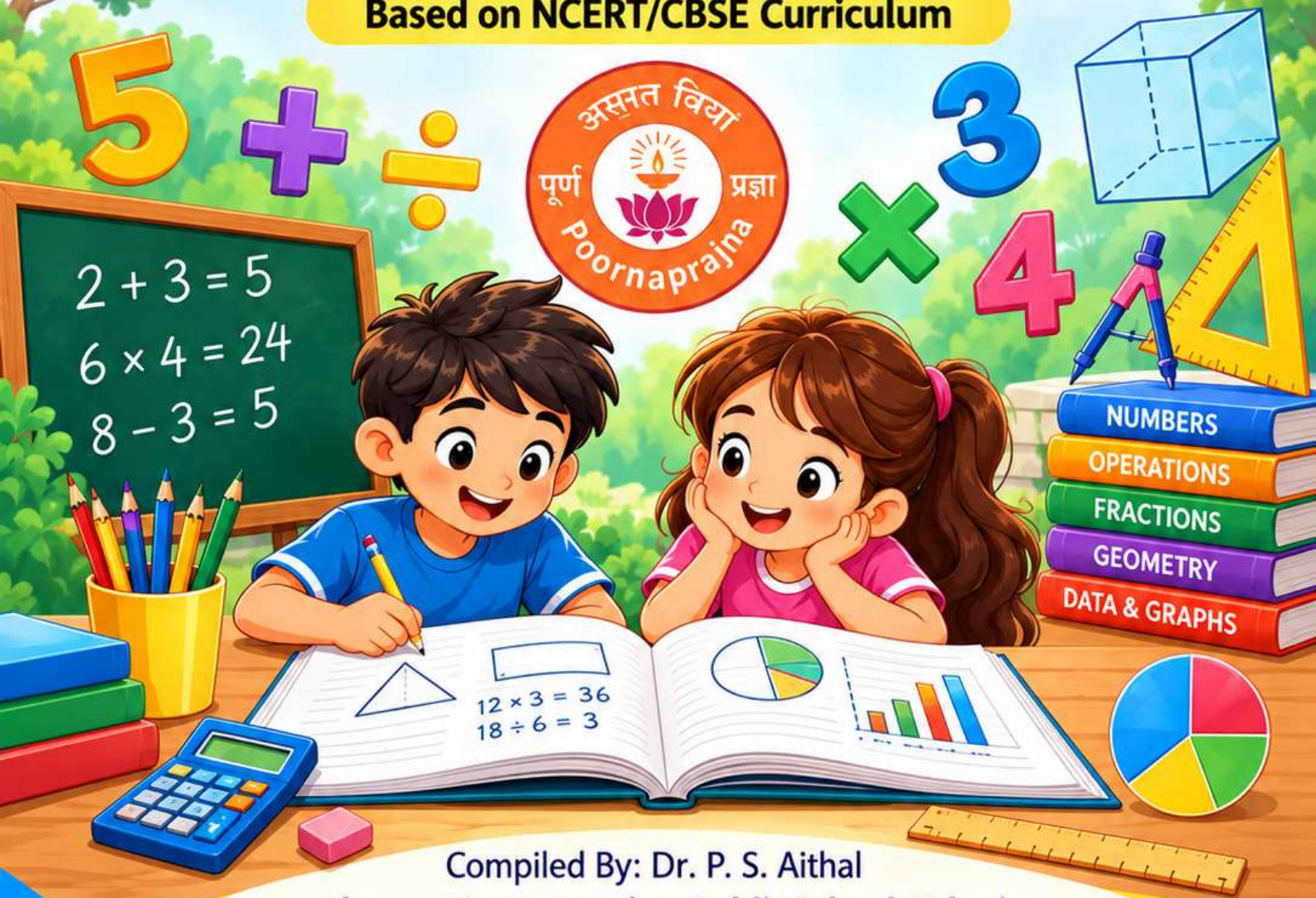
Super Power Series Book

MATHEMATICS FOR YOUNG MINDS

Study Material BOOK for 5th Standard Maths-Mela Subject

Based on NCERT/CBSE Curriculum



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www.alevoorpps.in

Published BY:

Poornaprajna Publication, Udupi, India

www.poornaprajnapublication.com

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Published BY:
Poornaprajna Publication, Udupi, India
Year of Publication: September, 2026
ISBN: 978-81-17181-76-8
DOI: https://doi.org/10.5281/zenodo.23113044
www.poornaprajnapublication.com

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Study Material BOOK for 5th Standard Maths-Mela Subject

(Prepared as per Poornaprajna Integrated Student Support Model)

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ISBN: 978-81-17181-76-8
DOI: https://doi.org/10.5281/zenodo.23113044
www.poornaprajnapublication.com

PREFACE

Mathematics FOR YOUNG MINDS – Study Material BOOK for 5th Standard Maths-Mela Subject has been thoughtfully developed with the help of AI-Driven GPTs in accordance with the **Poornaprajna Integrated Student Support Model** to provide comprehensive and learner-centred academic support to Grade 5 students. Based on the **NCERT/CBSE Curriculum**, this book aims to strengthen mathematical foundations while nurturing numerical ability, logical reasoning, problem-solving skills, analytical thinking, and confidence in applying mathematics to everyday situations.

The book systematically covers all **15 chapters of the Grade 5 Maths-Mela curriculum**, including *We the Travellers—I, Fractions, Angles as Turns, Far and Near, The Dairy Farm, Shapes and Patterns, Weight and Capacity, Symmetrical Designs, Racing Seconds, Maps and Locations,* and *Data Through Pictures*. Book for Preface Each chapter provides structured learning support through **chapter summaries, important formulae and mathematical rules, LOTS and HOTS questions, fill-in-the-blanks, one-mark to five-mark descriptive questions, application-oriented problems, and Olympiad-style questions**. This progressive approach helps learners advance from understanding basic concepts to reasoning, analysing, applying, and solving challenging mathematical problems. Book for Preface

Designed to prepare students for both **CBSE school examinations and competitive examinations such as Mathematics Olympiads**, *Mathematics FOR YOUNG MINDS* seeks to make mathematics meaningful, enjoyable, exploratory, and connected with real life. Through a balanced combination of conceptual learning, systematic practice, higher-order thinking, application-based problem solving, and competitive-examination readiness, the book encourages children not merely to learn mathematical procedures but to **think mathematically, reason logically, discover patterns, solve problems confidently, and develop a lasting interest in Mathematics**.

Dr. P. S. Aithal
(www.psaithal.in)

5th Standard Math Mela Book Chapter 1

Chapter 1: We the Travellers — I

1.1 Summary of the Chapter:

Summary: *We the Travellers—I*:

(1) People have travelled for thousands of years, first on foot or with animals, and later by carts, boats, ships, cars and trains.

(2) The chapter uses travel and distance to introduce reading and writing large numbers.

(3) In the place value chart, **10 ones make 1 ten**, **10 tens make 1 hundred**, and **10 hundreds make 1 thousand**.

(4) Ten thousands are written as **10,000**. The chapter introduces the **ten-thousands (TTh)** place alongside thousands, hundreds, tens and ones.

(5) A digit's place tells its value. For example, **9,123** means 9 thousands, 1 hundred, 2 tens and 3 ones.

(6) Large numbers can be written in words and in expanded form. For example, **783 = 700 + 80 + 3**.

(7) Number sequences follow patterns, such as adding or subtracting the same amount each time. Finding the pattern helps complete a sequence.

(8) Numbers can be compared and arranged in **ascending order** (smallest to largest) or **descending order** (largest to smallest).

(9) The chapter explores how numbers can be grouped in different ways, such as counting how many tens, hundreds or thousands are in a number.

(10) A digit puzzle shows that reversing two digits in a two-digit number and subtracting the smaller number from the larger gives a difference connected to the difference between the digits.

(11) Puzzles such as arranging horses around a square encourage careful counting and logical thinking: a horse at a corner can be counted along two sides.

1.2 Important Formulas:

Important Formulae and Number Rules: *We the Travellers—I*:

This chapter mainly covers place value, number patterns, and comparing numbers. It does not introduce many standard formulas, but these rules are useful:

(1) Place value expansion:
Number = (digit × place value) + (digit × place value) + …

(2) Example: **9,123 = 9 × 1,000 + 1 × 100 + 2 × 10 + 3 × 1**

(3) Expanded form:
Write a number as the sum of the place values of its digits.
Example: **10,304 = 10,000 + 300 + 4**

(4) Place value relationships:
10 ones = 1 ten
10 tens = 1 hundred
10 hundreds = 1 thousand
10 thousands = 1 ten thousand

(5) Number sequence rule:
Find the difference between consecutive terms, then add or subtract that amount to continue the pattern.
Example: **10,100, 10,200, 10,300…** increases by **100** each time.

(6) Comparing numbers:
Compare digits from the greatest place value to the smallest. The number with the greater digit at the first differing place is larger.

(7) Ascending order: Arrange numbers from smallest to largest.

(8) Descending order: Arrange numbers from largest to smallest.

(9) Two-digit reversal puzzle:
For different digits \(a\) and \(b\), the difference between the numbers \(10a+b\) and \(10b+a\) is **9 × the difference between the digits** (take the positive difference).
Example: **73 − 37 = 36 = 9 × (7 − 3)**.

1.3 Fill-Up the Blank LOTS type questions with Answers: (36 Questions)

Fill in the Blanks — LOTS:

1. People travelled long distances on foot or with the help of _____ in the past.
   Answer: animals
2. Boats and ships were used to travel across lakes, rivers and _____.
   Answer: seas
3. The place value chart in this chapter includes the ten-thousands place, written as _____.
   Answer: TTh
4. The number **10,000** is read as _____.
   Answer: ten thousand
5. Ten ones make one _____.
   Answer: ten
6. Ten tens make one _____.
   Answer: hundred
7. Ten hundreds make one _____.
   Answer: thousand
8. Ten thousands make one _____.
   Answer: ten thousand
9. In **1,380**, the digit 1 is in the _____ place.
   Answer: thousands
10. In **1,380**, the digit 3 represents _____.
    Answer: 300
11. In **1,380**, the digit 8 is in the _____ place.
    Answer: tens
12. In **9,123**, the digit 9 represents _____.
    Answer: 9,000
13. In **9,123**, the digit 1 represents _____.
    Answer: 100
14. In **9,123**, the digit 2 is in the _____ place.
    Answer: tens
15. In **9,123**, the digit 3 is in the _____ place.
    Answer: ones
16. The number **10,001** is read as ten thousand _____.
    Answer: one
17. The number **10,010** is read as ten thousand _____.
    Answer: ten
18. The number **10,024** is read as ten thousand _____.
    Answer: twenty-four

19. The number **10,458** is read as ten thousand four hundred _____.
    Answer: fifty-eight
20. The number **13,520** is read as thirteen thousand five hundred _____.
    Answer: twenty
21. The number **20,000** is read as _____ thousand.
    Answer: twenty
22. The number **45,867** has _____ in the ten-thousands place.
    Answer: 4
23. In **45,867**, the digit 5 is in the _____ place.
    Answer: thousands
24. The expanded form of **783** is 700 + 80 + _____.
    Answer: 3
25. The expanded form of **8,062** is 8,000 + 60 + _____.
    Answer: 2
26. The number **10,304** has 1 ten thousand, 3 hundreds and _____ ones.
    Answer: 4
27. A number between **23,568** and **24,234** must be greater than 23,568 and less than _____.
    Answer: 24,234
28. Arranging numbers from smallest to largest is called _____ order.
    Answer: ascending
29. Arranging numbers from largest to smallest is called _____ order.
    Answer: descending
30. In a number sequence, the difference between consecutive numbers can help us find the _____.
    Answer: pattern
31. In the sequence **10,100, 10,200, 10,300**, each number increases by _____.
    Answer: 100
32. The car driven for **67,543 km** has travelled farther than the car driven for **56,987 km** because _____ is greater.
    Answer: 67,543
33. When comparing two numbers, begin with the digit in the _____ place.
    Answer: greatest place value
34. A comma helps us read _____ numbers more easily.
    Answer: large
35. In the two-digit number **73**, the tens digit is _____.
    Answer: 7
36. In **73 − 37 = 36**, the smaller number is _____.
    Answer: 37

1.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

Fill in the Blanks — HOTS:

1. A number has 4 ten-thousands, 2 thousands, 6 hundreds, 0 tens and 5 ones. The number is _____.
   Answer: 42,605
2. In **38,407**, the digit 8 has a value of _____.
   Answer: 8,000
3. The number **27,305** in expanded form is 20,000 + 7,000 + 300 + _____.
   Answer: 5

4. If 1,000 is added to **9,000**, the result is _____.
   Answer: 10,000
5. If 100 is added each time, the next number after **10,700** is _____.
   Answer: 10,800
6. The next number in the pattern **5,501, 6,401, 7,301, ____** is _____.
   Answer: 8,201
7. The pattern **10,105, 10,125, ____** increases by 20, so the missing number is _____.
   Answer: 10,145
8. The number that comes just before **10,000** is _____.
   Answer: 9,999
9. The number that comes just after **10,999** is _____.
   Answer: 11,000
10. If the digits 3 and 7 are used to make two different two-digit numbers, their difference is _____.
    Answer: 36
11. For the digits 2 and 8, the difference between the numbers made by reversing them is **82 − 28 =** _____.
    Answer: 54
12. In the digit-reversal puzzle, if the difference between the two digits is 5, the difference between the two numbers is _____.
    Answer: 45
13. The two different digits that make the largest possible difference between two reversed two-digit numbers are 1 and _____.
    Answer: 9
14. A number greater than **38,125** and less than **38,600** could be _____.
    Answer: 38,500
15. The greatest number less than **24,234** that can be formed by reducing it by 1 is _____.
    Answer: 24,233
16. Of **56,987** and **67,543**, the larger number is _____.
    Answer: 67,543
17. In descending order, **45,858, 65,232, 53,231** should begin with _____.
    Answer: 65,232
18. In ascending order, **₹90,000, ₹49,900, ₹39,999** should begin with _____.
    Answer: ₹39,999
19. A number with 6 in the thousands place, 4 in the hundreds place, 0 in the tens place and 8 in the ones place is _____.
    Answer: 6,408
20. The number **7,069** has _____ thousands and 69 ones.
    Answer: 7
21. **5,621** can be regrouped as 4 thousands, 16 hundreds, 2 tens and _____ ones.
    Answer: 1
22. **607** can be regrouped as 4 hundreds and _____ ones.
    Answer: 207
23. In **43,001**, the digit in the ten-thousands place is _____.
    Answer: 4
24. The smallest number greater than **73,005** is _____.
    Answer: 73,006

25. The number between **42,750** and **53,500** that has 0 in its ones, tens and hundreds places could be _____.
    Answer: 43,000
26. If one horse is taken away from an arrangement of 20 horses, the number left is _____.
    Answer: 19
27. In a square arrangement, a horse placed at a corner can be counted along _____ sides.
    Answer: two
28. In the sequence **10,992, 10,993, ____**, the missing number is _____.
    Answer: 10,994
29. The number **82,350** is _____ more than **81,350**.
    Answer: 1,000
30. If the digits 4 and 5 form the numbers **54** and **45**, their difference is _____.
    Answer: 9

1.5 One-mark questions with Answers of LOTS Type: (33 Questions)

One-Mark Questions — LOTS:

1. **What is the number name of 10,000?**
   Answer: 10,000 is read as ten thousand.
2. **What does TTh stand for in the place value chart?**
   Answer: TTh stands for ten-thousands.
3. **How many ones make one ten?**
   Answer: Ten ones make one ten.
4. **How many tens make one hundred?**
   Answer: Ten tens make one hundred.
5. **How many hundreds make one thousand?**
   Answer: Ten hundreds make one thousand.
6. **How many thousands make ten thousand?**
   Answer: Ten thousands make ten thousand.
7. **What is the value of 1 in 1,380?**
   Answer: The value of 1 in 1,380 is 1,000.
8. **What is the value of 3 in 1,380?**
   Answer: The value of 3 in 1,380 is 300.
9. **What is the value of 8 in 1,380?**
   Answer: The value of 8 in 1,380 is 80.
10. **What is the value of 9 in 9,123?**
    Answer: The value of 9 in 9,123 is 9,000.
11. **What is the value of 1 in 9,123?**
    Answer: The value of 1 in 9,123 is 100.
12. **What is the value of 2 in 9,123?**
    Answer: The value of 2 in 9,123 is 20.
13. **What is the number name of 10,001?**
    Answer: 10,001 is read as ten thousand one.
14. **What is the number name of 10,024?**
    Answer: 10,024 is read as ten thousand twenty-four.
15. **What is the number name of 10,458?**
    Answer: 10,458 is read as ten thousand four hundred fifty-eight.
16. **What is the number name of 13,520?**
    Answer: 13,520 is read as thirteen thousand five hundred twenty.

17. **Write 783 in expanded form.**
    Answer: 783 in expanded form is 700 + 80 + 3.
18. **What is the expanded form of 8,062?**
    Answer: 8,062 in expanded form is 8,000 + 60 + 2.
19. **What is the next number after 10,999?**
    Answer: The next number after 10,999 is 11,000.
20. **What number comes just before 10,000?**
    Answer: The number just before 10,000 is 9,999.
21. **What is the next number in the sequence 10,100, 10,200, 10,300?**
    Answer: The next number is 10,400.
22. **By how much does the sequence 10,100, 10,200, 10,300 increase each time?**
    Answer: The sequence increases by 100 each time.
23. **Which is greater: 56,987 or 67,543?**
    Answer: 67,543 is greater.
24. **What is the ascending order of ₹90,000, ₹49,900 and ₹39,999?**
    Answer: The ascending order is ₹39,999, ₹49,900, ₹90,000.
25. **What is the descending order of 65,232, 53,231 and 45,858?**
    Answer: The descending order is 65,232, 53,231, 45,858.
26. **What is the difference between 73 and 37?**
    Answer: The difference between 73 and 37 is 36.
27. **What is the difference between 82 and 28?**
    Answer: The difference between 82 and 28 is 54.
28. **Which place does the digit 5 occupy in 45,867?**
    Answer: The digit 5 occupies the thousands place.
29. **Which digit is in the hundreds place in 45,867?**
    Answer: The digit 8 is in the hundreds place.
30. **What is the value of the digit 6 in 45,867?**
    Answer: The value of 6 in 45,867 is 60.
31. **What is the value of the digit 4 in 45,867?**
    Answer: The value of 4 in 45,867 is 40,000.
32. **What is the number of sides of the square stable in the "King's Horses" puzzle?**
    Answer: The square stable has four sides.
33. **What kinds of transport did people use to travel across rivers and seas?**
    Answer: People used boats and ships to travel across rivers and seas.

1.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark Questions — HOTS:

1. **A number has 3 ten-thousands, 2 thousands, 4 hundreds, 5 tens and 6 ones; what is the number?**
   Answer: The number is **32,456**.
2. **What number is 1,000 more than 9,000?**
   Answer: 1,000 more than 9,000 is **10,000**.
3. **What is the smallest number greater than 10,999?**
   Answer: The smallest number greater than 10,999 is **11,000**.
4. **What is the greatest number less than 10,000?**
   Answer: The greatest number less than 10,000 is **9,999**.
5. **A number has 5 in the ten-thousands place and 2 in the thousands place; what is the value of the 5?**
   Answer: The value of 5 is **50,000**.

6. **Which is greater, 45,867 or 45,786?**
   Answer: 45,867 is greater because its hundreds digit is greater.
7. **What number comes next in the sequence 10,105, 10,125, 10,145?**
   Answer: The next number is **10,165**.
8. **What is the missing number in 5,501, 6,401, ____, 8,201?**
   Answer: The missing number is **7,301**.
9. **The sequence 10,992, 10,993 continues by adding 1; what is the next number?**
   Answer: The next number is **10,994**.
10. **What number is 1,000 less than 23,568?**
    Answer: 1,000 less than 23,568 is **22,568**.
11. **A number is 100 more than 10,300; what is the number?**
    Answer: The number is **10,400**.
12. **What is the difference between the two numbers made with digits 3 and 7?**
    Answer: The difference between 73 and 37 is **36**.
13. **If the difference between two digits is 4, what is the difference between the reversed two-digit numbers made from them?**
    Answer: The difference is **36**.
14. **Which pair of different digits gives a difference of 9 when formed into reversed two-digit numbers?**
    Answer: The digits **4 and 5** give a difference of 9.
15. **What is the greatest number less than 24,234 that differs from it by 1?**
    Answer: The number is **24,233**.
16. **What is one possible number between 38,125 and 38,600?**
    Answer: 38,500 is one possible number.
17. **Which number is nearer to 50,000: 49,900 or 39,999?**
    Answer: 49,900 is nearer to 50,000.
18. **If 10 hundreds are exchanged for thousands, how many thousands do they make?**
    Answer: 10 hundreds make **1 thousand**.
19. **How can 607 be written as 4 hundreds and some ones?**
    Answer: 607 can be written as **4 hundreds and 207 ones**.
20. **How can 5,621 be written using 4 thousands, hundreds, tens and ones?**
    Answer: It can be written as **4 thousands, 16 hundreds, 2 tens and 1 one**.
21. **What is the greatest number in the list 65,232, 53,231 and 56,380?**
    Answer: The greatest number is **65,232**.
22. **What is the least price among ₹90,000, ₹89,999 and ₹94,983?**
    Answer: The least price is **₹89,999**.
23. **Why can a horse at a corner of a square be counted along two sides?**
    Answer: A corner belongs to two sides of the square.
24. **If one horse is stolen from a stable containing 20 horses, how many remain?**
    Answer: 19 horses remain.
25. **What number has 4 ten-thousands, 5 thousands, 0 hundreds, 2 tens and 8 ones?**
    Answer: The number is **45,028**.
26. **What is 1,000 more than 65,342?**
    Answer: 1,000 more than 65,342 is **66,342**.
27. **A number has 8 thousands and 6 tens, with zero in the hundreds and ones places; what is it?**
    Answer: The number is **8,060**.

1.7 Two-mark questions with Answers of LOTS Type: (18 Questions)

Two-Mark Questions — LOTS:

1. **Write 1,380 in expanded form and state the value of the digit 3.**
   Answer: 1,380 = 1,000 + 300 + 80. The value of 3 is **300**.
2. **Write 9,123 in expanded form and state the value of the digit 2.**
   Answer: 9,123 = 9,000 + 100 + 20 + 3. The value of 2 is **20**.
3. **Write the number name of 10,024 and identify its thousands digit.**
   Answer: 10,024 is "ten thousand twenty-four." Its thousands digit is **0**.
4. **Write 10,458 in words and state the value of its hundreds digit.**
   Answer: 10,458 is "ten thousand four hundred fifty-eight." The value of the hundreds digit, 4, is **400**.
5. **Write 13,520 in expanded form and give its number name.**
   Answer: 13,520 = 10,000 + 3,000 + 500 + 20. It is read as "thirteen thousand five hundred twenty."
6. **What do TTh and Th stand for in the place value chart?**
   Answer: TTh stands for **ten-thousands**. Th stands for **thousands**.
7. **How many tens make one hundred, and how many hundreds make one thousand?**
   Answer: Ten tens make one hundred. Ten hundreds make one thousand.
8. **Continue the pattern: 10,100, 10,200, 10,300. Write the next two numbers.**
   Answer: The pattern increases by 100 each time. The next two numbers are **10,400 and 10,500**.
9. **Arrange 65,232, 53,231 and 45,858 in descending order.**
   Answer: The descending order is **65,232, 53,231, 45,858**. This order goes from greatest to least.
10. **Arrange ₹90,000, ₹49,900 and ₹39,999 in ascending order.**
    Answer: The ascending order is **₹39,999, ₹49,900, ₹90,000**. This order goes from least to greatest.
11. **Compare 56,987 and 67,543. Which number is greater, and why?**
    Answer: 67,543 is greater. Its ten-thousands digit, 6, is greater than 5.
12. **Write the number that comes just before and just after 10,000.**
    Answer: The number just before 10,000 is **9,999**. The number just after it is **10,001**.
13. **Using the digits 3 and 7, form two different two-digit numbers and find their difference.**
    Answer: The numbers are **37 and 73**. Their difference is **73 − 37 = 36**.
14. **Using the digits 4 and 5, form two different two-digit numbers and find their difference.**
    Answer: The numbers are **45 and 54**. Their difference is **54 − 45 = 9**.
15. **Write 783 in expanded form and name the place of the digit 8.**
    Answer: 783 = **700 + 80 + 3**. The digit 8 is in the **tens place**.
16. **Write 8,062 in expanded form and state the value of the digit 6.**
    Answer: 8,062 = **8,000 + 60 + 2**. The value of 6 is **60**.
17. **How many sides does a square stable have, and how many horses were counted along each side in the puzzle?**
    Answer: A square has **four sides**. The caretaker said there were **five horses along each side**.
18. **What does ascending order mean, and what does descending order mean?**
    Answer: Ascending order arranges numbers from **smallest to largest**. Descending order arranges them from **largest to smallest**.

1.8. Two-mark questions with Answers of HOTS Type: (21 Questions)

Two-Mark Questions — HOTS:

1. **A number has 3 ten-thousands, 4 thousands, 2 hundreds, 0 tens and 6 ones. Write the number and its expanded form.**
   Answer: The number is **34,206**. Its expanded form is **30,000 + 4,000 + 200 + 6**.
2. **Which is greater: 38,704 or 38,470? Explain using place value.**
   Answer: 38,704 is greater. The thousands are the same, but its hundreds digit, 7, is greater than 4.
3. **Continue the sequence 10,105, 10,125, 10,145 by two numbers and state the pattern.**
   Answer: The next numbers are **10,165 and 10,185**. The pattern increases by **20** each time.
4. **Find the missing number: 5,501, 6,401, ____, 8,201. Explain the pattern.**
   Answer: The missing number is **7,301**. Each number increases by **900**.
5. **A number is 1,000 less than 23,568. Find the number and state its thousands digit.**
   Answer: The number is **22,568**. Its thousands digit is **2**.
6. **Write 45,867 in expanded form and state the value of the digit 5.**
   Answer: 45,867 = 40,000 + 5,000 + 800 + 60 + 7. The value of 5 is **5,000**.
7. **Arrange 56,380, 65,232 and 53,231 in descending order. Explain how you chose the first number.**
   Answer: The order is **65,232, 56,380, 53,231**. 65,232 comes first because its ten-thousands digit, 6, is the greatest.
8. **Arrange ₹94,983, ₹90,000 and ₹93,743 in ascending order.**
   Answer: The order is **₹90,000, ₹93,743, ₹94,983**. The values increase from the smallest price to the greatest.
9. **Using the digits 2 and 8, form two two-digit numbers and find their difference. What is the difference between the digits?**
   Answer: The numbers are **82 and 28**, and their difference is **54**. The difference between the digits is **6**.
10. **Using the digits 1 and 9, form two two-digit numbers and find their difference.**
    Answer: The numbers are **91 and 19**, and their difference is **72**. The digits differ by **8**.
11. **If two different digits differ by 3, what will be the difference between the two numbers formed by reversing them?**
    Answer: The difference between the numbers will be **27**. For example, 5 and 8 make 85 and 58, and 85 − 58 = 27.
12. **Find a number between 42,750 and 53,500 that has zeros in its ones, tens and hundreds places.**
    Answer: One such number is **43,000**. Its last three digits are all zero.
13. **A number has 7 thousands and 69 ones. Write the number and its expanded form.**
    Answer: The number is **7,069**. Its expanded form is **7,000 + 60 + 9**.
14. **Regroup 5,621 as 4 thousands, hundreds, tens and ones.**
    Answer: 5,621 can be written as **4 thousands, 16 hundreds, 2 tens and 1 one**. This still totals 5,621.
15. **A number has 8 thousands and 6 tens, with no hundreds or ones. Write the number and explain the zeros.**
    Answer: The number is **8,060**. The zeros show that there are no hundreds and no ones.

16. **What is the smallest number greater than 10,999, and what is its expanded form?**
    Answer: The smallest number is **11,000**. Its expanded form is **10,000 + 1,000**.
17. **Compare 49,900 and 39,999, then find how much greater the larger number is.**
    Answer: 49,900 is greater because its ten-thousands digit is 4 instead of 3. It is greater by **9,901**.
18. **In the horse puzzle, why can a horse at a corner be counted along two sides?**
    Answer: Each corner is shared by two sides of the square. So a horse placed at a corner contributes to the count on both sides.
19. **A car has travelled 56,987 km and another has travelled 67,543 km. Which has travelled farther, and by how much?**
    Answer: The car with **67,543 km** has travelled farther. It has travelled **10,556 km** more.
20. **Write the greatest and least numbers using the digits 3, 7, 0, 5 and 2 once each.**
    Answer: The greatest number is **75,320**. The least five-digit number is **20,357**.
21. **A number sequence starts at 10,992 and increases by 2 each time; write the next two numbers.**
    Answer: The next two numbers are **10,994 and 10,996**. Each term is 2 greater than the previous one.

1.9. Three-mark questions with Answers of LOTS Type: (15 Questions)

Three-Mark Questions — LOTS:

1. **Write 9,123 in expanded form, name it in words, and state the value of the digit 1.**
   Answer: The expanded form is **9,000 + 100 + 20 + 3**.
   The number name is **nine thousand one hundred twenty-three**.
   The value of the digit 1 is **100**.
2. **Write 10,458 in words, identify its ten-thousands digit, and state the value of its hundreds digit.**
   Answer: The number name is **ten thousand four hundred fifty-eight**.
   Its ten-thousands digit is **1**.
   The value of its hundreds digit, 4, is **400**.
3. **Write 13,520 in expanded form, state its thousands digit, and name it in words.**
   Answer: The expanded form is **10,000 + 3,000 + 500 + 20**.
   Its thousands digit is **3**.
   The number name is **thirteen thousand five hundred twenty**.
4. **Explain the place value relationships among ones, tens, hundreds and thousands.**
   Answer: Ten ones make one ten.
   Ten tens make one hundred.
   Ten hundreds make one thousand.
5. **Continue the sequence 10,100, 10,200, 10,300 by three numbers and state its rule.**
   Answer: The next three numbers are **10,400, 10,500 and 10,600**.
   Each number is 100 greater than the one before it.
   The sequence increases by **100** each time.
6. **Arrange 45,858, 65,232 and 53,231 in descending order and state what descending order means.**
   Answer: The descending order is **65,232, 53,231, 45,858**.
   The greatest number comes first.
   Descending order means arranging numbers from greatest to least.

7. **Arrange ₹90,000, ₹49,900 and ₹39,999 in ascending order and state what ascending order means.**
   Answer: The ascending order is **₹39,999, ₹49,900, ₹90,000**.
   The smallest price comes first.
   Ascending order means arranging numbers from least to greatest.
8. **Compare 56,987 and 67,543, identify the greater number, and explain your comparison.**
   Answer: 67,543 is greater.
   The ten-thousands digit of 67,543 is 6, while that of 56,987 is 5.
   Since 6 is greater than 5, 67,543 is the larger number.
9. **Using the digits 3 and 7, make two two-digit numbers and find their difference.**
   Answer: The two numbers are **37 and 73**.
   The greater number is **73**.
   Their difference is **73 − 37 = 36**.
10. **Write 783 in expanded form, identify the hundreds digit, and state its value.**
    Answer: The expanded form is **700 + 80 + 3**.
    The hundreds digit is **7**.
    Its value is **700**.
11. **Write 8,062 in expanded form, identify the tens digit, and state its value.**
    Answer: The expanded form is **8,000 + 60 + 2**.
    The tens digit is **6**.
    Its value is **60**.
12. **Write the number just before 10,000, the number just after it, and explain how they relate to 10,000.**
    Answer: The number just before 10,000 is **9,999**.
    The number just after 10,000 is **10,001**.
    They are one less and one more than 10,000.
13. **State the number of sides in a square, explain how a corner horse is counted, and give the number of horses claimed along each side in the puzzle.**
    Answer: A square has **four sides**.
    A horse at a corner can be counted along two sides.
    The caretaker claimed there were **five horses along each side**.
14. **Write the number name of 10,024, identify the ten-thousands digit, and state its value.**
    Answer: 10,024 is read as **ten thousand twenty-four**.
    Its ten-thousands digit is **1**.
    The value of that digit is **10,000**.
15. **State how the number sequence 10,992, 10,993 continues, and write the next three numbers.**
    Answer: The sequence increases by **1** each time.
    The next three numbers are **10,994, 10,995 and 10,996**.
    Each number is one more than the previous number.

1.10. Three-mark questions with Answers of HOTS Type: (16 Questions)

Three-Mark Questions — HOTS:

1. **A number has 4 ten-thousands, 3 thousands, 0 hundreds, 6 tens and 2 ones. Write it in standard and expanded forms.**
   Answer: The number is **43,062**.

Its expanded form is **40,000 + 3,000 + 60 + 2**.
The zero shows there are no hundreds.

2. **Continue the sequence 5,501, 6,401, 7,301 by two numbers and explain the pattern.**
   Answer: The next numbers are **8,201 and 9,101**.
   Each term increases by **900**.
   Adding 900 to 7,301 gives 8,201, and adding 900 again gives 9,101.
3. **Compare 45,867 and 45,786, identify the greater number, and explain using place value.**
   Answer: 45,867 is greater.
   Both numbers have 4 in the ten-thousands place and 5 in the thousands place.
   At the hundreds place, 8 is greater than 7.
4. **Using the digits 2 and 8, make two reversed two-digit numbers, find their difference, and compare it with the difference between the digits.**
   Answer: The numbers are **82 and 28**.
   Their difference is **82 − 28 = 54**.
   The digits differ by 6, and 54 is 9 times 6.
5. **A number is 1,000 more than 9,000; write the number, its number name, and its expanded form.**
   Answer: The number is **10,000**.
   Its number name is **ten thousand**.
   Its expanded form is **10,000 + 0 + 0 + 0 + 0**.
6. **Arrange 65,232, 56,380 and 53,231 in descending order and explain why the first number comes first.**
   Answer: The descending order is **65,232, 56,380, 53,231**.
   The first number is greatest because its ten-thousands digit is 6.
   The other two numbers have 5 in the ten-thousands place.
7. **Arrange ₹94,983, ₹90,000 and ₹93,743 in ascending order and state how you compared them.**
   Answer: The ascending order is **₹90,000, ₹93,743, ₹94,983**.
   ₹90,000 is smallest because its thousands digit is 0.
   Between the remaining prices, 94,983 is greater than 93,743.
8. **Find a number between 42,750 and 53,500 with zeros in the ones, tens and hundreds places, and show why it fits.**
   Answer: One suitable number is **43,000**.
   Its last three digits are all zero.
   It is greater than 42,750 and less than 53,500.
9. **Write 5,621 as 4 thousands, hundreds, tens and ones, and verify the regrouping.**
   Answer: It can be regrouped as **4 thousands, 16 hundreds, 2 tens and 1 one**.
   This gives 4,000 + 1,600 + 20 + 1.
   The total is 5,621.
10. **A sequence starts at 10,105 and increases by 20 each time; write the next three terms and state the rule.**
    Answer: The next three terms are **10,125, 10,145 and 10,165**.
    Each term is 20 greater than the one before it.
    This is an increasing number pattern.
11. **Compare 49,900 and 39,999, identify the greater number, and find their difference.**
    Answer: 49,900 is greater because its ten-thousands digit is 4 rather than 3.

The difference is **49,900 − 39,999 = 9,901**.
Therefore, 49,900 is 9,901 more than 39,999.

12. **A number has 7 thousands and 69 ones; write the number, its expanded form, and its number name.**
Answer: The number is **7,069**.
Its expanded form is **7,000 + 60 + 9**.
It is read as **seven thousand sixty-nine**.
13. **Explain how a horse at a corner of the square stable can count toward two sides, and why this matters when checking the caretaker's claim.**
Answer: Each corner is shared by two sides of the square.
So a corner horse is included in the count for both adjoining sides.
Counting it twice can make the total number of horses seem larger than it really is.
14. **What is the smallest number greater than 10,999, and how does its place value show the change?**
Answer: The smallest number greater than 10,999 is **11,000**.
Adding 1 changes the number from 10,999 to 11,000.
The ones, tens and hundreds become zero as the thousands and ten-thousands places increase.
15. **A car travelled 56,987 km and another travelled 67,543 km; identify the farther-travelled car and calculate the difference.**
Answer: The car that travelled **67,543 km** went farther.
The difference is **67,543 − 56,987 = 10,556 km**.
It travelled 10,556 km more.
16. **Using the digits 3, 7, 0, 5 and 2 once each, form the greatest and least five-digit numbers.**
Answer: The greatest number is **75,320**.
The least five-digit number is **20,357**.
For the least number, 0 cannot be placed first, so the smallest non-zero digit goes first.

1.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

Five-Mark Questions — LOTS:

1. **Write 9,123 in expanded form, give its number name, and state the place and value of each digit.**
Answer: The number is **9,123**.
Its expanded form is **9,000 + 100 + 20 + 3**.
The digit 9 is in the thousands place and has a value of 9,000.
The digit 1 is in the hundreds place and has a value of 100.
The number name is **nine thousand one hundred twenty-three**.
2. **Write 10,458 in words and state the place and value of its digits.**
Answer: The number name is **ten thousand four hundred fifty-eight**.
The digit 1 is in the ten-thousands place and has a value of 10,000.
The digit 4 is in the hundreds place and has a value of 400.
The digit 5 is in the tens place and has a value of 50.
The digit 8 is in the ones place and has a value of 8.
3. **Explain the place value relationships from ones to ten-thousands.**
Answer: Ten ones make one ten.
Ten tens make one hundred.
Ten hundreds make one thousand.

Ten thousands make ten thousand.
Each place to the left is ten times the place immediately to its right.

4. **Continue the sequence 10,100, 10,200, 10,300 by five numbers and explain its rule.**
   Answer: The next five numbers are **10,400, 10,500, 10,600, 10,700 and 10,800**.
   Each number is greater than the previous one.
   The difference between consecutive numbers is 100.
   The numbers increase by one hundred at each step.
   This is an increasing number sequence.
5. **Arrange 65,232, 53,231, 56,380, 51,336 and 45,858 in descending order.**
   Answer: The descending order is **65,232, 56,380, 53,231, 51,336, 45,858**.
   The greatest number is 65,232.
   The next greatest number is 56,380.
   The least number is 45,858.
   Descending order arranges numbers from greatest to least.
6. **Arrange ₹90,000, ₹89,999, ₹94,983, ₹49,900 and ₹93,743 in ascending order.**
   Answer: The ascending order is **₹49,900, ₹89,999, ₹90,000, ₹93,743, ₹94,983**.
   The least price is ₹49,900.
   The greatest price is ₹94,983.
   ₹89,999 comes just before ₹90,000.
   Ascending order arranges amounts from least to greatest.
7. **Write 13,520 in expanded form, name it in words, and identify the place and value of 3.**
   Answer: The number is **13,520**.
   Its expanded form is **10,000 + 3,000 + 500 + 20**.
   It is read as **thirteen thousand five hundred twenty**.
   The digit 3 is in the thousands place.
   Its value is 3,000.
8. **Compare 56,987 and 67,543, state which is greater, and explain by comparing their place values.**
   Answer: 67,543 is greater than 56,987.
   The ten-thousands digit in 67,543 is 6.
   The ten-thousands digit in 56,987 is 5.
   Since 6 is greater than 5, 67,543 is the greater number.
   We begin comparing numbers from their greatest place value.
9. **Write 783 and 8,062 in expanded form and identify the value of the digit 8 in each number.**
   Answer: The expanded form of 783 is **700 + 80 + 3**.
   The value of 8 in 783 is **80**.
   The expanded form of 8,062 is **8,000 + 60 + 2**.
   The value of 8 in 8,062 is **8,000**.
   A digit's value depends on its place in the number.
10. **Describe the "King's Horses" puzzle using the information given in the chapter.**
    Answer: The king had 20 horses in his stable.
    The thief stole one horse, leaving 19.
    The caretaker arranged the horses around a square.
    He asked the king to count five horses along each of the four sides.
    A horse at a corner can be counted along two sides.
11. **Continue the sequence 10,992, 10,993 by five numbers and state the pattern.**
    Answer: The next five numbers are **10,994, 10,995, 10,996, 10,997 and 10,998**.

Each number is one greater than the previous number.
The sequence increases by 1 each time.
These are consecutive numbers.
The pattern continues by adding one.

12. **Write 45,867 in expanded form, give its number name, and state the value of 4 and 6.**
    Answer: The expanded form is **40,000 + 5,000 + 800 + 60 + 7**.
    The number name is **forty-five thousand eight hundred sixty-seven**.
    The digit 4 is in the ten-thousands place.
    Its value is 40,000.
    The value of 6, in the tens place, is 60.

1.12 Five-mark questions with Answers of HOTS Type: (12 Questions)

Five-Mark Questions — HOTS:

1. **A number has 4 ten-thousands, 2 thousands, 6 hundreds, 0 tens and 5 ones. Write the number, its expanded form, and explain the role of zero.**
   Answer: The number is **42,605**.
   Its expanded form is **40,000 + 2,000 + 600 + 5**.
   The digit 4 represents 40,000.
   The digit 6 represents 600.
   Zero shows that there are no tens in the number.
2. **Continue the pattern 5,501, 6,401, 7,301 and explain how you found the next three numbers.**
   Answer: The next three numbers are **8,201, 9,101 and 10,001**.
   The difference between 6,401 and 5,501 is 900.
   The difference between 7,301 and 6,401 is also 900.
   Therefore, 900 is added each time.
   The pattern increases by 900 at every step.
3. **Compare 45,867 and 45,786, and explain the comparison from left to right.**
   Answer: 45,867 is greater than 45,786.
   Both numbers have 4 in the ten-thousands place.
   Both have 5 in the thousands place.
   In the hundreds place, 8 is greater than 7.
   Therefore, 45,867 is the greater number.
4. **Use the digits 3 and 7 to make two reversed two-digit numbers, find their difference, and explain the connection to the digit difference.**
   Answer: The two numbers are **37 and 73**.
   Their difference is **73 − 37 = 36**.
   The difference between the digits is **7 − 3 = 4**.
   The number difference, 36, is 9 times 4.
   Reversing the digits gives a difference linked to the difference between the digits.
5. **Arrange the town populations 65,232, 53,231, 56,380, 51,336 and 45,858 in descending order and explain your first choice.**
   Answer: The order is **65,232, 56,380, 53,231, 51,336, 45,858**.
   65,232 comes first because its ten-thousands digit is 6.
   The other numbers have 5 or 4 in the ten-thousands place.
   Among the numbers beginning with 5, 56,380 is greatest.
   Descending order goes from greatest to least.

6. **Find a number between 42,750 and 53,500 that has zeros in its ones, tens and hundreds places, and verify that it fits.**
   Answer: One suitable number is **43,000**.
   Its ones digit is 0.
   Its tens digit and hundreds digit are also 0.
   It is greater than 42,750.
   It is less than 53,500.
7. **A car has travelled 56,987 km and another 67,543 km; determine which has travelled farther and calculate the difference.**
   Answer: The car that travelled **67,543 km** has gone farther.
   Its ten-thousands digit is 6, while the other car's is 5.
   The difference is **67,543 − 56,987**.
   The subtraction gives **10,556 km**.
   The first car has travelled 10,556 km more.
8. **Regroup 5,621 as 4 thousands, hundreds, tens and ones, then check the total.**
   Answer: 5,621 can be regrouped as **4 thousands, 16 hundreds, 2 tens and 1 one**.
   Four thousands equal 4,000.
   Sixteen hundreds equal 1,600.
   Two tens and one one equal 21.
   Adding 4,000 + 1,600 + 21 gives 5,621.
9. **A square stable has horses arranged so that five are counted along each side; explain why simply multiplying 5 by 4 may give an incorrect total.**
   Answer: A square has four sides.
   A horse placed at a corner belongs to two sides.
   Multiplying five horses by four sides counts each corner horse twice.
   Therefore, the side counts cannot always be added as if every horse were separate.
   The actual arrangement must be counted carefully.
10. **A number is 1,000 more than 9,000; explain how it crosses into a new place-value group.**
    Answer: The number is **10,000**.
    Adding 1,000 to 9,000 gives 10,000.
    Nine thousands become ten thousands.
    The ten-thousands place now contains 1.
    This shows how place value changes when we pass 9,999.
11. **Write the greatest and least five-digit numbers that can be made using 3, 7, 0, 5 and 2 once each, and explain why zero cannot lead the smaller number.**
    Answer: The greatest number is **75,320**.
    The least five-digit number is **20,357**.
    To make the greatest number, arrange the digits from greatest to least.
    To make the least number, put the smallest non-zero digit first, then arrange the remaining digits.
    Zero cannot be first because the result would not be a five-digit number.
12. **A sequence begins 10,105, 10,125, 10,145; find the next two terms and justify the pattern.**
    Answer: The next two terms are **10,165 and 10,185**.
    The difference between 10,125 and 10,105 is 20.
    The difference between 10,145 and 10,125 is also 20.
    So 20 is added each time.
    This rule gives the next two terms.

1.13 Five-mark questions with Answers of Applied Type: (12 Questions)

Five-Mark Questions — Applied Type:

1. **A family travels 12,450 km by train and 3,275 km by bus over several trips. How far do they travel altogether? Write the answer in expanded form and words.**
   Answer: Add 12,450 and 3,275 to get **15,725 km**.
   The expanded form is **10,000 + 5,000 + 700 + 20 + 5**.
   The number name is **fifteen thousand seven hundred twenty-five**.
   The total distance is greater than 10,000 km.
   This combines distances using addition and place value.
2. **A car's odometer reads 38,450 km at the start of a trip and 39,125 km at the end. How far did the car travel?**
   Answer: Subtract 38,450 from 39,125.
   The car travelled **675 km**.
   The thousands digits are both 8, so compare the remaining places to subtract.
   The odometer reading increased during the trip.
   The distance travelled is the difference between the readings.
3. **A town has 45,867 people. Another town has 45,786 people. Which town has more people, and by how many?**
   Answer: The town with **45,867 people** has more.
   The hundreds digit 8 is greater than 7.
   The difference is **45,867 − 45,786 = 81**.
   The first town has **81 more people**.
   Place-value comparison helps identify the larger population.
4. **A travel agent lists four tour prices: ₹39,999, ₹49,900, ₹89,999 and ₹90,000. Arrange them from least to greatest and find the difference between the highest and lowest price.**
   Answer: The prices in ascending order are **₹39,999, ₹49,900, ₹89,999 and ₹90,000**.
   The highest price is **₹90,000**.
   The lowest price is **₹39,999**.
   Their difference is **₹50,001**.
   The difference shows how much more the costliest tour costs than the least expensive one.
5. **A school bus travels 10,100 km in one year, 10,200 km the next year and 10,300 km the following year. If the pattern continues, how far will it travel in the next two years?**
   Answer: The yearly distance increases by **100 km**.
   The next year's distance will be **10,400 km**.
   The following year's distance will be **10,500 km**.
   The sequence follows the pattern 10,100, 10,200, 10,300, 10,400, 10,500.
   Adding 100 each year continues the pattern.
6. **A bus has travelled 7,934 km. How many complete groups of 1,000 km has it travelled, and what distance remains?**
   Answer: The bus has travelled **7 complete groups of 1,000 km**.
   Seven groups account for **7,000 km**.
   The remaining distance is **934 km**.
   So, 7,934 km = 7,000 km + 934 km.
   This uses place value to group the distance into thousands.
7. **A travel club has two-digit membership numbers made from the digits 3 and 7: 37 and 73. What is the difference between the numbers, and how could this help**

a student notice a number pattern?
Answer: The difference is **73 − 37 = 36**.
The difference between the digits 7 and 3 is 4.
The number difference, 36, is 9 times 4.
Students can test other digit pairs to see whether this relationship continues.
This turns a travel-themed number puzzle into an exploration of patterns.

8. **A square campsite has 20 tent markers arranged around its boundary. A marker at a corner is counted along both adjoining sides. Explain why the total of the four side counts might be greater than 20.**
   Answer: A square has **four sides**.
   Each corner marker lies on two sides.
   Adding the counts for all four sides counts corner markers more than once.
   Therefore, the sum of the side counts may be greater than the number of different markers.
   To find the actual total, count each marker only once.
9. **A family wants a travel distance greater than 23,568 km but less than 24,234 km. Write five possible whole-number distances that meet this condition.**
   Answer: Five possible distances are **23,600 km, 23,750 km, 23,900 km, 24,000 km and 24,200 km**.
   Each is greater than 23,568 km.
   Each is less than 24,234 km.
   They all lie between the two given distances.
   Many other answers are possible.
10. **A travel company recorded 65,342 km of journeys. How many complete ₹500 units of distance are in this total if we compare the number numerically, and what is the remainder?**
    Answer: Divide 65,342 by 500.
    There are **130 complete groups of 500**.
    These groups total **65,000**.
    The remainder is **342**.
    Thus, 65,342 = 130 × 500 + 342.
11. **A traveller records these distances: 10,024 km, 13,520 km and 20,000 km. Arrange them in ascending order and find the total distance.**
    Answer: In ascending order, the distances are **10,024 km, 13,520 km and 20,000 km**.
    Their total is **43,544 km**.
    The smallest distance is 10,024 km.
    The greatest distance is 20,000 km.
    Comparing the ten-thousands place helps arrange them.
12. **A map shows a journey of 45,867 km. A student writes its expanded form as 40,000 + 5,000 + 800 + 60 + 7. Is the student correct? Explain by identifying the value of the 6.**
    Answer: The student is correct.
    The expanded form totals **45,867**.
    The digit 6 is in the tens place.
    Therefore, its value is **60**.
    Each digit's value comes from its place in the number.

1.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple Choice Questions:

1. **What is the value of 6 in 46,281?**
   A. 600
   B. 6,000
   C. 60,000
   D. 60
   Answer: B. 6,000
2. **Which is the expanded form of 30,405?**
   A. 30,000 + 400 + 5
   B. 3,000 + 400 + 5
   C. 30,000 + 40 + 5
   D. 30,000 + 4,000 + 5
   Answer: A. 30,000 + 400 + 5
3. **What is the number name of 12,306?**
   A. Twelve thousand three hundred six
   B. Twelve thousand thirty-six
   C. One thousand two hundred thirty-six
   D. Twelve thousand three hundred sixty
   Answer: A. Twelve thousand three hundred six
4. **Which number is greatest?**
   A. 54,321
   B. 54,312
   C. 53,421
   D. 45,321
   Answer: A. 54,321
5. **Which number comes just before 20,000?**
   A. 19,000
   B. 19,999
   C. 20,001
   D. 19,990
   Answer: B. 19,999
6. **What is 1,000 more than 9,650?**
   A. 9,750
   B. 10,550
   C. 10,650
   D. 19,650
   Answer: C. 10,650
7. **What is 100 less than 23,450?**
   A. 23,350
   B. 22,450
   C. 23,349
   D. 24,450
   Answer: A. 23,350
8. **Find the next number: 10,150, 10,250, 10,350, ____**
   A. 10,400
   B. 10,450
   C. 10,500
   D. 11,350
   Answer: B. 10,450

9. **Find the missing number: 5,501, 6,401, ____, 8,201.**
   A. 7,201
   B. 7,301
   C. 7,401
   D. 7,501
   Answer: B. 7,301
10. **Which list is in ascending order?**
   A. 12,000; 11,999; 10,999
   B. 10,999; 11,999; 12,000
   C. 11,999; 10,999; 12,000
   D. 12,000; 10,999; 11,999
   Answer: B. 10,999; 11,999; 12,000
11. **Which list is in descending order?**
   A. 45,670; 45,607; 45,076
   B. 45,076; 45,607; 45,670
   C. 45,607; 45,076; 45,670
   D. 45,607; 45,670; 45,076
   Answer: A. 45,670; 45,607; 45,076
12. **How many hundreds are there in 7,934?**
   A. 7
   B. 79
   C. 793
   D. 934
   Answer: B. 79
13. **How many complete thousands are there in 65,342?**
   A. 6
   B. 65
   C. 653
   D. 6,534
   Answer: B. 65
14. **Which number has 3 ten-thousands, 2 thousands, 5 hundreds, 0 tens and 8 ones?**
   A. 32,508
   B. 32,580
   C. 35,208
   D. 30,258
   Answer: A. 32,508
15. **What is the value of 4 in 24,671?**
   A. 4
   B. 40
   C. 400
   D. 4,000
   Answer: D. 4,000
16. **Which number is between 38,125 and 38,600?**
   A. 38,100
   B. 38,620
   C. 38,450
   D. 39,000
   Answer: C. 38,450
17. **What is the difference between 73 and 37?**
   A. 26

B. 36
C. 40
D. 46
Answer: B. 36

18. **If the digits in 82 are reversed, what is the difference between the two numbers?**
A. 45
B. 54
C. 60
D. 72
Answer: B. 54

19. **Two digits differ by 5. What is the difference between the two-digit numbers made by reversing them?**
A. 15
B. 25
C. 45
D. 50
Answer: C. 45

20. **Which pair of digits gives a difference of 27 between their reversed two-digit numbers?**
A. 2 and 5
B. 1 and 8
C. 3 and 7
D. 4 and 9
Answer: A. 2 and 5

21. **What is the smallest five-digit number that can be made using 0, 2, 3, 5 and 7 once each?**
A. 02,357
B. 20,357
C. 23,057
D. 25,037
Answer: B. 20,357

22. **What is the greatest number that can be made using 0, 2, 3, 5 and 7 once each?**
A. 75,320
B. 73,520
C. 57,320
D. 75,302
Answer: A. 75,320

23. **Which number has zeros in the ones, tens and hundreds places?**
A. 43,005
B. 43,050
C. 43,500
D. 43,000
Answer: D. 43,000

24. **What is the value of the 8 in 18,204?**
A. 8
B. 80
C. 800
D. 8,000
Answer: D. 8,000

25. **Which number is the smallest?**
    A. 45,858
    B. 45,885
    C. 45,588
    D. 45,858
    Answer: C. 45,588
26. **What is 10 tens equal to?**
    A. 10
    B. 100
    C. 1,000
    D. 10,000
    Answer: B. 100
27. **What is 10 hundreds equal to?**
    A. 100
    B. 1,000
    C. 10,000
    D. 10
    Answer: B. 1,000
28. **A number is 1,000 more than 19,999. What is the number?**
    A. 20,000
    B. 20,999
    C. 21,000
    D. 19,000
    Answer: B. 20,999
29. **A car has travelled 56,987 km, and another has travelled 67,543 km. How much farther has the second car travelled?**
    A. 10,456 km
    B. 10,556 km
    C. 11,556 km
    D. 9,556 km
    Answer: B. 10,556 km
30. **Which number is 900 more than 7,301?**
    A. 7,391
    B. 8,201
    C. 8,301
    D. 7,401
    Answer: B. 8,201
31. **What is the next number in the sequence 10,992, 10,993, 10,994, ____?**
    A. 10,995
    B. 10,996
    C. 11,004
    D. 10,904
    Answer: A. 10,995
32. **In a square arrangement, a horse placed at a corner belongs to how many sides?**
    A. One side
    B. Two sides
    C. Three sides
    D. Four sides
    Answer: B. Two sides

1.15 Best Practices Opportunity List from the Chapter: (15 Ideas)

Best Practices for Teaching *We the Travellers—I*:

(1) **Connect maths to travel:** Ask students about trips they have taken and discuss distance, travel time and transport.
(2) **Use a place-value chart:** Display ones, tens, hundreds, thousands and ten-thousands; have students place digit cards in the chart.
(3) **Build numbers with place-value materials:** Use bundles, counters or base-ten blocks to show how groups of ten form the next place value.
(4) **Practise reading large numbers aloud:** Show numbers on the board and let students read them, write their number names and check one another's work.
(5) **Model expanded form:** Demonstrate how each digit contributes to a number, then give students examples to expand and rebuild.
(6) **Explore number sequences:** Have learners identify the step size in a pattern, explain the rule and continue the sequence.
(7) **Use number cards for ordering:** Give groups number cards to arrange in ascending and descending order, explaining their comparisons by place value.
(8) **Compare numbers with real contexts:** Use sample journey distances, town populations or prices to practise identifying greater and smaller numbers.
(9) **Encourage mental estimation before calculation:** Ask students to predict which of two distances or prices is greater before comparing the exact values.
(10) **Discuss regrouping in different ways:** Show that numbers can be represented using different combinations of thousands, hundreds, tens and ones.
(11) **Use the digit-reversal puzzle:** Let students choose two digits, form reversed two-digit numbers, subtract and look for a pattern.
(12) **Investigate the King's Horses puzzle:** Use counters or a floor grid so students can arrange objects around a square and examine how corner objects are counted.
(13) **Promote pair explanations:** Ask students to explain how they found a place value, sequence rule or number order to a partner.
(14) **Use quick formative checks:** Give short exit questions on expanded form, number names, patterns and ordering to identify topics needing more practice.
(15) **Differentiate practice tasks:** Offer supported place-value charts to learners who need help and open-ended number puzzles to learners ready for a challenge.

1.16 Innovations Opportunity List from the Chapter: (15 Ideas)

Innovative Teaching–Learning Ideas:

(1) **Classroom travel agency:** Students create imaginary trip packages with distances and prices, then read, compare and order the numbers.
(2) **Human place-value chart:** Give students digit cards and let them stand in the correct place-value positions to form large numbers.
(3) **Number-building challenge:** Teams draw digit cards and race to build the greatest or smallest five-digit number, explaining their choices.
(4) **Travel route map:** Create a simple map with distances between destinations; students compare routes and arrange distances in order.
(5) **Interactive number-line walk:** Mark a large floor number line and have students stand at selected numbers to show which is greater, smaller or in between.
(6) **Pattern detectives:** Hide the rule in a number sequence and let students work in teams to discover it and create a sequence for another team.
(7) **Digit-reversal investigation:** Students choose pairs of digits, form reversed two-digit numbers, subtract, record results and look for a relationship.

(8) **King's Horses puzzle with counters:** Use counters on a square grid so students can test arrangements and explain how corner objects affect side counts.
(9) **Place-value role-play:** Students act as ones, tens, hundreds, thousands and ten-thousands; regrouping a group of ten moves them to the next place.
(10) **QR or audio number quiz:** Provide short audio clues or QR-linked questions where students identify number names, place values or missing pattern terms.
(11) **Student-created travel problems:** Learners invent word problems using journey distances, town populations or ticket prices, then exchange and solve them.
(12) **Digital number generator:** Use a classroom projector or shared spreadsheet to generate random numbers for quick practice in reading, expanding and ordering.
(13) **Error-spotting activity:** Display a number written incorrectly in expanded form or a wrongly ordered list; students find and explain the error.
(14) **Maths learning stations:** Set up stations for place value, number names, sequences, comparing numbers and puzzles, with students rotating in small groups.
(15) **Exit-ticket reflection:** At the end of the lesson, students write one new rule they learned and one question they still have.

1.17: Practicing Questions/Question Bank :

A. Fill in the Blanks:

1. Ten tens make one _____.
   Answer: hundred
2. The place-value abbreviation TTh stands for _____.
   Answer: ten-thousands
3. The expanded form of 783 is 700 + 80 + _____.
   Answer: 3
4. The number just before 10,000 is _____.
   Answer: 9,999
5. A number pattern that goes from smallest to greatest is in _____ order.
   Answer: ascending

B. One-Mark Questions:

1. **What is the value of 8 in 1,380?**
   Answer: The value of 8 is **80**.
2. **Write 10,001 in words.**
   Answer: 10,001 is **ten thousand one**.
3. **What number comes next: 10,992, 10,993, ____?**
   Answer: The next number is **10,994**.
4. **Which is greater: 56,987 or 67,543?**
   Answer: 67,543 is greater.
5. **How many sides does a square have?**
   Answer: A square has **four sides**.

C. Two-Mark Questions:

1. **Write 9,123 in expanded form and give its number name.**
   Answer: Its expanded form is **9,000 + 100 + 20 + 3**.
   Its number name is **nine thousand one hundred twenty-three**.

2. **Continue the sequence 10,100, 10,200, 10,300 by two numbers.**
   Answer: The next numbers are **10,400 and 10,500**.
   The sequence increases by **100** each time.

3. **Arrange 45,858, 65,232 and 53,231 in descending order.**
   Answer: The descending order is **65,232, 53,231, 45,858**.
   Descending order goes from greatest to least.

4. **Make two numbers using the digits 3 and 7, then find their difference.**
   Answer: The numbers are **37 and 73**.
   Their difference is **73 − 37 = 36**.

5. **Write 8,062 in expanded form and state the value of its tens digit.**
   Answer: The expanded form is **8,000 + 60 + 2**.
   The value of the tens digit is **60**.

D. Three-Mark Questions:

1. **Write 13,520 in expanded form, give its number name and state the value of 3.**
   Answer: Its expanded form is **10,000 + 3,000 + 500 + 20**.
   Its number name is **thirteen thousand five hundred twenty**.
   The value of 3 is **3,000**.

2. **Compare 45,867 and 45,786, and explain which is greater.**
   Answer: 45,867 is greater.
   Both numbers have 4 in the ten-thousands place and 5 in the thousands place.
   At the hundreds place, 8 is greater than 7.

3. **Continue the sequence 5,501, 6,401, 7,301 by two numbers and state its rule.**
   Answer: The next numbers are **8,201 and 9,101**.
   Each number increases by **900**.
   The rule is to add 900 each time.

4. **Explain how many horses a corner horse contributes to the side-count in the square-stable puzzle.**
   Answer: A square has four sides.
   A corner belongs to two sides.
   Therefore, a horse at a corner is counted along **two sides**.

5. **Write the number just before and just after 10,000, then describe their relationship to it.**
   Answer: The number before 10,000 is **9,999**.
   The number after it is **10,001**.
   They are one less and one more than 10,000.

E. Five-Mark Questions:

1. **Write 45,867 in expanded form and words, then state the place and value of 4, 5 and 6.**
   Answer: The expanded form is **40,000 + 5,000 + 800 + 60 + 7**.
   The number name is **forty-five thousand eight hundred sixty-seven**.
   The digit 4 is in the ten-thousands place and has a value of 40,000.
   The digit 5 is in the thousands place and has a value of 5,000.
   The digit 6 is in the tens place and has a value of 60.

2. **Arrange 65,232, 53,231, 56,380, 51,336 and 45,858 in descending order. Explain how you compared them.**
   Answer: The descending order is **65,232, 56,380, 53,231, 51,336, 45,858**.
   First, compare the ten-thousands digits.
   The number beginning with 6 is greatest, so 65,232 comes first.
   Among the numbers beginning with 5, compare the thousands and hundreds digits.
   The number beginning with 4, 45,858, comes last.

3. **A number pattern begins 10,105, 10,125, 10,145. Write the next three numbers and explain the rule.**
   Answer: The next three numbers are **10,165, 10,185 and 10,205**.
   The difference between 10,125 and 10,105 is 20.
   The difference between 10,145 and 10,125 is also 20.
   Therefore, the rule is to add 20 each time.
   The sequence continues by adding 20 to each new term.

4. **Use the digits 2 and 8 to form reversed two-digit numbers, find their difference and describe the relationship between the digit difference and number difference.**
   Answer: The two numbers are **82 and 28**.
   Their difference is **82 − 28 = 54**.
   The difference between the digits is **8 − 2 = 6**.
   The number difference, 54, is 9 times the digit difference.
   Reversing the digits produces a difference related to the gap between them.

5. **A car has travelled 56,987 km and another has travelled 67,543 km. Identify which travelled farther, calculate the difference and explain your comparison.**
   Answer: The car that travelled **67,543 km** went farther.
   The ten-thousands digit 6 is greater than 5.
   The difference is **67,543 − 56,987 = 10,556 km**.
   Therefore, the second car travelled 10,556 km more.
   Comparing the greatest place value is the first step in deciding which distance is larger.

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5th Standard Maths Book Chapter 2

Chapter 2: Fractions

2.1 Summary of the Chapter:

Summary: Fractions:

(1) A fraction describes equal parts of a whole. To compare fractions taken from different objects, first make sure the wholes are the same size.

(2) The numerator tells how many parts are being considered, and the denominator tells how many equal parts make up the whole.

(3) Different fractions can name the same amount. These are called **equivalent fractions**; for example, (1/3 = 2/6).

(4) Equivalent fractions can be found by dividing a fraction's parts into smaller equal pieces or by multiplying its numerator and denominator by the same number.

(5) Fraction strips, grids, shapes, and fraction kits help show and check equivalent fractions and different ways of making a whole.

(6) When fractions have the same denominator, compare their numerators. The fraction with the larger numerator is greater.

(7) When fractions have the same numerator, the fraction with the smaller denominator is greater because its parts are larger.

(8) Fractions can be shown on a number line. The closer a fraction is to the right, the greater its value.

(9) Fractions with a numerator equal to the denominator represent one whole; fractions with a larger numerator than denominator are greater than one.

(10) Comparing a fraction with one whole can help decide whether it is less than, equal to, or greater than one.

(11) One-half is another useful reference point. Equivalent fractions such as (2/4) and (3/6) equal (1/2), which helps compare other fractions.

(12) The chapter uses everyday examples, such as sharing chocolates, pizza, or parathas, to practise understanding, representing, and comparing fractions.

2.2 Important Formulas:

Important Formulae and Rules for Fractions:

Use these relationships to name equal parts, make equivalent fractions, and compare fractions.

1. Fraction of a whole

Fraction = number of equal parts selected ÷ total number of equal parts

Example: 3 shaded parts out of 8 equal parts give 3/8.

2. Equivalent fractions

$a/b = (a \times n)/(b \times n)$, where n is a positive whole number

Example: $1/3 = 2/6 = 3/9 = 4/12$.

3. Same denominator comparison

If $a > b$, then $a/n > b/n$.

Example: $2/3 > 1/3$.

4. Same numerator comparison

If $a < b$, then $n/a > n/b$.

Example: $4/5 > 4/6$; fifths are larger pieces than sixths.

5. Equal unit fractions

$1/n + 1/n + \ldots$ (k times) $= k/n$

Example: $1/2 + 1/2 + 1/2 + 1/2 + 1/2 = 5/2$.

6. One whole

n/n = 1
Examples: 2/2 = 1 and 3/3 = 1.
7. Comparison with one whole
a/b < 1 if a < b; a/b = 1 if a = b; a/b > 1 if a > b.
Examples: 7/8 < 1 and 8/6 > 1.
8. Fractions greater than one
5/2 = 2 + 1/2 = 2 1/2; 4/3 = 1 + 1/3 = 1 1/3.
Group the equal parts into complete wholes, then count what remains.
9. One-half as a reference
1/2 = 2/4 = 3/6 = 4/8 = 5/10
Example: 5/8 > 1/2, while 3/6 = 1/2.

2.3 Fill-Up the Blank LOTS type questions with Answers: (30 Questions)

Complete each sentence. The answer appears immediately below each question.

1. A fraction shows a part of a _____.
Answer: whole
2. The equal parts of a whole must be the _____ size.
Answer: same
3. The number above the line in a fraction is the _____.
Answer: numerator
4. The number below the line in a fraction is the _____.
Answer: denominator
5. In 3/8, the numerator is _____.
Answer: 3
6. In 3/8, the denominator is _____.
Answer: 8
7. One part out of five equal parts is written as _____.
Answer: 1/5
8. Four parts out of seven equal parts are written as _____.
Answer: 4/7
9. Fractions that show the same part of a whole are called _____ fractions.
Answer: equivalent
10. The fraction 1/3 is equivalent to 2/_____.
Answer: 6
11. The fraction 1/2 is equivalent to 3/_____.
Answer: 6
12. The fraction 2/5 is equivalent to 4/_____.
Answer: 10
13. To make an equivalent fraction, multiply the numerator and denominator by the _____ number.
Answer: same
14. When two fractions have the same denominator, compare their _____.
Answer: numerators
15. The greater fraction is 5/8 or 3/8: _____.
Answer: 5/8
16. The smaller fraction is 2/7 or 6/7: _____.
Answer: 2/7
17. When two fractions have the same numerator, the fraction with the smaller denominator is _____.
Answer: greater

18. The greater fraction is 4/5 or 4/7: _____.
Answer: 4/5
19. Two pieces of 1/2 make _____ whole.
Answer: one
20. Four pieces of 1/4 make _____ whole.
Answer: one
21. Six pieces of 1/6 make _____ whole.
Answer: one
22. A fraction with the same numerator and denominator is equal to _____ whole.
Answer: one
23. The fraction 5/5 is equal to _____.
Answer: 1
24. The fraction 3/4 is _____ than one whole.
Answer: less
25. The fraction 7/4 is _____ than one whole.
Answer: greater
26. A fraction is greater than one when its numerator is _____ than its denominator.
Answer: greater
27. Five pieces of 1/2 make 5/_____.
Answer: 2
28. Five halves equal 2 wholes and _____ half.
Answer: 1
29. Three pieces of 1/3 make the fraction _____.
Answer: 3/3
30. The fractions 2/4 and 1/2 show the _____ amount.
Answer: same
31. One-half is equivalent to 4/_____.
Answer: 8
32. The fraction 3/6 is equal to _____ half.
Answer: one
33. On a number line, fractions increase in value as we move to the _____.
Answer: right
34. On a number line from 0 to 1, 1/2 lies halfway between _____ and 1.
Answer: 0
35. To compare fractions taken from two different wholes, the wholes must be the _____ size.
Answer: same

2.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

Read each situation, use fraction models or comparison rules, and complete the sentence. The answer appears immediately below each question.

1. Two grids show the same shaded part: one is 1/3 shaded and the other is 2/6 shaded. The fractions are _____.
Answer: equivalent
2. A grid has 12 equal squares. If one-third is shaded, _____ squares are shaded.
Answer: 4
3. To make 3/5 an equivalent fraction with denominator 10, the numerator must be _____.
Answer: 6

4. The fraction equivalent to 2/3 with numerator 8 is 8/_____.
Answer: 12
5. A student shades 4 of 8 equal parts. The shaded fraction is equivalent to _____.
Answer: 1/2
6. A fraction strip shows 3/6. This covers the same length as _____.
Answer: 1/2
7. A child claims that 1/3 of a large chocolate is smaller than 1/2 of a small chocolate. The comparison is fair only if both chocolates are the same _____.
Answer: size
8. Sevi ate 2/3 of a same-sized paratha and Shami ate 1/3. Sevi ate _____ more of the paratha.
Answer: 1/3
9. Two same-sized strips are divided into eighths. The longer shaded part is 5/8 rather than 3/8, so _____ is greater.
Answer: 5/8
10. For fractions with numerator 4, compare 4/5 and 4/7. The larger fraction is _____.
Answer: 4/5
11. Between 5/6 and 5/8, the larger fraction is _____ because sixths are larger pieces than eighths.
Answer: 5/6
12. Between 2/9 and 2/5, the larger fraction is _____.
Answer: 2/5
13. A whole is divided into 8 equal parts. Seven parts are used. The fraction used is _____ than one whole.
Answer: less
14. A whole is divided into 8 equal parts. Nine parts are counted. The fraction 9/8 is _____ than one whole.
Answer: greater
15. If 13 twelfths are collected, they make 1 whole and _____ twelfth.
Answer: 1
16. Five half-paratha pieces represent 2 whole parathas and _____ half-paratha.
Answer: 1
17. Eleven quarter pieces can be grouped into 2 whole parathas and _____ quarter.
Answer: 3
18. Eight one-third pieces make 2 whole pieces and _____ third.
Answer: 2
19. Arrange 1/8, 3/8, and 7/8 from least to greatest. The first fraction is _____.
Answer: 1/8
20. On a number line, 7/8 is _____ than 1/2 because it lies farther to the right.
Answer: greater
21. The fractions 4/8 and 3/6 are both equal to _____.
Answer: 1/2
22. A student says 5/10 is not the same as 1/2 because the numbers look different. The two fractions are actually _____.
Answer: equivalent
23. From 3/8, 5/8, and 9/8, the fraction greater than 1/2 but less than 1 is _____.
Answer: 5/8
24. From 5/6 and 7/6, the fraction greater than one whole is _____.
Answer: 7/6

25. Using 1 as a reference, 11/12 is less than 1 and 9/8 is greater than 1. The smaller fraction is _____.
Answer: 11/12
26. One fraction is 7/8 and another is 8/7. The fraction greater than one is _____.
Answer: 8/7
27. Raman receives 2/3 of a pizza and Radhika receives 1/3 of the same pizza. Together they have _____ whole pizza.
Answer: 1
28. Three of the four equal slices of a pizza are eaten. The fraction left is _____.
Answer: 1/4
29. Five one-third pieces are placed end to end on a number line. They reach 1 whole and _____ more thirds.
Answer: 2
30. Sixteen ants, each 1/4 cm long, walk in a line. Their total length is _____ cm.
Answer: 4
31. To make 1/3 using sixth-size pieces, _____ pieces are needed.
Answer: 2
32. To make 1/2 using twelfth-size pieces, _____ pieces are needed.
Answer: 6
33. A 12-square grid has 9 squares shaded. The shaded fraction is _____.
Answer: 9/12 (or 3/4)
34. A whole is made using one 1/2 piece and two 1/4 pieces. The total is _____ whole.
Answer: 1
35. A student compares 7/9 and 10/9. Since 7/9 is below 1 and 10/9 is above 1, the greater fraction is _____.
Answer: 10/9

2.5 One-mark questions with Answers of LOTS Type: (35 Questions)

Each question carries one mark. Each answer is written as one sentence.
1. What does a fraction represent?
Answer: A fraction represents one or more equal parts of a whole.
2. What does the numerator tell us?
Answer: The numerator tells how many equal parts are selected.
3. What does the denominator tell us?
Answer: The denominator tells how many equal parts make the whole.
4. In the fraction 3/8, what is the numerator?
Answer: The numerator is 3.
5. In the fraction 3/8, what is the denominator?
Answer: The denominator is 8.
6. What is a unit fraction?
Answer: A unit fraction has 1 as its numerator.
7. What must be true of the parts when a whole is divided to make a fraction?
Answer: The parts must be equal in size.
8. What are equivalent fractions?
Answer: Equivalent fractions name the same part of a whole.
9. Give one fraction equivalent to 1/3.
Answer: One fraction equivalent to 1/3 is 2/6.
10. How can you make an equivalent fraction?
Answer: Multiply the numerator and denominator by the same number.

11. Which fraction is greater, 5/8 or 3/8?
Answer: The fraction 5/8 is greater than 3/8.
12. How do you compare fractions that have the same denominator?
Answer: Compare their numerators.
13. Which fraction is greater, 4/5 or 4/7?
Answer: The fraction 4/5 is greater because fifths are larger than sevenths.
14. How do you compare fractions that have the same numerator?
Answer: The fraction with the smaller denominator is greater.
15. How many 1/2 pieces make one whole?
Answer: Two 1/2 pieces make one whole.
16. How many 1/4 pieces make one whole?
Answer: Four 1/4 pieces make one whole.
17. What is 6/6 equal to?
Answer: The fraction 6/6 is equal to one whole.
18. When is a fraction equal to one whole?
Answer: A fraction is equal to one whole when its numerator and denominator are equal.
19. When is a fraction greater than one whole?
Answer: A fraction is greater than one when its numerator is greater than its denominator.
20. Is 3/4 less than or greater than one whole?
Answer: The fraction 3/4 is less than one whole.
21. Is 9/8 less than or greater than one whole?
Answer: The fraction 9/8 is greater than one whole.
22. What mixed number is equal to 5/2?
Answer: The fraction 5/2 is equal to 2 1/2.
23. What mixed number is equal to 4/3?
Answer: The fraction 4/3 is equal to 1 1/3.
24. In which direction do fraction values increase on a number line?
Answer: Fraction values increase as we move to the right.
25. Where does 1/2 lie between 0 and 1 on a number line?
Answer: The fraction 1/2 lies halfway between 0 and 1.
26. Name a fraction equivalent to 1/2 with denominator 8.
Answer: The fraction 4/8 is equivalent to 1/2.
27. What fraction is equal to 3/6?
Answer: The fraction 3/6 is equal to 1/2.
28. How many squares are shaded when one-third of a 12-square grid is shaded?
Answer: Four squares are shaded.
29. What fraction represents four shaded parts out of twelve equal parts?
Answer: The fraction is 4/12.
30. How long are sixteen ants if each ant is 1/4 cm long and they walk in a line?
Answer: Together, the sixteen ants are 4 cm long.
31. Who ate more of the same-sized paratha, a child who ate 2/3 or one who ate 1/3?
Answer: The child who ate 2/3 ate more.
32. Which is greater, 7/8 or 5/8?
Answer: The fraction 7/8 is greater than 5/8.
33. What fraction do three 1/3 pieces make?
Answer: Three 1/3 pieces make one whole.
34. How much pizza do three people have altogether if each receives 1/3 of the same pizza?
Answer: Together, they have one whole pizza.

35. What is 7/4 as a mixed number?
Answer: The fraction 7/4 is equal to 1 3/4.

2.6 One-mark questions with Answers of HOTS Type: (30 Questions)

Each question carries one mark. Each answer is written as one sentence.
1. Two same-sized chocolates are divided into thirds and sixths. Which is greater, 2/3 or 3/6?
Answer: The fraction 2/3 is greater because 3/6 is equal to 1/2.
2. Why should two wholes be the same size before comparing fractions taken from them?
Answer: The wholes must be the same size so the fractions represent comparable amounts.
3. A student shades 4 of 8 equal parts and another shades 1 of 2 equal parts; what can you conclude?
Answer: Both students shaded the same fraction of a whole.
4. What denominator makes 3/4 and 9/_____ equivalent?
Answer: The missing denominator is 12.
5. Which is larger, 5/6 or 5/8, and why?
Answer: The fraction 5/6 is larger because sixths are bigger parts than eighths.
6. Which fraction is greater, 6/9 or 4/9?
Answer: The fraction 6/9 is greater because the denominators are the same and 6 is greater than 4.
7. Arrange 1/8, 3/8, and 7/8 from least to greatest; which comes first?
Answer: The fraction 1/8 comes first because it is the smallest.
8. A student compares 7/8 with 1/2; which fraction is greater?
Answer: The fraction 7/8 is greater than 1/2.
9. Which fraction is greater than one-half, 3/8 or 5/8?
Answer: The fraction 5/8 is greater than one-half.
10. Using 1 as a reference, which is greater, 7/9 or 10/9?
Answer: The fraction 10/9 is greater because it is more than one whole.
11. How many whole units and extra eighths are represented by 9/8?
Answer: The fraction 9/8 represents 1 whole and 1/8 more.
12. Eleven quarter pieces are grouped into wholes; how many wholes and extra quarters are there?
Answer: There are 2 wholes and 3 extra quarters.
13. Fourteen half pieces make how many whole units?
Answer: Fourteen half pieces make 7 whole units.
14. What mixed number is represented by seven half pieces?
Answer: Seven half pieces make 3 1/2 wholes.
15. How many sixth-size pieces are needed to make 1/3?
Answer: Two sixth-size pieces make 1/3.
16. A 12-square grid is divided equally, and one-third is shaded; how many squares are shaded?
Answer: Four squares are shaded because one-third of 12 is 4.
17. Three friends each receive 1/3 of the same pizza; what fraction of the pizza do they have altogether?
Answer: Together, they have one whole pizza.
18. Raman has 2/3 of a pizza and receives another 1/3; how much does he have now?
Answer: Raman has one whole pizza.

19. Sixteen ants, each 1/4 cm long, walk in a line; what is their total length?
Answer: Their total length is 4 cm.
20. Which fractions are both equal to one-half, 3/6 or 4/8?
Answer: Both 3/6 and 4/8 are equal to one-half.
21. Which fraction is closer to one whole, 5/8 or 7/8?
Answer: The fraction 7/8 is closer to one whole.
22. Which is greater, 4/5 or 4/6, and what fraction rule helps?
Answer: The fraction 4/5 is greater because with the same numerator the smaller denominator gives larger parts.
23. How many 1/7 pieces are needed to show 4/7 of a whole?
Answer: Four 1/7 pieces are needed to show 4/7.
24. Sevi ate 2/3 of a same-sized paratha and Shami ate 1/3; how much more did Sevi eat?
Answer: Sevi ate 1/3 more than Shami.
25. A collection has 13 twelfths; what mixed number does it make?
Answer: Thirteen twelfths make 1 1/12.

2.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

Each question carries two marks. Each answer contains two sentences.
1. Identify the numerator and denominator in 3/7.
Answer: The numerator is 3. The denominator is 7.
2. What does the denominator in 3/4 tell us?
Answer: The whole is divided into four equal parts. Three of those parts are selected.
3. Write the fraction for three parts selected from eight equal parts and explain what it means.
Answer: The fraction is 3/8. It means three of the eight equal parts are selected.
4. What are equivalent fractions? Give one example.
Answer: Equivalent fractions name the same part of a whole. For example, 1/2 and 2/4 are equivalent.
5. Write an equivalent fraction to 1/2 with denominator 4 and explain.
Answer: The equivalent fraction is 2/4. Both fractions show one-half of a whole.
6. Compare 5/8 and 3/8.
Answer: The fraction 5/8 is greater than 3/8. They have the same denominator, so compare their numerators.
7. Compare 4/5 and 4/7.
Answer: The fraction 4/5 is greater than 4/7. Fifths are larger parts than sevenths.
8. How many 1/6 pieces make one whole?
Answer: Six 1/6 pieces make one whole. Six sixths are equal to 6/6.
9. Explain why 6/6 is equal to one whole.
Answer: The whole is divided into six equal parts. Taking all six parts gives the complete whole.
10. When is a fraction greater than one? Give an example.
Answer: A fraction is greater than one when its numerator is greater than its denominator. For example, 5/4 is greater than one.

2.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Each question carries two marks. Each answer contains two sentences or points.
1. Tamanna says that 1/3 of a large chocolate is always greater than 1/2 of a small chocolate. Can we decide if she is right?

Answer: We cannot decide without knowing whether the two chocolates are the same size. Fractions from different-sized wholes may represent different amounts.

2. A student shades 4/8 of a strip while a friend shades 1/2 of an equal-sized strip. How do their shaded parts compare?

Answer: The shaded parts are equal. The fractions 4/8 and 1/2 are equivalent.

3. What denominator makes 2/3 = 8/_____, and how do you know?

Answer: The missing denominator is 12. Multiplying both parts of 2/3 by 4 gives 8/12.

4. Which is larger, 3/5 or 3/8, and what does the size of the parts tell you?

Answer: The fraction 3/5 is larger. Fifths are larger parts than eighths.

5. Compare 5/6 and 4/6 and explain your choice.

Answer: The fraction 5/6 is greater than 4/6. Their denominators are equal, so the larger numerator represents more parts.

6. Is 7/8 greater or less than one-half?

Answer: The fraction 7/8 is greater than one-half. One-half is 4/8, and 7/8 is more than 4/8.

7. Which fraction is closer to one whole, 5/6 or 4/6?

Answer: The fraction 5/6 is closer to one whole. It is missing only 1/6, while 4/6 is missing 2/6.

8. Convert 11/9 to a mixed number and explain how many ninths remain.

Answer: The mixed number is 1 2/9. Nine ninths make one whole, leaving two ninths.

9. Thirteen quarter pieces are grouped into wholes; how many whole units and extra quarters are there?

Answer: There are 3 whole units and 1 extra quarter. Twelve quarters make 3 wholes, with 1 quarter left.

10. On a number line, five half-paratha pieces are placed end to end; where do they reach?

Answer: They reach 2 1/2. Four halves make 2 wholes, and one half remains.

11. A person has 2/3 of a pizza and receives another 1/3 of the same pizza. What is the total, and how do you know?

Answer: The total is 3/3, or one whole pizza. Three one-third pieces make one whole.

12. How many sixth-size pieces make 1/3, and what equivalent fraction does this show?

Answer: Two sixth-size pieces make 1/3. This shows that 1/3 is equivalent to 2/6.

13. A 12-square grid has one-third of its squares shaded; how many squares are shaded and what fraction names them?

Answer: Four squares are shaded. The shaded part is 4/12, which is equivalent to 1/3.

14. A grid is divided into eight equal parts and three are shaded; is the shaded part less than or greater than one-half?

Answer: The shaded part is less than one-half. Three eighths is less than four eighths, which equals one-half.

15. On a number line, which fraction lies farther to the right, 2/6 or 4/6, and which is greater?

Answer: The fraction 4/6 lies farther to the right. Therefore, 4/6 is greater than 2/6.

16. Compare 7/8 and 9/8 by using one whole as a reference.

Answer: The fraction 7/8 is less than one whole, while 9/8 is greater than one whole. Therefore, 9/8 is greater.

17. What is the difference in size between 6/6 and 8/6 when compared with one whole?

Answer: The fraction 6/6 is exactly one whole. The fraction 8/6 is greater than one whole by 2/6.

18. Which is greater, 4/7 or 4/9, and why?

Answer: The fraction 4/7 is greater. With the same numerator, sevenths are larger parts than ninths.

19. Sixteen ants, each 1/4 cm long, walk in a line; how long is the line of ants?
Answer: The line is 4 cm long. Four quarter-centimetre lengths make 1 cm, so sixteen make 4 cm.
20. What mixed number is equal to five half pieces, and how can you group the pieces?
Answer: Five halves equal 2 1/2. Group four halves into two wholes and one half remains.

2.9. Three-mark questions with Answers of LOTS Type: (18 Questions)

Each question carries three marks. Each answer contains three sentences or points.
1. What is a fraction? Give an example and explain what it shows.
Answer: A fraction names equal parts of a whole. For example, 3/5 is a fraction. It shows three of five equal parts.
2. Explain the numerator and denominator in 3/5.
Answer: The numerator is 3. It tells how many parts are selected. The denominator is 5 and tells the number of equal parts in the whole.
3. Write the fraction for four parts selected from nine equal parts and identify its numerator and denominator.
Answer: The fraction is 4/9. Its numerator is 4. Its denominator is 9.
4. What are equivalent fractions? Give two fractions that are equivalent to 1/2.
Answer: Equivalent fractions name the same part of a whole. Two fractions equivalent to 1/2 are 2/4 and 3/6. Each shows one-half.
5. Compare 3/8 and 6/8 and explain your answer.
Answer: The fraction 6/8 is greater than 3/8. Both fractions have the same denominator. Since 6 is greater than 3, 6/8 is greater.
6. Compare 3/5 and 3/7 and explain how the denominators help.
Answer: The fraction 3/5 is greater than 3/7. The numerators are the same. Fifths are larger parts than sevenths.
7. Show that 2/4 is equivalent to 1/2.
Answer: Two of four equal parts make 2/4. This is the same amount as one of two equal parts. Therefore, 2/4 and 1/2 are equivalent.
8. How can four quarter-pieces make a whole?
Answer: Each piece is 1/4 of the whole. Four such pieces make 4/4. Four-fourths equal one whole.
9. Explain why 5/4 is greater than one and write it as a mixed number.
Answer: Four fourths make one whole. The fraction 5/4 has one fourth more than 4/4. Therefore, 5/4 equals 1 1/4 and is greater than one.
10. Describe the position of 3/4 on a number line from 0 to 1.
Answer: Divide the distance from 0 to 1 into four equal steps. Each step is 1/4. The third step marks 3/4.
11. Write 7/2 as a mixed number and explain its value.
Answer: The fraction 7/2 equals 3 1/2. Six halves make three wholes. One half remains.
12. A 12-square grid has four shaded squares; write the shaded fraction and an equivalent fraction.
Answer: The shaded fraction is 4/12. This fraction is equivalent to 1/3. Both represent the same shaded part.
13. One person has 2/3 of a pizza and receives another 1/3; how much pizza do they have?
Answer: The total is 3/3 of a pizza. Three thirds make one whole. The person has one whole pizza.

14. Compare 7/8 and 9/8 by using one whole as a reference.
Answer: The fraction 7/8 is less than one whole. The fraction 9/8 is greater than one whole. Therefore, 9/8 is greater than 7/8.
15. Sixteen ants are each 1/4 cm long and walk in a line; find their total length.
Answer: Four ants together measure 1 cm. Sixteen ants make four groups of four. Their total length is 4 cm.

2.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

Each question carries three marks. Each answer contains three sentences or points.
1. A student compares 1/3 of a large chocolate with 1/2 of a small chocolate. What information is needed to decide which amount is larger?
Answer: We need to know whether the chocolates are the same size. If the wholes are the same size, 1/2 is greater than 1/3. If the wholes differ in size, the fractions alone are not enough to compare the amounts.
2. Compare 5/8 and 3/8 and explain how you know which is greater.
Answer: The fraction 5/8 is greater than 3/8. Both fractions have the same denominator. Since 5 is greater than 3, 5/8 represents more eighths.
3. Which is greater, 4/5 or 4/7, and why?
Answer: The fraction 4/5 is greater than 4/7. Both fractions have the same numerator. Fifths are larger parts than sevenths.
4. Find the fraction equivalent to 3/5 with denominator 20 and explain the change.
Answer: The equivalent fraction is 12/20. The denominator 5 is multiplied by 4 to make 20. The numerator 3 is also multiplied by 4 to keep the fraction equivalent.
5. A 12-square grid is three-fourths shaded; how many squares are shaded, and what equivalent fraction describes them?
Answer: Nine squares are shaded. The shaded fraction is 9/12. This is equivalent to 3/4.
6. Convert 11/4 to a mixed number and show how the pieces make it.
Answer: Four fourths make one whole. Eight fourths make two wholes, leaving three fourths. Therefore, 11/4 equals 2 3/4.
7. Use one whole to compare 7/8 and 9/8.
Answer: The fraction 7/8 is less than one whole. The fraction 9/8 is greater than one whole. Therefore, 9/8 is greater than 7/8.
8. A strip shows 3/6 shaded; identify an equivalent fraction and explain why.
Answer: The equivalent fraction is 1/2. Six equal parts are split into two groups of three. Three shaded parts make one of those two equal halves.
9. Seven one-third pieces are placed end to end on a number line; where do they reach?
Answer: Six one-third pieces make two wholes. One more one-third piece is added. The total is 2 1/3.
10. A person has 2/3 of a pizza and receives another 1/3 of the same pizza; find the total and explain.
Answer: The total is 3/3 of a pizza. Three one-third pieces make one whole. The person now has one whole pizza.
11. Sixteen ants are each 1/4 cm long and walk in a line; find their total length and show your grouping.
Answer: Four ants together measure 1 cm. Sixteen ants make four groups of four. Their total length is 4 cm.
12. How do 3/8 and 5/8 compare with one-half?
Answer: One-half is equal to 4/8. The fraction 3/8 is 1/8 less than one-half. The fraction 5/8 is 1/8 greater than one-half.

13. Compare 5/8 with one-half and state how much greater it is.
Answer: One-half is equal to 4/8. The fraction 5/8 is greater than 4/8. It is greater than one-half by 1/8.
14. Two equal-sized strips show 4/8 and 3/6 shaded; what can you conclude?
Answer: Both shaded fractions are equal to one-half. The fraction 4/8 simplifies by equal grouping to 1/2. The fraction 3/6 also represents 1/2.
15. Use one whole to compare 7/6 and 5/6.
Answer: The fraction 7/6 is greater than one whole. The fraction 5/6 is less than one whole. Therefore, 7/6 is greater than 5/6.

2.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

Each question carries five marks. Each answer has five points.
1. Explain the fraction 3/5 by describing its numerator, denominator, and the parts of the whole.
Answer:
The denominator is 5.
The whole is divided into five equal parts.
The numerator is 3.
Three of the five parts are selected.
Two of the five parts are not selected.
2. Show how equivalent fractions can be made from 1/3, using 2/6 as an example.
Answer:
The fraction 1/3 means one of three equal parts.
Divide each third into two equal smaller parts.
The whole is now divided into six equal parts.
The same shaded amount covers two of the six parts.
Therefore, 1/3 is equivalent to 2/6.
3. Compare 3/8 and 6/8 and explain which fraction is greater.
Answer:
Both fractions have the same denominator, 8.
Each part in both fractions is one-eighth of the same whole.
The first fraction has 3 selected parts.
The second fraction has 6 selected parts.
Therefore, 6/8 is greater than 3/8.
4. Compare 4/5 and 4/7 and explain how the size of the parts helps.
Answer:
Both fractions have the same numerator, 4.
The fraction 4/5 has four fifth-size parts.
The fraction 4/7 has four seventh-size parts.
A fifth is larger than a seventh when the wholes are the same size.
Therefore, 4/5 is greater than 4/7.
5. Show how seven quarter-pieces make the mixed number 1 3/4.
Answer:
Each piece represents 1/4 of a whole.
Four quarter-pieces make one whole.
Seven pieces can be grouped as four pieces and three pieces.
The four pieces make 1 whole, and the remaining pieces make 3/4.
Therefore, 7/4 is equal to 1 3/4.
6. Explain how 2/3 of a pizza and another 1/3 make one whole pizza.

Answer:
The pizza is divided into three equal slices.
The first share contains two of the slices.
The second share contains one of the slices.
Together, the shares contain three out of three slices, or 3/3.
Three thirds make one whole pizza.

7. Show how five half-pieces reach 2 1/2 on a number line.
Answer:
Divide the distance from 0 to 1 into two equal parts.
Each step on the number line represents 1/2.
Place five half-steps one after another from 0.
Four half-steps reach 2 wholes.
The fifth step reaches 2 1/2.

8. Compare 7/8 and 9/8 by using one whole as a reference.
Answer:
Eight eighths make one whole, so 8/8 equals 1.
The fraction 7/8 is less than 8/8.
The fraction 9/8 is greater than 8/8.
Therefore, 9/8 is greater than 7/8.
The fraction 9/8 is one eighth more than one whole.

2.12 Five-mark questions with Answers of HOTS Type: (5 Questions)

Each question carries five marks. Each answer has five points.

1. A student says that 1/3 is greater than 1/2 because 3 is greater than 2. Explain the mistake and give the correct comparison for equal-sized wholes.
Answer:
The student is comparing the denominators without considering the size of each part.
For equal-sized wholes, one half is one of two equal parts.
One third is one of three equal parts.
A half-piece is larger than a third-piece.
Therefore, 1/2 is greater than 1/3.

2. Two students compare 1/3 of a large chocolate with 1/2 of a small chocolate. Explain what they must know before deciding which amount is larger.
Answer:
The fractions come from chocolates that may be different sizes.
They must compare the sizes of the two whole chocolates.
If the chocolates are the same size, 1/2 is greater than 1/3.
If the chocolates are different sizes, the larger fraction may not be the larger amount.
Therefore, the whole chocolates must be the same size for a fair comparison.

3. Use a grid idea to explain why 1/3 and 4/12 are equivalent fractions.
Answer:
Begin with a whole divided into three equal parts.
Shade one of the three parts to show 1/3.
Divide each third into four equal smaller parts.
The whole now has twelve equal parts, and the shaded region covers four.
Therefore, 1/3 and 4/12 name the same part of the whole.

4. Compare 5/8 with 1/2 and explain your answer using equivalent fractions.
Answer:
Write one-half as an equivalent fraction with denominator 8.

One-half is equal to 4/8.
The fractions 4/8 and 5/8 have the same denominator.
Five eighths is greater than four eighths by 1/8.
Therefore, 5/8 is greater than 1/2.

5. Show how 11/4 can be written as a mixed number and located on a number line.

Answer:

Four quarter-pieces make one whole.
Eight quarter-pieces make two wholes.
Three quarter-pieces remain after making two wholes from eleven quarters.
Therefore, 11/4 is equal to 2 3/4.
On a number line, 2 3/4 lies between 2 and 3.

6. Seven half-paratha pieces are placed end to end; explain the total length in whole parathas and halves.

Answer:

Each piece represents one-half of a paratha.
Two half-pieces make one whole paratha.
Six half-pieces make three whole parathas.
One half-piece remains from the seven pieces.
The total is 3 1/2 parathas.

7. Use fraction pieces to compare 4/5 and 4/7.

Answer:

Both fractions use four pieces.
In 4/5, each piece is one-fifth of the whole.
In 4/7, each piece is one-seventh of the whole.
A fifth-size piece is larger than a seventh-size piece when the wholes are equal.
Therefore, 4/5 is greater than 4/7.

8. Two people receive 2/3 and 1/3 of the same pizza. Explain how to find their total share.

Answer:

The pizza is divided into three equal slices.
The first person receives two slices.
The second person receives one slice.
Together, they receive three of the three slices, or 3/3.
Their total share is one whole pizza.

2.13 Five-mark questions with Answers of Applied Type: (8 Questions)

Each problem applies fraction ideas to a familiar situation. Answers show the working.

1. Sixteen ants, each 1/4 cm long, walk in a straight line without gaps. What is the total length of the line?

Answer:

- Each ant is 1/4 cm long.
- Four ants together measure 4 × 1/4 = 4/4 cm.
- Since 4/4 cm equals 1 cm, each group of four ants is 1 cm long.
- Sixteen ants make four groups of four.
- The total length is 4 cm.

2. A family eats seven half-paratha pieces. How many whole parathas and halves have they eaten?

Answer:

- Each piece is 1/2 of a paratha.
- Seven pieces represent 7/2 parathas.

- Two half-pieces make one whole paratha.
- Six half-pieces make three whole parathas, with one half-piece left.
- The family ate 3 1/2 parathas.

3. A child says 1/3 of a large chocolate is less than 1/2 of a small chocolate. What should you find out before deciding which amount is larger?

Answer:

- The fractions refer to different whole chocolates.
- Find out whether the two chocolates are the same size.
- If they are equal in size, compare 1/3 and 1/2 directly.
- For equal-sized chocolates, 1/2 is greater than 1/3.
- If the chocolates differ in size, the fractions alone do not show which amount is larger.

4. A poster has 12 equal squares. One-third of the poster is to be coloured blue. How many squares should be coloured, and what fraction of the poster is that?

Answer:

- The poster has 12 equal squares.
- One-third of 12 is 4.
- Colour 4 squares blue.
- The blue part is 4/12 of the poster.
- The fraction 4/12 is equivalent to 1/3.

5. Three children each receive 1/3 of the same pizza. How much pizza do they receive altogether?

Answer:

- The pizza is divided into three equal slices.
- Each child receives one slice, or 1/3.
- The three children receive 1/3 + 1/3 + 1/3.
- Their total share is 3/3.
- They receive one whole pizza altogether.

6. A cake is divided into eight equal slices. Five slices are served. Is the amount served more or less than half the cake, and by how much?

Answer:

- The amount served is 5/8 of the cake.
- One-half of the cake is equivalent to 4/8.
- Both fractions have denominator 8, so compare their numerators.
- Five eighths is greater than four eighths by 1/8.
- The amount served is 1/8 more than half the cake.

7. A ribbon is marked into sixths. How many 1/6-length pieces equal 1/3 of the ribbon?

Answer:

- One-third of the ribbon is 1/3.
- Write 1/3 using sixths by dividing each third into two equal parts.
- The equivalent fraction is 2/6.
- Each marked piece is 1/6 of the ribbon.
- Two 1/6-length pieces equal 1/3 of the ribbon.

8. A cook has 13 quarter-piece servings of paratha. How many whole parathas and extra quarter-pieces does this represent?

Answer:

- Each serving is 1/4 of a paratha.
- Thirteen servings represent 13/4 parathas.
- Four quarter-pieces make one whole paratha.

- Twelve quarter-pieces make three whole parathas, leaving one quarter-piece.
- The cook has 3 1/4 parathas in total.

2.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Choose the best answer. The correct option and a short explanation follow each question.

1. Which fraction is equivalent to 2/3?
A) 3/6 B) 4/6
C) 4/9 D) 5/6
Answer: B) 4/6 Multiplying both numerator and denominator of 2/3 by 2 gives 4/6.

2. What is 3/5 written with denominator 20?
A) 9/20 B) 12/20
C) 15/20 D) 16/20
Answer: B) 12/20 Multiply the numerator and denominator of 3/5 by 4.

3. In 2/3 = □/12, what number belongs in the box?
A) 6 B) 8
C) 9 D) 10
Answer: B) 8 The denominator 3 is multiplied by 4 to make 12, so multiply 2 by 4 as well.

4. Which is the greatest fraction?
A) 2/9 B) 7/9
C) 5/9 D) 4/9
Answer: B) 7/9 The denominators are the same, so the fraction with the greatest numerator is largest.

5. Which is greatest among these fractions with numerator 3?
A) 3/4 B) 3/5
C) 3/8 D) 3/7
Answer: A) 3/4 With the same numerator, the fraction with the smaller denominator has larger parts.

6. Which fraction is exactly one whole?
A) 7/8 B) 8/8
C) 9/8 D) 8/9
Answer: B) 8/8 Eight out of eight equal parts make one whole.

7. Which fraction is greater than one whole?
A) 7/9 B) 9/9
C) 11/10 D) 5/6
Answer: C) 11/10 A fraction is greater than one when its numerator is greater than its denominator.

8. What mixed number is equal to 11/4?
A) 2 1/4 B) 2 3/4
C) 3 1/4 D) 4 2/3
Answer: B) 2 3/4 Eight fourths make two wholes, with three fourths remaining.

9. Five half-pieces make how many wholes and halves?
A) 1 1/2 B) 2 1/2
C) 3 1/2 D) 5 1/2
Answer: B) 2 1/2 Four halves make two wholes, and one half remains.

10. Which fraction is greater, 4/5 or 4/7?
A) 4/5 B) 4/7
C) They are equal D) Cannot compare
Answer: A) 4/5 Fifths are larger parts than sevenths when the wholes are the same size.

11. Which fraction is greater, 7/9 or 8/9?

A) 7/9 B) 8/9
C) They are equal D) 1/9
Answer: B) 8/9 The denominators are the same, and 8 is greater than 7.
12. Which fraction is less than one-half?
A) 3/8 B) 4/8
C) 5/8 D) 7/8
Answer: A) 3/8 One-half is 4/8, and 3/8 is less than 4/8.
13. Which fraction is equivalent to one-half?
A) 4/10 B) 5/10
C) 6/10 D) 7/10
Answer: B) 5/10 Five tenths is the same amount as one-half.
14. A grid has 12 equal squares. How many squares represent one-third of the grid?
A) 3 B) 4
C) 6 D) 9
Answer: B) 4 One-third of 12 equal squares is 4 squares.
15. What fraction is equal to 3/6?
A) 1/3 B) 1/2
C) 2/3 D) 3/4
Answer: B) 1/2 Three of six equal parts cover half of the whole.
16. Sixteen ants are each 1/4 cm long. What is their total length in a line?
A) 2 cm B) 3 cm
C) 4 cm D) 8 cm
Answer: C) 4 cm Four ants make 1 cm, so sixteen ants make 4 cm.
17. How much greater is 5/8 than one-half?
A) 1/8 B) 2/8
C) 3/8 D) 4/8
Answer: A) 1/8 One-half is 4/8, and 5/8 is one eighth more.
18. How much less is 3/8 than one-half?
A) 1/8 B) 2/8
C) 3/8 D) 4/8
Answer: A) 1/8 One-half is 4/8, which is one eighth more than 3/8.
19. How many twelfth-pieces make 1/3?
A) 2 B) 3
C) 4 D) 6
Answer: C) 4 One-third is equivalent to 4/12.
20. Identify the mixed number equal to 7/4.
A) 1 1/4 B) 1 2/4
C) 1 3/4 D) 2 1/4
Answer: C) 1 3/4 Four fourths make one whole, leaving three fourths.
21. Convert 13/12 to a mixed number.
A) 1 1/12 B) 1 3/12
C) 2 1/12 D) 12 1/13
Answer: A) 1 1/12 Twelve twelfths make one whole, leaving one twelfth.
22. Three friends each receive 1/3 of the same pizza. How much do they receive altogether?
A) 1/3 B) 2/3
C) 3/3 D) 4/3
Answer: C) 3/3 Three one-third shares make one whole pizza.
23. A person has 2/3 of a pizza and receives another 1/3. What is the total?

A) 1/3 B) 2/3
C) 3/3 D) 4/3
Answer: C) 3/3 Two thirds and one third make three thirds, or one whole.
24. Which pair of fractions are both equivalent to 1/3?
A) 2/6 and 4/12 B) 2/5 and 4/10
C) 3/6 and 4/12 D) 2/4 and 3/9
Answer: A) 2/6 and 4/12 Both fractions in option A name the same part as 1/3.
25. Before comparing 1/3 of one chocolate with 1/2 of another, what must be checked?
A) Their colours B) The sizes of the whole chocolates
C) The number of pieces eaten D) The shape of the chocolates
Answer: B) The sizes of the whole chocolates Fractions from different wholes can only be compared fairly when the wholes are the same size.
26. Which fraction is closest to one whole?
A) 3/4 B) 7/8
C) 5/6 D) 4/5
Answer: B) 7/8 Seven eighths is only one eighth less than one whole.
27. Which fraction is greater than one-half but less than one whole?
A) 3/8 B) 4/8
C) 5/8 D) 9/8
Answer: C) 5/8 Five eighths is greater than 4/8, which equals one-half, and less than 8/8, which equals one whole.
28. Ten quarter-pieces represent how many whole units and extra quarters?
A) 2 1/4 B) 2 2/4
C) 3 1/4 D) 4 2/4
Answer: B) 2 2/4 Eight quarters make two wholes, leaving two quarters; this is also 2 1/2.
29. Which equality shows a correct chain of equivalent fractions?
A) 1/3 = 2/6 = 3/9 B) 1/3 = 2/5 = 3/6
C) 1/2 = 2/6 = 3/8 D) 2/3 = 3/6 = 4/9
Answer: A) 1/3 = 2/6 = 3/9 Each fraction in option A represents the same part of a whole.
30. Which comparison is incorrect?
A) 3/8 < 5/8 B) 4/5 > 4/7
C) 7/8 < 1 D) 9/8 < 1
Answer: D) 9/8 < 1 Nine eighths is greater than one whole because its numerator is greater than its denominator.

2.15 Best Practices Opportunity List from the Chapter: (10 Ideas)

Best Practices for Teaching Fractions:

(1) Begin with familiar sharing situations: Use chocolates, parathas, or pizza to introduce fractions as equal parts of a whole.
(2) Check that wholes are equal before comparing: Use same-sized paper shapes or fraction strips to show why comparing fractions from differently sized wholes can be misleading.
(3) Use fraction kits and paper folding: Let students build a whole from pieces and discover equivalent fractions such as \(1/2=2/4=3/6\).
(4) Move from objects to pictures to symbols: Start with fraction pieces, then draw shaded shapes, and finally write the fractions and comparisons.
(5) Use grids to show equivalence: Ask students to divide shapes into more equal parts and observe that the shaded area stays the same.

(6) **Teach comparison rules through investigation:** Have students use fraction strips to compare fractions with the same denominator and fractions with the same numerator, then explain the patterns they notice.
(7) **Represent fractions on number lines:** Let students mark fractions between 0 and 1, and use the line to compare fractions and locate fractions greater than one.
(8) **Use one whole and one-half as reference points:** Ask students to decide whether fractions are below, equal to, or above these familiar values before comparing them.
(9) **Encourage students to explain their reasoning:** Use prompts such as "How do you know?" and "Can you show it another way?" during pair and class discussions.
(10) **Connect fraction models to everyday measurements:** Use examples such as repeated quarter-centimetre lengths or half-paratha pieces to connect fractions with repeated equal parts.
(11) **Address common misunderstandings with examples:** Discuss why a larger denominator does not automatically make a fraction larger, and why the size of the whole matters.
(12) **Use quick checks during lessons:** Ask students to draw, shade, place, or compare a fraction on a mini whiteboard so misconceptions can be noticed early.
(13) **Offer different ways to participate:** Let students use fraction pieces, drawings, spoken explanations, or written number sentences to show what they understand.
(14) **Finish with a short reflection:** Ask students to write one fraction idea they learned and one example that helped them understand it.

2.16 Innovations Opportunity List from the Chapter: (10 Ideas)

Innovations in Teaching and Learning Fractions:

(1) **Fraction Pizza or Paratha Lab:** Students make paper pizzas or parathas, divide them into equal parts, and show fractions such as (1/2), (3/4), and (2/4). They can compare pieces only when the whole is the same size.
(2) **Build-a-Fraction Kit:** Use coloured paper strips, fraction circles, or reusable magnetic pieces. Students assemble equivalent fractions—for example, (1/2 = 2/4 = 4/8)—and explain how the pieces match.
(3) **Human Number Line:** Mark a number line across the classroom floor. Give students fraction cards and ask them to stand at the matching positions, including fractions greater than one, such as (3/2).
(4) **Fraction Treasure Hunt:** Hide fraction clues around the classroom. Each answer leads to the next clue—for example, students match a picture of (2/4) with its equivalent fraction (1/2\).
(5) **Digital Fraction Sandbox:** Use an interactive whiteboard or a suitable fraction app to change the number of equal parts and see how the fraction changes. Students can explore equivalence and compare fractions visually.
(6) **Design a Fraction Board Game:** In groups, students create a simple game with fraction cards, picture matches, and comparison challenges. They play each other's games and explain their strategies.
(7) **Fraction Photo Walk:** Students find or draw everyday examples of fractions—such as a quarter of a window's grid or half of a paper sheet—and label each example with its fraction.
(8) **Fraction Story Comics:** Students create short comics about characters sharing food or objects equally. Each panel shows the whole, the equal parts, and the fraction received.

(9) **"Find the Mistake" Challenges:** Present a worked example with a common error, such as comparing fractions with differently sized wholes. Students identify the mistake and show how to correct it.

(10) **Student-Made Fraction Museum:** Students create displays using drawings, folded paper, or objects to demonstrate equivalent fractions, fractions equal to one whole, and fractions greater than one. They explain their displays to classmates.

2.17: Practicing Questions/Question Bank:

A. Fill in the Blanks:

1. Five pieces of 1/5 make one _____.

Answer: whole

2. The fraction equivalent to 1/2 with denominator 4 is _____.

Answer: 2/4

3. 2/6 is equivalent to _____.

Answer: 1/3

4. When two fractions have the same denominator, the fraction with the larger _____ is greater.

Answer: numerator

5. 4/7 is _____ than 2/7.

Answer: greater

6. For fractions with the same numerator, 3/5 is _____ than 3/4.

Answer: less

7. Six pieces of 1/2 make _____ wholes.

Answer: 3

8. 5/2 written as a mixed number is _____.

Answer: 2 1/2

9. 4/8 is equal to _____.

Answer: 1/2

B. One-Mark Descriptive Questions:

1. What must be equal in size before comparing fractions taken from two different wholes?

Answer: The wholes must be equal in size before their fractions can be compared.

2. What are equivalent fractions?

Answer: Equivalent fractions name the same part of a whole in different ways.

3. Which fraction is greater, 5/8 or 3/8?

Answer: 5/8 is greater because the fractions have the same denominator and 5 is greater than 3.

4. Which fraction is greater, 3/7 or 3/5?

Answer: 3/5 is greater because, with the same numerator, fifths are larger pieces than sevenths.

5. How many 1/4 pieces make one whole?

Answer: Four pieces of 1/4 make one whole.

6. Write 7/4 as a mixed number.

Answer: 7/4 is 1 3/4.

7. Is 9/8 greater than one whole?

Answer: Yes, 9/8 is greater than one whole because its numerator is greater than its denominator.

8. Write an equivalent fraction for 2/5 with denominator 10.

Answer: An equivalent fraction is 4/10.

C. Two-Mark Descriptive Questions:

1. Compare 3/4 and 2/4. Give a reason.

Answer :

- 3/4 > 2/4.
- They have the same denominator, and 3 fourths are more than 2 fourths.

2. Compare 3/8 and 3/5. Give a reason.

Answer :

- 3/8 < 3/5.
- With the same numerator, eighths are smaller pieces than fifths.

3. Write two fractions equivalent to 1/3.

Answer :

- 2/6 is equivalent to 1/3.
- 3/9 is also equivalent to 1/3.

4. Express nine pieces of 1/4 as a fraction and as a mixed number.

Answer :

- Nine quarter-pieces make 9/4.
- 9/4 = 2 1/4.

5. Which of these fractions are greater than one: 5/6, 7/4, 4/4? Explain.

Answer :

- 7/4 is greater than one because its numerator is greater than its denominator.
- 4/4 equals one, while 5/6 is less than one.

6. Sixteen ants, each 1/4 cm long, walk in a straight line. What is their total length?

Answer :

- Their total length is 16 × 1/4 cm.

- 16/4 cm = 4 cm.

D. Three-Mark Descriptive Questions;

1. Write three fractions equivalent to 2/5 and explain how you found them.

Answer :

- 2/5 = 4/10.
- 2/5 = 6/15.
- I multiplied the numerator and denominator by the same number each time.

2. Show how 9/4 can be written as a mixed number.

Answer :

- Four fourths make one whole.
- Eight fourths make two wholes, leaving one fourth.
- Therefore, 9/4 = 2 1/4.

3. Compare 7/8 and 9/6 by using one whole as a reference.

Answer :

- 7/8 is less than one whole.
- 9/6 is greater than one whole because 9 is greater than 6.
- Therefore, 7/8 < 9/6.

4. Two pizzas are each cut into three equal slices. Raman gets three slices and Radhika gets four slices. How much pizza does each get, and who gets more?

Answer :

- Raman gets 3/3 of a pizza, which is one whole pizza.
- Radhika gets 4/3 = 1 1/3 pizzas.
- Radhika gets more pizza.

5. Compare 5/8 and 3/6 by using one-half as a reference.

Answer :

- 3/6 is equal to 1/2.
- 5/8 is greater than 1/2 because 4/8 equals 1/2.
- Therefore, 5/8 > 3/6.

E. Five-Mark Descriptive Questions:

1. Explain equivalent fractions using 1/3 as an example.

- Equivalent fractions represent the same part of a whole.
- Dividing each third into two equal pieces gives 2/6.
- Dividing each third into three equal pieces gives 3/9.
- Dividing each third into four equal pieces gives 4/12.
- Thus, 1/3 = 2/6 = 3/9 = 4/12.

2. Describe how to compare fractions when they have the same denominator or the same numerator. Give an example of each.

- When denominators are the same, compare the numerators.
- For example, 5/8 > 3/8 because 5 > 3.
- When numerators are the same, the fraction with the smaller denominator is greater.
- For example, 3/5 > 3/8 because fifths are larger than eighths.
- These rules work when the fractions refer to equal-sized wholes.

3. Show how to change 11/4 into a mixed number and explain its meaning.

- Each whole contains four pieces of 1/4.
- Eight fourths make two wholes.
- Three fourths remain from the eleven pieces.
- So, 11/4 = 2 3/4.
- On a number line, 11/4 is three quarter-steps after 2.

4. Compare 7/8 and 8/6 using one whole as a reference.

- A fraction with numerator smaller than denominator is less than one.
- So, 7/8 is less than one whole.
- A fraction with numerator greater than denominator is greater than one.
- So, 8/6 is greater than one whole.
- Therefore, 7/8 < 8/6.

5. Sixteen ants are each 1/4 cm long and walk in a straight line, one after another. Find the total length and show how the fractions make this total.

- Each ant adds 1/4 cm to the line.
- Sixteen ants have a combined length of 16/4 cm.
- Four groups of four ants each make four whole centimetres.
- 16/4 = 4.
- The ants form a line 4 cm long.

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5th Standard Maths Book Chapter 3

Chapter 3: Angles as Turns

3.1 Summary of the Chapter:

Summary: Angles as Turns:

(1) A **turn** describes how far an object or person rotates from its starting position.
(2) A **full turn** brings an object back to its starting position and completes one circle.
(3) A **half turn** is half of a full turn. Two half turns make one full turn.
(4) A **quarter turn** is one-fourth of a full turn. Four quarter turns make one full turn.
(5) Two quarter turns make a half turn, which forms a **straight angle**.
(6) A **right angle** is made by a quarter turn. An angle smaller than a right angle is an **acute angle**.
(7) An angle greater than a right angle but smaller than a straight angle is an **obtuse angle**.
(8) Turns can be divided into smaller parts, such as eighths and twelfths, and combined to describe different angles.
(9) A paper fan, straws joined at one end, or a folded circle can help us make and measure turns.
(10) The minute hand of a clock makes a quarter turn in 15 minutes, a half turn in 30 minutes, and a full turn in 60 minutes.
(11) Clock hands move **clockwise**. Movement in the opposite direction is called **anti-clockwise**.
(12) We can use turns to work out the direction someone or something will face after rotating.

3.2 Important Formulas:

Important Facts and Formulae: Angles as Turns:

This chapter focuses on relationships between turns and angles rather than algebraic formulae.

- **1 full turn = 1 complete circle**
- **1 full turn = 2 half turns**
- **1 full turn = 4 quarter turns**
- **1 full turn = 8 eighth turns**
- **1 full turn = 12 twelfth turns**
- **1 half turn = 2 quarter turns = 4 eighth turns = 6 twelfth turns**
- **1 quarter turn = 2 eighth turns = 3 twelfth turns**
- **2 quarter turns = 1 half turn = 1 straight angle**
- **1 quarter turn = 1 right angle**

Angle Types

- **Acute angle:** less than a quarter turn
- **Right angle:** exactly a quarter turn
- **Obtuse angle:** more than a quarter turn but less than a half turn
- **Straight angle:** exactly a half turn

Turns of a Clock's Minute Hand

- **1 full turn = 60 minutes**
- **1/2 turn = 30 minutes**
- **1/4 turn = 15 minutes**
- **3/4 turn = 45 minutes**
- **1/6 turn = 10 minutes**
- **1/12 turn = 5 minutes**

Clockwise is the direction in which clock hands move. The opposite direction is **anti-clockwise**.

3.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks – LOTS:

1. A complete rotation back to the starting position is called a _____ turn.
   Answer: full
2. Half of a full turn is called a _____ turn.
   Answer: half
3. One-fourth of a full turn is called a _____ turn.
   Answer: quarter
4. Two half turns make one _____ turn.
   Answer: full
5. Four quarter turns make one _____ turn.
   Answer: full
6. Two quarter turns make one _____ turn.
   Answer: half
7. A quarter turn forms a _____ angle.
   Answer: right
8. An angle smaller than a right angle is called an _____ angle.
   Answer: acute
9. An angle larger than a right angle but smaller than a straight angle is called an _____ angle.
   Answer: obtuse
10. A half turn forms a _____ angle.
    Answer: straight
11. One full turn brings an object back to its _____ position.
    Answer: starting
12. The minute hand of a clock makes a full turn in _____ minutes.
    Answer: 60
13. The minute hand moves one-quarter turn in _____ minutes.
    Answer: 15
14. The minute hand moves half a turn in _____ minutes.
    Answer: 30
15. The minute hand moves three-quarter turn in _____ minutes.
    Answer: 45
16. The direction in which the hands of a clock move is called _____.
    Answer: clockwise
17. The direction opposite to clockwise is called _____.
    Answer: anti-clockwise
18. A full turn can be divided into _____ equal quarter turns.
    Answer: four
19. A full turn can be divided into _____ equal eighth turns.
    Answer: eight
20. A full turn can be divided into _____ equal twelfth turns.
    Answer: twelve
21. Two eighth turns make a _____ turn.
    Answer: quarter
22. Four eighth turns make a _____ turn.
    Answer: half

23. Six twelfth turns make a _____ turn.
    Answer: half
24. Three twelfth turns make a _____ turn.
    Answer: quarter
25. A giant wheel completes a full turn when it returns to its _____ point.
    Answer: starting
26. A person turning halfway around makes a _____ turn.
    Answer: half
27. A paper fan can be used to show different _____.
    Answer: angles
28. Angles are formed in situations that involve a _____.
    Answer: turn
29. A circle folded into eight equal parts can help measure _____.
    Answer: turns
30. A turn of one-eighth is _____ of a quarter turn.
    Answer: half
31. A minute hand moving for 10 minutes makes _____ of a full turn.
    Answer: one-sixth
32. A minute hand moving for 5 minutes makes _____ of a full turn.
    Answer: one-twelfth
33. A tap may be turned in the clockwise or _____ direction.
    Answer: anti-clockwise
34. Scissors and tongs open and close by making _____.
    Answer: turns
35. A quarter turn is also equal to _____ eighth turns.
    Answer: two

1.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

Fill in the Blanks – HOTS:

1. A wheel turns three quarter turns. It has turned _____ of a full circle.
   Answer: three-fourths (3/4)
2. Reema makes a half turn and then a quarter turn in the same direction. Altogether, she makes _____ of a full turn.
   Answer: three-fourths (3/4)
3. A straw turns one-quarter turn and then one-eighth turn in the same direction. Altogether, it turns _____ of a full turn.
   Answer: three-eighths (3/8)
4. One-half turn is the same as _____ eighth turns.
   Answer: four
5. To complete a full turn after making three quarter turns, an object must turn _____ more quarter turn.
   Answer: one
6. A minute hand moves from 12 to 6. It has made a _____ turn.
   Answer: half
7. A minute hand moves for 20 minutes. It has made _____ of a full turn.
   Answer: one-third (1/3)
8. A minute hand moves for 25 minutes. It has made _____ of a full turn.
   Answer: five-twelfths (5/12)
9. A minute hand moves for 10 minutes. It has made _____ of a full turn.
   Answer: one-sixth (1/6)

10. From 10 minutes past the hour to 25 minutes past the hour, the minute hand makes a _____ turn.
    Answer: quarter
11. A minute hand has moved for 45 minutes. It has completed _____ of a full turn.
    Answer: three-fourths (3/4)
12. A minute hand has made one-quarter of a full turn. It has moved for _____ minutes.
    Answer: 15
13. Starting from North, a person makes two right turns clockwise. The person faces _____.
    Answer: South
14. Starting from East, a person makes one quarter turn clockwise. The person faces _____.
    Answer: South
15. Starting from West, a person makes one quarter turn anti-clockwise. The person faces _____.
    Answer: South
16. Starting from North, a person makes three quarter turns clockwise. The person faces _____.
    Answer: West
17. Starting from South, a person makes one quarter turn anti-clockwise. The person faces _____.
    Answer: East
18. Starting from West, a person makes a half turn. The person faces _____.
    Answer: East
19. Starting from East, a person makes three quarter turns clockwise. The person faces _____.
    Answer: North
20. A person facing North makes five quarter turns clockwise. The person faces _____.
    Answer: East
21. A person facing South makes four right turns anti-clockwise. The person faces _____.
    Answer: South
22. An angle that is three-eighths of a full turn is _____ than a right angle.
    Answer: greater
23. An angle that is one-eighth of a full turn is _____ than a right angle.
    Answer: smaller
24. An angle of three-eighths of a full turn is an _____ angle.
    Answer: obtuse
25. Two angles of one-eighth of a full turn each together make a _____ angle.
    Answer: right
26. Three quarter turns are _____ than a half turn.
    Answer: greater
27. A person makes one full turn and then one quarter turn. The final direction is the same as after _____ quarter turn.
    Answer: one
28. A fan opens through one-quarter turn and then closes through one-quarter turn in the opposite direction. Its final position is its _____ position.
    Answer: starting

29. An object makes four eighth turns. Altogether, it makes a _____ turn.
    Answer: half
30. A circle is divided into 12 equal parts. Turning through 6 parts makes a _____ turn.
    Answer: half

1.5 One-mark questions with Answers of LOTS Type: (35 Questions)

One-Mark Descriptive Questions with Answers – LOTS:

1. **What is a full turn?**
   Answer: A full turn is one complete rotation that brings an object back to its starting position.
2. **What is a half turn?**
   Answer: A half turn is half of a complete turn.
3. **What is a quarter turn?**
   Answer: A quarter turn is one-fourth of a complete turn.
4. **How many half turns make one full turn?**
   Answer: Two half turns make one full turn.
5. **How many quarter turns make one full turn?**
   Answer: Four quarter turns make one full turn.
6. **How many quarter turns make a half turn?**
   Answer: Two quarter turns make a half turn.
7. **Which angle is formed by a quarter turn?**
   Answer: A quarter turn forms a right angle.
8. **What is an acute angle?**
   Answer: An acute angle is smaller than a right angle.
9. **What is an obtuse angle?**
   Answer: An obtuse angle is larger than a right angle but smaller than a straight angle.
10. **Which angle is formed by a half turn?**
    Answer: A half turn forms a straight angle.
11. **What happens after an object completes a full turn?**
    Answer: It returns to its starting position.
12. **What is the direction of movement of clock hands called?**
    Answer: The direction in which clock hands move is called clockwise.
13. **What is the direction opposite to clockwise called?**
    Answer: The direction opposite to clockwise is called anti-clockwise.
14. **How many eighth turns make one full turn?**
    Answer: Eight eighth turns make one full turn.
15. **How many twelfth turns make one full turn?**
    Answer: Twelve twelfth turns make one full turn.
16. **How many eighth turns make one quarter turn?**
    Answer: Two eighth turns make one quarter turn.
17. **How many eighth turns make one half turn?**
    Answer: Four eighth turns make one half turn.
18. **How many twelfth turns make one quarter turn?**
    Answer: Three twelfth turns make one quarter turn.
19. **How many twelfth turns make one half turn?**
    Answer: Six twelfth turns make one half turn.
20. **How long does the minute hand take to make one full turn?**
    Answer: The minute hand takes 60 minutes to make one full turn.

21. **How many minutes does the minute hand take to make a half turn?**
    Answer: The minute hand takes 30 minutes to make a half turn.
22. **How many minutes does the minute hand take to make a quarter turn?**
    Answer: The minute hand takes 15 minutes to make a quarter turn.
23. **How many minutes does the minute hand take to make three-quarter turn?**
    Answer: The minute hand takes 45 minutes to make three-quarter turn.
24. **What kind of turn does the minute hand make in 30 minutes?**
    Answer: The minute hand makes a half turn in 30 minutes.
25. **What kind of turn does the minute hand make in 15 minutes?**
    Answer: The minute hand makes a quarter turn in 15 minutes.
26. **Name one object that can make a full turn.**
    Answer: A giant wheel can make a full turn.
27. **What does a giant wheel do when it completes a full turn?**
    Answer: It comes back to its starting position.
28. **Name one everyday object that involves a turn.**
    Answer: A door with a hinge involves a turn when it opens or closes.
29. **What can be used to show different angles by turning?**
    Answer: A paper fan can be used to show different angles by turning.
30. **What is attached to the centre of the paper circle to make an angle-measuring tool?**
    Answer: A straw is attached to the centre of the paper circle.
31. **What is used as the reference when measuring a turn?**
    Answer: The marked starting point is used as the reference when measuring a turn.
32. **What does an angle show in situations involving turns?**
    Answer: An angle shows how far something has turned.
33. **What kind of angle is smaller than a quarter turn?**
    Answer: An acute angle is smaller than a quarter turn.
34. **What kind of angle is more than a quarter turn but less than a half turn?**
    Answer: An obtuse angle is more than a quarter turn but less than a half turn.
35. **Name one activity that can help learners observe turns.**
    Answer: Playing the "Statue" game can help learners observe turns.

1.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark Descriptive Questions with Answers – HOTS:

1. **Maya faces North and makes a half turn clockwise; which direction does she face?**
   Answer: She faces South.
2. **A person faces East and makes a quarter turn clockwise; which direction does the person face?**
   Answer: The person faces South.
3. **A person faces East and makes a quarter turn anti-clockwise; which direction does the person face?**
   Answer: The person faces North.
4. **A person faces West and makes a quarter turn clockwise; which direction does the person face?**
   Answer: The person faces North.
5. **A person faces North and makes three quarter turns anti-clockwise; which direction does the person face?**
   Answer: The person faces East.

6. **A person faces North and makes five quarter turns clockwise; which direction does the person face?**
   Answer: The person faces East.
7. **A person faces South and makes one quarter turn anti-clockwise; which direction does the person face?**
   Answer: The person faces East.
8. **A person faces East and makes three quarter turns clockwise; which direction does the person face?**
   Answer: The person faces North.
9. **An arrow turns three-eighths of a full circle; is the angle acute, right or obtuse?**
   Answer: It is an obtuse angle because it is more than a quarter turn but less than a half turn.
10. **A fan opens through one-eighth of a full turn; what type of angle does it show?**
    Answer: It shows an acute angle because one-eighth of a turn is less than a quarter turn.
11. **A toy turns two-eighths of a full circle; what type of angle does it make?**
    Answer: It makes a right angle because two-eighths is one-quarter of a full turn.
12. **A straw turns four-eighths of a full circle; what type of angle does it make?**
    Answer: It makes a straight angle because four-eighths is half of a full turn.
13. **An object turns one-quarter of a circle and then one-eighth more in the same direction; what fraction of a full turn has it made?**
    Answer: It has made three-eighths of a full turn.
14. **A wheel makes a half turn and then another quarter turn in the same direction; what fraction of a full turn has it made?**
    Answer: It has made three-fourths of a full turn.
15. **A rotating arrow has completed three quarter turns; what fraction of a full turn remains?**
    Answer: One-quarter of a full turn remains.
16. **The minute hand moves for 20 minutes; what fraction of a full turn does it make?**
    Answer: It makes one-third of a full turn.
17. **The minute hand moves for 25 minutes; what fraction of a full turn does it make?**
    Answer: It makes five-twelfths of a full turn.
18. **The minute hand moves for 10 minutes; what fraction of a full turn does it make?**
    Answer: It makes one-sixth of a full turn.
19. **The minute hand moves from 10 minutes past the hour to 25 minutes past the hour; what turn does it make?**
    Answer: It makes a quarter turn because 15 minutes is one-fourth of 60 minutes.
20. **A minute hand has moved for 45 minutes; what fraction of a full turn has it made?**
    Answer: It has made three-fourths of a full turn.
21. **A minute hand makes a quarter turn; how many minutes has it moved?**
    Answer: It has moved for 15 minutes.
22. **A person makes one full turn and then one quarter turn; what is the final direction compared with the starting direction?**
    Answer: The person faces one quarter turn clockwise or anti-clockwise from the starting direction, depending on the direction of the extra turn.

23. **A door is opened through a quarter turn and then closed through the same quarter turn; where is it at the end?**
    Answer: It returns to its starting position.
24. **Two turns of one-eighth each are made in the same direction; what angle do they form together?**
    Answer: They form a right angle because together they make one-quarter turn.
25. **Three quarter turns are compared with a half turn; which is larger?**
    Answer: Three quarter turns are larger than a half turn.
26. **A person facing West turns anti-clockwise through a quarter turn; which direction does the person face?**
    Answer: The person faces South.
27. **A circle is divided into 12 equal parts and a straw turns through 3 parts; what fraction of a full turn is this?**
    Answer: It is one-quarter of a full turn.
28. **A circle is divided into 12 equal parts and a straw turns through 6 parts; what type of angle does it show?**
    Answer: It shows a straight angle because 6 of the 12 parts make half a turn.
29. **A minute hand moves from 12 to 3; what fraction of a full turn has it made?**
    Answer: It has made one-quarter of a full turn.
30. **A minute hand moves from 12 to 6; what fraction of a full turn has it made?**
    Answer: It has made one-half of a full turn.

1.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

Two-Mark Descriptive Questions with Answers – LOTS:

1. **What is a full turn? What happens to the object after it makes one?**
   Answer: A full turn is one complete rotation. The object returns to its starting position.
2. **What is a half turn? How many half turns make a full turn?**
   Answer: A half turn is half of a complete rotation. Two half turns make one full turn.
3. **What is a quarter turn? How many quarter turns make a full turn?**
   Answer: A quarter turn is one-fourth of a complete rotation. Four quarter turns make one full turn.
4. **How many quarter turns make a half turn? What kind of angle does a half turn form?**
   Answer: Two quarter turns make a half turn. A half turn forms a straight angle.
5. **What kind of angle does a quarter turn form? How many eighth turns make a quarter turn?**
   Answer: A quarter turn forms a right angle. Two eighth turns make one quarter turn.
6. **What is an acute angle? How does it compare with a right angle?**
   Answer: An acute angle is smaller than a right angle. It is less than a quarter turn.
7. **What is an obtuse angle? How does it compare with a half turn?**
   Answer: An obtuse angle is larger than a right angle. It is smaller than a half turn.
8. **What is a straight angle? How many quarter turns does it equal?**
   Answer: A straight angle is formed by a half turn. It equals two quarter turns.
9. **What do “clockwise” and “anti-clockwise” mean?**
   Answer: Clockwise is the direction in which clock hands move. Anti-clockwise is the opposite direction.
10. **How long does the minute hand take to make a full turn? How far does it move in 30 minutes?**

Answer: The minute hand takes 60 minutes to make a full turn. In 30 minutes, it makes a half turn.

11. **How far does the minute hand turn in 15 minutes? How many minutes does a quarter turn take?**
    Answer: In 15 minutes, the minute hand makes a quarter turn. A quarter turn takes 15 minutes.
12. **How far does the minute hand turn in 45 minutes? How many quarter turns is this?**
    Answer: In 45 minutes, the minute hand makes three-fourths of a full turn. This equals three quarter turns.
13. **How many eighth turns make a full turn? How many make a half turn?**
    Answer: Eight eighth turns make a full turn. Four eighth turns make a half turn.
14. **How many twelfth turns make a full turn? How many make a half turn?**
    Answer: Twelve twelfth turns make a full turn. Six twelfth turns make a half turn.
15. **What happens when an object makes two quarter turns in the same direction? What angle does it make?**
    Answer: It makes a half turn. The angle formed is a straight angle.
16. **How can a paper fan help us learn about angles? What can we observe when it opens?**
    Answer: A paper fan can be used to show different angles. We can observe how its opening changes as it turns.
17. **How can straws be used to show turns? What should be held steady?**
    Answer: Two straws joined at one end can show different turns. One straw is held steady while the other is rotated.
18. **How is a simple angle-measuring tool made using a paper circle? What is attached at its centre?**
    Answer: A paper circle can be folded into equal parts to mark turns. A straw is attached at its centre.
19. **What is the purpose of marking a starting point on a turn-measuring tool? What is the turn measured from?**
    Answer: The mark shows where the movement begins. The turn is measured from this starting point.
20. **Name two everyday objects that involve turns. What do they do when moved?**
    Answer: A hinged door and a pair of scissors involve turns. They rotate as they open or close.
21. **How can the "Statue" game help children understand turns? What do they notice when they stop?**
    Answer: Children can turn around while playing the game. When they stop, they can compare their final position with their starting position.
22. **What does a giant wheel do during a full turn? How can you tell that it has completed the turn?**
    Answer: It rotates all the way around. It has completed a full turn when it returns to its starting position.
23. **How many minutes are there in one full turn of a clock's minute hand? How many minutes are there in a half turn?**
    Answer: A full turn takes 60 minutes. A half turn takes 30 minutes.
24. **What is the difference between an acute and an obtuse angle?**
    Answer: An acute angle is smaller than a right angle. An obtuse angle is larger than a right angle but smaller than a straight angle.

25. **How can turns help us describe a person's direction? What must we know to work out the final direction?**
Answer: Turns show how a person changes direction. We need to know the starting direction, the size of the turn, and whether it is clockwise or anti-clockwise.

1.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Two-Mark Descriptive Questions with Answers – HOTS:

1. **A clock's minute hand moves for 35 minutes. What fraction of a full turn does it make, and is this more or less than a half turn?**
Answer: It makes seven-twelfths of a full turn. This is more than a half turn.
2. **A minute hand moves for 40 minutes. What fraction of a full turn does it make, and how many minutes would complete the turn?**
Answer: It makes two-thirds of a full turn. It needs 20 more minutes to complete the turn.
3. **A straw turns one-half turn and then three-eighths of a turn in the same direction. What fraction of a full turn has it made, and how much is left to complete the circle?**
Answer: It has made seven-eighths of a full turn. One-eighth of a turn remains.
4. **A paper fan opens by one-quarter turn and then by one-eighth turn more. What fraction of a full turn has it opened, and what type of angle is formed?**
Answer: It has opened by three-eighths of a full turn. The angle is obtuse because it is greater than a quarter turn but less than a half turn.
5. **An arrow turns five-twelfths of a full circle. Is its angle acute, right, or obtuse? Explain your choice.**
Answer: Its angle is obtuse. Five-twelfths is greater than one-quarter turn and less than one-half turn.
6. **A wheel completes three-eighths of a turn. How much more must it turn to reach a half turn, and how much to complete a full turn?**
Answer: It must turn one-eighth more to reach a half turn. It must turn five-eighths more to complete a full turn.
7. **A person faces North and turns three right angles clockwise. Which direction does the person face, and what fraction of a full turn was made?**
Answer: The person faces West. Three right angles make three-quarters of a full turn.
8. **A person faces East and makes a half turn. Which direction will the person face, and would turning clockwise or anti-clockwise give the same result?**
Answer: The person will face West. A half turn clockwise or anti-clockwise gives the same final direction.
9. **A person faces South and turns three quarter turns clockwise. Which direction will the person face, and what fraction of a full turn has been made?**
Answer: The person will face East. The person has made three-quarters of a full turn.
10. **A person faces West and turns two quarter turns anti-clockwise. Which direction will the person face, and what kind of angle is formed?**
Answer: The person will face East. The two quarter turns make a straight angle.
11. **A minute hand moves from 12 to 4. What fraction of a full turn does it make, and how many minutes have passed?**
Answer: It makes one-third of a full turn. Twenty minutes have passed.
12. **A minute hand moves from 2 to 8. What fraction of a full turn does it make, and how many minutes have passed?**
Answer: It makes a half turn. Thirty minutes have passed.

13. **A minute hand moves from 9 to 12. What fraction of a full turn does it make, and how many minutes have passed?**
Answer: It makes one-quarter of a full turn. Fifteen minutes have passed.
14. **Two equal turns together make a right angle, and each turn is less than a quarter turn. What fraction of a full turn is each one?**
Answer: Each turn is one-eighth of a full turn. Two eighth turns together make one-quarter turn.
15. **A turn is one-sixth of a full circle. Is it acute, right, or obtuse? Give the reason.**
Answer: It is an acute angle. One-sixth of a turn is less than one-quarter turn.
16. **A circle is divided into 12 equal parts, and an arrow moves through five parts. What fraction of a full turn has it made, and what type of angle is it?**
Answer: It has made five-twelfths of a full turn. The angle is obtuse because five-twelfths lies between one-quarter and one-half.
17. **A turn-measuring circle is divided into eight equal parts. How many parts must the straw move to make a straight angle, and how many parts make a right angle?**
Answer: The straw must move through four parts to make a straight angle. It must move through two parts to make a right angle.
18. **A person makes one full turn and then one-eighth of a turn clockwise. Where will the person face compared with the starting direction?**
Answer: The person will face one-eighth of a turn clockwise from the starting direction. The full turn brings the person back to the starting direction before the extra turn.
19. **A door opens by one-quarter turn and then opens another one-quarter turn in the same direction. What total turn has it made, and what angle does this equal?**
Answer: The door has made a half turn. This is equal to a straight angle.
20. **A person faces North, turns one quarter clockwise, and then turns one quarter anti-clockwise. Where does the person end up? Explain.**
Answer: The person ends up facing North. The two equal turns in opposite directions cancel each other.
21. **A minute hand turns through three-eighths of a full circle. Is this turn more or less than a right angle, and what type of angle does it make?**
Answer: It is more than a right angle because three-eighths is greater than one-quarter. It makes an obtuse angle.
22. **A student says that four eighth turns make a full turn. Is the student correct, and what do four eighth turns actually make?**
Answer: The student is not correct. Four eighth turns make a half turn.
23. **An object turns through six twelfth-parts of a circle. What fraction of a full turn is this, and what angle does it form?**
Answer: Six twelfth-parts equal one-half of a full turn. They form a straight angle.
24. **A minute hand starts at 12 and moves for 10 minutes, then for another 20 minutes. What fraction of a turn has it made altogether, and where does it point?**
Answer: It has made a half turn altogether. It points at 6.
25. **A student wants to show an obtuse angle using a paper fan. How far should the fan open compared with a quarter turn, and how far compared with a half turn?**
Answer: The fan should open more than a quarter turn. It should open less than a half turn.

1.9. Three-mark questions with Answers of LOTS Type: (10 Questions)

Three-Mark Descriptive Questions with Answers – LOTS:

1. **What is a full turn? State two facts about it.**
   Answer:
   1. A full turn is one complete rotation.
   2. It brings an object back to its starting position.
   3. Four quarter turns make one full turn.
2. **Explain a half turn using quarter turns and angle names.**
   Answer:
   1. A half turn is half of a full turn.
   2. It is equal to two quarter turns.
   3. It forms a straight angle.
3. **What is a quarter turn? Give two related facts.**
   Answer:
   1. A quarter turn is one-fourth of a full turn.
   2. It forms a right angle.
   3. Four quarter turns make one full turn.
4. **Describe acute, right, and obtuse angles in terms of turns.**
   Answer:
   1. An acute angle is less than a quarter turn.
   2. A right angle is exactly a quarter turn.
   3. An obtuse angle is more than a quarter turn but less than a half turn.
5. **Describe the turns made by the minute hand of a clock in 15, 30, and 60 minutes.**
   Answer:
   1. In 15 minutes, the minute hand makes a quarter turn.
   2. In 30 minutes, it makes a half turn.
   3. In 60 minutes, it makes a full turn.
6. **What are clockwise and anti-clockwise movements? Give one example of each.**
   Answer:
   1. Clockwise is the direction in which the hands of a clock move.
   2. Anti-clockwise is the opposite direction.
   3. A clock's hands move clockwise, while turning them in the reverse direction is anti-clockwise.
7. **How can a paper circle be used to make an angle-measuring tool?**
   Answer:
   1. Cut a circle from tracing paper.
   2. Fold it into equal parts and mark a starting point.
   3. Attach a straw at the centre to show different turns.
8. **How can two straws be used to show an angle?**
   Answer:
   1. Join two straws at one end with a paper clip.
   2. Hold one straw steady.
   3. Turn the other straw to show different angles.
9. **Name three everyday objects that involve turns and describe their movement.**
   Answer:
   1. A door turns on its hinge as it opens and closes.
   2. Scissors turn around their joining point as they open and close.
   3. A tap turns when it is opened or closed.
10. **How can a learner identify the direction faced after making a turn?**
    Answer:
    1. Note the starting direction.

2. Identify the size of the turn and whether it is clockwise or anti-clockwise.
3. Follow the turn to find the final direction.

1.10. Three-mark questions with Answers of HOTS Type: (10 Questions)

Three-Mark Descriptive Questions with Answers – HOTS:

1. **A paper fan opens by one-quarter turn and then opens one-eighth turn more. Find the total turn and name the angle formed.**
   Answer:
   1. One-quarter turn is equal to two-eighth turns.
   2. The total opening is three-eighths of a full turn.
   3. This is an obtuse angle because it is between a quarter turn and a half turn.
2. **A straw turns three-eighths of a full turn and then turns one-eighth in the opposite direction. How far has it turned from its starting position?**
   Answer:
   1. The straw first turns three-eighths in one direction.
   2. The opposite turn reduces the movement by one-eighth.
   3. The straw ends one-quarter turn from its starting position.
3. **A person faces North, turns three quarter turns clockwise, and then one quarter turn anti-clockwise. Which direction does the person face?**
   Answer:
   1. Three quarter turns clockwise from North lead to West.
   2. One quarter turn anti-clockwise from West leads to South.
   3. The person faces South.
4. **A minute hand starts at 12 and moves for 25 minutes. Describe its turn and the type of angle it makes.**
   Answer:
   1. In 25 minutes, the hand moves through five of the 12 equal parts of a full circle.
   2. It makes five-twelfths of a full turn.
   3. This is an obtuse angle because it is greater than a quarter turn but less than a half turn.
5. **A student says that three eighth turns make a right angle. Is the student correct? Explain the correct turn and angle.**
   Answer:
   1. A right angle is one-quarter of a full turn.
   2. One-quarter turn equals two-eighth turns.
   3. Three-eighth turns make an obtuse angle, so the student is incorrect.
6. **A person faces South and turns two quarter turns anti-clockwise. Find the final direction and describe the total turn.**
   Answer:
   1. The two quarter turns make a half turn.
   2. A half turn from South leads to North.
   3. The person faces North after making a straight angle.
7. **A minute hand moves from 3 to 9 by turning clockwise. What fraction of a full turn does it make, and how much time passes?**
   Answer:
   1. The hand moves halfway around the clock face.
   2. It makes a half turn, which takes 30 minutes.
   3. The hand points at 9.

8. **A wheel turns seven-eighths of a full turn. How much more must it turn to complete the circle, and how does the completed position compare with the start?**
   Answer:
   1. The wheel needs one-eighth of a turn more.
   2. After that, it will have completed one full turn.
   3. It will return to its starting position.
9. **Two acute turns are each one-eighth of a full turn. What angle do they make together, and why?**
   Answer:
   1. Each turn is smaller than a quarter turn, so each is acute.
   2. Together they make two-eighth turns, which equal one-quarter turn.
   3. The combined angle is a right angle.
10. **A person faces East, makes a half turn clockwise, and then makes a quarter turn clockwise. Which direction does the person face?**
    Answer:
    1. A half turn from East leads to West.
    2. A further quarter turn clockwise from West leads to North.
    3. The person faces North after making three-quarter turn altogether.

1.11 Five-mark questions with Answers of LOTS Type: (10 Questions)

Five-Mark Descriptive Questions with Answers – LOTS:

1. Explain a full turn and its relationship to half turns and quarter turns.
Answer:
1. A full turn is one complete rotation.
2. After a full turn, an object returns to its starting position.
3. Two half turns make one full turn.
4. Four quarter turns make one full turn.
5. Two quarter turns make one half turn.

2. Describe the four types of angles introduced in the chapter.
Answer:
1. An acute angle is smaller than a quarter turn.
2. A right angle is exactly one-quarter of a full turn.
3. An obtuse angle is greater than a quarter turn.
4. An obtuse angle is smaller than a half turn.
5. A straight angle is equal to a half turn.

3. Describe how far the minute hand turns in different lengths of time.
Answer:
1. In 15 minutes, the minute hand makes a quarter turn.
2. In 30 minutes, it makes a half turn.
3. In 45 minutes, it makes three-quarter turn.
4. In 60 minutes, it makes a full turn.
5. After a full turn, it returns to its starting position.

4. Explain how to make a simple angle-measuring tool using a paper circle.
Answer:
1. Cut a circle from tracing paper.
2. Fold the circle into equal parts.
3. Mark a starting point on the circle.
4. Attach a straw at the centre.
5. Turn the straw from the starting point to show different turns.

5. Explain how two straws can be used to show different angles.
Answer:
1. Join two straws at one end with a paper clip.
2. Hold one straw steady.
3. Turn the other straw around the joined end.
4. The opening between the straws changes as the straw turns.
5. The opening can show different angles.

6. Describe clockwise and anti-clockwise movement.
Answer:
1. Clockwise is the direction in which clock hands move.
2. Anti-clockwise is the opposite direction.
3. A clock's minute hand moves clockwise.
4. A turn in the reverse direction is anti-clockwise.
5. Turns can be described by stating their direction.

7. Describe how the "Statue" game helps children observe turns.
Answer:
1. Children turn around while playing the game.
2. They stop when the teacher says "Statue".
3. They notice how much they have turned.
4. They compare their final position with their starting position.
5. The activity helps them understand full and partial turns.

8. Name five objects or activities that involve turns.
Answer:
1. A door turns on its hinge when it opens.
2. Scissors turn around their joining point when they open.
3. A tap turns when it is opened or closed.
4. A giant wheel turns as it moves around.
5. A paper fan turns as it opens and closes.

9. Describe the relationships between a full turn, eighth turns, and twelfth turns.
Answer:
1. Eight eighth turns make one full turn.
2. Four eighth turns make one half turn.
3. Two eighth turns make one quarter turn.
4. Twelve twelfth turns make one full turn.
5. Six twelfth turns make one half turn.

10. Explain how to find the direction someone faces after making a turn.
Answer:
1. Identify the person's starting direction.
2. Identify whether the turn is clockwise or anti-clockwise.
3. Find the size of the turn.
4. Follow the turn from the starting direction.
5. The direction reached is the person's final direction.

1.12 Five-mark questions with Answers of HOTS Type: (5 Questions)

Five-Mark Descriptive Questions with Answers – HOTS:
1. A paper fan opens by one-quarter turn and then by two-eighth turns. Find the total turn and name the angle formed.
Answer:
1. One-quarter turn is equal to two-eighth turns.

2. The fan opens by two-eighth turns first.
3. It then opens by another two-eighth turns.
4. Altogether, it opens by four-eighth turns, which is half a turn.
5. The angle formed is a straight angle.

2. A person faces West, turns two quarter turns clockwise, and then turns half a turn anti-clockwise. Which direction does the person face?

Answer:

1. The person starts by facing West.
2. Two quarter turns make a half turn.
3. A half turn clockwise from West leads to East.
4. A half turn anti-clockwise from East leads to West.
5. The person ends up facing West.

3. A minute hand starts at 12 and moves clockwise for 20 minutes, then continues for 10 more minutes. Where does it point, and what total turn has it made?

Answer:

1. In 20 minutes, the minute hand makes one-third of a full turn.
2. In 10 more minutes, it makes one-sixth of a full turn.
3. One-third plus one-sixth equals one-half of a full turn.
4. A half turn from 12 points to 6.
5. The minute hand ends at 6 after making a half turn.

4. Two straws form an angle of three-eighths of a full turn. How does this compare with a quarter turn, and what type of angle is it?

Answer:

1. A quarter turn is equal to two-eighths of a full turn.
2. Three-eighths is greater than two-eighths.
3. The angle is therefore greater than a right angle.
4. Three-eighths is less than one-half of a full turn.
5. The angle is obtuse.

5. A student wants to make an obtuse angle by combining a quarter turn and an eighth turn. Will this work? Explain.

Answer:

1. A quarter turn is two-eighths of a full turn.
2. Adding one-eighth turn gives three-eighths of a full turn.
3. Three-eighths is more than one-quarter turn.
4. Three-eighths is less than one-half turn.
5. The student makes an obtuse angle.

6. A person faces North, turns one quarter clockwise, then makes a half turn, and finally turns one quarter anti-clockwise. What is the final direction?

Answer:

1. The person starts by facing North.
2. A quarter turn clockwise leads to East.
3. A half turn from East leads to West.
4. A quarter turn anti-clockwise from West leads to South.
5. The person ends up facing South.

7. A student divides a circle into eight equal parts and turns a straw through three parts. Describe the turn and classify the angle.

Answer:

1. The circle has eight equal parts.
2. Three parts represent three-eighths of a full turn.
3. One-quarter turn is two-eighths of a full turn.

4. Three-eighths is greater than a quarter turn but less than a half turn.
5. The angle is obtuse.

8. A minute hand starts at 12, moves clockwise for 45 minutes, and then moves anti-clockwise for 15 minutes. Where does it point at the end?

Answer:

1. In 45 minutes, the hand makes three-quarter turn clockwise.
2. Three-quarter turn from 12 points to 9.
3. In 15 minutes, it makes a quarter turn anti-clockwise.
4. A quarter turn anti-clockwise from 9 points to 6.
5. The hand ends at 6.

9. Two acute turns are each one-eighth of a full turn. A third one-eighth turn is added in the same direction. What angle is formed?

Answer:

1. Each of the first two turns is one-eighth of a full turn.
2. Together, they make two-eighths, or one-quarter turn.
3. One-quarter turn forms a right angle.
4. Adding another one-eighth makes three-eighths of a full turn.
5. The final angle is obtuse.

10. An arrow turns through seven-twelfths of a full circle. How much of the circle remains, and what type of angle has the arrow turned through?

Answer:

1. A full turn has twelve-twelfths.
2. The arrow has turned seven-twelfths.
3. Five-twelfths of the circle remains.
4. Seven-twelfths is more than one-half of a full turn.
5. The turn is greater than a straight angle.

1.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Descriptive Questions with Answers – Applied Type:

1. A robot faces East. It turns one quarter turn clockwise, then one half turn anti-clockwise. Which direction does it face at the end?

Answer:

1. The robot starts by facing East.
2. A quarter turn clockwise takes it to South.
3. A half turn anti-clockwise from South takes it to North.
4. The robot has made turns in two different directions.
5. It ends up facing North.

2. A clock shows 12:00. The minute hand moves clockwise for 15 minutes. Where does it point, and what turn has it made?

Answer:

1. The minute hand starts at 12.
2. In 15 minutes, it makes one-quarter of a full turn.
3. A quarter turn is a right angle.
4. It moves clockwise around the clock face.
5. It points at 3.

3. A student opens a paper fan by three-eighths of a full turn. Describe the angle made by the fan.

Answer:

1. The fan opens through three-eighths of a full turn.

2. One-quarter turn is equal to two-eighths.
3. Three-eighths is greater than one-quarter turn.
4. Three-eighths is less than one-half turn.
5. The fan forms an obtuse angle.

4. A dancer faces South, makes a half turn, and then makes a quarter turn clockwise. Which direction does the dancer face?

Answer:

1. The dancer starts by facing South.
2. A half turn takes the dancer to North.
3. A quarter turn clockwise from North leads to East.
4. The dancer has made three-quarter turn altogether.
5. The dancer faces East.

5. A giant wheel completes two full turns and then one quarter turn. How far has it turned, and where is it compared with its starting position?

Answer:

1. Each full turn brings the wheel back to its starting position.
2. After two full turns, the wheel is at its starting position again.
3. It then makes one more quarter turn.
4. Altogether, it has turned two and one-quarter turns.
5. It is one-quarter turn from its starting position.

6. A student makes a turn-measuring tool by folding a circle into eight equal parts. How can the student use it to show an obtuse angle?

Answer:

1. Each part represents one-eighth of a full turn.
2. Two parts make one-quarter turn, or a right angle.
3. Three parts make three-eighths of a full turn.
4. Three-eighths is more than a quarter turn but less than a half turn.
5. The student can show an obtuse angle by turning the straw through three parts.

7. A minute hand starts at 12 and moves for 30 minutes. A student says it has made a quarter turn. Is the student correct? Explain where the hand points.

Answer:

1. The minute hand takes 60 minutes to make a full turn.
2. In 30 minutes, it makes half of a full turn.
3. A half turn is larger than a quarter turn.
4. The student is not correct.
5. The hand points at 6.

8. A person faces West, turns one quarter turn anti-clockwise, and then one quarter turn clockwise. Which direction does the person face at the end?

Answer:

1. The person starts by facing West.
2. A quarter turn anti-clockwise from West leads to South.
3. A quarter turn clockwise from South leads back to West.
4. The two turns are equal but in opposite directions.
5. The person ends up facing West.

9. A student observes a hinged door, a pair of scissors, and a tap. How can the student use these objects to study turns?

Answer:

1. The student can open and close the hinged door and observe its movement.
2. The student can open and close the scissors around their joining point.
3. The student can turn the tap to open or close it.

4. The student can compare how far each object turns.
5. The student can describe each movement as clockwise or anti-clockwise where appropriate.

10. A person faces North and turns clockwise through five quarter turns. What is the final direction, and how can the turns be simplified?

Answer:

1. Four quarter turns make one full turn.
2. After four quarter turns, the person faces North again.
3. One quarter turn remains.
4. A quarter turn clockwise from North leads to East.
5. The person ends up facing East.

1.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Type Multiple-Choice Questions:

1. **Which turn brings an object back to its starting position?**
   A. Half turn B. Quarter turn C. Full turn D. Eighth turn
   Answer: C. Full turn
2. **How many quarter turns make one full turn?**
   A. 2 B. 3 C. 4 D. 8
   Answer: C. 4
3. **Two quarter turns make a:**
   A. Full turn B. Half turn C. Three-quarter turn D. One-eighth turn
   Answer: B. Half turn
4. **Four eighth turns equal which fraction of a full turn?**
   A. One-quarter B. One-half C. Three-quarters D. One full turn
   Answer: B. One-half
5. **A turn of two-eighths of a full circle forms a:**
   A. Acute angle B. Right angle C. Obtuse angle D. Straight angle
   Answer: B. Right angle
6. **Which turn makes an acute angle?**
   A. One-eighth turn B. One-quarter turn C. Three-eighths turn D. One-half turn
   Answer: A. One-eighth turn
7. **An angle that is three-eighths of a full turn is:**
   A. Acute B. Right C. Obtuse D. Straight
   Answer: C. Obtuse
8. **Which turn makes a straight angle?**
   A. One-eighth turn B. One-quarter turn C. One-half turn D. Three-quarter turn
   Answer: C. One-half turn
9. **A minute hand moves for 20 minutes. What fraction of a full turn does it make?**
   A. One-quarter B. One-third C. One-half D. Three-quarters
   Answer: B. One-third
10. **A minute hand moves for 25 minutes. What fraction of a full turn does it make?**
    A. One-third B. One-half C. Five-twelfths D. Three-quarters
    Answer: C. Five-twelfths
11. **How many minutes does the minute hand take to make a quarter turn?**
    A. 10 B. 15 C. 20 D. 30
    Answer: B. 15 minutes

12. **A minute hand moves for 45 minutes. What fraction of a full turn has it made?**
    A. One-quarter B. One-half C. Three-quarters D. One full turn
    Answer: C. Three-quarters
13. **A straw turns one-quarter of a circle and then one-eighth more in the same direction. What is the total turn?**
    A. One-eighth B. One-quarter C. Three-eighths D. One-half
    Answer: C. Three-eighths
14. **An arrow turns seven-eighths of a full turn. How much more must it turn to complete the circle?**
    A. One-eighth B. One-quarter C. Three-eighths D. One-half
    Answer: A. One-eighth
15. **A person faces North and turns one quarter clockwise. Which direction does the person face?**
    A. South B. East C. West D. North
    Answer: B. East
16. **A person faces East and turns one quarter anti-clockwise. Which direction does the person face?**
    A. North B. South C. West D. East
    Answer: A. North
17. **A person faces South and turns one quarter clockwise. Which direction does the person face?**
    A. East B. North C. West D. South
    Answer: C. West
18. **A person faces West and makes a half turn. Which direction does the person face?**
    A. North B. South C. East D. West
    Answer: C. East
19. **A person faces North and turns three quarter turns clockwise. Which direction does the person face?**
    A. East B. South C. West D. North
    Answer: C. West
20. **A person faces East and turns three quarter turns clockwise. Which direction does the person face?**
    A. North B. South C. West D. East
    Answer: A. North
21. **A person faces South and turns two quarter turns anti-clockwise. Which direction does the person face?**
    A. East B. West C. North D. South
    Answer: C. North
22. **What is the direction opposite to clockwise?**
    A. Forward B. Anti-clockwise C. Straight D. Quarter-wise
    Answer: B. Anti-clockwise
23. **A circle is divided into eight equal parts. How many parts make a right angle?**
    A. 1 B. 2 C. 3 D. 4
    Answer: B. 2 parts
24. **A circle is divided into twelve equal parts. How many parts make a half turn?**
    A. 3 B. 4 C. 6 D. 8
    Answer: C. 6 parts

25. **An angle measures five-twelfths of a full turn. What type of angle is it?**
A. Acute B. Right C. Obtuse D. Straight
Answer: C. Obtuse
26. **Which turn is greater than a right angle but less than a straight angle?**
A. One-eighth turn B. One-quarter turn C. Three-eighths turn D. One-half turn
Answer: C. Three-eighths turn
27. **A minute hand starts at 12 and moves for 30 minutes. Where does it point?**
A. 3 B. 6 C. 9 D. 12
Answer: B. 6
28. **A minute hand starts at 12 and moves for 20 minutes. Where does it point?**
A. 2 B. 3 C. 4 D. 5
Answer: C. 4
29. **Which object can show different angles by opening and closing?**
A. Paper fan B. Ruler C. Eraser D. Notebook page
Answer: A. Paper fan
30. **Two turns of one-eighth each are made in the same direction. What angle do they make together?**
A. Acute angle B. Right angle C. Obtuse angle D. Straight angle
Answer: B. Right angle

1.15 Best Practices Opportunity List from the Chapter: (14 Ideas)

Best Practices for Teaching "Angles as Turns" – Grade 5:

(1) Begin with familiar examples: Ask students to notice turning movements in clock hands, doors, taps, scissors, and wheels.
(2) Use the "Statue" game: Have students make different turns and freeze when the teacher calls "Statue"; ask them to describe how far they turned.
(3) Connect turns to body movement: Let students make quarter, half, and full turns while standing safely in place.
(4) Teach turns in sequence: Introduce a full turn first, then show how it can be divided into halves, quarters, eighths, and twelfths.
(5) Use clear visual demonstrations: Draw circles on the board and mark the starting point and direction of each turn.
(6) Make hands-on angle tools: Guide students to fold paper circles into equal parts and attach a straw at the centre to show turns.
(7) Use straws or craft sticks: Join two pieces at one end so students can move one side and observe how the angle changes.
(8) Relate turns to clock time: Use a clock face to connect 15, 30, 45, and 60 minutes with quarter, half, three-quarter, and full turns.
(9) Teach angle names through comparison: Help students compare angles with a quarter turn to identify acute, right, and obtuse angles.
(10) Practise clockwise and anti-clockwise movement: Give students a starting direction and simple turn instructions, then ask them to name the final direction.
(11) Encourage students to explain their reasoning: Ask "How do you know?" after they identify an angle or direction, so they describe the steps they used.
(12) Check understanding during the lesson: Use quick questions, hand signals, or small board sketches to see whether students can recognise and compare turns.
(13) Support different learning needs: Offer paper models and guided examples to students who need help, and give multi-step turn challenges to students ready for extension.

(14) **Use careful observation and discussion:** Invite students to find examples of turns around the classroom or at home and share how each object moves.

1.16 Innovations Opportunity List from the Chapter: (10 Ideas)

Innovative Teaching-Learning Ideas: "Angles as Turns" – Grade 5:

(1) **Human Compass Activity:** Mark North, South, East, and West on the classroom floor; students follow turn instructions and record their final direction.
(2) **Turn-and-Record Challenge:** Students use a paper arrow on a marked circle, make a sequence of turns, and write the final position as a fraction of a full turn.
(3) **Classroom Turn Hunt:** Students photograph or sketch examples of turns around school, such as a door opening or a wheel rotating, then label each movement.
(4) **Create a Turn Board Game:** Students design a path game where players move by following instructions such as "turn one-quarter clockwise" or "turn half a turn anti-clockwise."
(5) **Animated Turn Stories:** In pairs, students draw a character in different positions or use a simple slide animation to show full, half, and quarter turns.
(6) **Turn Dance Routine:** Groups create a short sequence using quarter, half, and full turns, then explain the turns used in their routine.
(7) **Mystery Direction Cards:** Give students a starting direction and a hidden sequence of turns; classmates follow the clues and identify the final direction.
(8) **Build a Turn Spinner:** Students make a spinner labelled with different fractions of a turn and use it to create and solve movement challenges.
(9) **Angle Photo Gallery:** Students arrange their sketches or photos into categories—acute, right, obtuse, and straight—and explain how each turn relates to a quarter or half turn.
(10) **Digital Clock-Hand Simulation:** Use an interactive clock on a screen or tablet to move the minute hand and predict the fraction of a turn before checking.
(11) **Turn-Command Robot:** Use a toy robot or pretend robot; students write simple clockwise and anti-clockwise turn commands and test the route.
(12) **Student-Created Quiz Cards:** Students write a turn problem on one side of a card and the answer with a small diagram on the other, then exchange cards to solve.

1.17: Practicing Questions/Question Bank:

A. Fill in the Blanks:

1. A complete rotation is called a _____ turn.
   Answer: full

2. A quarter turn is _____ of a full turn.
   Answer: one-fourth

3. Two quarter turns make a _____ turn.
   Answer: half

4. A quarter turn forms a _____ angle.
   Answer: right

5. An angle smaller than a right angle is an _____ angle.
   Answer: acute

6. An angle greater than a right angle but smaller than a straight angle is an _____ angle.
   Answer: obtuse

7. The direction opposite to clockwise is called _____.
   Answer: anti-clockwise
8. The minute hand makes a full turn in _____ minutes.
   Answer: 60
9. The minute hand makes a quarter turn in _____ minutes.
   Answer: 15
10. Eight eighth turns make one _____ turn.
    Answer: full

B. One-Mark Descriptive Questions:

1. **What is a half turn?**
   Answer: A half turn is half of a complete rotation.
2. **What angle does a half turn form?**
   Answer: A half turn forms a straight angle.
3. **How long does the minute hand take to make a half turn?**
   Answer: It takes 30 minutes.
4. **What is clockwise movement?**
   Answer: Clockwise is the direction in which the hands of a clock move.
5. **Name one object that moves by turning.**
   Answer: A hinged door moves by turning.

C. Two-Mark Descriptive Questions:

1. **How many quarter turns make a full turn? How many make a half turn?**
   Answer: Four quarter turns make a full turn. Two quarter turns make a half turn.
2. **What is an acute angle? How does it compare with a quarter turn?**
   Answer: An acute angle is smaller than a right angle. It is less than a quarter turn.
3. **How can straws be used to show an angle?**
   Answer: Join two straws at one end. Hold one steady and turn the other to show an angle.
4. **How long does the minute hand take to make a quarter turn? What number does it point to when starting at 12?**
   Answer: It takes 15 minutes. Starting at 12, it points to 3 after a clockwise quarter turn.
5. **What is the difference between clockwise and anti-clockwise movement?**
   Answer: Clockwise is the direction in which clock hands move. Anti-clockwise is the opposite direction.

D. Three-Mark Descriptive Questions:

1. **Describe a full turn, a half turn, and a quarter turn.**
   Answer:
   1. A full turn is one complete rotation.
   2. A half turn is half of a full turn.
   3. A quarter turn is one-fourth of a full turn.

2. **Describe acute, right, and obtuse angles using turns.**
   Answer:
   1. An acute angle is less than a quarter turn.
   2. A right angle is exactly a quarter turn.
   3. An obtuse angle is more than a quarter turn but less than a half turn.
3. **A person faces North and turns one quarter clockwise. Then the person turns one quarter anti-clockwise. Where does the person end up?**
   Answer:
   1. A quarter turn clockwise from North leads to East.
   2. A quarter turn anti-clockwise from East leads back to North.
   3. The person ends up facing North.
4. **How can a folded paper circle help in measuring turns?**
   Answer:
   1. Fold the circle into equal parts.
   2. Mark the starting point and attach a straw at the centre.
   3. Turn the straw and count the parts to measure the turn.
5. **Describe how the minute hand moves in 15, 30, and 45 minutes.**
   Answer:
   1. In 15 minutes, it makes a quarter turn.
   2. In 30 minutes, it makes a half turn.
   3. In 45 minutes, it makes three-quarter turn.

E. Five-Mark Descriptive Questions:

1. **A paper fan opens one-quarter turn and then one-eighth turn more. Find the total turn and classify the angle.**
   Answer:
   1. One-quarter turn equals two-eighth turns.
   2. The fan first opens by two-eighth turns.
   3. It opens another one-eighth turn.
   4. The total opening is three-eighths of a full turn.
   5. This is an obtuse angle because it is between a quarter and a half turn.
2. **A person faces East and turns three quarter turns clockwise. Which direction does the person face?**
   Answer:
   1. The person starts by facing East.
   2. One quarter turn clockwise leads to South.

3. A second quarter turn leads to West.
4. A third quarter turn leads to North.
5. The person ends up facing North.

3. **Describe how to make and use a simple angle-measuring tool from a paper circle.**
   Answer:
   1. Cut a circle from tracing paper.
   2. Fold the circle into equal parts.
   3. Mark a starting point on the circle.
   4. Attach a straw at the centre.
   5. Turn the straw from the starting point to show and compare angles.
4. **A minute hand starts at 12 and moves clockwise for 45 minutes. Describe its turn and final position.**
   Answer:
   1. A full turn of the minute hand takes 60 minutes.
   2. In 45 minutes, it makes three-quarters of a full turn.
   1. Three-quarter turn is three quarter turns.
   2. From 12, the hand moves clockwise past 3 and 6.
   3. It points to 9.
5. **Explain how to find the final direction after a person makes a turn.**
   Answer:
   1. Identify the person's starting direction.
   2. Identify whether the turn is clockwise or anti-clockwise.
   3. Determine the size of the turn.
   4. Follow the turn from the starting direction.
   5. Name the direction the person faces at the end.

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5th Standard Maths Book Chapter 4

Chapter 4: We the Travellers — II

4.1 Summary of the Chapter:

Chapter Summary: *We the Travellers—II*:

(1) The chapter explores addition and subtraction through travel, fuel, money, distances, and other everyday situations.

(2) You can make two groups have equal sums by exchanging numbers between them. Choosing the right pair can help you do this in fewer moves.

(3) When adding, line up digits by place value—ones under ones, tens under tens, and so on. Regroup when a column adds up to ten or more.

(4) When subtracting, regroup from the next place value when needed. You can check subtraction by adding the difference to the number subtracted.

(5) Addition and subtraction are related: if $a + b = c$, then $c - a = b$ and $c - b = a$.

(6) Consecutive numbers follow one another without a gap, such as 4, 5, 6. Their sums form patterns, and these patterns can help you find totals without adding every number one by one.

(7) The chapter practises adding and subtracting larger numbers, including five-digit numbers, by keeping place values aligned and regrouping carefully.

(8) You can use number sense to make quick calculations. For example, adding 1 to a number that is 1 less than 100 makes 100; subtracting 9 or 99 can also be done using a helpful adjustment.

(9) A palindrome number reads the same from left to right and right to left, such as 363 or 8,558.

(10) Arranging numbers in grids introduces increasing and decreasing order in rows and columns, while using each number only once.

(11) Even numbers can be grouped into pairs without any left over; odd numbers leave one unpaired. Adding two even numbers or two odd numbers gives an even number, while adding an odd and an even number gives an odd number.

(12) The practice problems apply these ideas to real situations, such as checking certificate quantities, calculating travel expenses and distances, choosing coins to pay an exact amount, and spotting patterns in repeated actions.

4.2 Important Formulas:

Important Formulas and Number Rules:

(1) Addition:
Addend + Addend = Sum

(2) Subtraction:
Minuend − Subtrahend = Difference

(3) Check subtraction using addition:
Difference + Subtrahend = Minuend

(4) Addition and subtraction relationship:
If (a + b = c), then:
(c - a = b) and (c - b = a)

(5) Finding the total after adding more:
Starting amount + Amount added = Total amount

(6) Finding the amount added:
Final amount − Starting amount = Amount added

(7) Making two group sums equal:
Compare the two sums and exchange suitable numbers between the groups until the sums match.

(8) Quick subtraction of 9:
Number − 9 = Number − 10 + 1

(9) Quick subtraction of 99:
Number − 99 = Number − 100 + 1

(10) Finding a missing number to reach a target:
Target number − Given number = Missing number
For example, to find the number that makes 32 equal 100: (100 - 32).

(11) Even and odd numbers:
a. Even + Even = Even
b. Odd + Odd = Even
c. Even + Odd = Odd

(12) Successive sums of the same number of consecutive numbers:
Each new sum increases by the number of terms.
For example, sums of 3 consecutive numbers increase by 3 each time.

4.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks: LOTS Questions

1. The answer obtained by adding numbers is called the _____.
   Answer: sum
2. Numbers that follow one another without skipping are called _____ **numbers**.
   Answer: consecutive
3. A number that reads the same from left to right and right to left is called a _____ **number**.
   Answer: palindrome
4. Numbers that can be arranged in pairs with none left over are _____ **numbers**.
   Answer: even
5. Numbers that leave one unpaired when arranged in pairs are _____ **numbers**.
   Answer: odd
6. 28 + 75 = _____.
   Answer: 103
7. 49 + 89 = _____.
   Answer: 138
8. 15 + 79 = _____.
   Answer: 94
9. 46 + 99 = _____.
   Answer: 145
10. 38 + 35 = _____.
    Answer: 73
11. 82 - 37 = _____.
    Answer: 45
12. 57 - 11 = _____.
    Answer: 46
13. 23 - 19 = _____.
    Answer: 4
14. 56 - 18 = _____.
    Answer: 38

15. 93 - 35 = _____.
Answer: 58
16. (70 - 43 = _____.
Answer: 27
17. If 46 + 21 = 67, then 67 - 21 = _____.
Answer: 46
18. If 189 + 98 = 287, then 287 - 189 = _____.
Answer: 98
19. 1 + 2 + 3 = _____.
Answer: 6
20. 1 + 2 + 3 + 4 = _____.
Answer: 10
21. The sum of 2 and 3 is _____.
Answer: 5
22. 1 + 2 + 3 + 4 + 5 = _____.
Answer: 15
23. 32 + _____ = 100.
Answer: 68
24. 59 + _____ = 100.
Answer: 41
25. 877 + _____ = 1,000.
Answer: 123
26. 666 + _____ = 1,000.
Answer: 334
27. 67 - 9 = _____.
Answer: 58
28. 187 - 99 = _____.
Answer: 88
29. The sum of two even numbers is _____.
Answer: even
30. The sum of two odd numbers is _____.
Answer: even
31. The sum of an odd number and an even number is _____.
Answer: odd
32. Among 297, 498, and 724, the even numbers are _____ and _____.
Answer: 498 and 724
33. The number 363 is a _____ number.
Answer: palindrome
34. The total length of a route measuring 1,855 km and another measuring 1,862 km is _____ **km**.
Answer: 3,717 km
35. A ship has travelled 1,083 km of a 2,700 km route. It has _____ **km** left to travel.
Answer: 1,617 km
36. The difference between 15,150 and 10,228 is _____.
Answer: 4,922

4.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

1. Two groups have sums 19 and 21. If 2 from the first group is exchanged with 3 from the second group, each new sum is _____.
Answer: 20

2. Two groups have sums 39 and 47. Exchanging 5 from the first group with 9 from the second group makes each sum _____.
Answer: 43
3. Two groups have sums 68 and 76. Exchanging 11 from the first group with 15 from the second group makes each sum _____.
Answer: 72
4. A lorry has 28 litres of fuel and receives 75 more litres. It now has _____ litres.
Answer: 103
5. A minibus has 18 litres before refuelling and 65 litres afterwards. It received _____ litres.
Answer: 47
6. If 47 litres are added to the minibus's original 18 litres, the total is _____ litres.
Answer: 65
7. Without adding term by term, 67 + 68 + 69 = _____.
Answer: 204
8. Using the pattern for consecutive numbers, 24 + 25 + 26 + 27 = _____.
Answer: 102
9. The sum of five consecutive numbers from 48 to 52 is _____.
Answer: 250
10. The sum of the six consecutive numbers from 237 to 242 is _____.
Answer: 1,437
11. The sums of 1 + 2 + 3 and 2 + 3 + 4 are 6 and 9. The second sum is _____ more than the first.
Answer: 3
12. The sums of four consecutive numbers beginning with 1 and 2 are 10 and 14. The second sum is _____ more.
Answer: 4
13. The sums of five consecutive numbers beginning with 1 and 2 are 15 and 20. The difference between the sums is _____.
Answer: 5
14. To complete 32 to make 100, add _____.
Answer: 68
15. To complete 180 to make 1,000, add _____.
Answer: 820
16. To complete 4,103 to make 10,000, add _____.
Answer: 5,897
17. Using a quick adjustment, 247 - 99 = _____.
Answer: 148
18. Which number should be subtracted from 32 to leave 9? The number is _____.
Answer: 23
19. Which number should be subtracted from 877 to leave 99? The number is _____.
Answer: 778
20. A route is made up of two parts measuring 1,855 km and 1,862 km. Its total length is _____ km.
Answer: 3,717
21. A ship must travel 2,700 km and has already travelled 1,083 km. It has _____ km left.
Answer: 1,617
22. One land route is 15,150 km and another is 10,228 km. The longer route exceeds the shorter by _____ km.
Answer: 4,922

23. A district printed 19,043 certificates for 19,265 students. The district needs _____ more certificates.
Answer: 222
24. A district printed 20,863 certificates for 19,974 students. There are _____ extra certificates.
Answer: 889
25. Among the listed mountains, Everest at 8,848 m and Elbrus at 5,642 m differ in height by _____ m.
Answer: 3,206
26. If Priyanka was 20 years old when she climbed Everest in 2013, she was born in _____.
Answer: 1993
27. Jincy has 8 ₹1 coins, 9 ₹2 coins and 5 ₹5 coins. One way to pay exactly ₹38 is to use 5 ₹5 coins, 6 ₹2 coins and _____ ₹1 coin(s).
Answer: 1
28. The torch turns on after odd-numbered presses and off after even-numbered presses. After 23 presses, it is _____.
Answer: ON
29. Under the same switching pattern, after 24 presses, the torch is _____.
Answer: OFF
30. An even number plus an odd number always gives an _____ number.
Answer: odd
31. An odd number plus an odd number always gives an _____ number.
Answer: even
32. An even number plus an even number always gives an _____ number.
Answer: even
33. A number that reads the same forwards and backwards, such as 363, is called a _____ number.
Answer: palindrome
34. The number 6,893 is odd because its ones digit, _____, is odd. **Answer: 3**
35. If 198 - 98 = 100, then the related addition sentence is 100 + _____ = 198.
Answer: 98

4.5 One-mark questions with Answers of LOTS Type: (35 Questions)

1. What are consecutive numbers?
Answer: Consecutive numbers follow one another in order without skipping any number.
2. What is the sum of 1, 2, and 3?
Answer: The sum of 1, 2, and 3 is 6.
3. What is the sum of the first four counting numbers?
Answer: The sum of 1, 2, 3, and 4 is 10.
4. When 10 ones are regrouped, how many tens do they make?
Answer: Ten ones make one ten.
5. A lorry has 28 litres of fuel and receives 75 more litres; how much fuel does it have now?
Answer: The lorry has 103 litres of fuel now.
6. What is the sum of 49 and 89?
Answer: The sum of 49 and 89 is 138.
7. If 46 + 21 = 67, what is 67 − 21?
Answer: 67 − 21 = 46.
8. If 46 + 21 = 67, what is 67 − 46?
Answer: 67 − 46 = 21.

9. If 198 − 98 = 100, what addition sentence can be written using these numbers?
Answer: 100 + 98 = 198.
10. A minibus has 18 litres of fuel and its meter shows 65 litres after refuelling; how much fuel was added?
Answer: The minibus received 47 litres of fuel.
11. What is the difference between 82 and 37?
Answer: The difference between 82 and 37 is 45.
12. What is 57 − 11?
Answer: 57 − 11 = 46.
13. What is 23 − 19?
Answer: 23 − 19 = 4.
14. How should digits be arranged when adding numbers in columns?
Answer: Digits should be aligned by place value, with ones below ones, tens below tens, and so on.
15. What is the total of 1,855 km and 1,862 km?
Answer: The total distance is 3,717 km.
16. Mahesh spends ₹21,880 on fuel and tolls and ₹38,900 on other expenses; what is his total spending?
Answer: Mahesh spends ₹60,780 in total.
17. A ship travels 1,083 km of a 2,700 km route; how much distance remains?
Answer: The ship has 1,617 km left to travel.
18. What is the difference between 15,150 and 10,228?
Answer: The difference is 4,922.
19. What number must be added to 63 to make 100?
Answer: 37 must be added to 63 to make 100.
20. What number must be added to 59 to make 100?
Answer: 41 must be added to 59 to make 100.
21. What is 53 − 9?
Answer: 53 − 9 = 44.
22. What is a palindrome number?
Answer: A palindrome number reads the same from left to right and from right to left.
23. Give one three-digit palindrome number.
Answer: 121 is a three-digit palindrome number.
24. How can you tell whether a whole number is even?
Answer: A whole number is even if its ones digit is 0, 2, 4, 6, or 8.
25. What are the possible ones digits of an odd number?
Answer: An odd number has 1, 3, 5, 7, or 9 in the ones place.
26. What is the sum of two even numbers always?
Answer: The sum of two even numbers is always even.
27. What is the sum of two odd numbers always?
Answer: The sum of two odd numbers is always even.
28. What is the sum of one even number and one odd number always?
Answer: The sum of one even number and one odd number is always odd.
29. If a torch turns on with the first press and alternates on and off, what happens after the 23rd press?
Answer: The torch is on after the 23rd press.
30. If a torch alternates on and off with every press, what happens after the 24th press?
Answer: The torch is off after the 24th press.
31. According to the chapter's table, which is the highest mountain peak Priyanka Mohite climbed?

Answer: Mount Everest is the highest peak listed, at 8,848 metres.
32. According to the chapter's table, which listed peak is the lowest?
Answer: Mount Elbrus is the lowest listed peak, at 5,642 metres.
33. If Priyanka was 20 years old when she climbed Mount Everest in 2013, in which year was she born?
Answer: She was born in 1993.
34. Chittoor printed 18,225 certificates for 18,104 students; how many certificates were extra?
Answer: Chittoor had 121 extra certificates.
35. Jaunpur printed 19,043 certificates for 19,265 students; how many certificates were short?
Answer: Jaunpur was short by 222 certificates.
36. Raigad printed 20,863 certificates for 19,974 students; how many certificates were extra?
Answer: Raigad had 889 extra certificates.

4.6 One-mark questions with Answers of HOTS Type: (30 Questions)

1. Two groups have sums of 19 and 21; if 2 from the first group is exchanged for 3 from the second, what will each sum become?
Answer: Each group will have a sum of 20 because the first gains 1 and the second loses 1.
2. Two groups have sums of 39 and 47; which pair, 5 and 9, can be exchanged to make the sums equal, and what will each sum be?
Answer: Exchanging 5 and 9 makes both sums 43 because the smaller group gains 4 while the larger group loses 4.
3. How can you find 49 + 89 by changing one addend to a nearby ten without changing the total?
Answer: Change 49 to 50 and 89 to 88 to get the same total, 138.
4. A student says 28 + 75 = 103; how can subtraction be used to check the answer?
Answer: The answer is correct because 103 − 75 = 28.
5. A minibus had 18 litres before refuelling and 65 litres afterwards; how can you check that 47 litres were added?
Answer: The amount is correct because 18 + 47 = 65.
6. What mental strategy can find 56 − 18, and what is the result?
Answer: Subtracting 20 and then adding back 2 gives 56 − 18 = 38.
7. The sums of four consecutive numbers begin 10, 14, and 18; what is the difference between each pair of successive sums?
Answer: Each successive sum increases by 4 because one new number that is 4 greater replaces the first number.
8. Why does the sum of four consecutive numbers increase by 4 when the next group begins one number later?
Answer: The new group replaces the first number with a number 4 greater, so its sum rises by 4.
9. How can the sum of 18, 19, and 20 be found by using the middle number?
Answer: The sum is 57 because the middle number 19 is counted three times.
10. How can you add 23 + 24 + 25 + 26 by pairing numbers, and what is the total?
Answer: Pairing 23 with 26 and 24 with 25 gives 49 + 49 = 98.
11. Three consecutive numbers have a sum of 72; what are the numbers?
Answer: The numbers are 23, 24, and 25 because 24 is the middle number and 23 + 24 + 25 = 72.

12. What is the sum of the five consecutive numbers from 31 to 35, using the middle number as a shortcut?
Answer: The sum is 165 because the middle number 33 is counted five times.
13. How can 374 + 99 be worked out quickly by using 100, and what is the answer?
Answer: Add 100 to 374 and subtract 1 to get 473.
14. How can 602 − 99 be worked out quickly by using 100, and what is the answer?
Answer: Subtract 100 from 602 and add 1 back to get 503.
15. How can 426 + 99 be worked out quickly by using 100, and what is the answer?
Answer: Add 100 to 426 and subtract 1 to get 525.
16. The North–South Corridor sections are 1,855 km and 1,862 km; what is their exact total and a reasonable estimate?
Answer: Their exact total is 3,717 km, which is close to an estimate of 3,700 km.
17. A student finds 15,150 − 10,228 = 4,922; how can addition confirm the result?
Answer: The result is correct because 10,228 + 4,922 = 15,150.
18. A ship has 1,617 km left on a 2,700 km route after travelling 1,083 km; after travelling 600 km more, how much will remain?
Answer: The ship will have 1,017 km left because 1,617 − 600 = 1,017.
19. Mahesh spends ₹21,880 and ₹38,900 on a trip from a budget of ₹65,000; how much money remains?
Answer: He has ₹4,220 left because his expenses total ₹60,780.
20. If 82 − 37 is calculated as 45, how can the relationship between addition and subtraction verify it?
Answer: The answer is correct because 37 + 45 = 82.
21. Which of 846 and 789 is even, and how can the ones digits show this?
Answer: 846 is even because its ones digit is 6, while 789 is odd because its ones digit is 9.
22. If 23 is odd, what can you conclude about 23 + 2 without adding the numbers fully?
Answer: 23 + 2 is still odd because adding 2 preserves the odd-even pattern.
23. Why must the sum of any odd number and any even number be odd?
Answer: An even number is made of pairs, and adding an odd number leaves one unpaired unit.
24. Two odd numbers are added; what can you predict about their sum, and why?
Answer: Their sum is even because each odd number has one unpaired unit and the two units make a pair.
25. A torch turns on at press 1 and alternates on and off; what will happen at press 1,001?
Answer: The torch will be on because 1,001 is an odd-numbered press.
26. In the same torch pattern, which numbered presses turn the light off?
Answer: The light is off on every even-numbered press because the switch changes state each time.
27. How many palindrome numbers are there from 101 through 199, inclusive?
Answer: There are 10 because the palindromes are 101, 111, 121, 131, 141, 151, 161, 171, 181, and 191.
28. What is the next palindrome number after 898?
Answer: The next palindrome is 909 because it reads the same forwards and backwards.
29. Chittoor had 121 extra certificates, but 100 were damaged; how many usable extra certificates remain?
Answer: There are 21 usable extra certificates because 121 − 100 = 21.
30. Jaunpur had a shortage of 222 certificates and then printed 150 more; how many certificates are still needed?
Answer: Jaunpur still needs 72 certificates because 222 − 150 = 72.

31. Raigad had 889 extra certificates, but 500 were unusable; how many usable extra certificates remain?
Answer: There are 389 usable extra certificates because 889 − 500 = 389.
32. Mount Everest is 8,848 metres high and Mount Elbrus is 5,642 metres high; what is the difference in their heights?
Answer: Mount Everest is 3,206 metres higher because 8,848 − 5,642 = 3,206.

4.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

1. What are consecutive numbers? Give one example.
Answer — Point 1: Consecutive numbers follow one another in order without skipping any number.
Point 2: For example, 29, 30, and 31 are consecutive numbers.
2. How many tens are made by regrouping 10 ones? State the place-value relationship.
Answer — Point 1: Ten ones make one ten.
Point 2: This is written as 10 ones = 1 ten.
3. A lorry has 28 litres of fuel and receives 75 more litres; how much fuel does it have now, and what is regrouped?
Answer — Point 1: The lorry has 103 litres of fuel because 28 + 75 = 103.
Point 2: The 13 ones are regrouped as 1 ten and 3 ones.
4. Find 49 + 89 and state what happens when the ones are added.
Answer — Point 1: 49 + 89 = 138.
Point 2: The 9 ones and 9 ones make 18 ones, which regroup as 1 ten and 8 ones.
5. If 46 + 21 = 67, write the two subtraction sentences that follow.
Answer — Point 1: 67 − 21 = 46.
Point 2: 67 − 46 = 21.
6. If 198 − 98 = 100, write two related addition and subtraction sentences.
Answer — Point 1: 100 + 98 = 198.
Point 2: 198 − 100 = 98.
7. A minibus had 18 litres of fuel and has 65 litres after refuelling; how much fuel was added, and how can you check?
Answer — Point 1: 65 − 18 = 47 litres were added.
Point 2: The answer is checked by 18 + 47 = 65.
8. Find the difference between 82 and 37, and write an addition sentence to check it.
Answer — Point 1: 82 − 37 = 45.
Point 2: The subtraction is checked by 37 + 45 = 82.
9. Find 57 − 11 and 23 − 19.
Answer — Point 1: 57 − 11 = 46.
Point 2: 23 − 19 = 4.
10. Find the sum of 8, 9, and 10; state why these numbers are consecutive.
Answer — Point 1: 8 + 9 + 10 = 27.
Point 2: They are consecutive because each number is one more than the previous number.
11. Find the sum of 2, 3, 4, and 5; how many numbers are added?
Answer — Point 1: 2 + 3 + 4 + 5 = 14.
Point 2: Four consecutive numbers are added.
12. For two consecutive numbers, find 1 + 2 and 2 + 3; what is the difference between the sums?
Answer — Point 1: 1 + 2 = 3 and 2 + 3 = 5.
Point 2: The second sum is 2 greater than the first sum.

13. For three consecutive numbers, find the sums 1 + 2 + 3 and 2 + 3 + 4; how much does the sum increase?
Answer — Point 1: 1 + 2 + 3 = 6 and 2 + 3 + 4 = 9.
Point 2: The sum increases by 3.
14. How should digits be arranged when adding large numbers in columns? Give two place-value rules.
Answer — Point 1: Write the numbers so that the ones digits are in the same column.
Point 2: Keep the tens, hundreds, and higher place-value digits aligned in their matching columns.
15. Add 1,855 km and 1,862 km; give a nearby estimate as well.
Answer — Point 1: The exact total is 3,717 km.
Point 2: A nearby estimate is about 3,700 km.
16. Mahesh spends ₹21,880 on fuel and tolls and ₹38,900 on other expenses; what is his total spending?
Answer — Point 1: His total spending is ₹60,780.
Point 2: This is found by adding ₹21,880 + ₹38,900.
17. A ship travels 1,083 km of a 2,700 km route; find the remaining distance and check it.
Answer — Point 1: The remaining distance is 1,617 km because 2,700 − 1,083 = 1,617.
Point 2: The answer is checked by 1,617 + 1,083 = 2,700.
18. Find 15,150 − 10,228 and write an addition sentence to verify the result.
Answer — Point 1: 15,150 − 10,228 = 4,922.
Point 2: The result is verified by 10,228 + 4,922 = 15,150.
19. What number should be added to 63 to make 100, and what number should be added to 59 to make 100?
Answer — Point 1: 37 should be added to 63 to make 100.
Point 2: 41 should be added to 59 to make 100.
20. Find 53 − 9 and describe the quick method using 10.
Answer — Point 1: 53 − 9 = 44.
Point 2: Subtracting 10 and adding 1 back gives the same result.
21. What is a palindrome number? Give one example from the chapter.
Answer — Point 1: A palindrome number reads the same from left to right and from right to left.
Point 2: 363 is an example of a palindrome number.
22. Which of 846 and 789 is even, and which is odd? State the ones digits.
Answer — Point 1: 846 is even because its ones digit is 6.
Point 2: 789 is odd because its ones digit is 9.
23. State the sum rule for two even numbers and for two odd numbers.
Answer — Point 1: The sum of two even numbers is even.
Point 2: The sum of two odd numbers is also even.
24. State the sum rule for one odd number and one even number, and give an example.
Answer — Point 1: The sum of one odd number and one even number is odd.
Point 2: For example, 7 + 12 = 19, which is odd.
25. A torch turns on with the first press and alternates on and off; what happens after the 23rd and 24th presses?
Answer — Point 1: The torch is on after the 23rd press.
Point 2: The torch is off after the 24th press.
26. Chittoor printed 18,225 certificates for 18,104 students; how many certificates were extra?

Answer — Point 1: There were 121 extra certificates.
Point 2: This is found by subtracting 18,104 from 18,225.
27. Jaunpur printed 19,043 certificates for 19,265 students; how many certificates were short?
Answer — Point 1: There was a shortage of 222 certificates.
Point 2: This is found by subtracting 19,043 from 19,265.
28. Mount Everest is 8,848 metres high and Mount Elbrus is 5,642 metres high; find the difference in their heights.
Answer — Point 1: Mount Everest is 3,206 metres higher than Mount Elbrus.
Point 2: The difference is found by calculating 8,848 − 5,642.

4.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

1. Two groups have sums of 19 and 21, and the first group contains 2 while the second contains 3; how can one exchange make the sums equal?
Answer — Point 1: Exchange 2 from the first group for 3 from the second group.
Point 2: The sums become 20 each because one group gains 1 while the other loses 1.
2. Two groups have sums of 39 and 47, and one has 5 while the other has 9; what exchange makes the sums equal?
Answer — Point 1: Exchange 5 from the group with 39 for 9 from the group with 47.
Point 2: Both sums become 43 because the smaller sum increases by 4 and the larger sum decreases by 4.
3. How can 49 + 89 be calculated using compensation, and why does the total stay unchanged?
Answer — Point 1: Increase 49 by 1 to make 50 and decrease 89 by 1 to make 88.
Point 2: The total remains 138 because the increase of 1 is balanced by the decrease of 1.
4. A student says 28 + 75 = 103; use the relationship between addition and subtraction to test the answer.
Answer — Point 1: Subtract 75 from 103 to get 28.
Point 2: The calculation confirms that 28 + 75 = 103.
5. A minibus has 18 litres of fuel and shows 65 litres after refuelling; find the fuel added and verify it.
Answer — Point 1: Subtract 18 from 65 to find that 47 litres were added.
Point 2: Check the result by adding 18 + 47 to get 65 litres.
6. Find 82 − 37 and use addition to verify the difference.
Answer — Point 1: 82 − 37 = 45.
Point 2: The answer is correct because 37 + 45 = 82.
7. The sums of 1 + 2 + 3 + 4 and 2 + 3 + 4 + 5 are 10 and 14; explain the change in the sums.
Answer — Point 1: The second sum is 4 greater than the first.
Point 2: The group replaces 1 with 5, which increases the total by 4.
8. The sum of the first five counting numbers is 15; what is the sum of the next five-number group, 2 + 3 + 4 + 5 + 6?
Answer — Point 1: The next sum is 20.
Point 2: It is 5 greater because 1 is replaced by 6.
9. Three consecutive numbers have a sum of 72; find the numbers and explain your method.
Answer — Point 1: The middle number is 24 because 72 ÷ 3 = 24.
Point 2: The three numbers are 23, 24, and 25, and their sum is 72.

10. Find the sum of the five consecutive numbers from 31 to 35 using the middle number.
Answer — Point 1: The middle number is 33.
Point 2: The sum is 165 because 33 is counted five times.
11. Calculate 374 + 99 by using 100 as a nearby number, and state the adjustment.
Answer — Point 1: Add 100 to 374 to get 474.
Point 2: Subtract 1 because 99 is one less than 100, giving 473.
12. Calculate 602 − 99 by using 100 as a nearby number, and state the adjustment.
Answer — Point 1: Subtract 100 from 602 to get 502.
Point 2: Add 1 back because 99 is one less than 100, giving 503.
13. The two North–South Corridor sections are 1,855 km and 1,862 km; find their total and a reasonable estimate.
Answer — Point 1: The exact total is 3,717 km.
Point 2: Rounding the distances gives a reasonable estimate of about 3,700 km.
14. A student calculates 15,150 − 10,228 = 4,922; show how addition can check the answer.
Answer — Point 1: Add 10,228 and 4,922.
Point 2: The sum is 15,150, so the subtraction is correct.
15. A ship has travelled 1,083 km of a 2,700 km route; find the remaining distance and check the total.
Answer — Point 1: The remaining distance is 1,617 km because 2,700 − 1,083 = 1,617.
Point 2: Adding 1,083 km and 1,617 km gives the full 2,700 km route.
16. The ship then travels 600 km more from its remaining 1,617 km; how much is left, and what operation is used?
Answer — Point 1: Subtract 600 from 1,617.
Point 2: The remaining distance is 1,017 km.
17. Mahesh has a ₹65,000 travel budget and spends ₹21,880 and ₹38,900; find how much remains.
Answer — Point 1: His expenses total ₹60,780.
Point 2: He has ₹4,220 left because ₹65,000 − ₹60,780 = ₹4,220.
18. Jincy needs to pay ₹38 using ₹1, ₹2, and ₹5 coins; if she uses five ₹5 coins, how can she make the remaining amount exactly?
Answer — Point 1: Five ₹5 coins make ₹25, leaving ₹13 to pay.
Point 2: She can use six ₹2 coins and one ₹1 coin to make the remaining ₹13.
19. Explain what happens to the parity of a number when 2 is added to an odd number, using 23 as an example.
Answer — Point 1: 23 is odd, and adding 2 gives 25.
Point 2: The result remains odd because adding 2 preserves the odd-even pattern.
20. What is the parity of 846 + 789, and how can the ones digits help you decide?
Answer — Point 1: 846 is even because its ones digit is 6, while 789 is odd because its ones digit is 9.
Point 2: An even number plus an odd number is odd, so the sum is odd.
21. A torch is on after press 1 and alternates on and off; will it be on or off after press 2,026, and why?
Answer — Point 1: The torch will be off after press 2,026.
Point 2: An even-numbered press turns it off because press 1 is on and the state changes each time.
22. In the same torch pattern, what is the state after press 2,047, and what feature of the number tells you?

Answer — Point 1: The torch will be on after press 2,047.
Point 2: The press number is odd, and odd-numbered presses leave the torch on.
23. How many palindrome numbers are there from 101 through 199, and what pattern do they follow?
Answer — Point 1: There are 10 palindrome numbers in that range.
Point 2: They are 101, 111, 121, 131, 141, 151, 161, 171, 181, and 191.
24. What is the next palindrome after 898, and how can you check it?
Answer — Point 1: The next palindrome is 909.
Point 2: It is a palindrome because it reads the same forwards and backwards.
25. Chittoor has 121 extra certificates, but 100 are damaged; how many usable extra certificates remain?
Answer — Point 1: Subtract 100 damaged certificates from the 121 extra certificates.
Point 2: There are 21 usable extra certificates left.
26. Jaunpur has a shortage of 222 certificates and prints 150 more; how many certificates are still needed?
Answer — Point 1: Subtract 150 from the shortage of 222.
Point 2: Jaunpur still needs 72 certificates.
27. Mount Everest is 8,848 metres high and Mount Elbrus is 5,642 metres high; find how much higher Everest is and how to check.
Answer — Point 1: Everest is 3,206 metres higher because 8,848 − 5,642 = 3,206.
Point 2: Check by adding 5,642 + 3,206 to get 8,848 metres.

4.9. Three-mark questions with Answers of LOTS Type: (18 Questions)

1. A lorry has 28 litres of fuel and receives 75 more litres; find the total and show the regrouping in addition.
Answer — Point 1: Add the ones: 8 + 5 = 13 ones.
Answer — Point 2: Regroup 13 ones as 1 ten and 3 ones, then add the tens: 2 + 7 + 1 = 10 tens.
Answer — Point 3: The lorry has 103 litres of fuel.

2. Find 49 + 89 using place value.
Answer — Point 1: Add the ones: 9 + 9 = 18, so write 8 and carry 1 ten.
Answer — Point 2: Add the tens: 4 + 8 + 1 = 13 tens.
Answer — Point 3: The sum is 138.

3. Add 1,855 km and 1,862 km, and give a reasonable estimate.
Answer — Point 1: Add the exact distances: 1,855 + 1,862 = 3,717 km.
Answer — Point 2: Round the distances to about 1,900 km and 1,900 km.
Answer — Point 3: A reasonable estimate is about 3,800 km.

4. Mahesh spends ₹21,880 on fuel and tolls and ₹38,900 on other expenses; find his total spending.
Answer — Point 1: Write the amounts with matching place values.
Answer — Point 2: Add ₹21,880 and ₹38,900 to get ₹60,780.
Answer — Point 3: Mahesh spends ₹60,780 in total.

5. If 46 + 21 = 67, write the two related subtraction facts and state the relationship.

Answer — Point 1: 67 − 21 = 46.
Answer — Point 2: 67 − 46 = 21.
Answer — Point 3: Subtraction reverses addition in this number fact.

6. A minibus has 18 litres of fuel and shows 65 litres after refuelling; find the quantity added and check it.
Answer — Point 1: Subtract 18 from 65 to find the amount added.
Answer — Point 2: 65 − 18 = 47 litres.
Answer — Point 3: Check the answer with 18 + 47 = 65.

7. Find the difference between 82 and 37 using regrouping.
Answer — Point 1: Regroup 1 ten from 82 as 10 ones, so there are 7 tens and 12 ones.
Answer — Point 2: Subtract the ones and tens: 12 − 7 = 5 and 7 − 3 = 4.
Answer — Point 3: The difference is 45.

8. A ship travels 1,083 km of a 2,700 km route; find the remaining distance and check it.
Answer — Point 1: Subtract the travelled distance from the total: 2,700 − 1,083.
Answer — Point 2: The remaining distance is 1,617 km.
Answer — Point 3: Check by adding 1,083 + 1,617 = 2,700 km.

9. Find 15,150 − 10,228 and verify the answer with addition.
Answer — Point 1: Subtract 10,228 from 15,150 to get 4,922.
Answer — Point 2: Use the subtraction-addition relationship to check the result.
Answer — Point 3: 10,228 + 4,922 = 15,150, so the answer is correct.

10. What are consecutive numbers? Give an example and find the sum of the three numbers in your example.
Answer — Point 1: Consecutive numbers follow one another without skipping a number.
Answer — Point 2: For example, 8, 9, and 10 are consecutive numbers.
Answer — Point 3: Their sum is 8 + 9 + 10 = 27.

11. Find the sums 1 + 2, 2 + 3, and 3 + 4; describe how the sums change.
Answer — Point 1: The first sum is 1 + 2 = 3.
Answer — Point 2: The next sums are 2 + 3 = 5 and 3 + 4 = 7.
Answer — Point 3: Each successive sum increases by 2.

12. Three consecutive numbers have a sum of 72; find the numbers and show the steps.
Answer — Point 1: Divide 72 by 3 to find the middle number, which is 24.
Answer — Point 2: The number before 24 is 23 and the number after it is 25.
Answer — Point 3: The numbers are 23, 24, and 25.

13. The sums of four consecutive numbers begin 10, 14, and 18; state the change and explain it.
Answer — Point 1: The difference between 10 and 14 is 4.
Answer — Point 2: The difference between 14 and 18 is also 4.
Answer — Point 3: Each new group replaces its first number with one 4 greater, so the sum rises by 4.

14. What numbers must be added to 63 and 59 to make 100? Check both answers.

Answer — Point 1: 100 − 63 = 37, so add 37 to 63.
Answer — Point 2: 100 − 59 = 41, so add 41 to 59.
Answer — Point 3: The checks are 63 + 37 = 100 and 59 + 41 = 100.

15. Find 53 − 9 using the quick method of subtracting 10 and adding 1 back.
Answer — Point 1: Subtract 10 from 53 to get 43.
Answer — Point 2: Add 1 back because 9 is 1 less than 10.
Answer — Point 3: 53 − 9 = 44.

16. What is a palindrome number? Give two examples.
Answer — Point 1: A palindrome number reads the same from left to right and right to left.
Answer — Point 2: 22 is one example of a palindrome number.
Answer — Point 3: 363 is another example of a palindrome number.

17. State how to identify even and odd numbers from their ones digits, and classify 846 and 789.
Answer — Point 1: Numbers ending in 0, 2, 4, 6, or 8 are even.
Answer — Point 2: Numbers ending in 1, 3, 5, 7, or 9 are odd.
Answer — Point 3: 846 is even and 789 is odd.

18. A torch turns on with the first press and alternates on and off; state what happens at presses 23 and 24 and why.
Answer — Point 1: The torch is on after press 23.
Answer — Point 2: The torch is off after press 24.
Answer — Point 3: The torch changes its state at every press, so odd presses are on and even presses are off.

19. Chittoor printed 18,225 certificates for 18,104 students, while Jaunpur printed 19,043 for 19,265 students; find the extra and short counts.
Answer — Point 1: Chittoor printed more certificates than students attended.
Answer — Point 2: 18,225 − 18,104 = 121, so Chittoor had 121 extra certificates.
Answer — Point 3: 19,265 − 19,043 = 222, so Jaunpur was short by 222 certificates.

20. Mount Everest is 8,848 metres high and Mount Elbrus is 5,642 metres high; find the difference and check it.
Answer — Point 1: Subtract 5,642 from 8,848 to get 3,206 metres.
Answer — Point 2: Mount Everest is 3,206 metres higher than Mount Elbrus.
Answer — Point 3: Check by adding 5,642 + 3,206 = 8,848.

5.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

1. Two groups have sums of 19 and 21; the first group has 2 and the second has 3; explain how exchanging them makes the sums equal.
Answer — Point 1: The difference between the group sums is 2.
Answer — Point 2: Exchanging 2 for 3 makes the first group gain 1 and the second lose 1.
Answer — Point 3: Both group sums become 20.

2. Two groups have sums of 39 and 47, with 5 in the smaller-sum group and 9 in the larger-sum group; show how the exchange balances them.

Answer — Point 1: The difference between the sums is 8, so each group must change by 4.
Answer — Point 2: Exchanging 5 for 9 changes each group by 4 in the needed direction.
Answer — Point 3: Both groups then have a sum of 43.

3. Use compensation to find 49 + 89 and explain why the total does not change.
Answer — Point 1: Increase 49 by 1 to make 50.
Answer — Point 2: Decrease 89 by 1 to make 88, balancing the increase.
Answer — Point 3: 50 + 88 = 138, so the original total is 138.

4. Find 56 − 18 using a friendly number, then check your answer with addition.
Answer — Point 1: Subtract 20 from 56 to get 36.
Answer — Point 2: Add 2 back because 18 is 2 less than 20, giving 38.
Answer — Point 3: Check with 38 + 18 = 56.

5. A student adds the four consecutive numbers 18, 19, 20, and 21; use pairs to find the total.
Answer — Point 1: Pair the first and last numbers: 18 + 21 = 39.
Answer — Point 2: Pair the two middle numbers: 19 + 20 = 39.
Answer — Point 3: The total is 39 + 39 = 78.

6. Find the sum of the five consecutive numbers from 41 through 45 using pairs.
Answer — Point 1: Pair 41 with 45 to make 86.
Answer — Point 2: Pair 42 with 44 to make another 86, and keep 43 in the middle.
Answer — Point 3: The sum is 86 + 86 + 43 = 215.

7. The sums of 1 + 2 + 3 + 4 and 2 + 3 + 4 + 5 are 10 and 14; predict the next sum and explain the pattern.
Answer — Point 1: The sums increase by 4 each time.
Answer — Point 2: The next group is 3 + 4 + 5 + 6.
Answer — Point 3: Its sum is 18, which is 4 more than 14.

8. Three consecutive numbers have a sum of 96; find the numbers and show why they fit.
Answer — Point 1: Divide 96 by 3 to get the middle number, 32.
Answer — Point 2: The consecutive numbers are 31, 32, and 33.
Answer — Point 3: Their sum is 31 + 32 + 33 = 96.

9. The North–South Corridor sections are 1,855 km and 1,862 km; find the exact total and explain a useful estimate.
Answer — Point 1: The exact total is 1,855 + 1,862 = 3,717 km.
Answer — Point 2: Each distance is close to 1,900 km.
Answer — Point 3: So a useful estimate for the total is about 3,800 km.

10. A route is 15,150 km long and another is 10,228 km; find their difference and verify it.
Answer — Point 1: Subtract 10,228 from 15,150 to get 4,922 km.
Answer — Point 2: Add 10,228 and 4,922 to check the difference.
Answer — Point 3: The sum is 15,150, so 4,922 km is correct.

11. A ship has 1,617 km left on a route and then travels 600 km; calculate the new remaining distance and describe the operation.
Answer — Point 1: The ship has 1,617 km remaining before the next leg.
Answer — Point 2: Subtract the 600 km travelled: 1,617 − 600 = 1,017.
Answer — Point 3: The new remaining distance is 1,017 km.

12. Mahesh has a ₹65,000 budget and spends ₹21,880 on fuel and tolls and ₹38,900 on other expenses; find what remains.
Answer — Point 1: Add the expenses: ₹21,880 + ₹38,900 = ₹60,780.
Answer — Point 2: Subtract the expenses from the budget: ₹65,000 − ₹60,780.
Answer — Point 3: Mahesh has ₹4,220 remaining.

13. Jincy needs ₹38 and has coins of ₹1, ₹2, and ₹5; if she uses five ₹5 coins, find one exact way to pay the rest.
Answer — Point 1: Five ₹5 coins make ₹25.
Answer — Point 2: The remaining amount is ₹38 − ₹25 = ₹13.
Answer — Point 3: Six ₹2 coins and one ₹1 coin make ₹13, so the total payment is ₹38.

14. Without adding fully, decide whether 6,893 + 846 is even or odd and explain your reasoning.
Answer — Point 1: 6,893 is odd because its ones digit is 3.
Answer — Point 2: 846 is even because its ones digit is 6.
Answer — Point 3: An odd number plus an even number is odd, so the sum is odd.

15. A torch turns on at press 1 and alternates on and off; determine its state at presses 2,027 and 2,028.
Answer — Point 1: Press 2,027 is odd, so the torch is on.
Answer — Point 2: Press 2,028 is even, so the torch is off.
Answer — Point 3: The pattern alternates because each press changes the torch's state.

16. How many palindrome numbers are in the 900s from 900 to 999, and what pattern do they follow?
Answer — Point 1: A palindrome in the 900s must begin and end with 9.
Answer — Point 2: The numbers are 909, 919, 929, and so on through 999.
Answer — Point 3: There are 10 such numbers because the middle digit can be any digit from 0 to 9.

17. Chittoor has 121 extra certificates, but 100 are damaged; find how many usable extra certificates remain and show the calculation.
Answer — Point 1: There are 121 extra certificates before considering damage.
Answer — Point 2: Subtract the damaged certificates: 121 − 100 = 21.
Answer — Point 3: There are 21 usable extra certificates remaining.

18. Jaunpur is short by 222 certificates and prints 250 more; decide whether it still has a shortage or now has an excess.
Answer — Point 1: The extra printing is 250 certificates.
Answer — Point 2: Compare 250 with the shortage of 222: 250 − 222 = 28.
Answer — Point 3: Jaunpur now has 28 extra certificates.

19. Mount Everest is 8,848 metres high and Mount Elbrus is 5,642 metres high; find how much higher Everest is and check the result.
Answer — Point 1: Subtract 5,642 from 8,848 to get 3,206 metres.
Answer — Point 2: This means Everest is 3,206 metres higher than Elbrus.
Answer — Point 3: Check by adding 5,642 + 3,206 = 8,848.

5.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

1. A lorry has 28 litres of fuel and receives 75 more litres; find the total using place value and regrouping.
Answer — Point 1: Write 28 and 75 with ones below ones and tens below tens.
Answer — Point 2: Add the ones: 8 + 5 = 13 ones.
Answer — Point 3: Regroup 13 ones as 1 ten and 3 ones.
Answer — Point 4: Add the tens: 2 + 7 + 1 = 10 tens, which make 1 hundred.
Answer — Point 5: The total quantity of fuel is 103 litres.

2. Find 49 + 89 using column addition and show how regrouping gives the answer.
Answer — Point 1: Align 49 and 89 by place value.
Answer — Point 2: Add the ones: 9 + 9 = 18 ones.
Answer — Point 3: Write 8 ones and carry 1 ten to the tens column.
Answer — Point 4: Add the tens: 4 + 8 + 1 = 13 tens, or 1 hundred and 3 tens.
Answer — Point 5: The sum is 138.

3. A minibus has 18 litres of fuel before refuelling and 65 litres afterwards; find how much fuel was added and check your answer.
Point 1: Subtract the starting amount from the final amount: 65 − 18.
Point 2: Regroup 1 ten as 10 ones, making 5 tens and 15 ones.
Point 3: Subtract the ones: 15 − 8 = 7.
Point 4: Subtract the tens: 5 − 1 = 4, so the difference is 47 litres.
Point 5: Check by adding 18 + 47 = 65 litres.

4. Find the difference between 82 and 37 by regrouping, then check the result.
Point 1: Write 82 above 37, aligning the place values.
Point 2: Regroup 1 ten from 8 tens, leaving 7 tens and making 12 ones.
Point 3: Subtract the ones: 12 − 7 = 5.
Point 4: Subtract the tens: 7 − 3 = 4, so the difference is 45.
Point 5: Check by adding 37 + 45 = 82.

5. A ship travels 1,083 km of a 2,700 km route; find the remaining distance using regrouping and verify the answer.
Point 1: Subtract the distance travelled from the full route: 2,700 − 1,083.
Point 2: Regroup across the zeros so the ones become 10, the tens become 9, and the hundreds become 6.
Point 3: Subtract the ones, tens, hundreds, and thousands to get 1,617.
Point 4: The ship has 1,617 km left to travel.
Point 5: Check by adding 1,083 + 1,617 = 2,700 km.

6. If 46 + 21 = 67, write the related subtraction facts and explain how the operations are connected.

Point 1: The total in the addition fact is 67.
Point 2: Subtract 21 from 67 to get 46.
Point 3: Subtract 46 from 67 to get 21.
Point 4: The related facts are 67 − 21 = 46 and 67 − 46 = 21.
Point 5: Subtraction can be used to undo addition.

7. The sums of four consecutive numbers begin 10, 14, and 18; explain the pattern using the groups of numbers.
Answer — Point 1: The first group is 1 + 2 + 3 + 4 = 10.
Answer — Point 2: The next group is 2 + 3 + 4 + 5 = 14.
Answer — Point 3: The following group is 3 + 4 + 5 + 6 = 18.
Answer — Point 4: Each new sum is 4 greater than the previous sum.
Answer — Point 5: This happens because the first number is replaced by a number 4 greater.

8. Add the North–South Corridor sections of 1,855 km and 1,862 km; show an estimate and the exact total.
Answer — Point 1: Round 1,855 km to about 1,900 km.
Answer — Point 2: Round 1,862 km to about 1,900 km.
Answer — Point 3: The estimated total is about 3,800 km.
Answer — Point 4: Add the exact values: 1,855 + 1,862 = 3,717.
Answer — Point 5: The exact total is 3,717 km, which is close to the estimate.

9. Find 15,150 − 10,228 and verify the difference using addition.
Answer — Point 1: Write the numbers with matching place values.
Answer — Point 2: Subtract 10,228 from 15,150 to get 4,922.
Answer — Point 3: Use addition to check a subtraction answer.
Answer — Point 4: Add 10,228 + 4,922.
Answer — Point 5: The sum is 15,150, so the difference is 4,922.

10. Find the numbers that must be added to 63 and 59 to make 100, and check both results.
Answer — Point 1: Subtract 63 from 100 to find the first missing number.
Answer — Point 2: 100 − 63 = 37.
Answer — Point 3: Subtract 59 from 100 to find the second missing number.
Answer — Point 4: 100 − 59 = 41.
Answer — Point 5: Check: 63 + 37 = 100 and 59 + 41 = 100.

11. Explain how to identify even and odd numbers from their ones digits and classify 846 and 789.
Answer — Point 1: A number ending in 0, 2, 4, 6, or 8 is even.
Answer — Point 2: A number ending in 1, 3, 5, 7, or 9 is odd.
Answer — Point 3: The ones digit of 846 is 6.
Answer — Point 4: The ones digit of 789 is 9.
Answer — Point 5: Therefore, 846 is even and 789 is odd.

12. Chittoor printed 18,225 certificates for 18,104 students, while Jaunpur printed 19,043 for 19,265 students; calculate the extra and short counts.
Answer — Point 1: For Chittoor, compare certificates printed with students attended.
Answer — Point 2: 18,225 − 18,104 = 121, so Chittoor had 121 extra certificates.

Answer — Point 3: For Jaunpur, compare students attended with certificates printed.
Answer — Point 4: 19,265 − 19,043 = 222, so Jaunpur had a shortage of 222 certificates.
Answer — Point 5: Subtraction gives the surplus or shortage in each district.

5.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

1. Two groups have sums of 19 and 21; the first contains 2 and the second contains 3; show how one exchange makes their sums equal and explain why.
Answer — Point 1: The difference between the sums is 21 − 19 = 2.
Answer — Point 2: To balance the groups, the smaller sum must gain 1 and the larger sum must lose 1.
Answer — Point 3: Exchange 2 from the first group for 3 from the second group.
Answer — Point 4: The first sum becomes 20 and the second sum also becomes 20.
Answer — Point 5: The total stays 40 because exchanging numbers does not change the combined sum.

2. Two groups have sums of 39 and 47; the smaller-sum group contains 5 and the larger-sum group contains 9; find the balancing exchange and verify it.
Answer — Point 1: The difference between the sums is 47 − 39 = 8.
Answer — Point 2: Each group must change by half the difference, which is 4.
Answer — Point 3: Exchange 5 from the smaller-sum group for 9 from the larger-sum group.
Answer — Point 4: The new sums are 43 and 43.
Answer — Point 5: The groups are balanced because both sums are equal.

3. Use compensation to calculate 49 + 89 and explain how the adjustment keeps the total unchanged.
Answer — Point 1: Increase 49 by 1 to make 50.
Answer — Point 2: Decrease 89 by 1 to make 88.
Answer — Point 3: The +1 and −1 adjustments cancel each other.
Answer — Point 4: Add the easier numbers: 50 + 88 = 138.
Answer — Point 5: Therefore, 49 + 89 = 138.

4. A lorry has 28 litres of fuel, receives 75 litres, and then uses 16 litres; how much fuel remains and how can the result be checked?
Answer — Point 1: Add the fuel amounts first: 28 + 75 = 103 litres.
Answer — Point 2: Subtract the fuel used: 103 − 16 = 87 litres.
Answer — Point 3: The lorry has 87 litres remaining.
Answer — Point 4: Add the remaining fuel and the fuel used: 87 + 16 = 103 litres.
Answer — Point 5: The check confirms that the calculation is correct.

5. The first three sums of four consecutive numbers are 10, 14, and 18; find the next sum and explain the pattern.
Answer — Point 1: The first group is 1 + 2 + 3 + 4 = 10.
Answer — Point 2: The next group is 2 + 3 + 4 + 5 = 14.
Answer — Point 3: The third group is 3 + 4 + 5 + 6 = 18.
Answer — Point 4: The sums increase by 4 each time because the first number is replaced by one 4 greater.
Answer — Point 5: The next group is 4 + 5 + 6 + 7, and its sum is 22.

6. Three consecutive numbers have a sum of 96; find them and verify the result.
Answer — Point 1: The middle number is 96 ÷ 3 = 32.
Answer — Point 2: The number before 32 is 31.
Answer — Point 3: The number after 32 is 33.
Answer — Point 4: The consecutive numbers are 31, 32, and 33.
Answer — Point 5: Check: 31 + 32 + 33 = 96.

7. Find the sum of the five consecutive numbers 41, 42, 43, 44, and 45 using pairs, and explain the shortcut.
Answer — Point 1: Pair the first and last numbers: 41 + 45 = 86.
Answer — Point 2: Pair the second and fourth numbers: 42 + 44 = 86.
Answer — Point 3: The middle number 43 remains unpaired.
Answer — Point 4: Add the pairs and middle number: 86 + 86 + 43 = 215.
Answer — Point 5: The shortcut works because the pairs have equal sums around the middle number.

8. The North–South Corridor sections are 1,855 km and 1,862 km; estimate the total, calculate the exact total, and compare them.
Answer — Point 1: Round 1,855 km to about 1,900 km.
Answer — Point 2: Round 1,862 km to about 1,900 km.
Answer — Point 3: The estimated total is about 3,800 km.
Answer — Point 4: The exact total is 1,855 + 1,862 = 3,717 km.
Answer — Point 5: The estimate is 83 km higher than the exact total.

9. Two road routes measure 15,150 km and 10,228 km; find how much longer the first is and verify the difference.
Answer — Point 1: Subtract the shorter route from the longer route: 15,150 − 10,228.
Answer — Point 2: The difference is 4,922 km.
Answer — Point 3: Add the shorter route and the difference: 10,228 + 4,922.
Answer — Point 4: The sum is 15,150 km.
Answer — Point 5: Therefore, the first route is 4,922 km longer.

10. Mahesh has a ₹65,000 travel budget, spends ₹21,880 and ₹38,900, then faces an additional ₹500 expense; find what remains.
Answer — Point 1: Add the first two expenses: ₹21,880 + ₹38,900 = ₹60,780.
Answer — Point 2: Subtract from the budget: ₹65,000 − ₹60,780 = ₹4,220.
Answer — Point 3: Subtract the additional expense: ₹4,220 − ₹500 = ₹3,720.
Answer — Point 4: Mahesh still has ₹3,720 after all expenses.
Answer — Point 5: He remains within budget because the remaining amount is positive.

11. Jincy needs to pay ₹38 using ₹1, ₹2, and ₹5 coins; if she uses five ₹5 coins, find one exact combination for the rest.
Answer — Point 1: Five ₹5 coins make ₹25.
Answer — Point 2: Subtract ₹25 from ₹38 to find the balance: ₹13.
Answer — Point 3: Six ₹2 coins make ₹12.
Answer — Point 4: Add one ₹1 coin to make the remaining ₹13.
Answer — Point 5: The full payment is ₹25 + ₹12 + ₹1 = ₹38.

12. Chittoor printed 18,225 certificates for 18,104 students and Jaunpur printed 19,043 for 19,265 students; find each surplus or shortage and compare them.

Answer — Point 1: Chittoor printed more certificates than its student count.
Answer — Point 2: Chittoor's surplus is 18,225 − 18,104 = 121 certificates.
Answer — Point 3: Jaunpur printed fewer certificates than its student count.
Answer — Point 4: Jaunpur's shortage is 19,265 − 19,043 = 222 certificates.
Answer — Point 5: Jaunpur's shortage exceeds Chittoor's surplus by 222 − 121 = 101 certificates.

5.13 Five-mark questions with Answers of Applied Type: (10 Questions)

1. A lorry starts with 28 litres of fuel, receives 75 litres at a station, and then uses 16 litres; how much fuel remains?
Answer — Point 1: The lorry starts with 28 litres.
Answer — Point 2: It receives 75 litres, so add 28 + 75 = 103 litres.
Answer — Point 3: The lorry then uses 16 litres.
Answer — Point 4: Subtract 16 from 103 to get 87 litres.
Answer — Point 5: There are 87 litres of fuel left in the lorry.

2. A minibus has 18 litres of fuel and is refuelled until its meter reads 65 litres; after using 12 litres, how much fuel remains?
Answer — Point 1: The minibus has 18 litres before refuelling.
Answer — Point 2: Subtract 18 from 65 to find that 47 litres were added.
Answer — Point 3: After refuelling, the minibus has 65 litres.
Answer — Point 4: Subtract the 12 litres used: 65 − 12 = 53 litres.
Answer — Point 5: The minibus has 53 litres of fuel remaining.

3. A family drives two sections of the North–South Corridor measuring 1,855 km and 1,862 km; estimate and calculate the total distance.
Answer — Point 1: Round 1,855 km to about 1,900 km.
Answer — Point 2: Round 1,862 km to about 1,900 km.
Answer — Point 3: The estimated total is about 3,800 km.
Answer — Point 4: Add the exact distances: 1,855 + 1,862 = 3,717 km.
Answer — Point 5: The exact total is 83 km less than the estimate.

4. A ship has a 2,700 km route, travels 1,083 km on the first day and 617 km on the second day; how much is left?
Answer — Point 1: The ship travels 1,083 km on the first day.
Answer — Point 2: It travels another 617 km on the second day.
Answer — Point 3: The total distance travelled is 1,083 + 617 = 1,700 km.
Answer — Point 4: Subtract 1,700 from the full route: 2,700 − 1,700 = 1,000 km.
Answer — Point 5: The ship has 1,000 km left to travel.

5. Mahesh has a travel budget of ₹65,000, spends ₹21,880 on fuel and tolls and ₹38,900 on other expenses, then pays ₹500 more; how much remains?
Answer — Point 1: Add the first expenses: ₹21,880 + ₹38,900 = ₹60,780.
Answer — Point 2: Subtract them from the budget: ₹65,000 − ₹60,780 = ₹4,220.
Answer — Point 3: Subtract the additional ₹500 expense: ₹4,220 − ₹500 = ₹3,720.
Answer — Point 4: Mahesh still has ₹3,720.
Answer — Point 5: He remains within his budget because the balance is positive.

6. Jincy must pay ₹38 for stickers using ₹1, ₹2, and ₹5 coins; if she uses five ₹5 coins, find an exact combination for the rest.
Answer — Point 1: Five ₹5 coins make ₹25.
Answer — Point 2: Subtract ₹25 from ₹38 to find the remaining ₹13.
Answer — Point 3: Six ₹2 coins make ₹12.
Answer — Point 4: Add one ₹1 coin to complete the remaining ₹13.
Answer — Point 5: The total payment is ₹25 + ₹12 + ₹1 = ₹38.

7. Chittoor prints 18,225 certificates for 18,104 students, while Jaunpur prints 19,043 for 19,265 students; find the surplus or shortage in each place.
Answer — Point 1: Chittoor printed more certificates than the number of students.
Answer — Point 2: Subtract 18,104 from 18,225 to get a surplus of 121 certificates.
Answer — Point 3: Jaunpur printed fewer certificates than the number of students.
Answer — Point 4: Subtract 19,043 from 19,265 to get a shortage of 222 certificates.
Answer — Point 5: Chittoor has 121 extra certificates, while Jaunpur needs 222 more.

8. A driver can take a 15,150 km route or a 10,228 km route; how much distance does the shorter route save?
Answer — Point 1: The longer route is 15,150 km.
Answer — Point 2: The shorter route is 10,228 km.
Answer — Point 3: Subtract the shorter route from the longer route: 15,150 − 10,228.
Answer — Point 4: The difference is 4,922 km.
Answer — Point 5: The shorter route saves 4,922 km.

9. A school fair earns ₹374 from ticket sales in one week and ₹99 the next week; find the total using a quick addition strategy.
Answer — Point 1: The first week's ticket sales are ₹374.
Answer — Point 2: Treat ₹99 as ₹100 − ₹1.
Answer — Point 3: Add ₹100 to ₹374 to get ₹474.
Answer — Point 4: Subtract ₹1 to adjust for using ₹100 instead of ₹99.
Answer — Point 5: The two weeks' total sales are ₹473.

10. A class is collecting ₹1,000 for a trip, has collected ₹602, and receives another ₹99; how much more is needed?
Answer — Point 1: The class has collected ₹602.
Answer — Point 2: Add the new contribution: ₹602 + ₹99 = ₹701.
Answer — Point 3: Subtract the amount collected from the target: ₹1,000 − ₹701.
Answer — Point 4: The remaining amount is ₹299.
Answer — Point 5: The class needs to collect ₹299 more.

11. A mountaineering club compares Mount Everest at 8,848 metres with Mount Elbrus at 5,642 metres; find and check the height difference.
Answer — Point 1: Mount Everest is 8,848 metres high.
Answer — Point 2: Mount Elbrus is 5,642 metres high.
Answer — Point 3: Subtract 5,642 from 8,848 to get 3,206 metres.
Answer — Point 4: Mount Everest is 3,206 metres higher than Mount Elbrus.
Answer — Point 5: Check by adding 5,642 + 3,206 = 8,848 metres.

12. During a game, a torch turns on at the first press and alternates on and off; what happens at presses 27 and 28?

Answer — Point 1: The torch is on at press 1.
Answer — Point 2: The torch changes its state at every press.
Answer — Point 3: Press 27 is odd, so the torch is on.
Answer — Point 4: Press 28 is even, so the torch is off.
Answer — Point 5: The game ends with the torch off after press 2

5.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

1. Using compensation, what is 49 + 89?
A. 138
B. 140
C. 128
D. 148
Answer: A. 138. Changing 49 to 50 and 89 to 88 keeps the total 138.
2. What number completes 46 + ___ = 67?
A. 19
B. 21
C. 23
D. 31
Answer: B. 21. 67 − 46 = 21.
3. If 198 − 98 = 100, which addition sentence is also true?
A. 198 + 98 = 100
B. 100 + 98 = 198
C. 198 + 100 = 98
D. 98 + 100 = 298
Answer: B. 100 + 98 = 198. Subtraction and addition are related, so 100 + 98 = 198.
4. A minibus has 18 litres of fuel and 65 litres after refuelling; how much fuel was added?
A. 37 l
B. 43 l
C. 47 l
D. 83 l
Answer: C. 47 l. 65 − 18 = 47 litres.
5. What is the difference between 82 and 37?
A. 35
B. 45
C. 55
D. 49
Answer: B. 45. 82 − 37 = 45.
6. A lorry has 28 litres, receives 75 litres, then uses 16 litres; how much is left?
A. 77 l
B. 87 l
C. 93 l
D. 103 l
Answer: B. 87 l. 28 + 75 = 103 and 103 − 16 = 87 litres.
7. What is the total of 1,855 km and 1,862 km?
A. 3,617 km
B. 3,707 km
C. 3,717 km
D. 3,817 km

Answer: C. 3,717 km. 1,855 + 1,862 = 3,717 km.

8. Mahesh spends ₹21,880 and ₹38,900; what is the total spending?

A. ₹59,780
B. ₹60,780
C. ₹61,780
D. ₹50,780

Answer: B. ₹60,780. ₹21,880 + ₹38,900 = ₹60,780.

9. What is the sum of two consecutive numbers 28 and 29?

A. 56
B. 57
C. 58
D. 59

Answer: B. 57. 28 + 29 = 57.

10. What is 5 + 6 + 7 + 8?

A. 24
B. 25
C. 26
D. 27

Answer: C. 26. Pair 5 + 8 and 6 + 7 to get 13 + 13 = 26.

11. The sums of four consecutive numbers begin 10, 14, 18; what is the next sum?

A. 20
B. 21
C. 22
D. 24

Answer: C. 22. The sums rise by 4, so the next sum is 18 + 4 = 22.

12. When the starting number of a group of three consecutive numbers increases by 1, how much does its sum increase?

A. 1
B. 2
C. 3
D. 4

Answer: C. 3. Each of the three numbers increases by 1, so the sum increases by 3.

13. Three consecutive numbers have a sum of 72; what are they?

A. 22, 23, 24
B. 23, 24, 25
C. 24, 25, 26
D. 21, 24, 27

Answer: B. 23, 24, 25. The middle number is 72 ÷ 3 = 24, so the numbers are 23, 24, and 25.

14. What is the sum of the five consecutive numbers from 41 through 45?

A. 205
B. 210
C. 215
D. 220

Answer: C. 215. The middle number 43 is counted five times, giving 43 × 5 = 215.

15. If the sums of four consecutive numbers are 10, 14, and 18, which group comes next?

A. 3 + 4 + 5 + 6
B. 4 + 5 + 6 + 7
C. 5 + 6 + 7 + 8
D. 6 + 7 + 8 + 9

Answer: B. 4 + 5 + 6 + 7. The groups move ahead by one number, so the next group is 4 + 5 + 6 + 7.

16. For six consecutive numbers, how much greater is each sum than the previous sum when the group shifts forward by one?

A. 4
B. 5
C. 6
D. 7

Answer: C. 6. The first number is replaced by one 6 greater, so the sum rises by 6.

17. Which number is a palindrome?

A. 768
B. 565
C. 789
D. 680

Answer: B. 565. 565 reads the same from left to right and right to left.

18. Which number is not a palindrome?

A. 404
B. 565
C. 676
D. 768

Answer: D. 768. 768 reverses to 867, so it is not a palindrome.

19. How many three-digit palindrome numbers are between 100 and 200?

A. 9
B. 10
C. 11
D. 20

Answer: B. 10. They are 101, 111, 121, 131, 141, 151, 161, 171, 181, and 191, making 10.

20. How many palindrome numbers are in the 900s from 900 to 999?

A. 9
B. 10
C. 11
D. 90

Answer: B. 10. The middle digit can be any of 10 digits, giving 909 through 999 in steps of 10.

21. Which pair contains two even numbers?

A. 846 and 789
B. 498 and 724
C. 111 and 222
D. 789 and 6,893

Answer: B. 498 and 724. 498 and 724 both have even ones digits.

22. What is always true about the sum of two odd numbers?

A. It is odd
B. It is even
C. It is zero
D. It cannot be found

Answer: B. It is even. Each odd number has one unpaired unit, and the two units make a pair.

23. Without adding fully, what is the parity of 6,893 + 846?

A. Even

B. Odd
C. Zero
D. Cannot be determined
Answer: B. Odd. An odd number plus an even number is odd.
24. A torch is on after press 1 and alternates on and off; what is its state after press 23?
A. On
B. Off
C. It flashes twice
D. Cannot be known
Answer: A. On. Press 23 is odd, so the torch is on.
25. In the same torch pattern, what is the state after press 2,026?
A. On
B. Off
C. It is unchanged from press 1
D. Cannot be known
Answer: B. Off. An even-numbered press turns it off.
26. In the same torch pattern, what is the state after press 1,001?
A. On
B. Off
C. It is neither on nor off
D. Cannot be known
Answer: A. On. Press 1,001 is odd, so the torch is on.
27. Two groups have sums 19 and 21; which exchange makes them equal if the first group has 2 and the second has 3?
A. Exchange 2 and 3
B. Exchange 1 and 4
C. Exchange 7 and 9
D. Exchange 2 and 5
Answer: A. Exchange 2 and 3. Exchanging 2 for 3 changes the sums to 20 and 20.
28. Two groups have sums 39 and 47; which exchange balances them if one group has 5 and the other has 9?
A. Exchange 5 and 9
B. Exchange 5 and 7
C. Exchange 9 and 11
D. Exchange 12 and 13
Answer: A. Exchange 5 and 9. Exchanging 5 for 9 changes both sums by 4, giving 43 each.
29. Chittoor printed 18,225 certificates for 18,104 students; how many certificates were extra?
A. 111
B. 121
C. 131
D. 221
Answer: B. 121. 18,225 − 18,104 = 121.
30. Jaunpur printed 19,043 certificates for 19,265 students; how many were short?
A. 212
B. 222
C. 232
D. 322
Answer: B. 222. 19,265 − 19,043 = 222.
31. Raigad printed 20,863 certificates for 19,974 students; what was the surplus?

A. 789
B. 879
C. 889
D. 989
Answer: C. 889. 20,863 − 19,974 = 889.
32. If 100 of Raigad's 889 extra certificates are damaged, how many usable extra certificates remain?
A. 779
B. 789
C. 799
D. 889
Answer: B. 789. 889 − 100 = 789.
33. A ship travels 1,083 km of a 2,700 km route; how far remains?
A. 1,517 km
B. 1,617 km
C. 1,717 km
D. 1,817 km
Answer: B. 1,617 km. 2,700 − 1,083 = 1,617 km.
34. A ship has 1,617 km left and travels 617 km more; how much is left?
A. 900 km
B. 1,000 km
C. 1,100 km
D. 1,234 km
Answer: B. 1,000 km. 1,617 − 617 = 1,000 km.
35. Jincy pays ₹38 using five ₹5 coins; what coins can pay the remaining ₹13?
A. Six ₹2 coins and one ₹1 coin
B. Five ₹2 coins and three ₹1 coins
C. Two ₹5 coins and three ₹1 coins
D. Thirteen ₹1 coins
Answer: A. Six ₹2 coins and one ₹1 coin. Five ₹5 coins make ₹25, and six ₹2 coins plus one ₹1 coin make the remaining ₹13.
36. What number must be added to 59 to make 100?
A. 31
B. 39
C. 41
D. 49
Answer: C. 41. 100 − 59 = 41.
37. What is 602 − 99?
A. 501
B. 502
C. 503
D. 513
Answer: C. 503. Subtract 100 and add 1 back: 602 − 100 + 1 = 503.
38. What is 374 + 99?
A. 463
B. 473
C. 474
D. 483
Answer: B. 473. Add 100 and subtract 1: 374 + 100 − 1 = 473.

39. Mount Everest is 8,848 m high and Mount Elbrus is 5,642 m high; how much higher is Everest?
A. 3,106 m
B. 3,206 m
C. 3,306 m
D. 3,406 m
Answer: B. 3,206 m. 8,848 − 5,642 = 3,206 m.

5.15 Best Practices Opportunity List from the Chapter: (10 Ideas)

Best Practices for Teaching "We the Travellers—II":

(1) **Begin with students' prior knowledge:** Ask learners to share where they use addition and subtraction in daily life, such as shopping, travel, or saving money.
(2) **Use place-value materials:** Demonstrate regrouping with bundles of ten sticks, base-ten blocks, or place-value charts before moving to written calculations.
(3) **Model and discuss estimation:** Have students estimate answers before calculating sums such as 1,855 + 1,862, then compare estimates with exact answers.
(4) **Teach compensation strategies:** Practise adjusting numbers to make friendly tens or hundreds, such as changing 49 + 89 to 50 + 88.
(5) **Connect addition and subtraction:** Ask students to check subtraction by addition and use fact families to show how the operations are related.
(6) **Use real-life word problems:** Adapt the chapter's fuel, route, spending, and certificate examples so students can choose the correct operation and explain why.
(7) **Explore consecutive-number patterns:** Let students build groups of two, three, or four consecutive numbers, record their sums, and describe how the sums change.
(8) **Encourage mental-math explanations:** Invite students to share different ways to solve problems such as subtracting 9 or 99, and compare which methods are efficient.
(9) **Use number cards for equal-sum exchanges:** Have students form two groups, find their totals, and exchange numbers to make the sums equal.
(10) **Teach even and odd numbers with pairing:** Let students arrange counters into pairs, then discuss what happens when odd and even quantities are added.
(11) **Make the torch pattern interactive:** Use a real or imagined on/off sequence to help students connect alternating states with odd and even press numbers.
(12) **Use palindrome puzzles:** Ask learners to find, build, and explain palindrome numbers, then describe how the digits read in both directions.
(13) **Promote mathematical talk:** Encourage students to explain each step, listen to classmates' strategies, and use words such as *estimate*, *difference*, *regroup*, and *consecutive*.
(14) **Check understanding in small steps:** Use short practice questions, partner checks, and exit tickets to identify who needs more support with regrouping, patterns, or number properties.

5.16 Innovations Opportunity List from the Chapter: (10 Ideas)

Innovations for Teaching "We the Travellers—II":

(1) **Fuel Station Math Simulation:** Set up a pretend fuel station where students calculate starting fuel, refuelling amounts, and fuel used.
(2) **Route Planner Challenge:** Give groups a map with distances and ask them to calculate total travel distance, remaining distance, and route differences.
(3) **Number Exchange Game:** Students draw number cards for two groups, total each group, then find an exchange that makes the sums equal.

(4) **Consecutive Sums Investigation:** Use a digital or classroom number line to explore how the sums change as groups of consecutive numbers shift.
(5) **"Beat the Calculator" Mental-Math Round:** Students solve suitable sums such as adding 99 or subtracting 9 mentally, then explain their strategy.
(6) **Maths Escape Trail:** Create stations with addition, subtraction, palindrome, and even–odd clues; each answer reveals the next station.
(7) **Interactive Torch Pattern:** Use a torch, switch animation, or simple coding activity to model alternating on/off presses and connect the pattern to odd and even numbers.
(8) **Palindrome Number Hunt:** Hide palindrome cards around the classroom for students to find, sort, and explain.
(9) **Certificate Count Dashboard:** Give students printed and attendance figures for different districts and ask them to create a simple chart showing surplus or shortage.
(10) **Student-Created Word Problems:** Invite learners to write fuel, travel, or shopping problems using addition and subtraction, then exchange them with classmates to solve.
(11) **Digital Place-Value Board:** Use an interactive place-value chart or shared slide to move digits, regroup ones into tens, and tens into hundreds.
(12) **Maths Radio or News Report:** In pairs, students present a short "travel update" with route distances, totals, and differences, explaining how they calculated them.

5.17: Practicing Questions/Question Bank

A. Fill in the Blanks:

1. Ten ones make _____ ten.
   Answer: one
2. 28 + 75 = _____.
   Answer: 103
3. 82 - 37 = _____.
   Answer: 45
4. Numbers that follow one another without skipping are called _____ numbers.
   Answer: consecutive
5. A number that reads the same forwards and backwards is called a _____ number.
   Answer: palindrome
6. A number ending in 0, 2, 4, 6, or 8 is _____.
   Answer: even
7. 65 - 18 = _____.
   Answer: 47
8. The sum of two odd numbers is always _____.
   Answer: even

B. One-Mark Questions:

1. What is 57 - 11?
   Answer: 57 - 11 = 46.
2. What number must be added to 63 to make 100?
   Answer: 37 must be added.

3. Give one example of a three-digit palindrome.
   Answer: 363 is a three-digit palindrome.

4. Is 789 even or odd?
   Answer: 789 is odd.

5. What is the sum of 1, 2, and 3?
   Answer: The sum is 6.

C. Two-Mark Questions:

1. Find 49 + 89 and show how you regroup the ones.
   Answer:
   - 9 + 9 = 18 ones, so write 8 and carry 1 ten.
   - 4 + 8 + 1 = 13 tens, so the sum is 138.

2. A minibus has 18 litres of fuel and 65 litres after refuelling. How much fuel was added? Check your answer.
   Answer:
   - 65 - 18 = 47 litres were added.
   - Check: 18 + 47 = 65.

3. If 46 + 21 = 67, write the two related subtraction facts.
   Answer:
   - 67 - 21 = 46.
   - 67 - 46 = 21.

D. Three-Mark Questions:

1. Three consecutive numbers have a sum of 72. Find the numbers and check your answer.
   Answer:
   - The middle number is 72 \div 3 = 24.
   - The numbers are 23, 24, and 25.
   - Check: 23 + 24 + 25 = 72.

2. Find the sum of 1,855 km and 1,862 km, and give a reasonable estimate.
   Answer:
   - Round each distance to about 1,900 km.
   - The estimated total is about 3,800 km.
   - The exact total is 1,855 + 1,862 = 3,717 km.

3. A ship travels 1,083 km of a 2,700 km route. Find the remaining distance and verify it.
   Answer:
   - Subtract: 2,700 - 1,083 = 1,617 km.
   - The ship has 1,617 km left to travel.
   - Check: 1,083 + 1,617 = 2,700 km.

E. Five-Mark Questions:

1. A lorry has 28 litres of fuel, receives 75 litres, and then uses 16 litres. How much fuel remains? Show your working.
   Answer:
   - The lorry starts with 28 litres.
   - Add the fuel received: 28 + 75 = 103 litres.
   - The lorry uses 16 litres.
   - Subtract: 103 - 16 = 87 litres.
   - **87 litres remain in the lorry.**
2. Chittoor printed 18,225 certificates for 18,104 students, while Jaunpur printed 19,043 for 19,265 students. Find the surplus or shortage for each district.
   Answer:
   - Chittoor printed more certificates than students attended.
   - 18,225 - 18,104 = 121, so it had 121 extra certificates.
   - Jaunpur printed fewer certificates than students attended.
   - 19,265 - 19,043 = 222, so it was short by 222 certificates.
   - Chittoor had a surplus, while Jaunpur had a shortage.

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5th Standard Maths Book Chapter 5

Chapter 5: Far and Near

5.1 Summary of the Chapter:

Summary: "Far and Near" — Grade 5 Mathematics:

(1) Length and distance can be measured using different units, depending on whether the object or distance is small or large.

(2) Centimetres and metres are used for many everyday measurements, such as the length of a phone or the height of a building.

(3) Different units can describe the same length: **100 cm = 1 m**. Comparing measurements is easier when they are converted to the same unit.

(4) The symbols **<, >, and =** help compare lengths after converting them to matching units.

(5) Long distances can be measured with tools such as long tapes, measuring wheels, rangefinders, and laser distance meters.

(6) A kilometre is used for long distances: **1,000 m = 1 km**. The prefix *kilo* means one thousand.

(7) A centimetre is divided into ten equal parts called millimetres: **1 cm = 10 mm**. Millimetres help measure small lengths more precisely.

(8) Lengths can be converted between units, such as centimetres and millimetres, metres and centimetres, and kilometres and metres.

(9) When adding or subtracting lengths, add or subtract matching units, or convert all measurements into one unit first. Regrouping may be needed—for example, **1,000 m = 1 km**.

(10) Lengths can also be multiplied or divided to solve everyday problems, such as finding the total cloth needed or sharing a road-laying task equally across several days.

(11) Estimating and measuring familiar objects—such as a tree, pole, or well—helps us understand and judge distances in daily life.

(12) Other units are also used: **1 inch = 2 cm 5 mm**, and **1 foot = 12 inches or 30 cm**.

5.2 Important Formulas:

Important Formulas: "Far and Near" — Grade 5 Mathematics

Unit conversions:

- **1 cm = 10 mm**
- **1 m = 100 cm**
- **1 km = 1,000 m**
- **1 inch = 2 cm 5 mm**
- **1 foot = 12 inches = 30 cm**

Converting measurements:

- **Centimetres to millimetres:** cm × 10 = mm
- **Millimetres to centimetres and millimetres:** divide mm by 10; the quotient gives cm and the remainder gives mm
- **Metres to centimetres:** m × 100 = cm
- **Centimetres to metres and centimetres:** divide cm by 100; the quotient gives m and the remainder gives cm
- **Kilometres to metres:** km × 1,000 = m
- **Metres to kilometres and metres:** divide m by 1,000; the quotient gives km and the remainder gives m

Working with lengths:

- **Total length:** add lengths in the same unit; regroup every **10 mm = 1 cm**, **100 cm = 1 m**, or **1,000 m = 1 km**.
- **Difference in length:** convert to the same unit, then subtract.
- **Total length of equal items:** length of one item × number of items.
- **Length shared equally:** total length ÷ number of equal parts.

5.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks — LOTS:

1. The unit commonly used to measure the length of a pencil is the _____.
   (Answer: centimetre)
2. The unit commonly used to measure the distance between two cities is the _____.
   (Answer: kilometre)
3. **1 centimetre = _____ millimetres.**
   (Answer: 10)
4. **1 metre = _____ centimetres.**
   (Answer: 100)
5. **1 kilometre = _____ metres.**
   (Answer: 1,000)
6. The word *kilo* means _____.
   (Answer: thousand)
7. One of the tools used to measure long distances is a _____ tape.
   (Answer: long)
8. A measuring wheel is also called a _____.
   (Answer: rodometer)
9. The small unit used to measure the length of a sprout is the _____.
   (Answer: millimetre)
10. A centimetre is divided into _____ equal parts.
    (Answer: 10)
11. **3 cm = _____ mm.**
    (Answer: 30)
12. **7 cm = _____ mm.**
    (Answer: 70)
13. **40 mm = _____ cm.**
    (Answer: 4)
14. **6 m = _____ cm.**
    (Answer: 600)
15. **9 km = _____ m.**
    (Answer: 9,000)
16. **250 cm = _____ m _____ cm.**
    (Answer: 2 m 50 cm)
17. **325 cm = _____ m _____ cm.**
    (Answer: 3 m 25 cm)
18. **48 mm = _____ cm _____ mm.**
    (Answer: 4 cm 8 mm)
19. **2 m 15 cm = _____ cm.**
    (Answer: 215 cm)
20. **3 km 200 m = _____ m.**
    (Answer: 3,200 m)
21. **5 m + 3 m = _____ m.**
    (Answer: 8 m)

22. **200 cm + 300 cm = _____ cm.**
    (Answer: 500 cm)
23. **4 km + 2 km = _____ km.**
    (Answer: 6 km)
24. **8 m − 3 m = _____ m.**
    (Answer: 5 m)
25. **700 cm − 200 cm = _____ cm.**
    (Answer: 500 cm)
26. **1 inch = 2 cm _____ mm.**
    (Answer: 5)
27. **1 foot = _____ inches.**
    (Answer: 12)
28. **1 foot = _____ centimetres.**
    (Answer: 30)
29. The symbols used to compare lengths include **<, >, and** _____.
    (Answer: =)
30. To compare two lengths easily, first convert them to the _____ unit.
    (Answer: same)
31. **1,000 m is equal to _____ km.**
    (Answer: 1)
32. **5 cm 4 mm = _____ mm.**
    (Answer: 54)
33. A long tape can be used to measure a distance of _____ metres on a playground.
    (Answer: 100)
34. The length of a line can be measured using a _____.
    (Answer: ruler / scale)
35. When **1,000 metres** are regrouped, they make _____ kilometre.
    (Answer: 1)

5.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

Fill in the Blanks — HOTS

1. Saji walked **3 km 450 m** in the morning and **4 km 650 m** in the evening. Altogether, he walked _____. **(Answer: 8 km 100 m)**
2. Workers laid **12 km 600 m** of road equally over 6 days. They laid _____ each day. **(Answer: 2 km 100 m)**
3. Rani has ribbon rolls measuring **3 m 75 cm** and **2 m 25 cm**. Together, the rolls are _____ long. **(Answer: 6 m)**
4. An electrician has **63 m** of cable and uses **16 m 75 cm**. The cable left is _____. **(Answer: 46 m 25 cm)**
5. Sanchi is **48 km 700 m** from Bhopal. A waterfall is **17 km 900 m** from Bhopal along the same route. The waterfall is _____ from Sanchi. **(Answer: 30 km 800 m)**
6. A cable car travels **2 km 300 m** in its first section and **2 km 650 m** in its second section. Its total distance is _____. **(Answer: 4 km 950 m)**
7. A train has travelled **983 km** to Jalpaiguri Road and **2,800 km** to Vijayawada from its starting point. The distance between those stations is _____. **(Answer: 1,817 km)**
8. Guwahati is **556 km** and Coimbatore Junction is **3,675 km** from Dibrugarh. The distance between these stations is _____. **(Answer: 3,119 km)**
9. The Vivek Express route from Dibrugarh to Kanniyakumari is _____ long. **(Answer: 4,187 km)**

10. The Statue of Unity is **182 m** high and the Statue of Liberty is **93 m** high. Their height difference is _____. **(Answer: 89 m)**
11. A rope is **500 m** long. It takes _____ such ropes to make a length of **1 km**. **(Answer: 2)**
12. A **3 km** race is divided into **500 m** sections. There are _____ sections in the race. **(Answer: 6)**
13. A runner completes **1 km 250 m** of a **3 km** race. The distance left is _____. **(Answer: 1 km 750 m)**
14. A **5 m 40 cm** sari border is equal to _____ centimetres. **(Answer: 540 cm)**
15. A length of **2 m 150 cm** is equal to _____. **(Answer: 3 m 50 cm)**
16. Compare **238 cm** with **138 cm + 1 m**. The correct symbol in the blank is _____. **(Answer: =)**
17. The difference between **6 m 50 cm** and **6 m 5 cm** is _____. **(Answer: 45 cm)**
18. **204 cm** is the same as _____. **(Answer: 2 m 4 cm)**
19. **750 cm** is the same as _____. **(Answer: 7 m 50 cm)**
20. A cable is **6,300 cm** long. If **1,675 cm** is used, the remaining cable is _____. **(Answer: 4,625 cm or 46 m 25 cm)**
21. A length of **29 km 30 m** is equal to _____ metres. **(Answer: 29,030 m)**
22. One shirt needs **1 m 80 cm** of cloth. Twenty shirts need _____ of cloth. **(Answer: 36 m)**
23. Cloth costs ₹100 for 5 m. The cost of **15 m** of cloth is _____. **(Answer: ₹300)**
24. A **5 m** sari border needs 1 m of embroidery thread for every **50 cm** of border. The thread required is _____. **(Answer: 10 m)**
25. If the thread in Question 24 costs ₹50 per metre, the total cost is _____. **(Answer: ₹500)**
26. Jalpaiguri Road is **983 km** and Bhubaneswar is **2,007 km** from Dibrugarh. The distance between these stations is _____. **(Answer: 1,024 km)**
27. A sprout grows **8 mm** on each of 4 days. Its total growth is _____. **(Answer: 32 mm or 3 cm 2 mm)**
28. A student walks **100 m** in 125 steps. If each step is the same length, the student walks _____ metres in 250 steps. **(Answer: 200 m)**
29. A distance of **2 km 500 m** is equal to _____ metres. **(Answer: 2,500 m)**
30. A measuring line is **4 m** long. After **275 cm** is cut off, _____ remains. **(Answer: 1 m 25 cm)**

5.5 One-mark questions with Answers of LOTS Type: (35 Questions)

One-Mark Questions and Answers — LOTS:

1. **What unit is used to measure the length of a small object, such as a mobile phone?**
   Answer: A mobile phone is usually measured in centimetres.
2. **Which unit is suitable for measuring the distance between two cities?**
   Answer: Kilometres are suitable for measuring the distance between two cities.
3. **How many millimetres are there in 1 centimetre?**
   Answer: There are 10 millimetres in 1 centimetre.
4. **How many centimetres are there in 1 metre?**
   Answer: There are 100 centimetres in 1 metre.
5. **How many metres are there in 1 kilometre?**
   Answer: There are 1,000 metres in 1 kilometre.
6. **What does the word “kilo” mean?**
   Answer: The word “kilo” means one thousand.

7. **What is one millimetre?**
   Answer: One millimetre is one of the ten equal parts of a centimetre.
8. **Name one tool used to measure long distances.**
   Answer: A long tape can be used to measure long distances.
9. **What is another name for a measuring wheel?**
   Answer: A measuring wheel is also called a rodometer.
10. **Which tool can measure distance using laser technology?**
    Answer: A laser distance meter can measure distance using laser technology.
11. **Convert 4 cm into millimetres.**
    Answer: 4 cm is equal to 40 mm.
12. **Convert 9 cm into millimetres.**
    Answer: 9 cm is equal to 90 mm.
13. **Convert 60 mm into centimetres.**
    Answer: 60 mm is equal to 6 cm.
14. **Convert 5 m into centimetres.**
    Answer: 5 m is equal to 500 cm.
15. **Convert 8 km into metres.**
    Answer: 8 km is equal to 8,000 m.
16. **Express 236 cm in metres and centimetres.**
    Answer: 236 cm is equal to 2 m 36 cm.
17. **Express 57 mm in centimetres and millimetres.**
    Answer: 57 mm is equal to 5 cm 7 mm.
18. **Convert 3 m 25 cm into centimetres.**
    Answer: 3 m 25 cm is equal to 325 cm.
19. **Convert 2 km 400 m into metres.**
    Answer: 2 km 400 m is equal to 2,400 m.
20. **Which is longer: 3 m or 250 cm?**
    Answer: 3 m is longer than 250 cm.
21. **Which is shorter: 45 mm or 5 cm?**
    Answer: 45 mm is shorter than 5 cm.
22. **What symbol should be used between 300 cm and 3 m?**
    Answer: The equal-to symbol (=) should be used because both lengths are the same.
23. **Add 2 m and 4 m.**
    Answer: The sum is 6 m.
24. **Subtract 3 m from 8 m.**
    Answer: The difference is 5 m.
25. **What is 1,000 m equal to?**
    Answer: 1,000 m is equal to 1 km.
26. **How many inches are there in 1 foot?**
    Answer: There are 12 inches in 1 foot.
27. **How many centimetres are approximately equal to 1 foot, as given in the chapter?**
    Answer: 1 foot is approximately equal to 30 cm.
28. **How many centimetres and millimetres are equal to 1 inch, as given in the chapter?**
    Answer: 1 inch is equal to 2 cm 5 mm.
29. **What unit is used to record the length of a small sprout?**
    Answer: Millimetres can be used to record the length of a small sprout.
30. **What should you do before comparing lengths written in different units?**
    Answer: Convert the lengths to the same unit before comparing them.

31. **How many centimetres are there in 700 mm?**
    Answer: 700 mm is equal to 70 cm.
32. **How many metres are there in 6,000 m?**
    Answer: 6,000 m is equal to 6 km.
33. **What unit is appropriate for measuring the height of a building?**
    Answer: Metres are appropriate for measuring the height of a building.
34. **What unit is appropriate for measuring the thickness of a small screw?**
    Answer: Millimetres are appropriate for measuring the thickness of a small screw.
35. **How can you find the total length of two pieces measured in centimetres?**
    Answer: Add their lengths in centimetres to find the total length.

5.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark Questions and Answers — HOTS:

1. **A ribbon is 3 m 45 cm long and another is 2 m 80 cm long; what is their total length?**
   Answer: Their total length is 6 m 25 cm.
2. **A journey is 7 km 200 m long, and 3 km 850 m has been completed; how much distance remains?**
   Answer: 3 km 350 m remains.
3. **A rope is 2 m long and another is 125 cm long; what is their combined length?**
   Answer: Their combined length is 3 m 25 cm.
4. **A 4 m wire is cut by 275 cm; how much wire remains?**
   Answer: 1 m 25 cm remains.
5. **Are 6 m 5 cm and 605 cm equal in length?**
   Answer: Yes, both lengths are equal.
6. **A vehicle travels 2,300 m; express this distance in kilometres and metres.**
   Answer: The distance is 2 km 300 m.
7. **An 18 km road is divided into six equal sections; what is the length of each section?**
   Answer: Each section is 3 km long.
8. **Each dress needs 4 m of cloth; how much cloth is needed for seven dresses?**
   Answer: 28 m of cloth is needed.
9. **Five metres of cloth costs ₹100; what is the cost of 15 m at the same rate?**
   Answer: 15 m of cloth costs ₹300.
10. **A 50 cm sari border needs 1 m of thread; how much thread is needed for a 3 m border at the same rate?**
    Answer: 6 m of thread is needed.
11. **Water stations are placed at every 500 m along a 2 km race, including the finish line; how many stations are needed?**
    Answer: Four stations are needed.
12. **Flags are placed at each 50 m mark along a 1 km route, excluding the starting point; how many flags are needed?**
    Answer: Twenty flags are needed.
13. **A train station is 2,800 km from the start and another is 983 km from the start; how far apart are they?**
    Answer: They are 1,817 km apart.
14. **Two places are 750 m and 1 km 250 m from home in the same direction; how much farther away is the second place?**
    Answer: The second place is 500 m farther away.

15. **A length is 3 m 7 cm; what is this length in millimetres?**
    Answer: It is 3,070 mm.
16. **A board is 4,608 mm long; express its length in metres, centimetres, and millimetres.**
    Answer: It is 4 m 60 cm 8 mm long.
17. **A 830 cm rope is shortened by 265 cm; what is its new length in metres and centimetres?**
    Answer: Its new length is 5 m 65 cm.
18. **A person walks 5 km and then another 750 m; what is the total distance?**
    Answer: The total distance is 5 km 750 m.
19. **A 2 m 30 cm line is shortened by 45 cm; what length remains?**
    Answer: 1 m 85 cm remains.
20. **How much longer is 42 mm than 4 cm?**
    Answer: 42 mm is 2 mm longer than 4 cm.
21. **The Statue of Unity is 182 m high and Christ the Redeemer is 38 m high; what is the difference in their heights?**
    Answer: The difference is 144 m.
22. **The Statue of Liberty is 93 m high; how much taller would twice its height be than the 182 m Statue of Unity?**
    Answer: Twice its height is 4 m taller.
23. **How many 250 m ropes are needed to make a total length of 1 km?**
    Answer: Four ropes are needed.
24. **A route is 3 km 200 m long, and 800 m has been travelled; how much distance remains?**
    Answer: 2 km 400 m remains.
25. **If each step covers 75 cm, how far is covered in 20 steps?**
    Answer: The distance covered is 15 m.
26. **A 12 m rope is divided into three equal pieces; what is the length of each piece?**
    Answer: Each piece is 4 m long.
27. **A 6 m 40 cm cloth is cut into four equal pieces; what is the length of each piece?**
    Answer: Each piece is 1 m 60 cm long.
28. **What is the total length of 5 m 40 cm and 260 cm?**
    Answer: The total length is 8 m.
29. **Express 10,552 m in kilometres and metres.**
    Answer: 10,552 m is 10 km 552 m.
30. **A 400 m track is run five times; what total distance is covered?**
    Answer: The total distance is 2 km.

5.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

Two-Mark Questions and Answers — LOTS:

1. **Convert 7 cm into millimetres.**
   Answer: 1 cm = 10 mm. Therefore, 7 cm = **70 mm**.
2. **Convert 3 m 45 cm into centimetres.**
   Answer: 3 m = 300 cm. Therefore, 3 m 45 cm = **345 cm**.
3. **Express 485 cm in metres and centimetres.**
   Answer: 400 cm = 4 m. Therefore, 485 cm = **4 m 85 cm**.
4. **Convert 6 km 300 m into metres.**
   Answer: 6 km = 6,000 m. Therefore, 6 km 300 m = **6,300 m**.

5. **Express 7,230 m in kilometres and metres.**
   Answer: 7,000 m = 7 km. Therefore, 7,230 m = **7 km 230 m**.
6. **Convert 4 cm 6 mm into millimetres.**
   Answer: 4 cm = 40 mm. Therefore, 4 cm 6 mm = **46 mm**.
7. **Express 85 mm in centimetres and millimetres.**
   Answer: 80 mm = 8 cm. Therefore, 85 mm = **8 cm 5 mm**.
8. **Compare 4 m 50 cm and 460 cm.**
   Answer: 4 m 50 cm = 450 cm. Since 450 cm < 460 cm, **460 cm is longer by 10 cm**.
9. **Add 2 m 75 cm and 1 m 25 cm.**
   Answer: 75 cm + 25 cm = 100 cm = 1 m. The total is **4 m**.
10. **Add 5 km 600 m and 2 km 400 m.**
    Answer: 600 m + 400 m = 1,000 m = 1 km. The total is **8 km**.
11. **Subtract 3 m 40 cm from 9 m.**
    Answer: 9 m = 8 m 100 cm. After subtracting 3 m 40 cm, **5 m 60 cm remains**.
12. **Subtract 2 m 50 cm from 600 cm.**
    Answer: 2 m 50 cm = 250 cm. Therefore, 600 cm − 250 cm = **350 cm or 3 m 50 cm**.
13. **A 63 m cable is shortened by 16 m 75 cm; how much remains?**
    Answer: 63 m = 62 m 100 cm. After subtracting 16 m 75 cm, **46 m 25 cm remains**.
14. **How many 200 m ropes make 1 km?**
    Answer: 1 km = 1,000 m. Since 1,000 ÷ 200 = 5, **five ropes are needed**.
15. **Find the distance between stations that are 2,800 km and 983 km from the starting point.**
    Answer: Subtract 983 km from 2,800 km. The stations are **1,817 km apart**.
16. **A 3 km race has water stations every 500 m, including one at the finish; how many stations are needed?**
    Answer: 3 km = 3,000 m. There are 3,000 ÷ 500 = **6 stations**.
17. **Flags are placed every 100 m along a 1 km route, not at the starting point; how many flags are needed?**
    Answer: 1 km = 1,000 m. There are 1,000 ÷ 100 = **10 flags**.
18. **Convert 1 inch into centimetres and millimetres, using the chapter's conversion.**
    Answer: 1 inch = 2 cm 5 mm. This is equal to **25 mm**.
19. **A 6 m 40 cm cloth is divided equally into four pieces; find the length of each piece.**
    Answer: 6 m 40 cm = 640 cm, and 640 ÷ 4 = 160 cm. Each piece is **1 m 60 cm** long.
20. **Five metres of cloth cost ₹100; find the cost of 15 m.**
    Answer: 15 m is three times 5 m. Therefore, the cost is 3 × ₹100 = **₹300**.

5.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Two-Mark Questions and Answers — HOTS:

1. **A ribbon is 3 m 45 cm long and another is 2 m 80 cm long; what is their total length?**
   Answer: 45 cm + 80 cm = 125 cm, which is 1 m 25 cm. The total length is **6 m 25 cm**.
2. **A 7 km 200 m journey has 3 km 850 m completed; how much distance remains?**
   Answer: Write 7 km 200 m as 6 km 1,200 m. After subtracting 3 km 850 m, **3 km 350 m remains**.
3. **Each costume needs 1 m 25 cm of cloth; how much cloth is needed for four costumes?**

Answer: Convert 1 m 25 cm into 125 cm and multiply by 4 to get 500 cm. The tailor needs **5 m** of cloth.

4. **A 2 km 500 m race has markers every 250 m, including the finish; how many markers are needed?**
   Answer: 2 km 500 m equals 2,500 m. Since 2,500 ÷ 250 = 10, **10 markers** are needed.
5. **A student plans to walk 6 km and has walked 1 km 750 m and 2 km 850 m; how much farther must the student walk?**
   Answer: The student has walked 4 km 600 m altogether. The remaining distance is **1 km 400 m**.
6. **Two cables are 8 m 25 cm and 4 m 75 cm long; what is their combined length?**
   Answer: 25 cm + 75 cm = 100 cm, which is 1 m. The combined length is **13 m**.
7. **Each shirt needs 1 m 80 cm of cloth; how much cloth is needed for six shirts?**
   Answer: 1 m 80 cm equals 180 cm, and 180 × 6 = 1,080 cm. The six shirts need **10 m 80 cm** of cloth.
8. **Five metres of cloth cost ₹100; how many metres can be bought for ₹260 at the same rate?**
   Answer: One metre costs ₹20. ₹260 buys **13 m** of cloth.
9. **A 3 km 600 m path is divided into four equal sections; what is the length of each section?**
   Answer: 3 km 600 m equals 3,600 m. Each section is **900 m** long.
10. **Two stations are 2,450 km and 2,007 km from the starting point; how far apart are they?**
    Answer: Subtract 2,007 km from 2,450 km. The stations are **443 km apart**.
11. **Express 3,050 m in kilometres and metres.**
    Answer: 3,000 m equals 3 km. Therefore, 3,050 m is **3 km 50 m**.
12. **A 2 m 35 cm ribbon is joined to a 175 cm ribbon; what is their total length?**
    Answer: 2 m 35 cm equals 235 cm, and 235 cm + 175 cm = 410 cm. The total length is **4 m 10 cm**.
13. **Which is longer, 3,750 mm or 3 m 80 cm, and by how much?**
    Answer: 3 m 80 cm equals 3,800 mm. It is longer than 3,750 mm by **50 mm, or 5 cm**.
14. **Express 8,050 mm in metres and centimetres.**
    Answer: 8,050 mm equals 805 cm. Therefore, it is **8 m 5 cm**.
15. **How many 125 m rope lengths can be cut from 1 km of rope?**
    Answer: 1 km equals 1,000 m. Since 1,000 ÷ 125 = 8, **eight lengths** can be cut.
16. **A 600 cm rope is compared with a 5 m 65 cm rope; which is longer and by how much?**
    Answer: 5 m 65 cm equals 565 cm. The 600 cm rope is longer by **35 cm**.
17. **A student has completed 950 m of a 1 km 500 m walk; how much remains?**
    Answer: 1 km 500 m equals 1,500 m. The remaining distance is **550 m**.
18. **A 4 km race has markers every 500 m, excluding the starting point and including the finish; how many markers are placed?**
    Answer: 4 km equals 4,000 m. There are 4,000 ÷ 500 = **8 markers**.
19. **A 15 m roll is cut into pieces that are each 2 m 75 cm long; how many whole pieces can be cut, and how much remains?**
    Answer: Five pieces use 13 m 75 cm of the roll. **One piece of 1 m 25 cm remains**.
20. **A 3 m 45 cm rod is compared with a 2 m 90 cm rod; how much longer is the first rod?**

Answer: Convert the lengths to centimetres: 345 cm and 290 cm. The first rod is longer by **55 cm**.

5.9. Three-mark questions with Answers of LOTS Type: (18 Questions)

Three-Mark Questions and Answers — LOTS:

1. **Add 8 m 25 cm and 3 m 50 cm.**
   Answer: Add the metres: 8 m + 3 m = 11 m. Add the centimetres: 25 cm + 50 cm = 75 cm. The total is **11 m 75 cm**.
2. **Add 6 km 250 m and 2 km 750 m.**
   Answer: Add the kilometres: 6 km + 2 km = 8 km. Add the metres: 250 m + 750 m = 1,000 m = 1 km. The total is **9 km**.
3. **Subtract 2 m 35 cm from 5 m.**
   Answer: Write 5 m as 4 m 100 cm. Subtract 2 m 35 cm to get 2 m 65 cm. The answer is **2 m 65 cm**.
4. **Subtract 1 km 450 m from 4 km.**
   Answer: Write 4 km as 3 km 1,000 m. Subtract 1 km 450 m to get 2 km 550 m. The answer is **2 km 550 m**.
5. **Convert 360 cm into metres and centimetres.**
   Answer: 100 cm = 1 m. 300 cm = 3 m, with 60 cm remaining. Therefore, 360 cm = **3 m 60 cm**.
6. **Convert 5 m 8 cm into centimetres.**
   Answer: 1 m = 100 cm. So, 5 m = 500 cm. Therefore, 5 m 8 cm = **508 cm**.
7. **Convert 3,725 m into kilometres and metres.**
   Answer: 1 km = 1,000 m. 3,000 m = 3 km, with 725 m remaining. Therefore, 3,725 m = **3 km 725 m**.
8. **Convert 64 mm into centimetres and millimetres.**
   Answer: 10 mm = 1 cm. 60 mm = 6 cm, with 4 mm remaining. Therefore, 64 mm = **6 cm 4 mm**.
9. **Convert 9 cm 7 mm into millimetres.**
   Answer: 1 cm = 10 mm. So, 9 cm = 90 mm. Therefore, 9 cm 7 mm = **97 mm**.
10. **Compare 2 m 80 cm and 275 cm, and find their difference.**
    Answer: Convert 2 m 80 cm into 280 cm. Since 280 cm is greater than 275 cm, 2 m 80 cm is longer. Their difference is **5 cm**.
11. **One shirt needs 1 m 80 cm of cloth; how much cloth is needed for three shirts?**
    Answer: Multiply 1 m by 3 to get 3 m. Multiply 80 cm by 3 to get 240 cm, or 2 m 40 cm. The total is **5 m 40 cm**.
12. **A 12 km 600 m road is divided into six equal sections; find the length of each section.**
    Answer: Convert 12 km 600 m into 12,600 m. Divide 12,600 m by 6 to get 2,100 m. Each section is **2 km 100 m** long.
13. **A 1 km distance is divided into equal parts of 250 m; how many parts are there?**
    Answer: Convert 1 km into 1,000 m. Divide 1,000 m by 250 m. There are **4 parts**.
14. **A train has travelled 556 km to Guwahati and 2,007 km to Bhubaneswar from Dibrugarh; find the distance between these stations.**
    Answer: Both distances are measured from Dibrugarh. Subtract 556 km from 2,007 km. Guwahati and Bhubaneswar are **1,451 km apart**.
15. **A 3 km race has water stations every 500 m, including one at the finish; how many stations are required?**

Answer: Convert 3 km into 3,000 m. Divide 3,000 m by 500 m. **Six stations** are required.

5.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

Three-Mark Questions and Answers — HOTS:

1. **Two pieces of cloth are 4 m 75 cm and 2 m 80 cm long; what is their total length?**
   Answer: Add the centimetres: 75 cm + 80 cm = 155 cm, or 1 m 55 cm. Add the metres: 4 m + 2 m + 1 m = 7 m. The total length is **7 m 55 cm**.
2. **A walker has a 7 km route and has already walked 3 km 250 m; how much farther must they walk?**
   Answer: Write 7 km as 6 km 1,000 m. Subtract 3 km 250 m to get 3 km 750 m. The walker must go **3 km 750 m** farther.
3. **A 2 km race has water stations every 250 m, including one at the finish; how many stations are needed?**
   Answer: Convert 2 km into 2,000 m. Divide 2,000 m by 250 m. **Eight stations** are needed.
4. **The Statue of Unity is 182 m high and the Motherland Calls statue is 108 m high; what is the difference in their heights?**
   Answer: Both heights are already in metres. Subtract 108 m from 182 m. The height difference is **74 m**.
5. **Bhubaneswar and Visakhapatnam are 2,007 km and 2,450 km from Dibrugarh, respectively; how far apart are the two stations?**
   Answer: Both distances are measured from Dibrugarh. Subtract 2,007 km from 2,450 km. The stations are **443 km apart**.
6. **A 5 m piece of cloth is cut into 80 cm pieces for bags; how many whole pieces can be cut, and how much cloth remains?**
   Answer: Convert 5 m into 500 cm. Divide 500 cm by 80 cm to get 6 whole pieces, with 20 cm left over. Six pieces can be cut, and **20 cm remains**.
7. **Five metres of cloth cost ₹100; how much cloth can be bought for ₹700 at the same rate?**
   Answer: The cost of 1 m is ₹100 ÷ 5 = ₹20. Divide ₹700 by ₹20 to find the length. **35 m** of cloth can be bought.
8. **A 3 m sari border needs 1 m of thread for every 50 cm; if thread costs ₹50 per metre, what is the total thread cost?**
   Answer: Convert 3 m into 300 cm, which makes six 50 cm sections. Six metres of thread are needed. The thread costs 6 × ₹50 = **₹300**.
9. **A piece of ribbon is 2 m 40 cm long and another is 1 m 85 cm long; what is their total length?**
   Answer: Add the centimetres: 40 cm + 85 cm = 125 cm, or 1 m 25 cm. Add the metres, including the regrouped metre: 2 m + 1 m + 1 m = 4 m. Their total length is **4 m 25 cm**.
10. **A route is 4 km 650 m long, and a traveller has completed 1 km 875 m; how much is left?**
    Answer: Write 4 km 650 m as 3 km 1,650 m. Subtract 1 km 875 m to get 2 km 775 m. The remaining distance is **2 km 775 m**.
11. **Red and blue flags are placed alternately every 50 m along a 3 km route, excluding the starting point and including the finish; how many of each colour are needed?**

Answer: Convert 3 km into 3,000 m. There are 3,000 ÷ 50 = 60 flag positions. Alternating the colours requires **30 red flags and 30 blue flags**.

12. **A worker has 63 m of cable and uses 16 m 75 cm in one room and 21 m 50 cm in another; how much cable remains?**
Answer: Add the cable used: 16 m 75 cm + 21 m 50 cm = 38 m 25 cm. Write 63 m as 62 m 100 cm before subtracting. The remaining cable is **24 m 75 cm**.

5.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

Five-Mark Questions and Answers — LOTS:

1. Convert 8 cm 6 mm into millimetres.
Answer:
1. One centimetre equals 10 millimetres.
2. So, 8 cm equals 80 mm.
3. The remaining length is 6 mm.
4. Add 80 mm and 6 mm.
5. Therefore, 8 cm 6 mm = **86 mm**.

2. Convert 6 m 34 cm into centimetres.
Answer:
1. One metre equals 100 centimetres.
2. So, 6 m equals 600 cm.
3. The remaining length is 34 cm.
4. Add 600 cm and 34 cm.
5. Therefore, 6 m 34 cm = **634 cm**.

3. Express 5,792 cm in metres and centimetres.
Answer:
1. One metre equals 100 centimetres.
2. 5,700 cm equals 57 m.
3. There are 92 cm left over.
4. Combine 57 m and 92 cm.
5. Therefore, 5,792 cm = **57 m 92 cm**.

4. Express 6,870 m in kilometres and metres.
Answer:
1. One kilometre equals 1,000 metres.
2. 6,000 m equals 6 km.
3. There are 870 m left over.
4. Combine 6 km and 870 m.
5. Therefore, 6,870 m = **6 km 870 m**.

5. Add 3 km 450 m and 4 km 650 m.
Answer:
1. Add the kilometres: 3 km + 4 km = 7 km.
2. Add the metres: 450 m + 650 m = 1,100 m.
3. 1,100 m equals 1 km 100 m.
4. Add the extra kilometre to 7 km.
5. The total is **8 km 100 m**.

6. Subtract 16 m 75 cm from 63 m.
Answer:
1. Write 63 m as 62 m 100 cm.
2. Subtract 16 m from 62 m to get 46 m.
3. Subtract 75 cm from 100 cm to get 25 cm.

4. Combine 46 m and 25 cm.
5. The answer is **46 m 25 cm**.

7. A shirt needs 1 m 80 cm of cloth; how much cloth is needed for 5 shirts?
Answer:

1. Multiply 1 m by 5 to get 5 m.
2. Multiply 80 cm by 5 to get 400 cm.
3. 400 cm equals 4 m.
4. Add 5 m and 4 m.
5. Five shirts need **9 m** of cloth.

8. Divide 12 km 600 m of road equally among 6 days.
Answer:

1. Convert 12 km 600 m into metres: 12,600 m.
2. Divide 12,600 m by 6.
3. 12,600 ÷ 6 = 2,100.
4. Convert 2,100 m into kilometres and metres.
5. The workers lay **2 km 100 m** each day.

9. Compare 456 cm and 5 m, and find their difference.
Answer:

1. Convert 5 m into centimetres.
2. 5 m equals 500 cm.
3. Compare 456 cm and 500 cm.
4. 500 cm is greater than 456 cm.
5. The difference is **44 cm**, so 5 m is longer.

10. Water stations are placed every 500 m along a 3 km race, including the finish; how many stations are needed and where are they placed?
Answer:

1. Convert 3 km into 3,000 m.
2. Divide 3,000 m by 500 m.
3. 3,000 ÷ 500 = 6 stations.
4. Place them at 500 m, 1,000 m, and 1,500 m.
5. Place the remaining stations at 2,000 m, 2,500 m, and **3,000 m**.

5.12 Five-mark questions with Answers of HOTS Type: (5 Questions)

Five-Mark Questions and Answers — HOTS:
1. An electrician has 40 m of cable. The electrician uses 12 m 75 cm, 8 m 50 cm, and 5 m 25 cm in three rooms. How much cable remains?
Answer:

1. Add the first two lengths: 12 m 75 cm + 8 m 50 cm = 21 m 25 cm.
2. Add the third length: 21 m 25 cm + 5 m 25 cm = 26 m 50 cm.
3. Write 40 m as 39 m 100 cm.
4. Subtract 26 m 50 cm from 39 m 100 cm.
5. **13 m 50 cm of cable remains.**

2. Five metres of cloth cost ₹100. How much will 15 m cost, and how much change will remain from ₹500?
Answer:

1. Find the cost of 1 m: ₹100 ÷ 5 = ₹20.
2. Find the cost of 15 m: 15 × ₹20 = ₹300.
3. The amount available is ₹500.
4. Subtract the cost: ₹500 − ₹300 = ₹200.

5. The cloth costs **₹300**, and **₹200 remains**.

3. A passenger travels from Dimapur to Visakhapatnam by train. The stations are 306 km and 2,450 km from Dibrugarh, respectively. What is the distance travelled?

Answer:

1. Both distances are measured from Dibrugarh.
2. Subtract 306 km from 2,450 km.
3. 2,450 − 306 = 2,144.
4. The passenger travels 2,144 km between the stations.
5. The distance is **2,144 km**.

4. A board is 3 m 45 cm long and a rod is 3,400 mm long. Which is longer, and by how much?

Answer:

1. Convert the board's length: 3 m 45 cm = 345 cm.
2. Convert the rod's length: 3,400 mm = 340 cm.
3. Compare 345 cm and 340 cm.
4. The board is longer because 345 cm is greater than 340 cm.
5. The board is longer by **5 cm**.

5. Red and blue flags are placed alternately every 50 m along a 2 km route, excluding the start and including the finish; how many of each colour are needed?

Answer:

1. Convert 2 km into 2,000 m.
2. Divide 2,000 m by 50 m to find the flag positions.
3. There are 40 flag positions.
4. Alternating two colours gives 20 positions for each colour.
5. **20 red flags and 20 blue flags** are needed.

6. A road 8 km 600 m long is divided equally into four sections. What is the length of each section?

Answer:

1. Convert 8 km 600 m into 8,600 m.
2. Divide 8,600 m by 4.
3. Each section is 2,150 m long.
4. Convert 2,150 m into kilometres and metres.
5. Each section is **2 km 150 m** long.

7. A cable car travels 2 km 300 m in its first section and 2 km 650 m in its second section. What distance does it cover on a return trip over the same route?

Answer:

1. Add the first and second sections: 2 km 300 m + 2 km 650 m.
2. The one-way distance is 4 km 950 m.
3. The return trip covers the same distance again.
4. Double 4 km 950 m to get 9 km 900 m.
5. The full return trip is **9 km 900 m**.

8. A student takes 125 equal steps to walk 100 m. At the same step length, how many steps are needed to walk 1 km?

Answer:

1. Convert 1 km into 1,000 m.
2. 1,000 m is ten times 100 m.
3. The number of steps must also be multiplied by ten.
4. 125 × 10 = 1,250.
5. The student needs **1,250 steps**.

9. An electrician starts with 63 m of cable and uses 16 m 75 cm in one room and 18 m 50 cm in another. How much cable is left?
Answer:

1. Add the lengths used: 16 m 75 cm + 18 m 50 cm = 35 m 25 cm.
2. Write 63 m as 62 m 100 cm.
3. Subtract 35 m 25 cm from 62 m 100 cm.
4. The difference is 27 m 75 cm.
5. **27 m 75 cm of cable is left.**

10. In a 3 km race, water stations are set every 500 m and guides stand every 300 m, with both arrangements including the finish but not the start. How many water stations and guides are needed?
Answer:

1. Convert 3 km into 3,000 m.
2. Divide 3,000 m by 500 m to find the water stations: 6.
3. Divide 3,000 m by 300 m to find the guide positions: 10.
4. Both counts include the finish position and exclude the start.
5. **6 water stations and 10 guides** are needed.

5.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Applied Questions and Answers:
1. A tailor has 25 m of cloth and uses 1 m 80 cm for each of 12 uniforms. How much cloth is left?
Answer:

1. Convert 1 m 80 cm into 180 cm.
2. Multiply 180 cm by 12: 180 × 12 = 2,160 cm.
3. Convert 2,160 cm into 21 m 60 cm.
4. Subtract 21 m 60 cm from 25 m.
5. The tailor has **3 m 40 cm** of cloth left.

2. A family plans an 8 km 650 m walk. They have walked 3 km 750 m before lunch and 2 km 875 m after lunch. How far do they still need to walk?
Answer:

1. Add the distances already walked: 3 km 750 m + 2 km 875 m = 6 km 625 m.
2. Write the total route as 8 km 650 m.
3. Subtract 6 km 625 m from 8 km 650 m.
4. The subtraction gives 2 km 25 m.
5. The family still needs to walk **2 km 25 m**.

3. A student takes 125 steps to walk 100 m. At the same step length, how many steps would the student take to walk 800 m?
Answer:

1. Compare 800 m with 100 m.
2. 800 m is eight times 100 m.
3. Multiply 125 steps by 8.
4. 125 × 8 = 1,000.
5. The student would take **1,000 steps**.

4. Five garden beds each need a 4 m 80 cm hose. If a gardener has a 30 m hose, how much hose will remain after cutting the five lengths?
Answer:

1. Convert 4 m 80 cm into 480 cm.
2. Multiply 480 cm by 5 to get 2,400 cm.

3. Convert 2,400 cm into 24 m.
4. Subtract 24 m from 30 m.
5. The gardener will have **6 m** of hose left.

5. Workers must lay 18 km 500 m of road equally over five days. How much road will they lay each day?

Answer:

1. Convert 18 km 500 m into 18,500 m.
2. Divide 18,500 m by 5.
3. The result is 3,700 m per day.
4. Convert 3,700 m into kilometres and metres.
5. The workers will lay **3 km 700 m each day**.

6. Signs are placed every 250 m along a 1 km 500 m walking path, beginning after the start and including the finish. How many signs are needed, and where will they be placed?

Answer:

1. Convert 1 km 500 m into 1,500 m.
2. Divide 1,500 m by 250 m to find the number of spaces.
3. There are 6 spaces, so 6 signs are needed.
4. The first signs go at 250 m, 500 m, and 750 m.
5. The remaining signs go at 1,000 m, 1,250 m, and **1,500 m**.

7. A shop sells 3 m of cloth for ₹120. What will 8 m cost at the same rate?

Answer:

1. Find the cost of 1 m: ₹120 ÷ 3 = ₹40.
2. The cost per metre is ₹40.
3. Multiply ₹40 by 8.
4. ₹40 × 8 = ₹320.
5. The cost of 8 m is **₹320**.

8. A cable car travels 2 km 300 m in one section and 2 km 650 m in another section. What distance does it travel on a return trip over the same route?

Answer:

1. Add the two sections: 2 km 300 m + 2 km 650 m = 4 km 950 m.
2. This is the one-way distance.
3. A return trip covers the same distance again.
4. Double 4 km 950 m to get 9 km 900 m.
5. The return trip is **9 km 900 m**.

9. A 25 m cable is cut into seven pieces, each 2 m 75 cm long. How much cable remains?

Answer:

1. Convert 2 m 75 cm into 275 cm.
2. Multiply 275 cm by 7 to find the cable used: 1,925 cm.
3. Convert 1,925 cm into 19 m 25 cm.
4. Subtract 19 m 25 cm from 25 m.
5. **5 m 75 cm** of cable remains.

10. A scooter travels 4 km 500 m in the morning and 3 km 750 m in the afternoon. If its planned journey is 12 km, how much distance remains?

Answer:

1. Add the distances travelled: 4 km 500 m + 3 km 750 m = 8 km 250 m.
2. The planned journey is 12 km.
3. Write 12 km as 11 km 1,000 m.
4. Subtract 8 km 250 m to get 3 km 750 m.
5. The scooter still needs to travel **3 km 750 m**.

5.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple-Choice Questions:

1. **What is 4 m 8 cm in centimetres?**
   A. 48 cm B. 408 cm C. 4,008 cm D. 480 cm
   Answer: B. 408 cm
2. **What is 3 km 75 m in metres?**
   A. 3,075 m B. 3,750 m C. 375 m D. 30,075 m
   Answer: A. 3,075 m
3. **How many centimetres are equal to 560 mm?**
   A. 5.6 cm B. 56 cm C. 560 cm D. 5,600 cm
   Answer: B. 56 cm
4. **What is the sum of 6 m 25 cm and 2 m 90 cm?**
   A. 8 m 115 cm B. 9 m 15 cm C. 9 m 5 cm D. 8 m 95 cm
   Answer: B. 9 m 15 cm
5. **What remains when 2 km 650 m is subtracted from 5 km?**
   A. 2 km 350 m B. 3 km 350 m C. 2 km 450 m D. 3 km 650 m
   Answer: A. 2 km 350 m
6. **Express 725 cm in metres and centimetres.**
   A. 72 m 5 cm B. 7 m 25 cm C. 7 m 2 cm D. 72 m 50 cm
   Answer: B. 7 m 25 cm
7. **Which length is greater?**
   A. 3 m 40 cm B. 3,405 mm C. They are equal D. Cannot be compared
   Answer: B. 3,405 mm
8. **Each shirt needs 1 m 80 cm of cloth. How much cloth is needed for four shirts?**
   A. 6 m 20 cm B. 7 m 20 cm C. 7 m 80 cm D. 8 m
   Answer: B. 7 m 20 cm
9. **A 7 m 50 cm ribbon is cut into three equal pieces. What is the length of each piece?**
   A. 2 m 25 cm B. 2 m 50 cm C. 3 m 50 cm D. 2 m 75 cm
   Answer: B. 2 m 50 cm
10. **A 2 km route has markers every 250 m, starting after the start and including the finish. How many markers are placed?**
    A. 6 B. 7 C. 8 D. 9
    Answer: C. 8
11. **Jalpaiguri Road and Bhubaneswar are 983 km and 2,007 km from Dibrugarh. How far apart are they?**
    A. 1,014 km B. 1,024 km C. 1,124 km D. 2,990 km
    Answer: B. 1,024 km
12. **How many 125 m ropes make 1 km?**
    A. 4 B. 6 C. 8 D. 10
    Answer: C. 8
13. **How much longer is 5 m than 490 cm?**
    A. 5 cm B. 10 cm C. 50 cm D. 100 cm
    Answer: B. 10 cm
14. **What is 2 m 3 cm in millimetres?**
    A. 203 mm B. 2,030 mm C. 2,300 mm D. 23,000 mm
    Answer: B. 2,030 mm

15. **Express 3,050 m in kilometres and metres.**
A. 30 km 50 m B. 3 km 50 m C. 3 km 500 m D. 305 km
Answer: B. 3 km 50 m
16. **What is 5 m 60 cm multiplied by 3?**
A. 15 m 60 cm B. 16 m 80 cm C. 16 m 60 cm D. 17 m 80 cm
Answer: B. 16 m 80 cm
17. **How many metres are equal to 15,000 mm?**
A. 1.5 m B. 15 m C. 150 m D. 1,500 m
Answer: B. 15 m
18. **A student takes 1,250 steps to walk 1 km. At the same step length, how many steps are needed to walk 500 m?**
A. 250 B. 500 C. 625 D. 750
Answer: C. 625
19. **How much longer is 45 mm than 4 cm?**
A. 1 mm B. 5 mm C. 10 mm D. 15 mm
Answer: B. 5 mm
20. **What is 8 m 35 cm minus 4 m?**
A. 4 m 35 cm B. 4 m 65 cm C. 5 m 35 cm D. 3 m 35 cm
Answer: A. 4 m 35 cm
21. **How many 75 cm strips can be cut from a 6 m length, with no strip left incomplete?**
A. 6 B. 7 C. 8 D. 9
Answer: C. 8
22. **A 3 km race has guides placed every 300 m, excluding the start and including the finish. How many guides are needed?**
A. 8 B. 9 C. 10 D. 11
Answer: C. 10
23. **Using the chapter's conversion, what is 5 inches in millimetres?**
A. 25 mm B. 50 mm C. 125 mm D. 250 mm
Answer: C. 125 mm
24. **Which comparison is correct?**
A. 2 m 150 cm > 3 m 50 cm
B. 2 m 150 cm < 3 m 50 cm
C. 2 m 150 cm = 3 m 50 cm
D. 2 m 150 cm = 2 m 50 cm
Answer: C. 2 m 150 cm = 3 m 50 cm
25. **How many metres are equal to 7,600 cm?**
A. 7.6 m B. 76 m C. 760 m D. 7,600 m
Answer: B. 76 m
26. **Five metres of cloth cost ₹100. What is the cost of 12 m at the same rate?**
A. ₹200 B. ₹220 C. ₹240 D. ₹300
Answer: C. ₹240
27. **How many 1,500 m sections are there in a 9 km route?**
A. 5 B. 6 C. 7 D. 9
Answer: B. 6
28. **A 20 m rope is cut into pieces of 2 m 75 cm. How much rope remains after cutting as many whole pieces as possible?**
A. 50 cm B. 75 cm C. 1 m 25 cm D. 2 m 75 cm
Answer: B. 75 cm

29. **Coimbatore Junction and Vijayawada are 3,675 km and 2,800 km from Dibrugarh. What is the distance between them?**
A. 775 km B. 875 km C. 975 km D. 6,475 km
Answer: B. 875 km
30. **What is 5 m 2 cm in millimetres?**
A. 502 mm B. 5,020 mm C. 5,200 mm D. 50,200 mm
Answer: B. 5,020 mm

5.15 Best Practices Opportunity List from the Chapter: (10 Ideas)

Best Practices for Teaching "Far and Near" — Grade 5 Mathematics:

(1) **Begin with familiar objects:** Ask students to name suitable units for measuring a pencil, a classroom, a playground, and the distance between towns.
(2) **Let students estimate before measuring:** Have them predict the length of classroom objects, then measure and compare their estimates with the results.
(3) **Demonstrate measurement tools:** Show how to use a ruler, measuring tape, measuring wheel, or metre scale correctly, including where to place the zero mark.
(4) **Teach unit relationships with concrete materials:** Use a 1 m strip, a 1 cm ruler, and a 1 mm scale marking to demonstrate that 1 m = 100 cm and 1 cm = 10 mm.
(5) **Use a classroom measurement walk:** In small groups, students measure desks, doors, corridors, or playground distances and record each measurement with its correct unit.
(6) **Practise conversions in both directions:** Give regular short exercises converting mm and cm, cm and m, and m and km, using place-value charts or unit ladders.
(7) **Use double number lines:** Model how matching lengths appear in different units, such as metres and centimetres, and use the method to support conversions and comparisons.
(8) **Ask students to convert before comparing:** Encourage them to express both lengths in the same unit before deciding which is longer or shorter.
(9) **Connect calculations to real situations:** Use examples involving ribbon, cloth, cables, walking distances, race routes, and train journeys for adding, subtracting, multiplying, and dividing lengths.
(10) **Model regrouping explicitly:** When adding or subtracting, show how 100 cm becomes 1 m and 1,000 m becomes 1 km, using drawings or place-value columns.
(11) **Encourage mental strategies and written methods:** Let students explain convenient ways to solve calculations, then practise a clear written method for more complex measurements.
(12) **Use simple formative checks:** Ask students to explain why a unit is appropriate, show a conversion step, or identify an error in a worked example before moving to the next skill.

5.16 Innovations Opportunity List from the Chapter: (10 Ideas)

Innovations for Teaching "Far and Near" — Grade 5 Mathematics:

(1) **Classroom Measurement Mission:** Give teams a map of the classroom or school and ask them to measure selected spaces, record the distances, and convert them into different units.
(2) **Build a Human Conversion Line:** Students hold cards labelled mm, cm, m, and km, then arrange themselves to show how units relate—for example, 100 cm = 1 m.
(3) **Create a Measurement Museum:** Invite students to bring or draw objects of different lengths, label the most suitable unit, and display their measurements around the room.

(4) **Design a Mini Race Route:** Students plan a 1 km or 2 km route on a playground diagram, then place water stations or flags at set intervals and calculate their positions.
(5) **Make a "Find the Error" Challenge:** Show a fictional measurement calculation with a common conversion or regrouping mistake and ask teams to spot and correct it.
(6) **Use QR-Code Measurement Clues:** Place simple QR codes around the classroom that reveal a measurement problem or conversion clue at each station.
(7) **Run a Measurement Treasure Hunt:** Give teams clues such as "Find an object longer than 1 m" or "Find something about 10 cm long," then have them measure and record their discoveries.
(8) **Create a Class Distance Map:** Students map familiar places near the school or home, estimate the distances, and compare them using metres and kilometres.
(9) **Use Student-Made Double Number Lines:** Have students create reusable paper or digital number lines that show equivalent lengths, such as metres and centimetres.
(10) **Make Measurement Story Problems:** Students write short stories involving travel, cloth, ribbons, cables, or races, then exchange problems with classmates to solve.
(11) **Try a "Measure, Convert, Explain" video:** Students record a short demonstration of measuring an object, converting its length, and explaining the steps.
(12) **Connect measurement to growing plants:** Students measure a seedling or sprout over several days, record its growth in millimetres, and present the results in a simple table or chart.

5.17: Practicing Questions/Question Bank:

Question Bank: "Far and Near" — Grade 5 Mathematics

A. Fill in the Blanks:

1. **1 cm = _____ mm.**
   Answer: 10 mm
2. **1 km = _____ m.**
   Answer: 1,000 m
3. **3 m 6 cm = _____ cm.**
   Answer: 306 cm
4. **6750 m = _____ km _____ m.**
   Answer: 6 km 750 m
5. **1 inch = _____ cm _____ mm.**
   Answer: 2 cm 5 mm

B. One-Mark Questions:

1. **Which unit is suitable for measuring the length of a small screw?**
   Answer: Millimetres are suitable for measuring the length of a small screw.
2. **What is a measuring wheel also called?**
   Answer: A measuring wheel is also called a rodometer.
3. **How many centimetres are in 5 m?**
   Answer: There are 500 cm in 5 m.
4. **Which is longer: 460 cm or 4 m?**
   Answer: 460 cm is longer than 4 m.

5. **How many metres are in 2 km 300 m?**
   Answer: There are 2,300 m in 2 km 300 m.

C. Two-Mark Questions:

1. **Convert 7 cm 8 mm into millimetres.**
   Answer: 7 cm = 70 mm. Therefore, 7 cm 8 mm = **78 mm**.
2. **Add 5 m 75 cm and 2 m 40 cm.**
   Answer: 75 cm + 40 cm = 115 cm = 1 m 15 cm. The total is **8 m 15 cm**.
3. **Convert 4 km 250 m into metres.**
   Answer: 4 km = 4,000 m. Therefore, 4 km 250 m = **4,250 m**.
4. **A 9 m rope is cut by 3 m 60 cm. How much rope remains?**
   Answer: Write 9 m as 8 m 100 cm. After subtracting 3 m 60 cm, **5 m 40 cm remains**.

D. Three-Mark Questions:

1. **A 6 m 40 cm cloth is divided equally into four pieces. Find the length of each piece.**
   Answer:
   1. Convert 6 m 40 cm into 640 cm.
   2. Divide 640 cm by 4 to get 160 cm.
   3. Each piece is **1 m 60 cm** long.
2. **A 3 km race has water stations every 500 m, including the finish. How many stations are needed?**
   Answer:
   1. Convert 3 km into 3,000 m.
   2. Divide 3,000 m by 500 m to get 6.
   3. **Six stations** are needed.
3. **A train has travelled 556 km to Guwahati and 983 km to Jalpaiguri Road from Dibrugarh. How far apart are the stations?**
   Answer:
   1. Both distances are measured from Dibrugarh.
   2. Subtract 556 km from 983 km.
   3. The stations are **427 km apart**.

E. Five-Mark Questions:

1. **A tailor has 10 m of cloth and uses 1 m 25 cm for each of six costumes. How much cloth remains?**
   Answer:
   1. Convert 1 m 25 cm into 125 cm.
   2. Multiply 125 cm by 6 to get 750 cm.
   3. Convert 750 cm into 7 m 50 cm.
   4. Subtract 7 m 50 cm from 10 m.

5. **2 m 50 cm** of cloth remains.

2. **A student plans to walk 10 km. The student walks 4 km 250 m in the morning and 3 km 800 m in the afternoon. How much farther must the student walk?**
   Answer:

   1. Add the morning and afternoon distances: 4 km 250 m + 3 km 800 m.
   2. The distance walked is 8 km 50 m.
   3. Write 10 km as 9 km 1,000 m.
   4. Subtract 8 km 50 m to get 1 km 950 m.
   5. The student must walk **1 km 950 m** farther.

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5th Standard Maths Book Chapter 6

Chapter 6: The Dairy Farm

6.1 Summary of the Chapter:

Summary: "The Dairy Farm":

(1) The chapter explores different ways to multiply numbers using examples from dairy farms and everyday life.
(2) Changing the order of the numbers being multiplied does not change the product: for example, $3 \times 2 = 2 \times 3$.
(3) Multiplying by 10, 100, or 1,000 makes a number 10, 100, or 1,000 times larger; place value helps explain the resulting zeros.
(4) Numbers can be split into place-value parts to make multiplication easier. For example, 35 can be written as $30 + 5$.
(5) Partial products are found by multiplying each part and then adding the results.
(6) The doubling-and-halving strategy can simplify some multiplication problems, such as changing 3×18 into 6×9.
(7) Using a nearby multiple can make a calculation easier. For example, $4 \times 19 = 4 \times 20 - 4$.
(8) Multiplication can be estimated by rounding numbers to convenient values and checking whether an answer is reasonable.
(9) The chapter shows how to multiply larger numbers using place value and the standard written method, including carrying digits correctly.
(10) Multiplication patterns help us find related products. If one factor changes, the product changes in a predictable way.
(11) Word problems use multiplication to solve practical questions about milk, ghee, seating, books, travel, fodder, waste, and compost.
(12) The chapter encourages learners to compare different methods, explain their thinking, and choose a strategy that makes each problem easier.

6.2 Important Formulas:

(1) Changing the order of factors
$a \times b = b \times a$
Example: $3 \times 2 = 2 \times 3$

(2) Multiplication by zero
$a \times 0 = 0$

(3) Multiplication by one
$a \times 1 = a$

(4) Multiplication by 10, 100 and 1,000
$a \times 10 = 10a$
$a \times 100 = 100a$
$a \times 1{,}000 = 1{,}000a$

(5) Breaking a number into parts
$a \times (b + c) = (a \times b) + (a \times c)$
Example: $12 \times 35 = (12 \times 30) + (12 \times 5)$

(6) Multiplying when both numbers are split into parts
$(a + b) \times (c + d) = (a \times c) + (a \times d) + (b \times c) + (b \times d)$

(7) Doubling and halving
$a \times b = (2 \times a) \times (b \div 2)$, when b is even
Example: $3 \times 18 = 6 \times 9$

(8) Using the nearest lower multiple
$a \times (b - 1) = (a \times b) - a$
Example: $4 \times 19 = (4 \times 20) - 4$

(9) Using the nearest higher multiple
$a \times (b + 1) = (a \times b) + a$
Example: $14 \times 21 = (14 \times 20) + 14$

(10) Multiplying by numbers close to 100 or 1,000
$a \times 101 = (a \times 100) + a$
$a \times 1{,}001 = (a \times 1{,}000) + a$

(11) Estimating a product
Round the factors to nearby convenient numbers, then multiply.
Example: 25×31 is approximately $25 \times 30 = 750$.

6.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

1. $3 \times 2 =$ _____.
   Answer: 6
2. $8 \times 5 =$ _____.
   Answer: 40
3. $9 \times 0 =$ _____.
   Answer: 0
4. $7 \times 1 =$ _____.
   Answer: 7
5. $4 \times 10 =$ _____.
   Answer: 40
6. $3 \times 100 =$ _____.
   Answer: 300
7. $5 \times 1{,}000 =$ _____.
   Answer: 5,000
8. $20 \times 10 =$ _____.
   Answer: 200
9. $30 \times 20 =$ _____.
   Answer: 600
10. $10 \times 45 =$ _____.
    Answer: 450
11. $80 \times 10 =$ _____.
    Answer: 800
12. $4 \times 20 =$ _____.
    Answer: 80
13. $5 \times 18 =$ _____.
    Answer: 90
14. $3 \times 18 = 6 \times$ _____.
    Answer: 9
15. $4 \times 19 = (4 \times 20) -$ _____.
    Answer: 4

16. 14 × 21 = (14 × 20) + _____.
    Answer: 14
17. 35 can be written as _____ + 5.
    Answer: 30
18. 18 can be written as 10 + _____.
    Answer: 8
19. 32 × 8 = (30 × 8) + (2 × 8) = _____.
    Answer: 256
20. 12 × 35 = (12 × 30) + (12 × 5) = _____.
    Answer: 420
21. The product of 6 × 13 is _____.
    Answer: 78
22. 10 × 10 = _____.
    Answer: 100
23. 20 × 50 = _____.
    Answer: 1,000
24. 60 × 50 = _____.
    Answer: 3,000
25. 400 × 10 = _____.
    Answer: 4,000
26. 11 × 300 = _____.
    Answer: 3,300
27. 600 × 30 = _____.
    Answer: 18,000
28. When the order of the factors changes, the product _____.
    Answer: remains the same
29. A dairy farm has 30 groups of 2 pouches. The total number of pouches is _____.
    Answer: 60
30. If one cow gives 5 litres of milk, 10 cows give _____ litres.
    Answer: 50

6.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

FILL IN THE BLANKS – HOTS:

1. To calculate 18 × 5 by doubling 18 and halving 5, we get 36 × 2.5; a whole-number strategy is to use 9 × 10, which equals _____.
   Answer: 90
2. Since 14 × 3 = 7 × 6, both products equal _____.
   Answer: 42
3. Using doubling and halving, 25 × 16 can be rewritten as 100 × 4. The product is _____.
   Answer: 400
4. To find 50 × 28, double 50 and halve 28: 100 × 14 = _____.
   Answer: 1,400
5. Using the nearest multiple, 75 × 31 = (75 × 30) + 75 = _____.
   Answer: 2,325
6. Using 100 as the nearest multiple, 99 × 15 = (100 × 15) − 15 = _____.
   Answer: 1,485
7. Since 101 = 100 + 1, 101 × 42 = (100 × 42) + 42 = _____.
   Answer: 4,242
8. If 17 × 23 = 391, then 17 × 24 is 391 + _____.

Answer: 17

9. If 17 × 23 = 391, then 18 × 23 is 391 + _____.
   Answer: 23
10. If 67 × 67 = 4,489, then 67 × 68 = 4,489 + _____.
    Answer: 67
11. Using 100 as a nearby number, 99 × 99 = (99 × 100) − 99 = _____.
    Answer: 9,801
12. An auditorium has 35 rows with 42 seats in each row. Its total seating capacity is _____.
    Answer: 1,470 people
13. A school receives 36 boxes with 48 books in each box. The total number of books is _____.
    Answer: 1,728
14. If 29 cows each give 5 litres of milk, they give _____ litres altogether.
    Answer: 145
15. If 297 cows each need 18 kg of fodder, the farm needs _____ kg of fodder per day.
    Answer: 5,346
16. A family produces 35 kg of kitchen waste each month. In 12 months, it produces _____ kg.
    Answer: 420
17. If 150 kg of compost is worth ₹24 per kilogram, its total value is ₹_____.
    Answer: 3,600
18. A hall has 8 rows with 12 seats per row. If half the seats are filled, _____ people are seated.
    Answer: 48
19. A ticket seller sells 57 tickets for ₹115 each. The total ticket collection is ₹_____.
    Answer: 6,555
20. Three teams each pay ₹1,599 to join a tournament. The total participation fee is ₹_____.
    Answer: 4,797
21. If a team hits twenty-four 4s, the runs scored from those boundaries are _____.
    Answer: 96
22. If a team hits eighteen 6s, the runs scored from those boundaries are _____.
    Answer: 108
23. A team scores 96 runs from 4s, 108 runs from 6s, 234 runs by running, and 23 extras. Its total score is _____.
    Answer: 461
24. The product 16 × 44 is 704. If one factor is halved and the other doubled, 8 × 88 is _____.
    Answer: 704
25. Starting with 12 × 32 = 384, double 12 and halve 32. The new product, 24 × 16, is _____.
    Answer: 384
26. A packet arrangement has 60 pouches. If the pouches are grouped in sets of 5, there are _____ groups.
    Answer: 12
27. To find 4 × 19, use 4 × 20 and subtract 4. The answer is _____.
    Answer: 76
28. A dairy cooperative packs 60 butter-milk pouches as 30 groups of 2. If it repacks them into groups of 6, it will have _____ groups.

Answer: 10

29. The product of 12 × 17 can also be found as 12 × (10 + 7). The partial products are 120 and _____.
    Answer: 84
30. A dairy farm has 125 kg of ghee to sell at ₹574 per kg. Its total sale amount is ₹_____.
    Answer: 71,750

6.5 One-mark questions with Answers of LOTS Type: (30 Questions)

One-Mark Descriptive Questions with Answers – LOTS:

1. **What is 3 × 2?**
   Answer: 3 × 2 = 6.
2. **What is 8 × 5?**
   Answer: 8 × 5 = 40.
3. **What is 9 × 0?**
   Answer: 9 × 0 = 0.
4. **What is 7 × 1?**
   Answer: 7 × 1 = 7.
5. **What is 4 × 10?**
   Answer: 4 × 10 = 40.
6. **What is 3 × 100?**
   Answer: 3 × 100 = 300.
7. **What is 2 × 1,000?**
   Answer: 2 × 1,000 = 2,000.
8. **What is 30 × 20?**
   Answer: 30 × 20 = 600.
9. **What is 10 × 45?**
   Answer: 10 × 45 = 450.
10. **What is 20 × 50?**
    Answer: 20 × 50 = 1,000.
11. **What is 80 × 10?**
    Answer: 80 × 10 = 800.
12. **What is 4 × 19?**
    Answer: 4 × 19 = 76.
13. **What is 14 × 21?**
    Answer: 14 × 21 = 294.
14. **What is 18 × 5?**
    Answer: 18 × 5 = 90.
15. **What is 6 × 13?**
    Answer: 6 × 13 = 78.
16. **What is 32 × 8?**
    Answer: 32 × 8 = 256.
17. **What is 69 × 45?**
    Answer: 69 × 45 = 3,105.
18. **What is 35 × 12?**
    Answer: 35 × 12 = 420.
19. **What is 400 × 10?**
    Answer: 400 × 10 = 4,000.
20. **What is 11 × 300?**
    Answer: 11 × 300 = 3,300.

21. **What is 600 × 30?**
    Answer: 600 × 30 = 18,000.
22. **What is the product of 30 groups of 2 pouches?**
    Answer: 30 groups of 2 pouches make 60 pouches.
23. **What happens to the product when the order of the factors is changed?**
    Answer: The product remains the same.
24. **How can 35 be split by place value?**
    Answer: 35 can be split into 30 and 5.
25. **How can 18 be split by place value?**
    Answer: 18 can be split into 10 and 8.
26. **What is 12 multiplied by 30?**
    Answer: 12 × 30 = 360.
27. **What is 12 multiplied by 5?**
    Answer: 12 × 5 = 60.
28. **How many litres of milk do 10 cows give if each gives 5 litres?**
    Answer: 10 cows give 50 litres of milk.
29. **How much kitchen waste does a family produce in a year if it produces 35 kg each month?**
    Answer: The family produces 420 kg of kitchen waste in a year.
30. **How much money does a family save by making 150 kg of compost worth ₹24 per kg?**
    Answer: The family saves ₹3,600.

6.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark Descriptive Questions with Answers – HOTS:

1. **Without recalculating, what can you say about 8 × 5 and 5 × 8?**
   Answer: They have the same product, 40, because changing the order of factors does not change the product.
2. **How can you calculate 32 × 8 by splitting 32 into 30 and 2?**
   Answer: 32 × 8 = (30 × 8) + (2 × 8) = 256.
3. **How can 4 × 19 be calculated using the nearest multiple of 10?**
   Answer: 4 × 19 = (4 × 20) − 4 = 76.
4. **How can you calculate 14 × 21 using 14 × 20?**
   Answer: Add 14 to 14 × 20, so 14 × 21 = 294.
5. **Which easier multiplication fact can help you find 18 × 5?**
   Answer: 9 × 10 gives the same product, so 18 × 5 = 90.
6. **How can doubling and halving help calculate 50 × 28?**
   Answer: Double 50 and halve 28 to get 100 × 14 = 1,400.
7. **How can you use 100 to find 25 × 16?**
   Answer: Rewrite it as 100 × 4, which equals 400.
8. **How can you calculate 99 × 15 using a nearby multiple?**
   Answer: 99 × 15 = (100 × 15) − 15 = 1,485.
9. **How can you find 101 × 42 without using the standard multiplication method?**
   Answer: Add 42 to 100 × 42 to get 4,242.
10. **If 67 × 67 = 4,489, how can you find 67 × 68?**
    Answer: Add 67 to 4,489 to get 4,556.
11. **If 17 × 23 = 391, what is 17 × 24?**
    Answer: Add one more group of 17 to get 408.

12. **If 17 × 23 = 391, what is 18 × 23?**
    Answer: Add one more group of 23 to get 414.
13. **Why does 8 × 88 have the same product as 16 × 44?**
    Answer: One factor is halved while the other is doubled, so both products are 704.
14. **If 12 × 32 = 384, what is 24 × 16?**
    Answer: It is also 384 because one factor is doubled and the other is halved.
15. **Which is greater, 25 × 31 or 12 × 25, and by how much?**
    Answer: 25 × 31 is greater by 475 because the products are 775 and 300.
16. **Estimate 248 × 49 by rounding to nearby convenient numbers.**
    Answer: It is about 250 × 50, or 12,500.
17. **Estimate 132 × 19 by rounding each factor.**
    Answer: It is about 130 × 20, or 2,600.
18. **Using 31 rounded to 30, what is a quick estimate for 25 × 31?**
    Answer: The estimate is 25 × 30 = 750.
19. **A dairy has 35 rows with 42 seats in each row; how many seats does it have?**
    Answer: It has 1,470 seats because 35 × 42 = 1,470.
20. **A school receives 36 boxes with 48 books in each; how many books are there altogether?**
    Answer: There are 1,728 books because 36 × 48 = 1,728.
21. **If 297 cows each need 18 kg of fodder daily, how much fodder is needed?**
    Answer: The farm needs 5,346 kg of fodder each day.
22. **A family makes 150 kg of compost worth ₹24 per kilogram; how much money does it save?**
    Answer: It saves ₹3,600 because 150 × 24 = 3,600.
23. **A family produces 35 kg of kitchen waste each month; how much does it produce in a year?**
    Answer: It produces 420 kg because 35 × 12 = 420.
24. **A team scores 96 runs from fours, 108 from sixes, 234 by running, and 23 extras; what is its total?**
    Answer: Its total score is 461 runs.
25. **A dairy has 60 pouches; is 30 groups of 2 the only way to arrange them?**
    Answer: No, they can also be arranged as 20 groups of 3 or 10 groups of 6.
26. **A student writes 32 × 8 = (30 × 8) + 2; what mistake has the student made?**
    Answer: The student should multiply 2 by 8, so the correct expression is (30 × 8) + (2 × 8) = 256.
27. **Why is 30 × 20 equal to 3 × 2 × 100?**
    Answer: Each factor contains a factor of 10, so 30 × 20 = 3 × 2 × 100 = 600.
28. **If 10 × 45 = 450, how can you find 20 × 45?**
    Answer: Double 450 to get 900.
29. **A shop sells 3 books for ₹150; what is the cost of 18 books at the same rate?**
    Answer: Eighteen books cost ₹900 because 18 is six groups of 3.
30. **Which reward gives the most after seven daily multiplications: doubling 5 coins, tripling 3 coins, or multiplying 1 coin by 5?**
    Answer: Multiplying 1 coin by 5 each day gives the most, for a total of 78,125 coins.

6.7 Two-mark questions with Answers of LOTS Type: (20 Questions)

Two-Mark Descriptive Questions with Answers – LOTS:

1. **Find 12 × 5.**
   Answer: 12 × 5 = 60. The product is 60.

2. **Find 30 × 20.**
   Answer: 3 × 2 = 6, and there are two zeros in the factors. Therefore, 30 × 20 = 600.
3. **Find 40 × 10.**
   Answer: 4 × 1 = 4. Therefore, 40 × 10 = 400.
4. **Find 6 × 13.**
   Answer: 6 × 13 = 78. The product is 78.
5. **Find 8 × 5.**
   Answer: 8 × 5 = 40. The product is 40.
6. **Find 9 × 0 and state the rule.**
   Answer: 9 × 0 = 0. Any number multiplied by zero gives zero.
7. **Find 3 × 15 by splitting 15 into 10 and 5.**
   Answer: (3 × 10) + (3 × 5) = 30 + 15. Therefore, 3 × 15 = 45.
8. **Find 14 × 3.**
   Answer: 14 × 3 = 42. The product is 42.
9. **Find 32 × 8 by splitting 32 into 30 and 2.**
   Answer: (30 × 8) + (2 × 8) = 240 + 16. Therefore, 32 × 8 = 256.
10. **Find 35 × 12 by splitting 35 into 30 and 5.**
    Answer: (30 × 12) + (5 × 12) = 360 + 60. Therefore, 35 × 12 = 420.
11. **Find 7 × 4 and 4 × 7.**
    Answer: 7 × 4 = 28 and 4 × 7 = 28. Changing the order of the factors does not change the product.
12. **Find 4 × 25 by splitting 25 into 20 and 5.**
    Answer: (4 × 20) + (4 × 5) = 80 + 20. Therefore, 4 × 25 = 100.
13. **Find 7 × 100.**
    Answer: 7 × 100 = 700. Multiplying by 100 makes the number 100 times as large.
14. **Find 5 × 1,000.**
    Answer: 5 × 1,000 = 5,000. The product is 5,000.
15. **Ten cows give 5 litres of milk each; how much milk do they give altogether?**
    Answer: 10 × 5 = 50. They give 50 litres of milk altogether.
16. **There are 8 rows with 12 seats in each row; how many seats are there?**
    Answer: 8 × 12 = 96. There are 96 seats.
17. **A family produces 35 kg of kitchen waste each month; how much does it produce in 12 months?**
    Answer: 35 × 12 = 420. The family produces 420 kg of waste in a year.
18. **A family makes 150 kg of compost worth ₹24 per kg; find its total value.**
    Answer: 150 × 24 = 3,600. The compost is worth ₹3,600.
19. **Find 18 × 5 using 9 × 10.**
    Answer: 18 × 5 = 9 × 10. Therefore, the product is 90.
20. **Find 10 × 45 and 20 × 45.**
    Answer: 10 × 45 = 450 and 20 × 45 = 900. The second product is double the first.

6.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Two-Mark Descriptive Questions with Answers – HOTS:

1. **How can you find 4 × 19 using a nearby multiple of 10?**
   Answer: Calculate 4 × 20 and subtract 4. The product is 80 − 4 = 76.
2. **How can you calculate 14 × 21 using 14 × 20?**
   Answer: Add one more group of 14 to 14 × 20. The product is 280 + 14 = 294.
3. **How can you find 99 × 15 without multiplying 99 directly?**
   Answer: Calculate 100 × 15 and subtract 15. The product is 1,500 − 15 = 1,485.

4. **Use doubling and halving to find 50 × 28.**
   Answer: Double 50 and halve 28 to get 100 × 14. The product is 1,400.
5. **If 17 × 23 = 391, how can you find 17 × 24?**
   Answer: Add one more group of 17 to 391. So, 17 × 24 = 408.
6. **If 17 × 23 = 391, how can you find 18 × 23?**
   Answer: Add one more group of 23 to 391. So, 18 × 23 = 414.
7. **Estimate 248 × 49 by rounding both factors to convenient numbers.**
   Answer: Round 248 to 250 and 49 to 50. The estimated product is 250 × 50 = 12,500.
8. **A hall has 35 rows with 42 seats in each row; how many seats are there?**
   Answer: Split 42 into 40 and 2 to calculate 35 × 42. There are 1,400 + 70 = 1,470 seats.
9. **A school receives 36 boxes with 48 books in each; how many books does it receive?**
   Answer: Calculate 36 × 48 using 36 × (50 − 2). The school receives 1,728 books.
10. **A farm has 297 cows, and each needs 18 kg of fodder daily; how much fodder is needed?**
    Answer: Calculate 297 × (20 − 2). The farm needs 5,346 kg of fodder each day.
11. **A family makes 150 kg of compost worth ₹24 per kg; how much money does it save?**
    Answer: Multiply 150 by 24 to find the total value. The family saves ₹3,600.
12. **A family produces 35 kg of waste each month; how much waste does it produce in a year?**
    Answer: Multiply 35 kg by 12 months. The yearly amount is 420 kg.
13. **Why does 8 × 88 have the same product as 16 × 44?**
    Answer: In 16 × 44, one factor is halved and the other is doubled. Both products equal 704.
14. **If 12 × 32 = 384, what is 24 × 16 and why?**
    Answer: The product remains unchanged when one factor is doubled and the other is halved. Therefore, 24 × 16 = 384.
15. **A student writes 32 × 8 = 240 + 2; what is the error and the correct product?**
    Answer: The student forgot to multiply 2 by 8. The correct calculation is 240 + 16 = 256.
16. **How can you calculate 101 × 42 using 100 × 42?**
    Answer: Add one more group of 42 to 100 × 42. The product is 4,200 + 42 = 4,242.
17. **If 67 × 67 = 4,489, how can you find 67 × 68?**
    Answer: Add one more group of 67 to 4,489. The product is 4,556.
18. **How can you use 100 to calculate 25 × 16?**
    Answer: Double 25 and halve 16 twice to get 100 × 4. The product is 400.
19. **A club sells 57 tickets for ₹115 each; what is its ticket collection?**
    Answer: Calculate 57 × 115 by splitting 57 into 50 and 7. The total collection is ₹6,555.
20. **The club earns ₹6,555 from tickets and ₹4,797 from team fees; what is its total collection?**
    Answer: Add the ticket collection and team fees. The total is ₹11,352.

6.9. Three-mark questions with Answers of LOTS Type: (18 Questions)

Three-Mark Descriptive Questions with Answers – LOTS:

1. **Find 8 × 7.**
   Answer: The numbers to multiply are 8 and 7.

Multiply 8 by 7.
The product is 56.

2. **Find 15 × 4 by splitting 15 into 10 and 5.**
   Answer: Split 15 into 10 and 5.
   Calculate (10 × 4) + (5 × 4) = 40 + 20.
   Therefore, 15 × 4 = 60.
3. **Find 30 × 20.**
   Answer: Multiply 3 by 2 to get 6.
   The factors have two zeros altogether.
   Therefore, 30 × 20 = 600.
4. **Find 60 × 50.**
   Answer: Multiply 6 by 5 to get 30.
   Add the two zeros from the factors.
   Therefore, 60 × 50 = 3,000.
5. **Find 5 × 1,000.**
   Answer: Multiply 5 by 1,000.
   Five groups of 1,000 make 5,000.
   Therefore, 5 × 1,000 = 5,000.
6. **Find 12 × 35 by splitting 35 into 30 and 5.**
   Answer: Split 35 into 30 and 5.
   Calculate (12 × 30) + (12 × 5) = 360 + 60.
   Therefore, 12 × 35 = 420.
7. **Find 32 × 8 by splitting 32 into 30 and 2.**
   Answer: Split 32 into 30 and 2.
   Calculate (30 × 8) + (2 × 8) = 240 + 16.
   Therefore, 32 × 8 = 256.
8. **Find 14 × 21 by splitting 21 into 20 and 1.**
   Answer: Split 21 into 20 and 1.
   Calculate (14 × 20) + (14 × 1) = 280 + 14.
   Therefore, 14 × 21 = 294.
9. **Find 4 × 19 using 20 as the nearest multiple.**
   Answer: Replace 19 with 20 to make an easier multiplication.
   Calculate 4 × 20 = 80, then subtract 4.
   Therefore, 4 × 19 = 76.
10. **Find 69 × 45 by splitting both factors into tens and ones.**
    Answer: Split 69 into 60 and 9, and split 45 into 40 and 5.
    The partial products are 2,400, 360, 200, and 45.
    Their sum is 3,005.
11. **A dairy packs 30 groups of 2 pouches; how many pouches are packed?**
    Answer: There are 30 groups.
    Each group contains 2 pouches, so calculate 30 × 2.
    The dairy packs 60 pouches.
12. **Each cow gives 5 litres of milk; how much milk do 29 cows give?**
    Answer: There are 29 cows, and each gives 5 litres.
    Calculate 29 × 5.
    The cows give 145 litres altogether.
13. **A family produces 35 kg of kitchen waste each month; how much does it produce in a year?**
    Answer: There are 12 months in a year.

Calculate 35 × 12.
The family produces 420 kg of waste in a year.

14. **A dairy sells 125 kg of ghee at ₹574 per kg; find the total sale amount.**
Answer: Multiply the price per kilogram by the number of kilograms.
Calculate 574 × 125.
The total sale amount is ₹71,750.
15. **Each of 453 cows gives 13 litres of milk; how much milk do they give altogether?**
Answer: Multiply 453 by 13 to find the total milk.
Calculate (453 × 10) + (453 × 3) = 4,530 + 1,359.
The cows give 5,889 litres altogether.
16. **Find 7 × 4 and 4 × 7, then state what you observe.**
Answer: 7 × 4 = 28.
4 × 7 = 28.
The product stays the same when the order of the factors changes.
17. **Find 3 × 18 using doubling and halving.**
Answer: Double 3 to get 6.
Halve 18 to get 9.
Therefore, 3 × 18 = 6 × 9 = 54.
18. **Find 99 × 15 using 100 as a nearby number.**
Answer: First calculate 100 × 15 = 1,500.
Subtract 15 because 99 is one less than 100.
Therefore, 99 × 15 = 1,485.
19. **An auditorium has 35 rows with 42 seats in each row; find its seating capacity.**
Answer: Multiply the number of rows by the seats in each row.
Calculate 35 × 42 = 35 × 40 + 35 × 2 = 1,400 + 70.
The auditorium can seat 1,470 people.
20. **A school receives 36 boxes with 48 books in each box; find the total number of books.**
Answer: Multiply the number of boxes by the books in each box.
Calculate 36 × 48 = 36 × 40 + 36 × 8 = 1,440 + 288.
The school receives 1,728 books.

6.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

Three-Mark Descriptive Questions with Answers – HOTS:

1. **How can you calculate 75 × 31 using a nearby multiple?**
Answer: Write 31 as 30 + 1.
Calculate (75 × 30) + 75 = 2,250 + 75.
Therefore, 75 × 31 = 2,325.
2. **How can you find 99 × 15 without multiplying 99 directly?**
Answer: Use 100 as the nearby number.
Calculate (100 × 15) − 15 = 1,500 − 15.
Therefore, 99 × 15 = 1,485.
3. **Use doubling and halving to find 50 × 28.**
Answer: Double 50 to get 100.
Halve 28 to get 14.
So, 50 × 28 = 100 × 14 = 1,400.
4. **How can you use 100 to calculate 25 × 16?**
Answer: Double 25 and halve 16 to get 50 × 8.

Double 50 and halve 8 again to get 100 × 4.
Therefore, 25 × 16 = 400.

5. **The product 16 × 44 is 704; explain why 8 × 88 has the same product.**
   Answer: The first factor, 16, is halved to get 8.
   The second factor, 44, is doubled to get 88.
   The product remains 704 because one factor is halved while the other is doubled.
6. **If 12 × 32 = 384, find 24 × 16 and explain the relationship.**
   Answer: The factor 12 is doubled to get 24.
   The factor 32 is halved to get 16.
   Therefore, 24 × 16 has the same product, 384.
7. **If 17 × 23 = 391, find both 17 × 24 and 18 × 23.**
   Answer: Add 17 to 391 to find 17 × 24, which is 408.
   Add 23 to 391 to find 18 × 23, which is 414.
   The added amount is the other factor in each calculation.
8. **Compare 25 × 31 and 12 × 25; which product is greater, and by how much?**
   Answer: 25 × 31 = 775.
   12 × 25 = 300.
   The first product is greater by 475.
9. **Estimate 248 × 49 using nearby convenient numbers.**
   Answer: Round 248 to 250 and 49 to 50.
   Calculate 250 × 50 = 12,500.
   So, 12,500 is a reasonable estimate for the product.
10. **A student writes 32 × 8 = 240 + 2; identify the mistake and correct the answer.**
    Answer: The student split 32 into 30 and 2 but did not multiply 2 by 8.
    The correct calculation is (30 × 8) + (2 × 8) = 240 + 16.
    Therefore, 32 × 8 = 256.
11. **A farm has 297 cows, and each needs 18 kg of fodder daily; how much fodder is needed?**
    Answer: Write 18 as 20 − 2.
    Calculate (297 × 20) − (297 × 2) = 5,940 − 594.
    The farm needs 5,346 kg of fodder each day.
12. **An auditorium has 35 rows with 42 seats in each row; find its capacity using place-value splitting.**
    Answer: Write 42 as 40 + 2.
    Calculate (35 × 40) + (35 × 2) = 1,400 + 70.
    The auditorium can seat 1,470 people.
13. **A school receives 36 boxes with 48 books in each; calculate the total using 50 − 2.**
    Answer: Write 48 as 50 − 2.
    Calculate (36 × 50) − (36 × 2) = 1,800 − 72.
    The school receives 1,728 books.
14. **A sports club sells 57 tickets at ₹115 each and collects ₹1,599 from each of 3 teams; how much does it collect altogether?**
    Answer: Ticket sales amount to 57 × 115 = ₹6,555.
    Team fees amount to 3 × ₹1,599 = ₹4,797.
    The total collection is ₹11,352.
15. **The club spends ₹1,750 on the ground and ₹1,129 on food and water; how much remains from its ₹11,352 collection?**
    Answer: The total expenses are ₹1,750 + ₹1,129 = ₹2,879.
    Subtract the expenses from the collection: ₹11,352 − ₹2,879.
    The club has ₹8,473 remaining.

16. **A family produces 35 kg of kitchen waste each month; find its yearly waste and explain the multiplication.**
    Answer: There are 12 months in a year.
    Calculate 35 × 12 = (35 × 10) + (35 × 2) = 350 + 70.
    The family produces 420 kg of waste in a year.
17. **A family makes 150 kg of compost worth ₹24 per kilogram; find the money it saves.**
    Answer: Write 150 as 100 + 50.
    Calculate (24 × 100) + (24 × 50) = 2,400 + 1,200.
    The family saves ₹3,600.
18. **A team scores 24 fours, 18 sixes, 234 runs by running, and 23 extras; find its total score.**
    Answer: The fours contribute 24 × 4 = 96 runs, and the sixes contribute 18 × 6 = 108 runs.
    Add these to the running runs and extras: 96 + 108 + 234 + 23.
    The total score is 461 runs.
19. **Estimate 132 × 19, then calculate the exact product to see whether the estimate is reasonable.**
    Answer: Round 132 to 130 and 19 to 20 to estimate 2,600.
    The exact product is 132 × 19 = 2,508.
    The estimate is reasonable because it is close to the exact product.
20. **A king offers 5 coins that double daily, 3 coins that triple daily, or 1 coin multiplied by 5 daily for seven days; which choice gives the most?**
    Answer: The totals after seven days are $5 \times 2^7 = 640$, $3 \times 3^7 = 6{,}561$, and $1 \times 5^7 = 78{,}125$.
    The third choice gives the largest total.
    The minister choosing it receives 78,125 coins.

6.11 Five-mark questions with Answers of LOTS Type: (10 Questions)

Five-Mark Descriptive Questions with Answers – LOTS:

1. Find 35 × 12 using place-value splitting.

Answer:

1. Split 12 into 10 and 2.
2. Multiply 35 by 10 to get 350.
3. Multiply 35 by 2 to get 70.
4. Add the partial products: 350 + 70 = 420.
5. Therefore, 35 × 12 = **420**.

2. Find 69 × 45 by splitting 45 into 40 and 5.

Answer:

1. Split 45 into 40 and 5.
2. Calculate 69 × 40 = 2,760.
3. Calculate 69 × 5 = 345.
4. Add the partial products: 2,760 + 345 = 3,105.
5. Therefore, 69 × 45 = **3,105**.

3. A dairy receives 13 litres of milk from each of 453 cows; how much milk does it receive altogether?

Answer:

1. Multiply the number of cows by the milk from each cow: 453 × 13.
2. Split 13 into 10 and 3.

3. Calculate 453 × 10 = 4,530.
4. Calculate 453 × 3 = 1,359, and add: 4,530 + 1,359 = 5,889.
5. The dairy receives **5,889 litres** of milk.

4. A dairy sells 125 kg of ghee at ₹574 per kg; find the total sale amount.
Answer:

1. Multiply the price per kilogram by the number of kilograms: 574 × 125.
2. Split 125 into 100, 20, and 5.
3. Calculate 574 × 100 = 57,400 and 574 × 20 = 11,480.
4. Calculate 574 × 5 = 2,870 and add all three products to get 71,750.
5. The total sale amount is **₹71,750**.

5. An auditorium has 35 rows with 42 seats in each row; find its seating capacity.
Answer:

1. Multiply the number of rows by the seats in each row: 35 × 42.
2. Split 42 into 40 and 2.
3. Calculate 35 × 40 = 1,400.
4. Calculate 35 × 2 = 70, and add: 1,400 + 70 = 1,470.
5. The auditorium can seat **1,470 people**.

6. A school receives 36 boxes with 48 books in each box; find the total number of books.
Answer:

1. Multiply the number of boxes by the number of books in each box: 36 × 48.
2. Split 48 into 40 and 8.
3. Calculate 36 × 40 = 1,440.
4. Calculate 36 × 8 = 288, and add: 1,440 + 288 = 1,728.
5. The school receives **1,728 books**.

7. A family makes 150 kg of compost worth ₹24 per kg; find the total value.
Answer:

1. Multiply the weight of the compost by its value per kilogram: 150 × 24.
2. Split 150 into 100 and 50.
3. Calculate 24 × 100 = 2,400.
4. Calculate 24 × 50 = 1,200, and add: 2,400 + 1,200 = 3,600.
5. The total value of the compost is **₹3,600**.

8. A farm has 297 cows, and each cow needs 18 kg of fodder each day; find the daily fodder requirement.
Answer:

1. Multiply the number of cows by the fodder needed by each cow: 297 × 18.
2. Split 18 into 10 and 8.
3. Calculate 297 × 10 = 2,970.
4. Calculate 297 × 8 = 2,376, and add: 2,970 + 2,376 = 5,346.
5. The farm needs **5,346 kg of fodder each day**.

9. A dairy has 60 pouches; show five different ways to arrange them in equal groups.
Answer:

1. Arrange the pouches as 30 groups of 2: 30 × 2 = 60.
2. Arrange them as 20 groups of 3: 20 × 3 = 60.
3. Arrange them as 15 groups of 4: 15 × 4 = 60.
4. Arrange them as 12 groups of 5: 12 × 5 = 60.
5. They can also be arranged as 10 groups of 6: 10 × 6 = 60.

10. A family produces 35 kg of kitchen waste each month; find the amount produced in one year.
Answer:

1. There are 12 months in one year.

2. Multiply the monthly waste by 12: 35 × 12.
3. Split 12 into 10 and 2.
4. Calculate (35 × 10) + (35 × 2) = 350 + 70 = 420.
5. The family produces **420 kg of kitchen waste in one year**.

6.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

Five-Mark Descriptive Questions with Answers – HOTS:

1. A dairy needs to calculate 75 × 31. Show how the nearest-multiple strategy can be used and find the product.

Answer:

1. The number 31 is one more than 30.
2. First calculate 75 × 30 = 2,250.
3. Add one more group of 75.
4. Add 2,250 + 75 = 2,325.
5. Therefore, 75 × 31 = **2,325**.

2. Estimate 248 × 49, then find the exact product using a nearby multiple.

Answer:

1. Round 248 to 250 and 49 to 50 for an estimate.
2. The estimated product is 250 × 50 = 12,500.
3. For the exact product, write 49 as 50 − 1.
4. Calculate (248 × 50) − 248 = 12,400 − 248 = 12,152.
5. The exact product is **12,152**, which is reasonably close to the estimate.

3. If 67 × 67 = 4,489, find 67 × 68 without multiplying from the beginning.

Answer:

1. The factor 68 is one more than 67.
2. So, 67 × 68 is one group of 67 more than 67 × 67.
3. Start with the given product, 4,489.
4. Add 67 to get 4,556.
5. Therefore, 67 × 68 = **4,556**.

4. A farm has 297 cows, and each needs 18 kg of fodder daily; how many 50 kg bags are needed to feed them?

Answer:

1. First find the total fodder needed: 297 × 18.
2. Calculate (297 × 20) − (297 × 2) = 5,940 − 594 = 5,346 kg.
3. One bag holds 50 kg of fodder.
4. 106 bags hold 5,300 kg, so 46 kg would still be needed.
5. The farm must get **107 bags** to have enough fodder.

5. An auditorium has 35 rows with 42 seats in each; if 5 rows are empty and all other seats are filled, how many people are seated?

Answer:

1. There are 35 rows altogether.
2. Subtract the 5 empty rows to get 30 filled rows.
3. Each filled row has 42 seats.
4. Calculate 30 × 42 = 1,260.
5. Therefore, **1,260 people** are seated.

6. A dairy sells 125 kg of ghee each month at ₹574 per kg; how much does it earn in four months?

Answer:

1. The monthly sale amount is 125 × ₹574.

2. Calculate 574 × (100 + 20 + 5) = 57,400 + 11,480 + 2,870.
3. The dairy earns ₹71,750 each month.
4. Multiply ₹71,750 by 4 to find the four-month total.
5. The dairy earns **₹2,87,000** in four months.

7. A family makes 150 kg of compost worth ₹24 per kg; how much more would 200 kg be worth?

Answer:

1. The value of 150 kg is 150 × ₹24 = ₹3,600.
2. The value of 200 kg is 200 × ₹24 = ₹4,800.
3. Find the difference between the two values.
4. Calculate ₹4,800 − ₹3,600 = ₹1,200.
5. The 200 kg of compost would be worth **₹1,200 more**.

8. A team scores 24 fours, 18 sixes, 234 runs by running, and 23 extras; how many more runs does it need to reach 500?

Answer:

1. Runs from fours are 24 × 4 = 96.
2. Runs from sixes are 18 × 6 = 108.
3. Add all the runs: 96 + 108 + 234 + 23 = 461.
4. Subtract the score from 500: 500 − 461 = 39.
5. The team needs **39 more runs** to reach 500.

9. Three ministers receive different coin rewards: 5 coins doubled daily, 3 coins tripled daily, or 1 coin multiplied by 5 daily for seven days; which reward is greatest?

Answer:

1. The first reward becomes $5 \times 2^7 = 640$ coins.
2. The second reward becomes $3 \times 3^7 = 6{,}561$ coins.
3. The third reward becomes $1 \times 5^7 = 78{,}125$ coins.
4. Compare the three totals.
5. The third choice gives the most, with **78,125 coins**.

10. A student calculates 69 × 45 by finding 69 × 40 = 2,760 and 69 × 5 = 345, but writes the total as 3,005; identify and correct the error.

Answer:

1. The student's two partial products, 2,760 and 345, are correct.
2. Add the partial products carefully.
3. 2,760 + 345 = 3,105.
4. The student made an addition error when combining the partial products.
5. The correct answer is **69 × 45 = 3,105**.

6.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Descriptive Questions with Answers – Applied Type:

1. A school auditorium has 35 rows with 42 seats in each row. How many people can sit in it?

Answer:

1. The auditorium has 35 rows.
2. Each row has 42 seats.
3. Multiply 35 by 42 to find the total number of seats.
4. 35 × 42 = 1,470.
5. The auditorium can seat **1,470 people**.

2. A school receives 36 boxes of books, with 48 books in each box. How many books does it receive altogether?

Answer:

1. The school receives 36 boxes.
2. Each box contains 48 books.
3. Multiply 36 by 48.
4. 36 × 48 = 1,728.
5. The school receives **1,728 books**.

3. A dairy cooperative receives 13 litres of milk each day from each of its 453 cows. How much milk does it receive daily?

Answer:

1. There are 453 cows.
2. Each cow gives 13 litres of milk.
3. Multiply 453 by 13.
4. 453 × 13 = 5,889.
5. The cooperative receives **5,889 litres of milk daily**.

4. A dairy sells 125 kg of ghee at ₹574 per kg. How much does it earn from the sale?

Answer:

1. The dairy sells 125 kg of ghee.
2. Each kilogram costs ₹574.
3. Multiply 125 by ₹574.
4. 125 × 574 = 71,750.
5. The dairy earns **₹71,750**.

5. A family makes 150 kg of compost and would otherwise pay ₹24 per kilogram for it. How much does the family save?

Answer:

1. The family makes 150 kg of compost.
2. One kilogram of compost costs ₹24.
3. Multiply 150 by ₹24.
4. 150 × 24 = 3,600.
5. The family saves **₹3,600**.

6. A family produces 35 kg of kitchen waste each month. How much waste does it produce in one year?

Answer:

1. The family produces 35 kg each month.
2. One year has 12 months.
3. Multiply 35 by 12.
4. 35 × 12 = 420.
5. The family produces **420 kg of kitchen waste in a year**.

7. A farm has 297 cows, and each cow needs 18 kg of fodder each day. How much fodder is needed daily?

Answer:

1. The farm has 297 cows.
2. Each cow needs 18 kg of fodder.
3. Multiply 297 by 18.
4. 297 × 18 = 5,346.
5. The farm needs **5,346 kg of fodder each day**.

8. A sports club sells 57 tickets at ₹115 each and collects ₹1,599 from each of 3 teams. It spends ₹1,750 on the ground and ₹1,129 on food and water. How much money remains?

Answer:

1. Ticket sales bring in 57 × ₹115 = ₹6,555.
2. The team fees bring in 3 × ₹1,599 = ₹4,797.

3. The total collection is ₹6,555 + ₹4,797 = ₹11,352.
4. The total expenses are ₹1,750 + ₹1,129 = ₹2,879.
5. The club has **₹8,473 remaining**.

9. Each of 29 cows produces 5 litres of milk per day. How much milk do they produce in one week if they produce the same amount each day?

Answer:

1. There are 29 cows.
2. Each cow produces 5 litres per day.
3. The cows produce 29 × 5 = 145 litres each day.
4. One week has 7 days, so calculate 145 × 7 = 1,015.
5. They produce **1,015 litres in one week**.

10. A dairy packs 60 pouches into groups of 5. How many groups can it make, and how many pouches will be in all the groups?

Answer:

1. The dairy has 60 pouches altogether.
2. Each group contains 5 pouches.
3. Divide 60 by 5 to find the number of groups.
4. The dairy makes 12 groups, and 12 × 5 = 60.
5. It makes **12 groups with no pouches left over**.

6.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Type Multiple-Choice Questions:

1. **What is 28 × 15?**
   A. 320 B. 400 C. 420 D. 450
   Answer: C. 420

2. **What is 25 × 36?**
   A. 800 B. 850 C. 900 D. 950
   Answer: C. 900

3. **What is 99 × 24?**
   A. 2,376 B. 2,400 C. 2,424 D. 2,376
   Answer: A. 2,376

4. **Using 100 × 37 + 37, what is 101 × 37?**
   A. 3,637 B. 3,700 C. 3,737 D. 3,774
   Answer: C. 3,737

5. **What is 48 × 25?**
   A. 1,000 B. 1,200 C. 1,250 D. 1,500
   Answer: B. 1,200

6. **What is 125 × 16?**
   A. 1,500 B. 1,800 C. 2,000 D. 2,500
   Answer: C. 2,000

7. **What is 34 × 56?**
   A. 1,804 B. 1,904 C. 1,940 D. 2,004
   Answer: B. 1,904

8. **What is 45 × 263?**
   A. 11,385 B. 11,835 C. 12,835 D. 11,835
   Answer: B. 11,835

9. **What is 432 × 107?**
   A. 46,224 B. 45,224 C. 46,024 D. 47,224
   Answer: A. 46,224

10. **What is 310 × 120?**
    A. 3,720 B. 32,700 C. 37,200 D. 372,000
    Answer: C. 37,200

11. **Which expression has the same product as 16 × 44?**
    A. 8 × 88 B. 8 × 22 C. 32 × 22 D. 16 × 22
    Answer: A. 8 × 88

12. **Which product is greater: 25 × 31 or 26 × 30?**
    A. 25 × 31 B. 26 × 30 C. They are equal D. Cannot be determined
    Answer: B. 26 × 30
    (25 × 31 = 775; 26 × 30 = 780.)

13. **If 17 × 23 = 391, what is 17 × 24?**
    A. 398 B. 408 C. 414 D. 425
    Answer: B. 408

14. **If 67 × 67 = 4,489, what is 67 × 68?**
    A. 4,556 B. 4,489 C. 4,623 D. 4,556
    Answer: A. 4,556

15. **What is the best estimate for 248 × 49?**
    A. 2,500 B. 10,000 C. 12,500 D. 25,000
    Answer: C. 12,500

16. **What is a convenient estimate for 132 × 19?**
    A. 1,300 B. 2,600 C. 3,200 D. 13,000
    Answer: B. 2,600
    (Use 130 × 20.)

17. **Using 55 × 10 − 55, what is 55 × 9?**
    A. 445 B. 495 C. 505 D. 550
    Answer: B. 495

18. **Using 250 × 8 − 24, what is 247 × 8?**
    A. 1,952 B. 1,976 C. 2,000 D. 2,024
    Answer: B. 1,976

19. **What is 1,999 × 2?**
    A. 3,998 B. 4,000 C. 4,002 D. 3,999
    Answer: A. 3,998

20. **What is 1,001 × 5?**
A. 5,001 B. 5,005 C. 5,050 D. 5,500
Answer: B. 5,005

21. **What is 26 × 11?**
A. 266 B. 276 C. 286 D. 296
Answer: C. 286

22. **A dairy has 60 pouches and packs 4 in each group. How many groups can it make?**
A. 12 B. 15 C. 16 D. 24
Answer: B. 15

23. **Which number makes 16 × □ = 704?**
A. 22 B. 40 C. 44 D. 48
Answer: C. 44

24. **Which number makes 18 × □ = 90?**
A. 4 B. 5 C. 6 D. 9
Answer: B. 5

25. **A family makes 150 kg of compost worth ₹24 per kilogram. What is its total value?**
A. ₹2,400 B. ₹3,000 C. ₹3,600 D. ₹4,800
Answer: C. ₹3,600

26. **A cooperative receives 13 litres of milk from each of 453 cows. How many litres does it receive?**
A. 5,389 B. 5,839 C. 5,889 D. 5,988
Answer: C. 5,889

27. **If 297 cows each need 18 kg of fodder, how many kilograms are needed?**
A. 5,346 B. 5,436 C. 5,634 D. 5,940
Answer: A. 5,346

28. **A club sells 57 tickets for ₹115 each and collects ₹1,599 from each of 3 teams. What is the total collection?**
A. ₹10,352 B. ₹11,352 C. ₹11,532 D. ₹12,352
Answer: B. ₹11,352

29. **An auditorium has 35 rows with 42 seats in each row. What is its capacity?**
A. 1,270 B. 1,407 C. 1,470 D. 1,740
Answer: C. 1,470

30. **A school receives 36 boxes with 48 books in each box. How many books does it receive?**
A. 1,628 B. 1,728 C. 1,782 D. 1,872
Answer: B. 1,728

6.15 Best Practices Opportunity List from the Chapter: (10 Ideas)

Best Practices for Teaching "The Dairy Farm":

(1) **Use familiar objects:** Let students arrange counters, bottle caps, or paper pouches into equal groups to model multiplication.
(2) **Connect arrays to multiplication:** Show how rows and columns represent factors, then ask students to write the matching multiplication sentence.
(3) **Build understanding of place value:** Use a place-value chart to show why multiplying by 10, 100, or 1,000 changes the value of each digit.
(4) **Teach more than one strategy:** Demonstrate place-value splitting, doubling and halving, and using a nearby multiple; ask students to explain which method feels easiest.
(5) **Encourage estimation first:** Have students estimate a product before calculating it, then compare the estimate with the exact answer.
(6) **Model each step clearly:** When showing partial products or the standard method, explain how each digit contributes to the answer and where the zeros belong.
(7) **Use dairy-related examples:** Create short problems about milk, cows, fodder, ghee, and pouches so students can connect multiplication to everyday situations.
(8) **Invite students to explain their thinking:** Ask them to describe how they solved a problem, compare methods, and listen respectfully to classmates' approaches.
(9) **Discuss and correct errors together:** Present a worked example with a common mistake and guide students to find and correct it.
(10) **Use pair and group activities:** Give small groups different multiplication problems and invite them to present their solutions using drawings, arrays, or number sentences.
(11) **Check learning as you teach:** Use quick oral questions, mini whiteboards, or short exit questions to identify which ideas need more practice.
(12) **Provide practice at different levels:** Offer simple fact practice for students who need support and multi-step word problems for students ready for a challenge.

6.16 Innovations Opportunity List from the Chapter: (10 Ideas)

Innovative Teaching–Learning Ideas:

(1) **Create a mini dairy shop:** Students role-play as dairy owners and customers, calculating the cost of milk, ghee, and other items using multiplication.
(2) **Build pouch arrays:** Use paper milk pouches or counters to create equal rows and columns, then write the matching multiplication facts.
(3) **Set up a multiplication strategy station:** Create stations for place-value splitting, doubling and halving, and using the nearest multiple; students solve a problem at each one.
(4) **Make a "Which method works best?" challenge:** Give groups the same multiplication problem and ask them to solve it in different ways, then compare strategies.
(5) **Use a classroom dairy-farm map:** Add cows, fodder bags, milk cans, and rows of seats to a map; students solve multiplication questions based on the quantities shown.
(6) **Try a "Find the missing factor" puzzle:** Present incomplete multiplication sentences, such as $16 \times \square = 704$, for students to solve and explain.
(7) **Create multiplication pattern cards:** Students match a starting product with related problems, such as 17×23 and 17×24, and explain how the answer changes.
(8) **Organise an estimation race:** Teams estimate products before calculating exactly, then earn points for close estimates and correct reasoning.
(9) **Use a digital quiz or interactive board:** Display quick multiplication questions, strategy choices, or error-spotting problems for students to answer together.

(10) **Invite students to create word problems:** Ask them to write dairy-farm multiplication problems using cows, milk production, fodder, or compost, then exchange and solve them.
(11) **Run a "Spot the mistake" activity:** Show an incorrect worked solution and have students identify the error, correct it, and explain the right steps.
(12) **Make a multiplication strategy booklet:** Students collect examples of useful methods from the chapter and illustrate each with their own solved problem.

6.17: Practicing Questions/Question Bank :

A. Fill in the Blanks:

1. $4 \times 10 =$ _____.
   Answer: 40
2. $30 \times 20 =$ _____.
   Answer: 600
3. $9 \times 0 =$ _____.
   Answer: 0
4. $4 \times 19 = (4 \times 20) -$ _____.
   Answer: 4
5. $3 \times 1{,}000 =$ _____.
   Answer: 3,000

B. One-Mark Questions:

1. **What is 7×8?**
   Answer: $7 \times 8 = 56$.
2. **What is 6×13?**
   Answer: $6 \times 13 = 78$.
3. **What is 18×5?**
   Answer: $18 \times 5 = 90$.
4. **How many pouches are there in 30 groups of 2?**
   Answer: There are 60 pouches.
5. **What is 35×12?**
   Answer: $35 \times 12 = 420$.

C. Two-Mark Questions:

1. **Find 8×5 and 5×8. What do you observe?**
   Answer: $8 \times 5 = 40$ and $5 \times 8 = 40$. Changing the order of the factors does not change the product.
2. **Find 32×8 by splitting 32 into 30 and 2.**
   Answer: $(30 \times 8) + (2 \times 8) = 240 + 16$. Therefore, $32 \times 8 = 256$.
3. **Find 99×15 using 100 as a nearby number.**
   Answer: $99 \times 15 = (100 \times 15) - 15$. Therefore, $99 \times 15 = 1{,}485$.

4. **Find 35 × 12 by splitting 12 into 10 and 2.**
   Answer: (35 × 10) + (35 × 2) = 350 + 70. Therefore, 35 × 12 = 420.

5. **Find 10 × 45 and 20 × 45.**
   Answer: 10 × 45 = 450 and 20 × 45 = 900. The second product is double the first.

D. Three-Mark Questions:

1. **An auditorium has 35 rows with 42 seats in each row. How many seats are there?**
   Answer:
   1. Calculate 35 × 42.
   2. (35 × 40) + (35 × 2) = 1,400 + 70 = 1,470.
   3. The auditorium has 1,470 seats.

2. **A family produces 35 kg of kitchen waste each month. How much waste does it produce in one year?**
   Answer:
   1. There are 12 months in one year.
   2. Calculate 35 × 12 = 420.
   3. The family produces 420 kg of waste in a year.

3. **Each of 29 cows gives 5 litres of milk per day. How much milk do they give altogether?**
   Answer:
   1. There are 29 cows, and each gives 5 litres.
   2. Calculate 29 × 5 = 145.
   3. The cows give 145 litres of milk each day.

4. **A school receives 36 boxes with 48 books in each. How many books does it receive?**
   Answer:
   1. Calculate 36 × 48.
   2. (36 × 40) + (36 × 8) = 1,440 + 288 = 1,728.
   3. The school receives 1,728 books.

5. **A family makes 150 kg of compost worth ₹24 per kg. What is its total value?**
   Answer:
   1. Multiply 150 kg by ₹24 per kilogram.
   2. 150 × 24 = 3,600.
   3. The compost is worth ₹3,600.

E. Five-Mark Questions:

1. **A dairy sells 125 kg of ghee at ₹574 per kg. Find the total sale amount.**
   Answer:
   1. Multiply the price per kilogram by the number of kilograms: 574 × 125.

2. Split 125 into 100, 20, and 5.
3. 574 × 100 = 57,400 and 574 × 20 = 11,480.
4. 574 × 5 = 2,870; the partial products total 71,750.
5. The total sale amount is ₹71,750.

2. **A cooperative receives 13 litres of milk each day from each of 453 cows. Find its daily milk collection.**
   Answer:
   1. Multiply the number of cows by the milk from each cow: 453 × 13.
   2. Split 13 into 10 and 3.
   3. 453 × 10 = 4,530.
   4. 453 × 3 = 1,359; together they make 5,889.
   5. The cooperative receives 5,889 litres each day.
3. **A sports club sells 57 tickets at ₹115 each and collects ₹1,599 from each of 3 teams. Find its total collection.**
   Answer:
   1. Ticket sales amount to 57 × ₹115.
   2. The ticket collection is ₹6,555.
   3. Team fees amount to 3 × ₹1,599.
   4. The team fees total ₹4,797.
   5. The club's total collection is ₹11,352.
4. **A farm has 297 cows, and each cow needs 18 kg of fodder daily. Find the total fodder needed each day.**
   Answer:
   1. Multiply 297 cows by 18 kg per cow.
   2. Split 18 into 10 and 8.
   3. 297 × 10 = 2,970.
   4. 297 × 8 = 2,376; together they make 5,346.
   5. The farm needs 5,346 kg of fodder each day.
5. **Find 69 × 45 by splitting both numbers into tens and ones.**
   Answer:
   1. Split 69 into 60 and 9, and 45 into 40 and 5.
   2. Calculate 60 × 40 = 2,400.
   3. Calculate 60 × 5 = 300 and 9 × 40 = 360.
   4. Calculate 9 × 5 = 45, then add all partial products: 2,400 + 300 + 360 + 45 = 3,105.
   5. Therefore, 69 × 45 = 3,105.

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5th Standard Maths Book Chapter 7

Chapter 7: Shapes and Patterns

7.1 Summary of the Chapter:

Chapter 7: Shapes and Patterns — Summary

(1) Woven mats are made by passing paper strips over and under other strips in a repeating order. Changing the order creates different designs.

(2) A pattern can be described by its repeating steps, such as "one under, one over" or "two over, one under."

(3) A **tessellation** is a pattern of shapes that covers a surface without gaps or overlaps. Equilateral triangles, squares and regular hexagons can tessellate.

(4) Regular pentagons and regular octagons do not tessellate by themselves because they leave gaps when placed together.

(5) Different shapes can be combined to make tiling patterns. Looking at which shapes meet at a point helps us understand and continue the pattern.

(6) A triangle with **two equal sides** is called an **isosceles triangle**. It also has two equal angles.

(7) A triangle with **three equal sides** is called an **equilateral triangle**; its angles are equal. A triangle with **no equal sides** is called a **scalene triangle**.

(8) A **kite** is a four-sided shape with two pairs of equal adjacent sides. A **parallelogram** has equal opposite sides and equal opposite angles.

(9) A **rectangle** is a special parallelogram: all its angles are right angles. Shapes can be explored by joining or rearranging triangular pieces, as in tangrams.

(10) Joining the endpoints of two diameters in a circle forms a four-sided shape. Numbered points around a circle can also be joined in a sequence to create decorative designs.

(11) A **cube net** is a flat arrangement of squares that can be folded to make a cube. Cubes made from smaller cubes can be studied by counting how many faces are painted.

(12) The chapter explores three-dimensional shapes such as the **icosahedron** and **dodecahedron**. Their faces, edges and vertices can be examined by making models from nets or craft materials.

7.2 Important Formulas:

Important Formulae and Geometric Properties:

This chapter, **"Shapes and Patterns,"** focuses mainly on shape properties and repeating designs. It does not introduce numerical calculation formulae. The key properties to remember are:

(1) **Isosceles triangle:** Two sides are equal; the angles opposite those sides are equal.

(2) **Equilateral triangle:** All three sides are equal, and all three angles are equal.

(3) **Scalene triangle:** No two sides are equal.

(4) **Kite:** Two pairs of equal sides are adjacent: **Side 1 = Side 2** and **Side 3 = Side 4**.

(5) **Parallelogram:** Opposite sides are equal, and opposite angles are equal.

(6) **Rectangle:** All four angles are right angles; opposite sides are equal. A rectangle is a special parallelogram.

(7) **Rhombus:** All four sides are equal.

(8) **Tessellation:** Shapes fit together to cover a surface **without gaps or overlaps**.

(9) **Weaving pattern:** The over-and-under steps repeat in a regular order to create the design.

(10) **Circle design:** Joining points on a circle in a repeating sequence creates a pattern.

7.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks — LOTS:

1. A pattern made by passing strips over and under one another is called **weaving**.
2. In a simple weaving pattern, the strip may go one under and one **over**.
3. A **tessellation** covers a region without gaps or overlaps.
4. A shape with five sides is called a **pentagon**.
5. A shape with six sides is called a **hexagon**.
6. A shape with eight sides is called an **octagon**.
7. A regular pentagon has **five** equal sides.
8. A regular octagon has **eight** equal sides.
9. A triangle with two equal sides is called an **isosceles triangle**.
10. An isosceles triangle has **two** equal angles.
11. A triangle with all three sides equal is called an **equilateral triangle**.
12. The angles of an equilateral triangle are **equal**.
13. A triangle with no equal sides is called a **scalene triangle**.
14. A shape with four sides is called a **quadrilateral**.
15. A kite has two pairs of equal **adjacent** sides.
16. In a kite, Side 1 is equal to Side **2**.
17. In a kite, Side 3 is equal to Side **4**.
18. A parallelogram has equal **opposite** sides.
19. The opposite angles of a parallelogram are **equal**.
20. A rectangle is a special type of **parallelogram**.
21. All the angles of a rectangle are **right angles**.
22. A rhombus has all **four** sides equal.
23. A circle can be drawn using a **compass**.
24. A line drawn through the centre of a circle, with endpoints on the circle, is called a **diameter**.
25. A flat shape that can be folded to make a solid is called a **net**.
26. A cube net is made of **squares**.
27. A cube is a **solid** shape.
28. A large cube can be made by joining smaller **cubes**.
29. The corners of a solid shape are called **vertices**.
30. The line segments where the faces of a solid meet are called **edges**.
31. The flat surfaces of a solid shape are called **faces**.
32. A regular triangle that tessellates is an **equilateral triangle**.
33. Regular pentagons do not tessellate because they leave **gaps**.
34. Regular octagons do not tessellate by themselves without gaps or **overlaps**.
35. A tangram is made of different geometrical **shapes**.

7.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

Fill in the Blanks — HOTS:

1. A mat has a repeating row pattern of "2 over, 1 under." After "2 over, 1 under, 2 over," the next strip goes **under**.
2. In a weave, Row 1 begins "1 under, 1 over." If Row 2 begins with the opposite step, it starts "**1 over**."
3. A tiling has no gaps, but some shapes overlap. It is not a proper **tessellation**.
4. A regular pentagon leaves spaces when placed around a point. So regular pentagons do not **tessellate** by themselves.

5. A floor is covered with identical squares, with no gaps or overlaps. The squares **tessellate**.
6. Three equilateral triangles meet at a point, but a gap remains. Adding one more triangle makes **four** triangles at the point.
7. Four squares fit around a point without gaps or overlaps. Adding a fifth square would cause an **overlap**.
8. A pattern uses regular hexagons around a point. If three fit without gaps, adding another would cause an **overlap**.
9. A triangle has side lengths 5 cm, 5 cm and 8 cm. It is an **isosceles** triangle.
10. A triangle has side lengths 6 cm, 6 cm and 6 cm. Its three angles are **equal**.
11. A triangle has sides of 4 cm, 5 cm and 6 cm. It is a **scalene** triangle.
12. An isosceles triangle is folded in half along its line of symmetry. The two halves **match**.
13. A student makes a quadrilateral with two pairs of equal adjacent sides. The shape is a **kite**.
14. A quadrilateral has equal opposite sides and equal opposite angles. It is a **parallelogram**.
15. A parallelogram has four right angles. It is also a **rectangle**.
16. A rectangle has sides of 8 cm and 3 cm. Its opposite sides are **equal**.
17. A quadrilateral has four equal sides, but its angles are not all right angles. It can be a **rhombus**.
18. Two triangular pieces are joined along one full side. The outside boundary has **four** sides.
19. Three triangular pieces are joined to make a shape with five outside sides. The shape is a **pentagon**.
20. A circle is drawn with two diameters. Joining their four endpoints makes a **rectangle**.
21. A student joins points on a circle in a repeating order and gets a design. The design is made by following a **pattern**.
22. A cube is unfolded into a flat arrangement that can be folded back into the solid. The flat arrangement is its **net**.
23. A cube is built from 27 small cubes and painted on the outside. The number of small cubes with three painted faces is **8**.
24. In the painted 3 × 3 × 3 cube, the number of small cubes with two painted faces is **12**.
25. In the painted 3 × 3 × 3 cube, the number of small cubes with one painted face is **6**.
26. In the painted 3 × 3 × 3 cube, the number of small cubes with no painted faces is **1**.
27. A solid has flat surfaces, line segments where surfaces meet, and corners. These are called faces, edges and **vertices**.
28. A student wants to build a 3-D shape using straws for edges and clay for corners. The clay pieces represent the **vertices**.
29. An icosahedron is made with triangular faces. A dodecahedron is made with **pentagonal** faces.
30. A student continues a tiling by checking which shapes meet at each marked point. They should keep the same **arrangement** of shapes to continue the pattern.

7.5 One-mark questions with Answers of LOTS Type: (30 Questions)

One-Mark Questions and Answers — LOTS:

1. **What is a tessellation?**
   A tessellation is a pattern of shapes that covers a surface without gaps or overlaps.
2. **What is a five-sided shape called?**
   A five-sided shape is called a pentagon.

3. **What is a six-sided shape called?**
   A six-sided shape is called a hexagon.
4. **What is an eight-sided shape called?**
   An eight-sided shape is called an octagon.
5. **What is a triangle with two equal sides called?**
   A triangle with two equal sides is called an isosceles triangle.
6. **How many equal sides does an isosceles triangle have?**
   An isosceles triangle has two equal sides.
7. **How many equal angles does an isosceles triangle have?**
   An isosceles triangle has two equal angles.
8. **What is a triangle with three equal sides called?**
   A triangle with three equal sides is called an equilateral triangle.
9. **What is a triangle with no equal sides called?**
   A triangle with no equal sides is called a scalene triangle.
10. **What is a shape with four sides called?**
    A shape with four sides is called a quadrilateral.
11. **What is a kite shape?**
    A kite is a quadrilateral with two pairs of equal adjacent sides.
12. **What kind of sides are equal in a parallelogram?**
    The opposite sides of a parallelogram are equal.
13. **Which angles are equal in a parallelogram?**
    The opposite angles of a parallelogram are equal.
14. **What is a rectangle?**
    A rectangle is a parallelogram with four right angles.
15. **What is a rhombus?**
    A rhombus is a shape with all four sides equal.
16. **Name one regular shape that tessellates by itself.**
    A square tessellates by itself.
17. **Do regular pentagons tessellate by themselves?**
    No, regular pentagons do not tessellate by themselves.
18. **Do regular octagons tessellate by themselves?**
    No, regular octagons do not tessellate by themselves.
19. **What is used to draw a circle?**
    A compass is used to draw a circle.
20. **What is a diameter of a circle?**
    A diameter is a line segment that passes through the centre and joins two points on the circle.
21. **What is weaving in the chapter's mat activity?**
    Weaving is passing strips over and under one another to make a pattern.
22. **How can a weaving pattern be described?**
    A weaving pattern can be described by listing its repeating over-and-under steps.
23. **What is a tangram made up of?**
    A tangram is made up of geometric pieces that can be arranged to form shapes.
24. **What is a cube net?**
    A cube net is a flat arrangement that can be folded to make a cube.
25. **What are the flat surfaces of a solid called?**
    The flat surfaces of a solid are called faces.
26. **What are the line segments where faces meet called?**
    They are called edges.

27. **What are the corners of a solid called?**
    The corners of a solid are called vertices.
28. **What shapes are the faces of an icosahedron?**
    The faces of an icosahedron are triangles.
29. **What shapes are the faces of a dodecahedron?**
    The faces of a dodecahedron are pentagons.
30. **What can be used to build three-dimensional shapes in the chapter's activity?**
    Straws or ice-cream sticks with clay or play dough can be used to build three-dimensional shapes.

7.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark HOTS Questions and Answers:

1. **A mat row follows "2 over, 1 under" repeatedly; after "2 over," what should the next strip do?**
   The next strip should go under.
2. **A second weaving row starts with the opposite step from a row that begins "1 under"; how should it begin?**
   It should begin with "1 over."
3. **A floor pattern has shapes that leave spaces between them; does it form a tessellation?**
   No, because a tessellation has no gaps.
4. **Tiles cover a surface without gaps, but some overlap; is this a proper tessellation?**
   No, because tessellating shapes must not overlap.
5. **Four equal squares fit around a point without gaps; would a fifth square fit there without overlapping?**
   No, because the four squares already fill the space around the point.
6. **Three regular hexagons fit around a point; would a fourth fit without a gap or overlap?**
   No, because the three hexagons already fill the space around the point.
7. **A tiling pattern uses regular pentagons alone, but gaps remain; what does this show?**
   It shows that regular pentagons do not tessellate by themselves.
8. **A triangle has side lengths 7 cm, 7 cm and 10 cm; what type of triangle is it?**
   It is an isosceles triangle because two sides are equal.
9. **A triangle has three equal sides; what can you conclude about its angles?**
   Its three angles are equal.
10. **A triangle has sides of 3 cm, 4 cm and 5 cm; can it be isosceles?**
    No, because none of its sides are equal.
11. **A quadrilateral has two pairs of equal adjacent sides; what shape could it be?**
    It could be a kite.
12. **A quadrilateral has equal opposite sides and equal opposite angles; what shape is it?**
    It is a parallelogram.
13. **A parallelogram has four right angles; what special shape is it?**
    It is a rectangle.
14. **A shape has four equal sides but does not have four right angles; could it be a rhombus?**
    Yes, because a rhombus has four equal sides and need not have right angles.

15. **A student says every parallelogram is a rectangle; is the student correct?**
    No, because a rectangle is a special parallelogram with four right angles.
16. **Two diameters of a circle have their endpoints joined in order; what quadrilateral is formed?**
    A rectangle is formed.
17. **A student wants to make a cube from a flat pattern; what should the pattern be called?**
    It should be called a cube net.
18. **A small cube is at a corner of a painted 3 × 3 × 3 cube; how many of its faces are painted?**
    Three faces are painted.
19. **A small cube lies in the middle of an edge of a painted 3 × 3 × 3 cube; how many faces are painted?**
    Two faces are painted.
20. **A small cube lies at the centre of one face of a painted 3 × 3 × 3 cube; how many faces are painted?**
    One face is painted.
21. **A small cube is hidden completely inside a painted 3 × 3 × 3 cube; how many faces are painted?**
    No faces are painted.
22. **How many corner cubes of a 3 × 3 × 3 cube have three painted faces?**
    Eight corner cubes have three painted faces.
23. **A student arranges triangular pieces to make a shape with five sides; what has the student made?**
    The student has made a pentagon.
24. **A regular triangle is used to tile a surface without gaps; what property helps it fit with copies of itself?**
    Its equal sides and equal angles allow copies to fit together without gaps.
25. **A numbered circle design is made by joining points in a repeating sequence; what helps the design stay consistent?**
    Following the same joining sequence helps the design stay consistent.
26. **A solid has flat surfaces, edges and corners; what should be counted to describe its structure?**
    Its faces, edges and vertices should be counted.
27. **A student uses straws for the edges and clay at the corners of a solid model; what do the clay pieces represent?**
    They represent the vertices.
28. **A model has triangular faces; which named solid from the chapter could it be?**
    It could be an icosahedron.
29. **A model has pentagonal faces; which named solid from the chapter could it be?**
    It could be a dodecahedron.
30. **A student wants to make a decorative mat with a repeating design; what should they decide before weaving?**
    They should decide the repeating over-and-under steps for each row.

7.7 Two-mark questions with Answers of LOTS Type: (20 Questions)

Two-Mark Questions and Answers — LOTS:

1. **What is a tessellation? Give one example of a shape that tessellates.**
    - A tessellation covers a surface without gaps or overlaps.

- Squares can tessellate.

2. **Name two regular shapes that tessellate by themselves.**
   - Equilateral triangles tessellate by themselves.
   - Regular hexagons also tessellate by themselves.
3. **Name two regular shapes that do not tessellate by themselves.**
   - Regular pentagons do not tessellate by themselves.
   - Regular octagons do not tessellate by themselves.
4. **What is an isosceles triangle? How many equal angles does it have?**
   - An isosceles triangle has two equal sides.
   - It has two equal angles.
5. **What is an equilateral triangle? What do you know about its angles?**
   - An equilateral triangle has three equal sides.
   - Its three angles are equal.
6. **What is a scalene triangle? How are its sides different?**
   - A scalene triangle has no equal sides.
   - All three sides have different lengths.
7. **What is a kite? How are its sides arranged?**
   - A kite is a quadrilateral.
   - It has two pairs of equal adjacent sides.
8. **What is a parallelogram? State one property of its angles.**
   - A parallelogram has equal opposite sides.
   - Its opposite angles are equal.
9. **What is a rectangle? State one property of its sides.**
   - A rectangle is a parallelogram with four right angles.
   - Its opposite sides are equal.
10. **What is a rhombus? How are its sides related?**
    - A rhombus is a four-sided shape.
    - All four sides are equal.
11. **What is a quadrilateral? Name one quadrilateral discussed in the chapter.**
    - A quadrilateral is a shape with four sides.
    - A rectangle is a quadrilateral.
12. **What is a diameter of a circle? Where does it pass?**
    - A diameter is a line segment joining two points on a circle.
    - It passes through the centre of the circle.
13. **How is a circle used to make a design in the chapter?**
    - Points are marked around the circle.
    - The points are joined in a sequence to make a design.
14. **What is a cube net? What can it be used to make?**
    - A cube net is a flat arrangement of shapes.
    - It can be folded to make a cube.
15. **What are the faces and edges of a solid?**
    - Faces are the flat surfaces of a solid.
    - Edges are the line segments where faces meet.
16. **What are vertices of a solid? How can they be shown in a model?**
    - Vertices are the corners of a solid.
    - They can be shown using clay or play dough.
17. **What shapes form the faces of an icosahedron and a dodecahedron?**
    - An icosahedron has triangular faces.
    - A dodecahedron has pentagonal faces.
18. **How can students make three-dimensional shapes using craft materials?**

- Straws or ice-cream sticks can be used for the edges.
- Clay or play dough can be used to join them at the corners.

19. **How are paper strips woven to make a mat?**
    - Strips are passed over and under the slits in the base paper.
    - The over-and-under steps are repeated to make a pattern.
20. **What is a tangram? What can be made with its pieces?**
    - A tangram is a set of geometric pieces.
    - Its pieces can be arranged to make different shapes.

7.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Two-Mark HOTS Questions and Answers:

1. **A mat follows the pattern "2 over, 1 under" across a row. What should come after "2 over," and why?**
    - The next strip should go under.
    - The pattern repeats after every two strips over and one strip under.
2. **Row 1 of a mat starts "1 under, 1 over." Row 2 starts with the opposite step. How should Row 2 begin, and what pattern can follow?**
    - Row 2 should begin with "1 over."
    - It can continue by alternating "1 under" and "1 over."
3. **A floor is covered by squares with no gaps or overlaps. What does this show, and what is the arrangement called?**
    - The squares fit together to cover the floor completely.
    - The arrangement is a tessellation.
4. **Regular pentagons leave gaps when placed around a point. What does this tell you about using only regular pentagons to tile a surface?**
    - They cannot cover the surface completely by themselves.
    - Regular pentagons do not tessellate by themselves.
5. **Four squares fit around a point without gaps. Why would a fifth square fail to fit there in the same way?**
    - The four squares already fill the space around the point.
    - A fifth square would overlap the others.
6. **A pattern uses regular hexagons that fit around a point with no gaps. What could happen if another hexagon is added at that point?**
    - The space around the point is already filled.
    - Another hexagon would overlap the others.
7. **A triangle has sides measuring 5 cm, 5 cm and 8 cm. How would you classify it, and what angle property follows?**
    - It is an isosceles triangle because two sides are equal.
    - It has two equal angles.
8. **A triangle has three equal sides. What is its name, and what do you know about its angles?**
    - It is an equilateral triangle.
    - Its three angles are equal.
9. **A triangle has sides measuring 4 cm, 5 cm and 6 cm. How would you classify it, and why?**
    - It is a scalene triangle.
    - None of its sides are equal.
10. **A quadrilateral has two pairs of equal adjacent sides. What shape could it be, and which sides are equal?**

- It could be a kite.
- Each pair of equal sides lies next to each other.

11. **A quadrilateral has equal opposite sides and equal opposite angles. What shape is it, and what other property should you check to decide if it is a rectangle?**
    - It is a parallelogram.
    - To be a rectangle, all four angles must be right angles.
12. **A parallelogram has four right angles. What special shape is it, and why?**
    - It is a rectangle.
    - A rectangle is a parallelogram with four right angles.
13. **A four-sided shape has all sides equal, but its angles are not all right angles. What could it be, and why is it not a square?**
    - It could be a rhombus.
    - It is not a square because its angles are not all right angles.
14. **A student says, "Every four-sided shape is a parallelogram." Is this correct, and why?**
    - No, the statement is incorrect.
    - A parallelogram must have equal opposite sides, but a quadrilateral need not.
15. **Two diameters of a circle are drawn, and their four endpoints are joined in order. What shape is formed, and what feature of the drawing helps?**
    - A rectangle is formed.
    - The two diameters cross at the circle's centre.
16. **A student wants to build a cube from a flat paper pattern. What should the student prepare, and what will happen to it?**
    - The student should prepare a cube net.
    - The net can be folded to make a cube.
17. **A solid model is made with straws for its edges and clay at each corner. What do the straws represent, and what does the clay represent?**
    - The straws represent the edges.
    - The clay represents the vertices.
18. **A large cube is made of 27 small cubes and painted on the outside. How many small cubes have three painted faces, and where are they?**
    - Eight small cubes have three painted faces.
    - They are the cubes at the eight corners.
19. **In the painted 3 × 3 × 3 cube, how many small cubes have two painted faces, and where are they found?**
    - Twelve small cubes have two painted faces.
    - They lie in the middle of the cube's edges.
20. **In the painted 3 × 3 × 3 cube, how many small cubes have one painted face, and where are they found?**
    - Six small cubes have one painted face.
    - They are at the centres of the six outer faces.
21. **In the painted 3 × 3 × 3 cube, how many small cubes have no painted faces, and where are they?**
    - One small cube has no painted faces.
    - It is at the centre of the large cube.
22. **A student joins three triangular pieces to make a shape with five sides. What is the shape called, and how many sides does it have?**
    - It is a pentagon.
    - It has five sides.

23. **A student joins points on a circle by following a repeated sequence. What helps make the design regular, and what is created?**
    - Following the same sequence keeps the joining pattern consistent.
    - The joined lines create a circle design.
24. **A student needs to make a solid with triangular faces using a model from the chapter. Which solid could be used, and what shape are its faces?**
    - The student could make an icosahedron.
    - Its faces are triangles.
25. **A student needs to make a solid with pentagonal faces. Which solid from the chapter should they choose, and what shape are its faces?**
    - The student should choose a dodecahedron.
    - Its faces are pentagons.

7.9. Three-mark questions with Answers of LOTS Type: (15 Questions)

Three-Mark Questions and Answers — LOTS:

1. **Describe the steps used to make a paper mat.**
    - Fold a sheet of paper in half and cut evenly spaced slits, leaving the ends joined.
    - Unfold the sheet and prepare paper strips.
    - Weave the strips over and under the slits in a repeating pattern.
2. **How can a weaving pattern be described?**
    - Write down the order in which a strip goes over and under.
    - Repeat the order for the next part of the row.
    - Describe each row separately if the rows have different patterns.
3. **What is a tessellation?**
    - It is a pattern made by fitting shapes together.
    - The shapes cover a region completely.
    - There are no gaps or overlaps.
4. **Name three regular shapes that can tessellate by themselves.**
    - Equilateral triangles can tessellate.
    - Squares can tessellate.
    - Regular hexagons can tessellate.
5. **What do you observe when regular pentagons are placed together?**
    - The pentagons do not fit together to cover a region completely.
    - Gaps remain between them.
    - Therefore, regular pentagons do not tessellate by themselves.
6. **What do you observe when regular octagons are placed together?**
    - The octagons do not fit together without gaps or overlaps.
    - Spaces are left between the shapes.
    - Therefore, regular octagons do not tessellate by themselves.
7. **Describe an isosceles triangle.**
    - It is a triangle with two equal sides.
    - It has two equal angles.
    - Folding it in half can help compare its angles.
8. **Describe an equilateral triangle.**
    - It has three equal sides.
    - Its three angles are equal.
    - It can be used to make tessellating patterns.
9. **Describe a scalene triangle.**
    - It has no equal sides.

- Its sides have different lengths.
- It is one of the types of triangles explored in the chapter.

10. **Describe the sides of a kite.**
    - A kite is a four-sided shape.
    - It has two pairs of equal sides.
    - The equal sides in each pair are adjacent.
11. **Describe a parallelogram.**
    - It is a four-sided shape.
    - Its opposite sides are equal.
    - Its opposite angles are equal.
12. **Describe a rectangle.**
    - A rectangle is a special type of parallelogram.
    - Its opposite sides are equal.
    - All its angles are right angles.
13. **What is a rhombus?**
    - A rhombus is a four-sided shape.
    - All four of its sides are equal.
    - The chapter uses a rhombus divided into four triangles for activities.
14. **How can a circle be used to make a design?**
    - Mark points around the circle.
    - Join the points in a chosen sequence.
    - Repeating the sequence creates a design.
15. **Name the parts of a solid shape and describe them.**
    - Flat surfaces are called faces.
    - Line segments where faces meet are called edges.
    - Corners where edges meet are called vertices.

7.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

Three-Mark HOTS Questions and Answers:

1. **A student weaves a mat using "2 over, 1 under" repeatedly. Describe how the student can check whether the pattern is correct.**
    - Check whether each group follows the order "2 over, 1 under."
    - Check that the same order continues across the row.
    - Check that the next row follows its planned pattern.
2. **A floor is covered by square tiles, but some tiles overlap. Explain why the arrangement is not a proper tessellation.**
    - A tessellation must cover the surface without overlaps.
    - Overlapping tiles do not fit together correctly.
    - The tiles should be rearranged so they meet edge to edge.
3. **A student tries to cover a surface using only regular pentagons and finds gaps. What can the student conclude?**
    - The regular pentagons do not fit together without gaps.
    - The surface is not completely covered.
    - Regular pentagons do not tessellate by themselves.
4. **A design uses squares and triangles together to cover a surface. What should be checked to decide if it tessellates?**
    - Check whether the shapes cover the whole surface.
    - Check that there are no gaps between the shapes.
    - Check that the shapes do not overlap.

5. **A triangle has sides of 6 cm, 6 cm and 9 cm. Explain how to classify it and what you can say about its angles.**
    - It has two equal sides.
    - It is an isosceles triangle.
    - It has two equal angles.
6. **A triangle has three equal sides. Describe its type and two of its properties.**
    - It is an equilateral triangle.
    - All three sides are equal.
    - All three angles are equal.
7. **A triangle has side lengths 3 cm, 4 cm and 5 cm. Explain why it is scalene.**
    - It has three sides of different lengths.
    - No pair of sides is equal.
    - Therefore, it is a scalene triangle.
8. **A four-sided shape has two pairs of equal adjacent sides. Identify the shape and describe its side arrangement.**
    - The shape could be a kite.
    - One pair of equal sides lies next to each other.
    - The other pair of equal sides also lies next to each other.
9. **A quadrilateral has equal opposite sides and equal opposite angles. Identify it and state two properties.**
    - It is a parallelogram.
    - Its opposite sides are equal.
    - Its opposite angles are equal.
10. **A parallelogram has four right angles. Explain what special shape it is and why.**
    - It is a rectangle.
    - A rectangle has four right angles.
    - A rectangle is a special type of parallelogram.
11. **A shape has four equal sides, but its angles are not all right angles. Explain what it could be and why it is not a square.**
    - It could be a rhombus.
    - A rhombus has four equal sides.
    - It is not a square because its angles are not all right angles.
12. **A student joins the endpoints of two diameters of a circle in order. What shape is formed, and what could the student investigate?**
    - The four joined points form a rectangle.
    - The student can measure its sides.
    - The student can check its angles.
13. **A student wants to make a cube from paper. Explain what the student needs and how it is used.**
    - The student needs a cube net.
    - The net is a flat arrangement that folds into a cube.
    - The student should fold along the edges between its faces.
14. **A large cube made from 27 small cubes is painted on the outside. Describe the small cubes at its corners.**
    - There are eight corner cubes.
    - Each corner cube has three outer faces.
    - Each of those three faces is painted.
15. **In the painted 3 × 3 × 3 cube, describe the small cubes in the middle of its edges.**
    - There are twelve small cubes in the middle of the edges.
    - Each has two outer faces.

- Both of those faces are painted.

16. **In the painted 3 × 3 × 3 cube, describe the small cubes at the centres of its faces.**
    - There are six face-centre cubes.
    - Each has one outer face.
    - That one face is painted.
17. **In the painted 3 × 3 × 3 cube, describe the cube hidden at its centre.**
    - There is one small cube at the centre.
    - It is completely inside the large cube.
    - None of its faces are painted.
18. **A student builds a solid using straws and clay. Explain what each material represents and how they connect.**
    - The straws represent the edges.
    - The clay pieces represent the vertices.
    - The clay joins the straws at the corners.
19. **A student is comparing an icosahedron and a dodecahedron. State the face shape of each and one way to compare them further.**
    - An icosahedron has triangular faces.
    - A dodecahedron has pentagonal faces.
    - The student can compare their edges or vertices.
20. **A student wants to make a repeating circle design using numbered points. Describe a method for creating it.**
    - Mark points around the circle.
    - Join the points in a chosen sequence.
    - Repeat the sequence until the design is complete.

7.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

Five-Mark LOTS Questions and Answers:

1. Describe how to make a woven paper mat.

Answer:

1. Take a sheet of coloured paper and fold it in half.
2. Draw evenly spaced lines and cut slits, leaving the ends joined.
3. Unfold the paper to make the base of the mat.
4. Cut paper strips and weave them through the slits, going over and under.
5. Repeat the weaving pattern and fold the extra strip ends behind the mat.

2. What is a tessellation? Give examples and explain how to check one.

Answer:

1. A tessellation is a pattern that covers a region completely.
2. Its shapes fit together without gaps.
3. Its shapes do not overlap.
4. Equilateral triangles can tessellate by themselves.
5. Squares and regular hexagons can also tessellate by themselves.

3. Describe the properties of an isosceles triangle.

Answer:

1. An isosceles triangle has three sides.
2. Two of its sides are equal.
3. The angles opposite the equal sides are equal.
4. Folding it in half can help compare its two halves.
5. It is one of the triangle types explored in the chapter.

4. Describe the properties of an equilateral triangle.

Answer:

1. An equilateral triangle has three sides.
2. All three sides are equal.
3. All three angles are equal.
4. It is a regular triangle.
5. Equilateral triangles can fit together to make a tessellating pattern.

5. Describe the properties of a scalene triangle.

Answer:

1. A scalene triangle has three sides.
2. None of its sides are equal.
3. Its three sides have different lengths.
4. It is different from an isosceles triangle, which has two equal sides.
5. It is one of the triangle types studied in the chapter.

6. Describe the properties of a kite.

Answer:

1. A kite is a quadrilateral.
2. It has four sides.
3. It has two pairs of equal sides.
4. The equal sides in each pair are adjacent.
5. A kite can be made by folding a square piece of paper.

7. Describe the properties of a parallelogram and a rectangle.

Answer:

1. A parallelogram is a quadrilateral.
2. Its opposite sides are equal.
3. Its opposite angles are equal.
4. A rectangle is a special type of parallelogram.
5. All four angles of a rectangle are right angles.

8. Describe how to make a circle design using marked points.

Answer:

1. Draw a circle and mark points around it.
2. Number the points in order.
3. Choose a sequence for joining the points.
4. Join each point to the next point in that sequence.
5. Continue until the lines make a complete design.

9. Describe the faces, edges and vertices of a solid shape.

Answer:

1. Faces are the flat surfaces of a solid.
2. Edges are the line segments where faces meet.
3. Vertices are the corners of a solid.
4. A cube is an example of a solid shape.
5. These parts can be explored by making models with craft materials.

10. Describe how to make a three-dimensional shape using craft materials.

Answer:

1. Choose a three-dimensional shape to build.
2. Use straws or ice-cream sticks to represent its edges.
3. Use clay or play dough to represent its vertices.
4. Join the sticks at the corners using the clay.
5. Check the model by counting its faces, edges and vertices.

7.12 Five-mark questions with Answers of HOTS Type: (5 Questions)

Five-Mark HOTS Questions and Answers:

1. A student makes a mat with the repeating row pattern "2 over, 1 under." Explain how the student can check and continue the design.

Answer:

1. The repeating group contains three steps: over, over, under.
2. The student should check that this group repeats across the whole row.
3. The next strip after "2 over" should go under.
4. A new row may begin with the opposite step if that is the planned design.
5. Following the row rules consistently keeps the weave pattern regular.

2. A shape has four sides, two pairs of equal adjacent sides, and no right-angle requirement. What shape could it be? Explain your choice.

Answer:

1. The shape is a quadrilateral because it has four sides.
2. Its equal sides form two pairs.
3. Each pair of equal sides is adjacent.
4. These properties describe a kite.
5. The shape does not need to have right angles to be a kite.

3. A class tries to tile a board using regular pentagons, squares and equilateral triangles. Which shapes can tile by themselves, and how can students check?

Answer:

1. Squares can tile the board by themselves.
2. Equilateral triangles can also tile it by themselves.
3. Regular pentagons leave gaps when placed together.
4. Students can place cut-out shapes side by side to test the fit.
5. A successful tiling covers the board without gaps or overlaps.

4. A student says, "If shapes leave no gaps, they always make a tessellation." Explain what is missing from this statement.

Answer:

1. Leaving no gaps is one requirement of a tessellation.
2. The shapes must also not overlap.
3. The arrangement must cover the region completely.
4. Overlapping shapes do not form a proper tessellation.
5. Both gaps and overlaps should be checked.

5. A triangle has two sides of equal length. Describe how a student can classify it and check an angle property.

Answer:

1. The triangle is an isosceles triangle.
2. The student can compare its three side lengths.
3. The angles opposite the equal sides are equal.
4. Folding the triangle in half can help compare its two sides and angles.
5. The fold should match the two halves of the triangle.

6. A quadrilateral has equal opposite sides and equal opposite angles. It also has four right angles. Explain how to classify it.

Answer:

1. It is a quadrilateral because it has four sides.
2. Its equal opposite sides and angles show that it is a parallelogram.
3. Its four right angles show that it is a rectangle.
4. A rectangle is a special type of parallelogram.
5. Therefore, it can be described as both a rectangle and a parallelogram.

7. A student joins the four endpoints of two diameters in order. Explain what shape is formed and how the student can investigate it.
Answer:

1. The four endpoints form the corners of a quadrilateral.
2. Joining them in order forms a rectangle.
3. The student can measure the four sides.
4. The student can check whether each angle is a right angle.
5. The activity can be repeated using another pair of diameters.

8. A large cube is made from 27 small cubes and painted on the outside. How many small cubes have three, two, one or no painted faces?
Answer:

1. Eight small cubes at the corners have three painted faces each.
2. Twelve small cubes in the middle of the edges have two painted faces each.
3. Six small cubes at the centres of the outer faces have one painted face each.
4. One small cube at the centre has no painted faces.
5. These counts add up to 27 small cubes.

9. A student compares models of an icosahedron and a dodecahedron. What features could the student investigate?
Answer:

1. The student can identify the shape of each model's faces.
2. An icosahedron has triangular faces.
3. A dodecahedron has pentagonal faces.
4. The student can count the edges of each model.
5. The student can also count how many faces meet at each vertex.

10. A group wants to create a new tiling pattern using more than one shape. Describe a method they could follow and how they could check their result.
Answer:

1. Choose two or more shapes to use in the design.
2. Place the shapes together around a point.
3. Repeat the arrangement across the surface.
4. Check that the shapes leave no gaps.
5. Check that no shapes overlap.

7.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Applied Questions and Answers:
1. Your class wants to make a woven paper mat for a display table. Describe how you would make it.
Answer:

1. Choose a firm sheet of coloured paper for the base.
2. Fold the paper in half and mark evenly spaced lines.
3. Cut slits along the lines, leaving the ends joined.
4. Unfold the base and weave coloured strips through the slits, over and under.
5. Repeat the pattern, then fold the extra strip ends behind the mat.

2. You are helping to tile a square section of the classroom floor. How could you use square tiles to make a neat tessellation?
Answer:

1. Place the first square tile at one corner of the floor section.
2. Add more squares beside it, edge to edge.
3. Continue the rows to cover the whole section.

4. Check that there are no gaps between the tiles.
5. Check that no tiles overlap.

3. Your school wants a wall design using equilateral triangles. Explain how the triangles can be arranged to cover part of the wall.

Answer:

1. Use cut-outs of equal-sided equilateral triangles.
2. Place the triangles side by side.
3. Fit their edges together to make a repeating pattern.
4. Continue the pattern across the chosen wall area.
5. Check that the triangles leave no gaps or overlaps.

4. You are designing a border for a notebook using regular pentagons. What should you test before choosing this pattern?

Answer:

1. Cut out several regular pentagons.
2. Place them next to one another in a row or around a point.
3. Look for spaces between the shapes.
4. Check whether the shapes can cover the border without gaps or overlaps.
5. If gaps remain, combine them with another shape or choose a different pattern.

5. Your class is making a kite-shaped decoration from paper. What side properties should you check?

Answer:

1. Draw a four-sided shape for the decoration.
2. Make one pair of neighbouring sides equal.
3. Make the other pair of neighbouring sides equal.
4. Measure the sides to check the two pairs.
5. The finished shape should have the side arrangement of a kite.

6. You are checking a rectangular noticeboard before putting a frame around it. Which properties can help you identify it as a rectangle?

Answer:

1. Count four sides on the noticeboard.
2. Check that its opposite sides are equal.
3. Check that its opposite sides are parallel.
4. Check that all four corners are right angles.
5. If these properties fit, the noticeboard is rectangular.

7. Your art group wants to make a circular thread design on card. Describe how to create the design.

Answer:

1. Draw a circle on a piece of card.
2. Mark and number points around its edge.
3. Choose a rule for joining the points.
4. Join the points in the same sequence using thread or lines.
5. Continue until the pattern is complete.

8. You have a flat pattern that your group wants to fold into a cube for a display. How can you check whether it works?

Answer:

1. Cut out the flat pattern carefully.
2. Fold it along the lines between its faces.
3. Bring the edges together to form a solid.
4. Check that the faces meet without unwanted gaps or overlaps.
5. If the pattern folds into a cube, it is a suitable cube net.

9. A toy maker paints a large cube made from 27 small cubes. How can the toy maker describe the painted faces of the small cubes?

Answer:

1. The eight small cubes at the corners have three painted faces each.
2. The twelve cubes in the middle of the edges have two painted faces each.
3. The six cubes at the centres of the outer faces have one painted face each.
4. The single cube in the centre has no painted faces.
5. The four groups together account for all 27 small cubes.

10. Your class wants to build a model of a solid using straws and clay. Explain how to plan and make it.

Answer:

1. Choose a solid shape to model.
2. Use straws or ice-cream sticks for its edges.
3. Use clay or play dough for its vertices.
4. Join the sticks at the corners to make the frame.
5. Count the faces, edges and vertices to describe the finished model.

7.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple-Choice Questions:

1. A mat is woven using the repeating pattern “2 over, 1 under.” After “2 over,” what comes next?
   A. Over B. Under C. Cut D. Fold
   Answer: B. Under
2. A second row begins with the opposite step from a row that starts “1 under.” How should the second row begin?
   A. 1 under B. 1 over C. 2 under D. 2 over
   Answer: B. 1 over
3. Which arrangement is a tessellation?
   A. Shapes leave gaps B. Shapes overlap C. Shapes cover a region with no gaps or overlaps D. Shapes are placed in a pile
   Answer: C. Shapes cover a region with no gaps or overlaps
4. Which regular shape can tessellate by itself?
   A. Pentagon B. Octagon C. Square D. Circle
   Answer: C. Square
5. Three regular hexagons fit around a point without gaps. What would happen if a fourth were added at the same point?
   A. A gap would disappear B. The shapes would overlap C. The shape would become a square D. Nothing would change
   Answer: B. The shapes would overlap
6. How many regular equilateral triangles can fit around a point without gaps or overlaps?
   A. 3 B. 4 C. 5 D. 6
   Answer: D. 6
7. Which regular shape does not tessellate by itself, according to the chapter?
   A. Triangle B. Square C. Hexagon D. Pentagon
   Answer: D. Pentagon
8. A triangle has side lengths 7 cm, 7 cm and 4 cm. What type of triangle is it?
   A. Scalene B. Isosceles C. Equilateral D. Rectangle
   Answer: B. Isosceles

9. A triangle has side lengths 5 cm, 6 cm and 7 cm. What type of triangle is it?
   A. Isosceles B. Equilateral C. Scalene D. Kite
   Answer: C. Scalene
10. Which statement is true about an equilateral triangle?
   A. It has two equal sides B. All sides and angles are equal C. It has no equal sides D. It has four sides
   Answer: B. All sides and angles are equal
11. A quadrilateral has two pairs of equal adjacent sides. Which shape could it be?
   A. Kite B. Circle C. Triangle D. Pentagon
   Answer: A. Kite
12. In a parallelogram, which sides are equal?
   A. Only adjacent sides B. Opposite sides C. No sides D. All sides must be equal
   Answer: B. Opposite sides
13. A parallelogram has four right angles. What is it?
   A. Kite B. Triangle C. Rectangle D. Pentagon
   Answer: C. Rectangle
14. A four-sided shape has all sides equal, but its angles are not all right angles. What could it be?
   A. Rhombus B. Rectangle C. Scalene triangle D. Circle
   Answer: A. Rhombus
15. Which statement describes a scalene triangle?
   A. All its sides are equal B. Two sides are equal C. No sides are equal D. It has four sides
   Answer: C. No sides are equal
16. A line segment passes through the centre of a circle and joins two points on the circle. What is it called?
   A. Edge B. Diameter C. Vertex D. Side
   Answer: B. Diameter
17. A circle has two diameters drawn. Their four endpoints are joined in order. What shape is formed?
   A. Kite B. Rectangle C. Pentagon D. Triangle
   Answer: B. Rectangle
18. What is the flat arrangement that can be folded to make a cube called?
   A. Tangram B. Cube net C. Tessellation D. Diameter
   Answer: B. Cube net
19. How many faces does a cube have?
   A. 4 B. 6 C. 8 D. 12
   Answer: B. 6
20. How many edges does a cube have?
   A. 6 B. 8 C. 12 D. 20
   Answer: C. 12
21. How many vertices does a cube have?
   A. 4 B. 6 C. 8 D. 12
   Answer: C. 8
22. A solid's flat surfaces are called faces. What are its corners called?
   A. Edges B. Vertices C. Diameters D. Nets
   Answer: B. Vertices
23. Which solid has triangular faces?
   A. Dodecahedron B. Icosahedron C. Cube D. Rectangle
   Answer: B. Icosahedron

24. Which solid has pentagonal faces?
    A. Dodecahedron B. Icosahedron C. Cube D. Hexagon
    Answer: A. Dodecahedron
25. A large cube made from 27 small cubes is painted on the outside. How many small cubes have three painted faces?
    A. 4 B. 6 C. 8 D. 12
    Answer: C. 8
26. In the painted 3 × 3 × 3 cube, how many small cubes have two painted faces?
    A. 6 B. 8 C. 12 D. 27
    Answer: C. 12
27. In the painted 3 × 3 × 3 cube, how many small cubes have one painted face?
    A. 1 B. 6 C. 8 D. 12
    Answer: B. 6
28. In the painted 3 × 3 × 3 cube, how many small cubes have no painted faces?
    A. 0 B. 1 C. 6 D. 8
    Answer: B. 1
29. Which materials can be used in the chapter's activity to build a 3-D shape frame?
    A. Straws and clay B. Paper and paint only C. Thread and a compass D. Tiles and water
    Answer: A. Straws and clay
30. A set of geometric pieces is arranged to make different shapes. What is this activity set called?
    A. Tangram B. Diameter C. Cube net D. Tessellation
    Answer: A. Tangram

7.15 Best Practices Opportunity List from the Chapter: (10 Ideas)

Best Practices for Teaching "Shapes and Patterns":

(1) Begin with familiar examples: Show students woven baskets, floor tiles, rangoli and other patterns they may see around them.

(2) Use hands-on materials: Provide coloured paper strips, shape cut-outs, tangram pieces, straws and clay for classroom activities.

(3) Demonstrate weaving step by step: Model how to pass strips over and under, then let students describe and repeat the pattern.

(4) Explore tessellations with cut-outs: Have students fit shapes together and check for gaps or overlaps.

(5) Encourage observation before explanation: Ask students what they notice about sides, angles and repeating units before introducing shape names.

(6) Use paper folding to compare triangles: Let students fold isosceles and equilateral triangles to investigate equal sides and angles.

(7) Promote mathematical discussion: Ask students to explain why a shape fits a pattern or why a particular arrangement leaves gaps.

(8) Use grids for drawing: Provide grid paper for students to draw, continue and create tiling patterns and quadrilaterals.

(9) Connect 2-D shapes to 3-D models: Use cube nets and craft materials to help students relate flat shapes to solid forms.

(10) Include pair and group work: Let students collaborate to make mats, tangrams, tessellations and solid models, with each learner contributing.

(11) Check understanding during activities: Use quick questions, sorting tasks and "show me" demonstrations to identify misunderstandings as they arise.

(12) **Invite students to create and explain:** Ask each student or group to make an original design and describe the shapes or repeating rules used.

7.16 Innovations Opportunity List from the Chapter: (10 Ideas)

Innovations for Teaching "Shapes and Patterns":

(1) **Interactive weaving-pattern challenge:** Students use paper strips to create a mat, then write a simple rule for its repeating over-and-under pattern.
(2) **Digital tessellation studio:** Use a drawing app or interactive whiteboard to copy, rotate and arrange shapes, checking for gaps and overlaps.
(3) **Classroom shape hunt:** Students photograph or sketch real-life examples of triangles, quadrilaterals, circles and repeating patterns around the school.
(4) **Student-created pattern cards:** Each student designs a short weaving or tiling pattern for a classmate to continue.
(5) **Tessellation investigation station:** Set up shape cut-outs and ask students to test which shapes cover a surface by themselves and which leave gaps.
(6) **Fold-and-discover triangle lab:** Students fold paper triangles to compare sides and angles, then record their discoveries in a simple table.
(7) **Tangram design gallery:** Groups use tangram pieces to create pictures or new shapes and explain how they arranged the pieces.
(8) **Build-a-solid activity:** Students use straws and reusable modelling clay to construct solid frames, then label the edges and vertices.
(9) **Cube-net prediction game:** Show students different flat arrangements and ask them to predict which ones can fold into a cube before testing them.
(10) **Painted-cube reasoning model:** Use a large cube built from smaller cubes to explore how painting the outside affects corner, edge, face-centre and inner cubes.
(11) **Pattern-based classroom display:** Invite students to create a shared display combining woven designs, tessellations and circle patterns, with labels explaining the rules.
(12) **Peer-teaching mini lessons:** Assign each group a shape or pattern activity; have students demonstrate it and teach its key features to classmates.

7.17: Practicing Questions/Question Bank:

A. Fill in the Blanks:

1. **A shape with eight sides is called an _____.**
   Answer: Octagon.

2. **A triangle with three equal sides is an _____ triangle.**
   Answer: Equilateral.

3. **A quadrilateral with two pairs of equal adjacent sides is called a _____.**
   Answer: Kite.

4. **A rectangle is a special type of _____.**
   Answer: Parallelogram.

5. **A flat arrangement that folds to make a cube is called a cube _____.**
   Answer: Net.

B. One-Mark Questions:

1. **What is a tessellation?**
   Answer: A tessellation covers a region without gaps or overlaps.

2. **What is a triangle with no equal sides called?**
   Answer: It is called a scalene triangle.

3. **What are the corners of a solid called?**
   Answer: They are called vertices.

4. **What is a diameter of a circle?**
   Answer: It is a line segment through the centre that joins two points on the circle.

5. **What shape are the faces of a dodecahedron?**
   Answer: Its faces are pentagons.

C. Two-Mark Questions:

1. **State two properties of an isosceles triangle.**
   Answer:
   - **It has two equal sides.**
   - **It has two equal angles.**

2. **State two properties of a parallelogram.**
   Answer:
   - **Its opposite sides are equal.**
   - **Its opposite angles are equal.**

3. **How can you check whether shapes form a tessellation?**
   Answer:
   - **Check whether they cover the region completely.**
   - **Check that they leave no gaps or overlaps.**

4. **What are faces and edges of a solid?**
   Answer:
   - **Faces are the flat surfaces of a solid.**
   - **Edges are the line segments where faces meet.**

D. Three-Mark Questions:

1. **Describe an equilateral triangle.**
   Answer:
   - **It has three sides.**
   - **All three sides are equal.**
   - **All three angles are equal.**

2. **Describe the sides of a kite.**
   Answer:
   - **A kite is a quadrilateral.**
   - **It has two pairs of equal sides.**
   - **The sides in each pair are adjacent.**

3. **How can students make a circle design using marked points?**
   Answer:
   - **Draw a circle and mark points around it.**
   - **Join the points in a chosen sequence.**
   - **Repeat the sequence to complete the design.**

E. Five-Mark Questions:

1. **Describe how to make a woven paper mat.**
   Answer:
   - **Fold a sheet of paper in half.**
   - **Draw evenly spaced lines and cut slits, leaving the ends joined.**
   - **Unfold the sheet to make the base.**
   - **Weave paper strips through the slits, going over and under.**
   - **Repeat the pattern and fold the extra strip ends behind the mat.**
2. **Explain how to make a tessellation using square tiles.**
   Answer:
   - **Place a square tile on the surface.**
   - **Place another tile beside it, edge to edge.**
   - **Continue placing tiles in rows.**
   - **Cover the chosen region completely.**
   - **Check that there are no gaps or overlaps.**

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5th Standard Maths Book Chapter 8

Chapter 8: Weight and Capacity

8.1 Summary of the Chapter:

Chapter 8: Weight and Capacity — Summary:

(1) The chapter explores how to estimate and measure the weight of everyday objects using suitable units and weighing scales.

(2) Scales may show weights in kilograms or grams; reading them involves noting the marked units and intervals.

(3) The chapter teaches that **1 kilogram = 1,000 grams** and uses this relationship to convert between kg and g.

(4) Smaller weights can be measured in milligrams: **1 gram = 1,000 milligrams**.

(5) Larger weights can be described using quintals and tonnes: **100 kg = 1 quintal** and **1,000 kg = 1 tonne**.

(6) Weights written in mixed units, such as kg and g, can be converted into one unit to compare or calculate them.

(7) Weights can be added and subtracted in daily-life problems, such as finding the total amount bought or what remains after some is used.

(8) The chapter also uses multiplication and division with weights—for example, finding the weight of several equal sacks or sharing a quantity equally.

(9) Capacity measures how much a container can hold; the chapter introduces litres and millilitres.

(10) The relationship **1 litre = 1,000 millilitres** helps convert and compare capacities.

(11) Capacity problems include adding or subtracting quantities, such as measuring milk, water or petrol, and calculating how much is needed or left.

(12) Everyday examples—shopping, cooking, deliveries and refilling bottles—show how weight and capacity measurements are used in practical situations.

8.2 Important Formulas:

A. UNIT CONVERSIONS:

1 tonne = 10 quintals
1 tonne = 1,000 kg
1 quintal = 100 kg
1 kg = 1,000 g
1 g = 1,000 mg
1 l = 1,000 ml

B. CONVERTING MIXED UNITS:

Kilograms and grams to grams:

Weight in grams = (Number of kilograms × 1,000) + Number of grams

Example: 3 kg 500 g = (3 × 1,000) + 500 = 3,500 g

Grams and milligrams to milligrams:

Weight in milligrams = (Number of grams × 1,000) + Number of milligrams

Example: 4 g 100 mg = (4 × 1,000) + 100 = 4,100 mg

Litres and millilitres to millilitres:

Capacity in millilitres = (Number of litres × 1,000) + Number of millilitres

Example: 2 l 250 ml = (2 × 1,000) + 250 = 2,250 ml

C. BASIC OPERATIONS:

Total weight or capacity = Add the quantities
Remaining quantity = Starting quantity − Quantity used
Quantity of several equal items = Quantity of one item × Number of items
Quantity shared equally = Total quantity ÷ Number of groups
Total cost = Weight in kilograms × Cost per kilogram

D. CONVERTING TO MIXED UNITS:

To convert grams to kilograms and grams, divide the number of grams by 1,000. The quotient gives kilograms, and the remainder gives grams.

To convert millilitres to litres and millilitres, divide the number of millilitres by 1,000. The quotient gives litres, and the remainder gives millilitres.

8.3 Fill-Up the Blank LOTS type questions with Answers: (40 Questions)

Fill in the Blanks — LOTS:

1. 1 kilogram = _____ grams.
   Answer: 1,000 grams
2. 1 gram = _____ milligrams.
   Answer: 1,000 milligrams
3. 1 litre = _____ millilitres.
   Answer: 1,000 millilitres
4. 1 quintal = _____ kilograms.
   Answer: 100 kilograms
5. 1 tonne = _____ quintals.
   Answer: 10 quintals
6. 1 tonne = _____ kilograms.
   Answer: 1,000 kilograms
7. 3 kg = _____ g.
   Answer: 3,000 g
8. 5 kg 250 g = _____ g.
   Answer: 5,250 g
9. 2,250 g = _____ kg _____ g.
   Answer: 2 kg 250 g
10. 4 g = _____ mg.
    Answer: 4,000 mg
11. 4,100 mg = _____ g _____ mg.
    Answer: 4 g 100 mg
12. 8 kg = _____ g.
    Answer: 8,000 g
13. 3 l = _____ ml.
    Answer: 3,000 ml
14. 2 l 500 ml = _____ ml.
    Answer: 2,500 ml
15. 1,500 ml = _____ l _____ ml.
    Answer: 1 l 500 ml

16. 5,000 kg = _____ tonnes.
    Answer: 5 tonnes
17. 9,000 kg = _____ quintals.
    Answer: 90 quintals
18. 800 kg = _____ quintals.
    Answer: 8 quintals
19. 20 quintals = _____ tonnes.
    Answer: 2 tonnes
20. 5 kg 50 g = _____ g.
    Answer: 5,050 g
21. 1 kg 600 g = _____ g.
    Answer: 1,600 g
22. 1,600 g is _____ than 1,700 g.
    Answer: Less
23. 900 g + 7,000 g = _____ g.
    Answer: 7,900 g
24. 2 kg 500 g + 1 kg 750 g = _____ kg _____ g.
    Answer: 4 kg 250 g
25. 10 kg − 4 kg 500 g = _____ kg _____ g.
    Answer: 5 kg 500 g
26. 5 kg 200 g + 8 kg 900 g = _____ kg _____ g.
    Answer: 14 kg 100 g
27. Four sacks weighing 10 kg 500 g each weigh _____ kg altogether.
    Answer: 42 kg
28. 4 kg 800 g shared equally among 4 boxes gives _____ kg _____ g per box.
    Answer: 1 kg 200 g
29. Two 500 ml bottles contain _____ ml altogether.
    Answer: 1,000 ml
30. 3 l of water equals _____ ml.
    Answer: 3,000 ml
31. 3 l of water fills a 500 ml bottle _____ times.
    Answer: 6 times
32. 2 l + 500 ml = _____ ml.
    Answer: 2,500 ml
33. 14,075 ml = _____ l _____ ml.
    Answer: 14 l 75 ml
34. 8 l 86 ml = _____ ml.
    Answer: 8,086 ml
35. A 5 l container holds _____ ml of juice.
    Answer: 5,000 ml
36. A 5 l container can fill _____ glasses of 250 ml each.
    Answer: 20 glasses
37. Eight containers holding 1 l 75 ml each contain _____ l _____ ml altogether.
    Answer: 8 l 600 ml
38. 2 l 500 ml + 2 l 800 ml = _____ l _____ ml.
    Answer: 5 l 300 ml
39. If a bike has 9 l of fuel and 5 l 300 ml is used, _____ l _____ ml remains.
    Answer: 3 l 700 ml
40. 5 kg of tomatoes cost ₹73; 10 kg cost ₹_____.
    Answer: ₹146

8.4 Fill-Up the Blank HOTS type questions with Answers: (35 Questions)

Fill in the Blanks — HOTS:

1. Rathna buys 2 kg 500 g of rice and 1 kg 750 g more. Altogether, she buys _____ kg _____ g.
   Answer: 4 kg 250 g
2. Rathna buys 2 kg 500 g of rice for home use and 1 kg 750 g for a festival. She buys _____ g more for home use.
   Answer: 750 g
3. A 10 kg sack has 4 kg 500 g of sand removed. The sand left weighs _____ kg _____ g.
   Answer: 5 kg 500 g
4. A rice sack weighs 9 kg 750 g before use and 3 kg 700 g afterward. The rice used weighs _____ kg _____ g.
   Answer: 6 kg 50 g
5. A truck delivers 17 kg 900 g of supplies in the morning and 12 kg 700 g in the afternoon. The total delivered is _____ kg _____ g.
   Answer: 30 kg 600 g
6. A box weighs 14 kg 750 g before books are removed and 10 kg 500 g afterward. The books removed weigh _____ kg _____ g.
   Answer: 4 kg 250 g
7. A kitchen has 65 kg of flour. After using 42 kg 275 g, it receives another 52 kg 500 g. It now has _____ kg _____ g of flour.
   Answer: 75 kg 225 g
8. Four potato sacks each weigh 10 kg 500 g. Their total weight is _____ kg.
   Answer: 42 kg
9. A 4 kg 800 g box of nuts is divided equally into four boxes. Each box contains _____ kg _____ g.
   Answer: 1 kg 200 g
10. If 4 people need 500 g of rice for a meal, 8 people will need _____ g, assuming each person eats the same amount.
    Answer: 1,000 g
11. If 5 kg of tomatoes cost ₹73, then 10 kg will cost ₹_____.
    Answer: 146
12. A scrap dealer pays ₹8 per kilogram of newspaper. For 16 kg, the dealer pays ₹_____.
    Answer: 128
13. Iron costs ₹200 for every 10 kg. The cost of 20 kg is ₹_____.
    Answer: 400
14. Plastic costs ₹30 for every 5 kg. The cost of 10 kg is ₹_____.
    Answer: 60
15. A bottle contains 1 l 400 ml of water. Its capacity in millilitres is _____ ml.
    Answer: 1,400 ml
16. A container holds 3 l 8 ml of juice. This is _____ ml.
    Answer: 3,008 ml
17. A jar holds 9 l 90 ml of milk. This is _____ ml.
    Answer: 9,090 ml
18. A vessel contains 14,075 ml of water. This is _____ l _____ ml.
    Answer: 14 l 75 ml

19. Dev's family needs 1 l of milk each day and an extra 500 ml on Sunday. On Sunday, they need _____ l _____ ml.
    Answer: 1 l 500 ml
20. Muskaan drinks 3 l of water in a day. If her bottle holds 500 ml, she drinks _____ full bottles.
    Answer: 6
21. Ramiz drinks two 500 ml bottles of water at school. He drinks _____ l altogether.
    Answer: 1 l
22. Riya fills one 2 l bottle and four 500 ml bottles. Altogether, she fills _____ l of water.
    Answer: 4 l
23. Aarav fills three 750 ml bottles. Riya fills one 2 l bottle and four 500 ml bottles. Riya fills _____ ml more than Aarav.
    Answer: 1,750 ml
24. Milk is poured equally into 8 glasses, each holding 360 ml, and 120 ml remains in the bottle. The bottle held _____ ml at first.
    Answer: 3,000 ml
25. If 1 l of milk costs ₹40, then 3 l costs ₹_____.
    Answer: 120
26. A juice seller has 5 l of juice and serves it in 250 ml glasses. The juice fills _____ glasses.
    Answer: 20
27. A juice seller has served 10 glasses of 250 ml from a 5 l container. _____ l of juice remains.
    Answer: 2 l 500 ml
28. If each 250 ml glass of juice sells for ₹25, selling all 20 glasses from a 5 l container earns ₹_____.
    Answer: 500
29. A factory divides 8 l 400 ml of oil equally among 7 containers. Each container holds _____ l _____ ml.
    Answer: 1 l 200 ml
30. Eight containers each hold 1 l 75 ml of buttermilk. Together, they hold _____ l _____ ml.
    Answer: 8 l 600 ml
31. Compared in grams, 1 kg 600 g is _____ than 1,700 g.
    Answer: Less
32. The weight 10 kg 35 g is equal to _____ g.
    Answer: 10,035 g
33. 900 g + 7,000 g is _____ to 7 kg + 900 g.
    Answer: Equal
34. A parcel weighs 2 kg 250 g. In grams, it weighs _____ g.
    Answer: 2,250 g
35. A shipment weighs 5,000 kg. Its weight is _____ tonnes.
    Answer: 5 tonnes.

8.5 One-mark questions with Answers of LOTS Type: (35 Questions)

One-Mark LOTS Questions and Answers:

1. **How many grams are in 1 kilogram?**
   Answer: 1 kilogram is equal to 1,000 grams.

2. **How many milligrams are in 1 gram?**
   Answer: 1 gram is equal to 1,000 milligrams.
3. **How many millilitres are in 1 litre?**
   Answer: 1 litre is equal to 1,000 millilitres.
4. **How many kilograms are in 1 quintal?**
   Answer: 1 quintal is equal to 100 kilograms.
5. **How many quintals are in 1 tonne?**
   Answer: 1 tonne is equal to 10 quintals.
6. **How many kilograms are in 1 tonne?**
   Answer: 1 tonne is equal to 1,000 kilograms.
7. **Which unit is suitable for measuring a very light object, such as an ant?**
   Answer: Milligrams are suitable for measuring a very light object such as an ant.
8. **Which unit is suitable for measuring the capacity of a bucket?**
   Answer: Litres are suitable for measuring the capacity of a bucket.
9. **Which unit is suitable for measuring the weight of a rice bag?**
   Answer: Kilograms are suitable for measuring the weight of a rice bag.
10. **How many grams are in 3 kilograms?**
    Answer: 3 kilograms are equal to 3,000 grams.
11. **How many milligrams are in 5 grams?**
    Answer: 5 grams are equal to 5,000 milligrams.
12. **How many millilitres are in 2 litres?**
    Answer: 2 litres are equal to 2,000 millilitres.
13. **Write 3 kg 500 g in grams.**
    Answer: 3 kg 500 g is equal to 3,500 g.
14. **Write 2 l 250 ml in millilitres.**
    Answer: 2 l 250 ml is equal to 2,250 ml.
15. **Write 4 g 100 mg in milligrams.**
    Answer: 4 g 100 mg is equal to 4,100 mg.
16. **Write 2,500 g in kilograms and grams.**
    Answer: 2,500 g is equal to 2 kg 500 g.
17. **Write 1,500 ml in litres and millilitres.**
    Answer: 1,500 ml is equal to 1 l 500 ml.
18. **How many quintals are in 500 kilograms?**
    Answer: 500 kilograms are equal to 5 quintals.
19. **How many tonnes are in 3,000 kilograms?**
    Answer: 3,000 kilograms are equal to 3 tonnes.
20. **What is 2 kg 500 g plus 1 kg 500 g?**
    Answer: The total weight is 4 kg.
21. **What is 5 litres minus 2 litres?**
    Answer: The remaining capacity is 3 litres.
22. **What is the total weight of two 500 g bags?**
    Answer: The total weight is 1 kg.
23. **How much water is in two 500 ml bottles?**
    Answer: The two bottles contain 1 litre of water.
24. **How many 500 ml bottles are needed to hold 3 litres of water?**
    Answer: Six 500 ml bottles are needed to hold 3 litres.
25. **A 5 kg bag of rice is divided equally into five smaller bags; how much rice is in each?**
    Answer: Each smaller bag contains 1 kg of rice.

26. **What is the total weight of four sacks weighing 10 kg each?**
    Answer: The four sacks weigh 40 kg altogether.
27. **How much does 900 g plus 100 g weigh?**
    Answer: The total weight is 1 kg.
28. **Which is heavier: 1 kg or 900 g?**
    Answer: 1 kg is heavier than 900 g.
29. **Which is greater: 2 litres or 1,500 ml?**
    Answer: 2 litres is greater than 1,500 ml.
30. **What is the total capacity of a 1 l container and a 500 ml container?**
    Answer: Their total capacity is 1 l 500 ml.
31. **A bottle contains 1 l 400 ml; how much is this in millilitres?**
    Answer: The bottle contains 1,400 ml.
32. **A box weighs 10 kg and 4 kg is removed; what is its remaining weight?**
    Answer: The remaining weight is 6 kg.
33. **What is the total weight of three 2 kg bags?**
    Answer: The three bags weigh 6 kg altogether.
34. **A 5 l container is filled using 1 l jugs; how many jugfuls are needed?**
    Answer: Five jugfuls are needed to fill the container.
35. **What does a weighing scale measure?**
    Answer: A weighing scale measures the weight of an object.

8.6 One-mark questions with Answers of HOTS Type: (35 Questions)

One-Mark HOTS Questions and Answers:

1. **A parcel weighs 2 kg 500 g. Is it heavier, lighter or equal to a parcel weighing 2,500 g?**
   Answer: The parcels have equal weights.
2. **Which is lighter: 5 kg 50 g or 5,500 g?**
   Answer: 5 kg 50 g is lighter.
3. **Compare 800 mg + 88 mg with 880 mg + 8 mg.**
   Answer: The two quantities are equal.
4. **Which is smaller: 2,010 mg or 2 g 100 mg?**
   Answer: 2,010 mg is smaller.
5. **Are 9,000 mg and 90 g equal?**
   Answer: Yes, both quantities are equal.
6. **Which is heavier: 5,000 g or 7,500 g?**
   Answer: 7,500 g is heavier.
7. **A container holds 3 l 8 ml; is this equal to 3,008 ml?**
   Answer: Yes, both quantities are equal.
8. **A jug contains 14,075 ml of juice; how many litres and millilitres is that?**
   Answer: It contains 14 l 75 ml.
9. **Which holds more: 10 l 100 ml or 1 l 600 ml?**
   Answer: 10 l 100 ml holds more.
10. **Which is greater: 190 ml + 800 ml or 800 ml + 109 ml?**
    Answer: 190 ml + 800 ml is greater.
11. **Riya fills 4 l of water and Aarav fills 2 l 250 ml; how much more does Riya fill?**
    Answer: Riya fills 1 l 750 ml more.
12. **A 5 l juice container is poured into 250 ml glasses; how many full glasses can be filled?**
    Answer: It can fill 20 full glasses.

13. **After serving ten 250 ml glasses from a 5 l container, how much juice remains?**
    Answer: 2 l 500 ml remains.
14. **Milk fills eight 360 ml glasses, and 120 ml remains in the bottle; how much milk was there initially?**
    Answer: There was 3 l of milk initially.
15. **A factory divides 8 l 400 ml of oil equally among seven containers; how much goes into each?**
    Answer: Each container gets 1 l 200 ml.
16. **Eight containers hold 1 l 75 ml each; what is their total capacity?**
    Answer: Their total capacity is 8 l 600 ml.
17. **A kitchen has 65 kg of flour, uses 42 kg 275 g, and then buys 52 kg 500 g; how much flour does it have now?**
    Answer: It has 75 kg 225 g of flour now.
18. **A truck delivers 17 kg 900 g in the morning and 12 kg 700 g in the afternoon; what is the total weight delivered?**
    Answer: The total weight delivered is 30 kg 600 g.
19. **A box of books weighs 14 kg 750 g, and after some books are removed it weighs 10 kg 500 g; what was the weight of the books removed?**
    Answer: The removed books weighed 4 kg 250 g.
20. **If 5 kg of tomatoes cost ₹73, how much would 10 kg cost at the same rate?**
    Answer: 10 kg would cost ₹146.
21. **Muskaan drinks 3 l of water and uses a 500 ml bottle; how many full bottles does she drink?**
    Answer: She drinks six full bottles.
22. **A family uses 2 l of milk each day; how much do they use in seven days?**
    Answer: They use 14 l in seven days.
23. **A shopkeeper has 5 kg 50 g of sugar and sells 4 kg 500 g; how much sugar is left?**
    Answer: 550 g of sugar is left.
24. **A 10 kg sack loses 4 kg 500 g of rice; what weight remains?**
    Answer: 5 kg 500 g remains.
25. **A 1 kg 600 g parcel is compared with a 1,700 g parcel; how much lighter is the first parcel?**
    Answer: The first parcel is 100 g lighter.
26. **A store receives 5,000 kg of grain; how many tonnes is this?**
    Answer: The grain weighs 5 tonnes.
27. **A truck carries 9,000 kg of goods; how many quintals is that?**
    Answer: It carries 90 quintals.
28. **A gold ornament weighs 4 g 100 mg; what is its weight in milligrams?**
    Answer: It weighs 4,100 mg.
29. **A bottle holds 1 l 400 ml of water; what is its capacity in millilitres?**
    Answer: Its capacity is 1,400 ml.
30. **A family needs 1 l of milk daily and 500 ml extra on Sunday; how much milk do they need on Sunday?**
    Answer: They need 1 l 500 ml on Sunday.
31. **A restaurant uses 5 kg 200 g, 8 kg 900 g and 12 kg 600 g of onions; what is the total used?**
    Answer: The restaurant uses 26 kg 700 g of onions.
32. **Four people need 500 g of rice; how much rice is needed for eight people if everyone eats the same amount?**
    Answer: Eight people need 1 kg of rice.

33. **A student has 2 l 500 ml of petrol and adds 2 l 800 ml; how much petrol is there altogether?**
    Answer: There is 5 l 300 ml altogether.
34. **After adding 5 l 300 ml of petrol, a bike has 9 l; how much fuel did it have before refuelling?**
    Answer: It had 3 l 700 ml before refuelling.
35. **A container holds 20 ml, but it is meant to hold a bucketful of water; which unit would be more suitable?**
    Answer: Litres would be a more suitable unit.

8.7 Two-mark questions with Answers of LOTS Type: (25 Questions)

Two-Mark LOTS Questions and Answers:

1. How many grams are in 1 kilogram? Write the conversion relationship.
Answer:
- 1 kilogram is equal to 1,000 grams.
- The relationship is **1 kg = 1,000 g**.

2. How many milligrams are in 1 gram? Write the conversion relationship.
Answer:
- 1 gram is equal to 1,000 milligrams.
- The relationship is **1 g = 1,000 mg**.

3. How many millilitres are in 1 litre? Write the conversion relationship.
Answer:
- 1 litre is equal to 1,000 millilitres.
- The relationship is **1 l = 1,000 ml**.

4. Convert 3 kg 500 g into grams.
Answer:
- 3 kg = 3,000 g.
- Therefore, 3 kg 500 g = **3,500 g**.

5. Convert 2 l 250 ml into millilitres.
Answer:
- 2 l = 2,000 ml.
- Therefore, 2 l 250 ml = **2,250 ml**.

6. Convert 4 g 100 mg into milligrams.
Answer:
- 4 g = 4,000 mg.
- Therefore, 4 g 100 mg = **4,100 mg**.

7. Convert 2,250 g into kilograms and grams.
Answer:
- 2,000 g = 2 kg.
- Therefore, 2,250 g = **2 kg 250 g**.

8. Convert 1,500 ml into litres and millilitres.
Answer:
- 1,000 ml = 1 l.
- Therefore, 1,500 ml = **1 l 500 ml**.

9. Convert 100 kg into quintals.
Answer:
- 1 quintal is equal to 100 kg.
- Therefore, 100 kg = **1 quintal**.

10. Convert 2 tonnes into kilograms.

Answer:

- 1 tonne is equal to 1,000 kg.
- Therefore, 2 tonnes = **2,000 kg**.

11. Add 2 kg 500 g and 1 kg 750 g.

Answer:

- 500 g + 750 g = 1 kg 250 g.
- The total is **4 kg 250 g**.

12. Subtract 4 kg 500 g from 10 kg.

Answer:

- 10 kg = 9 kg 1,000 g.
- The difference is **5 kg 500 g**.

13. Add 5 kg 200 g and 8 kg 900 g.

Answer:

- 200 g + 900 g = 1 kg 100 g.
- The total is **14 kg 100 g**.

14. Four sacks each weigh 10 kg 500 g; find their total weight.

Answer:

- 4 × 10 kg = 40 kg and 4 × 500 g = 2,000 g.
- The total weight is **42 kg**.

15. Divide 4 kg 800 g equally among four boxes.

Answer:

- 4 kg ÷ 4 = 1 kg and 800 g ÷ 4 = 200 g.
- Each box receives **1 kg 200 g**.

16. Find the total capacity of eight containers that each hold 1 l 75 ml.

Answer:

- 8 × 1 l = 8 l and 8 × 75 ml = 600 ml.
- The total capacity is **8 l 600 ml**.

17. How many 250 ml glasses can be filled from 5 l of juice?

Answer:

- 5 l = 5,000 ml.
- 5,000 ml ÷ 250 ml = **20 glasses**.

18. How many 500 ml bottles are needed to hold 3 l of water?

Answer:

- 3 l = 3,000 ml.
- 3,000 ml ÷ 500 ml = **6 bottles**.

19. Compare 1 kg 600 g and 1,700 g.

Answer:

- 1 kg 600 g = 1,600 g.
- 1,600 g is less than 1,700 g, so **1 kg 600 g < 1,700 g**.

20. Compare 9,000 mg and 90 g.

Answer:

- 9,000 mg = 9 g.
- Therefore, **9,000 mg < 90 g**.

21. Convert 8 l 400 ml into millilitres.

Answer:

- 8 l = 8,000 ml.
- Therefore, 8 l 400 ml = **8,400 ml**.

22. Add 2 l 500 ml and 2 l 800 ml.

Answer:

- 500 ml + 800 ml = 1 l 300 ml.

- The total is **5 l 300 ml**.

23. A bike has 9 l of fuel after receiving 5 l 300 ml; how much fuel did it have before?
Answer:

- 9 l = 8 l 1,000 ml.
- After subtracting, the bike had **3 l 700 ml**.

24. A scrap dealer pays ₹8 per kilogram for newspapers; how much does the dealer pay for 16 kg?
Answer:

- 16 × ₹8 = ₹128.
- The dealer pays **₹128**.

25. If 5 kg of tomatoes cost ₹73, how much do 10 kg cost at the same rate?
Answer:

- 10 kg is twice 5 kg.
- The cost is twice ₹73, which is **₹146**.

8.8. Two-mark questions with Answers of HOTS Type: (30 Questions)

Two-Mark HOTS Questions and Answers:
1. A picnic basket contains 3 kg of watermelon, 1 kg 750 g of pineapple, 1 kg 250 g of apples and 2 kg of mangoes. What is the total fruit weight, and which fruit weighs the most?
Answer:

- Total weight = 3 kg + 1 kg 750 g + 1 kg 250 g + 2 kg = **8 kg**.
- The watermelon weighs the most at **3 kg**.

2. Arrange the picnic fruits in descending order of weight and name the lightest fruit.
Answer:

- Descending order: watermelon, mangoes, pineapple, apples.
- Apples are the lightest at **1 kg 250 g**.

3. A kitchen has 65 kg of flour, uses 42 kg 275 g and then buys 52 kg 500 g more. How much flour does it have now?
Answer:

- Flour remaining after use = **22 kg 725 g**.
- After the purchase, the kitchen has **75 kg 225 g**.

4. A box weighs 14 kg 750 g before books are removed and 10 kg 500 g afterward. What was the weight of the removed books?
Answer:

- 14 kg 750 g − 10 kg 500 g = **4 kg 250 g**.
- The removed books weighed **4 kg 250 g**.

5. A truck delivers 17 kg 900 g in the morning and 12 kg 700 g in the afternoon. What is the total weight delivered?
Answer:

- 900 g + 700 g = **1 kg 600 g**.
- The total delivery weighs **30 kg 600 g**.

6. A restaurant uses 5 kg 200 g, 8 kg 900 g and 12 kg 600 g of onions over three days. How many kilograms and grams does it use altogether?
Answer:

- 5 kg 200 g + 8 kg 900 g + 12 kg 600 g = **26 kg 700 g**.
- The restaurant uses **26 kg 700 g** of onions.

7. Four potato sacks each weigh 10 kg 500 g. What is their total weight?
Answer:

- Four times 10 kg is **40 kg**, and four times 500 g is **2,000 g**.
- The total weight is **42 kg**.

8. Four people need 500 g of rice for a meal. How much rice is needed for eight people if each person eats the same amount?

Answer:

- Eight people are twice as many as four people.
- They need twice 500 g, which is **1 kg of rice**.

9. Five kilograms of tomatoes cost ₹73. What is the cost of 10 kg at the same rate?

Answer:

- 10 kg is twice 5 kg.
- The cost is twice ₹73, which is **₹146**.

10. Iron costs ₹200 for every 10 kg. How much does 20 kg cost?

Answer:

- 20 kg is twice 10 kg.
- The cost is twice ₹200, which is **₹400**.

11. Riya fills one 2 l bottle and four 500 ml bottles. Aarav fills three 750 ml bottles. Who fills more, and by how much?

Answer:

- Riya fills 4,000 ml, while Aarav fills 2,250 ml.
- Riya fills **1,750 ml more**.

12. Muskaan drinks 3 l of water in a day using a 500 ml bottle. How many full bottles does she drink?

Answer:

- 3 l = **3,000 ml**.
- 3,000 ml ÷ 500 ml = **6 bottles**.

13. A juice seller has 5 l of juice and serves it in 250 ml glasses. How many full glasses can be served?

Answer:

- 5 l = **5,000 ml**.
- 5,000 ml ÷ 250 ml = **20 glasses**.

14. After serving ten 250 ml glasses from a 5 l container, how much juice remains?

Answer:

- Ten glasses contain 10 × 250 ml = **2,500 ml**.
- The remaining juice is **2 l 500 ml**.

15. Milk is poured equally into eight glasses, each holding 360 ml, and 120 ml remains in the bottle. How much milk was in the bottle initially?

Answer:

- The glasses contain 8 × 360 ml = **2,880 ml**.
- Including the leftover milk, the original amount was **3,000 ml or 3 l**.

16. A factory divides 8 l 400 ml of oil equally among seven containers. How much oil goes into each container?

Answer:

- 8 l 400 ml = **8,400 ml**.
- 8,400 ml ÷ 7 = **1,200 ml or 1 l 200 ml**.

17. Each of eight containers holds 1 l 75 ml of buttermilk. What is their total capacity?

Answer:

- Eight containers hold 8 l and 600 ml altogether.
- Their total capacity is **8 l 600 ml**.

18. Tina buys 2 l 500 ml of petrol, and Sam buys 2 l 800 ml more than Tina. How much petrol does Sam buy?

Answer:

- Sam's amount = 2 l 500 ml + 2 l 800 ml.
- Sam buys **5 l 300 ml**.

19. Sam's bike has 9 l of fuel after refuelling with 5 l 300 ml. How much fuel did it have before refuelling?

Answer:

- 9 l − 5 l 300 ml = **3 l 700 ml**.
- The bike had **3 l 700 ml** before refuelling.

20. Mary says 1 l 400 ml equals 1,400 ml, while Daisy says it equals 1,040 ml. Who is correct?

Answer:

- 1 l = **1,000 ml**.
- Mary is correct because 1,000 ml + 400 ml = **1,400 ml**.

21. Compare 5 l 600 ml with 5,400 ml. Which is greater, and by how much?

Answer:

- 5 l 600 ml = **5,600 ml**.
- It is greater by **200 ml**.

22. How much more is 10 l 100 ml than 1 l 600 ml?

Answer:

- 10 l 100 ml = **10,100 ml**, and 1 l 600 ml = **1,600 ml**.
- The difference is **8 l 500 ml**.

23. Compare 4 l 50 ml and 4 l 500 ml. Which holds more, and by how much?

Answer:

- Both quantities contain 4 litres, so compare 50 ml and 500 ml.
- 4 l 500 ml holds **450 ml more**.

24. Compare 190 ml + 800 ml with 800 ml + 109 ml. Which total is greater, and by how much?

Answer:

- The totals are **990 ml** and **909 ml**.
- The first total is greater by **81 ml**.

25. How much greater is 90 g than 9,000 mg?

Answer:

- 9,000 mg = **9 g**.
- 90 g is greater by **81 g**.

26. A 1 kg 600 g parcel is compared with a 1,700 g parcel. How much lighter is the first parcel?

Answer:

- 1 kg 600 g = **1,600 g**.
- The first parcel is **100 g lighter**.

27. Which is heavier, 5 kg 50 g or 4 kg 500 g, and by how much?

Answer:

- The weights are **5,050 g** and **4,500 g**.
- 5 kg 50 g is heavier by **550 g**.

28. How much heavier is 7,500 g than 5,000 g?

Answer:

- 7,500 g − 5,000 g = **2,500 g**.
- The difference is **2 kg 500 g**.

29. Are 3 l 8 ml and 3,008 ml equal? Show the conversion.

Answer:

- 3 l = **3,000 ml**.

- Therefore, 3 l 8 ml = **3,008 ml**, so the quantities are equal.

30. A vessel contains 14,075 ml of milk. Express this in litres and millilitres.
Answer:

- 14,000 ml = **14 l**.
- Therefore, the vessel contains **14 l 75 ml**.

8.9. Three-mark questions with Answers of LOTS Type: (25 Questions)

Three-Mark LOTS Questions and Answers:
1. Convert 2 kg 250 g into grams.
Answer:

- 1 kg = 1,000 g.
- 2 kg = 2,000 g.
- 2 kg 250 g = **2,250 g**.

2. Convert 3 l 250 ml into millilitres.
Answer:

- 1 l = 1,000 ml.
- 3 l = 3,000 ml.
- 3 l 250 ml = **3,250 ml**.

3. Convert 6 g 40 mg into milligrams.
Answer:

- 1 g = 1,000 mg.
- 6 g = 6,000 mg.
- 6 g 40 mg = **6,040 mg**.

4. Convert 4,200 g into kilograms and grams.
Answer:

- 1,000 g = 1 kg.
- 4,000 g = 4 kg.
- 4,200 g = **4 kg 200 g**.

5. Convert 2,350 ml into litres and millilitres.
Answer:

- 1,000 ml = 1 l.
- 2,000 ml = 2 l.
- 2,350 ml = **2 l 350 ml**.

6. Convert 900 kg into quintals.
Answer:

- 1 quintal = 100 kg.
- 900 ÷ 100 = 9.
- 900 kg = **9 quintals**.

7. Convert 4,000 kg into tonnes.
Answer:

- 1 tonne = 1,000 kg.
- 4,000 ÷ 1,000 = 4.
- 4,000 kg = **4 tonnes**.

8. Convert 3 quintals into kilograms.
Answer:

- 1 quintal = 100 kg.
- 3 × 100 = 300.
- 3 quintals = **300 kg**.

9. Add 2 kg 500 g and 1 kg 750 g.

Answer:

- Add the grams: 500 g + 750 g = 1,250 g.
- 1,250 g = 1 kg 250 g.
- The total is **4 kg 250 g**.

10. Add 8 kg 900 g and 12 kg 600 g.

Answer:

- Add the grams: 900 g + 600 g = 1,500 g.
- 1,500 g = 1 kg 500 g.
- The total is **21 kg 500 g**.

11. Subtract 4 kg 500 g from 10 kg.

Answer:

- Write 10 kg as 9 kg 1,000 g.
- Subtract 4 kg 500 g.
- The answer is **5 kg 500 g**.

12. A rice sack weighs 9 kg 750 g before use and 3 kg 700 g afterward. How much rice was used?

Answer:

- Convert the weights to grams: 9,750 g and 3,700 g.
- Subtract: 9,750 g − 3,700 g = 6,050 g.
- The rice used was **6 kg 50 g**.

13. Four sacks each weigh 10 kg 500 g. Find their total weight.

Answer:

- Multiply the kilograms: 4 × 10 kg = 40 kg.
- Multiply the grams: 4 × 500 g = 2,000 g = 2 kg.
- The total weight is **42 kg**.

14. Divide 4 kg 800 g equally among four boxes.

Answer:

- 4 kg ÷ 4 = 1 kg.
- 800 g ÷ 4 = 200 g.
- Each box contains **1 kg 200 g**.

15. A scrap dealer pays ₹8 per kilogram for old newspapers. How much does the dealer pay for 16 kg?

Answer:

- The rate is ₹8 for 1 kg.
- Multiply: 16 × ₹8 = ₹128.
- The dealer pays **₹128**.

16. Iron costs ₹200 for every 10 kg. Find the cost of 20 kg.

Answer:

- 20 kg is twice 10 kg.
- Multiply the cost: 2 × ₹200 = ₹400.
- The cost of 20 kg is **₹400**.

17. Five kilograms of tomatoes cost ₹73. Find the cost of 10 kg.

Answer:

- 10 kg is twice 5 kg.
- Multiply the cost: 2 × ₹73 = ₹146.
- The cost of 10 kg is **₹146**.

18. Muskaan drinks 3 l of water using a 500 ml bottle. How many full bottles does she drink?

Answer:

- Convert 3 l to millilitres: 3 l = 3,000 ml.

- Divide: 3,000 ÷ 500 = 6.
- She drinks **6 bottles**.

19. A 5 l container is used to fill 250 ml glasses. How many full glasses can be filled?
Answer:

- Convert 5 l to millilitres: 5 l = 5,000 ml.
- Divide: 5,000 ÷ 250 = 20.
- The container fills **20 glasses**.

20. Add 2 l 500 ml and 2 l 800 ml.
Answer:

- Add the millilitres: 500 ml + 800 ml = 1,300 ml.
- 1,300 ml = 1 l 300 ml.
- The total is **5 l 300 ml**.

21. Convert 9,000 mg into grams.
Answer:

- 1 g = 1,000 mg.
- Divide: 9,000 ÷ 1,000 = 9.
- 9,000 mg = **9 g**.

22. Compare 1 kg 600 g and 1,700 g.
Answer:

- Convert 1 kg 600 g into grams: 1,600 g.
- Compare 1,600 g and 1,700 g.
- **1 kg 600 g is less than 1,700 g.**

23. Milk fills eight glasses of 360 ml each, and 120 ml remains in the bottle. How much milk was there at first?
Answer:

- Milk poured into the glasses: 8 × 360 ml = 2,880 ml.
- Add the remaining milk: 2,880 ml + 120 ml = 3,000 ml.
- There was **3 l** of milk at first.

24. Divide 8 l 400 ml of oil equally among seven containers.
Answer:

- Convert 8 l 400 ml into millilitres: 8,400 ml.
- Divide: 8,400 ÷ 7 = 1,200 ml.
- Each container holds **1 l 200 ml**.

25. Eight containers each hold 1 l 75 ml of buttermilk. Find their total capacity.
Answer:

- Multiply the litres: 8 × 1 l = 8 l.
- Multiply the millilitres: 8 × 75 ml = 600 ml.
- The total capacity is **8 l 600 ml**.

8.10. Three-mark questions with Answers of HOTS Type: (15 Questions)

Three-Mark HOTS Questions and Answers:
1. A family buys 2 kg 500 g of rice for home use and 1 kg 750 g for a festival. How much rice do they buy altogether, and how much more is for home use?
Answer:

1. Total rice = 2 kg 500 g + 1 kg 750 g = **4 kg 250 g**.
2. Difference = 2 kg 500 g − 1 kg 750 g.
3. They buy **750 g more** for home use.

2. A picnic basket contains watermelon (3 kg), pineapple (1 kg 750 g), apples (1 kg 250 g) and mangoes (2 kg). What is the total weight, and what is the difference between the heaviest and lightest fruits?

Answer:

1. Total weight = 3 kg + 1 kg 750 g + 1 kg 250 g + 2 kg = **8 kg**.
2. The watermelon is heaviest at **3 kg**.
3. Apples are lightest at 1 kg 250 g, so the difference is **1 kg 750 g**.

3. A restaurant uses 5 kg 200 g, 8 kg 900 g and 12 kg 600 g of onions over three days. How much does it use altogether?

Answer:

1. Add the grams: 200 g + 900 g + 600 g = **1 kg 700 g**.
2. Add the kilograms: 5 kg + 8 kg + 12 kg = **25 kg**.
3. The total onion weight is **26 kg 700 g**.

4. A kitchen has 65 kg of flour, uses 42 kg 275 g and then buys 52 kg 500 g more. How much flour does it have now?

Answer:

1. Flour remaining after use = 65 kg − 42 kg 275 g = **22 kg 725 g**.
2. Add the new purchase: 22 kg 725 g + 52 kg 500 g.
3. The kitchen now has **75 kg 225 g** of flour.

5. A farmer has four potato sacks, each weighing 10 kg 500 g. What is their total weight in kilograms and quintals?

Answer:

1. Total weight = 4 × 10 kg 500 g = **42 kg**.
2. 1 quintal = 100 kg.
3. Therefore, 42 kg = **0.42 quintal**.

6. A box weighs 4 kg 250 g. Is this equal to 4,250 g, and how can you check?

Answer:

1. Convert 4 kg to grams: 4 kg = **4,000 g**.
2. Add the remaining 250 g: 4,000 g + 250 g = **4,250 g**.
3. So the two weights are **equal**.

7. Iron costs ₹200 for every 10 kg. Find the cost of 20 kg and explain how you know.

Answer:

1. 20 kg is twice 10 kg.
2. So the cost is twice ₹200.
3. The cost of 20 kg is **₹400**.

8. Plastic costs ₹30 for every 5 kg. Find the cost of 10 kg.

Answer:

1. 10 kg is twice 5 kg.
2. Therefore, the cost is twice ₹30.
3. The cost of 10 kg is **₹60**.

9. Riya fills one 2 l bottle and four 500 ml bottles. Aarav fills three 750 ml bottles. Who fills more water, and by how much?

Answer:

1. Riya fills 2,000 ml + 4 × 500 ml = **4,000 ml**.
2. Aarav fills 3 × 750 ml = **2,250 ml**.
3. Riya fills **1,750 ml more** than Aarav.

10. A juice seller has 5 l of juice and serves it in 250 ml glasses. After serving 10 glasses, how much juice remains, and how many more glasses can be filled?

Answer:

1. The 10 glasses contain 10 × 250 ml = **2,500 ml**.

2. The remaining juice is 5,000 ml − 2,500 ml = **2,500 ml**.
3. This is enough for **10 more glasses**.

11. Milk is poured equally into eight 360 ml glasses, and 120 ml remains in the bottle. How much milk was in the bottle initially?

Answer:

1. Milk poured into the glasses = 8 × 360 ml = **2,880 ml**.
2. Add the 120 ml left in the bottle to get **3,000 ml**.
3. The bottle initially held **3 l** of milk.

12. A factory divides 8 l 400 ml of oil equally among seven containers. How much goes into each container?

Answer:

1. Convert 8 l 400 ml to millilitres: **8,400 ml**.
2. Divide 8,400 ml by 7 to get **1,200 ml**.
3. Each container gets **1 l 200 ml**.

13. Compare 5 l 600 ml with 5,400 ml. Which quantity is greater, and by how much?

Answer:

1. Convert 5 l 600 ml into millilitres: **5,600 ml**.
2. Compare 5,600 ml and 5,400 ml.
3. **5 l 600 ml is greater by 200 ml**.

14. A petrol pump fills 500 l in each of 3 trucks and 300 l in each of 6 buses. How much more fuel is used for the buses?

Answer:

1. Fuel for trucks = 3 × 500 l = **1,500 l**.
2. Fuel for buses = 6 × 300 l = **1,800 l**.
3. The buses use **300 l more** than the trucks.

15. A bike has 9 l of fuel after refuelling with 2 l 500 ml and another 2 l 800 ml. How much fuel did it have before refuelling?

Answer:

1. Fuel added = 2 l 500 ml + 2 l 800 ml = **5 l 300 ml**.
2. Convert 9 l to 9,000 ml and 5 l 300 ml to 5,300 ml.
3. Fuel before refuelling = 9,000 ml − 5,300 ml = **3 l 700 ml**.

8.11 Five-mark questions with Answers of LOTS Type: (10 Questions)

Five-Mark LOTS Questions and Answers:

1. Write the conversions between the weight units from milligrams to tonnes.

Answer:

1. 1 gram = 1,000 milligrams.
2. 1 kilogram = 1,000 grams.
3. 1 quintal = 100 kilograms.
4. 1 tonne = 10 quintals.
5. 1 tonne = 1,000 kilograms.

2. Convert 3 kg 500 g into grams.

Answer:

1. 1 kg = 1,000 g.
2. 3 kg = 3 × 1,000 g.
3. 3 kg = 3,000 g.
4. Add the remaining 500 g.
5. 3 kg 500 g = **3,500 g**.

3. Convert 2 l 250 ml into millilitres.

Answer:

1. 1 l = 1,000 ml.
2. 2 l = 2 × 1,000 ml.
3. 2 l = 2,000 ml.
4. Add the remaining 250 ml.
5. 2 l 250 ml = **2,250 ml**.

4. Add 2 kg 500 g and 1 kg 750 g.

Answer:

1. Write the quantities as 2 kg 500 g and 1 kg 750 g.
2. Add the grams: 500 g + 750 g = 1,250 g.
3. Convert 1,250 g into 1 kg 250 g.
4. Add the kilograms and the carried 1 kg: 2 kg + 1 kg + 1 kg.
5. The total is **4 kg 250 g**.

5. Subtract 4 kg 500 g from 10 kg.

Answer:

1. Write 10 kg as 10 kg 0 g.
2. Regroup it as 9 kg 1,000 g.
3. Subtract the grams: 1,000 g − 500 g = 500 g.
4. Subtract the kilograms: 9 kg − 4 kg = 5 kg.
5. The answer is **5 kg 500 g**.

6. Find the total weight of four potato sacks, each weighing 10 kg 500 g.

Answer:

1. There are 4 sacks.
2. Multiply the kilograms: 4 × 10 kg = 40 kg.
3. Multiply the grams: 4 × 500 g = 2,000 g.
4. Convert 2,000 g into 2 kg.
5. The total weight is **42 kg**.

7. Divide 4 kg 800 g of nuts equally among four boxes.

Answer:

1. The total quantity is 4 kg 800 g.
2. Divide the kilograms: 4 kg ÷ 4 = 1 kg.
3. Divide the grams: 800 g ÷ 4 = 200 g.
4. Combine the two parts: 1 kg + 200 g.
5. Each box contains **1 kg 200 g**.

8. A 5 l container of juice is poured into 250 ml glasses. How many full glasses can be filled?

Answer:

1. The container holds 5 l of juice.
2. Convert 5 l into millilitres: 5 × 1,000 = 5,000 ml.
3. Each glass holds 250 ml.
4. Divide: 5,000 ÷ 250 = 20.
5. The juice fills **20 glasses**.

9. Muskaan drinks 3 l of water in a day using a 500 ml bottle. Find how many bottles she drinks.

Answer:

1. Muskaan drinks 3 l of water.
2. Convert 3 l into millilitres: 3 × 1,000 = 3,000 ml.
3. Each bottle holds 500 ml.
4. Divide: 3,000 ÷ 500 = 6.
5. She drinks **6 bottles**.

10. Rice costs ₹60 per kilogram. Find the cost of 12 kg 500 g of rice.
Answer:

1. Convert 12 kg 500 g into kilograms: 12 kg 500 g = 12.5 kg.
2. The cost per kilogram is ₹60.
3. Calculate 12.5 × 60.
4. 12.5 × 60 = 750.
5. The rice costs **₹750**.

8.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

Five-Mark HOTS Questions and Answers:
1. A picnic basket contains 3 kg of watermelon, 1 kg 750 g of pineapple, 1 kg 250 g of apples and 2 kg of mangoes. Find the total weight, arrange the fruits from heaviest to lightest, and find the difference between the heaviest and lightest.
Answer:

1. Total weight = 3 kg + 1 kg 750 g + 1 kg 250 g + 2 kg = **8 kg**.
2. The watermelon is heaviest at **3 kg**.
3. The mangoes weigh **2 kg**.
4. The pineapple weighs **1 kg 750 g**, and the apples weigh **1 kg 250 g**.
5. Descending order is watermelon, mangoes, pineapple, apples; the difference between the heaviest and lightest is **1 kg 750 g**.

2. A kitchen has 65 kg of flour, uses 42 kg 275 g, and then buys 52 kg 500 g more. Work out the amount left after use and the final amount in the kitchen.
Answer:

1. Starting flour = **65 kg**.
2. Convert 65 kg to 64 kg 1,000 g for subtraction.
3. Flour used = **42 kg 275 g**, leaving **22 kg 725 g**.
4. Add the purchase: 22 kg 725 g + 52 kg 500 g.
5. The kitchen now has **75 kg 225 g** of flour.

3. Riya fills one 2 l bottle and four 500 ml bottles. Aarav fills three 750 ml bottles. Find each person's total, who fills more, and by how much.
Answer:

1. Riya's 2 l bottle contains **2,000 ml**.
2. Her four 500 ml bottles contain **2,000 ml** altogether.
3. Riya fills **4,000 ml**, while Aarav fills 3 × 750 ml = **2,250 ml**.
4. Compare the amounts: 4,000 ml − 2,250 ml = **1,750 ml**.
5. Riya fills **1 l 750 ml more** than Aarav.

4. A petrol pump fills 3 trucks with 500 l each, 6 buses with 300 l each, 10 cars with 50 l each, 12 auto-rickshaws with 8 l each and 25 two-wheelers with 5 l each. Find the total fuel sold and compare the fuel bought by buses and trucks.
Answer:

1. Trucks receive 3 × 500 l = **1,500 l**.
2. Buses receive 6 × 300 l = **1,800 l**.
3. Cars, auto-rickshaws and two-wheelers receive 500 l, 96 l and 125 l respectively.
4. Total fuel sold = 1,500 l + 1,800 l + 500 l + 96 l + 125 l = **4,021 l**.
5. Buses receive **300 l more** fuel than trucks.

5. A juice seller has 5 l of juice, serves 10 glasses of 250 ml, then serves all the remaining juice in glasses of the same size at ₹25 each. How many more glasses can be served, and what is the total earning?
Answer:

1. Convert 5 l into millilitres: 5 l = **5,000 ml**.
2. The first 10 glasses use 10 × 250 ml = **2,500 ml**.
3. The remaining juice is **2,500 ml**, enough for 10 more glasses.
4. Altogether, the seller serves **20 glasses**.
5. Total earning = 20 × ₹25 = **₹500**.

6. Milk is poured into eight glasses holding 360 ml each, with 120 ml left in the bottle. If milk costs ₹40 per litre, find how much milk was in the bottle and its cost.

Answer:

1. Milk poured into the glasses = 8 × 360 ml = **2,880 ml**.
2. Add the remaining 120 ml: 2,880 ml + 120 ml = **3,000 ml**.
3. Convert 3,000 ml into litres: 3,000 ml = **3 l**.
4. The cost per litre is **₹40**.
5. The original milk cost 3 × ₹40 = **₹120**.

7. A factory divides 8 l 400 ml of oil equally among seven containers. How much oil goes into each container, and how much would three containers hold?

Answer:

1. Convert 8 l 400 ml into millilitres: **8,400 ml**.
2. Divide equally: 8,400 ml ÷ 7 = **1,200 ml per container**.
3. Convert 1,200 ml to litres and millilitres: **1 l 200 ml**.
4. Three containers hold 3 × 1,200 ml = **3,600 ml**.
5. Three containers hold **3 l 600 ml** of oil.

8. Rice costs ₹60 per kilogram and flour costs ₹40 per kilogram. Find the costs of 12 kg 500 g of rice and 7 kg 250 g of flour, then find their combined cost.

Answer:

1. Convert 12 kg 500 g of rice to **12.5 kg**.
2. Rice cost = 12.5 × ₹60 = **₹750**.
3. Convert 7 kg 250 g of flour to **7.25 kg**.
4. Flour cost = 7.25 × ₹40 = **₹290**.
5. Combined cost = ₹750 + ₹290 = **₹1,040**.

9. Compare parcels weighing 5 kg 50 g and 4 kg 500 g. Find which is heavier, the difference and their combined weight.

Answer:

1. Convert 5 kg 50 g into grams: **5,050 g**.
2. Convert 4 kg 500 g into grams: **4,500 g**.
3. The first parcel is heavier because **5,050 g > 4,500 g**.
4. The difference is 5,050 g − 4,500 g = **550 g**.
5. Their combined weight is 9,550 g, or **9 kg 550 g**.

10. Sam adds 2 l 500 ml of petrol and 2 l 800 ml to his bike. The fuel gauge then shows 9 l. Find the amount added and the fuel in the bike before refuelling.

Answer:

1. The first amount is **2 l 500 ml**.
2. The second amount is **2 l 800 ml**.
3. Total fuel added = 2 l 500 ml + 2 l 800 ml = **5 l 300 ml**.
4. Convert 9 l to millilitres: **9,000 ml**.
5. Fuel before refuelling = 9,000 ml − 5,300 ml = **3 l 700 ml**.

8.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Applied Questions and Answers:

1. Rathna buys 2 kg 500 g of rice for daily use and 1 kg 750 g for a festival. Find the total amount of rice she buys and how much more she buys for daily use.
Answer:

1. Rice for daily use = **2 kg 500 g**.
2. Rice for the festival = **1 kg 750 g**.
3. Total rice = 2 kg 500 g + 1 kg 750 g.
4. The total is **4 kg 250 g**.
5. Rathna buys **750 g more** for daily use.

2. A family packs 3 kg of watermelon, 1 kg 750 g of pineapple, 1 kg 250 g of apples and 2 kg of mangoes for a picnic. Find the total weight and the difference between the heaviest and lightest fruits.
Answer:

1. Total weight = 3 kg + 1 kg 750 g + 1 kg 250 g + 2 kg.
2. The total fruit weighs **8 kg**.
3. The watermelon is the heaviest at **3 kg**.
4. The apples are the lightest at **1 kg 250 g**.
5. The difference between them is **1 kg 750 g**.

3. A community kitchen has 65 kg of flour, uses 42 kg 275 g and receives another 52 kg 500 g. Find how much flour remains after use and the final amount in the kitchen.
Answer:

1. The kitchen begins with **65 kg** of flour.
2. It uses **42 kg 275 g**.
3. The amount remaining is **22 kg 725 g**.
4. Add the new delivery of **52 kg 500 g**.
5. The kitchen now has **75 kg 225 g** of flour.

4. Four people need 500 g of rice for a meal. How much rice is needed for 8 people, and how much is needed for 12 people if each person eats the same amount?
Answer:

1. Four people need **500 g** of rice.
2. Eight people are twice as many as four people.
3. Rice for 8 people = 2 × 500 g = **1,000 g or 1 kg**.
4. Twelve people are three times as many as four people.
5. Rice for 12 people = 3 × 500 g = **1,500 g or 1 kg 500 g**.

5. A shop sells rice for ₹60 per kilogram and flour for ₹40 per kilogram. Find the cost of 12 kg 500 g of rice and 7 kg 250 g of flour, then find the total bill.
Answer:

1. 12 kg 500 g of rice = **12.5 kg**.
2. Rice cost = 12.5 × ₹60 = **₹750**.
3. 7 kg 250 g of flour = **7.25 kg**.
4. Flour cost = 7.25 × ₹40 = **₹290**.
5. Total bill = ₹750 + ₹290 = **₹1,040**.

6. A family uses 1 l of milk each day and needs an extra 500 ml on Sunday. How much milk do they need for the whole week?
Answer:

1. Monday to Saturday is **6 days**.
2. Milk for those six days = 6 × 1 l = **6 l**.
3. Sunday's milk = 1 l + 500 ml = **1 l 500 ml**.
4. Add the Sunday amount: 6 l + 1 l 500 ml.
5. The family needs **7 l 500 ml** for the week.

7. A juice seller has a 5 l container and serves juice in 250 ml glasses. If each glass costs ₹25, find the number of glasses and the total money earned by selling all the juice.
Answer:

1. Convert 5 l to millilitres: **5,000 ml**.
2. Each glass holds **250 ml**.
3. Number of glasses = 5,000 ÷ 250 = **20**.
4. Each glass sells for **₹25**.
5. Total earnings = 20 × ₹25 = **₹500**.

8. A petrol pump fills 3 trucks with 500 l each and 6 buses with 300 l each. Find the total fuel given to these vehicles and which type receives more fuel altogether.
Answer:

1. Fuel for trucks = 3 × 500 l = **1,500 l**.
2. Fuel for buses = 6 × 300 l = **1,800 l**.
3. Total fuel = 1,500 l + 1,800 l = **3,300 l**.
4. Compare 1,800 l for buses with 1,500 l for trucks.
5. Buses receive **300 l more** fuel altogether.

9. Riya fills one 2 l bottle and four 500 ml bottles for a picnic. Aarav fills three 750 ml bottles. Find how much each fills and who brings more water.
Answer:

1. Riya's 2 l bottle contains **2,000 ml**.
2. Her four 500 ml bottles contain **2,000 ml** altogether.
3. Riya fills **4,000 ml**, while Aarav fills 3 × 750 ml = **2,250 ml**.
4. Difference = 4,000 ml − 2,250 ml = **1,750 ml**.
5. Riya brings **1 l 750 ml more** water.

10. A factory has 8 l 400 ml of oil to divide equally among seven containers. Find the amount in each container and the amount in three containers.
Answer:

1. Convert 8 l 400 ml to millilitres: **8,400 ml**.
2. Divide by seven: 8,400 ÷ 7 = **1,200 ml per container**.
3. Convert 1,200 ml to **1 l 200 ml**.
4. Oil in three containers = 3 × 1,200 ml = **3,600 ml**.
5. Three containers hold **3 l 600 ml** of oil.

8.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style MCQs: Weight and Capacity:

1. What is 4 kg 75 g in grams?
   A. 4,075 g B. 4,750 g C. 4,705 g D. 475 g
   Answer: A. 4,075 g
2. What is 3,250 g in kilograms and grams?
   A. 32 kg 50 g B. 3 kg 250 g C. 3 kg 25 g D. 2 kg 350 g
   Answer: B. 3 kg 250 g
3. What is 2 l 35 ml in millilitres?
   A. 2,350 ml B. 2,035 ml C. 2,305 ml D. 235 ml
   Answer: B. 2,035 ml
4. What is 7,500 mg in grams and milligrams?
   A. 75 g B. 7 g 500 mg C. 7 kg 500 g D. 7 g 50 mg
   Answer: B. 7 g 500 mg

5. What is 2 tonnes 350 kg in kilograms?
   A. 2,350 kg B. 2,035 kg C. 235 kg D. 23,500 kg
   Answer: A. 2,350 kg
6. How does 2 kg 75 g compare with 2,075 g?
   A. It is less B. It is greater C. They are equal D. It is twice as much
   Answer: C. They are equal
7. What is 900 g + 1 kg 250 g?
   A. 2 kg 150 g B. 1 kg 350 g C. 2 kg 50 g D. 2 kg 250 g
   Answer: A. 2 kg 150 g
8. What is 5 kg − 2 kg 750 g?
   A. 3 kg 250 g B. 2 kg 250 g C. 2 kg 750 g D. 3 kg 750 g
   Answer: B. 2 kg 250 g
9. Three boxes each weigh 1 kg 800 g. What is their total weight?
   A. 4 kg 800 g B. 5 kg 400 g C. 5 kg 800 g D. 6 kg
   Answer: B. 5 kg 400 g
10. A 7 kg 200 g quantity of nuts is divided equally among 6 boxes. How much goes in each box?
    A. 1 kg 20 g B. 1 kg 200 g C. 1 kg 500 g D. 2 kg 200 g
    Answer: B. 1 kg 200 g
11. What is the total capacity of four bottles that each hold 2 l 500 ml?
    A. 8 l B. 9 l C. 10 l D. 12 l
    Answer: C. 10 l
12. A container holds 5 l of juice. After 1 l 750 ml is used, how much remains?
    A. 3 l 250 ml B. 3 l 750 ml C. 4 l 250 ml D. 4 l 750 ml
    Answer: A. 3 l 250 ml
13. What is 3 l 600 ml + 2 l 850 ml?
    A. 5 l 450 ml B. 6 l 450 ml C. 6 l 350 ml D. 5 l 1,450 ml
    Answer: B. 6 l 450 ml
14. Six bottles each contain 2 l 500 ml of water. How much water is there altogether?
    A. 12 l B. 15 l C. 16 l D. 18 l
    Answer: B. 15 l
15. How many full 350 ml glasses can be filled from 4 l of juice, and how much remains?
    A. 10 glasses, 500 ml B. 11 glasses, 150 ml C. 11 glasses, 250 ml D. 12 glasses, 200 ml
    Answer: B. 11 glasses, 150 ml
16. How many 250 ml glasses can be filled from 3 l of water?
    A. 10 B. 11 C. 12 D. 14
    Answer: C. 12
17. What is the total capacity of 12 cups that each hold 125 ml?
    A. 1 l 250 ml B. 1 l 500 ml C. 2 l 250 ml D. 12 l
    Answer: B. 1 l 500 ml
18. What is 850 ml + 1 l 250 ml?
    A. 1 l 100 ml B. 2 l 100 ml C. 2 l 500 ml D. 1 l 350 ml
    Answer: B. 2 l 100 ml
19. Compare 3 l 50 ml and 3,050 ml.
    A. 3 l 50 ml is greater B. 3,050 ml is greater C. They are equal D. Their difference is 50 ml
    Answer: C. They are equal

20. What is 14,075 ml in litres and millilitres?
    A. 14 l 750 ml B. 14 l 75 ml C. 1 l 4075 ml D. 140 l 75 ml
    Answer: B. 14 l 75 ml
21. If 5 kg of tomatoes cost ₹73, how much do 15 kg cost at the same rate?
    A. ₹146 B. ₹219 C. ₹365 D. ₹438
    Answer: B. ₹219
22. Iron costs ₹200 for every 10 kg. What is the cost of 35 kg?
    A. ₹600 B. ₹650 C. ₹700 D. ₹750
    Answer: C. ₹700
23. A picnic basket contains 3 kg of watermelon, 1 kg 750 g of pineapple, 1 kg 250 g of apples and 2 kg of mangoes. What is the total weight?
    A. 7 kg B. 7 kg 500 g C. 8 kg D. 8 kg 500 g
    Answer: C. 8 kg
24. A 9 l container has 2 l 500 ml and 1 l 750 ml removed. How much remains?
    A. 4 l 250 ml B. 4 l 500 ml C. 4 l 750 ml D. 5 l 250 ml
    Answer: C. 4 l 750 ml
25. How much oil goes into each container when 8 l 400 ml is shared equally among 7 containers?
    A. 1 l 100 ml B. 1 l 200 ml C. 1 l 400 ml D. 2 l 100 ml
    Answer: B. 1 l 200 ml
26. Muskaan drinks 3 l of water each day using a 500 ml bottle. How many full bottles does she drink?
    A. 5 B. 6 C. 7 D. 8
    Answer: B. 6
27. How much heavier is 5 kg 50 g than 4 kg 500 g?
    A. 450 g B. 500 g C. 550 g D. 650 g
    Answer: C. 550 g
28. What is 15 g 200 mg in milligrams?
    A. 1,520 mg B. 15,020 mg C. 15,200 mg D. 152,000 mg
    Answer: C. 15,200 mg
29. How many quintals are equal to 600 kg?
    A. 6 B. 60 C. 600 D. 0.6
    Answer: A. 6
30. A 5 l juice container is poured into 250 ml glasses. How many glasses can be filled?
    A. 15 B. 18 C. 20 D. 25
    Answer: C. 20

8.15 Best Practices Opportunity List from the Chapter: (12 Ideas)

Best Practices for Teaching "Weight and Capacity":

(1) Begin with real objects: Bring familiar items such as a rice bag, water bottle, bucket and small packet so students can connect measurement units to everyday life.

(2) Teach estimation before measuring: Ask students to estimate an object's weight or a container's capacity, then measure it and compare their estimates.

(3) Demonstrate weighing scales: Show students how to read different scales, locate zero and interpret the marked intervals.

(4) Choose units thoughtfully: Discuss why milligrams suit very light objects, grams suit small items, kilograms suit heavier objects, and litres or millilitres suit capacity.

(5) Use hands-on measuring activities: Let students weigh classroom objects and measure water using containers marked in millilitres and litres.

(6) **Practise conversions with visual supports:** Use double number lines or conversion charts to show relationships such as 1 kg = 1,000 g and 1 l = 1,000 ml.
(7) **Connect conversions to real quantities:** Have students convert actual labels from food packets, bottles or household products.
(8) **Model addition and subtraction clearly:** Show how to combine or compare mixed units, including regrouping when the grams or millilitres total 1,000 or more.
(9) **Encourage more than one method:** Demonstrate both working with mixed units and converting everything to grams or millilitres before calculating.
(10) **Use practical word problems:** Include examples about shopping, recipes, sharing food, refilling bottles and measuring fuel.
(11) **Check understanding through explanation:** Ask students to explain why they selected a unit or how they checked a calculation, not only state the answer.
(12) **Address common conversion errors:** Reinforce that 1 kg is 1,000 g and 1 l is 1,000 ml, and help students distinguish mixed measures such as 1 l 400 ml from 1,040 ml.

8.16 Innovations Opportunity List from the Chapter: (12 Ideas)

Innovations for Teaching "Weight and Capacity":

(1) **Classroom measurement market:** Set up a pretend grocery stall where students weigh items, read price-per-kilogram labels and calculate costs.
(2) **Unit-conversion relay:** Teams solve conversion cards—such as kilograms to grams or litres to millilitres—and pass the completed card to the next teammate.
(3) **Design a measuring container:** Students make a marked bottle or jug scale and use it to measure set quantities of water.
(4) **Measurement detective challenge:** Give students object weights or container capacities in mixed units and ask them to find matching equivalent measures.
(5) **Digital scale and measuring-cylinder station:** Where available, let students compare readings from digital tools with traditional scales and marked containers.
(6) **Create a class measurement database:** Students measure safe classroom objects, record their weights or capacities, and sort the results by unit.
(7) **Recipe scaling activity:** Students adjust a simple recipe for a different number of people by multiplying or dividing ingredient quantities.
(8) **Bottle-refill investigation:** Students test how many small bottles are needed to fill a larger container, then record the measurements and explain their method.
(9) **Measurement mystery cards:** Present clues such as "I weigh more than 1 kg but less than 2 kg" or "I hold 1 l 500 ml," and have students identify or create suitable examples.
(10) **Plan a low-waste picnic:** Students calculate how much food and drink to pack for a group, using the chapter's weight and capacity measures.
(11) **Student-made conversion videos or posters:** Small groups explain one unit relationship using examples, drawings or a short classroom presentation.
(12) **Interactive digital quiz:** Use a simple quiz or classroom display to practise comparing, converting and calculating mixed weights and capacities.

8.17: Practicing Questions/Question Bank:

A. Fill in the Blanks:

1. 1 kilogram = _____ grams.
   Answer: 1,000 grams.

2. 1 gram = _____ milligrams.
   Answer: 1,000 milligrams.

3. 1 litre = _____ millilitres.
   Answer: 1,000 millilitres.

4. 1 quintal = _____ kilograms.
   Answer: 100 kilograms.

5. 1 tonne = _____ kilograms.
   Answer: 1,000 kilograms.

B. One-Mark Questions;

1. Convert 2 kg 500 g into grams.
   Answer: 2 kg 500 g = **2,500 g**.

2. Convert 5 l into millilitres.
   Answer: 5 l = **5,000 ml**.

3. Convert 9,000 mg into grams.
   Answer: 9,000 mg = **9 g**.

4. Which unit would you use to measure the capacity of a bucket?
   Answer: Litres are suitable for measuring a bucket's capacity.

5. What is the total weight of two 500 g bags?
   Answer: The total weight is **1 kg**.

C. Two-Mark Questions:

1. Convert 3 kg 250 g into grams.
   Answer:
   - 3 kg = 3,000 g.
   - 3 kg 250 g = **3,250 g**.

2. Add 2 l 500 ml and 1 l 750 ml.
   Answer:
   - 500 ml + 750 ml = 1 l 250 ml.
   - The total is **4 l 250 ml**.

3. Four potato sacks each weigh 10 kg 500 g. Find their total weight.
   Answer:
   - 4 × 10 kg = 40 kg and 4 × 500 g = 2,000 g.
   - Their total weight is **42 kg**.

4. How many 500 ml bottles are needed to hold 3 l of water?
   Answer:
   - 3 l = 3,000 ml.
   - 3,000 ml ÷ 500 ml = **6 bottles**.

D. Three-Mark Questions:

1. A sack weighs 10 kg, and 4 kg 500 g of rice is used. How much remains?
   Answer:

- Write 10 kg as 9 kg 1,000 g.
- Subtract 4 kg 500 g.
- **5 kg 500 g remains.**

2. A juice seller has 5 l of juice and serves it in 250 ml glasses. How many full glasses can be served?
Answer:
   - 5 l = 5,000 ml.
   - Divide 5,000 ml by 250 ml.
   - The seller can fill **20 glasses**.

3. A family needs 1 l of milk every day and an extra 500 ml on Sunday. How much milk do they need on Sunday?
Answer:
   - The regular daily amount is 1 l.
   - Add 500 ml to 1 l.
   - They need **1 l 500 ml** on Sunday.

E. Five-Mark Questions:

1. Rathna buys 2 kg 500 g of rice for home use and 1 kg 750 g for a festival. Find the total amount and how much more she buys for home use.
Answer:
   - Home-use rice = **2 kg 500 g**.
   - Festival rice = **1 kg 750 g**.
   - Add the two amounts to get **4 kg 250 g**.
   - Subtract 1 kg 750 g from 2 kg 500 g.
   - Rathna buys **750 g more** for home use.

2. A factory divides 8 l 400 ml of oil equally among seven containers. Find the amount in each container and the amount in three containers.
Answer:
   - Convert 8 l 400 ml into **8,400 ml**.
   - Divide 8,400 ml by 7.
   - Each container gets **1,200 ml**.
   - Three containers hold 3 × 1,200 ml = **3,600 ml**.
   - Three containers hold **3 l 600 ml** of oil.

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5th Standard Maths Book Chapter 9

Chapter 9: Coconut Farm

9.1 Summary of the Chapter:

(1) Multiplication and division are related operations. From **5 × 7 = 35**, we can write **35 ÷ 5 = 7** and **35 ÷ 7 = 5**.

(2) In a division sentence, the **dividend ÷ divisor = quotient**. When there is a remainder, **Dividend = Divisor × Quotient + Remainder**.

(3) Dividing numbers with zeros often reveals place-value patterns. For example, dividing by 10 or 100 shifts the digits to smaller place values.

(4) Large numbers can be divided mentally by splitting them into convenient parts, such as **1,248 = 1,200 + 48**.

(5) Some divisions can be solved by halving repeatedly. For example, dividing by 4 means halving twice.

(6) The chapter introduces **partial quotients**: subtracting convenient multiples of the divisor until the remainder is smaller than the divisor.

(7) Division can also be done using place value. Regroup hundreds or tens when they cannot be shared equally, and place zeroes in the quotient when needed.

(8) Estimating before calculating helps check whether a quotient is reasonable.

(9) A remainder can affect real-life answers. If people or items must all be accommodated, the answer may need to be rounded up—for example, arranging enough buses or bags.

(10) Word problems use division to share quantities or find amounts such as daily distances, equal payments, quantities sold, and the number of items made.

(11) Tables and bills can be completed by using multiplication or division to connect **price, quantity, and total amount**.

(12) The chapter ends with mathematical statements. Students decide whether statements are **always true, sometimes true, or never true**, and check whether both sides of an equation have the same value.

9.2 Important Formulas:

IMPORTANT FORMULAS:

(1) Dividend = Divisor × Quotient
N = D × Q
(When the division has no remainder.)

(2) Dividend = Divisor × Quotient + Remainder
N = D × Q + R
(When the division has a remainder.)

(3) Quotient = Dividend ÷ Divisor
Q = N ÷ D

(4) Remainder = Dividend − (Divisor × Quotient)
R = N − (D × Q)

(5) Remainder < Divisor
The remainder must be smaller than the divisor.

(6) Related multiplication and division facts
If a × b = c, then:
c ÷ a = b
c ÷ b = a

(7) Formulas used in the chapter's word problems

(8) Equal share = Total quantity ÷ Number of groups

(9) Quantity = Total amount ÷ Cost per unit
(10) Total amount = Cost per unit × Quantity
(11) Distance covered each day = Total distance ÷ Number of days

9.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks – LOTS:

1. 35 ÷ 7 = _____.
   Answer: 5
2. 35 ÷ 5 = _____.
   Answer: 7
3. If 5 × 7 = 35, then 35 ÷ 7 = _____.
   Answer: 5
4. In a division sentence, the number being divided is called the _____.
   Answer: Dividend
5. The number by which we divide is called the _____.
   Answer: Divisor
6. The answer to a division problem is called the _____.
   Answer: Quotient
7. When a division is not exact, the leftover amount is the _____.
   Answer: Remainder
8. Dividend = Divisor × Quotient + _____.
   Answer: Remainder
9. The remainder must be smaller than the _____.
   Answer: Divisor
10. 30 × 30 = _____.
    Answer: 900
11. 15 × 60 = _____.
    Answer: 900
12. 400 × 8 = _____.
    Answer: 3,200
13. 200 × 16 = _____.
    Answer: 3,200
14. 150 ÷ 3 = _____.
    Answer: 50
15. 80 ÷ 4 = _____.
    Answer: 20
16. 500 ÷ 5 = _____.
    Answer: 100
17. 100 ÷ 10 = _____.
    Answer: 10
18. 300 ÷ 100 = _____.
    Answer: 3
19. 500 ÷ 50 = _____.
    Answer: 10
20. 200 ÷ 20 = _____.
    Answer: 10
21. 440 ÷ 44 = _____.
    Answer: 10
22. 630 ÷ 63 = _____.
    Answer: 10
23. 1,000 ÷ 10 = _____.
    Answer: 100
24. 1,000 ÷ 100 = _____.
    Answer: 10

25. 1,600 ÷ 4 = _____.
    Answer: 400
26. 2,000 ÷ 20 = _____.
    Answer: 100
27. 3,700 ÷ 37 = _____.
    Answer: 100
28. 4,000 ÷ 40 = _____.
    Answer: 100
29. 1,248 ÷ 6 = _____.
    Answer: 208
30. 1,992 ÷ 4 = _____.
    Answer: 498
31. 128 ÷ 4 = _____.
    Answer: 32
32. 582 ÷ 6 = _____.
    Answer: 97
33. 4,376 ÷ 8 = _____.
    Answer: 547
34. 324 ÷ 3 = _____.
    Answer: 108
35. 160 km divided equally over 20 days gives _____ km per day.
    Answer: 8 km

9.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

Fill in the Blanks – HOTS:

1. If 726 ÷ 4 = 181 remainder 2, then 726 = (4 × 181) + _____.
   Answer: 2
2. If 902 ÷ 16 = 56 remainder 6, then 902 = (16 × 56) + _____.
   Answer: 6
3. A division has a divisor of 25, a quotient of 21, and a remainder of 10. Its dividend is _____.
   Answer: 535
4. When 535 coconuts are packed in bags of 25, 21 bags are full and _____ more bag is needed.
   Answer: 1
5. A theatre has 45 seats per show. To seat 475 people, it needs _____ shows.
   Answer: 11
6. If the theatre holds two shows each day, 11 shows will take _____ days to complete.
   Answer: 6
7. Five kilograms of ice cream equals _____ grams.
   Answer: 5,000
8. After 400 g is left from 5 kg, the amount shared by 23 friends is _____ g per friend.
   Answer: 200
9. A group has 15 biscuit packets with 8 biscuits in each. If 6 people share them evenly over 4 days, each person gets _____ biscuits per day.
   Answer: 5
10. A carpenter has 120 large clips and needs 4 for each bookshelf. The clips are enough for _____ bookshelves.
    Answer: 30
11. The carpenter has enough screws for 87 complete bookshelves, but the large clips allow only 30. The maximum number of bookshelves possible is _____.
    Answer: 30

12. A bus carries 41 students. For 342 students, 8 buses carry 328 students, so _____ more bus is needed.
    Answer: 1
13. Rani needs 250 samosas. Packs of 8 require _____ packs to provide at least 250 samosas.
    Answer: 32
14. Those 32 packs contain _____ samosas altogether.
    Answer: 256
15. A picnic costs ₹157 + ₹124 + ₹136 = ₹_____.
    Answer: 417
16. If 3 friends share the ₹417 picnic cost equally, each pays ₹_____.
    Answer: 139
17. If each coconut-oil litre needs 8 coconuts, 4,376 coconuts produce _____ litres.
    Answer: 547
18. At ₹175 per litre, selling 547 litres earns ₹_____.
    Answer: 95,725
19. At ₹23 per kilogram, ₹9,913 earned from coir equals _____ kg sold.
    Answer: 431
20. If 431 tender coconuts cost ₹20 each to buy, their total purchase cost is ₹_____.
    Answer: 8,620
21. If those coconuts sell for ₹8,890 altogether, the extra amount earned is ₹_____.
    Answer: 270
22. Dividing 1,248 as 1,200 + 48 gives 1,248 ÷ 6 = 200 + _____.
    Answer: 8
23. Dividing 1,992 as 2,000 − 8 gives 1,992 ÷ 4 = 500 − _____.
    Answer: 2
24. To divide 128 by 4 using repeated halving, halve 128 and then halve _____.
    Answer: 64
25. Dividing 324 by 3 gives 1 hundred, 0 tens, and _____ ones.
    Answer: 8
26. When 136 is divided by 6, the quotient is 22 and the remainder is _____.
    Answer: 4
27. If both the dividend and divisor are multiplied by 2, the quotient of 192 ÷ 4 remains the same as _____ ÷ 8.
    Answer: 384
28. If 352 ÷ 11 = 32, then doubling both numbers gives 704 ÷ 22 = _____.
    Answer: 32
29. To make the statement 7 × 6 = _____ + 17 true, the blank must be _____.
    Answer: 25
30. To make the statement 87 + 6 = _____ × 31 true, the blank must be _____.
    Answer: 3
31. A number divided by 100 gives 70. The number is _____.
    Answer: 7,000
32. If 870 is divided by 10, the quotient is _____.
    Answer: 87

9.5 One-mark questions with Answers of LOTS Type: (32 Questions)

One-Mark LOTS Questions with Answers:

1. What is 35 ÷ 7?
   Answer: 35 ÷ 7 = 5.

2. What is the number being divided called?
   Answer: The number being divided is called the dividend.
3. What is the answer to a division problem called?
   Answer: The answer to a division problem is called the quotient.
4. What is 30 × 30?
   Answer: 30 × 30 = 900.
5. What is 15 × 60?
   Answer: 15 × 60 = 900.
6. What is 400 × 8?
   Answer: 400 × 8 = 3,200.
7. What is 150 ÷ 3?
   Answer: 150 ÷ 3 = 50.
8. What is 80 ÷ 4?
   Answer: 80 ÷ 4 = 20.
9. What is 500 ÷ 5?
   Answer: 500 ÷ 5 = 100.
10. What is 100 ÷ 10?
    Answer: 100 ÷ 10 = 10.
11. What is 300 ÷ 100?
    Answer: 300 ÷ 100 = 3.
12. What is 500 ÷ 50?
    Answer: 500 ÷ 50 = 10.
13. What is 200 ÷ 20?
    Answer: 200 ÷ 20 = 10.
14. What is 440 ÷ 44?
    Answer: 440 ÷ 44 = 10.
15. What is 630 ÷ 63?
    Answer: 630 ÷ 63 = 10.
16. What is 1,000 ÷ 10?
    Answer: 1,000 ÷ 10 = 100.
17. What is 1,000 ÷ 100?
    Answer: 1,000 ÷ 100 = 10.
18. What is 1,600 ÷ 4?
    Answer: 1,600 ÷ 4 = 400.
19. What is 2,000 ÷ 2?
    Answer: 2,000 ÷ 2 = 1,000.
20. What is 2,000 ÷ 20?
    Answer: 2,000 ÷ 20 = 100.
21. What is 3,700 ÷ 37?
    Answer: 3,700 ÷ 37 = 100.
22. What is 3,300 ÷ 3?
    Answer: 3,300 ÷ 3 = 1,100.
23. What is 3,300 ÷ 300?
    Answer: 3,300 ÷ 300 = 11.
24. What is 4,000 ÷ 40?
    Answer: 4,000 ÷ 40 = 100.
25. What is 1,248 ÷ 6?
    Answer: 1,248 ÷ 6 = 208.
26. What is 1,992 ÷ 4?
    Answer: 1,992 ÷ 4 = 498.

27. What is 128 ÷ 4?
    Answer: 128 ÷ 4 = 32.
28. How many coconuts does each customer receive when 582 coconuts are shared equally among 6 customers?
    Answer: Each customer receives 97 coconuts.
29. How many litres of oil can be made from 4,376 coconuts if 8 coconuts make 1 litre?
    Answer: 4,376 coconuts make 547 litres of oil.
30. What is 324 ÷ 3?
    Answer: 324 ÷ 3 = 108.
31. What is the quotient when 136 is divided by 6?
    Answer: The quotient is 22.
32. What is the remainder when 62 is divided by 5?
    Answer: The remainder is 2.

9.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark HOTS Questions with Answers:

1. Susie divides 1,248 by 6 by splitting it into 1,200 and 48; what quotient does she get?
   Answer: She gets 208 because 1,200 ÷ 6 = 200 and 48 ÷ 6 = 8.
2. What is 1,992 ÷ 4 if you use 2,000 − 8 to make the calculation easier?
   Answer: It is 498 because 2,000 ÷ 4 = 500 and 8 ÷ 4 = 2.
3. A division gives a quotient of 56 and a remainder of 6 when the divisor is 16; what is the dividend?
   Answer: The dividend is 902 because 16 × 56 + 6 = 902.
4. Why must a remainder be smaller than the divisor?
   Answer: If the remainder were as large as the divisor, another group could be made.
5. How many bags are needed to pack 535 coconuts if each bag holds 25?
   Answer: Twenty-two bags are needed because 21 bags hold 525 coconuts and one more bag holds the remaining 10.
6. A theatre seats 45 people per show; how many shows are needed for 475 people?
   Answer: Eleven shows are needed because 10 shows seat 450 people and one more show seats the remaining 25.
7. If the theatre conducts two shows a day, how many days are needed to conduct 11 shows?
   Answer: Six days are needed because five days allow 10 shows and one more day is needed for the last show.
8. How many buses carrying up to 41 students each are needed for 342 students?
   Answer: Nine buses are needed because eight buses carry 328 students and the remaining 14 need another bus.
9. If 4,376 coconuts are used and 8 coconuts make 1 litre of oil, how many litres are produced?
   Answer: They produce 547 litres because 4,376 ÷ 8 = 547.
10. Sabina cycles 160 km equally over 20 days; how far does she cycle each day?
    Answer: She cycles 8 km each day because 160 ÷ 20 = 8.
11. What is each employee's share if ₹5,500 is divided equally among 10 employees?
    Answer: Each employee receives ₹550 because ₹5,500 ÷ 10 = ₹550.
12. If the owner wants to give each of 10 employees the same ₹1,100 received when sharing ₹5,500 among five employees, how much money is needed?
    Answer: The owner needs ₹11,000 because 10 × ₹1,100 = ₹11,000.

13. Five kilograms of ice cream is shared among 23 friends, with 400 g left over; how much does each friend receive?
    Answer: Each friend receives 200 g because 5,000 g − 400 g = 4,600 g and 4,600 ÷ 23 = 200 g.
14. Fifteen packets contain 8 biscuits each, shared by 6 people over 4 days; how many biscuits does each person get per day?
    Answer: Each person gets 5 biscuits per day because 15 × 8 ÷ 6 ÷ 4 = 5.
15. A carpenter's materials can make 66, 38, 150, 30, and 87 bookshelves respectively; what limits the total production?
    Answer: The 120 large clips limit production to 30 bookshelves because only four large clips are needed per bookshelf.
16. If both the dividend and divisor in 192 ÷ 4 are doubled, what happens to the quotient?
    Answer: The quotient remains 48 because 384 ÷ 8 = 192 ÷ 4.
17. Are 352 ÷ 11 and 704 ÷ 22 equal, and what is their quotient?
    Answer: Yes, both divisions equal 32 because doubling both numbers does not change the quotient.
18. Is the statement "the sum of two odd numbers is even" always true, sometimes true, or never true?
    Answer: It is always true.
19. Is the statement "multiplying a number by 2 can give an odd number" always true, sometimes true, or never true?
    Answer: It is never true because a number multiplied by 2 is even.
20. Is "adding 10 to a number gives a multiple of 10" always true, sometimes true, or never true?
    Answer: It is sometimes true, such as 20 + 10 = 30, but 21 + 10 = 31.
21. Is changing the order of two numbers in subtraction always harmless?
    Answer: No, because 9 − 4 = 5 but 4 − 9 is not 5.
22. Is "multiplication by an odd number gives an even number" always true, sometimes true, or never true?
    Answer: It is sometimes true because an odd number times an even number is even, while two odd numbers give an odd product.
23. Is "multiplying by 5 gives a number ending in 0" always true, sometimes true, or never true?
    Answer: It is sometimes true because 5 × 2 = 10, but 5 × 3 = 15.
24. Which is the better choice for 250 guests: packs of 6 samosas or packs of 8, if Rani wants fewer packs?
    Answer: Packs of 8 are better because 32 packs provide 256 samosas, while 42 packs of 6 are needed.
25. A coconut seller charges ₹23 per kilogram and earns ₹9,913; how many kilograms did the seller sell?
    Answer: The seller sold 431 kg because ₹9,913 ÷ ₹23 = 431.
26. If 62 candies are divided among 5 children, how many does each child receive and how many remain?
    Answer: Each child receives 12 candies and 2 remain because 62 = 5 × 12 + 2.
27. If 75 items are divided into groups of 8, what quotient and remainder do you get?
    Answer: The quotient is 9 and the remainder is 3 because 75 = 8 × 9 + 3.
28. What is the missing number in 7 × 6 = _____ + 17?
    Answer: The missing number is 25 because 7 × 6 = 42 and 42 − 17 = 25.
29. What number makes 87 + 6 = _____ × 31 true?
    Answer: The number is 3 because 87 + 6 = 93 and 93 ÷ 31 = 3.

30. If 870 ÷ □ = 87, what is the missing divisor?
    Answer: The missing divisor is 10 because 870 ÷ 10 = 87.
31. A shop supplied 78 kg of radishes at ₹26 per kilogram; what was the total cost?
    Answer: The total cost was ₹2,028 because 78 × ₹26 = ₹2,028.
32. A shop earned ₹3,125 by selling 125 kg of green peas; what was the price per kilogram?
    Answer: The price was ₹25 per kilogram because ₹3,125 ÷ 125 = ₹25.

9.7 Two-mark questions with Answers of LOTS Type: (26 Questions)

Two-Mark LOTS Questions with Answers:

1. Given 5 × 7 = 35, write the two related division facts.
   Answer: 35 ÷ 5 = 7. 35 ÷ 7 = 5.
2. In 35 ÷ 5 = 7, identify the dividend, divisor, and quotient.
   Answer: The dividend is 35 and the divisor is 5. The quotient is 7.
3. Write the relationship between the dividend, divisor, and quotient when there is no remainder.
   Answer: Dividend = Divisor × Quotient. In symbols, N = D × Q.
4. Write the relationship between the dividend, divisor, quotient, and remainder.
   Answer: Dividend = Divisor × Quotient + Remainder. In symbols, N = D × Q + R.
5. Calculate 30 × 30 and write two related division facts.
   Answer: 30 × 30 = 900. The related facts are 900 ÷ 30 = 30 and 900 ÷ 30 = 30.
6. Calculate 15 × 60 and write two related division facts.
   Answer: 15 × 60 = 900. The related facts are 900 ÷ 15 = 60 and 900 ÷ 60 = 15.
7. Calculate 400 × 8 and check the product using division.
   Answer: 400 × 8 = 3,200. The check is 3,200 ÷ 8 = 400.
8. Calculate 150 ÷ 3 and check your answer using multiplication.
   Answer: 150 ÷ 3 = 50. The check is 50 × 3 = 150.
9. Calculate 80 ÷ 4 and check your answer using multiplication.
   Answer: 80 ÷ 4 = 20. The check is 20 × 4 = 80.
10. Calculate 500 ÷ 50 and 200 ÷ 20.
    Answer: 500 ÷ 50 = 10. 200 ÷ 20 = 10.
11. Calculate 1,000 ÷ 10 and 1,000 ÷ 100.
    Answer: 1,000 ÷ 10 = 100. 1,000 ÷ 100 = 10.
12. Calculate 1,600 ÷ 4 and 2,000 ÷ 2.
    Answer: 1,600 ÷ 4 = 400. 2,000 ÷ 2 = 1,000.
13. Divide 1,248 by 6 by splitting it into 1,200 and 48.
    Answer: 1,200 ÷ 6 = 200 and 48 ÷ 6 = 8. Therefore, 1,248 ÷ 6 = 208.
14. Calculate 1,992 ÷ 4 using 1,992 = 2,000 − 8.
    Answer: 2,000 ÷ 4 = 500 and 8 ÷ 4 = 2. Therefore, 1,992 ÷ 4 = 498.
15. Divide 128 by 4 by halving twice.
    Answer: Half of 128 is 64. Half of 64 is 32, so 128 ÷ 4 = 32.
16. Divide 726 by 4 and state the remainder.
    Answer: 726 ÷ 4 = 181 remainder 2. The check is 4 × 181 + 2 = 726.
17. Divide 902 by 16 and state the remainder.
    Answer: 902 ÷ 16 = 56 remainder 6. The check is 16 × 56 + 6 = 902.
18. Susie and Sunitha share 582 coconuts equally among 6 customers; how many does each receive?
    Answer: Each customer receives 97 coconuts. The check is 97 × 6 = 582.

19. How many bags are needed for 535 coconuts if each bag holds 25?
    Answer: 535 ÷ 25 = 21 remainder 10. They need 22 bags to pack all the coconuts.
20. How many litres of oil can be extracted from 4,376 coconuts if 8 coconuts make 1 litre?
    Answer: 4,376 ÷ 8 = 547. They can extract 547 litres of oil.
21. A farm earns ₹9,913 by selling husk at ₹23 per kilogram; how many kilograms are sold?
    Answer: ₹9,913 ÷ ₹23 = 431. The farm sold 431 kg of husk.
22. Divide 62 candies equally among 5 children and state the remainder.
    Answer: Each child receives 12 candies. Two candies remain because 62 = 5 × 12 + 2.
23. Divide 324 by 3 using place value.
    Answer: 324 ÷ 3 = 108. The quotient has 1 hundred, 0 tens, and 8 ones.
24. Divide 136 by 6 and state the remainder.
    Answer: 136 ÷ 6 = 22 remainder 4. The check is 6 × 22 + 4 = 136.
25. ₹5,500 is shared equally among 5 employees; how much does each employee receive?
    Answer: ₹5,500 ÷ 5 = ₹1,100. Each employee receives ₹1,100.
26. Sabina cycles 160 km equally over 20 days; how many kilometres does she cycle each day?
    Answer: 160 ÷ 20 = 8. She cycles 8 km each day.

9.8. Two-mark questions with Answers of HOTS Type: (26 Questions)

Two-Mark HOTS Questions with Answers:

1. Susie and Sunitha share 582 coconuts equally among 6 customers. How many coconuts does each customer receive, and how can the answer be checked?
   Answer: Each customer receives 97 coconuts because 582 ÷ 6 = 97. The check is 97 × 6 = 582.
2. Before calculating 582 ÷ 6, estimate whether the answer is more or less than 100. Then give the exact answer.
   Answer: The answer is less than 100 because 600 ÷ 6 = 100 and 582 is less than 600. The exact answer is 97.
3. Susie and Sunitha have 535 coconuts to pack in bags of 25. How many full bags can they fill, and how many bags are needed altogether?
   Answer: They can fill 21 full bags with 10 coconuts left over. They need 22 bags altogether.
4. A student says 726 ÷ 4 = 181 with no remainder. Is the answer correct? Show how to check it.
   Answer: The answer is incomplete because 4 × 181 = 724, leaving 2. So, 726 ÷ 4 = 181 remainder 2.
5. A student divides 902 by 16 and gets 56 remainder 6. Use the division relationship to check the result.
   Answer: Multiply 16 by 56 to get 896. Add the remainder 6, and the result is 902.
6. If both numbers in 192 ÷ 4 are doubled, what division sentence is formed, and does the quotient change?
   Answer: Doubling both numbers gives 384 ÷ 8. The quotient stays 48.
7. The chapter gives 352 ÷ 11 = 32. What is 704 ÷ 22, and why?
   Answer: 704 ÷ 22 = 32. Both the dividend and divisor were doubled, so the quotient remains the same.

8. Rani needs 250 samosas and can buy packs of 6 or packs of 8. Which pack size gives her enough samosas with fewer packs?
   Answer: Packs of 8 are the better choice because 32 packs provide 256 samosas. Packs of 6 would require 42 packs to provide at least 250 samosas.
9. A bus can carry 41 students. How many buses are needed for 342 students, and why is one more bus required after filling 8 buses?
   Answer: Nine buses are needed because 8 buses carry 328 students. The remaining 14 students need another bus.
10. A theatre has 45 seats per show, and 475 people have tickets. If there are 2 shows each day, how many days are needed to seat everyone?
    Answer: Eleven shows are needed because 10 shows seat 450 people and one more show seats the remaining 25. At two shows per day, it takes 6 days.
11. ₹5,500 is shared equally among 5 employees and then among 10 employees. How does each employee's share change?
    Answer: With 5 employees, each receives ₹1,100; with 10 employees, each receives ₹550. The share becomes half when the number of employees doubles.
12. The owner wants 10 employees to receive the same ₹1,100 each that 5 employees received from ₹5,500. How much money must be distributed?
    Answer: The owner must distribute ₹11,000. This is because 10 × ₹1,100 = ₹11,000.
13. Five kilograms of ice cream is shared among 23 friends, with 400 g left over. How much does each friend receive?
    Answer: First, 400 g is subtracted from 5,000 g, leaving 4,600 g to share. Each friend receives 200 g because 4,600 ÷ 23 = 200.
14. A group packs 15 packets of biscuits, with 8 biscuits in each packet. If 6 people share them equally over 4 days, how many biscuits does each person get per day?
    Answer: There are 120 biscuits altogether because 15 × 8 = 120. Each person gets 5 biscuits per day because 120 ÷ 6 ÷ 4 = 5.
15. Susie and Sunitha use 4,376 coconuts to make oil, with 8 coconuts needed for each litre. How much oil do they make, and how can the answer be checked?
    Answer: They make 547 litres because 4,376 ÷ 8 = 547. The check is 547 × 8 = 4,376.
16. The farm sells 547 litres of oil at ₹175 per litre. What is the total earning?
    Answer: The total earning is ₹95,725 because 547 × 175 = 95,725. This is the amount before subtracting any expenses.
17. Ibrahim sells coconuts for ₹35 each and earns ₹8,890. If he bought them for ₹20 each, how much extra does he earn?
    Answer: He sold 254 coconuts because ₹8,890 ÷ ₹35 = 254. His extra earning is ₹3,810 because 254 × (₹35 − ₹20) = ₹3,810.
18. A carpenter has enough materials for 66, 38, 150, 30, and 87 bookshelves according to the different parts. What is the maximum number of complete bookshelves possible, and which part limits it?
    Answer: The carpenter can make 30 bookshelves because 30 is the smallest of those quantities. The large clips are the limiting part.
19. A question says a fruit vendor sells 6 baskets with 12 mangoes in each and asks how much the vendor earned. What information is missing, and why is it needed?
    Answer: The selling price per mango or basket is missing. The number of mangoes alone cannot determine the money earned.
20. A school has 8 classrooms with an equal number of desks, and the question asks how many desks are in each classroom. What additional information is needed?

Answer: The total number of desks in the school is needed. Then the total can be divided by 8.

21. A restaurant sells 125 plates of idlis and earns ₹6,250. What is the earning per plate, and can this information tell how many idlis were on each plate?
    Answer: The earning is ₹50 per plate because ₹6,250 ÷ 125 = ₹50. The number of idlis per plate cannot be found without knowing the total number of idlis.
22. In the vegetable record, 78 kg of radishes are sold at ₹26 per kilogram. What is the total amount, and how would you check it?
    Answer: The total is ₹2,028 because 78 × 26 = 2,028. Divide ₹2,028 by 78 to check that the price is ₹26 per kilogram.
23. Can multiplying a whole number by 2 give an odd product? Explain using the chapter's idea about statements.
    Answer: No, the statement is never true because doubling a whole number always gives an even number. For example, 7 × 2 = 14.
24. Is "the sum of two odd numbers is even" always true, sometimes true, or never true? Give an example.
    Answer: It is always true. For example, 3 + 5 = 8.
25. Is "adding 10 to a number gives a multiple of 10" always true, sometimes true, or never true? Give examples.
    Answer: It is sometimes true because 20 + 10 = 30. But 21 + 10 = 31, which is not a multiple of 10.
26. Sabina cycles 160 km equally over 20 days. If she cycles the same total distance over 10 days instead, how does her daily distance change?
    Answer: Over 20 days, she cycles 8 km each day; over 10 days, she cycles 16 km each day. Halving the number of days doubles the daily distance.

9.9. Three-mark questions with Answers of LOTS Type: (18 Questions)

Three-Mark LOTS Questions with Answers:

1. Given 5 × 7 = 35, write the two related division facts.
   Answer: 5 × 7 = 35.
   35 ÷ 5 = 7.
   35 ÷ 7 = 5.
2. Calculate 400 × 8 and write the related division facts.
   Answer: 400 × 8 = 3,200.
   3,200 ÷ 8 = 400.
   3,200 ÷ 400 = 8.
3. Divide 150 by 3 and check your answer.
   Answer: 150 ÷ 3 = 50.
   The quotient is 50.
   Check: 50 × 3 = 150.
4. Divide 1,248 by 6 by splitting the dividend into convenient parts.
   Answer: 1,248 = 1,200 + 48.
   1,200 ÷ 6 = 200 and 48 ÷ 6 = 8.
   Therefore, 1,248 ÷ 6 = 208.
5. Divide 1,992 by 4 using 1,992 = 2,000 − 8.
   Answer: 2,000 ÷ 4 = 500.
   8 ÷ 4 = 2.
   Therefore, 1,992 ÷ 4 = 498.

6. Divide 726 by 4 and check the answer using the remainder.
   Answer: 726 ÷ 4 = 181 remainder 2.
   4 × 181 = 724.
   724 + 2 = 726, so the answer is correct.
7. Divide 902 by 16 and check the answer.
   Answer: 902 ÷ 16 = 56 remainder 6.
   16 × 56 = 896.
   896 + 6 = 902, so the answer is correct.
8. Susie and Sunitha share 582 coconuts equally among 6 customers. How many does each customer receive?
   Answer: Write the division as 582 ÷ 6.
   582 ÷ 6 = 97.
   Each customer receives 97 coconuts.
9. Susie and Sunitha harvest 1,117 coconuts and sell 582. How many remain, and how many bags are needed if each holds 25?
   Answer: 1,117 − 582 = 535 coconuts remain.
   535 ÷ 25 = 21 remainder 10.
   They need 22 bags altogether.
10. How many litres of oil can be made from 4,376 coconuts if 8 coconuts make 1 litre?
    Answer: Divide 4,376 by 8.
    4,376 ÷ 8 = 547.
    They can make 547 litres of oil.
11. A farm earns ₹9,913 by selling husk at ₹23 per kilogram. Find the quantity sold.
    Answer: Divide the total earnings by the price per kilogram.
    ₹9,913 ÷ ₹23 = 431.
    The farm sold 431 kg of husk.
12. Sabina cycles 160 km equally over 20 days. Find the distance she cycles each day.
    Answer: Divide the total distance by the number of days.
    160 ÷ 20 = 8.
    Sabina cycles 8 km each day.
13. An owner shares ₹5,500 equally among 5 employees. Find each share and check the answer.
    Answer: Divide ₹5,500 by 5.
    ₹5,500 ÷ 5 = ₹1,100.
    Check: ₹1,100 × 5 = ₹5,500.
14. Seema needs ₹4,200 in ₹100 notes. How many notes does she need?
    Answer: Divide ₹4,200 by ₹100.
    ₹4,200 ÷ ₹100 = 42.
    Seema needs 42 notes.
15. A bus carries 41 students. How many buses are needed for 342 students?
    Answer: 41 × 8 = 328 students can travel in 8 buses.
    342 − 328 = 14 students remain.
    One more bus is needed, so 9 buses are required.
16. A theatre seats 45 people per show. How many shows are needed for 475 people?
    Answer: 45 × 10 = 450 people can attend 10 shows.
    475 − 450 = 25 people remain.
    One more show is needed, so 11 shows are required.
17. Divide 62 candies equally among 5 children.
    Answer: 5 × 12 = 60.

62 − 60 = 2 candies remain.
Each child gets 12 candies, with 2 left over.

18. Divide 324 by 3 using place value.
Answer: 3 hundreds divided by 3 gives 1 hundred.
Regrouping the 2 tens gives 20 ones, and 24 ones divided by 3 gives 8 ones.
Therefore, 324 ÷ 3 = 108.
19. Divide 136 by 6 and check the result.
Answer: 136 ÷ 6 = 22 remainder 4.
6 × 22 = 132.
132 + 4 = 136, so the answer is correct.
20. Radishes cost ₹26 per kilogram, and 78 kg are supplied. Find the total amount.
Answer: Multiply the price by the quantity.
₹26 × 78 = ₹2,028.
The total amount is ₹2,028.
21. Potatoes cost ₹20 per kilogram, and the total amount is ₹2,240. Find the quantity supplied.
Answer: Divide the total amount by the cost per kilogram.
₹2,240 ÷ ₹20 = 112.
The quantity supplied is 112 kg.
22. Find the quotients of 40 ÷ 10, 400 ÷ 10, and 4,000 ÷ 10.
Answer: 40 ÷ 10 = 4.
400 ÷ 10 = 40.
4,000 ÷ 10 = 400.

9.10. Three-mark questions with Answers of HOTS Type: (25 Questions)

Three-Mark HOTS Questions with Answers:

1. A farm harvests 1,117 coconuts, sells 582 equally to 6 customers, and packs the rest in bags of 25. How many coconuts does each customer receive, and how many bags are needed for the rest?
Answer: Each customer receives 582 ÷ 6 = 97 coconuts.
There are 1,117 − 582 = 535 coconuts left.
Since 535 ÷ 25 = 21 remainder 10, 22 bags are needed.
2. Susie calculates 582 ÷ 6 by repeatedly subtracting groups of 120, while Sunitha uses a shorter division method. What is the answer, and how can you check it?
Answer: Both methods give 97 coconuts per customer.
The shorter method takes fewer subtraction steps.
Check: 97 × 6 = 582.
3. There are 535 coconuts to pack in bags that hold 25 each. How many bags are required, and how many spaces will be empty in the last bag?
Answer: 21 full bags hold 21 × 25 = 525 coconuts.
The remaining 10 coconuts need one more bag, so 22 bags are required.
That last bag has 25 − 10 = 15 empty spaces.
4. A theatre has 45 seats per show and 475 people need seats. If two shows are held each day, how many days are required, and how many seats are empty in the final show?
Answer: The theatre needs 11 shows because 10 shows seat 450 people and 25 people remain.
At two shows per day, 11 shows take 6 days.
The final show has 45 − 25 = 20 empty seats.

5. Rani needs at least 250 samosas and can buy packs of 6 or 8. Which pack size needs fewer packs, and how many samosas will be left over?
   Answer: Packs of 8 need 32 packs, while packs of 6 need 42 packs.
   So, packs of 8 require fewer packs.
   They provide 256 samosas, leaving 6 extra.
6. An owner shares ₹5,500 among 5 employees and then considers sharing the same amount among 10 employees. Compare each employee's share.
   Answer: With 5 employees, each gets ₹5,500 ÷ 5 = ₹1,100.
   With 10 employees, each gets ₹5,500 ÷ 10 = ₹550.
   Doubling the number of employees halves each share.
7. The owner wants each of 10 employees to receive the same ₹1,100 that each of 5 employees received from ₹5,500. How much must be distributed?
   Answer: The required share for each employee is ₹1,100.
   For 10 employees, the total is 10 × ₹1,100.
   The owner must distribute ₹11,000.
8. Five kilograms of ice cream is shared among 23 friends, with 400 g left over. Find each friend's share and verify the total.
   Answer: Five kilograms equals 5,000 g, so 5,000 − 400 = 4,600 g is shared.
   Each friend receives 4,600 ÷ 23 = 200 g.
   Check: 23 × 200 g + 400 g = 5,000 g.
9. A group has 15 packets with 8 biscuits in each and 6 people share them equally over 4 days. How many biscuits does each person get per day?
   Answer: The group has 15 × 8 = 120 biscuits.
   Each person gets 120 ÷ 6 = 20 biscuits for the trip.
   Over 4 days, each person gets 20 ÷ 4 = 5 biscuits per day.
10. A carpenter's supplies can make 66, 38, 150, 30, and 87 bookshelves, depending on the part. How many complete bookshelves can be made, and which supply limits production?
    Answer: The smallest of these quantities is 30.
    Therefore, the carpenter can make 30 complete bookshelves.
    The large clips are the limiting supply.
11. Susie and Sunitha use 4,376 coconuts to make oil, with 8 coconuts needed per litre. If oil sells for ₹175 per litre, what is the total earning?
    Answer: They make 4,376 ÷ 8 = 547 litres.
    The sale earns 547 × ₹175.
    Their total earning is ₹95,725.
12. Ibrahim earns ₹8,890 selling tender coconuts at ₹35 each and bought them for ₹20 each. How many did he sell, and how much extra did he earn?
    Answer: He sold ₹8,890 ÷ ₹35 = 254 coconuts.
    The extra amount per coconut is ₹35 − ₹20 = ₹15.
    His extra earning is 254 × ₹15 = ₹3,810.
13. The farm sells radishes at ₹26 per kilogram for 78 kg and cabbage at ₹32 per kilogram for 56 kg. Find the total amount earned from these two vegetables.
    Answer: The radishes earn 78 × ₹26 = ₹2,028.
    The cabbage earns 56 × ₹32 = ₹1,792.
    Together, they earn ₹2,028 + ₹1,792 = ₹3,820.
14. A record shows that 125 kg of green peas earned ₹3,125. Find the price per kilogram and explain how to check it.
    Answer: Divide ₹3,125 by 125 kg to find the unit price.

The price is ₹25 per kilogram.
Check: 125 × ₹25 = ₹3,125.

15. Compare 40 ÷ 10, 400 ÷ 10, and 4,000 ÷ 10. What happens to the quotient each time the dividend becomes ten times larger?
Answer: The quotients are 4, 40, and 400.
Each dividend is ten times the previous one.
The quotient also becomes ten times larger because the divisor stays 10.
16. A student says doubling one factor and halving the other changes the product. Use 8 × 6 to check the statement.
Answer: 8 × 6 = 48.
Doubling 8 and halving 6 gives 16 × 3 = 48.
The product stays the same in this example.
17. Check whether the statement 8 × 9 = 70 + 2 is true. Show the value of each side.
Answer: The left side is 8 × 9 = 72.
The right side is 70 + 2 = 72.
The statement is true because both sides are equal.
18. A three-digit number gives 42 when divided by 5 and gives 420 when multiplied by 2. What is the number, and how can you check both clues?
Answer: The number is 210 because 42 × 5 = 210.
Check the division clue: 210 ÷ 5 = 42.
Check the multiplication clue: 210 × 2 = 420.
19. Complete the statement 7 × 6 = ___ + 17 and show how you found the missing number.
Answer: First calculate 7 × 6 = 42.
Subtract 17 from 42 to get 25.
The missing number is 25.
20. Complete the statement 87 + 6 = ___ × 31 and show how you found the missing number.
Answer: First calculate 87 + 6 = 93.
Divide 93 by 31 to get 3.
The missing number is 3.
21. Given 352 ÷ 11 = 32, find 704 ÷ 22 and explain the relationship.
Answer: Both 352 and 11 are doubled to get 704 and 22.
Doubling both the dividend and divisor keeps the quotient unchanged.
Therefore, 704 ÷ 22 = 32.
22. A cycle rally aims to cover 576 km in 12 days. How far should the cyclists travel each day, and what multiplication check confirms the answer?
Answer: Divide 576 km by 12 days.
They should travel 48 km each day.
Check: 48 × 12 = 576 km.
23. A shop has 240 kg of potatoes priced at ₹20 per kilogram. What is the total cost, and how can the amount be checked by division?
Answer: Multiply 240 by ₹20 to get ₹4,800.
The total cost is ₹4,800.
Check: ₹4,800 ÷ ₹20 = 240 kg.
24. A farm sells 535 coconuts in bags of 25. If 21 bags are filled completely, how many coconuts remain, and why is another bag needed?
Answer: 21 full bags contain 21 × 25 = 525 coconuts.
The remaining number is 535 − 525 = 10.
One more bag is needed because the 10 coconuts still need to be packed.

25. A student says 136 ÷ 6 = 22 with no remainder. Check the claim and write the correct result.
    Answer: 6 × 22 = 132, which is 4 less than 136.
    So, 136 ÷ 6 = 22 remainder 4.
    Check: 6 × 22 + 4 = 136.

9.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

Five-Mark LOTS Questions with Answers:

1. Divide 1,248 by 6 by splitting the number into convenient parts.

Answer:

1. Split 1,248 into 1,200 + 48.
2. Divide 1,200 by 6: 1,200 ÷ 6 = 200.
3. Divide 48 by 6: 48 ÷ 6 = 8.
4. Add the two quotients: 200 + 8 = 208.
5. Therefore, 1,248 ÷ 6 = **208**.

2. Divide 1,992 by 4 using 1,992 = 2,000 − 8.

Answer:

1. Write 1,992 as 2,000 − 8.
2. Divide 2,000 by 4: 2,000 ÷ 4 = 500.
3. Divide 8 by 4: 8 ÷ 4 = 2.
4. Subtract the smaller quotient: 500 − 2 = 498.
5. Therefore, 1,992 ÷ 4 = **498**.

3. Susie and Sunitha share 582 coconuts equally among 6 customers. How many coconuts does each customer receive?

Answer:

1. Write the division as 582 ÷ 6.
2. Divide 58 tens by 6 to get 9 tens, with 4 tens left.
3. Regroup the remaining 4 tens as 40 ones and add 2 ones to get 42 ones.
4. Divide 42 by 6 to get 7 ones.
5. Each customer receives **97 coconuts**.

4. There are 535 coconuts to pack in bags that hold 25 coconuts each. How many bags are needed?

Answer:

1. Divide 535 by 25.
2. Twenty bags hold 500 coconuts.
3. There are 35 coconuts left after filling 20 bags.
4. One more full bag holds 25, leaving 10 coconuts for another bag.
5. **22 bags** are needed altogether.

5. Divide 902 by 16 and check the quotient and remainder.

Answer:

1. Divide 902 by 16.
2. The quotient is 56 because 16 × 56 = 896.
3. Subtract 896 from 902 to find the remainder: 902 − 896 = 6.
4. Write the result as 902 ÷ 16 = 56 remainder 6.
5. Check: 16 × 56 + 6 = **902**.

6. Divide 62 candies equally among 5 children. How many candies does each child receive, and how many remain?

Answer:

1. Write the division as 62 ÷ 5.

2. Give 10 candies to each child, using 50 candies.
3. There are 12 candies left to share.
4. Give 2 more candies to each child, using 10 of them.
5. Each child receives **12 candies**, and **2 remain**.

7. Divide 324 by 3 using place value.

Answer:

1. Write 324 as 3 hundreds, 2 tens, and 4 ones.
2. Divide 3 hundreds equally among 3 groups to get 1 hundred per group.
3. Regroup the 2 tens as 20 ones.
4. Divide the 24 ones equally among 3 groups to get 8 ones per group.
5. Therefore, 324 ÷ 3 = **108**.

8. Radishes cost ₹26 per kilogram, and 78 kilograms are supplied. Find the total amount.

Answer:

1. The price for 1 kilogram is ₹26.
2. The quantity supplied is 78 kilograms.
3. Multiply the price by the quantity: ₹26 × 78.
4. Calculate ₹26 × 78 = ₹2,028.
5. The total amount is **₹2,028**.

9. Sabina cycles 160 kilometres equally over 20 days. How far does she cycle each day?

Answer:

1. The total distance is 160 kilometres.
2. The number of days is 20.
3. Divide the total distance by the number of days: 160 ÷ 20.
4. The quotient is 8.
5. Sabina cycles **8 kilometres per day**.

10. An owner distributes ₹5,500 equally among 5 employees. Find each employee's share and check the answer.

Answer:

1. The total amount is ₹5,500.
2. The amount is shared among 5 employees.
3. Divide ₹5,500 by 5 to get ₹1,100.
4. Each employee receives ₹1,100.
5. Check: ₹1,100 × 5 = **₹5,500**.

11. Divide 4,376 coconuts by 8 to find the litres of oil produced if 8 coconuts make 1 litre.

Answer:

1. The number of coconuts is 4,376.
2. Eight coconuts are needed to make 1 litre of oil.
3. Divide 4,376 by 8.
4. The quotient is 547.
5. The coconuts produce **547 litres of oil**.

12. A farm earns ₹9,913 by selling husk at ₹23 per kilogram. Find the quantity of husk sold.

Answer:

1. The total amount earned is ₹9,913.
2. The price per kilogram is ₹23.
3. Divide ₹9,913 by ₹23.
4. The quotient is 431.
5. The farm sold **431 kilograms of husk**.

9.12 Five-mark questions with Answers of HOTS Type: (12 Questions)

Five-Mark HOTS Questions with Answers:

1. A farm harvests 1,117 coconuts, sells 582 equally to 6 customers, and packs the rest in bags of 25. Find how many coconuts each customer receives and how many bags are needed for the rest.

Answer:

1. Divide the coconuts sold among the customers: 582 ÷ 6 = 97.
2. Each customer receives 97 coconuts.
3. Find how many coconuts remain: 1,117 − 582 = 535.
4. Pack the remainder: 535 ÷ 25 = 21 remainder 10.
5. The farm needs **22 bags** to pack all the remaining coconuts.

2. A theatre seats 45 people per show. If 475 people need seats and the theatre holds two shows each day, find the number of shows and days needed, and the empty seats in the final show.

Answer:

1. Ten shows seat 10 × 45 = 450 people.
2. There are 475 − 450 = 25 people left to seat, so one more show is needed.
3. The theatre needs 11 shows altogether.
4. At two shows per day, 11 shows take 6 days.
5. The final show has 45 − 25 = **20 empty seats**.

3. Rani needs at least 250 samosas and can buy packs of 6 or packs of 8. Which size should she choose if she wants fewer packs, and how many samosas will be left over?

Answer:

1. For packs of 8, 250 ÷ 8 = 31 remainder 2, so she needs 32 packs.
2. Those packs contain 32 × 8 = 256 samosas.
3. For packs of 6, she needs 42 packs because 41 packs contain only 246 samosas.
4. Packs of 8 require fewer packs than packs of 6.
5. She should choose packs of 8, and **6 samosas** will be left over.

4. An owner has ₹5,500 to share among 5 employees. If the owner wants 10 employees to receive the same share, how much money must be distributed in total?

Answer:

1. Find the original share: ₹5,500 ÷ 5 = ₹1,100.
2. Each employee originally receives ₹1,100.
3. Ten employees receiving ₹1,100 each need 10 × ₹1,100.
4. The required total is ₹11,000.
5. The owner must add **₹5,500** to the original amount.

5. Five kilograms of ice cream is shared among 23 friends, with 400 g left over. How much does each friend receive, and how can the result be checked?

Answer:

1. Convert 5 kg to grams: 5 kg = 5,000 g.
2. Subtract the leftover amount: 5,000 g − 400 g = 4,600 g.
3. Divide the amount shared by 23: 4,600 ÷ 23 = 200 g.
4. Each friend receives 200 g.
5. Check: 23 × 200 g + 400 g = **5,000 g**.

6. A group packs 15 packets of biscuits, with 8 biscuits in each packet. Six people share them equally over 4 days. How many biscuits does each person get per day?

Answer:

1. Find the total number of biscuits: 15 × 8 = 120.
2. Divide them among 6 people: 120 ÷ 6 = 20 biscuits per person.
3. Each person receives 20 biscuits for the trip.
4. Divide each person's share over 4 days: 20 ÷ 4 = 5.

5. Each person gets **5 biscuits per day**.

7. A carpenter's supplies can make 66, 38, 150, 30, and 87 bookshelves, depending on the part. How many complete bookshelves can be made, and which part limits production?

Answer:

1. The supplies allow 66 bookshelves by one measure.
2. Another supply allows only 38 bookshelves.
3. The other supplies allow 150, 30, and 87 bookshelves.
4. The smallest number is 30.
5. The carpenter can make **30 bookshelves**, limited by the supply of large clips.

8. Susie and Sunitha use 4,376 coconuts to make oil, with 8 coconuts needed per litre. If they sell all the oil at ₹175 per litre, how much do they earn?

Answer:

1. Find the oil produced: 4,376 ÷ 8 = 547 litres.
2. The farm produces 547 litres of oil.
3. Multiply the litres by the price per litre: 547 × ₹175.
4. The calculation gives ₹95,725.
5. They earn **₹95,725** from the sale.

9. Ibrahim earns ₹8,890 by selling tender coconuts at ₹35 each. He bought them for ₹20 each. Find how many coconuts he sold and the extra amount he earned over his buying cost.

Answer:

1. Find the number sold: ₹8,890 ÷ ₹35 = 254 coconuts.
2. The buying cost per coconut is ₹20.
3. The difference between selling and buying price is ₹35 − ₹20 = ₹15.
4. The extra amount is 254 × ₹15 = ₹3,810.
5. Ibrahim earned **₹3,810 more than the buying cost**.

10. Complete the missing entries in the vegetable record: radishes cost ₹26 per kg for 78 kg; potatoes cost ₹20 per kg with a total of ₹2,240; cabbage costs ₹32 per kg for 56 kg; peas total ₹3,125 for 125 kg. Find the missing values and total amount earned.

Answer:

1. Radish total: ₹26 × 78 = ₹2,028.
2. Potato quantity: ₹2,240 ÷ ₹20 = 112 kg.
3. Cabbage total: ₹32 × 56 = ₹1,792.
4. Peas price: ₹3,125 ÷ 125 = ₹25 per kg.
5. Total earnings are ₹2,028 + ₹2,240 + ₹1,792 + ₹3,125 = **₹9,185**.

11. Classify each statement as always true, sometimes true, or never true: "Two odd numbers add to an even number"; "multiplying by 2 gives an odd number"; "adding 10 gives a multiple of 10."

Answer:

1. Two odd numbers add to an even number: **always true**.
2. Example: 3 + 5 = 8.
3. Multiplying a whole number by 2 gives an odd number: **never true**.
4. Adding 10 gives a multiple of 10: **sometimes true**.
5. For example, 20 + 10 = 30, but 21 + 10 = 31.

12. A division has divisor 25, quotient 21, and remainder 10. Find the dividend and check whether the remainder is valid.

Answer:

1. Use the relationship: Dividend = Divisor × Quotient + Remainder.
2. Multiply the divisor and quotient: 25 × 21 = 525.
3. Add the remainder: 525 + 10 = 535.

4. The dividend is 535.
5. The remainder is valid because 10 is less than the divisor 25.

9.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Applied Questions with Answers:

1. A school receives 1,250 tender coconuts and shares them equally among 8 classrooms. How many does each classroom receive, and how many are left over?

Answer:

1. Divide 1,250 by 8.
2. 8 × 150 = 1,200.
3. 1,250 − 1,200 = 50.
4. 8 × 6 = 48, leaving 2 coconuts.
5. Each classroom receives **156 coconuts**, with **2 left over**.

2. A community event has 476 sweets to pack in boxes that hold 24 sweets each. How many boxes are needed, and how many spaces are empty in the last box?

Answer:

1. Divide 476 by 24.
2. 24 × 19 = 456, so 19 boxes can be filled completely.
3. 476 − 456 = 20 sweets remain.
4. The 20 sweets need one more box, so 20 boxes are needed altogether.
5. The last box has **4 empty spaces**.

3. A school has 368 students going on a trip. Each bus can carry 42 students. How many buses are needed, and how many seats will be empty in the last bus?

Answer:

1. 42 × 8 = 336 students.
2. 368 − 336 = 32 students still need seats.
3. One more bus is needed, so the school requires 9 buses.
4. The 9 buses have 9 × 42 = 378 seats altogether.
5. There will be **10 empty seats** in the last bus.

4. A farm uses 576 coconuts to make oil. If 8 coconuts make 1 litre, how many litres are made and what is the earning if each litre sells for ₹175?

Answer:

1. Divide 576 by 8 to find the litres of oil.
2. 576 ÷ 8 = 72 litres.
3. The selling price is ₹175 per litre.
4. Multiply 72 by ₹175: 72 × ₹175 = ₹12,600.
5. The farm makes **72 litres** and earns **₹12,600**.

5. A farmer plants 1,440 seedlings equally in 12 rows. If each packet contains 20 seedlings, how many seedlings are in each row and how many packets are needed per row?

Answer:

1. Divide 1,440 seedlings by 12 rows.
2. Each row gets 1,440 ÷ 12 = 120 seedlings.
3. Each packet contains 20 seedlings.
4. Divide 120 by 20: 120 ÷ 20 = 6.
5. Each row has **120 seedlings**, requiring **6 packets**.

6. A teacher gives 5 pencils to each of 28 students. Pencils are sold in boxes of 12. How many pencils are needed, and how many boxes must be bought?

Answer:

1. Multiply 28 students by 5 pencils each.

2. The students need 28 × 5 = 140 pencils.
3. Each box contains 12 pencils.
4. Eleven boxes contain 132 pencils, which is not enough.
5. The teacher must buy **12 boxes**, which contain 144 pencils.

7. A shop sells 125 kg of green peas at ₹25 per kilogram. If the customer pays ₹5,000, how much change should the shopkeeper return?

Answer:

1. Multiply the quantity by the price per kilogram.
2. 125 × ₹25 = ₹3,125.
3. The customer pays ₹5,000.
4. Subtract the bill from the amount paid: ₹5,000 − ₹3,125 = ₹1,875.
5. The shopkeeper returns **₹1,875**.

8. A school distributes ₹5,600 equally among 8 student teams for an activity. How much does each team receive?

Answer:

1. The total amount is ₹5,600.
2. The money is shared among 8 teams.
3. Divide ₹5,600 by 8.
4. ₹5,600 ÷ 8 = ₹700.
5. Each team receives **₹700**.

9. A carpenter has 264 long panels, 306 short panels, 2,400 small clips, 120 large clips, and 2,800 screws. Each bookshelf needs 4 long panels, 8 short panels, 16 small clips, 4 large clips, and 32 screws. How many complete bookshelves can be made?

Answer:

1. The long panels are enough for 264 ÷ 4 = 66 bookshelves.
2. The short panels are enough for 306 ÷ 8 = 38 complete bookshelves.
3. The small clips and screws are enough for 150 and 87 bookshelves respectively.
4. The large clips are enough for 120 ÷ 4 = 30 bookshelves.
5. The carpenter can make **30 complete bookshelves**.

10. A farmer cycles 576 km over 12 days to deliver goods. If the distance is covered equally each day, how far does the farmer cycle daily?

Answer:

1. The total distance is 576 km.
2. The journey takes 12 days.
3. Divide the distance by the number of days.
4. 576 ÷ 12 = 48.
5. The farmer cycles **48 km per day**.

9.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple-Choice Questions:

1. If 5 × 7 = 35, what is 35 ÷ 7?
   A. 4 B. 5 C. 6 D. 7
   Answer: B. 5
2. What is 440 ÷ 44?
   A. 1 B. 10 C. 44 D. 100
   Answer: B. 10
3. What number makes this statement true: □ ÷ 18 = 100?
   A. 180 B. 1,080 C. 1,800 D. 18,000
   Answer: C. 1,800

4. What number makes 870 ÷ □ = 87?
   A. 2 B. 10 C. 100 D. 783
   Answer: B. 10
5. What is 1,992 ÷ 4?
   A. 489 B. 498 C. 508 D. 528
   Answer: B. 498
6. A student divides 1,248 by 6 by splitting it into 1,200 and 48. What is the quotient?
   A. 208 B. 218 C. 280 D. 2,080
   Answer: A. 208
7. What is the quotient and remainder when 726 is divided by 4?
   A. 180 R 6 B. 181 R 2 C. 182 R 1 D. 181 R 1
   Answer: B. 181 R 2
8. What is the quotient and remainder when 902 is divided by 16?
   A. 56 R 6 B. 57 R 10 C. 55 R 22 D. 56 R 8
   Answer: A. 56 R 6
9. Coconuts are packed in bags of 25. What is the fewest number of bags needed for 535 coconuts?
   A. 21 B. 22 C. 25 D. 535
   Answer: B. 22
10. A theatre seats 45 people per show. How many shows are needed to seat 475 people?
    A. 10 B. 11 C. 12 D. 45
    Answer: B. 11
11. Each bus can carry 41 students. What is the fewest number of buses needed for 342 students?
    A. 8 B. 9 C. 10 D. 41
    Answer: B. 9
12. Eight coconuts make 1 litre of oil. How many litres can be made from 4,376 coconuts?
    A. 547 B. 537 C. 548 D. 4,368
    Answer: A. 547
13. A farm earns ₹9,913 by selling husk at ₹23 per kilogram. How many kilograms did it sell?
    A. 341 kg B. 413 kg C. 431 kg D. 493 kg
    Answer: C. 431 kg
14. Sabina cycles 160 km equally over 20 days. How far does she cycle each day?
    A. 6 km B. 8 km C. 10 km D. 12 km
    Answer: B. 8 km
15. ₹5,500 is shared equally among 5 employees, then among 10 employees. How much less does each employee receive in the second case?
    A. ₹275 B. ₹550 C. ₹1,100 D. ₹2,750
    Answer: B. ₹550
16. What is 2,000 ÷ 20?
    A. 10 B. 20 C. 100 D. 1,000
    Answer: C. 100
17. What is 3,700 ÷ 37?
    A. 10 B. 37 C. 100 D. 1,000
    Answer: C. 100
18. What is 324 ÷ 3?
    A. 18 B. 108 C. 118 D. 1,008
    Answer: B. 108

19. What is the quotient and remainder when 136 is divided by 6?
    A. 22 R 4 B. 21 R 10 C. 23 R 2 D. 22 R 2
    Answer: A. 22 R 4
20. If 62 candies are shared equally among 5 children, how many candies remain?
    A. 1 B. 2 C. 5 D. 12
    Answer: B. 2
21. Fifteen packets contain 8 biscuits each. How many biscuits are there altogether?
    A. 23 B. 120 C. 125 D. 150
    Answer: B. 120
22. The 120 biscuits are shared among 6 people for 4 days. How many biscuits does each person get per day?
    A. 4 B. 5 C. 6 D. 20
    Answer: B. 5
23. Radishes cost ₹26 per kilogram. What is the cost of 78 kg?
    A. ₹2,008 B. ₹2,028 C. ₹2,080 D. ₹2,280
    Answer: B. ₹2,028
24. A shop earns ₹3,125 by selling 125 kg of green peas. What is the price per kilogram?
    A. ₹20 B. ₹25 C. ₹30 D. ₹40
    Answer: B. ₹25
25. A division has divisor 25, quotient 21, and remainder 10. What is the dividend?
    A. 515 B. 525 C. 535 D. 560
    Answer: C. 535
26. If 352 ÷ 11 = 32, what is 704 ÷ 22?
    A. 16 B. 32 C. 64 D. 128
    Answer: B. 32
27. What number makes 87 + 6 = □ × 31 true?
    A. 2 B. 3 C. 31 D. 93
    Answer: B. 3
28. Which statement is always true?
    A. Two odd numbers add to an odd number.
    B. Two odd numbers add to an even number.
    C. Multiplying a whole number by 2 gives an odd number.
    D. Reversing the order in subtraction keeps the answer unchanged.
    Answer: B. Two odd numbers add to an even number.
29. Doubling one factor and halving the other can keep the product unchanged. Which pair shows this?
    A. 12 × 8 and 24 × 4
    B. 12 × 8 and 24 × 8
    C. 12 × 8 and 6 × 4
    D. 12 × 8 and 12 × 4
    Answer: A. 12 × 8 and 24 × 4
30. A carpenter has enough materials for 66, 38, 150, 30, and 87 bookshelves, depending on the part. What is the greatest number of complete bookshelves possible?
    A. 30 B. 38 C. 66 D. 87
    Answer: A. 30

9.15 Best Practices Opportunity List from the Chapter: (12 Ideas)

Best Practices for Teaching "Coconut Farm":

(1) **Begin with equal sharing:** Use coconuts, counters, or classroom objects to show what division means before introducing written calculations.
(2) **Connect multiplication and division:** Start with a multiplication fact, such as $5 \times 7 = 35$, and have students write the two related division facts.
(3) **Use arrays and drawings:** Let students arrange dots or objects in rows and columns to represent multiplication and division facts visually.
(4) **Teach estimation before calculation:** Ask students to predict whether an answer will be greater or less than a benchmark, then compare their estimate with the exact quotient.
(5) **Model more than one strategy:** Demonstrate splitting numbers into convenient parts, repeated halving, partial quotients, and place-value division.
(6) **Use place-value materials:** Base-ten blocks, bundles of sticks, or place-value charts can help students understand regrouping hundreds and tens during division.
(7) **Make the remainder meaningful:** Use examples such as packing coconuts into bags or seating people in buses, and discuss whether the remainder should be left over or requires one more group.
(8) **Teach students to check their work:** Practise using **Dividend = Divisor × Quotient + Remainder** to verify division answers.
(9) **Use practical classroom tasks:** Have students calculate equal shares, costs, quantities, or groups using familiar items, simple bills, and classroom situations.
(10) **Discuss strategies, not only answers:** Invite students to explain how they solved a problem and compare which methods use fewer steps or are easier to follow.
(11) **Use errors as discussion prompts:** Present a division with a misplaced zero or an incorrect remainder and ask students to find and correct the mistake.
(12) **Check understanding in small steps:** Use quick oral questions, mini-whiteboards, or short exit tasks to find out whether students can identify the dividend, divisor, quotient, and remainder.
(13) **Offer varied practice:** Give students a mix of number calculations, missing-number problems, patterns, and word problems from the chapter.
(14) **Support different learning needs:** Provide counters or guided examples for students who need more support, and extension problems with larger numbers or multiple steps for students ready for a challenge.

These suggestions are based on the division strategies, place-value work, and real-life problems in the chapter.

9.16 Innovations Opportunity List from the Chapter: (12 Ideas)

Innovative Teaching–Learning Ideas for "Coconut Farm":

(1) **Coconut Division Market:** Set up a classroom market where students "sell" coconuts, pack them into equal groups, and calculate the quotient and remainder.
(2) **Division Escape Challenge:** Create clue cards with division problems; each correct answer reveals a number or clue needed to complete a coconut-farm mission.
(3) **Build-a-Bag Activity:** Give groups paper coconuts and bags with different capacities. Students work out the number of full bags, leftover coconuts, and bags needed altogether.
(4) **Human Array:** Ask students to form equal rows to represent multiplication facts, then rearrange into groups to show the related division facts.
(5) **Choose Your Strategy Board:** Put one division problem on the board and invite students to solve it using splitting, halving, partial quotients, or place value, then compare methods.

(6) **Digital Coconut Farm:** Use a simple interactive slide or spreadsheet where students change the harvest, customer count, or bag size and observe how the quotient and remainder change.
(7) **Remainder Decision Cards:** Present real-life situations—such as buses, bags, or equal sharing—and have students decide whether the remainder stays, is shared, or means one more group is needed.
(8) **Student-Created Word Problems:** Have pairs invent a short story involving coconuts, money, or sharing, exchange it with another pair, and solve each other's problem.
(9) **Division Fact Dominoes:** Create domino cards that connect multiplication facts to their matching division statements; students work together to build a correct chain.
(10) **Maths Newsroom:** Ask students to present a short "farm report" explaining a harvest, sale, division calculation, and remainder as if they were reporters.
(11) **Find the Missing Information:** Give students word problems with one important detail removed, such as the price per kilogram or total quantity, and ask them to identify what is needed before solving.
(12) **Create a Class Data Record:** Students collect simple class data—such as the number of pencils or books—and create sharing and grouping problems for classmates to solve.

These ideas build on the chapter's division facts, remainders, place-value strategies, and coconut-farm situations.

9.17: Practicing Questions/Question Bank

Question Bank – Chapter 9: "Coconut Farm":

A. Fill in the Blanks:

1. 35 ÷ 7 = _____.

   Answer: 5

2. If 5 × 7 = 35, then 35 ÷ 5 = _____.

   Answer: 7

3. 870 ÷ 10 = _____.

   Answer: 87

4. 4,000 ÷ 40 = _____.

   Answer: 100

5. In a division sentence, the number being divided is called the _____.

   Answer: Dividend

6. The remainder must be smaller than the _____.

   Answer: Divisor

7. 136 ÷ 6 gives a remainder of _____.

   Answer: 4

8. If 8 coconuts make 1 litre of oil, 4,376 coconuts make _____ litres.

   Answer: 547

B. One-Mark Questions:

1. What is 500 ÷ 50?
   Answer: 10.

2. What is 324 ÷ 3?
   Answer: 108.

3. What is the remainder when 62 is divided by 5?
   Answer: 2.

4. How many kilograms of husk were sold for ₹9,913 at ₹23 per kilogram?
   Answer: 431 kg.

5. Is the sum of two odd numbers always even, sometimes even, or never even?
   Answer: Always even.

C. Two-Mark Questions:

1. Write the two division facts related to 5 × 7 = 35.
   Answer: 35 ÷ 5 = 7. 35 ÷ 7 = 5.

2. Divide 62 candies equally among 5 children. How many does each child receive, and how many remain?
   Answer: Each child receives 12 candies. Two candies remain.

3. Radishes cost ₹26 per kilogram, and 78 kg are supplied. Find the total amount.
   Answer: ₹26 × 78 = ₹2,028. The total amount is ₹2,028.

4. A school has 8 classrooms with an equal number of desks. What information is needed to find the number of desks in each classroom?
   Answer: The total number of desks is needed. Divide that total by 8.

D. Three-Mark Questions:

1. Divide 902 by 16 and check your answer.
   Answer: The quotient is 56.
   The remainder is 6.
   Check: 16 × 56 + 6 = 902.

2. A farm harvests 1,117 coconuts, sells 582, then packs the rest in bags of 25. How many bags are needed?
   Answer: 1,117 − 582 = 535 coconuts remain.
   535 ÷ 25 = 21 remainder 10.
   Therefore, 22 bags are needed.

3. A theatre seats 45 people per show. How many shows are needed for 475 people?
   Answer: Ten shows seat 450 people.
   475 − 450 = 25 people still need seats.
   Therefore, 11 shows are needed.

E. Five-Mark Questions:

1. A farm uses 4,376 coconuts to make oil, with 8 coconuts needed per litre. If the oil sells for ₹175 per litre, find the total earning.
   Answer:

   1. Divide the coconuts by 8: 4,376 ÷ 8.

2. The farm produces 547 litres.
3. Each litre sells for ₹175.
4. Calculate 547 × ₹175 = ₹95,725.
5. The total earning is **₹95,725**.

2. A carpenter has 264 long panels, 306 short panels, 2,400 small clips, 120 large clips, and 2,800 screws. Each bookshelf needs 4 long panels, 8 short panels, 16 small clips, 4 large clips, and 32 screws. Find the greatest number of complete bookshelves possible.
Answer:

1. Long panels are enough for 264 ÷ 4 = 66 bookshelves.
2. Short panels are enough for 306 ÷ 8 = 38 complete bookshelves.
3. Small clips are enough for 2,400 ÷ 16 = 150 bookshelves.
4. Large clips are enough for 120 ÷ 4 = 30 bookshelves, and screws for 2,800 ÷ 32 = 87.
5. The carpenter can make **30 complete bookshelves**, limited by the large clips.

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5th Standard Maths Book Chapter 10

Chapter 10: Symmetrical Designs

10.1 Summary of the Chapter:

Summary: Chapter 10 – Symmetrical Designs

(1) A **line of symmetry** divides a shape or letter into two matching halves.
(2) Folding paper along a line of symmetry helps create symmetrical cutouts, such as the letter **A**.
(3) Some letters, such as **H**, have more than one line of symmetry and can be made by folding paper into quarters.
(4) Letters and designs may have **horizontal**, **vertical**, or both types of lines of symmetry.
(5) A **quarter turn** is one-fourth of a full turn; a **half turn** is one-half, and a **three-quarter turn** is three-fourths.
(6) **Rotational symmetry** occurs when a shape looks the same after being turned around its centre.
(7) The letter **H** looks the same after a half turn, so it has rotational symmetry.
(8) A **firki (windmill)** can look the same after quarter, half, and three-quarter turns.
(9) Shapes, letters, and numbers can be checked for reflection symmetry, rotational symmetry, or both.
(10) Adding or arranging shapes can create designs that look the same after a quarter turn or a half turn.
(11) Symmetrical designs can be made using squares and equilateral triangles, and then sorted by the types of symmetry they have.
(12) Block printing uses repeated wooden-block prints to create patterns; these patterns can also be examined for symmetry.

10.2 Important Formulas:

Important Formulas and Rules: Symmetrical Designs:

This chapter does not contain arithmetic formulas. It focuses on **reflection symmetry** and **rotational symmetry**.

(1) **Reflection symmetry:** A shape has reflection symmetry when its two sides match exactly across a line called the **line of symmetry**.
  a. Figure: ◁ | ▷
  b. The vertical line divides the two matching halves.
(2) **Rotational symmetry:** A shape has rotational symmetry when it looks the same after being turned around its centre.
(3) **Quarter turn:** (1/4) of a full turn = **90°**.
(4) **Half turn:** (1/2) of a full turn = **180°**.
(5) **Three-quarter turn:** (3/4) of a full turn = **270°**.
(6) **Full turn:** One complete turn = **360°**.
(7) **Order of rotational symmetry:**
  a. **Order = number of times the design looks the same during one full turn.**
(8) The letter **H** looks the same after a half turn, so it has rotational symmetry.
(9) A **firki** looks the same after quarter, half, and three-quarter turns.
(10) A shape may have **reflection symmetry only**, **rotational symmetry only**, **both**, or **neither**.

10.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

1. A line that divides a shape into two matching halves is called a line of _____.

Answer: symmetry
2. The letter A has a _____ line of symmetry.
Answer: vertical
3. The letter H has _____ lines of symmetry.
Answer: two
4. To make a paper cutout of the letter A, fold the paper in _____.
Answer: half
5. To make a paper cutout of the letter H, fold the paper into _____.
Answer: one-fourth
6. The letter H looks the same after a _____ turn.
Answer: half
7. A shape that looks the same after being turned has _____ symmetry.
Answer: rotational
8. The windmill made in the chapter is also called a _____.
Answer: firki
9. To make a firki, begin with a _____ piece of paper.
Answer: square
10. Fold the square paper in half _____ to make two triangles.
Answer: diagonally
11. Folding the paper diagonally in the other direction forms an _____ shape.
Answer: X
12. The paper is cut along the _____ lines of the X.
Answer: four
13. The cuts should stop about halfway to the _____ of the paper.
Answer: centre
14. The corners of the paper are folded towards the _____.
Answer: centre
15. A _____ is pushed through the folded corners and the centre of the paper.
Answer: pin
16. The pin is pushed through a stick or a _____.
Answer: straw
17. The pin should not be too _____.
Answer: tight
18. The firki should spin when the _____ is blowing.
Answer: wind
19. One-fourth of a turn is called a _____ turn.
Answer: quarter
20. One-half of a turn is called a _____ turn.
Answer: half
21. Three-fourths of a turn is called a _____-quarter turn.
Answer: three
22. One complete turn is called a _____ turn.
Answer: full
23. The chapter asks students to find symmetry in the _____.
Answer: digits
24. Symmetrical designs can be made using squares and _____ triangles.
Answer: equilateral
25. The squares and triangles used in the activity should have the same _____ length.
Answer: side
26. Block printing is a traditional craft of _____.

Answer: Rajasthan
27. Artisans use carved _____ blocks to print designs.
Answer: wooden
28. Block-printed designs are printed on _____.
Answer: fabric
29. The design marked A looks the same after every _____ turn.
Answer: quarter
30. Vegetable blocks can be used to create symmetrical _____.
Answer: patterns
31. The chapter suggests making paper cutouts of a diya and a _____.
Answer: boat
32. The letter cutout activity includes E, N, X, T, K, V and _____.
Answer: O
33. Students can use _____ paper to check whether a letter looks the same when turned.
Answer: tracing
34. A letter's centre point can be fixed using a _____.
Answer: nail
35. A design may have reflection symmetry, rotational symmetry, or _____.
Answer: both

10.4 Fill-Up the Blank HOTS type questions with Answers: (35 Questions)

1. Meera folds paper along a vertical line, draws half of A, and cuts it out. The finished letter has reflection symmetry about the _____ line.
Answer: vertical
2. To make the H cutout using both its symmetry lines, the paper must be folded once vertically and once _____.
Answer: horizontally
3. The H cutout has two lines of symmetry, so its two matching folds show _____ reflection axes.
Answer: two
4. A student says H has rotational symmetry because it looks the same after a half turn. H also has _____ symmetry because it can be folded into matching halves.
Answer: reflection
5. The letter A matches when folded along its vertical line, so it has _____ symmetry.
Answer: reflection
6. After a half turn, a capital A no longer looks the same; therefore, A does not have _____ symmetry at a half turn.
Answer: rotational
7. A firki looks the same after each quarter turn. Its rotational symmetry has order _____.
Answer: four
8. The firki in the chapter looks the same after a quarter turn, a half turn, and a _____-quarter turn.
Answer: three
9. If a design matches after every quarter turn, it also matches after a _____ turn.
Answer: half
10. A design matches after a half turn but not after a quarter turn. It has rotational symmetry of order _____.
Answer: two

11. A motif repeats at four equally spaced positions during one full turn. Its rotational symmetry has order _____.
Answer: four
12. A design that matches only after a complete turn has no matching position after a smaller _____.
Answer: turn
13. A dot marked on a letter helps a student track its _____ while the letter is turned.
Answer: orientation
14. To test rotational symmetry with tracing paper, rotate the tracing around the shape's _____ point.
Answer: centre
15. Fixing a nail at the centre lets the cutout turn around the same _____.
Answer: point
16. When the two sides of a folded shape overlap exactly, the fold is a line of _____.
Answer: symmetry
17. If the two halves do not overlap after folding along a proposed line, that fold is not a line of _____.
Answer: symmetry
18. A capital A matches when folded vertically but not after a half turn, so it has reflection symmetry but not half-turn _____ symmetry.
Answer: rotational
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19. The letter H matches after a half turn and also has matching folded halves, so it has _____ types of symmetry.
Answer: both
20. A rectangle that is not a square matches after a half turn but not after a quarter turn; its rotational symmetry is at a _____ turn.
Answer: half
21. If a design matches after a quarter turn, repeating that turn twice brings it to the same position after a _____ turn.
Answer: half
22. A design that matches after a half turn is not guaranteed to match after a _____ turn.
Answer: quarter
23. Before saying that a letter has rotational symmetry, compare its outline after the _____. **Answer: turn**
24. If the pin of a firki is pushed too tightly, the firki may not _____ freely.
Answer: spin
25. The cuts for a firki stop halfway to the centre so that the paper stays joined at the _____. **Answer: centre**
26. Folding a square paper diagonally in both directions makes an _____ shape.
Answer: X
27. The four cuts along the X form flaps, while the uncut middle keeps them _____ to the paper.
Answer: attached
28. To make a design repeat after each quarter turn, place each copy in a position reached by turning around the same _____.
Answer: centre
29. Using a block four times does not by itself guarantee rotational symmetry; the finished print must also match after a _____ turn.
Answer: quarter

30. In the example, design A looks the same after every quarter turn, so the printed pattern has _____ symmetry.
Answer: rotational
31. Rajasthan's traditional block printing uses carved _____ blocks to make fabric patterns. **Answer: wooden**
32. For the chapter's design activity, squares and equilateral triangles should have the same _____ length.
Answer: side
33. A student sorts designs into only rotational, only reflection, and _____ symmetry.
Answer: both
34. If a design matches when rotated but has no matching mirror fold, it has _____ symmetry only.
Answer: rotational
35. If a design matches when folded across a line and also after a turn, it has _____ types of symmetry.
Answer: both

10.5 One-mark questions with Answers of LOTS Type: (35 Questions)

Answer each question in one sentence. The answer is provided after each question for review.

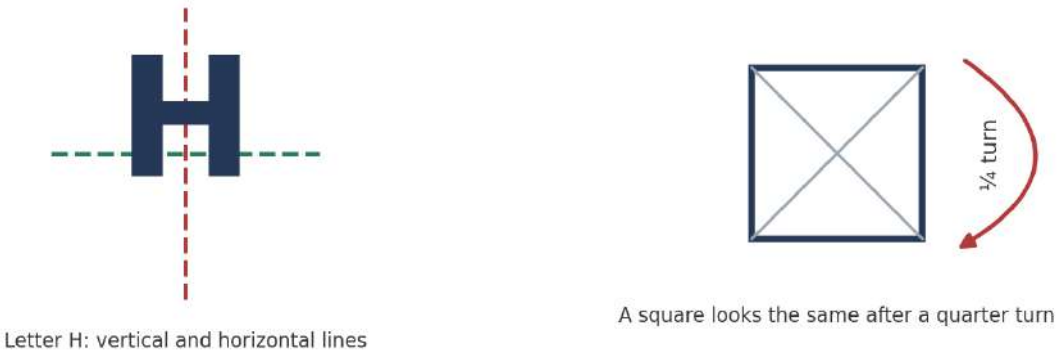


Figure 1. Examples of reflection symmetry and rotational symmetry.

1. What does a line of symmetry divide a shape into?
Answer: A line of symmetry divides a shape into two matching halves.
2. What is reflection symmetry?
Answer: Reflection symmetry occurs when the two sides of a shape match across a line.
3. Which line of symmetry does the letter A have?
Answer: The letter A has a vertical line of symmetry.
4. How many lines of symmetry does the letter H have?
Answer: The letter H has two lines of symmetry.
5. Which two lines of symmetry does the letter H have?
Answer: The letter H has vertical and horizontal lines of symmetry.
6. What is rotational symmetry?
Answer: Rotational symmetry occurs when a shape looks the same after being turned around its centre.
7. What is a quarter turn?
Answer: A quarter turn is one-fourth of a full turn.
8. What is a half turn?
Answer: A half turn is one-half of a full turn.

9. What is a three-quarter turn?
Answer: A three-quarter turn is three-fourths of a full turn.
10. What is a full turn?
Answer: A full turn is one complete turn.
11. What is the windmill made in the chapter also called?
Answer: The windmill is also called a firki.
12. What shape of paper is used to make a firki?
Answer: A square piece of paper is used to make a firki.
13. What shape appears when the paper is folded diagonally in both directions?
Answer: The folds form an X shape on the paper.
14. Along how many lines of the X are cuts made?
Answer: Cuts are made along the four lines of the X.
15. Where should the cuts stop when making a firki?
Answer: The cuts should stop about halfway to the centre.
16. Towards which point are the firki corners folded?
Answer: The firki corners are folded towards the centre of the paper.
17. What is pushed through the folded corners and the centre?
Answer: A pin is pushed through the folded corners and the centre.
18. What can the pin be pushed through after passing through the paper?
Answer: The pin can be pushed through a stick or a straw.
Grade 5 Mathematics | Symmetrical Designs
19. How tight should the pin be in the firki?
Answer: The pin should not be too tight.
20. When should the firki spin?
Answer: The firki should spin when the wind is blowing.
21. After which turns does the chapter say the firki looks the same?
Answer: The firki looks the same after quarter, half, and three-quarter turns.
22. After which turn does the letter H look the same?
Answer: The letter H looks the same after a half turn.
23. What can be used to check whether a letter looks the same when turned?
Answer: Tracing paper can be used to check a letter after turning it.
24. What can be used to fix the centre point of a letter while checking rotation?
Answer: A nail can be used to fix the centre point of a letter.
25. Why are dots marked on letters in the rotation activity?
Answer: The dots help track the orientation of the letters.
26. In which Indian state is block printing described as a traditional craft?
Answer: Block printing is described as a traditional craft of Rajasthan.
27. What do artisans use to print designs on fabric?
Answer: Artisans use carved wooden blocks to print designs on fabric.
28. On what material are the wooden-block designs printed?
Answer: The designs are printed on fabric.
29. How many times is the wooden block used to make the example print?
Answer: The wooden block is used four times to make the example print.
30. After what turn does design A look the same?
Answer: Design A looks the same after every quarter turn.
31. Which two shapes are used in the design-making activity?
Answer: The activity uses squares and equilateral triangles.
32. What should be equal for the squares and triangles in the activity?
Answer: The squares and triangles should have the same side length.
33. Name one paper cutout suggested in the chapter besides a diya.

Answer: A boat is suggested as another paper cutout.
34. What three groups are used to sort the symmetrical designs?
Answer: The designs are sorted into rotational-only, reflection-only, and both-symmetry groups.
35. What should be drawn on a letter to show its reflection symmetry?
Answer: A line of symmetry should be drawn on the letter.

10.6 One-mark questions with Answers of HOTS Type: (30 Questions)

Answer each question in one sentence. The questions ask you to apply and reason with the chapter ideas; answers are shown for review.

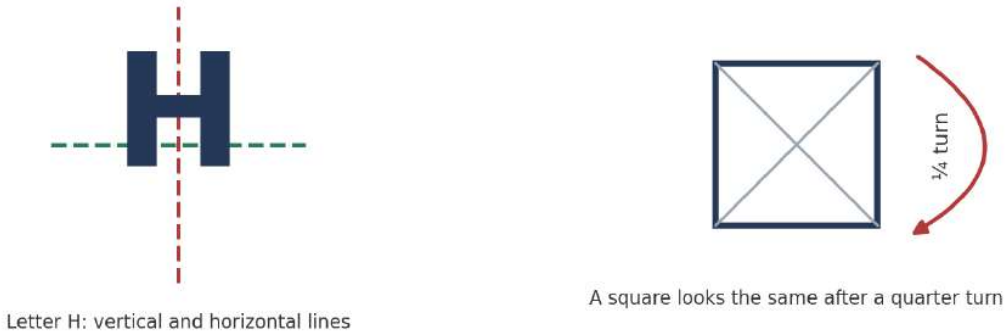


Figure: *Reflection symmetry and a quarter-turn example.*

1. A student folds paper vertically, draws half of A, and cuts it out; what symmetry makes the two sides match?
Answer: The cutout has reflection symmetry across the vertical line.
2. A student makes an H cutout by folding in both directions; which two symmetry lines should appear?
Answer: The cutout should have vertical and horizontal lines of symmetry.
3. The letter H looks unchanged after a half turn; what kind of symmetry does this show?
Answer: This shows rotational symmetry.
4. A classmate notices H's rotational symmetry but misses its folds; what other symmetry does H have?
Answer: The letter H also has reflection symmetry.
5. Capital A matches across a vertical fold but changes after a half turn; which symmetry does it have?
Answer: Capital A has reflection symmetry but not half-turn rotational symmetry.
6. A firki matches after every quarter turn; after which other partial turns should it match?
Answer: It should also match after a half turn and a three-quarter turn.
7. A design matches after every quarter turn; how many matching orientations does it have during a full turn? **Answer: It has four matching orientations during a full turn.**
8. A motif matches after a half turn but not after a quarter turn; what is its rotational symmetry order? **Answer: Its rotational symmetry order is two.**
9. A shape does not match at any partial turn before a full turn; when does it first return to its original appearance? **Answer: It returns to its original appearance after a full turn.**
10. A pattern matches after a quarter turn; what turn will result after repeating that turn twice?
Answer: Repeating a quarter turn twice makes a half turn.
11. When folded along a proposed line, the two halves overlap exactly; what does this show about the fold? **Answer: The fold is a line of symmetry.**

12. When a shape is folded along a proposed line, its halves do not match; is that line a line of symmetry? **Answer: No, that fold is not a line of symmetry.**
13. A rectangle that is not a square matches after a half turn but not a quarter turn; which turn shows its rotational symmetry? **Answer: Its rotational symmetry is shown by a half turn.**
14. A square looks the same after a quarter turn; what type of symmetry does this show? **Answer: This shows rotational symmetry.**
15. A student draws the line needed to make an A cutout; in which direction should the line run? **Answer: The line should run vertically through the letter A.**
16. To draw only one-fourth of H for a cutout, how should the paper be folded? **Answer: The paper should be folded once vertically and once horizontally.**
17. A dot is placed on a letter before turning it; what does the dot help the student track? **Answer: The dot helps track the letter's orientation.**
18. A student uses tracing paper to test a letter's rotational symmetry; around which point should it turn? **Answer: The tracing should turn around the letter's centre point.**
19. A nail is used while testing a letter's rotation; where should the nail be fixed? **Answer: The nail should be fixed at the centre point of the letter.**
20. A firki does not spin freely because its pin is too tight; what should be changed? **Answer: The pin should be loosened so the firki can spin.**
21. Why should the cuts for a firki stop halfway to the centre? **Answer: The cuts should stop halfway so the paper stays joined at the centre.**
22. A square sheet is folded diagonally in both directions; what pattern do the creases form? **Answer: The creases form an X shape.**
23. Which shape of paper should a student choose to begin making the firki? **Answer: The student should begin with a square piece of paper.**
24. When making the firki, towards which point are the corners folded? **Answer: The corners are folded gently towards the centre of the paper.**
25. After the folded corners are pinned, what can the pin be attached through to make the firki spin? **Answer: The pin can be pushed through a stick or a straw.**
26. An artisan wants a repeated print to look the same after each quarter turn; how should the block impressions be arranged? **Answer: The impressions should repeat in matching positions around the centre.**
27. A wooden block is used four times, but the print does not match after a quarter turn; can it be called quarter-turn symmetric? **Answer: No, the finished print must look the same after a quarter turn.**
28. What printing method uses carved wooden blocks to make patterns on fabric? **Answer: Block printing uses carved wooden blocks to make fabric patterns.**
29. An artisan is learning the traditional craft described in the chapter; which state is associated with it? **Answer: The traditional block-printing craft described is from Rajasthan.**
30. A student cuts squares and equilateral triangles for a design; what should their side lengths be? **Answer: The squares and triangles should have the same side length.**
31. A design matches after turning but has no matching mirror fold; how should it be classified? **Answer: It has rotational symmetry only.**
32. A design matches across a fold but not after a turn; how should it be classified? **Answer: It has reflection symmetry only.**
33. A design matches across a fold and also after a turn; how should it be classified? **Answer: It has both reflection and rotational symmetry.**
34. A student sorts designs into only-rotational, only-reflection, and shared groups; what belongs in the shared group? **Answer: Designs with both reflection and rotational symmetry belong in the shared group.**

35. A student wants to make a paper cutout of a diya with matching sides; what idea from the chapter should be used? **Answer: The student should use a line of symmetry to guide the cutout.**

10.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

Answer each question using the two points provided.

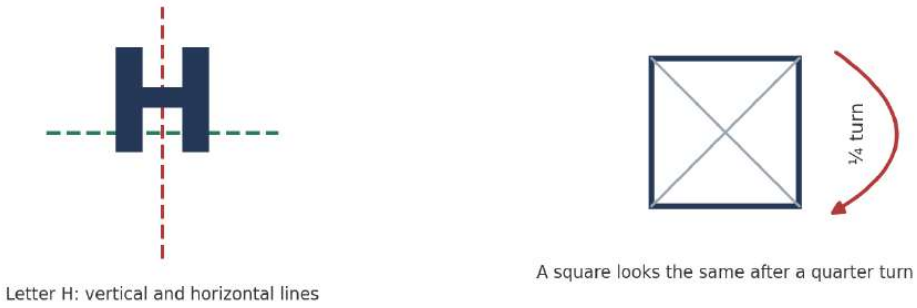


Figure 1. Reflection symmetry and a quarter-turn example.

1. What does a line of symmetry do to a shape?
1) It divides the shape into two matching halves.
2) The halves overlap when the shape is folded along that line.

2. What is reflection symmetry?
1) A shape has reflection symmetry when its two sides match across a line.
2) The matching line is called a line of symmetry.

3. Describe the line of symmetry in the letter A.
1) The letter A has a vertical line of symmetry.
2) Its left and right sides match across that line.

4. How many lines of symmetry does H have, and which are they?
1) The letter H has two lines of symmetry.
2) They are vertical and horizontal.

5. How can a paper cutout of A be made using symmetry?
1) Fold the paper in half and draw half of A along the fold.
2) Cut along the outline and unfold the paper to see the full letter.

6. Why is the paper folded into one-fourth to make an H cutout?
1) The letter H has vertical and horizontal lines of symmetry.
2) Folding in both directions lets the student draw one-fourth of the letter.

7. What happens when a symmetrical paper cutout is unfolded?
1) The full design appears.
2) Its two sides match across the fold line.

8. What is rotational symmetry?
1) A shape has rotational symmetry when it looks the same after being turned.
2) The turning takes place around the shape's centre.

9. How does the letter H show rotational symmetry?
1) The letter H looks the same after a half turn.
2) A half turn is one-half of a full turn.

10. What is a firki, and what is it designed to do?

1) A firki is a paper windmill.
2) It is designed to spin when the wind is blowing.

11. What kind of paper is used to make a firki?

1) A square piece of paper is used.
2) It is folded diagonally in both directions before cutting.

12. What do the diagonal folds show on the paper?

1) The folds make an X shape.
2) The X has four lines along which the paper is cut.

13. Where should the firki cuts stop, and why?

1) The cuts should stop about halfway to the centre.
2) This keeps the paper joined at the middle.

14. How are the firki corners folded?

1) The corners are folded gently towards the centre.
2) They should not be pressed flat.

15. How is the firki fastened to make it spin?

1) A pin is pushed through the folded corners and the centre.
2) The pin is then pushed through a stick or a straw.

16. What should be checked about the pin in a firki?

1) The pin should not be too tight.
2) The firki should be able to spin when the wind blows.

17. After which turns does a firki look the same?

1) It looks the same after a quarter turn and a half turn.
2) It also looks the same after a three-quarter turn.

18. How can tracing paper help test a letter for rotational symmetry?

1) Trace the letter and turn the tracing around its centre.
2) Check whether it looks the same in the new position.

19. Why are dots marked on letters during the turning activity?

1) The dots help students track the letters' orientation.
2) They make it easier to see whether a letter has turned.

20. What does the chapter say about block printing in Rajasthan?

1) Block printing is a traditional craft of Rajasthan.
2) Artisans use carved wooden blocks to print designs on fabric.

21. How is the example block print made?

1) The wooden block is used four times.
2) The final design looks the same after every quarter turn.

22. What does it mean if design A looks the same after every quarter turn?

1) Design A has rotational symmetry.
2) It matches after each one-fourth turn.

23. Which shapes are used to make symmetrical designs in the chapter's activity?

1) The activity uses squares and equilateral triangles.
2) The shapes should have the same side length.

24. Name two paper cutouts suggested in the chapter's activity.

1) A diya is one suggested paper cutout.
2) A boat is another suggested cutout.

25. How are student-made symmetrical designs sorted?

1) Some designs have only rotational symmetry, and some have only reflection symmetry.
2) Designs with both types of symmetry form the third group.

10.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Answer each question using the two points provided.

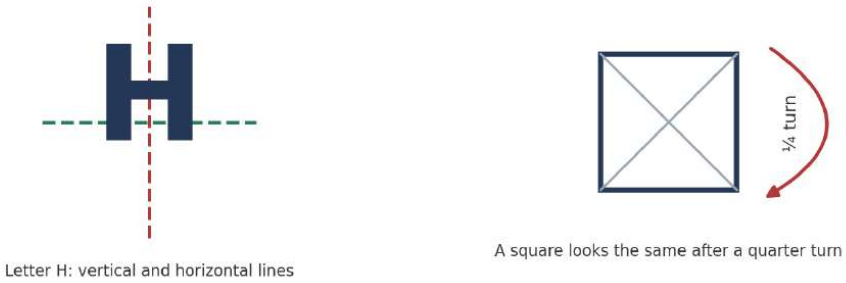


Figure : Reflection symmetry and a quarter-turn example.

1. Riya folds paper vertically, draws half of A, and cuts it out. Why do the two sides match when she opens the paper?

1) The fold acts as the vertical line of symmetry.
2) The drawn half is reflected to make a matching half.

2. Why is paper folded both vertically and horizontally to make an H cutout?

1) The letter H has both vertical and horizontal lines of symmetry.
2) The two folds let the student draw only one-fourth of the letter.

3. A student observes that H looks the same after a half turn and also folds into matching halves. Which two symmetries does H have?

1) H has rotational symmetry because it matches after a half turn.
2) H has reflection symmetry because its halves match across its symmetry lines.

4. A capital A matches across a vertical fold but changes after a half turn. How should its symmetry be described?

1) A has reflection symmetry across a vertical line.
2) It does not have rotational symmetry at a half turn.

5. A pattern looks the same after every quarter turn. What can you infer about its rotational symmetry?

1) It has four matching orientations during a full turn.
2) It also matches after half and three-quarter turns.

6. A motif matches after a half turn but not after a quarter turn. What is its rotational symmetry order?

1) Its order of rotational symmetry is two.
2) The half turn is its first matching partial turn.

7. A design matches after a quarter turn. Which later partial-turn positions should also match?

1) It should match again after a half turn.

2) It should also match after a three-quarter turn.

8. A shape looks the same only after a complete turn. What does this tell you about smaller turns?

1) It has no matching position after a smaller partial turn.
2) It has no rotational symmetry before the complete turn.

9. A student tests a letter by turning tracing paper around a nail placed away from the centre. Why might the test give a wrong result?

1) Rotational symmetry must be checked around the shape's centre.
2) An off-centre nail shifts the outline instead of turning it in place.

10. Why does the chapter mark a dot on a letter before testing it by turning?

1) The dot helps track the letter's orientation.
2) It shows how the marked point moves during the turn.

11. When does a proposed fold line qualify as a line of symmetry?

1) The two halves must match exactly when folded along it.
2) The matching halves should overlap one another.

12. A shape is folded along a proposed line, but the halves do not overlap. What can you conclude?

1) That fold is not a line of symmetry.
2) The shape does not have reflection symmetry across that line.

13. A square looks unchanged after a quarter turn. What symmetry does this show, and what is a quarter turn?

1) It shows rotational symmetry.
2) A quarter turn is one-fourth of a full turn.

14. A rectangle that is not a square matches after a half turn but not a quarter turn. Which turn shows its rotational symmetry?

1) The half turn shows its rotational symmetry.
2) It does not match after a quarter turn.

15. An artisan uses a wooden block four times, but the finished print changes after a quarter turn. Is the print quarter-turn symmetric?

1) No, it is not quarter-turn symmetric.
2) The whole print must look the same after a quarter turn.

16. How should four copies of a motif be arranged to make a pattern repeat after each quarter turn?

1) Place the copies in matching positions around the same centre.
2) Space them so each is a quarter turn from the previous copy.

17. A vegetable-block design has matching mirror halves and also looks the same after turning. Which symmetry group does it belong to?

1) It has reflection symmetry because its mirror halves match.
2) It also has rotational symmetry, so it belongs in the both-symmetries group.

18. A design matches when folded but does not match after a turn. How should it be classified?

1) It has reflection symmetry.
2) It has reflection symmetry only.

19. A design matches after turning but has no matching fold line. How should it be classified?

1) It has rotational symmetry.
2) It has rotational symmetry only.

20. A design matches across a fold and after a turn. What should a student record?

1) The design has reflection symmetry.
2) The design also has rotational symmetry.

21. Why do the cuts for a firki stop halfway to the centre?

1) The uncut middle keeps the paper joined.
2) The joined centre holds the folded corners together for the pin.

22. A firki does not spin because its pin is too tight. What change should be made, and what should happen next?

1) Loosen the pin slightly.
2) The firki should then spin when the wind blows.

23. How can tracing paper be used to test a letter for rotational symmetry?

1) Trace the letter and turn the tracing around its centre.
2) Check whether the turned outline matches the original letter.

24. Why should the squares and equilateral triangles in the design activity have equal side lengths?

1) Equal side lengths let the shapes meet along matching edges.
2) This helps students combine the shapes into a design.

25. A wooden block is used four times to make a print. How can a student check whether the print has quarter-turn symmetry?

1) Turn the finished print by one-fourth of a turn around its centre.
2) If it looks the same, it has quarter-turn rotational symmetry.

10.9. Three-mark questions with Answers of LOTS Type: (20 Questions)

Answer each question using the three points provided.

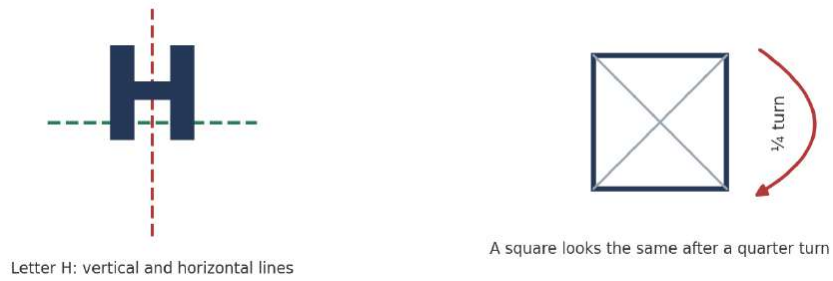


Figure: Reflection symmetry and a quarter-turn example.

1. Describe the steps for making a paper cutout of the letter A.

Point 1: Fold a paper in half.
Point 2: Draw half of the letter A along the fold.
Point 3: Cut along the outline and open the paper to see the full A.

2. Describe how to fold paper to make a cutout of the letter H.

Point 1: Fold the paper once vertically and once horizontally.
Point 2: Draw one-fourth of the letter H along the folds.

Point 3: Cut the outline and open the paper to see the full H.

3. State three facts about the reflection symmetry of the letter A.

Point 1: The letter A has a vertical line of symmetry.

Point 2: The line divides A into matching left and right halves.

Point 3: Folding along the line makes the halves overlap.

4. Describe the lines of symmetry in the letter H.

Point 1: The letter H has a vertical line of symmetry.

Point 2: It also has a horizontal line of symmetry.

Point 3: Altogether, it has two lines of symmetry.

5. Explain reflection symmetry in three points.

Point 1: A line of symmetry divides a shape into two parts.

Point 2: The two parts are matching halves.

Point 3: They overlap when folded along the line.

6. Explain rotational symmetry in three points.

Point 1: A shape is turned around its centre.

Point 2: It has rotational symmetry if it looks the same after a turn.

Point 3: The turn may be a quarter, half, or three-quarter turn.

7. Describe the three kinds of partial turns used in the chapter.

Point 1: A quarter turn is one-fourth of a full turn.

Point 2: A half turn is one-half of a full turn.

Point 3: A three-quarter turn is three-fourths of a full turn.

8**. Name three items used to make and support a firki.**

Point 1: A square piece of paper is used to make the firki.

Point 2: A pin is pushed through its folded corners and centre.

Point 3: The pin is pushed through a stick or a straw.

9. Describe how the folds form the X used to make a firki.

Point 1: Fold the square paper diagonally in half.

Point 2: Open it and fold it diagonally in the other direction.

Point 3: Open it again to see the X-shaped folds.

10. State three instructions for cutting the paper for a firki.

Point 1: Cut along the four lines of the X.

Point 2: Stop each cut about halfway to the centre.

Point 3: Keep the middle joined so the paper stays in one piece.

11. Describe how the firki corners are prepared before pinning.

Point 1: Take a corner from each triangular section.

Point 2: Fold the corners gently towards the centre.

Point 3: Do not press the folded corners flat.

12. Give three safety or working checks for a finished firki.

Point 1: Push the pin through the folded corners and centre.

Point 2: Make sure the pin is not too tight.

Point 3: Check that the firki spins when the wind blows.

13. State the turns after which the firki looks the same.

Point 1: The firki looks the same after a quarter turn.

Point 2: It also looks the same after a half turn.

Point 3: It looks the same after a three-quarter turn.

14. Describe three ways to check whether a letter has rotational symmetry.

Point 1: Mark a dot to track the letter's orientation.

Point 2: Use tracing paper or fix the centre with a nail.

Point 3: Turn the letter around its centre and check if it looks the same.

15. Explain how folding helps identify a line of symmetry.

Point 1: Fold the shape along a proposed line.

Point 2: Check whether the two halves match.

Point 3: If they overlap, the fold is a line of symmetry.

16. Describe block printing as presented in the chapter.

Point 1: Block printing is a traditional craft of Rajasthan.

Point 2: Artisans use carved wooden blocks.

Point 3: They use the blocks to print designs on fabric.

17. State three facts about the example print made with a wooden block.

Point 1: The wooden block is used four times.

Point 2: The repeated use makes a larger design.

Point 3: Design A looks the same after every quarter turn.

18. Name the shapes used in the chapter's design-making activity and state their size condition.

Point 1: The activity uses squares.

Point 2: It also uses equilateral triangles.

Point 3: The shapes should have the same side length.

19. Name three groups used to sort student-made symmetrical designs.

Point 1: One group has designs with only rotational symmetry.

Point 2: Another group has designs with only reflection symmetry.

Point 3: The third group has designs with both types of symmetry.

20. Describe how a student can make a symmetrical paper cutout such as a diya or boat.

Point 1: Choose a line of symmetry for the design.

Point 2: Fold the paper along that line and draw half the design by the fold.

Point 3: Cut along the outline and unfold the paper to see the full design.

10.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

Answer each question using the three points provided.

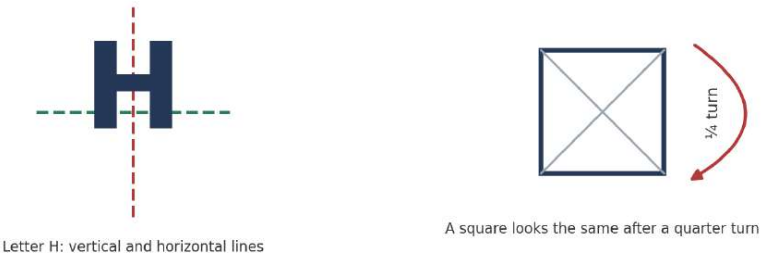


Figure: Reflection symmetry and a quarter-turn example.

1. A student says H has only rotational symmetry because it looks the same after a half turn. How would you correct the student?

Point 1: H has rotational symmetry after a half turn.

Point 2: H also has vertical and horizontal lines of reflection symmetry.

Point 3: So H has both reflection and rotational symmetry.

2. A paper H cutout is folded once vertically and once horizontally. What can you infer about the drawing and the letter?

Point 1: The folds divide the paper into four equal parts.

Point 2: The student can draw one-fourth of H along the folds.

Point 3: The letter has two lines of symmetry, one vertical and one horizontal.

3. Capital A matches across a vertical fold but looks different after a half turn. How should its symmetry be classified?

Point 1: The vertical fold shows reflection symmetry.

Point 2: The letter has matching left and right halves.

Point 3: It does not have rotational symmetry at a half turn.

4. A firki looks the same after every quarter turn. What other positions should match, and what is its rotational order?

Point 1: It should also match after a half turn.

Point 2: It should match after a three-quarter turn as well.

Point 3: It has four matching orientations during a full turn.

5. A design first looks the same after a half turn and does not match after a quarter turn. What does this tell you?

Point 1: The first matching partial turn is a half turn.

Point 2: The design has rotational symmetry of order two.

Point 3: It does not have quarter-turn symmetry.

6. An artisan uses a block four times, but the finished print changes after a quarter turn. Is the print quarter-turn symmetric?

Point 1: No, four impressions alone do not prove quarter-turn symmetry.

Point 2: The whole print must look the same after a quarter turn.

Point 3: The positions and orientations of the impressions must match when turned.

7. A student checks a letter by turning tracing paper around a nail placed away from the centre. Why is this test unreliable?

Point 1: Rotational symmetry is checked around the shape's centre.

Point 2: An off-centre nail shifts the tracing as it turns.

Point 3: The student should fix the turning point at the centre.

8. A dot is marked on a letter before it is turned. How does this help test rotational symmetry?

Point 1: The dot helps track the letter's orientation.

Point 2: The student turns the letter around its centre.

Point 3: The turned letter is checked to see whether it looks the same.

9. A student folds a shape along a proposed line and the halves overlap exactly. What can the student conclude?

Point 1: The two halves match across the fold.

Point 2: The fold is a line of symmetry.

Point 3: The shape has reflection symmetry across that line.

10. A square and a non-square rectangle are tested by turning them. How do their quarter-turn results differ?

Point 1: A square looks the same after a quarter turn.

Point 2: A non-square rectangle does not look the same after a quarter turn.

Point 3: The rectangle matches after a half turn instead.

11. A student wants a wooden-block print to have quarter-turn symmetry. How should the impressions be arranged?

Point 1: Place matching impressions around a common centre.

Point 2: Space each copy one quarter turn from the previous one.

Point 3: Check that the full print looks unchanged after a quarter turn.

12. Why do the cuts in the firki activity stop halfway to the centre?

Point 1: The middle of the paper stays uncut.

Point 2: The uncut centre keeps the paper connected.

Point 3: The connected centre holds the folded corners for the pin.

13. A finished firki does not spin because its pin is too tight. What should the student do and check?

Point 1: The student should loosen the pin slightly.

Point 2: The folded corners should remain held by the pin.

Point 3: The firki should spin when the wind blows.

14. A design has matching mirror halves and also looks the same after turning. Which symmetry group should it join?

Point 1: The matching mirror halves show reflection symmetry.

Point 2: The unchanged turned design shows rotational symmetry.

Point 3: It belongs in the group with both types of symmetry.

15. A student wants to make a symmetrical diya or boat cutout. Describe a simple method using reflection symmetry.

Point 1: Choose a line of symmetry and fold the paper along it.

Point 2: Draw half of the design by the fold and cut its outline.

Point 3: Unfold the paper to reveal the full symmetrical design.

10.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

Answer each question using the five points provided.

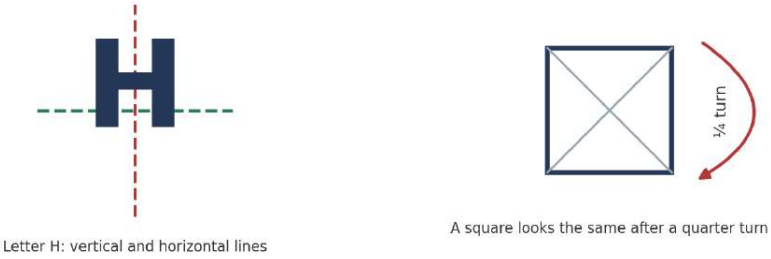


Figure:. Reflection symmetry and a quarter-turn example.

1. Explain reflection symmetry using the letter A.

Point 1: The letter A has a vertical line of symmetry.
Point 2: The line divides A into left and right parts.
Point 3: The two parts are matching halves.
Point 4: Folding along the line makes the halves overlap.
Point 5: The matching fold is called a line of symmetry.

2. Compare the lines of symmetry in the letters A and H.

Point 1: The letter A has one vertical line of symmetry.
Point 2: The letter H has two lines of symmetry.
Point 3: One line in H is vertical.
Point 4: The other line in H is horizontal.
Point 5: Both letters can be checked by folding along their symmetry lines.

3. Describe five steps for making a paper cutout of the letter A.

Point 1: Take a piece of paper.
Point 2: Fold the paper in half.
Point 3: Draw half of the letter A along the fold.
Point 4: Cut along the outline.
Point 5: Open the paper to see the full letter A.

4. Describe five steps for making a paper cutout of the letter H.

Point 1: Take a piece of paper.
Point 2: Fold it once vertically and once horizontally.
Point 3: Draw one-fourth of the letter H along the folds.
Point 4: Cut along the outline.
Point 5: Open the paper to see the full letter H.

5. Explain how the letter H shows rotational symmetry.
Point 1: Rotational symmetry is checked by turning a shape around its centre.
Point 2: A half turn is one-half of a full turn.
Point 3: The letter H looks the same after a half turn.
Point 4: Its orientation changes as it turns.
Point 5: Because it matches again, H has rotational symmetry.

6. Describe the turns used in the chapter and what each fraction means.
Point 1: A quarter turn is one-fourth of a full turn.
Point 2: A half turn is one-half of a full turn.
Point 3: A three-quarter turn is three-fourths of a full turn.
Point 4: A full turn is one complete turn.
Point 5: The turns can be used to check rotational symmetry.

7. Describe five steps for folding the square paper to make a firki pattern.
Point 1: Take a square piece of paper.
Point 2: Fold it diagonally in half to make two triangles.
Point 3: Open the paper.
Point 4: Fold it diagonally in the other direction.
Point 5: Open it again to see an X shape.

8. State five instructions for cutting the paper when making a firki.
Point 1: Use scissors to cut along the four lines of the X.
Point 2: Begin each cut from a corner of the square.
Point 3: Stop cutting about halfway to the centre.
Point 4: Leave the centre of the paper uncut.
Point 5: The uncut middle keeps the paper joined.

9. Describe five steps for assembling a firki.
Point 1: Take a corner from each triangular section.
Point 2: Fold the corners gently towards the centre.
Point 3: Do not press the folded corners flat.
Point 4: Push a pin through the folded corners and the centre.
Point 5: Push the pin through a stick or straw.

10. Explain how the firki shows rotational symmetry and how to check that it works.
Point 1: A firki looks the same after a quarter turn.
Point 2: It also looks the same after a half turn.
Point 3: It looks the same after a three-quarter turn.
Point 4: The pin should not be too tight.
Point 5: The firki should spin when the wind is blowing.

11. Describe five ways to check whether a letter has rotational symmetry.
Point 1: Choose a letter to test.
Point 2: Mark a dot to track its orientation.
Point 3: Use tracing paper or fix its centre with a nail.
Point 4: Turn the letter around its centre.
Point 5: Check whether it looks the same after the turn.

12. Describe block printing as introduced in the chapter.
Point 1: Block printing is a traditional craft of Rajasthan.
Point 2: It is used to create patterns.
Point 3: Artisans carve wooden blocks.
Point 4: They use the blocks to print designs.
Point 5: The designs are printed on fabric.

13. State five facts about the example print made with a wooden block.
Point 1: A wooden block is used to make the print.
Point 2: The block is used four times.
Point 3: The repeated prints form a larger design.
Point 4: Design A looks the same after every quarter turn.
Point 5: Therefore, design A has rotational symmetry.

14. Describe the shapes used in the symmetrical design activity.
Point 1: The activity uses square cutouts.
Point 2: It also uses equilateral triangle cutouts.
Point 3: The squares and triangles have the same side length.
Point 4: The shapes can be arranged to make designs.
Point 5: The finished designs can be checked for symmetry.

15. Explain how student-made designs can be sorted by symmetry.
Point 1: First, check whether a design matches after a turn.
Point 2: Then, check whether it matches when folded along a line.
Point 3: Put designs with only rotational symmetry in one group.
Point 4: Put designs with only reflection symmetry in another group.
Point 5: Put designs with both types of symmetry in a third group.

10.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

Answer each question using the five points provided.

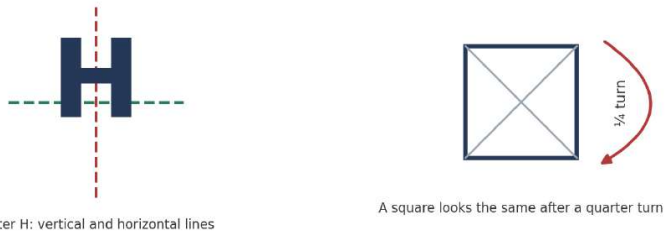


Figure 1. Reflection symmetry and a quarter-turn example.

1. Mira says that every line passing through the centre of the letter H is a line of symmetry. Use folding to test her claim and explain your conclusion.
Point 1: A fold is a line of symmetry only when the two halves match exactly.
Point 2: Folding H along its vertical middle line makes its left and right halves overlap.
Point 3: Folding H along its horizontal middle line also makes matching halves overlap.
Point 4: A slanting line through the centre does not generally make the parts overlap.
Point 5: So H has the two matching fold lines shown in the figure, not every line through its centre.

2. A design looks unchanged after a half turn but looks different after a quarter turn. What can you conclude about its rotational symmetry? Explain how you would check it.
Point 1: A half turn brings the design back to its original appearance.
Point 2: A quarter turn does not bring it back to the same appearance.
Point 3: The design therefore has rotational symmetry at a half turn.
Point 4: Its first matching turn is one-half of a full turn, so its rotational order is two.
Point 5: I would keep the centre fixed and compare the design after quarter-turn and half-turn rotations.

3. A classmate says that a square needs only one test to prove it has rotational symmetry. Decide whether a quarter-turn test is enough, and describe the other matching turns.
Point 1: A square matches its starting position after a quarter turn about its centre.
Point 2: That quarter-turn match is enough to establish rotational symmetry.
Point 3: A further quarter turn makes a half turn and the square still matches.
Point 4: After three quarter turns it matches again, and after a full turn it returns to its start.
Point 5: The square therefore matches at all three intermediate quarter-turn positions.

4. A student turns a paper design around a nail placed away from its centre and says it has no rotational symmetry. Explain why the test may be unfair and how to improve it.
Point 1: Rotational symmetry is tested by turning a shape around its own centre.
Point 2: A nail away from the centre makes the design move around a different point.
Point 3: That movement can make even a symmetric design appear not to match.
Point 4: The student should mark the design's centre and place the turning point there.
Point 5: Then the student can compare the design after quarter, half, and three-quarter turns.

5. A wooden block is used four times to make a printed design, but the four prints are not all placed in the same orientation. How would you decide whether the complete design has rotational symmetry?
Point 1: Using the block four times by itself does not prove that the complete design is rotationally symmetric.
Point 2: I would first identify the centre of the whole printed design.
Point 3: I would turn tracing paper around that centre by a quarter turn.
Point 4: I would check whether every printed part overlaps its matching part after the turn.
Point 5: If the whole pattern matches, it has rotational symmetry; otherwise it does not pass that test.

6. A design matches when folded along one vertical line but does not match after either a quarter turn or a half turn. Classify the symmetry it shows and explain the evidence.
Point 1: The vertical fold divides the design into two matching halves.
Point 2: That matching fold shows reflection symmetry.
Point 3: Neither a quarter turn nor a half turn brings the design to its original appearance.
Point 4: So the design has not shown rotational symmetry at either tested turn.
Point 5: From these tests, I would classify it as having reflection symmetry only.

7. Two students test the letter H: Arun folds it along a horizontal line and Leela turns it through a half turn. What different kinds of symmetry do their tests show?
Point 1: Arun's horizontal fold makes the top and bottom halves of H overlap.
Point 2: His result shows reflection symmetry across a horizontal line.
Point 3: Leela's half turn brings H back to the same appearance.

Point 4: Her result shows rotational symmetry about the centre of H.
Point 5: Together, the tests show that H has both reflection and rotational symmetry.

8. A firki does not spin smoothly and one blade seems to lag behind the others. Use the chapter's ideas to suggest what to check and how to correct the problem.
Point 1: I would check that the four paper corners were folded towards the same centre.
Point 2: I would check that the centre is still joined because the cuts should stop before reaching it.
Point 3: I would check that the pin passes through the folded corners and the centre.
Point 4: If the pin is too tight, I would loosen it so the firki can turn freely.
Point 5: I would then check that the blades are arranged evenly and the firki spins around its centre.

9. A group makes designs using equal-sided squares and equilateral triangles. Give a clear method for deciding whether each finished design has reflection symmetry, rotational symmetry, both, or neither.
Point 1: I would look for a centre and test turns while keeping that point fixed.
Point 2: If the design matches after a turn, I would record rotational symmetry.
Point 3: I would also test possible fold lines to see whether both halves overlap.
Point 4: A matching fold gives reflection symmetry, while a failed fold does not.
Point 5: I would sort each design into both, reflection only, rotational only, or neither using both tests.

10. A repeated print looks the same after a half turn but not after a quarter turn. Another student concludes that it has no symmetry at all. Explain what is wrong with the conclusion and how to report the result.
Point 1: The student has checked rotational symmetry but has not checked reflection symmetry.
Point 2: Matching after a half turn is evidence of rotational symmetry.
Point 3: Not matching after a quarter turn does not cancel the half-turn match.
Point 4: The design has rotational symmetry with a half-turn as its first matching turn.
Point 5: To decide whether it also has reflection symmetry, the student

10.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Answer each question using the five points provided.

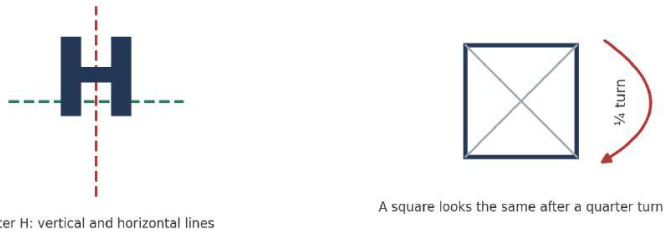


Figure: Fold lines and a quarter-turn example for checking symmetry.

1. For a school celebration, Anu wants to make a paper diya cutout that can be made by drawing only half of its outline. How should she plan and check it?
Point 1: Anu should fold a sheet of paper in half before drawing the diya.
Point 2: She should place the middle of the diya along the fold and draw one side of its outline.
Point 3: She should cut along the drawn outline while keeping the folded paper together.
Point 4: When she opens the paper, the two sides should match across the fold.
Point 5: If the sides overlap when folded, the fold is a line of symmetry for the diya.

2. A class is colouring a square rangoli with four identical flower motifs, one in each corner around the centre. What should the students do so that the rangoli matches after a quarter turn?
Point 1: They should keep the centre of the square as the turning point.
Point 2: They should place the same flower motif in each of the four corners.
Point 3: They should orient each motif so it moves into the next corner after a quarter turn.
Point 4: They can trace the rangoli and turn the tracing around its centre by a quarter turn.
Point 5: If every flower overlaps its next position, the rangoli has rotational symmetry at a quarter turn.

3. A Rajasthan textile maker prints a pattern using one carved wooden block four times. How can the maker arrange the prints to create a design that matches after every quarter turn?
Point 1: The maker should first mark the centre of the intended design on the fabric.
Point 2: The four impressions should be placed at equal quarter-turn positions around that centre.
Point 3: The orientation of each impression should follow the same quarter-turn movement.
Point 4: The maker can compare the whole pattern after turning it around the centre by a quarter turn.
Point 5: The complete design will match after every quarter turn only if all four impressions overlap their next positions.

4. Ravi is making a firki from square paper, but it does not spin freely after he fixes it to a straw. What should he check and change?
Point 1: Ravi should check that the square was folded along both diagonals to mark the centre.
Point 2: He should check that each cut from a corner stops before reaching the centre.
Point 3: He should bring one corner from each section towards the centre in the same way.
Point 4: He should check that the pin passes through the folded corners and the centre without being too tight.
Point 5: After fixing it to the straw, he should make sure the firki can turn freely around its centre.

5. A student designs a school badge using the letter H and wants it to have both reflection symmetry and rotational symmetry. How can the student check the finished badge?

Point 1: The student should first check whether the H has a vertical fold line with matching halves.
Point 2: The student should also test the horizontal fold line through the centre of the H.
Point 3: The student should turn the badge around its centre by a half turn.
Point 4: If the whole badge matches after the half turn, it has rotational symmetry.
Point 5: The badge has both types only if the complete design, including every added decoration, passes a fold test and a turn test.

6. A shop wants a square floor tile decorated with a two-colour pattern that stays unchanged after each quarter turn. How can the designer test and improve the pattern?

Point 1: The designer should mark the centre of the square tile.
Point 2: The colours and shapes should be arranged so each quarter can move onto the next quarter.
Point 3: The designer can copy the pattern onto tracing paper and turn it by a quarter turn around the centre.
Point 4: If parts do not overlap, the designer should change the colours or shapes in those positions.
Point 5: The pattern is ready when the whole tile looks the same after each quarter turn.

7. Meera makes a fabric border by printing the same block repeatedly in a straight row. Her friend says the border must have rotational symmetry because the block is repeated. How can Meera check the claim?

Point 1: Meera should test the complete border rather than looking only at one repeated block.
Point 2: She should mark a possible centre and turn the design around that point.
Point 3: She should check whether the full row matches after a quarter turn or a half turn.
Point 4: A row that repeats along its length may still fail to match when turned around a centre.
Point 5: Meera should claim rotational symmetry only if the entire border overlaps itself after a tested turn.

8. A group arranges equal-sided squares and equilateral triangles to make a flower-shaped floor design. Describe how they can sort the design for a school display. [Use the four symmetry groups: both, reflection only, rotational only, or neither.]

Point 1: They should keep the finished design flat and choose its centre for the turn test.
Point 2: They should record rotational symmetry if the design matches after a turn around that centre.
Point 3: They should check possible fold lines by seeing whether the two halves overlap.
Point 4: A matching fold shows reflection symmetry, while a failed fold does not show it.
Point 5: Using both results, they can sort the design as both, reflection only, rotational only, or neither.

9. A student makes a paper letter A for a classroom sign and decorates only its right side with stars. The student still expects to cut it from folded paper. Explain how to correct the design.

Point 1: The letter A can be made from folded paper when its outline matches across a vertical line.
Point 2: Stars added only to the right side make the decorated design unequal across that line.
Point 3: The student can move or copy the stars so matching stars appear on the left side.
Point 4: The student should fold the paper along the vertical middle line to check whether the decorated halves overlap.
Point 5: Once the whole design matches across the fold, the student can draw half and cut out the full sign.

10. For a classroom art project, a student claims a printed design has no symmetry because it does not match after a quarter turn. What additional checks should the student make before deciding?

Point 1: The student should also test the design after a half turn around its centre.

Point 2: The student should check a three-quarter turn if the class is testing the turns shown in the chapter.

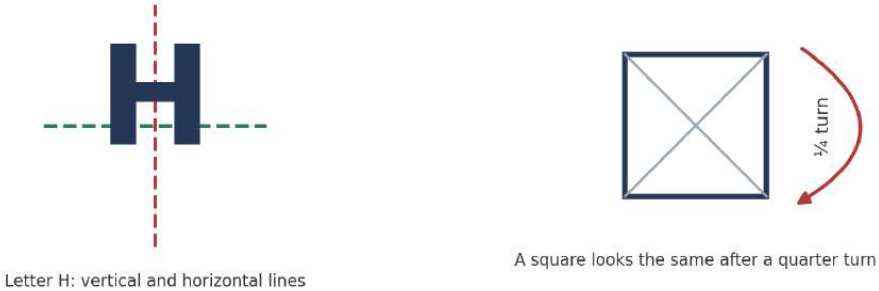
Point 3: The student should use tracing paper or another way to keep the centre fixed during each turn.

Point 4: The student should test possible fold lines to see whether matching halves show reflection symmetry.

Point 5: Only after recording both turn tests and fold tests can the student decide which symmetry the design has.

10.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Type Multiple Choice Questions:
Choose the best answer. The correct option and a short reason follow each question.



Reference figure: lines of symmetry and a quarter-turn example.

1. Which line divides the capital letter A into two matching halves in the usual block form?
A. A vertical line through its middle B. A horizontal line through its middle

C. A diagonal line from top left to bottom right D. Every line through its centre
Answer: A. A vertical line through its middle *The two sides of A match across its vertical line.*
2. How many lines of reflection symmetry are shown for the capital letter H in the reference figure?
A. One B. Two
C. Three D. Four
Answer: B. Two *H matches across one vertical and one horizontal line.*
3. A square design matches after a quarter turn. Which statement must also be true?
A. It matches after a half turn B. It has no reflection symmetry
C. It matches only after a full turn D. It cannot match after three-quarter turn
Answer: A. It matches after a half turn *Repeated quarter turns give half, three-quarter, and full turns, with a match each time.*
4. A design matches after a half turn but not after a quarter turn. What is its smallest matching turn?
A. Quarter turn B. Half turn
C. Three-quarter turn D. Full turn only
Answer: B. Half turn *The first non-full turn that makes it match is one-half of a turn.*
5. A student turns a square paper around its centre by a quarter turn. Which corner moves to the position of the top-right corner if the turn is clockwise?
A. Top-left corner B. Top-right corner
C. Bottom-right corner D. Bottom-left corner
Answer: A. Top-left corner *A clockwise quarter turn moves the top-left corner to the top-right position.*
6. A design looks the same after a three-quarter turn. Which other turn must also make it look the same?
A. Quarter turn B. No other turn
C. Only a half turn D. Only a full turn
Answer: A. Quarter turn *A three-quarter turn is undone by a quarter turn in the opposite direction, so the quarter-turn position also matches.*
Grade 5 Mathematics | Symmetrical Designs
7. A paper cutout is made by drawing only one-fourth of a design after folding the paper vertically and horizontally. Which shape from the chapter is a suitable example?
A. Letter A B. Letter H
C. A slanting line D. A single triangle
Answer: B. Letter H *The letter H has both vertical and horizontal symmetry lines, so one-fourth can be drawn.*
8. A student folds a paper only once along the vertical middle line before cutting out A. What part of the design should be drawn?
A. The whole letter B. Half of the letter
C. One-fourth of the letter D. Three-fourths of the letter
Answer: B. Half of the letter *One vertical fold gives two matching halves, so draw half of A along the fold.*
9. Which statement about a line of symmetry is correct?
A. It always passes through the centre B. It divides a shape into two matching parts
C. It always makes four parts D. It must be horizontal
Answer: B. It divides a shape into two matching parts *A symmetry line makes the two sides overlap when folded.*
10. A student uses a dot to track a letter while turning tracing paper. What does the dot help the student observe?

A. The paper's colour B. The letter's orientation
C. The letter's area D. The number of fold lines
Answer: B. The letter's orientation *The marked dot helps track how the letter is oriented during a turn.*

11. Why is a nail placed away from the centre a poor choice for testing rotational symmetry?
A. The shape will become larger B. The shape turns around the wrong point
C. The nail removes reflection symmetry D. The shape cannot be folded
Answer: B. The shape turns around the wrong point *A rotational symmetry test must turn the shape about its own centre.*

12. A block is used four times to make a fabric print. What additional fact is needed to conclude that the complete print has quarter-turn symmetry?
A. The block is made of wood B. The four prints overlap after a quarter turn about the design's centre
C. The fabric has four colours D. The prints are in a straight row
Answer: B. The four prints overlap after a quarter turn about the design's centre *The whole arrangement, not just the number of impressions, must match after the turn.*

13. A square rangoli has four identical motifs arranged at quarter-turn positions around its centre. What kind of symmetry is directly shown?
A. Rotational symmetry B. No symmetry
C. Only a diagonal fold D. Translation only
Answer: A. Rotational symmetry *The pattern matches after each quarter turn about its centre.*

14. Four arrow motifs are placed around a centre so each arrow points clockwise to the next. The arrangement matches after every quarter turn, but a mirror fold reverses the arrows. Which classification fits?
A. Reflection only B. Rotational only
C. Both reflection and rotational D. Neither
Answer: B. Rotational only *The quarter-turn match shows rotational symmetry, while the reversed arrows do not match in a reflection.*

15. A design matches when folded vertically but does not match after either a quarter or half turn. Which symmetry does it show from these tests?
A. Rotational only B. Reflection only
C. Both D. Neither
Answer: B. Reflection only *The vertical fold shows reflection symmetry, and the tested turns do not show rotational symmetry.*

16. A design has a matching vertical fold and also matches after a half turn. What is the best conclusion?
A. It has both reflection and rotational symmetry B. It has only reflection symmetry
C. It has only rotational symmetry D. It has neither type
Answer: A. It has both reflection and rotational symmetry *A matching fold and a matching turn show both types of symmetry.*

17. A design matches after a half turn but not a quarter turn. Which conclusion is justified without further tests?
A. It has rotational symmetry B. It has reflection symmetry
C. It has no symmetry D. It has four lines of symmetry
Answer: A. It has rotational symmetry *The half-turn match proves rotational symmetry, but fold tests are needed to check reflection symmetry.*

18. A student colours only one corner of a square design red. What is the likely result after a quarter-turn test?

A. It will still match in every case B. It may not match because the red corner moves
C. It becomes a line of symmetry D. It must match after a half turn
Answer: B. It may not match because the red corner moves *The differently coloured corner moves to another position, so the design may not overlap.*
19. A square tile has the same colour pattern in all four quarters, arranged to move into the next quarter after a turn. How many distinct orientations does it match in before it completes one full turn?
A. Two B. Three
C. Four D. Five
Answer: C. Four *It has four distinct matching orientations at quarter-turn intervals before returning to its starting orientation.*
20. A firki's paper cuts reach all the way to the centre and separate the corners. What is the most likely problem?
A. The centre may no longer hold the blades together B. The paper will gain a fold line
C. It will have five blades D. It will automatically spin faster
Answer: A. The centre may no longer hold the blades together *The cuts should stop before the centre so the paper remains joined.*
21. A firki is difficult to spin because its pin is too tight. What should be changed?
A. Tighten the pin further B. Loosen the pin enough for free turning
C. Move the pin to a corner D. Cut through the centre
Answer: B. Loosen the pin enough for free turning *The pin should hold the firki while still allowing it to turn freely.*
22. Which test checks reflection symmetry most directly?
A. Turn the shape around its centre B. Fold along a proposed line and see whether both halves overlap
C. Count the colours D. Measure the paper's weight
Answer: B. Fold along a proposed line and see whether both halves overlap *Reflection symmetry is tested by folding across a line and checking for overlap.*
23. A repeated block-print border runs in a straight line. Why does repetition alone not prove rotational symmetry?
A. Rotation depends on the whole design matching around a centre B. Repeated patterns never have symmetry
C. Wooden blocks cannot be rotated D. A straight line has four centres
Answer: A. Rotation depends on the whole design matching around a centre *The complete border must overlap itself after turning around a centre.*
24. Which turn is one-half of a complete turn?
A. Quarter turn B. Half turn
C. Three-quarter turn D. No turn
Answer: B. Half turn *A half turn is one of two equal parts of a full turn.*
25. A design matches after quarter, half, and three-quarter turns. What happens after a full turn?
A. It returns to its original position B. It becomes a mirror image only
C. It turns into a different design D. It matches only if folded
Answer: A. It returns to its original position *A full turn brings the design back to where it started.*
26. An artist wants a paper boat cutout made by drawing only half the outline. Which feature should the boat outline have?
A. A vertical or horizontal line that divides it into matching halves B. Four different corners
C. A spiral shape D. No fold line

Answer: A. A vertical or horizontal line that divides it into matching halves *Drawing half works only when a fold line divides the outline into matching halves.*

27. A student claims a shape has no symmetry after it fails a quarter-turn test. What should the student do next?

A. Stop testing B. Try other turns and test possible fold lines

C. Add a random colour D. Move the turning centre away from the shape

Answer: B. Try other turns and test possible fold lines *It may match after a half turn or show reflection symmetry even if it fails a quarter turn.*

28. Which design is most likely to have both reflection and rotational symmetry?

A. A square with the same decoration repeated symmetrically in all four quarters B. A row of arrows pointing only right

C. A shape with a different mark on each side D. A spiral with one loose end

Answer: A. A square with the same decoration repeated symmetrically in all four quarters *A balanced four-quarter square design can match both across folds and after turns.*

29. A design has rotational symmetry after every quarter turn. What is its rotational order?

A. One B. Two

C. Three D. Four

Answer: D. Four *It matches four times during a full turn at quarter-turn intervals.*

30. Which is the best way to test a paper design using tracing paper?

A. Trace it, keep its centre fixed, turn it, and check for overlap B. Trace it, slide it sideways, and check the colour

C. Fold it without tracing and count its corners D. Turn it around a point outside the design

Answer: A. Trace it, keep its centre fixed, turn it, and check for overlap *Keeping the centre fixed makes the tracing-paper turn a valid rotational symmetry test.*

10.15 Best Practices Opportunity List from the Chapter: (14 Ideas)

Best Practices for Teaching "Symmetrical Designs" – Grade 5:

(1) **Begin with familiar objects:** Ask students to notice symmetry in classroom objects, leaves, rangoli patterns, tiles and letters.

(2) **Use paper folding to test reflection symmetry:** Have students fold shapes along possible lines and check whether the halves overlap exactly.

(3) **Connect cutouts to symmetry:** Let students fold paper vertically or horizontally, draw half of a simple design such as a letter or diya, cut it out and compare the two sides.

(4) **Teach one idea at a time:** Introduce reflection symmetry and rotational symmetry separately before asking students to identify both in the same design.

(5) **Demonstrate turns with a fixed centre:** Use tracing paper or a paper shape with its centre marked to show quarter, half, three-quarter and full turns.

(6) **Use a marked dot to track orientation:** Ask students to mark one point on a shape and observe where it moves after each turn.

(7) **Make a firki together:** Guide students through folding and cutting square paper, leaving the centre joined, and checking that the pin allows the firki to turn freely.

(8) **Explore designs through block printing:** Show how repeated wooden-block impressions form a pattern, then have students test whether the complete design matches after a turn.

(9) **Use shape cutouts for design-making:** Provide equal-sided squares and equilateral triangles for students to arrange into original patterns and investigate their symmetry.

(10) **Sort designs using evidence:** Ask students to group their designs as reflection only, rotational only, both, or neither, and explain each choice with a fold or turn test.

(11) **Encourage students to predict before testing:** Have them predict whether a shape will match after a fold or turn, then verify the prediction with materials.
(12) **Assess the reasoning, not just the label:** Ask students to show the matching fold or turn and describe why the two positions overlap.
(13) **Include varied examples:** Use designs with different orientations, colours and numbers of repeated parts so students do not assume every repeated pattern is symmetrical.
(14) **Support different learning needs:** Offer pre-cut shapes or guided fold lines to students who need help, and invite confident learners to create designs with a specified type of symmetry.

10.16 Innovations Opportunity List from the Chapter: (14 Ideas)

Innovative Teaching–Learning Ideas for "Symmetrical Designs" – Grade 5:

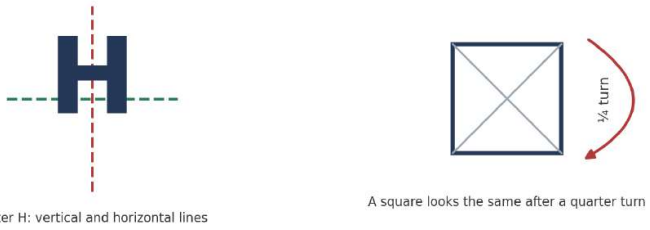
(1) **Symmetry Detective Trail:** Set up classroom stations with letters, tiles, leaves, rangoli patterns and printed designs; students identify and record reflection or rotational symmetry at each stop.
(2) **Digital Mirror Experiments:** Use a tablet or phone camera with a mirror-effect app to complete half-drawn shapes and compare the result with students' predictions.
(3) **Interactive Turn Simulator:** Use a simple animation or classroom presentation to rotate shapes by quarter, half and three-quarter turns around a marked centre.
(4) **Symmetry Photo Hunt:** Invite students to photograph symmetrical patterns they find at home or school, then bring one image to class and explain the fold or turn that shows its symmetry.
(5) **QR-Code Learning Stations:** Place QR codes beside activity stations that link to short instructions, examples or a self-check question about folding, turning or classifying designs.
(6) **Create a Symmetry Story:** Students draw a character or object that changes as it is folded or turned, then explain which transformations make it look the same.
(7) **Block-Print Pattern Lab:** Use safe foam stamps, potato stamps handled by the teacher, or reusable pattern blocks to create prints; students test whether the finished pattern has rotational or reflection symmetry.
(8) **Human Symmetry Model:** Have students form a shape in pairs or groups, with one group acting as a "mirror image" of another; then test whether the two sides match across an imaginary line.
(9) **Design-and-Repair Challenge:** Give groups a nearly symmetrical pattern with one misplaced shape or colour; students locate the mismatch and revise the design to meet a symmetry rule.
(10) **Symmetry Bingo:** Create bingo cards with shapes and designs; call out clues such as "has a vertical line of symmetry" or "matches after a half turn," and students mark a fitting example.
(11) **Student-Made Firki Investigation:** Students create firkis with different blade arrangements, predict how they will look after turns, and compare their predictions with a tracing or rotation test.
(12) **Digital Gallery and Peer Feedback:** Display student-made designs in a shared slideshow or classroom gallery; classmates identify the symmetry shown and leave one evidence-based comment.
(13) **Build a Symmetry Portfolio:** Students keep a small collection of sketches, photographs and short explanations showing how they tested folds, turns and design changes.

(14) Symmetry Challenge Cards: Prepare cards with tasks such as "make a design with a vertical fold line but no quarter-turn match" or "add shapes so the design matches after a quarter turn," then let groups solve and explain them.

10.17: Practicing Questions/Question Bank

Question Bank Additions | With Answers:

This set includes fill-in-the-blanks and descriptive questions for 1, 2, 3 and 5 marks.



Reference figure: reflection lines in H and a square after a quarter turn.

A. Fill in the Blanks:

1. A line that divides a shape into two matching halves is called a line of _____.

Answer: symmetry.

2. The letter A has a _____ line of symmetry in its usual block form.

Answer: vertical.

3. The letter H has _____ lines of symmetry in the chapter figure.

Answer: two.

4. A quarter turn is _____ of a full turn.

Answer: one-fourth.

5. A half turn is _____ of a full turn.

Answer: one-half.

6. A three-quarter turn is _____ of a full turn.

Answer: three-fourths.

7. A shape has rotational symmetry if it looks the same after a turn around its _____.
Answer: centre.

8. Tracing paper can be turned around a marked _____ to test rotational symmetry.

Answer: centre.

9. Block printing is a traditional craft of _____.

Answer: Rajasthan.

10. When making a firki, cuts from the corners should stop before reaching the _____. Answer: centre.

B. One-Mark Descriptive Questions:

1. What is reflection symmetry?
Answer: It is symmetry in which folding along a line makes the two halves overlap.

2. How many lines of symmetry does the letter A have in its usual block form?
Answer: The letter A has one vertical line of symmetry.

3. Name the two lines of symmetry in the letter H shown in the figure.
Answer: The letter H has a vertical line and a horizontal line of symmetry.

4. What is a quarter turn?
Answer: A quarter turn is one-fourth of a complete turn.

5. What is a half turn?
Answer: A half turn is one-half of a complete turn.

6. How can folding help test a possible line of symmetry?
Answer: Fold the shape along the line and see whether both halves match exactly.

7. What tool can be used to check whether a design matches after a turn?
Answer: Tracing paper can be used to turn the design around its centre and check for overlap.

8. What should remain uncut when making a paper firki?
Answer: The centre of the paper should remain uncut so that the paper stays joined.

9. Which shape is shown matching after a quarter turn in the reference figure?
Answer: The square matches its starting position after a quarter turn.

10. What do artisans use to print patterns in the Rajasthan block-printing example?
Answer: Artisans use carved wooden blocks to print patterns on fabric.

C. Two-Mark Descriptive Questions:

1. State two facts about the lines of symmetry of the letters A and H.
Answer:
1. The letter A has one vertical line of symmetry.
2. The letter H has one vertical and one horizontal line of symmetry.

2. Explain how to test whether a paper shape has reflection symmetry along a chosen line.
Answer:
1. Fold the shape along the chosen line.
2. If the two halves overlap exactly, the line is a line of symmetry.

3. Describe two steps for checking rotational symmetry with tracing paper.
Answer:
1. Trace the design and mark or keep its centre fixed.
2. Turn the tracing around that centre and check whether the design overlaps itself.

4. State two important instructions for cutting paper to make a firki.
Answer:
1. Cut from each corner along the folded lines towards the centre.
2. Stop each cut before the centre so the paper remains joined.

5. What should be checked if a firki does not spin freely? Give two checks.
Answer:
1. Check that the pin passes through the folded corners and the centre.
2. Check that the pin is not too tight and allows the firki to turn.

6. Give two facts about the quarter-turn symmetry of a square.
Answer:
1. A square looks the same after a quarter turn about its centre.
2. It also matches after a half turn and a three-quarter turn.

7. State two facts about Rajasthan block printing from the chapter.
Answer:
1. Block printing is a traditional craft of Rajasthan.
2. Artisans use carved wooden blocks to print designs on fabric.

8. How can students check a design for both reflection and rotational symmetry?
Answer:
1. Fold it along possible lines and check whether its halves overlap.
2. Turn it around its centre and check whether it matches after a turn.

D. Three-Mark Descriptive Questions:

1. Describe three steps for making a symmetrical paper cutout by folding.
Answer:
1. Fold a piece of paper along a line that will be a line of symmetry.
2. Draw half of the design with its middle edge along the fold.
3. Cut along the outline and open the paper to see the matching halves.

2. Explain the three-quarter turn test for rotational symmetry.
Answer:
1. Keep the centre of the design fixed while turning it.
2. Turn the design through three-fourths of a full turn.
3. Check whether the turned design overlaps its original position.

3. Give three steps for assembling a paper firki after cutting it.
Answer:
1. Bring one corner from each triangular section towards the centre.
2. Pass a pin through the folded corners and the joined centre.
3. Fix the pin to a stick or straw so the firki can turn freely.

4. A printed design is made using a wooden block four times. Give three checks to decide whether the whole design has quarter-turn symmetry.
Answer:
1. Find the centre of the complete printed design.

2. Turn the whole design around that centre by a quarter turn.
3. Check that every printed part overlaps its matching part.

5. Explain how to classify a student-made design using reflection and rotational tests.
Answer:
1. Test possible fold lines and record whether the halves overlap.
2. Test turns around the centre and record whether the design matches.
3. Use both results to decide whether it has reflection symmetry, rotational symmetry, both, or neither.

6. State three ways students can create designs using the shapes in the chapter activity.
Answer:
1. Cut out squares and equilateral triangles with the same side length.
2. Arrange the shapes in different ways to make a design.
3. Test each design by folding it and turning it around its centre.

E. Five-Mark Descriptive Questions:

1. Describe five steps for making a symmetrical paper cutout of the letter A.
Answer:
1. Take a piece of paper and fold it vertically in half.
2. Draw half of the letter A along the fold.
3. Cut along the drawn outline while the paper is folded.
4. Open the paper carefully.
5. Check that the two sides of the letter A match across the fold.

2. Describe five steps for making a firki from square paper.
Answer:
1. Take a square piece of paper and fold it diagonally in half.
2. Open it and fold it diagonally in the other direction to mark an X.
3. Cut along the diagonal lines from the corners, stopping before the centre.
4. Bring one corner from each section towards the centre.
5. Fix the folded corners with a pin through the centre and attach it to a stick or straw.

3. Explain five steps for testing a design for rotational symmetry using tracing paper.
Answer:
1. Place tracing paper over the design and trace its outline.
2. Mark the centre of the design and keep that point fixed.
3. Turn the tracing by a chosen amount, such as a quarter or half turn.
4. Compare the turned tracing with the original design.
5. If the parts overlap after a turn, the design has rotational symmetry for that turn.

4. A class is arranging wooden-block prints to make a symmetrical fabric design. Give five steps for checking quarter-turn symmetry.
Answer:
1. Identify the centre of the complete printed design.
2. Arrange the four impressions around that centre.
3. Turn the complete design by a quarter turn while keeping the centre fixed.
4. Check whether each impression overlaps a matching impression.
5. Revise the positions or orientations if they do not overlap, then test again.

5. Describe five steps for sorting designs made from squares and equilateral triangles by their symmetry.

Answer:

1. Choose one finished design and locate its centre.
2. Turn it around the centre and note whether it matches after a turn.
3. Fold it along possible lines and check whether both halves overlap.
4. Record whether it has rotational symmetry, reflection symmetry, both, or neither.
5. Place it in the matching group and repeat the tests for each design.

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5th Standard Maths Book Chapter 11

Chapter 11: Grandmother's Quilt

11.1 Summary of the Chapter:

Summary: "Grandmother's Quilt"

(1) The **perimeter** of a shape is the total length around its boundary. Lace needed to decorate a quilt must be long enough to cover its entire perimeter.
(2) A shape's perimeter can be found by adding the lengths of all its sides.
(3) **Area** is the amount of surface covered by a shape or region.
(4) Shapes such as squares, rectangles and some triangles can cover a surface without gaps or overlaps. Circles leave gaps when arranged this way.
(5) A square grid is a useful way to compare and estimate areas. One square with sides of 1 unit has an area of **1 square unit**.
(6) The area of a rectangle can be found by multiplying its length by its breadth: **Area = Length × Breadth**.
(7) The perimeter of a rectangle is the sum of its four sides: **Perimeter = 2 × Length + 2 × Breadth**.
(8) A square has four equal sides. Its area is **side × side**, and its perimeter is **4 × side**.
(9) Shapes can have the **same area but different perimeters**. Shapes can also have the **same perimeter but different areas**.
(10) Increasing a shape's area does not always mean its perimeter will increase in the same way.
(11) Area and perimeter can be found in everyday settings by measuring objects and spaces such as notebooks, tables, mats and classroom floors.

11.2 Important Formulas:

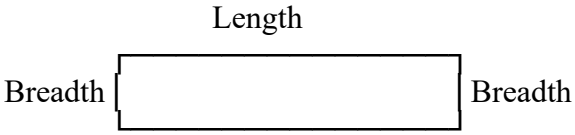
Important Formulas: Grandmother's Quilt

1. Perimeter of a shape

Perimeter = Sum of the lengths of all its sides

2. Perimeter of a rectangle

A rectangle has two equal lengths and two equal breadths.



Perimeter = Length + Length + Breadth + Breadth

Perimeter = 2 × Length + 2 × Breadth

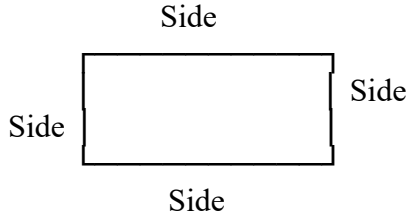
3. Area of a rectangle

Area = Length × Breadth

Area is measured in **square units**, such as square centimetres (cm^2) or square metres (m^2).

4. Perimeter of a square

A square has four equal sides.



Perimeter = Side + Side + Side + Side
Perimeter = 4 × Side
5. Area of a square
Area = Side × Side
6. Area of a unit square
A square with sides of 1 unit has an area of **1 square unit**.
Note: Perimeter is measured in units of length (such as cm or m); area is measured in square units (such as cm² or m²).

11.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks – LOTS:

1. The total length around the boundary of a shape is called its _____.
   Answer: perimeter
2. The amount of surface covered by a shape is called its _____.
   Answer: area
3. Perimeter is found by adding the lengths of _____ the sides of a shape.
   Answer: all
4. Shapes that cover a surface without gaps or overlaps are said to _____.
   Answer: tile
5. A square with sides of 1 unit has an area of _____.
   Answer: 1 square unit
6. A square grid is a convenient way to find the _____ of a region.
   Answer: area
7. A rectangle has two pairs of _____ sides.
   Answer: equal
8. The longer side of a rectangle is called its _____.
   Answer: length
9. The shorter side of a rectangle is called its _____.
   Answer: breadth
10. The area of a rectangle is found by multiplying its length by its _____.
    Answer: breadth
11. The formula for the area of a rectangle is _____ × **breadth**.
    Answer: length
12. The perimeter of a rectangle is the sum of its _____ sides.
    Answer: four
13. The formula for the perimeter of a rectangle is 2 × length + 2 × _____.
    Answer: breadth
14. Another way to write the perimeter of a rectangle is length + length + breadth + _____.
    Answer: breadth
15. A square has _____ equal sides.
    Answer: four
16. The area of a square is found by multiplying its side by the _____.
    Answer: same side
17. The formula for the area of a square is side × _____.
    Answer: side
18. The perimeter of a square is four times the length of its _____.
    Answer: side
19. The formula for the perimeter of a square is 4 × _____.
    Answer: side

20. Area is measured in _____ **units**.
    Answer: square
21. Perimeter is measured in units of _____.
    Answer: length
22. The area of a rectangle with 6 rows and 4 columns of square patches is _____ **square units**.
    Answer: 24
23. To find the area of a rectangle made of square patches, multiply the number of rows by the number of _____.
    Answer: columns
24. Triangles, squares and rectangles can cover a region without gaps or _____.
    Answer: overlaps
25. Circles leave _____ when used to cover a region in the way shown in the chapter.
    Answer: gaps
26. The area of a square with side 5 cm is _____ **square cm**.
    Answer: 25
27. The perimeter of a square with side 5 cm is _____ **cm**.
    Answer: 20
28. The area of a rectangle whose length is 42 m and breadth is 34 m is _____ **square metres**.
    Answer: 1,428
29. If a rectangle's area is 64 square metres and its length is 16 metres, its breadth is _____ **metres**.
    Answer: 4
30. Opposite sides of a rectangle are _____ **in length**.
    Answer: equal
31. The area of a shape can be estimated by covering it with equal-sized _____.
    Answer: squares
32. Notebook covers and classroom floors are examples of surfaces whose area and perimeter can be _____.
    Answer: measured
33. Lace needed to go around the border of a quilt depends on its _____.
    Answer: perimeter
34. The area of a rectangular patchwork measuring 6 cm by 4 cm is _____ **square cm**.
    Answer: 24
35. A square is a rectangle whose _____ sides are equal.
    Answer: all four

11.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

Fill in the Blanks – HOTS:

1. A rectangular patch is 8 cm long and 3 cm wide. Its area is _____ **square cm**.
   Answer: 24
2. A rectangle is 8 cm long and 3 cm wide. Its perimeter is _____ **cm**.
   Answer: 22
3. A square has an area of 36 square cm. Its side is _____ **cm**.
   Answer: 6
4. A square has sides of 7 cm each. Its perimeter is _____ **cm**.
   Answer: 28

5. A rectangle measuring 10 cm by 4 cm and a square with sides of 7 cm have the same perimeter. The rectangle's area is _____ **square cm**.
   Answer: 40
6. Rectangles measuring 6 cm by 4 cm and 8 cm by 3 cm have the same area of _____ **square cm**.
   Answer: 24
7. A 5 cm by 5 cm square and a 1 cm by 25 cm rectangle have equal areas. The square's perimeter is _____ **cm**.
   Answer: 20
8. A 1 cm by 25 cm rectangle has a perimeter of _____ **cm**.
   Answer: 52
9. A patchwork rug has 6 rows with 4 square patches in each row. It contains _____ **patches**.
   Answer: 24
10. A mat has 7 rows with 5 square patches in each row. The mat's area is _____ **square patch units**.
    Answer: 35
11. A rectangle is 8 cm long and has an area of 48 square cm. Its breadth is _____ **cm**.
    Answer: 6
12. A rectangle has a perimeter of 30 cm and a length of 10 cm. Its breadth is _____ **cm**.
    Answer: 5
13. A square has a perimeter of 32 cm. Its area is _____ **square cm**.
    Answer: 64
14. A classroom floor is 9 m long and 6 m wide. Its area is _____ **square metres**.
    Answer: 54
15. A classroom floor is 9 m long and 6 m wide. Its perimeter is _____ **metres**.
    Answer: 30
16. A garden has an area of 72 square metres and a length of 9 metres. Its breadth is _____ **metres**.
    Answer: 8
17. A rectangular quilt is 12 cm long and 5 cm wide. The lace needed to go once around its border is _____ **cm**.
    Answer: 34
18. If 2 cm is added to the length of a 7 cm by 5 cm rectangle, while its breadth stays the same, the area increases by _____ **square cm**.
    Answer: 10
19. If 2 cm is added to the length of a 7 cm by 5 cm rectangle, while its breadth stays the same, the perimeter increases by _____ **cm**.
    Answer: 4
20. A rectangle measuring 8 cm by 2 cm is changed to 7 cm by 3 cm. The first rectangle's area is _____ **square cm**.
    Answer: 16
21. A rectangle measuring 8 cm by 2 cm is changed to 7 cm by 3 cm. The new rectangle's area is _____ **square cm**.
    Answer: 21
22. The rectangles 8 cm by 2 cm and 7 cm by 3 cm have equal perimeters of _____ **cm**.
    Answer: 20

23. A rectangle has length 10 cm and breadth 4 cm. If its length is doubled and its breadth stays 4 cm, its new area is _____ **square cm**.
    Answer: 80
24. A square with side 6 cm has an area of 36 square cm. A rectangle with the same area and length 9 cm has a breadth of _____ **cm**.
    Answer: 4
25. A square with side 6 cm has a perimeter of 24 cm. A rectangle 8 cm long with the same perimeter has a breadth of _____ **cm**.
    Answer: 4
26. A 7-column by 4-row grid contains _____ **unit squares**.
    Answer: 28
27. A shape covers 24 unit squares on a grid. If it is arranged as 6 equal rows, each row has _____ **unit squares**.
    Answer: 4
28. Two shapes cover the same number of square units, but one has more boundary edges. The shape with more boundary edges has the greater _____.
    Answer: perimeter
29. A rectangle's length and breadth are both doubled. Its area becomes _____ **times the original area**.
    Answer: 4
30. A square has a side of 4 cm. If its side is doubled to 8 cm, its area increases from 16 square cm to _____ **square cm**.
    Answer: 64
31. A rectangle measuring 6 cm by 4 cm has an area of 24 square cm. Another rectangle with the same area has a length of 12 cm, so its breadth is _____ **cm**.
    Answer: 2
32. A square mat has a perimeter of 40 cm. Each side is _____ **cm** long.
    Answer: 10
33. A rectangle is 11 cm long and 4 cm wide. If only its breadth increases by 2 cm, its new area is _____ **square cm**.
    Answer: 66
34. A rectangle is 11 cm long and 4 cm wide. If only its breadth increases by 2 cm, its new perimeter is _____ **cm**.
    Answer: 34
35. A square and a rectangle can have the same area but different perimeters. For example, a 5 cm by 5 cm square and a 1 cm by 25 cm rectangle each have an area of _____ **square cm**.
    Answer: 25

11.5 One-mark questions with Answers of LOTS Type: (25 Questions)

One-Mark Descriptive Questions – LOTS:

1. **What is the perimeter of a shape?**
   Answer: The perimeter is the total length around the boundary of a shape.
2. **What is the area of a shape?**
   Answer: The area is the amount of surface covered by a shape.
3. **How do we find the perimeter of a shape?**
   Answer: We add the lengths of all its sides.
4. **What is the formula for the area of a rectangle?**
   Answer: Area of a rectangle = length × breadth.

5. **What is the formula for the perimeter of a rectangle?**
   Answer: Perimeter of a rectangle = 2 × length + 2 × breadth.
6. **What is the formula for the area of a square?**
   Answer: Area of a square = side × side.
7. **What is the formula for the perimeter of a square?**
   Answer: Perimeter of a square = 4 × side.
8. **How many equal sides does a square have?**
   Answer: A square has four equal sides.
9. **What is the area of a square with sides of 1 unit?**
   Answer: Its area is 1 square unit.
10. **What does it mean for shapes to tile a surface?**
    Answer: Shapes tile a surface when they cover it without gaps or overlaps.
11. **Name one shape that can tile a surface without gaps or overlaps.**
    Answer: A square can tile a surface without gaps or overlaps.
12. **Do circles tile a surface without gaps when arranged as shown in the chapter?**
    Answer: No, circles leave gaps when arranged to cover a surface.
13. **What are the opposite sides of a rectangle like?**
    Answer: The opposite sides of a rectangle are equal in length.
14. **How can square grids help us compare areas?**
    Answer: We can compare areas by counting the unit squares that cover each shape.
15. **What is the area of a rectangle that is 6 cm long and 4 cm wide?**
    Answer: Its area is 24 square centimetres.
16. **What is the perimeter of a square with sides of 5 cm?**
    Answer: Its perimeter is 20 cm.
17. **What is the area of a square with sides of 5 cm?**
    Answer: Its area is 25 square centimetres.
18. **What unit is used to measure the area of a classroom floor?**
    Answer: The area of a classroom floor can be measured in square metres.
19. **What unit is used to measure the perimeter of a classroom floor?**
    Answer: The perimeter of a classroom floor can be measured in metres.
20. **What measurement tells us how much lace is needed to go around a quilt?**
    Answer: The quilt's perimeter tells us how much lace is needed.
21. **A rectangle is 8 cm long and 3 cm wide; what is its perimeter?**
    Answer: Its perimeter is 22 cm.
22. **A rectangle has 6 rows and 4 columns of square patches; how many patches are there?**
    Answer: There are 24 square patches.
23. **Can two shapes have the same area but different perimeters?**
    Answer: Yes, two shapes can have the same area but different perimeters.
24. **Can two shapes have the same perimeter but different areas?**
    Answer: Yes, two shapes can have the same perimeter but different areas.
25. **Name one object whose area and perimeter can be measured.**
    Answer: The cover of a notebook is one object whose area and perimeter can be measured.

11.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark Descriptive Questions – HOTS:

1. **A quilt is 9 cm long and 4 cm wide; how much lace is needed to go once around its border?**
   Answer: The quilt's perimeter is 26 cm, so 26 cm of lace is needed.
2. **A rectangular mat is 9 cm long and 4 cm wide; what is its area?**
   Answer: Its area is 36 square cm.
3. **A square patch has an area of 49 square cm; what is its perimeter?**
   Answer: Its side is 7 cm, so its perimeter is 28 cm.
4. **A rectangle has an area of 36 square cm and a length of 9 cm; what is its breadth?**
   Answer: Its breadth is 4 cm.
5. **A rectangle has a perimeter of 26 cm and a length of 8 cm; what is its breadth?**
   Answer: Its breadth is 5 cm.
6. **Two patchwork designs measure 10 cm by 3 cm and 6 cm by 5 cm; do they have the same area?**
   Answer: Yes, both designs have an area of 30 square cm.
7. **The two designs in Question 6 have the same area; which has the greater perimeter?**
   Answer: The 10 cm by 3 cm design has the greater perimeter, at 26 cm.
8. **A 6 cm square and an 8 cm by 4 cm rectangle have the same perimeter; which has the greater area?**
   Answer: The square has the greater area, at 36 square cm compared with 32 square cm.
9. **A rectangle measuring 5 cm by 3 cm is changed to 10 cm by 3 cm; how much does its area increase?**
   Answer: Its area increases by 15 square cm.
10. **A rectangle measuring 5 cm by 3 cm is changed to 10 cm by 3 cm; how much does its perimeter increase?**
    Answer: Its perimeter increases by 10 cm.
11. **A 1 cm by 12 cm rectangle and a 3 cm by 4 cm rectangle have the same area; which has the smaller perimeter?**
    Answer: The 3 cm by 4 cm rectangle has the smaller perimeter, at 14 cm.
12. **A patchwork has 6 rows of 4 square patches; how many patches are needed for one more row?**
    Answer: Four more patches are needed.
13. **A rectangle has 7 rows and 5 columns of unit squares; what is its area?**
    Answer: Its area is 35 square units.
14. **A square's side is doubled from 4 cm to 8 cm; how many times larger is its area?**
    Answer: Its area becomes four times larger.
15. **A rectangle's length and breadth are both doubled; how many times larger does its area become?**
    Answer: Its area becomes four times larger.
16. **A 6 cm by 4 cm rectangle is changed to 8 cm by 3 cm; what happens to its area?**
    Answer: Its area stays the same at 24 square cm.
17. **A square has a perimeter of 36 cm; what is its area?**
    Answer: Its side is 9 cm, so its area is 81 square cm.
18. **A rectangle's perimeter is 32 cm and its length is 10 cm; what is its area?**
    Answer: Its breadth is 6 cm, so its area is 60 square cm.
19. **A rectangular garden has an area of 64 square metres and a length of 16 metres; what is its perimeter?**
    Answer: Its breadth is 4 metres, so its perimeter is 40 metres.

20. **A square mat has a perimeter of 24 cm; what is its area?**
    Answer: Its side is 6 cm, so its area is 36 square cm.
21. **A 6 cm by 4 cm rectangle and a square each have a perimeter of 20 cm; which has the greater area?**
    Answer: The rectangle has the greater area, at 24 square cm compared with the square's 25 square cm?
    Correction: The square has the greater area, at 25 square cm compared with 24 square cm.
22. **A rectangle is 12 cm long and 3 cm wide; what breadth would give the same area if its length were 9 cm?**
    Answer: The new breadth would be 4 cm.
23. **A square has an area of 64 square cm; what is the length of one side?**
    Answer: One side is 8 cm long.
24. **A 5 cm by 4 cm rectangle is made 2 cm longer while its breadth stays the same; what is the new area?**
    Answer: Its new area is 28 square cm.
25. **A 5 cm by 4 cm rectangle is made 2 cm longer while its breadth stays the same; what is the new perimeter?**
    Answer: Its new perimeter is 22 cm.
26. **A shape covers 30 unit squares arranged in 5 equal rows; how many squares are in each row?**
    Answer: There are 6 squares in each row.
27. **A rectangle has an area of 42 square cm and a breadth of 6 cm; what is its length?**
    Answer: Its length is 7 cm.
28. **A 4 cm by 4 cm square and a 2 cm by 8 cm rectangle have equal areas; which has the greater perimeter?**
    Answer: The 2 cm by 8 cm rectangle has the greater perimeter, at 20 cm.
29. **A 4 cm by 4 cm square and a 2 cm by 8 cm rectangle have equal areas; what is their shared area?**
    Answer: Their shared area is 16 square cm.
30. **A rectangle has a perimeter of 24 cm and a breadth of 4 cm; what is its area?**
    Answer: Its length is 8 cm, so its area is 32 square cm.
31. **A 6 cm square and a 10 cm by 2 cm rectangle have the same perimeter; how much greater is the square's area?**
    Answer: The square's area is 16 square cm greater.
32. **A quilt border is 40 cm long; if the quilt is a square, what is the length of each side?**
    Answer: Each side is 10 cm long.
33. **A rectangular mat is 8 cm by 5 cm; if its length is reduced by 3 cm, what is its new area?**
    Answer: Its new area is 25 square cm.
34. **A rectangle measures 8 cm by 5 cm; if its length is reduced by 3 cm, what happens to its perimeter?**
    Answer: Its perimeter decreases by 6 cm.
35. **A rectangle has an area of 48 square cm; if its length is 12 cm, what is its breadth?**
    Answer: Its breadth is 4 cm.

Correction to Question 21: The square's area is 25 square cm, so it is 1 square cm greater than the rectangle's area of 24 square cm.

11.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

Two-Mark Descriptive Questions – LOTS:

1. **What is perimeter, and how is it found?**
   Answer:
   - Perimeter is the total length around a shape.
   - Add the lengths of all its sides to find the perimeter.
2. **What is area, and in what kind of units is it measured?**
   Answer:
   - Area is the amount of surface covered by a shape.
   - It is measured in square units, such as square centimetres.
3. **Write the formula for the area of a rectangle and the formula for its perimeter.**
   Answer:
   - Area = length × breadth.
   - Perimeter = 2 × length + 2 × breadth.
4. **Write the formulas for the area and perimeter of a square.**
   Answer:
   - Area = side × side.
   - Perimeter = 4 × side.
5. **A rectangle is 7 cm long and 3 cm wide; find its area and perimeter.**
   Answer:
   - Area = 7 × 3 = 21 square cm.
   - Perimeter = 7 + 7 + 3 + 3 = 20 cm.
6. **A square has sides of 4 cm; find its area and perimeter.**
   Answer:
   - Area = 4 × 4 = 16 square cm.
   - Perimeter = 4 × 4 = 16 cm.
7. **A rectangle has a length of 8 cm and a breadth of 5 cm; find its area and perimeter.**
   Answer:
   - Area = 8 × 5 = 40 square cm.
   - Perimeter = 8 + 8 + 5 + 5 = 26 cm.
8. **A square has sides of 6 cm; find its area and perimeter.**
   Answer:
   - Area = 6 × 6 = 36 square cm.
   - Perimeter = 4 × 6 = 24 cm.
9. **A rectangle measures 9 cm by 4 cm; how much lace is needed to go around it, and what is its area?**
   Answer:
   - The perimeter is 2 × 9 + 2 × 4 = 26 cm, so 26 cm of lace is needed.
   - Its area is 9 × 4 = 36 square cm.
10. **A square has a perimeter of 20 cm; find the length of each side and its area.**
    Answer:
    - Each side is 20 ÷ 4 = 5 cm.
    - Its area is 5 × 5 = 25 square cm.
11. **A rectangle has an area of 30 square cm and a length of 6 cm; find its breadth and perimeter.**
    Answer:
    - Its breadth is 30 ÷ 6 = 5 cm.

- Its perimeter is $2 \times 6 + 2 \times 5 = 22$ cm.

12. **A rectangular rug has 5 rows of 4 square patches; how many patches are there, and what is its area in patch units?**
    Answer:
    - There are $5 \times 4 = 20$ patches.
    - The rug's area is 20 square patch units.
13. **What does it mean for shapes to tile a surface? Name two shapes that can do this without gaps or overlaps.**
    Answer:
    - Shapes tile a surface when they cover it without gaps or overlaps.
    - Squares and rectangles can tile a surface this way.
14. **Why is a square grid useful for finding area?**
    Answer:
    - A region can be covered or represented by equal-sized squares.
    - Counting the squares helps estimate or find its area.
15. **What is the area of a unit square, and what are the lengths of its sides?**
    Answer:
    - Its area is 1 square unit.
    - Each side is 1 unit long.
16. **How are the opposite sides of a rectangle related?**
    Answer:
    - The opposite sides of a rectangle are equal in length.
    - One pair is called the length, and the other pair is called the breadth.
17. **A classroom floor is 10 m long and 6 m wide; find its area and perimeter.**
    Answer:
    - Its area is $10 \times 6 = 60$ square metres.
    - Its perimeter is $2 \times 10 + 2 \times 6 = 32$ metres.
18. **A rectangle has a length of 12 cm and a breadth of 3 cm; find its area and perimeter.**
    Answer:
    - Its area is $12 \times 3 = 36$ square cm.
    - Its perimeter is $2 \times 12 + 2 \times 3 = 30$ cm.
19. **Name two objects whose area and perimeter can be measured, and state a tool that can be used.**
    Answer:
    - A notebook cover and a blackboard are two objects that can be measured.
    - A ruler or measuring tape can be used to measure their sides.
20. **Can two shapes have the same area but different perimeters? Give one example from the chapter's ideas.**
    Answer:
    - Yes, two shapes can have the same area but different perimeters.
    - A 5 cm by 5 cm square and a 1 cm by 25 cm rectangle both have an area of 25 square cm, but their perimeters differ.
21. **Can two shapes have the same perimeter but different areas? Give an example.**
    Answer:
    - Yes, two shapes can have the same perimeter but different areas.
    - A 6 cm square and an 8 cm by 4 cm rectangle both have a perimeter of 24 cm, but their areas are 36 and 32 square cm.
22. **A rectangle measures 11 cm by 4 cm; find its area and perimeter.**
    Answer:

- Its area is 11 × 4 = 44 square cm.
- Its perimeter is 2 × 11 + 2 × 4 = 30 cm.

23. **A rectangular garden is 16 m long and 4 m wide; find its area and perimeter.**
    Answer:
    - Its area is 16 × 4 = 64 square metres.
    - Its perimeter is 2 × 16 + 2 × 4 = 40 metres.
24. **How can you find the area of a rectangular patchwork without counting every square patch one by one?**
    Answer:
    - Count the number of rows and the number of patches in each row.
    - Multiply those numbers to find the total area in square patch units.
25. **What measurements are needed to find the area and perimeter of a rectangular classroom floor?**
    Answer:
    - Measure the length and breadth of the floor.
    - Multiply them for the area and add twice each for the perimeter.

11.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Two-Mark Descriptive Questions – HOTS:

1. **A quilt is 14 cm long and 9 cm wide. How much lace is needed around it, and what is its area?**
   Answer:
   - Perimeter = 2 × 14 + 2 × 9 = 46 cm, so 46 cm of lace is needed.
   - Area = 14 × 9 = 126 square cm.
2. **A rectangular mat is 12 cm long and 5 cm wide. Find its area and perimeter.**
   Answer:
   - Area = 12 × 5 = 60 square cm.
   - Perimeter = 2 × 12 + 2 × 5 = 34 cm.
3. **A square patch has a perimeter of 36 cm. Find its side length and area.**
   Answer:
   - Side = 36 ÷ 4 = 9 cm.
   - Area = 9 × 9 = 81 square cm.
4. **A rectangular garden has an area of 64 square metres and a length of 16 metres. Find its breadth and perimeter.**
   Answer:
   - Breadth = 64 ÷ 16 = 4 m.
   - Perimeter = 2 × 16 + 2 × 4 = 40 m.
5. **A rectangle has a perimeter of 30 cm and a length of 9 cm. Find its breadth and area.**
   Answer:
   - Since 2 × (9 + breadth) = 30, the breadth is 6 cm.
   - Area = 9 × 6 = 54 square cm.
6. **A rectangular field is 42 m long and 34 m wide. Find its area and perimeter.**
   Answer:
   - Area = 42 × 34 = 1,428 square metres.
   - Perimeter = 2 × 42 + 2 × 34 = 152 m.
7. **A rectangular table has an area of 48 square cm and a length of 8 cm. Find its breadth and perimeter.**
   Answer:

- Breadth = 48 ÷ 8 = 6 cm.
- Perimeter = 2 × 8 + 2 × 6 = 28 cm.

8. **A rectangle has a perimeter of 40 cm and a length of 12 cm. Find its breadth and area.**
   Answer:
   - Breadth = 40 ÷ 2 − 12 = 8 cm.
   - Area = 12 × 8 = 96 square cm.
9. **Two patchwork rectangles measure 6 cm by 4 cm and 8 cm by 3 cm. Compare their areas and perimeters.**
   Answer:
   - Both have an area of 24 square cm.
   - Their perimeters are 20 cm and 22 cm, respectively.
10. **A 6 cm square and an 8 cm by 4 cm rectangle have the same perimeter. Compare their areas.**
    Answer:
    - The square's area is 6 × 6 = 36 square cm.
    - The rectangle's area is 8 × 4 = 32 square cm, so the square's area is greater by 4 square cm.
11. **A 5 cm square and a 1 cm by 25 cm rectangle have equal areas. Compare their perimeters.**
    Answer:
    - Both areas are 25 square cm.
    - Their perimeters are 20 cm and 52 cm, so the rectangle has the greater perimeter.
12. **A rectangle measures 7 cm by 3 cm. Its length is increased by 4 cm while its breadth stays the same. How much do its area and perimeter increase?**
    Answer:
    - The area increases by 4 × 3 = 12 square cm.
    - The perimeter increases by 4 + 4 = 8 cm.
13. **A 3 cm by 2 cm rectangle has both dimensions doubled. Compare its old and new areas.**
    Answer:
    - The original area is 3 × 2 = 6 square cm.
    - The new area is 6 × 4 = 24 square cm, which is four times the original area.
14. **A square's side is increased from 4 cm to 8 cm. Find the increase in its area.**
    Answer:
    - The original area is 4 × 4 = 16 square cm and the new area is 8 × 8 = 64 square cm.
    - The area increases by 64 − 16 = 48 square cm.
15. **A rug has 5 rows of 7 square patches. If 2 more rows of 7 patches are added, how many patches will the rug have altogether?**
    Answer:
    - The original rug has 5 × 7 = 35 patches.
    - The new rug has 7 × 7 = 49 patches.
16. **A rectangle has an area of 54 square cm and a breadth of 6 cm. Find its length and perimeter.**
    Answer:
    - Length = 54 ÷ 6 = 9 cm.
    - Perimeter = 2 × 9 + 2 × 6 = 30 cm.

17. **A rectangle has a perimeter of 28 cm and a length of 9 cm. Find its breadth and area.**
    Answer:
    - Breadth = 28 ÷ 2 − 9 = 5 cm.
    - Area = 9 × 5 = 45 square cm.
18. **A classroom floor is 10 m long and 8 m wide. Find its area and the length of border needed to go around it.**
    Answer:
    - Its area is 10 × 8 = 80 square metres.
    - Its perimeter is 2 × 10 + 2 × 8 = 36 m.
19. **A rectangular region is covered by 35 unit squares arranged in 7 equal rows. Find the number of squares in each row and the rectangle's dimensions in units.**
    Answer:
    - Each row has 35 ÷ 7 = 5 unit squares.
    - The rectangle is 7 units by 5 units.
20. **A rectangle measures 11 cm by 4 cm. Its breadth is increased by 3 cm. Find its new area and perimeter.**
    Answer:
    - The new breadth is 7 cm, so the area is 11 × 7 = 77 square cm.
    - The new perimeter is 2 × 11 + 2 × 7 = 36 cm.
21. **A square quilt has a perimeter of 32 cm. Find the length of lace needed around it and its area.**
    Answer:
    - The lace needed is 32 cm, and each side is 32 ÷ 4 = 8 cm.
    - Its area is 8 × 8 = 64 square cm.
22. **A patchwork is made from 64 equal square patches arranged in 8 rows. How many patches are in each row, and what is the perimeter of the square patchwork in patch units?**
    Answer:
    - Each row has 64 ÷ 8 = 8 patches, making an 8-by-8 square.
    - Its perimeter is 4 × 8 = 32 patch units.
23. **Two rectangles have the same area of 36 square cm: one is 9 cm by 4 cm and the other is 6 cm by 6 cm. Compare their perimeters.**
    Answer:
    - The 9 cm by 4 cm rectangle has a perimeter of 26 cm.
    - The 6 cm by 6 cm square has a perimeter of 24 cm, which is 2 cm less.
24. **A 7 cm square and a 10 cm by 4 cm rectangle have the same perimeter. Which has the greater area, and by how much?**
    Answer:
    - The square's area is 49 square cm, while the rectangle's area is 40 square cm.
    - The square's area is greater by 9 square cm.
25. **A 10 cm by 6 cm rectangle is changed to 12 cm by 5 cm. Compare their areas and perimeters.**
    Answer:
    - The first rectangle's area is 60 square cm, and the second rectangle's area is also 60 square cm.
    - Their perimeters are 32 cm and 34 cm, so the second perimeter is 2 cm greater.

11.9. Three-mark questions with Answers of LOTS Type: (15 Questions)

Three-Mark Descriptive Questions – LOTS:

1. **A rectangular quilt is 12 cm long and 5 cm wide. Find its area and perimeter, and state how much lace is needed to go around it.**
   Answer:
   1. Area = 12 × 5 = 60 square cm.
   2. Perimeter = 12 + 12 + 5 + 5 = 34 cm.
   3. Therefore, 34 cm of lace is needed.
2. **A square patch has a side of 8 cm. Find its perimeter and area.**
   Answer:
   1. Perimeter = 4 × 8 = 32 cm.
   2. Area = 8 × 8 = 64 square cm.
   3. The patch covers 64 square cm.
3. **A rectangle has an area of 72 square cm and a length of 9 cm. Find its breadth and perimeter.**
   Answer:
   1. Breadth = 72 ÷ 9 = 8 cm.
   2. Perimeter = 9 + 9 + 8 + 8 = 34 cm.
   3. The rectangle is 9 cm by 8 cm.
4. **A rectangle has a perimeter of 36 cm and a length of 11 cm. Find its breadth and area.**
   Answer:
   1. Half the perimeter is 36 ÷ 2 = 18 cm.
   2. Breadth = 18 − 11 = 7 cm.
   3. Area = 11 × 7 = 77 square cm.
5. **A patchwork mat has 6 rows with 8 square patches in each row. Find the total number of patches and its area in patch units.**
   Answer:
   1. Number of patches = 6 × 8 = 48.
   2. Each patch represents one square unit.
   3. The mat's area is 48 square patch units.
6. **A rectangle is 10 cm by 4 cm. Find its perimeter and area, then compare its perimeter with that of a square having sides of 7 cm.**
   Answer:
   1. The rectangle's perimeter is 2 × 10 + 2 × 4 = 28 cm.
   2. Its area is 10 × 4 = 40 square cm.
   3. The 7 cm square also has a perimeter of 28 cm.
7. **A classroom floor is 15 m long and 8 m wide. Find its area and perimeter.**
   Answer:
   1. Area = 15 × 8 = 120 square metres.
   2. Perimeter = 15 + 15 + 8 + 8 = 46 m.
   3. The floor covers 120 square metres.
8. **A rectangular field is 42 m long and 34 m wide. Find its area and perimeter.**
   Answer:
   1. Area = 42 × 34 = 1,428 square metres.
   2. Perimeter = 42 + 42 + 34 + 34 = 152 m.
   3. The field covers 1,428 square metres.
9. **A table top has an area of 54 square cm and a length of 9 cm. Find its breadth and perimeter.**
   Answer:
   1. Breadth = 54 ÷ 9 = 6 cm.

2. Perimeter = 9 + 9 + 6 + 6 = 30 cm.
3. The table top is 9 cm by 6 cm.

10. **A square has a perimeter of 44 cm. Find the length of one side and its area.**
    Answer:
    1. Side = 44 ÷ 4 = 11 cm.
    2. Area = 11 × 11 = 121 square cm.
    3. Each side of the square is 11 cm long.
11. **A rug has 5 rows of 7 patches. Two more rows of 7 patches are added. Find the new number of patches and the increase.**
    Answer:
    1. The original number of patches is 5 × 7 = 35.
    2. The new number of patches is 7 × 7 = 49.
    3. The increase is 49 − 35 = 14 patches.
12. **A rectangle measures 10 cm by 5 cm. Another rectangle measures 12 cm by 3 cm. Find and compare their perimeters and areas.**
    Answer:
    1. The first rectangle has perimeter 30 cm and area 50 square cm.
    2. The second rectangle has perimeter 30 cm and area 36 square cm.
    3. They have equal perimeters, but the first has the greater area.
13. **A rectangular grid has 7 columns and 4 rows of unit squares. Find its area and perimeter in units.**
    Answer:
    1. Area = 7 × 4 = 28 square units.
    2. Perimeter = 7 + 7 + 4 + 4 = 22 units.
    3. The grid contains 28 unit squares.
14. **A rectangular room is 9 m long and 6 m wide. Find its area and perimeter, including the units.**
    Answer:
    1. Area = 9 × 6 = 54 square metres.
    2. Perimeter = 9 + 9 + 6 + 6 = 30 metres.
    3. The room's floor covers 54 square metres.
15. **A 5 cm by 5 cm square and a 1 cm by 25 cm rectangle have the same area. Find each area and compare their perimeters.**
    Answer:
    1. Each shape has an area of 25 square cm.
    2. The square's perimeter is 20 cm.
    3. The rectangle's perimeter is 52 cm, which is greater.

11.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

Three-Mark Descriptive Questions – HOTS:

1. **A 10 cm by 4 cm rectangle and a square with sides of 7 cm have equal perimeters. Compare their areas.**
   Answer:
   1. The rectangle's perimeter is 2 × 10 + 2 × 4 = 28 cm.
   2. The square's perimeter is 4 × 7 = 28 cm.
   3. Their areas are 40 and 49 square cm, so the square's area is 9 square cm greater.

2. **Two patchwork rectangles measure 6 cm by 4 cm and 8 cm by 3 cm. They have equal areas; compare their perimeters.**
   Answer:
   1. Both areas are 24 square cm.
   2. Their perimeters are 20 cm and 22 cm.
   3. The 8 cm by 3 cm rectangle has a perimeter 2 cm greater.
3. **A 12 cm by 5 cm rectangular mat is changed to 9 cm by 7 cm. Compare the old and new areas and perimeters.**
   Answer:
   1. The original area is 60 square cm and its perimeter is 34 cm.
   2. The new area is 63 square cm and its perimeter is 32 cm.
   3. The area increases by 3 square cm while the perimeter decreases by 2 cm.
4. **A patchwork contains 48 square patches arranged in 8 equal rows. Find the number of patches per row and the perimeter of the rectangular arrangement in patch units.**
   Answer:
   1. Each row contains $48 \div 8 = 6$ patches.
   2. The arrangement is 8 patches by 6 patches.
   3. Its perimeter is $8 + 8 + 6 + 6 = 28$ patch units.
5. **A square and a rectangle each have a perimeter of 32 cm. The square has sides of 8 cm, and the rectangle measures 10 cm by 6 cm. Compare their areas.**
   Answer:
   1. The square's area is $8 \times 8 = 64$ square cm.
   2. The rectangle's area is $10 \times 6 = 60$ square cm.
   3. The square's area is 4 square cm greater.
6. **Two rectangles have an area of 48 square cm: one measures 12 cm by 4 cm and the other 8 cm by 6 cm. Which has the smaller perimeter, and by how much?**
   Answer:
   1. The 12 cm by 4 cm rectangle has a perimeter of 32 cm.
   2. The 8 cm by 6 cm rectangle has a perimeter of 28 cm.
   3. The 8 cm by 6 cm rectangle's perimeter is 4 cm smaller.
7. **A 9 cm by 4 cm rectangle and a 6 cm square have equal areas. Compare their perimeters.**
   Answer:
   1. Both areas are 36 square cm.
   2. The rectangle's perimeter is 26 cm and the square's is 24 cm.
   3. The rectangle's perimeter is 2 cm greater.
8. **Two rectangles have the same area of 80 square cm: one measures 16 cm by 5 cm and the other 10 cm by 8 cm. Compare their perimeters.**
   Answer:
   1. Both rectangles have an area of 80 square cm.
   2. Their perimeters are 42 cm and 36 cm.
   3. The 16 cm by 5 cm rectangle has a perimeter 6 cm greater.
9. **A 12 cm by 6 cm rectangle is rearranged into an 18 cm by 4 cm rectangle. Compare their areas and perimeters.**
   Answer:
   1. Both rectangles have an area of 72 square cm.
   2. Their perimeters are 36 cm and 44 cm.
   3. The second rectangle's perimeter is 8 cm greater.

10. **A 1 cm by 16 cm rectangle and a 4 cm square have the same area. Compare their perimeters.**
    Answer:
    1. Both shapes have an area of 16 square cm.
    2. The rectangle's perimeter is 34 cm and the square's is 16 cm.
    3. The rectangle's perimeter is 18 cm greater.
11. **Two rectangular mats have the same area of 60 square cm: one is 12 cm by 5 cm and the other is 10 cm by 6 cm. Which needs less border lace, and how much less?**
    Answer:
    1. Both mats have an area of 60 square cm.
    2. Their perimeters are 34 cm and 32 cm.
    3. The 10 cm by 6 cm mat needs 2 cm less lace.
12. **A 10 cm by 10 cm square and a 12 cm by 8 cm rectangle have equal perimeters. Compare their areas.**
    Answer:
    1. Each shape has a perimeter of 40 cm.
    2. Their areas are 100 and 96 square cm.
    3. The square's area is 4 square cm greater.
13. **A rectangle measuring 7 cm by 5 cm is changed to 9 cm by 4 cm. Compare the areas and perimeters.**
    Answer:
    1. The original area is 35 square cm and its perimeter is 24 cm.
    2. The new area is 36 square cm and its perimeter is 26 cm.
    3. The area increases by 1 square cm and the perimeter increases by 2 cm.
14. **A square patchwork has sides of 6 cm. A rectangle with the same perimeter has a length of 8 cm. Find the rectangle's breadth and compare the areas.**
    Answer:
    1. The square's perimeter is $4 \times 6 = 24$ cm.
    2. The rectangle's breadth is $24 \div 2 - 8 = 4$ cm.
    3. The square's area is 36 square cm and the rectangle's is 32 square cm, so the square's area is 4 square cm greater.
15. **A rectangular garden is 15 m by 5 m. It is redesigned as a 10 m by 7.5 m rectangle. Compare the areas and perimeters.**
    Answer:
    1. The original area is 75 square metres and its perimeter is 40 m.
    2. The redesigned area is also 75 square metres and its perimeter is 35 m.
    3. The area stays the same, while the new perimeter is 5 m shorter.

11.11 Five-mark questions with Answers of LOTS Type: (10 Questions)

Five-Mark Descriptive Questions – LOTS:

1. A rectangular quilt is 15 cm long and 8 cm wide. Find its perimeter and area, and state how much lace is needed to go around it.

Answer:

1. Length = 15 cm and breadth = 8 cm.
2. Perimeter = 15 + 15 + 8 + 8.
3. Perimeter = 46 cm.
4. Area = $15 \times 8 = 120$ square cm.
5. Therefore, 46 cm of lace is needed, and the quilt's area is 120 square cm.

2. A square patch has sides of 9 cm. Find its perimeter and area.
Answer:

1. Each side of the square is 9 cm.
2. Perimeter = 4 × side.
3. Perimeter = 4 × 9 = 36 cm.
4. Area = side × side.
5. Area = 9 × 9 = 81 square cm.

3. A rectangle has an area of 84 square cm and a length of 12 cm. Find its breadth and perimeter.
Answer:

1. Area = length × breadth.
2. Breadth = area ÷ length.
3. Breadth = 84 ÷ 12 = 7 cm.
4. Perimeter = 12 + 12 + 7 + 7.
5. The perimeter is 38 cm.

4. A rectangle has a perimeter of 34 cm and a length of 10 cm. Find its breadth and area.
Answer:

1. Half the perimeter is 34 ÷ 2 = 17 cm.
2. Length + breadth = 17 cm.
3. Breadth = 17 − 10 = 7 cm.
4. Area = 10 × 7.
5. The area is 70 square cm.

5. A patchwork has 6 rows of 5 square patches. Two more rows of 5 patches are added. Find the original and new numbers of patches.
Answer:

1. The original patchwork has 6 rows.
2. Each row contains 5 patches.
3. Original number of patches = 6 × 5 = 30.
4. The new patchwork has 8 rows.
5. New number of patches = 8 × 5 = 40.

6. Two rectangles measure 8 cm by 3 cm and 6 cm by 4 cm. Find and compare their areas and perimeters.
Answer:

1. The first rectangle's area is 8 × 3 = 24 square cm.
2. The second rectangle's area is 6 × 4 = 24 square cm.
3. The first rectangle's perimeter is 8 + 8 + 3 + 3 = 22 cm.
4. The second rectangle's perimeter is 6 + 6 + 4 + 4 = 20 cm.
5. Both areas are equal, but the first rectangle's perimeter is 2 cm greater.

7. A classroom floor is 12 m long and 8 m wide. Find its area and perimeter.
Answer:

1. Length = 12 m and breadth = 8 m.
2. Area = length × breadth.
3. Area = 12 × 8 = 96 square metres.
4. Perimeter = 12 + 12 + 8 + 8.
5. The perimeter is 40 m.

8. A rectangular field is 42 m long and 34 m wide. Find its area and perimeter.
Answer:

1. Length = 42 m and breadth = 34 m.
2. Area = 42 × 34.
3. Area = 1,428 square metres.

4. Perimeter = 42 + 42 + 34 + 34.
5. The perimeter is 152 m.

9. A square and a rectangle each have a perimeter of 24 cm. The square has sides of 6 cm, and the rectangle measures 8 cm by 4 cm. Find and compare their areas.

Answer:

1. The square's perimeter is 4 × 6 = 24 cm.
2. The rectangle's perimeter is 8 + 8 + 4 + 4 = 24 cm.
3. The square's area is 6 × 6 = 36 square cm.
4. The rectangle's area is 8 × 4 = 32 square cm.
5. The square's area is 4 square cm greater.

10. A rectangular grid contains 35 unit squares arranged in 7 equal rows. Find the number of squares in each row, the grid's dimensions, its area and its perimeter.

Answer:

1. Total number of unit squares = 35.
2. Number of rows = 7.
3. Squares in each row = 35 ÷ 7 = 5.
4. The grid measures 7 units by 5 units, so its area is 35 square units.
5. Its perimeter is 7 + 7 + 5 + 5 = 24 units.

11.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

Five-Mark Descriptive Questions – HOTS:

1. Two rectangular quilt pieces measure 12 cm by 5 cm and 10 cm by 6 cm. Compare their areas and the lace needed around each piece.

Answer:

1. The first piece has an area of 12 × 5 = 60 square cm.
2. The second piece has an area of 10 × 6 = 60 square cm.
3. The first piece's perimeter is 2 × 12 + 2 × 5 = 34 cm.
4. The second piece's perimeter is 2 × 10 + 2 × 6 = 32 cm.
5. Both pieces have the same area, but the first needs 2 cm more lace.

2. A rectangle measures 8 cm by 4 cm, and a square has sides of 6 cm. Compare their perimeters and areas.

Answer:

1. The rectangle's perimeter is 2 × 8 + 2 × 4 = 24 cm.
2. The square's perimeter is 4 × 6 = 24 cm.
3. The rectangle's area is 8 × 4 = 32 square cm.
4. The square's area is 6 × 6 = 36 square cm.
5. They have equal perimeters, but the square's area is 4 square cm greater.

3. A rectangular mat measures 10 cm by 6 cm. Its length is increased by 2 cm and its breadth is reduced by 1 cm. Compare the areas and perimeters before and after the change.

Answer:

1. The original area is 10 × 6 = 60 square cm.
2. The new dimensions are 12 cm by 5 cm, so the new area is also 60 square cm.
3. The original perimeter is 2 × 10 + 2 × 6 = 32 cm.
4. The new perimeter is 2 × 12 + 2 × 5 = 34 cm.
5. The area stays the same, but the new perimeter is 2 cm greater.

4. Two rugs have equal areas: one measures 15 cm by 4 cm and the other 10 cm by 6 cm. Which rug needs less lace, and how much less?

Answer:

1. The first rug's area is 15 × 4 = 60 square cm.
2. The second rug's area is 10 × 6 = 60 square cm.
3. The first rug's perimeter is 2 × 15 + 2 × 4 = 38 cm.
4. The second rug's perimeter is 2 × 10 + 2 × 6 = 32 cm.
5. The second rug needs 6 cm less lace.

5. A square garden has sides of 10 m. A rectangular garden measures 12 m by 8 m. Compare their perimeters and areas.

Answer:

1. The square garden's perimeter is 4 × 10 = 40 m.
2. The rectangle's perimeter is 2 × 12 + 2 × 8 = 40 m.
3. The square garden's area is 10 × 10 = 100 square metres.
4. The rectangle's area is 12 × 8 = 96 square metres.
5. They have equal perimeters, but the square garden's area is 4 square metres greater.

6. Forty-eight square patches can be arranged in a 6-by-8 rectangle or a 4-by-12 rectangle. Compare the outside perimeters of the two patchwork designs.

Answer:

1. Both arrangements use 48 patches because 6 × 8 = 48 and 4 × 12 = 48.
2. The 6-by-8 design has a perimeter of 2 × 6 + 2 × 8 = 28 patch units.
3. The 4-by-12 design has a perimeter of 2 × 4 + 2 × 12 = 32 patch units.
4. Both designs have the same area of 48 square patch units.
5. The 6-by-8 design has an outside perimeter 4 patch units shorter.

7. A classroom floor measures 12 m by 8 m. The length is increased by 2 m and the breadth is reduced by 2 m. Compare the old and new area and perimeter.

Answer:

1. The original area is 12 × 8 = 96 square metres.
2. The new dimensions are 14 m by 6 m, so the new area is 14 × 6 = 84 square metres.
3. The original perimeter is 2 × 12 + 2 × 8 = 40 m.
4. The new perimeter is 2 × 14 + 2 × 6 = 40 m.
5. The perimeter stays the same, while the area decreases by 12 square metres.

8. Three rectangles each have an area of 36 square cm: 9 cm by 4 cm, 6 cm by 6 cm, and 12 cm by 3 cm. Which has the smallest perimeter?

Answer:

1. Each rectangle has an area of 36 square cm.
2. The 9-by-4 rectangle has a perimeter of 26 cm.
3. The 6-by-6 square has a perimeter of 24 cm.
4. The 12-by-3 rectangle has a perimeter of 30 cm.
5. The 6-by-6 square has the smallest perimeter.

9. A patchwork has 5 rows of 8 patches. It is changed to 7 rows of 7 patches. Compare the number of patches in the two designs.

Answer:

1. The first design has 5 × 8 = 40 patches.
2. The second design has 7 × 7 = 49 patches.
3. The second design uses 49 − 40 = 9 more patches.
4. The first design's area is 40 square patch units.
5. The second design's area is 49 square patch units.

10. Two rectangular gardens each have a perimeter of 30 m. One measures 10 m by 5 m, and the other 12 m by 3 m. Which has the larger area, and by how much?

Answer:

1. The first garden's perimeter is 2 × 10 + 2 × 5 = 30 m.
2. The second garden's perimeter is 2 × 12 + 2 × 3 = 30 m.

3. The first garden's area is 10 × 5 = 50 square metres.
4. The second garden's area is 12 × 3 = 36 square metres.
5. The first garden's area is 14 square metres greater.

11.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Applied Questions with Answers:

1. A rectangular quilt is 2 m long and 1 m wide. How much cloth covers it, and how much lace is needed to go around its edge?

Answer:

1. Length = 2 m and breadth = 1 m.
2. Area = length × breadth.
3. Area = 2 × 1 = 2 square metres of cloth.
4. Perimeter = 2 + 2 + 1 + 1 = 6 m.
5. Therefore, the quilt covers 2 square metres and needs 6 m of lace.

2. A classroom floor is 8 m long and 6 m wide. How many 1-square-metre tiles are needed to cover it, and what is the length of its boundary?

Answer:

1. Floor area = 8 × 6 = 48 square metres.
2. Each tile covers 1 square metre.
3. Therefore, 48 tiles are needed.
4. Floor perimeter = 8 + 8 + 6 + 6 = 28 m.
5. The floor needs 48 tiles and has a boundary of 28 m.

3. A rectangular garden is 18 m long and 12 m wide. Find its area and the length of fencing needed to go around it.

Answer:

1. Length = 18 m and breadth = 12 m.
2. Area = 18 × 12 = 216 square metres.
3. Perimeter = 18 + 18 + 12 + 12.
4. Perimeter = 60 m.
5. The garden covers 216 square metres and needs 60 m of fencing.

4. A notebook cover is 24 cm long and 18 cm wide. Find the area to be covered and the length of ribbon needed to go around its edge.

Answer:

1. Length = 24 cm and breadth = 18 cm.
2. Area = 24 × 18 = 432 square cm.
3. Perimeter = 24 + 24 + 18 + 18.
4. Perimeter = 84 cm.
5. The cover needs 432 square cm of material and 84 cm of ribbon.

5. A rectangular rug is made with 6 rows of 8 square patches. How many patches are used, and what is the area in square patch units?

Answer:

1. Number of rows = 6.
2. Number of patches in each row = 8.
3. Total patches = 6 × 8 = 48.
4. Each patch represents one square patch unit.
5. The rug has an area of 48 square patch units.

6. A rectangular playground is 25 m long and 15 m wide. Find the ground area and the length of rope needed to mark its boundary.

Answer:

1. Length = 25 m and breadth = 15 m.
2. Area = 25 × 15 = 375 square metres.
3. Perimeter = 25 + 25 + 15 + 15.
4. Perimeter = 80 m.
5. The playground covers 375 square metres and needs 80 m of rope to mark its boundary.

7. A rectangular table mat is 90 cm long and 60 cm wide. Find its area and perimeter.
Answer:

1. Length = 90 cm and breadth = 60 cm.
2. Area = 90 × 60 = 5,400 square cm.
3. Perimeter = 90 + 90 + 60 + 60.
4. Perimeter = 300 cm.
5. The mat covers 5,400 square cm and has a perimeter of 300 cm.

8. A rectangular vegetable garden has an area of 72 square metres and is 12 m long. Find its breadth and the length of fencing needed around it.
Answer:

1. Area = length × breadth.
2. Breadth = 72 ÷ 12 = 6 m.
3. Perimeter = 12 + 12 + 6 + 6.
4. Perimeter = 36 m.
5. The garden is 6 m wide and needs 36 m of fencing.

9. A rectangular poster is 40 cm long and 25 cm wide. Find the area of the poster and the length of border needed to decorate it.
Answer:

1. Length = 40 cm and breadth = 25 cm.
2. Area = 40 × 25 = 1,000 square cm.
3. Perimeter = 40 + 40 + 25 + 25.
4. Perimeter = 130 cm.
5. The poster covers 1,000 square cm and needs 130 cm of border.

10. A rectangular room is 9 m long and 6 m wide. How many 1-square-metre tiles are needed for the floor, and what is the room's perimeter?
Answer:

1. Floor area = 9 × 6 = 54 square metres.
2. Each tile covers 1 square metre.
3. Therefore, 54 tiles are needed.
4. Perimeter = 9 + 9 + 6 + 6 = 30 m.
5. The floor needs 54 tiles and the room's perimeter is 30 m.

11.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple-Choice Questions:
Choose the correct answer.

1. A rectangle is 9 cm long and 4 cm wide. What is its perimeter?
   A. 22 cm B. 24 cm C. 26 cm D. 28 cm
   Answer: C. 26 cm
2. What is the area of a rectangle measuring 12 cm by 5 cm?
   A. 17 square cm B. 60 square cm C. 34 square cm D. 120 square cm
   Answer: B. 60 square cm
3. A square has a perimeter of 36 cm. How long is each side?
   A. 6 cm B. 8 cm C. 9 cm D. 12 cm
   Answer: C. 9 cm

4. What is the area of a square with sides of 8 cm?
   A. 16 square cm B. 32 square cm C. 56 square cm D. 64 square cm
   Answer: D. 64 square cm
5. A rectangle has an area of 72 square cm and a length of 9 cm. What is its breadth?
   A. 6 cm B. 8 cm C. 9 cm D. 12 cm
   Answer: B. 8 cm
6. A rectangle has a perimeter of 30 cm and a length of 9 cm. What is its breadth?
   A. 6 cm B. 7 cm C. 8 cm D. 12 cm
   Answer: A. 6 cm
7. A patchwork has 5 rows of 7 square patches. How many patches are used?
   A. 12 B. 30 C. 35 D. 40
   Answer: C. 35
8. Which pair of rectangles has equal areas?
   A. 6 cm × 4 cm and 8 cm × 3 cm
   B. 5 cm × 4 cm and 6 cm × 3 cm
   C. 7 cm × 3 cm and 8 cm × 2 cm
   D. 9 cm × 2 cm and 5 cm × 5 cm
   Answer: A. Both have an area of 24 square cm.
9. Which two shapes have the same perimeter?
   A. A 6 cm square and an 8 cm × 4 cm rectangle
   B. A 5 cm square and a 9 cm × 2 cm rectangle
   C. A 7 cm square and a 10 cm × 3 cm rectangle
   D. A 4 cm square and a 6 cm × 3 cm rectangle
   Answer: A. Both have a perimeter of 24 cm.
10. What is the area of a rectangle measuring 10 cm by 3 cm?
    A. 13 square cm B. 26 square cm C. 30 square cm D. 60 square cm
    Answer: C. 30 square cm
11. What is the perimeter of a square with sides of 7 cm?
    A. 14 cm B. 21 cm C. 28 cm D. 49 cm
    Answer: C. 28 cm
12. A rectangle has a perimeter of 40 cm and a length of 12 cm. What is its breadth?
    A. 6 cm B. 7 cm C. 8 cm D. 10 cm
    Answer: C. 8 cm
13. A rectangle is 10 cm long and 3 cm wide. Which pair gives its area and perimeter?
    A. 30 square cm and 26 cm
    B. 13 square cm and 30 cm
    C. 30 square cm and 13 cm
    D. 60 square cm and 26 cm
    Answer: A. 30 square cm and 26 cm
14. A square has sides of 1 unit. What is its area?
    A. 1 square unit B. 2 square units C. 3 square units D. 4 square units
    Answer: A. 1 square unit
15. A rectangle measures 7 cm by 4 cm. Which pair gives its area and perimeter?
    A. 11 square cm and 28 cm
    B. 28 square cm and 22 cm
    C. 28 square cm and 11 cm
    D. 22 square cm and 28 cm
    Answer: B. 28 square cm and 22 cm

16. A rectangle has a perimeter of 26 cm and a length of 8 cm. What is its breadth?
    A. 3 cm B. 5 cm C. 7 cm D. 10 cm
    Answer: B. 5 cm
17. A rectangle has an area of 96 square cm and a length of 12 cm. What is its breadth?
    A. 6 cm B. 7 cm C. 8 cm D. 9 cm
    Answer: C. 8 cm
18. A mat is made with 5 rows of 4 square patches. How many patches does it contain?
    A. 9 B. 20 C. 25 D. 40
    Answer: B. 20
19. What is the area of a rectangle measuring 14 cm by 6 cm?
    A. 40 square cm B. 84 square cm C. 90 square cm D. 120 square cm
    Answer: B. 84 square cm
20. Which pair has the same area but different perimeters?
    A. 1 cm × 12 cm and 3 cm × 4 cm
    B. 2 cm × 6 cm and 3 cm × 4 cm
    C. 2 cm × 8 cm and 4 cm × 4 cm
    D. 5 cm × 5 cm and 1 cm × 20 cm
    Answer: A. Both have an area of 12 square cm, but their perimeters differ.
21. A square has sides of 5 cm. Which pair gives its area and perimeter?
    A. 20 square cm and 25 cm
    B. 25 square cm and 20 cm
    C. 10 square cm and 20 cm
    D. 25 square cm and 10 cm
    Answer: B. 25 square cm and 20 cm
22. A rectangle measures 10 cm by 5 cm. What is its perimeter?
    A. 15 cm B. 25 cm C. 30 cm D. 50 cm
    Answer: C. 30 cm
23. A patchwork contains 48 patches arranged in 6 equal rows. How many patches are in each row?
    A. 6 B. 7 C. 8 D. 9
    Answer: C. 8
24. A rectangle measures 4 cm by 3 cm. If both dimensions are doubled, what is the new area?
    A. 24 square cm B. 36 square cm C. 48 square cm D. 96 square cm
    Answer: C. 48 square cm
25. A rectangular grid is 7 unit squares long and 5 unit squares wide. What is its perimeter?
    A. 12 units B. 24 units C. 35 units D. 70 units
    Answer: B. 24 units
26. A rectangular garden is 15 m long and 10 m wide. How much fencing is needed to go around it once?
    A. 25 m B. 50 m C. 150 m D. 300 m
    Answer: B. 50 m
27. A rectangle has an area of 42 square cm and a length of 7 cm. What is its breadth?
    A. 5 cm B. 6 cm C. 7 cm D. 8 cm
    Answer: B. 6 cm
28. A rectangle has a perimeter of 34 cm and a breadth of 7 cm. What is its length?
    A. 8 cm B. 9 cm C. 10 cm D. 13 cm
    Answer: C. 10 cm

29. What is the area of a rectangle with a length of 9 cm and a breadth of 5 cm?
    A. 14 square cm B. 28 square cm C. 45 square cm D. 90 square cm
    Answer: C. 45 square cm
30. A square has a perimeter of 32 cm. What is its area?
    A. 32 square cm B. 64 square cm C. 72 square cm D. 256 square cm
    Answer: B. 64 square cm
31. The length of a rectangle increases by 3 cm while its breadth stays the same. By how much does its perimeter increase?
    A. 3 cm B. 6 cm C. 9 cm D. It does not change
    Answer: B. 6 cm
32. Which statement about tiling a surface is correct?
    A. Shapes must leave gaps between them.
    B. Shapes must overlap each other.
    C. Shapes cover the surface without gaps or overlaps.
    D. Only circles can tile a surface.
    Answer: C. Shapes tile a surface when they cover it without gaps or overlaps.

11.15 Best Practices Opportunity List from the Chapter: (15 Ideas)

Best Practices for Teaching "Grandmother's Quilt"

(1) **Begin with familiar objects:** Ask students to identify the boundary and surface of a notebook, desk, mat or classroom floor.

(2) **Use a quilt or paper rectangle:** Let students trace around its edge to introduce perimeter and cover its surface to introduce area.

(3) **Measure real objects:** Provide rulers or measuring tapes so students can measure classroom objects and record their length and breadth.

(4) **Build shapes with square tiles:** Have students arrange equal-sized square tiles into rectangles and count rows and columns to find area.

(5) **Use square-grid paper:** Let students draw shapes on grids, count unit squares and compare areas visually.

(6) **Teach perimeter and area as different ideas:** Ask students to trace a shape's boundary with string, then cover its surface with tiles or grid squares.

(7) **Connect multiplication to area:** Guide students to see that the number of rows multiplied by the number of squares in each row gives the total area.

(8) **Encourage estimation before calculation:** Ask students to predict which shape has the larger area or perimeter, then check by measuring or counting.

(9) **Compare shapes:** Give students shapes with the same area or the same perimeter and invite them to find and explain what differs.

(10) **Use clear units:** Reinforce that perimeter is recorded in units such as cm or m, while area is recorded in square units such as cm^2 or m^2.

(11) **Discuss gaps and overlaps:** Let students test which shapes can cover a surface completely without gaps or overlaps, as in the chapter's tiling activity.

(12) **Include practical problem-solving:** Ask students to calculate how much lace is needed around a quilt or how many square patches cover a mat.

(13) **Use pair and group activities:** Have students measure, draw, tile and compare shapes together, giving each learner a clear role.

(14) **Check understanding during the lesson:** Use quick questions, mini whiteboards or exit slips to check whether students can choose the correct formula and unit.

(15) **Address common mix-ups:** Ask students to explain whether a problem requires measuring around a shape or measuring the surface it covers before they calculate.

1. **Support different learning needs:** Offer physical tiles and ruler demonstrations, grid diagrams and worked examples; provide extension tasks comparing different shapes.

11.16 Innovations Opportunity List from the Chapter: (15 Ideas)

Innovative Teaching–Learning Ideas:

(1) Digital Quilt Designer: Students use a simple drawing or grid app to arrange virtual square patches, then calculate the quilt's area and perimeter.

(2) Perimeter Treasure Hunt: Place cards with objects or shape diagrams around the classroom. Students find each card, solve its perimeter clue and move to the next location.

(3) "Same Area, Different Shape" Challenge: Give groups the same number of square tiles and ask them to make as many different rectangles as possible, then compare their perimeters.

(4) Human Grid Activity: Mark a large grid on the floor with tape. Students stand in rows and columns to model unit squares and work out the area of a rectangle.

(5) Quilt Pattern Exhibition: Students design a patchwork on square-grid paper, label its dimensions and display its area and perimeter beside the design.

(6) QR Code Learning Stations: Place QR codes around the classroom that link to short instructions, visual examples or practice questions on area, perimeter and tiling.

(7) Area and Perimeter Escape Trail: Create a sequence of short puzzles where each correct answer gives a clue to the next station.

(8) Classroom Measurement Map: Students measure selected classroom spaces and objects, mark them on a simple floor plan and record their areas or perimeters.

(9) Interactive Whiteboard Sorting Game: Students sort shape cards into groups such as "same area," "same perimeter," "tiles without gaps" and "leaves gaps."

(10) Patchwork Story Problems: Students write and exchange short story problems about quilts, rugs or table covers, then solve a classmate's problem.

(11) Digital Shape Explorer: Use an interactive grid tool to change a rectangle's length or breadth and observe how its area and perimeter change.

(12) Reusable Floor-Tile Kit: Create large, reusable square tiles from cardboard. Students arrange the tiles into different shapes and measure the covered area and outside boundary.

(13) Student-Made Video Demonstrations: In small groups, students record a brief explanation showing how they measured an object or found the area of a tiled shape.

(14) Design-a-Rug Challenge: Give students a fixed number of square patches and ask them to design a rug with a chosen shape, then calculate its area and perimeter.

(15) Class Data Wall: Display students' measured objects and designs in a shared chart so the class can compare dimensions, areas and perimeters.

11.17: Practicing Questions/Question Bank

Question Bank: "Grandmother's Quilt":

A. Fill in the Blanks:

1. The total length around a shape is its _____.
   Answer: perimeter

2. The surface covered by a shape is its _____.
   Answer: area

3. The area of a rectangle is found by multiplying its length by its _____.
   Answer: breadth

4. The perimeter of a square is _____ × **side**.
   Answer: 4

5. A square with sides of 1 unit has an area of _____ **square unit**.
   Answer: 1

6. Shapes that cover a surface without gaps or overlaps are said to _____.
   Answer: tile

7. A rectangle measuring 6 cm by 4 cm has an area of _____ **square cm**.
   Answer: 24

8. A square with sides of 5 cm has a perimeter of _____ **cm**.
   Answer: 20

9. Area is measured in _____ **units**.
   Answer: square

10. A rectangular quilt's perimeter tells us how much lace is needed to go around its _____.
    Answer: border

B. One-Mark Descriptive Questions:

1. **What is the perimeter of a shape?**
   Answer: Perimeter is the total length around the boundary of a shape.

2. **What is the area of a shape?**
   Answer: Area is the amount of surface covered by a shape.

3. **What is the formula for the area of a rectangle?**
   Answer: Area = length × breadth.

4. **What is the formula for the perimeter of a square?**
   Answer: Perimeter = 4 × side.

5. **How many equal sides does a square have?**
   Answer: A square has four equal sides.

6. **What is the area of a rectangle measuring 8 cm by 3 cm?**
   Answer: Its area is 24 square cm.

7. **What is the perimeter of a square with sides of 6 cm?**
   Answer: Its perimeter is 24 cm.

8. **Name one shape that can tile a surface without gaps or overlaps.**
   Answer: A square can tile a surface without gaps or overlaps.

9. **What is the perimeter of a rectangle measuring 5 cm by 4 cm?**
   Answer: Its perimeter is 18 cm.

10. **Which measurement tells how much lace is needed around a quilt?**
    Answer: The quilt's perimeter tells how much lace is needed.

C. Two-Mark Descriptive Questions:

1. **A rectangle is 9 cm long and 4 cm wide. Find its area and perimeter.**
   Answer:
   1. Area = 9 × 4 = 36 square cm.
   2. Perimeter = 9 + 9 + 4 + 4 = 26 cm.
2. **A square has sides of 7 cm. Find its area and perimeter.**
   Answer:
   1. Area = 7 × 7 = 49 square cm.
   2. Perimeter = 4 × 7 = 28 cm.
3. **A rectangle has an area of 48 square cm and a length of 8 cm. Find its breadth and perimeter.**
   Answer:
   1. Breadth = 48 ÷ 8 = 6 cm.
   2. Perimeter = 8 + 8 + 6 + 6 = 28 cm.
4. **A rectangle has a perimeter of 32 cm and a length of 10 cm. Find its breadth and area.**
   Answer:
   1. Breadth = 32 ÷ 2 − 10 = 6 cm.
   2. Area = 10 × 6 = 60 square cm.
5. **A garden is 14 m long and 9 m wide. Find its area and perimeter.**
   Answer:
   1. Area = 14 × 9 = 126 square metres.
   2. Perimeter = 14 + 14 + 9 + 9 = 46 m.
6. **Compare the areas and perimeters of rectangles measuring 6 cm by 4 cm and 8 cm by 3 cm.**
   Answer:
   1. Both areas are 24 square cm.
   2. Their perimeters are 20 cm and 22 cm, respectively.

D. Three-Mark Descriptive Questions:

1. **A classroom floor is 12 m long and 7 m wide. Find its area and perimeter.**
   Answer:
   1. Area = 12 × 7 = 84 square metres.
   2. Perimeter = 12 + 12 + 7 + 7.
   3. The perimeter is 38 m.
2. **A rectangle has an area of 90 square cm and a length of 15 cm. Find its breadth and perimeter.**
   Answer:
   1. Breadth = 90 ÷ 15 = 6 cm.

2. Perimeter = 15 + 15 + 6 + 6.
3. The perimeter is 42 cm.

3. **A rectangular grid has 6 rows and 5 columns of unit squares. Find its area and perimeter in units.**
   Answer:
   1. Area = 6 × 5 = 30 square units.
   2. Perimeter = 6 + 6 + 5 + 5.
   3. The perimeter is 22 units.
4. **A square has sides of 9 cm. Find its area and perimeter.**
   Answer:
   1. Area = 9 × 9 = 81 square cm.
   2. Perimeter = 4 × 9.
   3. The perimeter is 36 cm.
5. **A rectangle has a perimeter of 34 cm and a length of 10 cm. Find its breadth and area.**
   Answer:
   1. Half the perimeter is 34 ÷ 2 = 17 cm.
   2. Breadth = 17 − 10 = 7 cm.
   3. Area = 10 × 7 = 70 square cm.
6. **Compare the areas and perimeters of mats measuring 10 cm by 4 cm and 8 cm by 5 cm.**
   Answer:
   1. Both mats have an area of 40 square cm.
   2. Their perimeters are 28 cm and 26 cm.
   3. The 10 cm by 4 cm mat has a perimeter 2 cm greater.

E. Five-Mark Descriptive Questions:

1. **A rectangular quilt is 18 cm long and 12 cm wide. Find its area and the lace needed around its border.**
   Answer:
   1. Length = 18 cm and breadth = 12 cm.
   2. Area = 18 × 12 = 216 square cm.
   3. Perimeter = 18 + 18 + 12 + 12.
   4. Perimeter = 60 cm.
   5. The quilt covers 216 square cm and needs 60 cm of lace.
2. **A rectangular field is 42 m long and 34 m wide. Find its area and perimeter.**
   Answer:
   1. Length = 42 m and breadth = 34 m.

2. Area = 42 × 34.
3. Area = 1,428 square metres.
4. Perimeter = 42 + 42 + 34 + 34.
5. The perimeter is 152 m.

3. **A garden has an area of 72 square metres and a length of 12 metres. Find its breadth and the fencing needed around it.**
   Answer:
   1. Area = length × breadth.
   2. Breadth = 72 ÷ 12 = 6 m.
   3. Perimeter = 12 + 12 + 6 + 6.
   4. Perimeter = 36 m.
   5. The garden is 6 m wide and needs 36 m of fencing.

4. **A classroom floor is 9 m long and 6 m wide. Find how many 1-square-metre tiles are needed and calculate the floor's perimeter.**
   Answer:
   1. Floor area = 9 × 6 = 54 square metres.
   2. Each tile covers 1 square metre.
   3. Therefore, 54 tiles are needed.
   4. Perimeter = 9 + 9 + 6 + 6 = 30 m.
   5. The floor needs 54 tiles and has a perimeter of 30 m.

5. **A 5 cm square and a 1 cm by 25 cm rectangle have equal areas. Find their areas and perimeters, then compare them.**
   Answer:
   1. The square's area is 5 × 5 = 25 square cm.
   2. The rectangle's area is 1 × 25 = 25 square cm.
   3. The square's perimeter is 4 × 5 = 20 cm.
   4. The rectangle's perimeter is 1 + 1 + 25 + 25 = 52 cm.
   5. The areas are equal, but the rectangle's perimeter is 32 cm greater.

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5th Standard Maths Book Chapter 12

Chapter 12: Racing Seconds

12.1 Summary of the Chapter:

Summary: "Racing Seconds":

(1) Time can be measured in **hours, minutes, and seconds**.
(2) **One minute equals 60 seconds**. Seconds help us measure short activities and notice small differences, such as in a race.
(3) **One hour equals 60 minutes**.
(4) Time can be written in **12-hour format** using a.m. and p.m., or in **24-hour format** using hours from 00 to 23.
(5) We can find **elapsed time** by working out how much time passes between a start time and an end time.
(6) To find a finishing time, add the duration of an activity to its starting time.
(7) To find a starting time, count backwards from the finishing time by the duration.
(8) Hours and minutes can be changed into minutes. For example, multiply the number of hours by 60, then add any extra minutes.
(9) Minutes and seconds can be changed into seconds. For example, multiply the number of minutes by 60, then add any extra seconds.
(10) Seconds can be grouped into minutes, and minutes can be grouped into hours to express a duration in a larger unit.
(11) Clocks and their seconds hands help us observe and measure short durations.
(12) Estimating and timing everyday activities—such as running, skipping, washing, or counting—helps us understand and compare time.

12.2 Important Formulas:

Important Formulas and Time Rules:

(1) **1 hour = 60 minutes**
(2) **1 minute = 60 seconds**
(3) **1 hour = 3,600 seconds**
(4) **Hours and minutes to minutes:**
Total minutes = (hours × 60) + extra minutes
Example: 2 hours 15 minutes = (2 × 60) + 15 = 135 minutes.
(5) **Minutes to hours and minutes:** Divide the total minutes by 60. The quotient gives hours; the remainder gives minutes.
(6) **Minutes and seconds to seconds:**
Total seconds = (minutes × 60) + extra seconds
Example: 4 minutes 8 seconds = (4 × 60) + 8 = 248 seconds.
(7) **Seconds to minutes and seconds:** Divide the total seconds by 60. The quotient gives minutes; the remainder gives seconds.
(8) **Elapsed time = finishing time − starting time**
(9) **Finishing time = starting time + time taken**
(10) **Starting time = finishing time − time taken**
(11) **12-hour to 24-hour time:** For p.m. times from 1:00 p.m. to 11:59 p.m., add 12 to the hour. For example, 2:30 p.m. = 14:30 hours. (12:00 p.m. stays 12:00 hours.)
(12) **a.m. times** generally keep the same hour in 24-hour format; midnight is written as **00:00 hours**.

12.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

LOTS Fill in the Blanks: "Racing Seconds":

1. One minute has _____ **seconds**.
   Answer: 60
2. One hour has _____ **minutes**.
   Answer: 60
3. _____ **minutes** make one hour.
   Answer: 60
4. _____ **seconds** make one minute.
   Answer: 60
5. Two hours have _____ **minutes**.
   Answer: 120
6. Three hours have _____ **minutes**.
   Answer: 180
7. Four hours have _____ **minutes**.
   Answer: 240
8. Five hours have _____ **minutes**.
   Answer: 300
9. Six hours have _____ **minutes**.
   Answer: 360
10. Seven hours have _____ **minutes**.
    Answer: 420
11. Eight hours have _____ **minutes**.
    Answer: 480
12. Nine hours have _____ **minutes**.
    Answer: 540
13. Ten hours have _____ **minutes**.
    Answer: 600
14. Eleven hours have _____ **minutes**.
    Answer: 660
15. Twelve hours have _____ **minutes**.
    Answer: 720
16. Two minutes have _____ **seconds**.
    Answer: 120
17. Five minutes have _____ **seconds**.
    Answer: 300
18. Ten minutes have _____ **seconds**.
    Answer: 600
19. Fifteen minutes have _____ **seconds**.
    Answer: 900
20. Twenty minutes have _____ **seconds**.
    Answer: 1,200
21. Twenty-five minutes have _____ **seconds**.
    Answer: 1,500
22. One hour is equal to _____ **seconds**.
    Answer: 3,600
23. To change hours into minutes, multiply the number of hours by _____.
    Answer: 60
24. To change minutes into seconds, multiply the number of minutes by _____.
    Answer: 60
25. **05:30 a.m.** in 24-hour format is _____ **hours**.

Answer: 05:30

26. **08:35 hours** in 12-hour format is _____.
    Answer: 08:35 a.m.
27. **11:55 a.m.** in 24-hour format is _____ **hours**.
    Answer: 11:55
28. **02:30 p.m.** in 24-hour format is _____ **hours**.
    Answer: 14:30
29. **05:30 p.m.** in 24-hour format is _____ **hours**.
    Answer: 17:30
30. **09:35 p.m.** in 24-hour format is _____ **hours**.
    Answer: 21:35
31. **06:30 a.m.** in 24-hour format is _____ **hours**.
    Answer: 06:30
32. **08:45 p.m.** in 24-hour format is _____ **hours**.
    Answer: 20:45
33. **11:45 p.m.** in 24-hour format is _____ **hours**.
    Answer: 23:45
34. **01:30 a.m.** in 24-hour format is _____ **hours**.
    Answer: 01:30
35. In the pictured race, the child who took **1 minute 55 seconds** finished in the _____ place. — **Answer: First**

12.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

HOTS Fill in the Blanks: "Racing Seconds":

1. A child starts practising at 7:20 a.m. and practises for 2 hours 50 minutes. The child finishes at _____. — **Answer: 10:10 a.m.**
2. A game begins at 4:45 p.m. and lasts 1 hour 35 minutes. It ends at _____. — **Answer: 6:20 p.m.**
3. Rani finishes reading at 8:15 p.m. after reading for 2 hours 25 minutes. She started at _____. — **Answer: 5:50 p.m.**
4. A race winner takes 1 minute 55 seconds, and the second-place runner takes 1 minute 56 seconds. The winner finishes _____ **second(s)** ahead. — **Answer: 1**
5. A third runner takes 1 minute 57 seconds. The winner finishes _____ **seconds** ahead of this runner. — **Answer: 2**
6. An activity starts at 10:48 a.m. and ends at 11:15 a.m. It lasts _____ **minutes**. — **Answer: 27**
7. A class begins at 2:35 p.m. and ends at 4:05 p.m. It lasts _____ **hour(s) and** _____ **minutes**. — **Answer: 1 hour and 30 minutes**
8. A child starts an activity at 9:50 a.m. and works for 35 minutes. The activity ends at _____. — **Answer: 10:25 a.m.**
9. A lunch break begins at 11:40 a.m. and lasts 45 minutes. It ends at _____. — **Answer: 12:25 p.m.**
10. A child begins homework at 7:55 p.m. and works for 1 hour 20 minutes. The child finishes at _____. — **Answer: 9:15 p.m.**
11. A student studies four subjects for 50 minutes each. The total study time is _____ **hours and** _____ **minutes**. — **Answer: 3 hours and 20 minutes**
12. Rani takes 2 hours 10 minutes to paint a picture, while Raghav takes 1 hour 20 minutes. Rani spends _____ **minutes** longer than Raghav. — **Answer: 50**
13. Ritu takes 1 hour 35 minutes to paint a picture, while Raghav takes 1 hour 20 minutes. Ritu spends _____ **minutes** longer. — **Answer: 15**

14. Rani takes 2 hours 10 minutes, and Ritu takes 1 hour 35 minutes to paint. Rani takes _____ **minutes** longer than Ritu. — **Answer: 35**
15. A journey lasts 1 hour 5 minutes. This is equal to _____ **minutes**. — **Answer: 65**
16. A child studies for 2 hours 45 minutes. This is equal to _____ **minutes**. — **Answer: 165**
17. A programme lasts 3 hours 15 minutes. This is equal to _____ **minutes**. — **Answer: 195**
18. A trip lasts 4 hours 20 minutes. This is equal to _____ **minutes**. — **Answer: 260**
19. A task takes 75 minutes. This is equal to _____ **hour and** _____ **minutes**. — **Answer: 1 hour and 15 minutes**
20. A film lasts 150 minutes. This is equal to _____ **hours and** _____ **minutes**. — **Answer: 2 hours and 30 minutes**
21. A journey takes 220 minutes. This is equal to _____ **hours and** _____ **minutes**. — **Answer: 3 hours and 40 minutes**
22. A practice session lasts 390 minutes. This is equal to _____ **hours and** _____ **minutes**. — **Answer: 6 hours and 30 minutes**
23. A runner takes 320 seconds to complete a practice run. This is equal to _____ **minutes and** _____ **seconds**. — **Answer: 5 minutes and 20 seconds**
24. A task takes 225 seconds. This is equal to _____ **minutes and** _____ **seconds**. — **Answer: 3 minutes and 45 seconds**
25. A child spends 700 seconds on an activity. This is equal to _____ **minutes and** _____ **seconds**. — **Answer: 11 minutes and 40 seconds**
26. A timer records 1,000 seconds. This is equal to _____ **minutes and** _____ **seconds**. — **Answer: 16 minutes and 40 seconds**
27. Ten minutes and 13 seconds are equal to _____ **seconds**. — **Answer: 613**
28. Four minutes and 8 seconds are equal to _____ **seconds**. — **Answer: 248**
29. Fifteen minutes and 40 seconds are equal to _____ **seconds**. — **Answer: 940**
30. A child runs for 45 seconds, rests for 1 minute, and then runs for 50 seconds. The total time is _____ **minutes and** _____ **seconds**. — **Answer: 2 minutes and 35 seconds**
31. A student reads for 2 minutes 30 seconds and then reads for another 1 minute 45 seconds. The total reading time is _____ **minutes and** _____ **seconds**. — **Answer: 4 minutes and 15 seconds**
32. A clock shows 08:35 p.m. After 8 hours 25 minutes, the time will be _____ **a.m. on the next day**. — **Answer: 5:00**
33. A picnic group leaves at 8:30 a.m. and returns after 4 hours 10 minutes. The return time is _____ **p.m.** — **Answer: 12:40**
34. A child begins playing at 6:15 p.m. and returns home after 1 hour 45 minutes. The child returns at _____ **p.m.** — **Answer: 8:00**
35. A 200-metre race is timed as 1 minute 55 seconds, 1 minute 56 seconds, and 1 minute 57 seconds. The difference between the fastest and slowest times is _____ **seconds**. — **Answer: 2**

12.5 One-mark questions with Answers of LOTS Type: (35 Questions)

One-Mark Descriptive Questions: "Racing Seconds":

1. **How many seconds are there in one minute?**
   Answer: There are 60 seconds in one minute.
2. **How many minutes are there in one hour?**
   Answer: There are 60 minutes in one hour.
3. **What unit helps us measure small differences in a race?**
   Answer: Seconds help us measure small differences in a race.

4. **What does "elapsed time" mean?**
   Answer: Elapsed time is the time that passes between a starting time and a finishing time.
5. **How many minutes are there in two hours?**
   Answer: There are 120 minutes in two hours.
6. **How many minutes are there in three hours?**
   Answer: There are 180 minutes in three hours.
7. **How many seconds are there in two minutes?**
   Answer: There are 120 seconds in two minutes.
8. **How many seconds are there in five minutes?**
   Answer: There are 300 seconds in five minutes.
9. **How many minutes are there in 75 minutes?**
   Answer: 75 minutes is 1 hour and 15 minutes.
10. **How many hours and minutes are there in 150 minutes?**
    Answer: 150 minutes is 2 hours and 30 minutes.
11. **How many hours and minutes are there in 220 minutes?**
    Answer: 220 minutes is 3 hours and 40 minutes.
12. **How many minutes and seconds are there in 320 seconds?**
    Answer: 320 seconds is 5 minutes and 20 seconds.
13. **How many minutes and seconds are there in 225 seconds?**
    Answer: 225 seconds is 3 minutes and 45 seconds.
14. **How many seconds are there in 10 minutes?**
    Answer: There are 600 seconds in 10 minutes.
15. **How many seconds are there in 15 minutes?**
    Answer: There are 900 seconds in 15 minutes.
16. **How is 2:30 p.m. written in 24-hour format?**
    Answer: 2:30 p.m. is written as 14:30 hours.
17. **How is 5:30 p.m. written in 24-hour format?**
    Answer: 5:30 p.m. is written as 17:30 hours.
18. **How is 9:35 p.m. written in 24-hour format?**
    Answer: 9:35 p.m. is written as 21:35 hours.
19. **How is 8:45 p.m. written in 24-hour format?**
    Answer: 8:45 p.m. is written as 20:45 hours.
20. **How is 11:45 p.m. written in 24-hour format?**
    Answer: 11:45 p.m. is written as 23:45 hours.
21. **How is 5:30 a.m. written in 24-hour format?**
    Answer: 5:30 a.m. is written as 05:30 hours.
22. **How is 1:30 a.m. written in 24-hour format?**
    Answer: 1:30 a.m. is written as 01:30 hours.
23. **What is 1 hour and 10 minutes equal to in minutes?**
    Answer: 1 hour and 10 minutes equals 70 minutes.
24. **What is 2 hours and 45 minutes equal to in minutes?**
    Answer: 2 hours and 45 minutes equals 165 minutes.
25. **What is 3 hours and 15 minutes equal to in minutes?**
    Answer: 3 hours and 15 minutes equals 195 minutes.
26. **What is 4 minutes and 8 seconds equal to in seconds?**
    Answer: 4 minutes and 8 seconds equals 248 seconds.
27. **What is 10 minutes and 13 seconds equal to in seconds?**
    Answer: 10 minutes and 13 seconds equals 613 seconds.

28. **What is 15 minutes and 40 seconds equal to in seconds?**
    Answer: 15 minutes and 40 seconds equals 940 seconds.
29. **What time did Raghu reach his Nana ji's house if he left at 08:00 and travelled for 1 hour 5 minutes?**
    Answer: Raghu reached his Nana ji's house at 09:05 hours.
30. **How long did Raghav take to paint a picture, according to the chapter's table?**
    Answer: Raghav took 1 hour and 20 minutes to paint the picture.
31. **How long did Rani take to paint a picture, according to the chapter's table?**
    Answer: Rani took 2 hours and 10 minutes to paint the picture.
32. **How long did Ritu take to paint a picture, according to the chapter's table?**
    Answer: Ritu took 1 hour and 35 minutes to paint the picture.
33. **Who took the longest time to paint the picture?**
    Answer: Rani took the longest time to paint the picture.
34. **Who took the least time to paint the picture?**
    Answer: Raghav took the least time to paint the picture.
35. **Which child won the pictured race, with times of 1 minute 55 seconds, 1 minute 56 seconds, and 1 minute 57 seconds?**
    Answer: The child who took 1 minute and 55 seconds won the race.

12.6 One-mark questions with Answers of HOTS Type: (35 Questions)

One-Mark Descriptive Questions: "Racing Seconds":

1. **A student studies for 4 hours and 20 minutes; how many minutes is that altogether?**
   Answer: 4 hours and 20 minutes equals 260 minutes.
2. **A practice session lasts 390 minutes; how many hours and minutes is this?**
   Answer: 390 minutes equals 6 hours and 30 minutes.
3. **A child spends 700 seconds on an activity; how many minutes and seconds is this?**
   Answer: 700 seconds equals 11 minutes and 40 seconds.
4. **Jyoti goes out to play at 6:15 p.m. and returns after 1 hour 45 minutes; when does she return?**
   Answer: Jyoti returns at 8:00 p.m.
5. **Ragini finishes her homework at 9:40 p.m. after working for 1 hour 10 minutes; when did she start?**
   Answer: Ragini started her homework at 8:30 p.m.
6. **A picnic group leaves at 8:30 a.m. and returns after 4 hours 10 minutes; what time do they return?**
   Answer: The group returns at 12:40 p.m.
7. **It is 8:35 p.m.; what time will it be 8 hours 25 minutes later?**
   Answer: It will be 5:00 a.m. the next day.
8. **Lunch begins at 12:30 p.m. and lasts 35 minutes; when does it end?**
   Answer: Lunch ends at 1:05 p.m.
9. **Alya goes out at 5:30 p.m. and returns after 1 hour 10 minutes; when does she return?**
   Answer: Alya returns at 6:40 p.m.
10. **How much time passes from 1:15 p.m. to 1:42 p.m.?**
    Answer: 27 minutes pass.
11. **How much time passes from 3:18 p.m. to 8:18 p.m.?**
    Answer: 5 hours pass.

12. **How much time passes from 9:15 a.m. to 11:30 a.m.?**
    Answer: 2 hours and 15 minutes pass.
13. **A child reads for 10 minutes 13 seconds; how many seconds does the child read?**
    Answer: The child reads for 613 seconds.
14. **A run takes 320 seconds; how many minutes and seconds is that?**
    Answer: 320 seconds equals 5 minutes and 20 seconds.
15. **A task takes 1,000 seconds; how many minutes and seconds is that?**
    Answer: 1,000 seconds equals 16 minutes and 40 seconds.
16. **One runner finishes in 1 minute 55 seconds and another in 1 minute 56 seconds; how much faster is the first runner?**
    Answer: The first runner is faster by 1 second.
17. **If the fastest runner takes 1 minute 55 seconds and the slowest takes 1 minute 57 seconds, what is the difference?**
    Answer: The difference is 2 seconds.
18. **Rani takes 2 hours 10 minutes and Ritu takes 1 hour 35 minutes to paint; how much longer does Rani take?**
    Answer: Rani takes 35 minutes longer.
19. **A student studies four subjects for 50 minutes each; what is the total study time in hours and minutes?**
    Answer: The total study time is 3 hours and 20 minutes.
20. **A duration of 1 hour 10 minutes is converted to minutes; what is the result?**
    Answer: 1 hour 10 minutes equals 70 minutes.
21. **How much longer is 75 minutes than one hour?**
    Answer: 75 minutes is 15 minutes longer than one hour.
22. **A film lasts 2 hours 45 minutes; how many minutes does it last?**
    Answer: The film lasts 165 minutes.
23. **A meeting starts at 8:45 p.m.; how is its starting time written in 24-hour format?**
    Answer: The meeting starts at 20:45 hours.
24. **A clock shows 06:30 hours; what time is this in 12-hour format?**
    Answer: It is 6:30 a.m.
25. **A bus leaves at 04:30 hours; what time is this in 12-hour format?**
    Answer: The bus leaves at 4:30 a.m.
26. **A programme begins at 7:30 p.m.; how is this time written in 24-hour format?**
    Answer: The programme begins at 19:30 hours.
27. **A student finishes reading at 8:15 p.m. after reading for 2 hours 25 minutes; when did the student start?**
    Answer: The student started reading at 5:50 p.m.
28. **A class begins at 2:35 p.m. and ends at 4:05 p.m.; how long is the class?**
    Answer: The class lasts 1 hour and 30 minutes.
29. **A runner takes 1 minute 55 seconds and another takes 1 minute 57 seconds; how many seconds quicker is the first runner?**
    Answer: The first runner is 2 seconds quicker.
30. **A child skips for 5 minutes; how many seconds does the child skip?**
    Answer: The child skips for 300 seconds.
31. **A journey lasts 150 minutes; how can this duration be expressed in hours and minutes?**
    Answer: The journey lasts 2 hours and 30 minutes.
32. **A task takes 220 minutes; how can this duration be expressed in hours and minutes?**
    Answer: The task takes 3 hours and 40 minutes.

33. **A child completes an activity in 225 seconds; how can this time be expressed in minutes and seconds?**
    Answer: The child takes 3 minutes and 45 seconds.
34. **The seconds hand completes 60 movements; how much time has passed?**
    Answer: One minute has passed.
35. **Raghav takes 1 hour 20 minutes and Ritu takes 1 hour 35 minutes to paint; who takes less time and by how many minutes?**
    Answer: Raghav takes 15 minutes less than Ritu.

12.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

Two-Mark Descriptive Questions: "Racing Seconds":

1. **How many seconds are in one minute, and how many minutes are in one hour?**
   Answer:
   - One minute has 60 seconds.
   - One hour has 60 minutes.
2. **Convert 2 hours into minutes and 3 hours into minutes.**
   Answer:
   - 2 hours = 120 minutes.
   - 3 hours = 180 minutes.
3. **Convert 5 hours into minutes and 6 hours into minutes.**
   Answer:
   - 5 hours = 300 minutes.
   - 6 hours = 360 minutes.
4. **Convert 2 minutes into seconds and 5 minutes into seconds.**
   Answer:
   - 2 minutes = 120 seconds.
   - 5 minutes = 300 seconds.
5. **Convert 1 hour 10 minutes and 2 hours 45 minutes into minutes.**
   Answer:
   - 1 hour 10 minutes = 70 minutes.
   - 2 hours 45 minutes = 165 minutes.
6. **Convert 3 hours 15 minutes and 4 hours 20 minutes into minutes.**
   Answer:
   - 3 hours 15 minutes = 195 minutes.
   - 4 hours 20 minutes = 260 minutes.
7. **Convert 75 minutes and 150 minutes into hours and minutes.**
   Answer:
   - 75 minutes = 1 hour 15 minutes.
   - 150 minutes = 2 hours 30 minutes.
8. **Convert 220 minutes and 390 minutes into hours and minutes.**
   Answer:
   - 220 minutes = 3 hours 40 minutes.
   - 390 minutes = 6 hours 30 minutes.
9. **Convert 320 seconds and 225 seconds into minutes and seconds.**
   Answer:
   - 320 seconds = 5 minutes 20 seconds.
   - 225 seconds = 3 minutes 45 seconds.
10. **Convert 10 minutes 13 seconds and 4 minutes 8 seconds into seconds.**
    Answer:

- 10 minutes 13 seconds = 613 seconds.
- 4 minutes 8 seconds = 248 seconds.

11. **Write 2:30 p.m. and 5:30 p.m. in 24-hour format.**
    Answer:
    - 2:30 p.m. = 14:30 hours.
    - 5:30 p.m. = 17:30 hours.
12. **Write 8:45 p.m. and 11:45 p.m. in 24-hour format.**
    Answer:
    - 8:45 p.m. = 20:45 hours.
    - 11:45 p.m. = 23:45 hours.
13. **Write 5:30 a.m. and 1:30 a.m. in 24-hour format.**
    Answer:
    - 5:30 a.m. = 05:30 hours.
    - 1:30 a.m. = 01:30 hours.
14. **Raghu left home at 8:00 a.m. and reached his Nana ji's house at 9:05 a.m.; how long did he travel?**
    Answer:
    - The journey started at 8:00 a.m. and ended at 9:05 a.m.
    - Raghu travelled for 1 hour 5 minutes.
15. **Jyoti went out to play at 6:15 p.m. and returned after 1 hour 45 minutes; what time did she return?**
    Answer:
    - Jyoti started playing at 6:15 p.m.
    - She returned at 8:00 p.m.
16. **Ragini finished her homework at 9:40 p.m. after working for 1 hour 10 minutes; when did she start?**
    Answer:
    - Ragini finished at 9:40 p.m.
    - She started at 8:30 p.m.
17. **A picnic group left at 8:30 a.m. and returned after 4 hours 10 minutes; what was the return time?**
    Answer:
    - The group left at 8:30 a.m.
    - It returned at 12:40 p.m.
18. **Raji began homework at 6:00 p.m. and finished after 1 hour 30 minutes; when did she finish?**
    Answer:
    - Raji started at 6:00 p.m.
    - She finished at 7:30 p.m.
19. **Alya went out to play at 5:30 p.m. and came back after 1 hour 10 minutes; when did she return?**
    Answer:
    - Alya went out at 5:30 p.m.
    - She returned at 6:40 p.m.
20. **A school lunch break began at 12:30 p.m. and lasted 35 minutes; when did it end?**
    Answer:
    - The lunch break began at 12:30 p.m.
    - It ended at 1:05 p.m.

21. **Raghav, Rani, and Ritu took 1 hour 20 minutes, 2 hours 10 minutes, and 1 hour 35 minutes to paint; who took the longest and who took the least time?**
    Answer:
    - Rani took the longest time.
    - Raghav took the least time.
22. **What times did the three children take in the pictured race, and who won?**
    Answer:
    - The times were 1 minute 55 seconds, 1 minute 56 seconds, and 1 minute 57 seconds.
    - The child who took 1 minute 55 seconds won.
23. **How many minutes are there in 10 hours and in 12 hours?**
    Answer:
    - 10 hours = 600 minutes.
    - 12 hours = 720 minutes.
24. **How many seconds are there in 10 minutes and in 15 minutes?**
    Answer:
    - 10 minutes = 600 seconds.
    - 15 minutes = 900 seconds.
25. **A student studies four subjects for 50 minutes each; what is the total time in minutes and in hours and minutes?**
    Answer:
    - The total is 200 minutes.
    - 200 minutes = 3 hours 20 minutes.

12.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Two-Mark Descriptive Questions: "Racing Seconds":

1. **A yoga session starts at 8:45 a.m. and lasts 2 hours 35 minutes. When does it finish?**
   Answer:
   - Add 2 hours 35 minutes to 8:45 a.m.
   - The session finishes at 11:20 a.m.
2. **A programme ends at 6:10 p.m. after lasting 1 hour 25 minutes. When did it begin?**
   Answer:
   - Subtract 1 hour 25 minutes from 6:10 p.m.
   - The programme began at 4:45 p.m.
3. **A child starts reading at 11:40 a.m. and reads for 55 minutes. When does the child finish?**
   Answer:
   - Add 55 minutes to 11:40 a.m.
   - The child finishes at 12:35 p.m.
4. **A game starts at 9:25 p.m. and lasts 2 hours 50 minutes. When does it end?**
   Answer:
   - Add 2 hours 50 minutes to 9:25 p.m.
   - The game ends at 12:15 a.m. the next day.
5. **How long is the time from 7:50 a.m. to 10:15 a.m.?**
   Answer:
   - From 7:50 a.m. to 9:50 a.m. is 2 hours.
   - The total elapsed time is 2 hours 25 minutes.

6. **A class begins at 2:35 p.m. and ends at 4:20 p.m. How long is the class?**
   Answer:
   - From 2:35 p.m. to 3:35 p.m. is 1 hour.
   - The class lasts 1 hour 45 minutes.
7. **How much time passes from 5:15 p.m. to 6:05 p.m.?**
   Answer:
   - From 5:15 p.m. to 6:00 p.m. is 45 minutes.
   - The total elapsed time is 50 minutes.
8. **A picnic begins at 10:45 a.m. and lasts 1 hour 35 minutes. When does it finish?**
   Answer:
   - Add 1 hour 35 minutes to 10:45 a.m.
   - The picnic finishes at 12:20 p.m.
9. **A child begins an activity at 3:50 p.m. and works for 2 hours 25 minutes. When does the activity end?**
   Answer:
   - Add 2 hours 25 minutes to 3:50 p.m.
   - The activity ends at 6:15 p.m.
10. **A study session starts at 7:45 p.m. and lasts 3 hours 30 minutes. When does it end?**
    Answer:
    - Add 3 hours 30 minutes to 7:45 p.m.
    - It ends at 11:15 p.m.
11. **A journey begins at 8:40 p.m. and lasts 4 hours 35 minutes. When does the journey end?**
    Answer:
    - Add 4 hours 35 minutes to 8:40 p.m.
    - The journey ends at 1:15 a.m. the next day.
12. **Raghav takes 1 hour 20 minutes to paint a picture, while Ritu takes 1 hour 35 minutes. How much longer does Ritu take?**
    Answer:
    - The two times differ by 15 minutes.
    - Ritu takes 15 minutes longer than Raghav.
13. **One activity takes 2 hours 5 minutes and another takes 125 minutes. Which takes longer?**
    Answer:
    - 2 hours 5 minutes equals 125 minutes.
    - Both activities take the same time.
14. **A student studies for 245 minutes; how many hours and minutes is this, and how does it compare with 4 hours 5 minutes?**
    Answer:
    - 245 minutes equals 4 hours 5 minutes.
    - The two durations are equal.
15. **How long is the time from 9:35 a.m. to 12:10 p.m.?**
    Answer:
    - From 9:35 a.m. to 11:35 a.m. is 2 hours.
    - The total elapsed time is 2 hours 35 minutes.
16. **A practice session lasts 2 hours 50 minutes. How many minutes is this?**
    Answer:
    - 2 hours equal 120 minutes.
    - The total is 170 minutes.

17. **A runner's time is 460 seconds. How many minutes and seconds is this?**
    Answer:
    - 7 minutes equal 420 seconds.
    - 460 seconds equals 7 minutes 40 seconds.
18. **A task takes 12 minutes 25 seconds. How many seconds is this?**
    Answer:
    - 12 minutes equal 720 seconds.
    - The total is 745 seconds.
19. **A timer shows 970 seconds. How many minutes and seconds have passed?**
    Answer:
    - 16 minutes equal 960 seconds.
    - 970 seconds equals 16 minutes 10 seconds.
20. **Compare 35 minutes with 2,100 seconds. Are the durations equal?**
    Answer:
    - 35 minutes equals 2,100 seconds.
    - The durations are equal.
21. **A student studies two subjects for 45 minutes and 55 minutes. What is the total study time in hours and minutes?**
    Answer:
    - Together, the subjects take 100 minutes.
    - 100 minutes equals 1 hour 40 minutes.
22. **One runner takes 1 minute 58 seconds and another takes 2 minutes 3 seconds. How much faster is the first runner?**
    Answer:
    - 2 minutes 3 seconds equals 123 seconds, and 1 minute 58 seconds equals 118 seconds.
    - The first runner is faster by 5 seconds.
23. **A child reads for 2 minutes 15 seconds and then for another 1 minute 40 seconds. What is the total reading time?**
    Answer:
    - The total is 3 minutes and 55 seconds.
    - In seconds, this is 235 seconds.
24. **Convert 17:25 hours and 21:10 hours into 12-hour format.**
    Answer:
    - 17:25 hours is 5:25 p.m.
    - 21:10 hours is 9:10 p.m.
25. **A student studies four subjects for 50 minutes each and takes a 30-minute break. What is the total time, including the break?**
    Answer:
    - The study time is 200 minutes, or 3 hours 20 minutes.
    - Including the break, the total is 230 minutes, or 3 hours 50 minutes.

12.9. Three-mark questions with Answers of LOTS Type: (18 Questions)

Three-Mark Descriptive Questions: "Racing Seconds":

1. **Raghu left home at 8:00 a.m. and reached his Nana ji's house at 9:05 a.m. How long did he take?**
   Answer:
   - From 8:00 a.m. to 9:00 a.m. is 1 hour.
   - From 9:00 a.m. to 9:05 a.m. is 5 minutes.

- Raghu took 1 hour 5 minutes.

2. **Jyoti went to play at 6:15 p.m. and returned after 1 hour 45 minutes. What time did she return?**
   Answer:
   - Add 1 hour to 6:15 p.m. to get 7:15 p.m.
   - Add 45 minutes to get 8:00 p.m.
   - Jyoti returned at 8:00 p.m.
3. **Ragini finished her homework at 9:40 p.m. after working for 1 hour 10 minutes. When did she start?**
   Answer:
   - Count back 1 hour from 9:40 p.m. to get 8:40 p.m.
   - Count back 10 minutes to get 8:30 p.m.
   - Ragini started at 8:30 p.m.
4. **A student studies four subjects for 50 minutes each. Find the total time in hours and minutes.**
   Answer:
   - Four subjects take $4 \times 50 = 200$ minutes.
   - 180 minutes make 3 hours.
   - The total study time is 3 hours 20 minutes.
5. **The times in a race are 1 minute 55 seconds, 1 minute 56 seconds, and 1 minute 57 seconds. Who came first, second, and third?**
   Answer:
   - The child who took 1 minute 55 seconds came first.
   - The child who took 1 minute 56 seconds came second.
   - The child who took 1 minute 57 seconds came third.
6. **Convert 3 hours 15 minutes into minutes.**
   Answer:
   - 3 hours equal $3 \times 60 = 180$ minutes.
   - Add the extra 15 minutes.
   - 3 hours 15 minutes equal 195 minutes.
7. **Convert 390 minutes into hours and minutes.**
   Answer:
   - 360 minutes equal 6 hours.
   - $390 - 360 = 30$ minutes.
   - 390 minutes equal 6 hours 30 minutes.
8. **Convert 320 seconds into minutes and seconds.**
   Answer:
   - 300 seconds equal 5 minutes.
   - $320 - 300 = 20$ seconds.
   - 320 seconds equal 5 minutes 20 seconds.
9. **Convert 1,000 seconds into minutes and seconds.**
   Answer:
   - 960 seconds equal 16 minutes.
   - $1{,}000 - 960 = 40$ seconds.
   - 1,000 seconds equal 16 minutes 40 seconds.
10. **Convert 12 hours into minutes.**
    Answer:
    - 1 hour equals 60 minutes.
    - Multiply 12 by 60.
    - 12 hours equal 720 minutes.

11. **Write 11:45 p.m. in 24-hour format.**
    Answer:
    - The time is after noon.
    - Add 12 to the hour: 11 + 12 = 23.
    - 11:45 p.m. is 23:45 hours.
12. **Write 5:30 a.m. in 24-hour format.**
    Answer:
    - The time is in the morning.
    - Keep the hour as 5 and write a zero before it.
    - 5:30 a.m. is 05:30 hours.
13. **It is 8:35 p.m. What time will it be after 8 hours 25 minutes?**
    Answer:
    - Add 8 hours to get 4:35 a.m. the next day.
    - Add 25 minutes to get 5:00 a.m.
    - The time will be 5:00 a.m. the next day.
14. **How much time passes from 1:15 p.m. to 1:42 p.m.?**
    Answer:
    - The hour remains 1 p.m.
    - Subtract 15 minutes from 42 minutes.
    - 27 minutes pass.
15. **How much time passes from 9:15 a.m. to 11:30 a.m.?**
    Answer:
    - From 9:15 a.m. to 11:15 a.m. is 2 hours.
    - From 11:15 a.m. to 11:30 a.m. is 15 minutes.
    - The total time is 2 hours 15 minutes.
16. **Rani took 2 hours 10 minutes and Ritu took 1 hour 35 minutes to paint. How much longer did Rani take?**
    Answer:
    - Convert 2 hours 10 minutes to 130 minutes.
    - Convert 1 hour 35 minutes to 95 minutes.
    - Rani took 130 − 95 = 35 minutes longer.
17. **Convert 4 hours 20 minutes into minutes.**
    Answer:
    - 4 hours equal 4 × 60 = 240 minutes.
    - Add 20 minutes.
    - 4 hours 20 minutes equal 260 minutes.
18. **Convert 15 minutes 40 seconds into seconds.**
    Answer:
    - 15 minutes equal 15 × 60 = 900 seconds.
    - Add 40 seconds.
    - 15 minutes 40 seconds equal 940 seconds.
19. **A child runs for 1 minute 20 seconds. Express this time in seconds.**
    Answer:
    - 1 minute equals 60 seconds.
    - Add the extra 20 seconds.
    - The child runs for 80 seconds.
20. **Convert 150 minutes into hours and minutes.**
    Answer:
    - 120 minutes equal 2 hours.
    - 150 − 120 = 30 minutes.

- 150 minutes equal 2 hours 30 minutes.

12.10. Three-mark questions with Answers of HOTS Type: (15 Questions)

Three-Mark Descriptive Questions: "Racing Seconds":

1. **A child begins yoga at 7:35 a.m. and practises for 2 hours 45 minutes. At what time does the child finish?**
   Answer:
   - Add 2 hours to 7:35 a.m. to get 9:35 a.m.
   - Add 45 minutes to get 10:20 a.m.
   - The child finishes at 10:20 a.m.
2. **A programme ends at 12:25 p.m. after lasting 1 hour 35 minutes. When did it begin?**
   Answer:
   - Count back 1 hour from 12:25 p.m. to get 11:25 a.m.
   - Count back 35 minutes to get 10:50 a.m.
   - The programme began at 10:50 a.m.
3. **A class starts at 1:30 p.m. and ends at 4:05 p.m. How long is the class?**
   Answer:
   - From 1:30 p.m. to 3:30 p.m. is 2 hours.
   - From 3:30 p.m. to 4:05 p.m. is 35 minutes.
   - The class lasts 2 hours 35 minutes.
4. **A student studies four subjects for 50 minutes each and takes a 20-minute break. What is the total time spent, including the break?**
   Answer:
   - The four subjects take $4 \times 50 = 200$ minutes.
   - Including the break, the total is $200 + 20 = 220$ minutes.
   - 220 minutes equals 3 hours 40 minutes.
5. **One activity lasts 175 minutes, and another lasts 2 hours 55 minutes. Which lasts longer?**
   Answer:
   - 2 hours 55 minutes equals $120 + 55 = 175$ minutes.
   - Both activities last 175 minutes.
   - Neither activity lasts longer.
6. **A runner takes 460 seconds, while another takes 8 minutes. How much faster is the runner who takes 460 seconds?**
   Answer:
   - 8 minutes equals 480 seconds.
   - 460 seconds is 20 seconds less than 480 seconds.
   - The runner who takes 460 seconds is faster by 20 seconds.
7. **Runner A takes 2 minutes 5 seconds, and Runner B takes 125 seconds. Who finishes first?**
   Answer:
   - 2 minutes 5 seconds equals 125 seconds.
   - Runner B also takes 125 seconds.
   - Both runners finish at the same time.
8. **A journey starts at 10:50 p.m. and lasts 2 hours 35 minutes. When does it end?**
   Answer:
   - Adding 2 hours to 10:50 p.m. gives 12:50 a.m. the next day.
   - Adding 35 minutes gives 1:25 a.m.

- The journey ends at 1:25 a.m. the next day.

9. **How long is the time from 11:25 a.m. to 2:10 p.m.?**
   Answer:
   - From 11:25 a.m. to 1:25 p.m. is 2 hours.
   - From 1:25 p.m. to 2:10 p.m. is 45 minutes.
   - The elapsed time is 2 hours 45 minutes.
10. **A child starts an activity at 10:48 a.m. and must finish by noon. How much time is available?**
    Answer:
    - From 10:48 a.m. to 11:48 a.m. is 1 hour.
    - From 11:48 a.m. to 12:00 noon is 12 minutes.
    - The child has 1 hour 12 minutes.
11. **A student spends 45 minutes on one task, 35 minutes on another, and 50 minutes on a third. What is the total time in hours and minutes?**
    Answer:
    - The total is 45 + 35 + 50 = 130 minutes.
    - 120 minutes equals 2 hours.
    - The total time is 2 hours 10 minutes.
12. **Rani takes 2 hours 10 minutes to paint, while Ritu takes 1 hour 35 minutes. How much longer does Rani take?**
    Answer:
    - Rani's time is 130 minutes.
    - Ritu's time is 95 minutes.
    - Rani takes 130 − 95 = 35 minutes longer.
13. **A duration is 4 hours 20 minutes. Convert it first into minutes and then into seconds.**
    Answer:
    - 4 hours equal 240 minutes.
    - 240 + 20 = 260 minutes.
    - 260 minutes equal 15,600 seconds.
14. **A timer records 700 seconds. How does this compare with 12 minutes?**
    Answer:
    - 700 seconds equals 11 minutes 40 seconds.
    - 12 minutes equals 720 seconds.
    - The recorded time is 20 seconds shorter than 12 minutes.
15. **One study period lasts 1 hour 10 minutes, and another lasts 75 minutes. Which is longer, and by how much?**
    Answer:
    - 1 hour 10 minutes equals 70 minutes.
    - The other study period lasts 75 minutes.
    - The 75-minute period is longer by 5 minutes.

12.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

Five-Mark Descriptive Questions: "Racing Seconds":

1. **Raghu left home at 8:00 a.m. and reached his Nana ji's house at 9:05 a.m. Find the travel time.**
   Answer:
   1. The starting time was 8:00 a.m.
   2. The finishing time was 9:05 a.m.

3. From 8:00 a.m. to 9:00 a.m. is 1 hour.
4. From 9:00 a.m. to 9:05 a.m. is 5 minutes.
5. Raghu's travel time was 1 hour 5 minutes.

2. **Jyoti went out to play at 6:15 p.m. and returned after 1 hour 45 minutes. Find her return time.**
   Answer:
   1. Jyoti started playing at 6:15 p.m.
   2. Add 1 hour to get 7:15 p.m.
   3. Add 45 minutes to 7:15 p.m.
   4. The time becomes 8:00 p.m.
   5. Jyoti returned home at 8:00 p.m.
3. **Ragini finished her homework at 9:40 p.m. after working for 1 hour 10 minutes. Find her starting time.**
   Answer:
   1. Ragini finished her homework at 9:40 p.m.
   2. Count back 1 hour to reach 8:40 p.m.
   3. Count back another 10 minutes.
   4. The time becomes 8:30 p.m.
   5. Ragini started her homework at 8:30 p.m.
4. **A picnic group left at 8:30 a.m. and returned after 4 hours 10 minutes. Find the return time.**
   Answer:
   1. The group left at 8:30 a.m.
   2. Add 4 hours to get 12:30 p.m.
   3. Add 10 minutes to 12:30 p.m.
   4. The time becomes 12:40 p.m.
   5. The group returned at 12:40 p.m.
5. **A student studies four subjects for 50 minutes each. Find the total study time in hours and minutes.**
   Answer:
   1. The student studies 4 subjects.
   2. Each subject takes 50 minutes.
   3. Multiply 4 by 50 to get 200 minutes.
   4. 200 minutes equals 3 hours and 20 minutes.
   5. The total study time is 3 hours 20 minutes.
6. **Convert 3 hours 15 minutes into minutes.**
   Answer:
   1. One hour equals 60 minutes.
   2. Three hours equal $3 \times 60 = 180$ minutes.
   3. Add the extra 15 minutes.
   4. $180 + 15 = 195$ minutes.
   5. Therefore, 3 hours 15 minutes equal 195 minutes.
7. **Convert 390 minutes into hours and minutes.**
   Answer:
   1. One hour equals 60 minutes.
   2. Six hours equal $6 \times 60 = 360$ minutes.
   3. Subtract 360 from 390 to get 30 minutes.
   4. The remaining time is 30 minutes.
   5. Therefore, 390 minutes equal 6 hours 30 minutes.

8. **Convert 1,000 seconds into minutes and seconds.**
   Answer:
   1. One minute equals 60 seconds.
   2. Sixteen minutes equal 16 × 60 = 960 seconds.
   3. Subtract 960 from 1,000 to get 40 seconds.
   4. The remaining time is 40 seconds.
   5. Therefore, 1,000 seconds equal 16 minutes 40 seconds.
9. **Write 8:45 p.m. in 24-hour format and explain the conversion.**
   Answer:
   1. The given time is 8:45 p.m.
   2. For a p.m. time, add 12 to the hour.
   3. 8 + 12 = 20.
   4. Keep the minutes as 45.
   5. The time is 20:45 hours.
10. **Raghav, Ritu, and Rani took 1 hour 20 minutes, 1 hour 35 minutes, and 2 hours 10 minutes to paint. Put their times in order from least to greatest.**
    Answer:
    1. Raghav took 1 hour 20 minutes, or 80 minutes.
    2. Ritu took 1 hour 35 minutes, or 95 minutes.
    3. Rani took 2 hours 10 minutes, or 130 minutes.
    4. From least to greatest, the times are 80, 95, and 130 minutes.
    5. The order is Raghav, Ritu, then Rani.

12.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

Five-Mark Descriptive Questions: "Racing Seconds":

1. **A picnic group leaves at 8:30 a.m. and returns after 4 hours 10 minutes. Find the return time, write it in 24-hour format, and convert the duration into minutes.**
   Answer:
   1. The group leaves at 8:30 a.m.
   2. Add 4 hours to get 12:30 p.m.
   3. Add 10 minutes to get 12:40 p.m.
   4. In 24-hour format, the return time is 12:40 hours.
   5. The duration of 4 hours 10 minutes equals 250 minutes.
2. **A journey begins at 8:35 p.m. and lasts 8 hours 25 minutes. Find the arrival time and explain how the journey passes midnight.**
   Answer:
   1. From 8:35 p.m. to midnight is 3 hours 25 minutes.
   2. The remaining journey time is 8 hours 25 minutes − 3 hours 25 minutes = 5 hours.
   3. Add 5 hours to midnight.
   4. The arrival time is 5:00 a.m.
   5. The journey ends the next day.
3. **A student studies four subjects for 50 minutes each, with a 10-minute break between each subject. Find the total time, including breaks.**
   Answer:
   1. The study time is 4 × 50 = 200 minutes.
   2. There are three breaks between four subjects.
   3. The total break time is 3 × 10 = 30 minutes.
   4. The combined time is 200 + 30 = 230 minutes.

5. The student spends 3 hours 50 minutes altogether.

4. **Three runners take 1 minute 55 seconds, 1 minute 56 seconds, and 1 minute 57 seconds. Put them in finishing order and find the difference between the first and third times.**
   Answer:
   1. The runner who takes 1 minute 55 seconds finishes first.
   2. The runner who takes 1 minute 56 seconds finishes second.
   3. The runner who takes 1 minute 57 seconds finishes third.
   4. The difference between 1 minute 55 seconds and 1 minute 57 seconds is 2 seconds.
   5. The first runner finishes 2 seconds before the third runner.
5. **Raghav, Ritu, and Rani take 1 hour 20 minutes, 1 hour 35 minutes, and 2 hours 10 minutes to paint. Find their order from fastest to slowest, their combined time, and the difference between the longest and shortest times.**
   Answer:
   1. Raghav takes 80 minutes, Ritu takes 95 minutes, and Rani takes 130 minutes.
   2. From fastest to slowest, the order is Raghav, Ritu, and Rani.
   3. Their combined time is 80 + 95 + 130 = 305 minutes.
   4. 305 minutes equals 5 hours 5 minutes.
   5. The difference between the longest and shortest times is 130 − 80 = 50 minutes.
6. **Lunch starts at 12:30 p.m. and lasts 35 minutes. Find the ending time in 12-hour and 24-hour formats, and convert the lunch duration into seconds.**
   Answer:
   1. Add 30 minutes to 12:30 p.m. to reach 1:00 p.m.
   2. Add the remaining 5 minutes to get 1:05 p.m.
   3. In 24-hour format, the ending time is 13:05 hours.
   4. One minute has 60 seconds.
   5. The 35-minute lunch lasts 2,100 seconds.
7. **Raji starts her homework at 6:00 p.m. and works for 1 hour 30 minutes. Another activity begins at 8:05 p.m. How much time is there between the two activities?**
   Answer:
   1. Raji's homework ends at 7:30 p.m.
   2. The next activity begins at 8:05 p.m.
   3. From 7:30 p.m. to 8:00 p.m. is 30 minutes.
   4. From 8:00 p.m. to 8:05 p.m. is 5 minutes.
   5. There are 35 minutes between the activities.
8. **The time from 9:15 a.m. to 11:30 a.m. is shown on a clock. Find the elapsed time in hours and minutes, in minutes, and in seconds.**
   Answer:
   1. From 9:15 a.m. to 11:15 a.m. is 2 hours.
   2. From 11:15 a.m. to 11:30 a.m. is 15 minutes.
   3. The elapsed time is 2 hours 15 minutes.
   4. This equals 135 minutes.
   5. This also equals 8,100 seconds.
9. **A long activity lasts 390 minutes. Express this time in hours and minutes, then find the total number of seconds.**
   Answer:
   1. Six hours equal 360 minutes.
   2. 390 − 360 = 30 minutes.

3. Therefore, 390 minutes equal 6 hours 30 minutes.
4. 390 × 60 = 23,400 seconds.
5. The activity lasts 23,400 seconds.

10. **A timer records 1,000 seconds. Express the time in minutes and seconds, then compare it with 17 minutes.**
    Answer:
    1. Sixteen minutes equal 16 × 60 = 960 seconds.
    2. 1,000 − 960 = 40 seconds.
    3. So, 1,000 seconds equal 16 minutes 40 seconds.
    4. Seventeen minutes equal 1,020 seconds.
    5. The recorded time is 20 seconds shorter than 17 minutes.

12.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Descriptive Questions: "Racing Seconds":

1. **A school bus leaves at 7:45 a.m. and reaches school after 1 hour 35 minutes. Find the arrival time and the journey duration in minutes.**
   Answer:
   1. The bus leaves at 7:45 a.m.
   2. Add 1 hour to reach 8:45 a.m.
   3. Add 35 minutes to reach 9:20 a.m.
   4. The bus arrives at 9:20 a.m.
   5. The journey takes 95 minutes.
2. **A cake goes into the oven at 4:20 p.m. and bakes for 45 minutes. It then cools for 15 minutes. When is it ready, and how long is the total time?**
   Answer:
   1. The baking starts at 4:20 p.m.
   2. After 45 minutes, the cake is ready to cool at 5:05 p.m.
   3. Add 15 minutes of cooling time.
   4. The cake is ready at 5:20 p.m.
   5. The total time is 60 minutes, or 1 hour.
3. **A runner completes three practice runs, taking 1 minute 55 seconds for each run. Find the total time for the three runs.**
   Answer:
   1. One run takes 1 minute 55 seconds, or 115 seconds.
   2. Three runs take 3 × 115 = 345 seconds.
   3. 300 seconds equal 5 minutes.
   4. The remaining 45 seconds make the total 5 minutes 45 seconds.
   5. The runner takes 5 minutes 45 seconds altogether.
4. **A doctor's appointment begins at 10:25 a.m. and lasts 35 minutes. The next appointment is at 11:20 a.m. How much time is there between the appointments?**
   Answer:
   1. The first appointment starts at 10:25 a.m.
   2. It ends after 35 minutes, at 11:00 a.m.
   3. The next appointment begins at 11:20 a.m.
   4. From 11:00 a.m. to 11:20 a.m. is 20 minutes.
   5. There are 20 minutes between the appointments.
5. **A student studies four subjects for 40 minutes each and takes two 10-minute breaks. If the student starts at 5:15 p.m., when will the study period end?**
   Answer:

1. The four subjects take 4 × 40 = 160 minutes.
2. The two breaks take 2 × 10 = 20 minutes.
3. The total time is 180 minutes, or 3 hours.
4. Add 3 hours to the 5:15 p.m. starting time.
5. The study period ends at 8:15 p.m.

6. **A train leaves at 21:40 hours and travels for 3 hours 35 minutes. Find its arrival time in 12-hour format.**
   Answer:
   1. The train leaves at 21:40 hours, which is 9:40 p.m.
   2. From 9:40 p.m. to midnight is 2 hours 20 minutes.
   3. There are 1 hour 15 minutes of the journey remaining after midnight.
   4. Add 1 hour 15 minutes to midnight.
   5. The train arrives at 1:15 a.m. the next day.
7. **A school trip begins at 8:30 a.m. and returns at 12:40 p.m. The group spends 30 minutes stopped along the way. How long is the actual travelling time?**
   Answer:
   1. From 8:30 a.m. to 12:40 p.m. is 4 hours 10 minutes.
   2. The total time away is 250 minutes.
   3. The stop takes 30 minutes.
   4. The travelling time is 250 − 30 = 220 minutes.
   5. The group travels for 3 hours 40 minutes.
8. **Three children take 1 minute 55 seconds, 1 minute 56 seconds, and 1 minute 57 seconds to finish a race. Identify the winner, find the gap between first and second place, and calculate the sum of their times.**
   Answer:
   1. The child who takes 1 minute 55 seconds wins.
   2. The difference between 1 minute 55 seconds and 1 minute 56 seconds is 1 second.
   3. The three times are 115, 116, and 117 seconds.
   4. Their total is 115 + 116 + 117 = 348 seconds.
   5. 348 seconds equals 5 minutes 48 seconds.
9. **A phone call is planned to last 12 minutes but the timer shows 725 seconds. How long did the call last in minutes and seconds, and by how much did it exceed the planned time?**
   Answer:
   1. Twelve minutes equal 12 × 60 = 720 seconds.
   2. The call lasted 725 seconds.
   3. 725 seconds equals 12 minutes 5 seconds.
   4. The call exceeded 720 seconds by 5 seconds.
   5. The call was 5 seconds longer than planned.
10. **A student takes 25 minutes to get ready and 15 minutes to eat breakfast. If the student starts getting ready at 7:10 a.m., when will breakfast finish?**
    Answer:
    1. Getting ready takes 25 minutes.
    2. The student finishes getting ready at 7:35 a.m.
    3. Breakfast takes another 15 minutes.
    4. Add 15 minutes to 7:35 a.m.
    5. Breakfast finishes at 7:50 a.m.

12.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple Choice Questions: "Racing Seconds":

1. **What is 3 hours 25 minutes expressed in minutes?**
   A. 185 minutes
   B. 195 minutes
   C. 205 minutes
   D. 215 minutes
   Answer: C. 205 minutes
2. **How many hours and minutes are equal to 245 minutes?**
   A. 3 hours 65 minutes
   B. 4 hours 5 minutes
   C. 4 hours 15 minutes
   D. 5 hours 5 minutes
   Answer: B. 4 hours 5 minutes
3. **How many minutes and seconds are equal to 575 seconds?**
   A. 8 minutes 35 seconds
   B. 9 minutes 25 seconds
   C. 9 minutes 35 seconds
   D. 10 minutes 15 seconds
   Answer: C. 9 minutes 35 seconds
4. **A race begins at 7:48 a.m. and lasts 1 hour 37 minutes. When does it finish?**
   A. 9:15 a.m.
   B. 9:25 a.m.
   C. 9:35 a.m.
   D. 10:25 a.m.
   Answer: B. 9:25 a.m.
5. **A film begins at 8:55 p.m. and lasts 2 hours 20 minutes. When does it finish?**
   A. 10:15 p.m.
   B. 11:05 p.m.
   C. 11:15 p.m.
   D. 11:25 p.m.
   Answer: C. 11:15 p.m.
6. **A journey starts at 11:35 p.m. and lasts 50 minutes. When does it end?**
   A. 12:15 a.m. the next day
   B. 12:25 a.m. the next day
   C. 12:35 a.m. the next day
   D. 1:25 a.m. the next day
   Answer: B. 12:25 a.m. the next day
7. **How much time passes from 9:20 a.m. to 12:05 p.m.?**
   A. 2 hours 35 minutes
   B. 2 hours 45 minutes
   C. 2 hours 55 minutes
   D. 3 hours 15 minutes
   Answer: B. 2 hours 45 minutes
8. **A show ends at 4:10 p.m. after running for 1 hour 35 minutes. When did it begin?**
   A. 2:25 p.m.
   B. 2:35 p.m.
   C. 2:45 p.m.
   D. 3:35 p.m.
   Answer: B. 2:35 p.m.

9. **How much time passes from 3:47 p.m. to 5:22 p.m.?**
   A. 1 hour 25 minutes
   B. 1 hour 35 minutes
   C. 1 hour 45 minutes
   D. 2 hours 35 minutes
   Answer: B. 1 hour 35 minutes
10. **How is 19:45 hours written in 12-hour format?**
   A. 7:45 a.m.
   B. 7:45 p.m.
   C. 9:45 p.m.
   D. 9:45 a.m.
   Answer: B. 7:45 p.m.
11. **How is 12:15 a.m. written in 24-hour format?**
   A. 00:15 hours
   B. 12:15 hours
   C. 12:45 hours
   D. 24:15 hours
   Answer: A. 00:15 hours
12. **How is 15:08 hours written in 12-hour format?**
   A. 3:08 a.m.
   B. 5:08 p.m.
   C. 3:08 p.m.
   D. 12:08 p.m.
   Answer: C. 3:08 p.m.
13. **How is 00:30 hours written in 12-hour format?**
   A. 12:30 a.m.
   B. 12:30 p.m.
   C. 10:30 a.m.
   D. 12:00 a.m.
   Answer: A. 12:30 a.m.
14. **A student practises four activities for 35 minutes each. What is the total practice time?**
   A. 1 hour 40 minutes
   B. 2 hours 10 minutes
   C. 2 hours 20 minutes
   D. 2 hours 30 minutes
   Answer: C. 2 hours 20 minutes
15. **One runner takes 2 minutes 14 seconds and another takes 2 minutes 9 seconds. What is the difference between their times?**
   A. 3 seconds
   B. 5 seconds
   C. 9 seconds
   D. 14 seconds
   Answer: B. 5 seconds
16. **How many seconds are there in 10 minutes?**
   A. 60 seconds
   B. 100 seconds
   C. 600 seconds
   D. 1,000 seconds
   Answer: C. 600 seconds

17. **How many seconds are there in 1 hour 45 minutes?**
    A. 5,400 seconds
    B. 6,000 seconds
    C. 6,300 seconds
    D. 6,600 seconds
    Answer: C. 6,300 seconds
18. **Which duration is equal to 135 minutes?**
    A. 2 hours 5 minutes
    B. 2 hours 15 minutes
    C. 2 hours 25 minutes
    D. 3 hours 15 minutes
    Answer: B. 2 hours 15 minutes
19. **How many minutes and seconds are equal to 710 seconds?**
    A. 10 minutes 50 seconds
    B. 11 minutes 10 seconds
    C. 11 minutes 50 seconds
    D. 12 minutes 10 seconds
    Answer: C. 11 minutes 50 seconds
20. **How much time passes from 11:48 a.m. to 1:16 p.m.?**
    A. 1 hour 18 minutes
    B. 1 hour 28 minutes
    C. 1 hour 38 minutes
    D. 2 hours 28 minutes
    Answer: B. 1 hour 28 minutes
21. **Homework takes 2 hours 55 minutes and finishes at 8:15 a.m. When did it start?**
    A. 5:10 a.m.
    B. 5:20 a.m.
    C. 5:30 a.m.
    D. 6:20 a.m.
    Answer: B. 5:20 a.m.
22. **A play begins at 4:35 p.m. and lasts 2 hours 40 minutes. When does it end?**
    A. 6:55 p.m.
    B. 7:05 p.m.
    C. 7:15 p.m.
    D. 7:25 p.m.
    Answer: C. 7:15 p.m.
23. **A clock shows 23:20 hours. What time will it show 1 hour 55 minutes later?**
    A. 12:15 a.m. the next day
    B. 1:15 a.m. the next day
    C. 1:25 a.m. the next day
    D. 2:15 a.m. the next day
    Answer: B. 1:15 a.m. the next day
24. **How many 15-minute periods are there in 3 hours 45 minutes?**
    A. 12
    B. 14
    C. 15
    D. 18
    Answer: C. 15
25. **A student studies for 3 hours 25 minutes and then for another 1 hour 50 minutes. What is the total study time?**

A. 4 hours 75 minutes
B. 5 hours 5 minutes
C. 5 hours 15 minutes
D. 5 hours 25 minutes
Answer: C. 5 hours 15 minutes

26. **How many seconds are there in 4 minutes 35 seconds?**
A. 255 seconds
B. 265 seconds
C. 275 seconds
D. 285 seconds
Answer: C. 275 seconds

27. **How many minutes are there in 5 hours 35 minutes?**
A. 325 minutes
B. 330 minutes
C. 335 minutes
D. 355 minutes
Answer: C. 335 minutes

28. **A seconds hand completes 60 movements. How much time has passed?**
A. 30 seconds
B. 1 minute
C. 2 minutes
D. 60 minutes
Answer: B. 1 minute

29. **A student starts an activity at 6:50 p.m. and finishes at 8:05 p.m. How long does it take?**
A. 1 hour 5 minutes
B. 1 hour 15 minutes
C. 1 hour 25 minutes
D. 2 hours 15 minutes
Answer: B. 1 hour 15 minutes

30. **A programme starts at 3:45 p.m. and ends at 6:20 p.m. How long is the programme?**
A. 2 hours 25 minutes
B. 2 hours 35 minutes
C. 2 hours 45 minutes
D. 3 hours 35 minutes
Answer: B. 2 hours 35 minutes

12.15 Best Practices Opportunity List from the Chapter: (12 Ideas)

Best Practices for Teaching "Racing Seconds":

(1) Begin with familiar routines: Ask students when they wake up, travel to school, and start lessons to recall how they use time.

(2) Use a teaching clock: Demonstrate how the minute and second hands move, and show that 60 seconds make one minute.

(3) Time short activities: Use a stopwatch to time safe tasks such as writing a word, walking a short distance, or counting.

(4) Estimate before measuring: Have students guess how long an activity will take, then time it and compare the estimate with the result.

(5) **Practise elapsed time on number lines:** Mark the start and finish times, then count the jumps between them.
(6) **Teach conversions with double number lines:** Show matching hours and minutes, and minutes and seconds, before students try conversions independently.
(7) **Use a daily timetable:** Ask students to calculate the length of lessons, breaks, and activities from the school schedule.
(8) **Practise both time formats:** Display familiar a.m. and p.m. times and have students match them with their 24-hour format.
(9) **Use a mock race to compare seconds:** Time short activities or use sample race times so students can identify the fastest time and calculate the difference.
(10) **Encourage mental strategies:** Let students split elapsed time into convenient steps, such as counting first to the next hour and then onward.
(11) **Use paired problem-solving:** Have partners solve a time problem using different methods and explain how they checked their answers.
(12) **Check understanding during lessons:** Use quick questions, clock cards, or short exit tasks to find out whether students can read, convert, and compare times.

12.16 Innovations Opportunity List from the Chapter: (15 Ideas)

Innovations for Teaching "Racing Seconds"

(1) **Classroom Time Lab:** Set up activity stations where students estimate, time, and record how long different tasks take.
(2) **Create a Human Clock:** Let students represent the hour, minute, and second hands and move to show given times.
(3) **Design a Time-Conversion Board Game:** Players move forward by correctly converting hours, minutes, and seconds.
(4) **Build a Race Results Chart:** Students record sample race times, rank the participants, and find the differences between times.
(5) **Make a Daily Schedule Puzzle:** Give students activity cards and ask them to arrange them into a timetable with correct start and finish times.
(6) **Try a Time-Detective Challenge:** Give clues such as a finishing time and duration, and ask students to find the missing starting time.
(7) **Create a 12-hour/24-hour Matching Game:** Students match cards showing the same time in both formats.
(8) **Use a Stopwatch Data Project:** Students time repeated activities, compare the results, and discuss why measurements may differ.
(9) **Make a Time-Unit Foldable:** Students create a visual foldable showing relationships among hours, minutes, and seconds with worked examples.
(10) **Run a "Beat the Clock" Challenge:** Teams solve a time problem before a timer ends, then explain the strategy they used.
(11) **Create a Story Problem Comic:** Students draw a short story about a journey, game, or daily routine and add a time calculation to each scene.
(12) **Use a Digital Clock Simulation:** If devices are available, students change clock settings and practise reading equivalent times.
(13) **Hold a Time-Estimation Fair:** Students estimate how long classroom activities will take, measure them, and display the results.
(14) **Make a Class Audio Quiz:** Students record time questions and answers for classmates to solve, including elapsed-time and conversion problems.
(15) **Design a Mini "Time Escape Room":** Teams solve a sequence of time clues to reveal a final code, such as converting a duration or finding an arrival time.

12.17: Practicing Questions/Question Bank :

Question Bank: "Racing Seconds" — Grade 5 Maths

A. Fill in the Blanks:

1. One minute has _____ **seconds**.
   Answer: 60
2. Seven hours equal _____ **minutes**.
   Answer: 420
3. Two hours and 45 minutes equal _____ **minutes**.
   Answer: 165

B. One-Mark Descriptive Questions:

1. **How many minutes and seconds are in 225 seconds?**
   Answer: 225 seconds equals 3 minutes 45 seconds.
2. **How much time passes from 9:15 a.m. to 11:30 a.m.?**
   Answer: 2 hours and 15 minutes pass.
3. **Which time is fastest in a race: 1 minute 55 seconds, 1 minute 56 seconds, or 1 minute 57 seconds?**
   Answer: 1 minute 55 seconds is the fastest time.

C. Two-Mark Descriptive Questions:

1. **Convert 2 hours 35 minutes and 4 hours 10 minutes into minutes.**
   Answer:
   - 2 hours 35 minutes = 155 minutes.
   - 4 hours 10 minutes = 250 minutes.
2. **A child goes out to play at 5:30 p.m. and returns after 1 hour 10 minutes. When does the child return?**
   Answer:
   - Add 1 hour to 5:30 p.m. to get 6:30 p.m.
   - Add 10 minutes; the child returns at 6:40 p.m.
3. **Compare 1 hour 20 minutes with 1 hour 35 minutes. Which is longer, and by how much?**
   Answer:
   - 1 hour 35 minutes is longer.
   - It is longer by 15 minutes.

D. Three-Mark Descriptive Questions:

1. **Ragini finishes her homework at 9:40 p.m. after working for 1 hour 10 minutes. When did she start?**
   Answer:
   - Count back 1 hour from 9:40 p.m. to get 8:40 p.m.

- Count back 10 minutes to get 8:30 p.m.
- Ragini started at 8:30 p.m.

2. **Convert 320 seconds into minutes and seconds.**
   Answer:
   - 5 minutes equal 300 seconds.
   - 320 − 300 = 20 seconds.
   - 320 seconds equal 5 minutes 20 seconds.
3. **Three runners take 1 minute 55 seconds, 1 minute 56 seconds, and 1 minute 57 seconds. Put them in order from fastest to slowest.**
   Answer:
   - The runner who takes 1 minute 55 seconds is fastest.
   - The runner who takes 1 minute 56 seconds is second.
   - The runner who takes 1 minute 57 seconds is slowest.

E. Five-Mark Descriptive Questions:

1. **A picnic group leaves at 8:30 a.m. and returns after 4 hours 10 minutes. Find the return time and express the duration in minutes.**
   Answer:
   1. The group leaves at 8:30 a.m.
   2. Add 4 hours to get 12:30 p.m.
   3. Add 10 minutes to get 12:40 p.m.
   4. The group returns at 12:40 p.m.
   5. The duration is 250 minutes.
2. **A student studies four subjects for 50 minutes each and takes three 10-minute breaks. Find the total time, including breaks.**
   Answer:
   1. The four subjects take 4 × 50 = 200 minutes.
   2. The three breaks take 3 × 10 = 30 minutes.
   3. The total is 200 + 30 = 230 minutes.
   4. 180 minutes equal 3 hours.
   5. The total time is 3 hours 50 minutes.
3. **A timer records 1,000 seconds. Convert this to minutes and seconds, then compare it with 17 minutes.**
   Answer:
   1. Sixteen minutes equal 16 × 60 = 960 seconds.
   2. 1,000 − 960 = 40 seconds.

3. So, 1,000 seconds equal 16 minutes 40 seconds.
4. Seventeen minutes equal 1,020 seconds.
5. The recorded time is 20 seconds shorter than 17 minutes.

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5th Standard Maths Book Chapter 13

Chapter 13: Animal Jumps

13.1 Summary of the Chapter:

Summary: Chapter 13 — *Animal Jumps*:

(1) A **factor** divides a number exactly, with no remainder. For example, 1, 2, 3, 4, 6 and 12 are factors of 12.

(2) A **multiple** is the result of multiplying a number by a whole number. For example, 12 is a multiple of 3 because 3 times 4 = 12.

(3) Arrays help show the factor pairs of a number. For 12, the pairs are 1 × 12, 2 × 6 and 3 × 4.

(4) A number can have several factors. The number itself and 1 are always factors of that number.

(5) A **prime number** has exactly two factors: 1 and itself. The chapter asks students to identify prime numbers by making arrays.

(6) Repeated jumps on a number line show the multiples of a number. A rabbit jumping by 4 lands on multiples of 4; a frog jumping by 3 lands on multiples of 3.

(7) Numbers reached by both jumpers are **common multiples**. For jumps of 3 and 4, 12 is the first common multiple.

(8) A **common factor** exactly divides two or more numbers. For example, 2 is a common factor of 24 and 36.

(9) Jumping along a numbered trail helps identify which numbers are multiples of a chosen jump size and which are common factors of the friends' positions.

(10) The chapter applies common multiples to repeated events, such as two animals going hunting every 3rd and 5th day.

(11) It explores divisibility by 2, 5 and 10 by sorting numbers into groups. For instance, numbers ending in 0 are divisible by 10.

(12) Practice activities ask students to list factors and multiples, find common factors and multiples, and decide whether number statements are true or false.

13.2 Important Formulas:

IMPORTANT FORMULAS AND RULES:

(1) Factor pair
Factor × Factor = Number
Example: 3 × 4 = 12. Therefore, 3 and 4 are factors of 12.

(2) Test for a factor
A number is a factor of another number if the division leaves no remainder.
Example: 12 ÷ 3 = 4, so 3 is a factor of 12.

(3) Multiples of a number
Multiples of a number = Number × 1, Number × 2, Number × 3, …
Example: Multiples of 4 are 4, 8, 12, 16, …

(4) Common factor
A common factor divides each of two or more numbers exactly.
Example: 2 is a common factor of 24 and 36.

(5) Common multiple
A common multiple is a multiple shared by two or more numbers.
Example: 12 is a common multiple of 3 and 4.

(6) Number-line jumps
Jumping by the same number each time from 0 lands on that number's multiples.
Example: Jumps of 3 land on 0, 3, 6, 9, 12, …

(7) Prime number rule
A prime number has exactly two factors: 1 and the number itself.

(8) Divisibility by 2
A number is divisible by 2 if its last digit is 0, 2, 4, 6 or 8.

(9) Divisibility by 5
A number is divisible by 5 if its last digit is 0 or 5.

(10) Divisibility by 10
A number is divisible by 10 if its last digit is 0.

(11) Consecutive numbers
The only common factor of two consecutive numbers is 1. Their product is a common multiple of both numbers.

The chapter presents these relationships and rules through examples, arrays and number-line jumps.

13.3 Fill-Up the Blank LOTS type questions with Answers: (30 Questions)

FILL IN THE BLANKS – LOTS:

1. A number that divides another number exactly is called a _____.
   Answer: factor
2. The answer obtained by multiplying numbers is called a _____.
   Answer: multiple
3. The factors of 12 include 1, 2, 3, 4, 6 and _____.
   Answer: 12
4. 3 times 5 = _____.
   Answer: 15
5. 2 times 6 = _____.
   Answer: 12
6. 3 times 4 = _____.
   Answer: 12
7. 1\times 12 = _____.
   Answer: 12
8. 28 is a multiple of _____.
   Answer: 4
9. 36 is a multiple of _____.
   Answer: 4
10. The number itself is always a _____ of itself.
    Answer: multiple
11. A number that has exactly two factors, 1 and itself, is called a _____ number.
    Answer: prime

12. The number 13 is a _____ number.
    Answer: prime
13. A rabbit jumps 4 steps at a time. Its first positive landing number is _____.
    Answer: 4
14. A frog jumps 3 steps at a time. Its first positive landing number is _____.
    Answer: 3
15. The first common multiple of 3 and 4 is _____.
    Answer: 12
16. 6 is a common multiple of 3 and _____.
    Answer: 6
17. Multiples of 4 are 4, 8, 12, _____, …
    Answer: 16
18. Multiples of 6 are 6, 12, 18, _____, …
    Answer: 24
19. 2 is a common factor of 24 and _____.
    Answer: 36
20. 3 is a common factor of 24 and _____.
    Answer: 36
21. A common factor of two or more numbers divides each number _____.
    Answer: exactly
22. The number 1 is a factor of every _____ number.
    Answer: whole
23. A number is divisible by 2 if its last digit is 0, 2, 4, 6 or _____.
    Answer: 8
24. A number is divisible by 5 if its last digit is 0 or _____.
    Answer: 5
25. A number is divisible by 10 if its last digit is _____.
    Answer: 0
26. The number 40 is divisible by 10 because its last digit is _____.
    Answer: 0
27. The number 25 is divisible by _____.
    Answer: 5
28. The number 38 is divisible by _____.
    Answer: 2
29. The number 30 is divisible by 2, 5 and _____.
    Answer: 10
30. Two consecutive numbers have _____ as their only common factor.
    Answer: 1

13.4 Fill-Up the Blank HOTS type questions with Answers: (30 Questions)

FILL IN THE BLANKS WITH ANSWERS – HOTS:

1. A jumper takes 4-step jumps from 0. After landing on 16, the next landing number is _____.
   Answer: 20
2. The first positive number that is a multiple of both 3 and 5 is _____.
   Answer: 15
3. A rabbit makes 6 jumps of 4 steps each and lands on _____.
   Answer: 24
4. If 24 students stand in equal rows of 6, there will be _____ rows.
   Answer: 4

5. In \(3 \times \square = 27\), the missing number is _____.
   Answer: 9
6. In \(5 \times \square = 35\), the missing number is _____.
   Answer: 7
7. A number that is a factor of both 18 and 24 is _____.
   Answer: 6
8. The common multiples of 4 and 6 that are less than 30 are _____ and _____.
   Answer: 12 and 24
9. Of 14, 18, 20 and 24, the number that is a common multiple of 4 and 6 is _____.
   Answer: 24
10. A jumper reaches 27 by taking 3-step jumps from 0 after _____ jumps.
    Answer: 9
11. A jumper taking 5-step jumps from 0 will not land on _____.
    Answer: 22
12. If 36 objects are arranged in 4 equal rows, each row has _____ objects.
    Answer: 9
13. If a number is divisible by both 2 and 5, its last digit must be _____.
    Answer: 0
14. A number ending in 5, such as 65, is divisible by 5 but not by _____.
    Answer: 2
15. The number 42 is divisible by 2 but not by 5 because its last digit is _____.
    Answer: 2
16. The number 70 is divisible by 2, 5 and _____.
    Answer: 10
17. The common factors of 8 and 20 are 1, 2 and _____.
    Answer: 4
18. Of 21, 23, 25 and 27, the prime number is _____.
    Answer: 23
19. The number 33 is not prime because \(3 \times \square = 33\).
    Answer: 11
20. The number 1 is not prime because it has only _____ factor.
    Answer: 1
21. A common factor of 20 and 30 that is greater than 5 is _____.
    Answer: 10
22. The only common factor of the consecutive numbers 17 and 18 is _____.
    Answer: 1
23. The landing numbers shared by jumpers moving in steps of 3 and 6 include 6, 12 and _____.
    Answer: 18
24. If two animals go hunting every 3rd day and every 5th day, their first shared hunting day after starting together is after _____ days.
    Answer: 15
25. Ten is a common multiple of 2 and 5, but it is not a multiple of _____.
    Answer: 4
26. The factors of 12 are 1, 2, 3, 4, 6 and 12, so 12 has _____ factors.
    Answer: 6
27. The common factors of 15 and 20 are 1 and _____.
    Answer: 5

28. If 18 objects are arranged in 3 equal rows, each row contains _____ objects.
    Answer: 6
29. The number 40 is divisible by 2, 5 and 10, but it is not divisible by _____.
    Answer: 3
30. Twelve is a common multiple of 4 and 6; the next common multiple after 12 is _____.
    Answer: 24

13.5 One-mark questions with Answers of LOTS Type: (32 Questions)

ONE-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – LOTS:

1. **What is a factor of a number?**
   Answer: A factor divides a number exactly.
2. **What is a multiple of a number?**
   Answer: A multiple is the product of that number and a whole number.
3. **Name any two factors of 12.**
   Answer: Two factors of 12 are 3 and 4.
4. **Is 6 a factor of 12?**
   Answer: Yes, 6 is a factor of 12 because $12 \div 6 = 2$.
5. **Is 5 a factor of 12?**
   Answer: No, 5 is not a factor of 12 because it does not divide 12 exactly.
6. **What are the factors in the multiplication $3 \times 5 = 15$?**
   Answer: The factors are 3 and 5.
7. **What is the product of 2 and 6?**
   Answer: The product of 2 and 6 is 12.
8. **Is 28 a multiple of 4?**
   Answer: Yes, 28 is a multiple of 4 because $4 \times 7 = 28$.
9. **Is 36 a multiple of 4?**
   Answer: Yes, 36 is a multiple of 4 because $4 \times 9 = 36$.
10. **What is the first positive multiple of 3?**
    Answer: The first positive multiple of 3 is 3.
11. **What is the first positive multiple of 4?**
    Answer: The first positive multiple of 4 is 4.
12. **What is the first common multiple of 3 and 4?**
    Answer: The first common multiple of 3 and 4 is 12.
13. **Name one common multiple of 3 and 6.**
    Answer: Six is a common multiple of 3 and 6.
14. **What is a common factor of two numbers?**
    Answer: A common factor divides both numbers exactly.
15. **Name one common factor of 24 and 36.**
    Answer: Two is a common factor of 24 and 36.
16. **What is an array used to show?**
    Answer: An array can show the factor pairs of a number.
17. **What is a prime number?**
    Answer: A prime number has exactly two factors, 1 and itself.
18. **Is 13 a prime number?**
    Answer: Yes, 13 is prime because its only factors are 1 and 13.
19. **What are the factors of 15 other than 1 and 15?**
    Answer: The other factors of 15 are 3 and 5.
20. **How many steps does the rabbit jump each time in the chapter?**
    Answer: The rabbit jumps 4 steps each time.

21. **How many steps does the frog jump each time in the chapter?**
    Answer: The frog jumps 3 steps each time.
22. **What numbers does a jumper land on when jumping by 3 from 0?**
    Answer: The jumper lands on multiples of 3.
23. **Which last digits show that a number is divisible by 2?**
    Answer: A number is divisible by 2 if its last digit is 0, 2, 4, 6 or 8.
24. **Which last digits show that a number is divisible by 5?**
    Answer: A number is divisible by 5 if its last digit is 0 or 5.
25. **What must the last digit be for a number to be divisible by 10?**
    Answer: The last digit must be 0.
26. **Is 40 divisible by 10?**
    Answer: Yes, 40 is divisible by 10 because it ends in 0.
27. **Is 25 divisible by 5?**
    Answer: Yes, 25 is divisible by 5 because it ends in 5.
28. **Is 38 divisible by 2?**
    Answer: Yes, 38 is divisible by 2 because it ends in 8.
29. **What is the only common factor of two consecutive numbers?**
    Answer: The only common factor of two consecutive numbers is 1.
30. **Is 0 a factor of a number, according to the chapter?**
    Answer: No, 0 cannot be a factor of a number.
31. **What is one common multiple of 4 and 6?**
    Answer: Twelve is a common multiple of 4 and 6.
32. **What do repeated equal jumps on a number line help us find?**
    Answer: Repeated equal jumps help us find the multiples of the jump size.

13.6 One-mark questions with Answers of HOTS Type: (30 Questions)

ONE-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – HOTS:

1. **A number is reached by both a jumper taking 3-step jumps and one taking 4-step jumps; what is the smallest positive number they could reach together?**
   Answer: The smallest positive number they could both reach is 12.
2. **Ravi says 18 is a common multiple of 3 and 6; is he correct, and why?**
   Answer: Yes, because 18 is a multiple of both 3 and 6.
3. **A rabbit jumps by 4 and a frog by 3, both starting at 0; will they both land on 8?**
   Answer: No, because 8 is not a multiple of 3.
4. **A jumper takes 5-step jumps from 0; will the jumper land on 25?**
   Answer: Yes, because 25 is a multiple of 5.
5. **A jumper takes 4-step jumps from 0; will the jumper land on 27?**
   Answer: No, because 27 is not divisible by 4.
6. **Can 3 be a common factor of 24 and 36? Give a reason.**
   Answer: Yes, because both 24 and 36 can be divided exactly by 3.
7. **Can 5 be a common factor of 24 and 36? Give a reason.**
   Answer: No, because neither 24 nor 36 is divisible by 5.
8. **A number is divisible by 2 and 5; what must its last digit be?**
   Answer: Its last digit must be 0.
9. **A number ends in 5; can it be divisible by 10?**
   Answer: No, because a number divisible by 10 must end in 0.
10. **A number ends in 8; which of 2, 5 and 10 must divide it?**
    Answer: Two must divide it because 8 is an even digit.

11. **A number ends in 0; which of 2, 5 and 10 divide it?**
    Answer: All three numbers, 2, 5 and 10, divide it.
12. **Mowgli jumps by 2 steps from 0; will he land on 13?**
    Answer: No, because 13 is not a multiple of 2.
13. **Mowgli jumps by 3 steps from 0; will he land on 21?**
    Answer: Yes, because 21 is a multiple of 3.
14. **A number has exactly two factors, 1 and itself; what kind of number is it?**
    Answer: It is a prime number.
15. **A student makes only one rectangular array for a number, using 1 row and the number of objects in that row; what might this suggest about the number?**
    Answer: It might be a prime number if no other factor arrays can be made.
16. **Could 15 be arranged in an array with 3 rows of equal size?**
    Answer: Yes, because $3 \times 5 = 15$.
17. **Could 15 be arranged in an array with 4 rows of equal size and no objects left over?**
    Answer: No, because 4 does not divide 15 exactly.
18. **A student claims that 1 is a factor of 37; is the claim correct?**
    Answer: Yes, because 1 divides every whole number exactly.
19. **A student claims that 0 is a factor of 12; is the claim correct?**
    Answer: No, because division by 0 is not possible.
20. **Two consecutive numbers are 14 and 15; what is their only common factor?**
    Answer: Their only common factor is 1.
21. **A number is a common multiple of 4 and 6 and is less than 24; what could it be?**
    Answer: It could be 12.
22. **A number is a common multiple of 3 and 6; must it also be a multiple of 3?**
    Answer: Yes, because being a common multiple means it is a multiple of both numbers.
23. **A number is a common factor of 8 and 12; could it be 4?**
    Answer: Yes, because 4 divides both 8 and 12 exactly.
24. **A number is a common factor of 8 and 12; could it be 5?**
    Answer: No, because 5 does not divide either number exactly.
25. **The hunting cycles are every 3 days and every 5 days; what is the first positive day on which both cycles meet?**
    Answer: They first meet after 15 days.
26. **Two animals start together, one moving in jumps of 4 and the other in jumps of 6; what is the first positive landing number they share?**
    Answer: They first share the landing number 12.
27. **A number is divisible by 5 but not by 10; what must its last digit be?**
    Answer: Its last digit must be 5.
28. **Can an odd number be divisible by 2?**
    Answer: No, because numbers divisible by 2 are even.
29. **A student lists 12, 24 and 36 as common multiples of 4 and 6; what pattern do these numbers show?**
    Answer: They are successive multiples of 12, which is a common multiple of 4 and 6.
30. **If 4 is a factor of 20, what multiplication fact can confirm it?**
    Answer: The fact $4 \times 5 = 20$ confirms that 4 is a factor of 20.

13.7 Two-mark questions with Answers of LOTS Type: (22 Questions)

TWO-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – LOTS:

1. **Write any four factors of 12.**
   Answer: Four factors of 12 are 1, 2, 3 and 4. Each divides 12 exactly.
2. **Write the factor pairs of 12.**
   Answer: The factor pairs are 1 and 12, 2 and 6, and 3 and 4. Each pair multiplies to make 12.
3. **Write the first four positive multiples of 4.**
   Answer: The first four positive multiples of 4 are 4, 8, 12 and 16. They are found by multiplying 4 by 1, 2, 3 and 4.
4. **Write the first four positive multiples of 3.**
   Answer: The first four positive multiples of 3 are 3, 6, 9 and 12. They are found by multiplying 3 by 1, 2, 3 and 4.
5. **Name two common multiples of 3 and 4.**
   Answer: Two common multiples of 3 and 4 are 12 and 24. Both numbers are divisible by 3 and by 4.
6. **Name two common multiples of 3 and 6.**
   Answer: Two common multiples of 3 and 6 are 6 and 12. Both numbers are divisible by 3 and by 6.
7. **What are the factors of 15 other than 1 and 15?**
   Answer: The other factors of 15 are 3 and 5. Their product is 15.
8. **Why is 13 a prime number?**
   Answer: The only factors of 13 are 1 and 13. Therefore, 13 has exactly two factors.
9. **Why is 12 a multiple of 3?**
   Answer: Twelve is divisible by 3 without a remainder. It can be written as $3 \times 4 = 12$.
10. **Write two common factors of 24 and 36.**
    Answer: Two common factors of 24 and 36 are 2 and 3. Both numbers divide 24 and 36 exactly.
11. **How can you check whether 5 is a factor of 25?**
    Answer: Divide 25 by 5. The answer is 5 with no remainder, so 5 is a factor of 25.
12. **How can you check whether 4 is a factor of 14?**
    Answer: Divide 14 by 4. It leaves a remainder, so 4 is not a factor of 14.
13. **State the divisibility rule for 2 and give one example.**
    Answer: A number is divisible by 2 if its last digit is 0, 2, 4, 6 or 8. For example, 38 is divisible by 2 because it ends in 8.
14. **State the divisibility rule for 5 and give one example.**
    Answer: A number is divisible by 5 if its last digit is 0 or 5. For example, 25 is divisible by 5 because it ends in 5.
15. **State the divisibility rule for 10 and give one example.**
    Answer: A number is divisible by 10 if its last digit is 0. For example, 40 is divisible by 10.
16. **Which numbers in this list are divisible by 2: 25, 38 and 45?**
    Answer: Only 38 is divisible by 2. It ends in the even digit 8.
17. **Which numbers in this list are divisible by 5: 22, 30 and 37?**
    Answer: Only 30 is divisible by 5. It ends in 0.
18. **Which numbers in this list are divisible by 10: 25, 40 and 55?**
    Answer: Only 40 is divisible by 10. Its last digit is 0.
19. **How does jumping by 4 steps on a number line show multiples of 4?**
    Answer: Start at 0 and move forward 4 steps each time. The landing numbers are 4, 8, 12, 16 and so on.

20. **What is a common factor of two numbers? Give an example.**
    Answer: A common factor divides both numbers exactly. For example, 2 is a common factor of 8 and 12.
21. **What is a common multiple of two numbers? Give an example.**
    Answer: A common multiple is a multiple of both numbers. For example, 12 is a common multiple of 3 and 4.
22. **What is the only common factor of two consecutive numbers?**
    Answer: The only common factor of two consecutive numbers is 1. For example, 1 is the only common factor of 5 and 6.

13.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

TWO-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – HOTS:

1. **A rabbit jumps by 4 and a frog by 3, starting at 0. What is the first positive number they will both reach, and why?**
   Answer: They will both first reach 12. Twelve is a multiple of both 4 and 3.
2. **A jumper takes 6-step jumps from 0. Will the jumper land on 30, and how can you check?**
   Answer: Yes, the jumper will land on 30. Since $6 \times 5 = 30$, it is a multiple of 6.
3. **A jumper takes 4-step jumps from 0. Can the jumper land on 26? Explain.**
   Answer: No, the jumper cannot land on 26. Twenty-six is not divisible by 4 without a remainder.
4. **A number is a common multiple of 3 and 5. Is 30 one such number, and why?**
   Answer: Yes, 30 is a common multiple of 3 and 5. It equals 3×10 and 5×6.
5. **A student says 18 is a common multiple of 4 and 6. Is the student correct? Give a reason.**
   Answer: No, the student is not correct. Eighteen is a multiple of 6 but not of 4.
6. **A student says 4 is a common factor of 16 and 24. Check the claim.**
   Answer: The claim is correct. Both 16 and 24 can be divided exactly by 4.
7. **Could 5 be a common factor of 20 and 25? Explain your answer.**
   Answer: Yes, 5 is a common factor of 20 and 25. Both numbers can be divided exactly by 5.
8. **Could 3 be a common factor of 15 and 20? Explain your answer.**
   Answer: No, 3 is not a common factor of both numbers. It divides 15 but does not divide 20 exactly.
9. **A student makes an array of 18 objects using 3 rows. How many objects are in each row?**
   Answer: There are 6 objects in each row. This is because $3 \times 6 = 18$.
10. **Can 14 objects be arranged in 4 equal rows with none left over? Explain.**
    Answer: No, 14 objects cannot be arranged in 4 equal rows without any left over. Four does not divide 14 exactly.
11. **A student says 17 is prime because it has no factors. What correction should be made?**
    Answer: Seventeen is prime, but it does have factors. Its factors are 1 and 17.
12. **Can 1 be a prime number? Explain using its factors.**
    Answer: No, 1 is not prime. It has only one factor, while a prime number has exactly two factors.
13. **A number ends in 0. Which of 2, 5 and 10 must divide it? Explain.**
    Answer: All three numbers divide it. A number ending in 0 is divisible by 2, 5 and 10.

14. **A number ends in 5. Which of 2, 5 and 10 divides it?**
    Answer: Five divides the number. A number ending in 5 is not divisible by 2 or 10.
15. **A number ends in 8. Which of 2, 5 and 10 divides it? Explain.**
    Answer: Two divides the number. A number ending in 8 is not divisible by 5 or 10.
16. **A student sorts 45 as divisible by 10. Is this correct, and what rule helps decide?**
    Answer: No, 45 is not divisible by 10. A number must end in 0 to be divisible by 10.
17. **Two friends jump along a number line, one by 3 and one by 6. What do you notice about the numbers reached by both?**
    Answer: Every multiple of 6 is also a multiple of 3. Therefore, the common multiples include 6, 12 and 18.
18. **A student lists 12, 24 and 36 as common multiples of 4 and 6. Why are these correct?**
    Answer: Each number is divisible by 4. Each is also divisible by 6.
19. **Can 0 be reached by both a 3-step jumper and a 4-step jumper starting at 0? Does this make 0 the first positive common multiple?**
    Answer: Both jumpers start at 0, so they are together there. Zero is not a positive number, so it is not the first positive common multiple.
20. **A student says 2 is a common factor of 14 and 21. Is the claim correct?**
    Answer: No, 2 is not a common factor of 14 and 21. It divides 14 but does not divide 21 exactly.
21. **What is the only common factor of 16 and 17, and how can you tell they are consecutive?**
    Answer: Their only common factor is 1. Seventeen comes immediately after 16.
22. **A number is divisible by both 2 and 5. What must its last digit be, and which other number must divide it?**
    Answer: Its last digit must be 0. Therefore, it is also divisible by 10.
23. **A student says 25 is a multiple of 5 but not a factor of 5. Is this correct? Explain.**
    Answer: Yes, the statement is correct. Five divides 25, but 25 does not divide 5 exactly.
24. **A rabbit jumps by 4 and a deer by 6. Can they both reach 24? Show why.**
    Answer: Yes, they can both reach 24. It is 6 jumps of 4 and 4 jumps of 6.
25. **Why is 12 a common factor of 12 and 24, but not a common factor of 12 and 18?**
    Answer: Twelve divides both 12 and 24 exactly. It does not divide 18 exactly.

13.9. Three-mark questions with Answers of LOTS Type: (18 Questions)

THREE-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – LOTS:

1. **List the factors of 12 and show one factor pair.**
   Answer: The factors of 12 are 1, 2, 3, 4, 6 and 12. One factor pair is 2 and 6. Their product is 12.
2. **Write three factor pairs of 12.**
   Answer: One factor pair is 1 and 12. Another is 2 and 6. The third is 3 and 4.
3. **Write the first five positive multiples of 4.**
   Answer: The first five positive multiples of 4 are 4, 8, 12, 16 and 20. They are found by multiplying 4 by 1, 2, 3, 4 and 5. Each number is divisible by 4.
4. **Write the first five positive multiples of 3.**
   Answer: The first five positive multiples of 3 are 3, 6, 9, 12 and 15. They are found by multiplying 3 by 1, 2, 3, 4 and 5. Each number is divisible by 3.

5. **List three common multiples of 3 and 4.**
   Answer: Three common multiples of 3 and 4 are 12, 24 and 36. Each is divisible by 3. Each is also divisible by 4.
6. **List three common multiples of 3 and 6.**
   Answer: Three common multiples of 3 and 6 are 6, 12 and 18. Each is divisible by 3. Each is also divisible by 6.
7. **List the factors of 15.**
   Answer: The factors of 15 are 1, 3, 5 and 15. Three multiplied by 5 equals 15. Each listed number divides 15 exactly.
8. **Explain why 13 is a prime number.**
   Answer: The factors of 13 are 1 and 13. It has exactly two factors. Therefore, 13 is prime.
9. **Name three common factors of 24 and 36.**
   Answer: Three common factors of 24 and 36 are 1, 2 and 3. Each divides 24 exactly. Each also divides 36 exactly.
10. **Show that 4 is a factor of 20.**
    Answer: Divide 20 by 4. The answer is 5 with no remainder. Therefore, 4 is a factor of 20.
11. **Show how a jumper can reach 12 by making jumps of 3.**
    Answer: Start at 0 and jump 3 steps each time. The landing numbers are 3, 6, 9 and 12. The jumper reaches 12 after four jumps.
12. **State the divisibility rule for 2 and give two examples.**
    Answer: A number is divisible by 2 if its last digit is 0, 2, 4, 6 or 8. The number 38 is divisible by 2. The number 40 is also divisible by 2.
13. **State the divisibility rule for 5 and give two examples.**
    Answer: A number is divisible by 5 if its last digit is 0 or 5. The number 25 is divisible by 5. The number 30 is also divisible by 5.
14. **State the divisibility rule for 10 and give two examples.**
    Answer: A number is divisible by 10 if its last digit is 0. The number 40 is divisible by 10. The number 90 is also divisible by 10.
15. **Write the common factors of 12 and 16.**
    Answer: The common factors of 12 and 16 are 1, 2 and 4. Each of these divides 12 exactly. Each also divides 16 exactly.
16. **Write the common factors of 9 and 21.**
    Answer: The common factors of 9 and 21 are 1 and 3. Both numbers divide exactly by 3. They also both divide exactly by 1.
17. **Write the multiples of 6 up to 30.**
    Answer: The multiples of 6 up to 30 are 6, 12, 18, 24 and 30. They are found by multiplying 6 by 1, 2, 3, 4 and 5. Each is divisible by 6.
18. **Name the common factors of 12 and 13.**
    Answer: The only common factor of 12 and 13 is 1. Twelve is divisible by 1. Thirteen is also divisible by 1.

13.10. Three-mark questions with Answers of HOTS Type: (15 Questions)

THREE-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – HOTS:

1. **Robby jumps 4 steps at a time and Deeku jumps 6 steps at a time, both starting at 0. Will they both reach 24, and how many jumps will each make?**
   Answer: Yes, both will reach 24 because it is a multiple of 4 and 6. Robby will make 6 jumps because $4 \times 6 = 24$. Deeku will make 4 jumps because $6 \times 4 = 24$.

2. **A rabbit jumps by 4 and a frog by 3. What is the first positive number they both land on, and how can you check?**
   Answer: The first positive number they both land on is 12. Twelve is reached by three jumps of 4. It is also reached by four jumps of 3.
3. **A student says 20 is a common multiple of 4 and 6. Check the claim using multiplication facts.**
   Answer: The claim is false because 20 is not a multiple of 6. Although $4 \times 5 = 20$, no whole-number multiplication fact makes $6 \times$ a number equal to 20. Therefore, 20 is not a common multiple of 4 and 6.
4. **Can 3 be a common factor of 18 and 27? Explain how you know.**
   Answer: Yes, 3 is a common factor of 18 and 27. Eighteen divided by 3 equals 6. Twenty-seven divided by 3 equals 9.
5. **A student claims that 5 is a common factor of 20 and 32. Is the claim correct? Explain.**
   Answer: No, the claim is not correct. Five divides 20 exactly. Five does not divide 32 exactly.
6. **A teacher has 24 counters and wants to arrange them in equal rows of 6. How many rows will there be, and how does this show a factor?**
   Answer: There will be 4 rows. This is because $6 \times 4 = 24$. Therefore, 6 is a factor of 24.
7. **Can 18 objects be arranged in equal rows of 4 with none left over? Use division to explain.**
   Answer: No, 18 objects cannot be arranged in equal rows of 4 without any left over. Eighteen divided by 4 leaves a remainder. Therefore, 4 is not a factor of 18.
8. **A number ends in 0. Explain whether it is divisible by 2, 5 and 10.**
   Answer: It is divisible by 2 because 0 is an even last digit. It is divisible by 5 because its last digit is 0. It is divisible by 10 because it ends in 0.
9. **A number ends in 5. Which of 2, 5 and 10 can divide it, and why?**
   Answer: Five can divide the number because it ends in 5. Two cannot divide it because 5 is not an even digit. Ten cannot divide it because the number does not end in 0.
10. **Two animals go hunting every 3rd day and every 5th day, starting on the same day. After how many days will their hunting days first coincide?**
    Answer: Their hunting days will first coincide after 15 days. Fifteen is a multiple of 3 because $3 \times 5 = 15$. It is also a multiple of 5 because $5 \times 3 = 15$.
11. **Mowgli can jump by 2 steps. Which of these numbered places can he reach: 13, 14 and 17? Explain.**
    Answer: Mowgli can reach 14. Fourteen is a multiple of 2. Thirteen and 17 are not divisible by 2.
12. **A student says 21 is prime because it is odd. Explain why the student is mistaken.**
    Answer: Being odd does not always mean a number is prime. Twenty-one can be written as 3×7. Therefore, it has factors besides 1 and itself and is not prime.
13. **Find the common factors of 16 and 24, and explain how you know they are common.**
    Answer: The common factors are 1, 2, 4 and 8. Each of these numbers divides 16 exactly. Each also divides 24 exactly.
14. **A student lists 6, 12 and 18 as common multiples of 3 and 6. Explain why all three numbers belong in the list.**
    Answer: Each number is a multiple of 6. Since each is also divisible by 3, each is a multiple of 3. Therefore, all three are common multiples of 3 and 6.

15. **The numbers 14 and 15 are consecutive. What is their only common factor, and what multiplication fact shows that their product is a common multiple of both?**
Answer: Their only common factor is 1. Their product is 14 × 15 = 210. Since 210 is 14 multiplied by 15 and 15 multiplied by 14, it is a multiple of both numbers.

13.11 Five-mark questions with Answers of LOTS Type: (12 Questions)

FIVE-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – LOTS:

1. List the factors of 12 and show how they form factor pairs.
Answer:
1. The factors of 12 are 1, 2, 3, 4, 6 and 12.
2. One factor pair is 1 and 12.
3. Another factor pair is 2 and 6.
4. The third factor pair is 3 and 4.
5. Each pair multiplies to make 12.

2. Write the first five positive multiples of 4.
Answer:
1. The first positive multiple of 4 is 4.
2. The second positive multiple is 8.
3. The third positive multiple is 12.
4. The fourth positive multiple is 16.
5. The fifth positive multiple is 20.

3. Write the first five positive multiples of 3.
Answer:
1. The first positive multiple of 3 is 3.
2. The second positive multiple is 6.
3. The third positive multiple is 9.
4. The fourth positive multiple is 12.
5. The fifth positive multiple is 15.

4. List five common multiples of 3 and 4.
Answer:
1. Twelve is a common multiple of 3 and 4.
2. Twenty-four is a common multiple of 3 and 4.
3. Thirty-six is a common multiple of 3 and 4.
4. Forty-eight is a common multiple of 3 and 4.
5. Sixty is a common multiple of 3 and 4.

5. List the factors of 15 and show one factor pair.
Answer:
1. The factors of 15 are 1, 3, 5 and 15.
2. One factor pair is 1 and 15.
3. Another factor pair is 3 and 5.
4. One multiplied by 15 equals 15.
5. Three multiplied by 5 also equals 15.

6. Explain why 13 is a prime number.
Answer:
1. One is a factor of 13.
2. Thirteen is a factor of itself.
3. No other whole number divides 13 exactly.
4. Therefore, 13 has exactly two factors.
5. A number with exactly two factors is called a prime number.

7. List the common factors of 12 and 16.
Answer:
1. One is a common factor of 12 and 16.
2. Two is a common factor of 12 and 16.
3. Four is a common factor of 12 and 16.
4. Each of these numbers divides 12 exactly.
5. Each of these numbers also divides 16 exactly.

8. State the divisibility rule for 2 and give four examples.
Answer:
1. A number is divisible by 2 if its last digit is 0, 2, 4, 6 or 8.
2. Thirty-eight is divisible by 2.
3. Forty is divisible by 2.
4. Fifty-six is divisible by 2.
5. Eighty-four is divisible by 2.

9. State the divisibility rule for 5 and give four examples.
Answer:
1. A number is divisible by 5 if its last digit is 0 or 5.
2. Twenty-five is divisible by 5.
3. Thirty is divisible by 5.
4. Fifty-five is divisible by 5.
5. Ninety is divisible by 5.

10. Explain how to find multiples by jumping on a number line, using jumps of 3.
Answer:
1. Start at 0 on the number line.
2. Make a jump of 3 to reach 3.
3. Make another jump of 3 to reach 6.
4. Continue jumping by 3 to reach 9 and 12.
5. The landing numbers are multiples of 3.

11. State the divisibility rule for 10 and give four examples.
Answer:
1. A number is divisible by 10 if its last digit is 0.
2. Twenty is divisible by 10.
3. Forty is divisible by 10.
4. Seventy is divisible by 10.
5. Ninety is divisible by 10.

13.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

FIVE-MARK DESCRIPTIVE QUESTIONS WITH ANSWERS – HOTS:
1. A rabbit jumps 4 steps at a time and a frog jumps 3 steps at a time, both starting at 0. Find the first positive number they will both reach and explain.
Answer:
1. The rabbit lands on 4, 8, 12, 16, and so on.
2. The frog lands on 3, 6, 9, 12, and so on.
3. Twelve appears in both lists.
4. The rabbit reaches 12 after 3 jumps.
5. The frog reaches 12 after 4 jumps, so 12 is their first shared positive landing number.

2. A student says that 18 is a common multiple of 4 and 6. Check the student's claim.
Answer:
1. Eighteen is a multiple of 6 because $6 \times 3 = 18$.

2. To be a common multiple, it must also be a multiple of 4.
3. Eighteen is not divisible by 4 exactly.
4. Therefore, 18 is not a multiple of 4.
5. The student's claim is incorrect.

3. A teacher has 24 counters and wants to arrange them in equal rows. Find all the possible numbers of counters in each row.

Answer:

1. One possible arrangement has 1 counter in each row.
2. Other possible row sizes include 2, 3, and 4 counters.
3. The remaining possible row sizes are 6, 8, 12, and 24.
4. These numbers are all factors of 24.
5. Each row size makes an arrangement with no counters left over.

4. Compare 15 and 17 by listing their factors and identifying which is prime.

Answer:

1. The factors of 15 are 1, 3, 5, and 15.
2. The factors of 17 are 1 and 17.
3. Fifteen has more than two factors.
4. Seventeen has exactly two factors.
5. Therefore, 17 is prime and 15 is not prime.

5. Mowgli can jump by 2 steps from 0. Which of these numbered places can he reach: 14, 21, 36, and 45? Explain.

Answer:

1. Mowgli lands on multiples of 2 when he jumps by 2.
2. Fourteen is divisible by 2, so he can reach it.
3. Twenty-one is not divisible by 2, so he cannot reach it.
4. Thirty-six is divisible by 2, so he can reach it.
5. Forty-five is not divisible by 2, so he cannot reach it.

6. A student says that 5 is a common factor of 30 and 45. Check this statement and find another common factor.

Answer:

1. Thirty divided by 5 equals 6.
2. Forty-five divided by 5 equals 9.
3. So 5 divides both numbers exactly and is a common factor.
4. One is also a common factor of 30 and 45.
5. Both 1 and 5 divide the two numbers exactly.

7. Two animals jump by 3 and 6 steps from 0. Explain why every positive landing number of the 6-step jumper is also reached by the 3-step jumper.

Answer:

1. The 6-step jumper lands on 6, 12, 18, and so on.
2. Each of these numbers is divisible by 3.
3. The 3-step jumper lands on multiples of 3.
4. Therefore, the 3-step jumper also lands on 6, 12, 18, and so on.
5. So each positive landing number of the 6-step jumper is shared by both.

8. A number ends in 0. Explain which of 2, 5, and 10 can divide it.

Answer:

1. A number ending in 0 is divisible by 2.
2. It is also divisible by 5.
3. It is divisible by 10 as well.
4. For example, 40 can be divided exactly by 2, 5, and 10.
5. Therefore, all three numbers divide any number that ends in 0.

9. Two friends go hunting every 3rd day and every 5th day, starting on the same day. Find the first positive day when their hunting schedules coincide.
Answer:

1. The first friend's hunting days are multiples of 3.
2. The second friend's hunting days are multiples of 5.
3. Fifteen is a multiple of 3 because $3 \times 5 = 15$.
4. Fifteen is also a multiple of 5 because $5 \times 3 = 15$.
5. Their schedules first coincide after 15 days.

10. A student says that 1 is a prime number because it has no factors other than itself. Is the student correct?
Answer:

1. One has only one factor, which is 1.
2. A prime number must have exactly two factors.
3. These factors must be 1 and the number itself.
4. One does not have two different factors.
5. Therefore, 1 is not a prime number.

13.13 Five-mark questions with Answers of Applied Type: (10 Questions)

FIVE-MARK APPLIED DESCRIPTIVE QUESTIONS WITH ANSWERS
1. A teacher has 24 students and wants to arrange them in equal rows with no students left over. What different numbers of students can be placed in each row?
Answer:

1. One student can be placed in each row, making 24 rows.
2. Two students can be placed in each row, making 12 rows.
3. Three students can be placed in each row, making 8 rows.
4. Four students can be placed in each row, making 6 rows.
5. The possible row sizes are 1, 2, 3, 4, 6, 8, 12 and 24 because they are factors of 24.

2. A rabbit hops 4 metres at a time and a frog hops 3 metres at a time from the same starting point. At which positive distances will they both land during their first 24 metres?
Answer:

1. The rabbit lands at 4, 8, 12, 16, 20 and 24 metres.
2. The frog lands at 3, 6, 9, 12, 15, 18, 21 and 24 metres.
3. Twelve metres appears in both lists.
4. Twenty-four metres also appears in both lists.
5. They will both land at 12 metres and 24 metres during that distance.

3. A school has 30 notebooks. The notebooks must be packed into equal piles with none left over. What different numbers of notebooks could be in each pile?
Answer:

1. There could be 1 notebook in each pile, making 30 piles.
2. There could be 2 notebooks in each pile, making 15 piles.
3. There could be 3 notebooks in each pile, making 10 piles.
4. There could be 5 notebooks in each pile, making 6 piles.
5. The possible pile sizes are the factors of 30: 1, 2, 3, 5, 6, 10, 15 and 30.

4. A gardener plants 3 flowers in each row. How many flowers could be planted in total if there are 1, 2, 3, 4 or 5 rows?
Answer:

1. One row has 3 flowers.
2. Two rows have 6 flowers.
3. Three rows have 9 flowers.

4. Four rows have 12 flowers.
5. Five rows have 15 flowers, so the totals are multiples of 3.

5. Two lights flash at regular intervals: one every 4 seconds and the other every 6 seconds. If they flash together now, after how many seconds will they next flash together?

Answer:

1. The first light flashes after 4, 8, 12, 16 seconds and so on.
2. The second light flashes after 6, 12, 18 seconds and so on.
3. Twelve appears in both lists.
4. Therefore, both lights will next flash together after 12 seconds.
5. Twelve is a common multiple of 4 and 6.

6. A school has 18 red balls and 24 blue balls. The balls of each colour are to be divided into equal groups with none left over. What is the greatest group size that can be used for both colours?

Answer:

1. The factors of 18 include 1, 2, 3, 6, 9 and 18.
2. The factors of 24 include 1, 2, 3, 4, 6, 8, 12 and 24.
3. The common factors include 1, 2, 3 and 6.
4. The greatest common factor is 6.
5. So groups of 6 can be made from both colours without leftovers.

7. A bus visits a stop every 5 days, and a van visits it every 10 days. If both visit today, after how many days will they next visit on the same day?

Answer:

1. The bus visits after 5, 10, 15 days and so on.
2. The van visits after 10, 20, 30 days and so on.
3. Ten days appears in both lists.
4. Therefore, they will next visit together after 10 days.
5. Ten is a common multiple of 5 and 10.

8. A shopkeeper has 40 stickers and wants to give them out in equal groups of 2, 5 or 10. Can each group size be used without any stickers left over?

Answer:

1. Forty is divisible by 2 because it ends in 0.
2. Forty is divisible by 5 because it ends in 0.
3. Forty is divisible by 10 because it ends in 0.
4. The shopkeeper can make groups of 2, 5 or 10 stickers.
5. Each of these group sizes leaves no stickers over.

9. Mowgli jumps along numbered places by taking 5 steps each time, starting from 0. Which of these places can he reach: 20, 23, 30 and 35?

Answer:

1. Twenty is a multiple of 5, so Mowgli can reach it.
2. Twenty-three is not a multiple of 5, so he cannot reach it.
3. Thirty is a multiple of 5, so he can reach it.
4. Thirty-five is a multiple of 5, so he can reach it.
5. He can reach 20, 30 and 35.

10. A fruit seller has 25 apples and wants to arrange them in equal rows. Can the seller make 5 rows with the same number of apples in each row? Explain.

Answer:

1. The seller can make 5 equal rows.
2. Divide 25 apples equally among the 5 rows.
3. Each row will have 5 apples.
4. This is shown by $5 \times 5 = 25$.

5. Therefore, 5 is a factor of 25.

13.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

OLYMPIAD-STYLE MULTIPLE-CHOICE QUESTIONS WITH ANSWERS:

1. **Which list shows all the factors of 12?**
   A. 1, 2, 3, 4, 6, 12
   B. 1, 2, 3, 6, 12
   C. 2, 3, 4, 6
   D. 1, 3, 4, 12
   Answer: A. 1, 2, 3, 4, 6, 12
2. **Which number is not a factor of 36?**
   A. 4
   B. 6
   C. 9
   D. 5
   Answer: D. 5
3. **What is the first positive number reached by both a 4-step jumper and a 6-step jumper?**
   A. 8
   B. 10
   C. 12
   D. 24
   Answer: C. 12
4. **How many factors does 24 have?**
   A. 6
   B. 7
   C. 8
   D. 9
   Answer: C. 8
5. **Which number is prime?**
   A. 15
   B. 17
   C. 21
   D. 27
   Answer: B. 17
6. **Which number is a common factor of both 12 and 18?**
   A. 5
   B. 8
   C. 6
   D. 9
   Answer: C. 6
7. **Which number is a common multiple of 3 and 5?**
   A. 15
   B. 18
   C. 20
   D. 25
   Answer: A. 15
8. **A jumper takes 4 steps each time. Where will the jumper land after 6 jumps?**
   A. 20

B. 22
C. 24
D. 26
Answer: C. 24

9. **Which number is divisible by 5 but not by 10?**
A. 40
B. 55
C. 60
D. 70
Answer: B. 55

10. **Which number is divisible by 2, 5 and 10?**
A. 25
B. 32
C. 45
D. 40
Answer: D. 40

11. **Which number has exactly two factors?**
A. 1
B. 9
C. 19
D. 21
Answer: C. 19

12. **Which is the greatest common factor of 8 and 12?**
A. 2
B. 3
C. 4
D. 6
Answer: C. 4

13. **Which number is not a common multiple of 4 and 6?**
A. 12
B. 24
C. 30
D. 36
Answer: C. 30

14. **Which factor pair makes 30?**
A. 4 × 7
B. 5 × 6
C. 3 × 8
D. 2 × 14
Answer: B. 5 × 6

15. **Which number is a factor of 48?**
A. 7
B. 9
C. 12
D. 14
Answer: C. 12

16. **What number fills the blank? \(7 \times \square = 42\)**
A. 5
B. 6
C. 7

D. 8
Answer: B. 6

17. **What is the smallest positive common multiple of 3 and 5?**
A. 8
B. 10
C. 15
D. 30
Answer: C. 15
18. **Which number is divisible by 2?**
A. 35
B. 47
C. 58
D. 65
Answer: C. 58
19. **Which number is divisible by 10?**
A. 125
B. 230
C. 345
D. 452
Answer: B. 230
20. **A student makes arrays of 20 counters. How many different factor pairs can be made?**
A. 2
B. 3
C. 4
D. 5
Answer: B. 3
The pairs are 1 × 20, 2 × 10 and 4 × 5.
21. **What is the next multiple of 6 after 18?**
A. 20
B. 22
C. 24
D. 26
Answer: C. 24
22. **Which number is a common factor of 15 and 25?**
A. 2
B. 3
C. 5
D. 10
Answer: C. 5
23. **Which number has the factors 1, 2, 4 and 8, and no others?**
A. 8
B. 12
C. 16
D. 24
Answer: A. 8
24. **A rabbit jumps 4 steps and a frog jumps 3 steps. Which number will they both reach?**
A. 10
B. 14

C. 18
D. 24
Answer: D. 24

25. **Which statement about consecutive numbers is correct?**
A. They always have 2 as a common factor.
B. Their only common factor is 1.
C. They are always prime numbers.
D. They have no common factors.
Answer: B. Their only common factor is 1.

26. **Which number is a multiple of both 4 and 8?**
A. 12
B. 16
C. 18
D. 20
Answer: B. 16

27. **Which number is divisible by 2 but not by 5?**
A. 30
B. 45
C. 62
D. 75
Answer: C. 62

28. **Which number is divisible by 5 but not by 2?**
A. 20
B. 35
C. 40
D. 50
Answer: B. 35

29. **If a number is divisible by both 2 and 5, which must be its last digit?**
A. 2
B. 5
C. 8
D. 0
Answer: D. 0

30. **Which pair shows two common factors of 24 and 36?**
A. 5 and 7
B. 2 and 3
C. 4 and 5
D. 8 and 9
Answer: B. 2 and 3

31. **Which number is both a multiple of 3 and a factor of 18?**
A. 4
B. 6
C. 10
D. 20
Answer: B. 6

32. **Sher Khan hunts every 3rd day and Bagheera hunts every 5th day. After how many days will they first hunt together again?**
A. 8
B. 10
C. 15

D. 20
Answer: C. 15

13.15 Best Practices Opportunity List from the Chapter: (15 Ideas)

Best Practices for Teaching Chapter 13: "Animal Jumps":

(1) **Begin with a number-line activity:** Ask students to make equal jumps from 0 and name the numbers they land on.
(2) **Use physical movement:** Mark numbers on the classroom floor and let students hop by 2, 3, 4 or 5 steps to experience multiples.
(3) **Use counters to make arrays:** Give students counters and let them arrange a number in equal rows to discover its factor pairs.
(4) **Connect multiplication and division:** Show that if \(3 \times 4 = 12\), then 3 and 4 are factors of 12, and 12 is a multiple of both.
(5) **Teach through examples before rules:** Explore several numbers together before asking students to describe patterns in their factors or multiples.
(6) **Use familiar situations:** Discuss repeated events, such as two animals visiting a place every few days, to introduce common multiples.
(7) **Model common factors with groups:** Have students divide counters into equal groups in different ways, then identify group sizes that work for two numbers.
(8) **Use clear mathematical vocabulary:** Review and display the terms *factor*, *multiple*, *common factor*, *common multiple* and *prime number*.
(9) **Teach divisibility rules with number cards:** Let students sort number cards by whether they are divisible by 2, 5 or 10, and explain their choices.
(10) **Encourage students to explain their reasoning:** Ask "How do you know?" after answers, so students practise checking factors and multiples rather than guessing.
(11) **Use pair and group work:** Give pairs different numbers to explore with arrays or jumps, then ask them to share their results with the class.
(12) **Check understanding during the lesson:** Use quick oral questions, mini whiteboards or exit slips to see whether students can identify factors, multiples and common numbers.
(13) **Provide varied levels of practice:** Start with small numbers and familiar examples, then offer larger numbers or challenge questions for students who are ready.
(14) **Address misconceptions directly:** Discuss why a factor divides exactly, why 0 cannot be a factor, and why 1 is not a prime number.
(15) **Include a short review game:** Call out a number and ask students to show whether it is a factor, a multiple, or neither for a chosen number.

These ideas draw on the chapter's use of arrays, number-line jumps, common factors and multiples, prime numbers, and divisibility by 2, 5 and 10.

13.16 Innovations Opportunity List from the Chapter: (15 Ideas)

Innovations for Teaching and Learning "Animal Jumps":

(1) **Interactive digital number-line game:** Use a projector or tablet game where students choose a jump size and predict the landing numbers.
(2) **QR-code maths trail:** Place QR codes around the classroom; each reveals a factor, multiple or divisibility challenge for students to solve at that station.
(3) **Student-designed jump videos:** Ask groups to record a short video showing jumps of 3, 4 or 5 and explaining which numbers are multiples.
(4) **Virtual array builder:** Use a simple digital grid or virtual counters so students can create arrays and discover factor pairs by rearranging objects.

(5) **"Find the hidden number" challenge:** Give students clues such as "I am a multiple of 4 and 6 and less than 30" and have them identify the number.
(6) **Classroom escape-room activity:** Create a sequence of factor and multiple puzzles; each correct answer gives a clue needed to solve the next one.
(7) **Student-made board game:** Invite groups to design a path game in which players move by rolling a die and answer factor, multiple or divisibility questions to advance.
(8) **Human number line:** Give students number cards and ask them to stand in order; classmates identify where a 3-step or 4-step jumper would land.
(9) **Digital sorting challenge:** Use an interactive board or a simple slide activity to sort numbers into "divisible by 2," "divisible by 5" and "divisible by 10."
(10) **Maths story creation:** Students write or act out a short story about animals with different jump sizes, then identify the common multiples where the animals meet.
(11) **Create-a-quiz project:** In pairs, students make a short quiz on factors, multiples or prime numbers using paper cards or a classroom quiz app, then exchange quizzes.
(12) **Pattern-spotting investigation:** Display several multiples lists and ask students to find, describe and present patterns in where the lists meet.
(13) **Audio explanations:** Let students record a brief voice note explaining how they know a number is a factor or multiple, helping them practise mathematical language.
(14) **Home number hunt:** Ask students to find examples of numbers in daily life—such as quantities divisible by 2, 5 or 10—and bring them back for a class sorting activity.

These ideas build on the chapter's number-line jumps, arrays, factors, multiples, prime numbers and divisibility by 2, 5 and 10.

13.17: Practicing Questions/Question Bank:

Question Bank: Chapter 13 — "Animal Jumps":

A. Fill in the Blanks:

1. A number that divides another number exactly is called a _____.
   Answer: factor

2. The product of a number and a whole number is a _____ of that number.
   Answer: multiple

3. The factors of 12 are 1, 2, 3, 4, 6 and _____.
   Answer: 12

4. The first positive common multiple of 3 and 4 is _____.
   Answer: 12

5. A number with exactly two factors, 1 and itself, is called a _____ number.
   Answer: prime

6. A number is divisible by 5 if its last digit is 0 or _____.
   Answer: 5

7. A number is divisible by 10 if its last digit is _____.
   Answer: 0

8. The only common factor of two consecutive numbers is _____.
   Answer: 1

9. \(3 \times 5 =\) _____.
   Answer: 15

10. Jumps of 4 from 0 land on _____ of 4.
Answer: multiples

B. One-Mark Descriptive Questions:

1. **What is a factor of a number?**
Answer: A factor divides a number exactly.

2. **What is a multiple of a number?**
Answer: A multiple is the product of that number and a whole number.

3. **Name two factors of 15.**
Answer: Two factors of 15 are 3 and 5.

4. **Is 24 a multiple of 6?**
Answer: Yes, because $6 \times 4 = 24$.

5. **Name a common multiple of 3 and 6.**
Answer: Twelve is a common multiple of 3 and 6.

6. **Name a common factor of 8 and 12.**
Answer: Four is a common factor of 8 and 12.

7. **Why is 17 a prime number?**
Answer: Its only factors are 1 and 17.

8. **What last digit can a number have to be divisible by 10?**
Answer: It must end in 0.

9. **Will a jumper taking 5-step jumps land on 30?**
Answer: Yes, because 30 is a multiple of 5.

10. **Can 0 be a factor of a number?**
Answer: No, 0 cannot be a factor.

C. Two-Mark Descriptive Questions:

1. **Write the factors of 10.**
Answer: The factors of 10 are 1, 2, 5 and 10. Each divides 10 exactly.

2. **Write the first four positive multiples of 6.**
Answer: They are 6, 12, 18 and 24. They are found by multiplying 6 by 1, 2, 3 and 4.

3. **Explain why 5 is a common factor of 20 and 25.**
Answer: Twenty divided by 5 equals 4. Twenty-five divided by 5 equals 5.

4. **State the divisibility rule for 2 and give one example.**
Answer: A number is divisible by 2 if its last digit is 0, 2, 4, 6 or 8. For example, 46 is divisible by 2.

5. **Name two common multiples of 4 and 6.**
Answer: Twelve and 24 are common multiples of 4 and 6. Both numbers are divisible by 4 and by 6.

D. Three-Mark Descriptive Questions:

1. **List the factors of 18 and show one factor pair.**
   Answer: The factors of 18 are 1, 2, 3, 6, 9 and 18. One factor pair is 2 and 9. Two multiplied by 9 equals 18.

2. **A rabbit jumps by 4 and a frog jumps by 3, both starting at 0. Name the first positive number they both reach and explain.**
   Answer: They both first reach 12. The rabbit reaches it after three jumps of 4. The frog reaches it after four jumps of 3.

3. **Write the divisibility rules for 2, 5 and 10.**
   Answer: A number is divisible by 2 if it ends in 0, 2, 4, 6 or 8. A number is divisible by 5 if it ends in 0 or 5. A number is divisible by 10 if it ends in 0.

4. **List the common factors of 12 and 16.**
   Answer: The common factors are 1, 2 and 4. Each divides 12 exactly. Each also divides 16 exactly.

5. **Explain why 21 is not a prime number.**
   Answer: Twenty-one can be written as 3 × 7. So 3 and 7 are factors of 21. It has more than two factors.

E. Five-Mark Descriptive Questions:

1. **List the factors of 24 and show three factor pairs.**
   Answer:
   1. The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.
   2. One factor pair is 1 and 24.
   3. Another factor pair is 2 and 12.
   4. Another factor pair is 3 and 8.
   5. Each pair multiplies to make 24.

2. **Write the first five positive multiples of 3 and the first five positive multiples of 4. Then name their common multiples from the lists.**
   Answer:
   1. The first five positive multiples of 3 are 3, 6, 9, 12 and 15.
   2. The first five positive multiples of 4 are 4, 8, 12, 16 and 20.
   3. Twelve appears in both lists.
   4. Therefore, 12 is a common multiple of 3 and 4.
   5. It is the only common multiple in these two lists.

3. **A teacher has 20 counters. Show three ways to arrange them in equal rows with no counters left over.**
   Answer:
   1. The counters can be arranged in 1 row of 20.
   2. They can be arranged in 2 rows of 10.
   3. They can be arranged in 4 rows of 5.

4. They can also be arranged in 5 rows of 4.
5. The row sizes are factors of 20.

4. **A number ends in 0. Explain whether it is divisible by 2, 5 and 10. Give an example.**
   Answer:
   1. A number ending in 0 is divisible by 2.
   2. It is also divisible by 5.
   3. It is divisible by 10 as well.
   4. For example, 40 ends in 0.
   5. So 40 is divisible by 2, 5 and 10.

5. **Two animals jump along a trail: one jumps by 3 steps and the other by 5 steps. Find the first positive number they both reach and show why.**
   Answer:
   1. The first animal lands on multiples of 3.
   2. The second animal lands on multiples of 5.
   3. Fifteen is a multiple of 3 because $3 \times 5 = 15$.
   4. Fifteen is a multiple of 5 because $5 \times 3 = 15$.
   5. Therefore, 15 is their first shared positive landing number.

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5th Standard Maths Book Chapter 14

Chapter 14: Maps And Locations

14.1 Summary of the Chapter:

Summary: Maps and Locations:

(1) The four main directions are **North, South, East and West**. A direction symbol or compass rose shows where each direction lies.

(2) The rising Sun helps us identify **East**. When we face East, **North** is to our left, **South** is to our right, and **West** is behind us.

(3) A **compass** is another tool that can help people find directions. Birds also travel long distances during migration and find their way.

(4) We can describe where an object is by telling its direction in relation to another object—for example, a bed may be north of a girl.

(5) A **map** is a drawing that shows places and how they are arranged. We can use a map to locate homes, roads, parks, buildings and other places.

(6) Maps help us **plan and follow routes**. To trace a route, we observe the starting point, roads, turns, directions and destination.

(7) On a street map, we can compare locations and answer questions such as which house is east of another or which bus stop is closest.

(8) A **metro map** uses coloured lines to show different train routes. Symbols and station names help passengers understand the map and choose where to change lines.

(9) A map can include a **key** that explains the symbols used. We can also make a school map and mark places or hidden objects on it.

(10) A grid map helps show how far and in which direction to move. Each grid space may represent a fixed distance, such as **1 centimetre**.

(11) Grid locations can be written as ordered pairs such as **(1, 1)**. First, move horizontally to the column; then move vertically to the row.

(12) Maps combine **directions, symbols, routes, distances and locations** to help us describe places and travel from one place to another.

14.2 Important Formulas:

Important Rules and Formulas: Maps and Locations:

This chapter focuses on directions, maps and locations rather than numerical formulas. These key rules help solve its questions.

(1) Facing the rising Sun:
Front = East; behind = West; left = North; right = South.

(2) Opposite directions:
North ↔ South; East ↔ West.

(3) Grid location:
Position = (column, row)
Move horizontally to find the column first, then vertically to find the row.
Example: **(4, 1)** means column 4, row 1.

(4) Distance on a grid:
Distance = number of grid spaces × length of each space
For example, if each space is 1 cm, moving 3 spaces covers 3 cm.

(5) Total route distance:
Total distance = sum of the distances travelled in each part of the route.

(6) Turning while facing a direction:
A **right turn** is clockwise; a **left turn** is anticlockwise. For example, facing North, a right turn points East and a left turn points West.

(7) Map key:
Use the map's **key** to understand what its symbols represent.

(8) Finding a route:
Follow the roads or marked lines from the starting point, noting each direction and turn until you reach the destination.

14.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks: LOTS Questions:

1. The Sun rises in the _____.
   Answer: East
2. When we face the rising Sun, our left side points towards the _____.
   Answer: North
3. When we face the rising Sun, our right side points towards the _____.
   Answer: South
4. The direction behind us when we face the rising Sun is _____.
   Answer: West
5. The four cardinal directions are North, South, East and _____.
   Answer: West
6. A tool used to find directions is a _____.
   Answer: Compass
7. A drawing that shows the locations of places is called a _____.
   Answer: Map
8. A map can help us find the location of a _____.
   Answer: Place
9. A symbol key on a map explains what the map's _____ mean.
   Answer: Symbols
10. On a map, a direction arrow can show _____.
    Answer: Directions
11. The direction opposite to North is _____.
    Answer: South
12. The direction opposite to East is _____.
    Answer: West
13. A right turn from North points towards the _____.
    Answer: East
14. A left turn from North points towards the _____.
    Answer: West
15. The chapter shows children using a map to find places in a _____.
    Answer: Zoo
16. The bus in the street-map activity starts from the _____ area.
    Answer: Parking
17. A street map can show roads, houses and bus _____.
    Answer: Stops
18. Coloured lines on a metro map represent different metro _____.
    Answer: Routes
19. The Qutb Minar metro station is marked on the _____ Line.
    Answer: Yellow

20. The Supreme Court metro station is marked on the _____ Line.
    Answer: Blue
21. To travel from one metro line to another, passengers may need to change at a _____.
    Answer: Station
22. A grid has horizontal rows and vertical _____.
    Answer: Columns
23. On the zoo grid, the first move is made _____ from 0.
    Answer: Horizontally
24. After moving horizontally on the grid, we move _____.
    Answer: Vertically
25. The position where the first row and first column meet is written as _____.
    Answer: (1, 1)
26. In the ordered pair (4, 1), the first number gives the _____.
    Answer: Column
27. In the ordered pair (4, 1), the second number gives the _____.
    Answer: Row
28. The tortoise is located at position _____ on the zoo grid.
    Answer: (4, 1)
29. The panda is located at position _____ on the zoo grid.
    Answer: (1, 1)
30. Each dotted space on the ant's grid represents _____ centimetre.
    Answer: 1
31. To reach the laddoos, the ant crawls 2 cm towards the _____.
    Answer: East
32. The ant can move along the _____ lines on the grid.
    Answer: Dotted
33. The arrows on the ant's grid show the direction in which it can _____.
    Answer: Move
34. A map of a school can show different places in the _____.
    Answer: School
35. Red dots or flags can mark the places where hidden _____ are placed.
    Answer: Objects

14.4 Fill-Up the Blank HOTS type questions with Answers: (32 Questions)

Fill in the Blanks: HOTS Questions:

1. If Manu faces the rising Sun and turns to his left, he faces _____.
   Answer: North
2. If a person is facing West, the direction behind them is _____.
   Answer: East
3. A child faces North and turns right. The child is now facing _____.
   Answer: East
4. A child faces South and turns left. The child is now facing _____.
   Answer: East
5. A child faces East, turns right, and then turns right again. The child now faces _____.
   Answer: West
6. If a person faces West and turns left, they face _____.
   Answer: South

7. A tent is west of a road. The road is therefore _____ of the tent.
   Answer: East
8. If the green tent is south of the purple tent, the purple tent is _____ of the green tent.
   Answer: North
9. If the yellow tent is south of the lake, the lake is _____ of the yellow tent.
   Answer: North
10. If a tent is east of the lake, the lake is _____ of that tent.
    Answer: West
11. A traveller moves 3 grid spaces east. The traveller's eastward position changes by _____ spaces.
    Answer: 3
12. Starting at (1, 1), moving 3 spaces east reaches the position _____.
    Answer: (4, 1)
13. Starting at (4, 1), moving 2 spaces north reaches the position _____.
    Answer: (4, 3)
14. From (2, 5), moving 4 spaces east keeps the row the same and reaches column _____.
    Answer: 6
15. From (7, 3), moving 2 spaces north keeps the column the same and reaches row _____.
    Answer: 5
16. From (5, 6), moving 3 spaces west and 2 spaces south reaches _____.
    Answer: (2, 4)
17. From (3, 2), moving 4 spaces east and then 3 spaces north reaches _____.
    Answer: (7, 5)
18. A point is at (8, 4). To reach (8, 7), move _____ spaces north.
    Answer: 3
19. A point is at (6, 9). To reach (2, 9), move _____ spaces west.
    Answer: 4
20. If each grid space is 1 cm, travelling 5 spaces along a grid line covers _____ cm.
    Answer: 5
21. If each grid space is 1 cm, a route of 3 spaces east and 4 spaces north has a total travelled distance of _____ cm.
    Answer: 7
22. If two routes reach the same place, the route using fewer grid spaces is the _____ route.
    Answer: Shorter
23. When comparing two routes on a map, we count the distance of _____ part of each route.
    Answer: Every
24. A traveller moves east, then west by the same number of spaces. The traveller returns to the _____ column.
    Answer: Starting
25. If a route begins at the parking area and ends at a bus stop, the bus stop is the route's _____ point.
    Answer: Destination

26. A student wants to find the nearest bus stop from a house. The student should compare the _____ along the possible routes.
Answer: Distances
27. If two places lie on the same horizontal grid line, they are in the same _____.
Answer: Row
28. If two places lie on the same vertical grid line, they are in the same _____.
Answer: Column
29. On a metro map, a traveller who changes from one coloured line to another must identify a station where the lines _____.
Answer: Meet
30. If a map symbol is unfamiliar, the map's _____ should be checked to understand it.
Answer: Key
31. To guide a friend to a hidden object using a school map, you need to mark its _____ on the map.
Answer: Position
32. If the first number in a grid position is correct but the second number is wrong, the _____ is incorrect.
Answer: Row

14.5 One-mark questions with Answers of LOTS Type: (35 Questions)

One-Mark LOTS Questions with Answers:

1. **Which direction does the Sun rise in?**
Answer: The Sun rises in the East.
2. **What are the four cardinal directions?**
Answer: The four cardinal directions are North, South, East and West.
3. **Which direction is behind you when you face the rising Sun?**
Answer: West is behind you.
4. **Which direction is to your left when you face the rising Sun?**
Answer: North is to your left.
5. **Which direction is to your right when you face the rising Sun?**
Answer: South is to your right.
6. **What instrument can help us find directions?**
Answer: A compass can help us find directions.
7. **What is a map?**
Answer: A map is a drawing that shows places and their locations.
8. **What does a direction arrow show on a map?**
Answer: A direction arrow shows where the main directions lie.
9. **What does a map key explain?**
Answer: A map key explains the symbols used on a map.
10. **What can a street map show?**
Answer: A street map can show roads, houses and other places.
11. **Where did the children plan to go after visiting Qutb Minar?**
Answer: The children planned to visit the zoo.
12. **Where does the bus start its journey on the street map?**
Answer: The bus starts from the parking area.
13. **What do the coloured lines on a metro map represent?**
Answer: The coloured lines represent different metro routes.
14. **On which metro line is Qutb Minar station marked?**
Answer: Qutb Minar station is marked on the Yellow Line.

15. **On which metro line is Supreme Court station marked?**
    Answer: Supreme Court station is marked on the Blue Line.
16. **What must passengers do to travel from one metro line to another?**
    Answer: Passengers must change trains at a station where the lines connect.
17. **What two types of lines form a grid?**
    Answer: Horizontal and vertical lines form a grid.
18. **What is a vertical section of a grid called?**
    Answer: A vertical section of a grid is called a column.
19. **What is a horizontal section of a grid called?**
    Answer: A horizontal section of a grid is called a row.
20. **How do we begin locating a place on the zoo grid?**
    Answer: We begin by moving horizontally from zero.
21. **After moving horizontally on the zoo grid, which way do we move?**
    Answer: We then move vertically.
22. **How is the meeting point of the first row and first column written?**
    Answer: It is written as (1, 1).
23. **What is the position of the tortoise on the zoo grid?**
    Answer: The tortoise is at (4, 1).
24. **What is the position of the panda on the zoo grid?**
    Answer: The panda is at (1, 1).
25. **What does the first number in a grid position show?**
    Answer: The first number shows the column.
26. **What does the second number in a grid position show?**
    Answer: The second number shows the row.
27. **How far apart are the dotted grid lines in the ant activity?**
    Answer: The dotted grid lines are 1 centimetre apart.
28. **In which direction does the ant crawl to reach the laddoos?**
    Answer: The ant crawls towards the East.
29. **How far does the ant crawl east to reach the laddoos?**
    Answer: The ant crawls 2 centimetres east.
30. **Along which lines can the ant crawl to collect food?**
    Answer: The ant can crawl along the dotted lines.
31. **What do the arrows show on the ant's grid?**
    Answer: The arrows show the directions in which the ant can move.
32. **What can children mark on a school map to show where objects are hidden?**
    Answer: Children can mark hidden objects with red dots or flags.
33. **What should be included when making a map of the school?**
    Answer: A map of the school should include a key for its symbols.
34. **How can we find the direction of one object in relation to another?**
    Answer: We compare their positions using the directions shown on the map.
35. **What information can help us choose a route on a map?**
    Answer: Directions, roads, turns and distances can help us choose a route.

14.6 One-mark questions with Answers of HOTS Type: (35 Questions)

One-Mark HOTS Questions with Answers:

1. **A child faces the rising Sun and turns around. Which direction is the child facing?**
   Answer: The child is facing West.
2. **A traveller is facing South and turns right. Which direction will the traveller face?**
   Answer: The traveller will face West.

3. **A person faces East and turns left. Which direction will the person face?**
   Answer: The person will face North.
4. **A person faces West and turns right. Which direction will the person face?**
   Answer: The person will face North.
5. **A house is east of a park; in which direction is the park from the house?**
   Answer: The park is west of the house.
6. **A tent is north of a lake; in which direction is the lake from the tent?**
   Answer: The lake is south of the tent.
7. **The green tent is south of the purple tent; in which direction is the purple tent from the green tent?**
   Answer: The purple tent is north of the green tent.
8. **The yellow tent is south of the lake; in which direction should you look from the yellow tent to find the lake?**
   Answer: Look north from the yellow tent.
9. **A student walks east and then west by the same number of steps; where does the student end up?**
   Answer: The student returns to the starting point.
10. **A bus is travelling north and takes a right turn; which direction does it travel next?**
    Answer: It travels east.
11. **A bus is travelling east and takes a left turn; which direction does it travel next?**
    Answer: It travels north.
12. **A map user needs to identify what a symbol means; which part of the map should they check?**
    Answer: The user should check the map key.
13. **Two routes lead to the zoo, and one uses fewer grid spaces; which route is shorter?**
    Answer: The route with fewer grid spaces is shorter.
14. **On a grid, a traveller starts at (2, 3) and moves 4 spaces east; at which position does the traveller arrive?**
    Answer: The traveller arrives at (6, 3).
15. **A traveller starts at (5, 2) and moves 3 spaces north; at which position does the traveller arrive?**
    Answer: The traveller arrives at (5, 5).
16. **A traveller starts at (7, 4) and moves 2 spaces west; at which position does the traveller arrive?**
    Answer: The traveller arrives at (5, 4).
17. **A traveller starts at (3, 6) and moves 2 spaces south; at which position does the traveller arrive?**
    Answer: The traveller arrives at (3, 4).
18. **Starting at (1, 1), a child moves 3 spaces east and 2 spaces north; what is the child's final position?**
    Answer: The child's final position is (4, 3).
19. **Starting at (6, 5), a child moves 2 spaces west and 3 spaces north; what is the child's final position?**
    Answer: The child's final position is (4, 8).
20. **A point is at (4, 7), and another is at (4, 2); in which direction is the second point from the first?**
    Answer: The second point is south of the first.

21. **A point is at (9, 3), and another is at (5, 3); in which direction is the second point from the first?**
    Answer: The second point is west of the first.
22. **A traveller moves 3 grid spaces east and then 4 spaces north, with each space measuring 1 cm; how far do they travel altogether?**
    Answer: The traveller covers 7 cm altogether.
23. **An ant must travel 5 spaces on a grid where each space is 1 cm; what distance does it cover?**
    Answer: The ant covers 5 cm.
24. **A traveller moves 3 spaces east and then 3 spaces west; how many spaces away from the starting point is the traveller?**
    Answer: The traveller is 0 spaces away from the starting point.
25. **A traveller at (4, 1) must reach (4, 6); how many spaces north must the traveller move?**
    Answer: The traveller must move 5 spaces north.
26. **A traveller at (8, 5) must reach (3, 5); how many spaces west must the traveller move?**
    Answer: The traveller must move 5 spaces west.
27. **A traveller moves from (2, 2) to (2, 7); which coordinate stays unchanged?**
    Answer: The column coordinate stays unchanged.
28. **A traveller moves from (6, 4) to (9, 4); which coordinate stays unchanged?**
    Answer: The row coordinate stays unchanged.
29. **A child marks a hidden object on a school map but leaves out the key; what information will friends find difficult to understand?**
    Answer: Friends may find it difficult to understand what the map symbols mean.
30. **A passenger is on the Yellow Line and needs to continue on a different metro line; what should the passenger look for on the map?**
    Answer: The passenger should look for a station where the metro lines connect.
31. **A passenger wants to travel from Qutb Minar to Supreme Court; which line is marked for the destination station?**
    Answer: Supreme Court is marked on the Blue Line.
32. **A student faces the rising Sun, then turns left and walks forward; in which direction does the student walk?**
    Answer: The student walks north.
33. **A student faces the rising Sun, turns right, and walks forward; in which direction does the student walk?**
    Answer: The student walks south.
34. **On the zoo grid, the tortoise is at (4, 1) and the panda is at (1, 1); how many spaces west is the panda from the tortoise?**
    Answer: The panda is 3 spaces west of the tortoise.
35. **A route requires 2 spaces east, 3 spaces north, and 2 spaces west; how many spaces north of the starting point does it finish?**
    Answer: The route finishes 3 spaces north of the starting point.

14.7 Two-mark questions with Answers of LOTS Type: (20 Questions)

Two-Mark LOTS Questions with Answers:

1. **Name the four cardinal directions.**
   Answer: The four cardinal directions are North, South, East and West. They help us describe where places are located.
2. **How can we find East by observing the Sun?**
   Answer: The Sun rises in the East. When we face the rising Sun, we are facing East.
3. **What directions are to the left and right when we face East?**
   Answer: North is to the left when we face East. South is to the right.
4. **What is a compass used for?**
   Answer: A compass is used to find directions. It can help us understand which way to travel.
5. **What information can a map show?**
   Answer: A map can show places and their locations. It can also show roads and routes between places.
6. **What is the purpose of a map key?**
   Answer: A map key explains the symbols used on a map. It helps readers understand what each symbol represents.
7. **How can a map help someone plan a journey?**
   Answer: A map shows the route from one place to another. It helps the traveller follow roads and directions.
8. **What do coloured lines on a metro map represent?**
   Answer: Coloured lines represent different metro routes. They help passengers identify and follow the routes.
9. **On which metro lines are Qutb Minar and Supreme Court stations marked?**
   Answer: Qutb Minar station is marked on the Yellow Line. Supreme Court station is marked on the Blue Line.
10. **What should a passenger do when changing from one metro line to another?**
    Answer: The passenger should find a station where the lines connect. The passenger can then change to the required line.
11. **What are the rows and columns on a grid?**
    Answer: Rows run horizontally across a grid. Columns run vertically.
12. **How is a location written on the zoo grid?**
    Answer: A grid location is written as an ordered pair of numbers. The first number gives the column and the second gives the row.
13. **How do you locate a point on the zoo grid?**
    Answer: First, move horizontally from zero to the required column. Then move vertically to the required row.
14. **What is the position of the panda, and how is it found?**
    Answer: The panda is at (1, 1). It is at the meeting point of the first column and first row.
15. **What is the position of the tortoise on the zoo grid?**
    Answer: The tortoise is at (4, 1). Its position is found by reading the column first and the row second.
16. **What does each grid space measure in the ant activity?**
    Answer: Each grid space measures 1 centimetre. The ant moves along the dotted lines.
17. **How does the ant reach the laddoos in the grid activity?**
    Answer: The ant crawls 2 centimetres. It moves towards the East.
18. **How can children show hidden objects on a school map?**
    Answer: They can mark the positions with red dots or flags. They can make a key to explain the symbols.

19. **How can we describe the location of one object in a room?**
    Answer: We can name the object's direction in relation to a person or another object. For example, we can say that the bed is north of the girl.
20. **What can we learn by observing a street map?**
    Answer: We can see the arrangement of roads, houses and other places. We can use this information to trace routes and compare locations.

14.8. Two-mark questions with Answers of HOTS Type: (20 Questions)

Two-Mark HOTS Questions with Answers:

1. **A child faces the rising Sun, turns left, and then turns right. Which direction is the child facing at the end? Explain.**
   Answer: The child first faces North after turning left. The child faces East after turning right.
2. **A traveller faces South and turns left. Which direction does the traveller face, and what would happen after another left turn?**
   Answer: The traveller first faces East. After another left turn, the traveller faces North.
3. **A tent is west of a road, and another tent is east of the road. Where is the road in relation to each tent?**
   Answer: The road is east of the tent on its west side. The road is west of the tent on its east side.
4. **A purple tent is north of a green tent, and a yellow tent is south of a lake. What can you say about the purple tent and the yellow tent's relation to the lake?**
   Answer: The purple tent's position is described in relation to the green tent, not the lake. The yellow tent is south of the lake.
5. **Two routes on a map reach the same place, but one crosses fewer grid spaces. Which route should a traveller choose if they want the shorter route?**
   Answer: The traveller should choose the route that crosses fewer grid spaces. It covers a shorter distance when the spaces are equal in length.
6. **A student moves from (2, 3) to (5, 3). How did the student move, and which coordinate stayed the same?**
   Answer: The student moved 3 spaces east. The row coordinate stayed the same.
7. **A student moves from (4, 2) to (4, 6). How did the student move, and which coordinate changed?**
   Answer: The student moved 4 spaces north. The row coordinate changed while the column stayed the same.
8. **Starting at (1, 1), a child moves 2 spaces east and 3 spaces north. What is the final position?**
   Answer: The child reaches column 3 after moving east. The final position is (3, 4).
9. **A traveller at (7, 5) needs to reach (3, 5). Which direction should they move, and how many spaces?**
   Answer: The traveller should move west. They need to move 4 spaces.
10. **A traveller at (4, 2) must reach (4, 7). Which direction should they move, and how far?**
    Answer: The traveller should move north. They need to move 5 spaces.
11. **On a grid where each space is 1 cm, an ant crawls 3 spaces east and then 2 spaces north. What is the total distance covered?**
    Answer: The ant covers 3 cm east and 2 cm north. Its total distance is 5 cm.

12. **A traveller moves 4 spaces east and then 4 spaces west. How does the traveller's final position compare with the starting position?**
    Answer: The traveller returns to the starting column. The eastward and westward movements cancel each other.
13. **A map uses a small symbol for a bus stop, but the symbol is unfamiliar. How can a reader identify it?**
    Answer: The reader should look for the symbol in the map key. The key explains what the symbol represents.
14. **A friend marks a hidden object on a school map but does not include a key. What may be difficult for others, and how can this be fixed?**
    Answer: Others may not understand the symbols used on the map. Adding a key will explain them.
15. **A passenger needs to travel from a station on the Yellow Line to a station on the Blue Line. What should the passenger look for on the metro map?**
    Answer: The passenger should look for a station where the two lines connect. The passenger can change lines there.
16. **Why should a passenger study the metro map before choosing a route?**
    Answer: The map shows the coloured routes and station locations. It helps the passenger plan where to travel or change lines.
17. **A child is facing East and wants to walk north. Which way should the child turn first?**
    Answer: The child should turn left. North is to the left when facing East.
18. **A map shows a house east of a park. In which direction should someone travel from the house to reach the park?**
    Answer: The person should travel west. West is opposite to East.
19. **A student marks a place at (6, 4) but accidentally writes (4, 6). Why is the new position different?**
    Answer: The first number gives the column and the second gives the row. Swapping the numbers changes both the column and row location.
20. **The ant can reach the apple by more than one route on the grid. How can the student decide which route is shortest?**
    Answer: The student should count the grid spaces along each route. The route with the fewest spaces is the shortest.

14.9. Three-mark questions with Answers of LOTS Type: (15 Questions)

Three-Mark LOTS Questions with Answers:

1. **Name the four cardinal directions and state what they help us do.**
   Answer: The four cardinal directions are North, South, East and West. The Sun rises in the East. These directions help us describe the location of places.
2. **When you face the rising Sun, name the directions in front of you, behind you and to your left.**
   Answer: East is in front of you. West is behind you. North is to your left.
3. **When you face the rising Sun, name the directions to your right and behind you, and state the direction you face.**
   Answer: You face East. South is to your right. West is behind you.
4. **State three ways maps help us.**
   Answer: Maps show where places are located. They can show roads and routes. They help us find our way from one place to another.

5. **What three things can a reader use to understand a map?**
   Answer: The reader can observe the places shown. The reader can follow the direction arrow. The reader can check the key to understand the symbols.
6. **What information can a street map help a traveller find?**
   Answer: It can show roads. It can show houses and other places. It can help the traveller trace a route.
7. **What do coloured lines and station names help passengers do on a metro map?**
   Answer: Coloured lines show different metro routes. Station names identify places along the routes. Both help passengers plan their journey.
8. **Name the metro lines on which Qutb Minar and Supreme Court stations are marked, and state one use of the map.**
   Answer: Qutb Minar station is marked on the Yellow Line. Supreme Court station is marked on the Blue Line. The map helps passengers trace routes between stations.
9. **Describe the two kinds of lines that make up a grid.**
   Answer: Horizontal lines run across the grid. Vertical lines run up and down the grid. The spaces between them help show locations.
10. **Explain how to locate a point on the zoo grid.**
    Answer: Start at zero and move horizontally to the required column. Then move vertically to the required row. Write the location as a pair of numbers.
11. **What does each number in the grid position (4, 1) represent?**
    Answer: The first number, 4, gives the column. The second number, 1, gives the row. The point is where that column and row meet.
12. **State three facts about the ant's grid activity.**
    Answer: The ant moves along dotted lines. The arrows show the directions in which it can move. Each marked grid space represents 1 centimetre.
13. **Describe the ant's movement to reach the laddoos.**
    Answer: The ant starts from its marked position on the grid. It crawls 2 centimetres. It moves towards the East.
14. **How can children make and use a map of their school to find hidden objects?**
    Answer: They can draw a map showing places in the school. They can make a key to explain the symbols. They can mark hidden objects with red dots or flags.
15. **How can a map help children describe objects in a room?**
    Answer: Children can draw the room and mark where its objects are placed. They can show the directions from their position in the room. They can list objects found to the East, West, North and South.

14.10. Three-mark questions with Answers of HOTS Type: (20 Questions)

Three-Mark HOTS Questions with Answers:

1. **A child faces the rising Sun, turns left, and then turns right. Which direction is the child facing at each step?**
   Answer: The child first faces East. After turning left, the child faces North. After turning right, the child faces East again.
2. **A traveller faces South, turns right, and then turns left. What direction does the traveller face after each turn?**
   Answer: The traveller first faces South. After turning right, the traveller faces West. After turning left, the traveller faces South again.
3. **A house is east of a park, and the school is west of the park. Describe the direction of each place from the park.**

Answer: The house is east of the park. The school is west of the park. The house and school are in opposite directions from the park.

4. **The green tent is closest to the lake, the purple tent is north of the green tent, and the yellow tent is south of the lake. State the known relative locations.**
   Answer: The green tent is closest to the lake. The purple tent is north of the green tent. The yellow tent is south of the lake.
5. **A bus is travelling north and takes a right turn. It then takes a left turn. Which way does it travel after each turn?**
   Answer: After the right turn, the bus travels east. After the left turn, it travels north. The second turn returns it to its original direction.
6. **A student starts at (2, 3), moves 4 spaces east, then 2 spaces north. What is the student's final grid position?**
   Answer: Moving east changes the column from 2 to 6. Moving north changes the row from 3 to 5. The final position is (6, 5).
7. **A child starts at (7, 6), walks 3 spaces west, then 2 spaces south. What is the final position?**
   Answer: Moving west changes the column from 7 to 4. Moving south changes the row from 6 to 4. The final position is (4, 4).
8. **A traveller at (3, 2) must reach (3, 8). State the direction, number of spaces, and coordinate that stays the same.**
   Answer: The traveller must move north. The traveller moves 6 spaces. The column coordinate, 3, stays the same.
9. **A traveller at (9, 5) must reach (4, 5). State the direction, number of spaces, and coordinate that stays the same.**
   Answer: The traveller must move west. The traveller moves 5 spaces. The row coordinate, 5, stays the same.
10. **Starting at (1, 1), a child moves 5 spaces east and 4 spaces north. What is the final position, and which number represents the row?**
    Answer: The child reaches column 6 after moving east. The child reaches row 5 after moving north. The final position is (6, 5), and 5 represents the row.
11. **A point moves from (2, 7) to (6, 7). Explain the movement and identify what remains unchanged.**
    Answer: The point moves 4 spaces east. Its row remains 7. Only the column changes.
12. **A point moves from (8, 3) to (8, 6). Explain the movement and identify what remains unchanged.**
    Answer: The point moves 3 spaces north. Its column remains 8. Only the row changes.
13. **On a grid where each space is 1 cm, an ant travels 4 spaces east and 3 spaces north. How far does it travel altogether, and how do you know?**
    Answer: The ant travels 4 cm east and 3 cm north. The two parts of the route add to 7 cm. Therefore, the total distance is 7 cm.
14. **Two routes lead to the same food on the ant's grid. One route uses 8 spaces and the other uses 6 spaces. Which route is shorter, and by how many spaces?**
    Answer: The route using 6 spaces is shorter. It uses fewer grid spaces than the 8-space route. It is shorter by 2 spaces.
15. **A student marks a hidden object on a school map with a symbol that friends do not understand. What two changes would make the map clearer?**
    Answer: The student should add a key explaining the symbol. The student should mark the object clearly on the map. These changes help friends locate and understand it.

16. **A passenger needs to travel from a station on the Yellow Line to one on the Blue Line. What should the passenger identify before planning the route?**
    Answer: The passenger should identify the starting station. The passenger should find a station where the lines connect. The passenger can then plan where to change lines.
17. **A student faces East and wants to walk first north and then west. Which turns should the student make?**
    Answer: The student should turn left to face North. After walking north, the student should turn left again. The second turn points West.
18. **The panda is at (1, 1) and the tortoise is at (4, 1). How far apart are they on the grid, and in which direction is the panda from the tortoise?**
    Answer: They are 3 grid spaces apart horizontally. The panda is west of the tortoise. Their row coordinate is the same.
19. **A traveller walks 3 spaces east, 2 spaces north, and 3 spaces west. How does the final position compare with the starting position?**
    Answer: The eastward and westward movements cancel each other. The traveller ends in the same column as at the start. The traveller finishes 2 spaces north of the starting position.
20. **A map shows a bus stop, several roads, and houses, but no direction arrow. What information might be difficult to use, and what should be added?**
    Answer: It may be difficult to tell which way is North, South, East or West. This can make route directions harder to follow. A direction arrow or compass symbol should be added.

14.11 Five-mark questions with Answers of LOTS Type: (10 Questions)

Five-Mark LOTS Questions with Answers:

1. How can we identify the four cardinal directions by facing the rising Sun?
Answer:

1. The Sun rises in the East.
2. Face the direction in which the Sun rises.
3. East will be in front of you.
4. North will be on your left and South on your right.
5. West will be behind you.

2. State five ways a map can help us.
Answer:

1. A map shows the location of places.
2. It can show roads and streets.
3. It can show houses and other buildings.
4. It can help us trace a route.
5. It can help us describe where one place is in relation to another.

3. How can a compass help someone who is travelling?
Answer:

1. A compass helps a person find directions.
2. It helps the traveller identify which way to go.
3. The traveller can use it while reading a map.
4. It can help the traveller follow a planned route.
5. It can help the traveller describe the direction of a place.

4. How can you describe the positions of objects in your room using directions?
Answer:

1. Stand at the centre of the room.

2. Decide which way is North.
3. Observe where the objects are placed around you.
4. Name the direction of each object in relation to your position.
5. Record the objects found to the East, West, North and South.

5. How can you use a street map to plan a journey?
Answer:

1. Find the starting place on the map.
2. Find the destination.
3. Observe the roads connecting the places.
4. Follow the route and note the turns.
5. Use the direction symbols to describe the way.

6. How can a passenger read a metro map?
Answer:

1. Look at the symbols and the map key.
2. Find the starting station.
3. Find the destination station.
4. Follow the coloured line for the required route.
5. Check where to change lines if the journey uses another route.

7. How do you locate an animal using the zoo grid?
Answer:

1. Find the animal's position on the grid.
2. Begin from zero.
3. Move horizontally to the required column.
4. Move vertically to the required row.
5. Write the location as an ordered pair of numbers.

8. How is a location written as an ordered pair on the zoo grid?
Answer:

1. An ordered pair uses two numbers.
2. The first number gives the column.
3. The second number gives the row.
4. The two numbers identify where a column and row meet.
5. The first row and first column meet at (1, 1).

9. Describe how the ant moves on the grid to find food.
Answer:

1. The ant starts at its marked position.
2. It can crawl along the dotted lines.
3. The arrows show the directions in which it can move.
4. Each grid space represents 1 centimetre.
5. The distance and direction of each movement can be recorded.

10. How can children make a map activity to help friends find hidden objects at school?
Answer:

1. Draw a map showing different places in the school.
2. Choose symbols for the places.
3. Make a key explaining the symbols.
4. Hide objects and mark their positions with red dots or flags.
5. Ask friends to use the map to find the objects.

Five-Mark HOTS Questions with Answers:
1. A child starts at a point, walks 4 grid spaces east and then 3 spaces north. If each space is 1 cm, describe the child's journey and final position relative to the start.

Answer:

1. The child first walks 4 cm east.
2. The child then walks 3 cm north.
3. The child finishes north-east of the starting point.
4. The total distance walked is 7 cm.
5. The route uses 7 grid spaces altogether.

2. A traveller starts at (2, 3), moves 4 spaces east, and then moves 2 spaces south. Find the final position and describe the movement.

Answer:

1. The starting column is 2.
2. Moving 4 spaces east changes the column to 6.
3. The starting row is 3.
4. Moving 2 spaces south changes the row to 1.
5. The final position is (6, 1).

3. A traveller must move from (7, 5) to (3, 8). Describe a route using horizontal and vertical movements.

Answer:

1. The traveller starts at column 7 and row 5.
2. The traveller moves 4 spaces west to column 3.
3. The traveller then moves 3 spaces north to row 8.
4. The final position is (3, 8).
5. The route covers 7 grid spaces.

4. Two routes connect the same places on a grid: Route A uses 5 spaces east and 2 spaces north, while Route B uses 2 spaces north and 5 spaces east. Compare the routes.

Answer:

1. Route A covers 5 spaces east and 2 spaces north.
2. Route B covers 2 spaces north and 5 spaces east.
3. Both routes cover 7 spaces altogether.
4. Both routes reach the same final position.
5. Neither route is shorter if each grid space has the same length.

5. A child faces the rising Sun, turns right, walks forward, and then turns left. Which direction does the child walk after each turn?

Answer:

1. Facing the rising Sun means the child faces East.
2. Turning right makes the child face South.
3. The child walks towards the South.
4. Turning left from South makes the child face East.
5. The child faces East after the second turn.

6. A green tent is south of a purple tent, and a yellow tent is south of a lake. What can be concluded about these places, and what cannot be determined?

Answer:

1. The purple tent is north of the green tent.
2. The lake is north of the yellow tent.
3. These clues describe two separate pairs of locations.
4. They do not show whether the purple tent is near the lake.
5. More information is needed to compare the two pairs.

7. A traveller moves 3 spaces east, 2 spaces north, and then 3 spaces west. Describe where the traveller ends up compared with the starting point.

Answer:

1. The traveller moves 3 spaces east.

2. The traveller then moves 2 spaces north.
3. The traveller next moves 3 spaces west.
4. The eastward and westward movements cancel each other.
5. The traveller ends 2 spaces north of the starting point.

8. A student says that the location (4, 7) means 7 columns east and 4 rows north. Explain the mistake and give the correct meaning.

Answer:

1. The first number in an ordered pair gives the column.
2. The second number gives the row.
3. In (4, 7), the column is 4.
4. The row is 7.
5. The student has reversed the meanings of the two numbers.

9. You are making a map of the school for a hidden-object game. Describe how to make it clear enough for friends to use.

Answer:

1. Draw the main places in the school on the map.
2. Mark each place in its correct position.
3. Choose simple symbols for the places.
4. Add a key to explain each symbol.
5. Mark the hidden objects with dots or flags.

10. A passenger wants to travel from a station on the Yellow Line to a station on the Blue Line. Explain how the passenger can use the metro map to plan the journey.

Answer:

1. Find the starting station on the Yellow Line.
2. Find the destination station on the Blue Line.
3. Trace the Yellow Line from the starting station.
4. Look for a station where the route connects to the Blue Line.
5. Follow the Blue Line to the destination station.

14.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Applied Questions with Answers;

1. You are standing in the school playground and facing the rising Sun. Give directions to guide a friend to places around you.

Answer:

1. Ask your friend to face the rising Sun, which is East.
2. The direction behind your friend is West.
3. North is on your friend's left.
4. South is on your friend's right.
5. Use these directions to describe where each place is from your friend.

2. You are drawing a map of your classroom. How will you show where the door, windows, blackboard and desks are located?

Answer:

1. Draw the classroom as a simple shape.
2. Mark the door and windows in their correct positions.
3. Show the blackboard and desks in relation to the room.
4. Add a direction arrow to the map.
5. Include a key if you use symbols.

3. A friend is at the bus stop and wants to reach the school using a street map. What steps can you suggest?

Answer:

1. Find the bus stop on the map.
2. Find the school's location.
3. Identify the roads connecting the two places.
4. Trace the route and note the turns.
5. Use the direction arrow to describe which way to go.

4. You are making a treasure hunt map of your school. How can you help your classmates find the hidden object?

Answer:

1. Draw a map showing important places in the school.
2. Add a key to explain the symbols.
3. Mark the object's hidden position with a dot or flag.
4. Give classmates directions from a known starting place.
5. Ask them to follow the map to find the object.

5. You are at a metro station on the Yellow Line and need to reach a station on the Blue Line. How would you plan your journey?

Answer:

1. Locate your starting station on the metro map.
2. Find your destination station on the Blue Line.
3. Trace the Yellow Line from your starting station.
4. Identify a station where you can change to the Blue Line.
5. Follow the Blue Line to your destination.

6. An ant starts at (2, 2) on a grid. It crawls 3 spaces east and then 4 spaces north to reach food. Find its final position and total distance.

Answer:

1. The ant starts in column 2 and row 2.
2. After moving 3 spaces east, it reaches column 5.
3. After moving 4 spaces north, it reaches row 6.
4. Its final position is (5, 6).
5. It crawls 7 spaces altogether.

7. Your room has a bed, cupboard, window and bedside table. How can you record their directions from where you stand in the centre?

Answer:

1. Stand at the centre of the room.
2. Use a compass or a direction arrow to identify North.
3. Look at where each item is placed in relation to you.
4. Write the direction of the bed, cupboard, window and bedside table.
5. List the items found to the East, West, North and South.

8. You are at grid position (6, 3) and need to reach (2, 6). Describe a route and calculate its length if each grid space is 1 cm.

Answer:

1. Start at column 6 and row 3.
2. Move 4 spaces west to column 2.
3. Move 3 spaces north to row 6.
4. The destination is position (2, 6).
5. The route is 7 cm long.

9. Your class is going to a zoo by bus and metro. How can maps help you understand the journey?

Answer:

1. Use the street map to locate the bus route and stops.

2. Check which stop is nearer to the starting place.
3. Use the metro map to locate the boarding station.
4. Follow the coloured metro lines towards the zoo.
5. Check where a line change may be needed.

10. Your friend is facing West and wants to walk south to a nearby shop. What should your friend do?

Answer:

1. The friend is currently facing West.
2. South is to the left when facing West.
3. The friend should turn left.
4. The friend will then face South.
5. The friend can walk forward towards the shop.

14.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple-Choice Questions:

1. **A child faces the rising Sun. Which direction is on the child's left?**
   A. East
   B. West
   C. North
   D. South
   Answer: C. North
2. **A traveller faces North and turns right. Which direction does the traveller face?**
   A. West
   B. East
   C. South
   D. North
   Answer: B. East
3. **A person faces South and turns left. Which direction does the person face?**
   A. East
   B. West
   C. North
   D. South
   Answer: A. East
4. **A child faces East, turns right, and then turns left. Which direction does the child face at the end?**
   A. North
   B. East
   C. South
   D. West
   Answer: B. East
5. **A traveller faces West and turns left. Which direction does the traveller face?**
   A. North
   B. South
   C. East
   D. West
   Answer: B. South
6. **Which direction is opposite to East?**
   A. North
   B. South

C. West
D. East
Answer: C. West

7. **A house is west of a park. In which direction is the park from the house?**
   A. North
   B. East
   C. South
   D. West
   Answer: B. East
8. **The green tent is south of the purple tent. In which direction is the purple tent from the green tent?**
   A. South
   B. East
   C. North
   D. West
   Answer: C. North
9. **The yellow tent is south of a lake. In which direction is the lake from the yellow tent?**
   A. North
   B. South
   C. East
   D. West
   Answer: A. North
10. **Which tool can help a person find directions?**
    A. Ruler
    B. Compass
    C. Calendar
    D. Thermometer
    Answer: B. Compass
11. **What does a map key help us understand?**
    A. The symbols on the map
    B. The weather outside
    C. The time of a journey
    D. The age of a building
    Answer: A. The symbols on the map
12. **On which metro line is Qutb Minar station marked?**
    A. Blue Line
    B. Yellow Line
    C. Green Line
    D. Red Line
    Answer: B. Yellow Line
13. **On which metro line is Supreme Court station marked?**
    A. Yellow Line
    B. Green Line
    C. Blue Line
    D. Red Line
    Answer: C. Blue Line
14. **On the zoo grid, the first number in a position such as (4, 1) tells us the:**
    A. Row
    B. Column

C. Direction
D. Distance
Answer: B. Column

15. **On the zoo grid, the position (1, 1) identifies the meeting point of the:**
A. First row and first column
B. First row and second column
C. Second row and first column
D. Second row and second column
Answer: A. First row and first column

16. **The tortoise is at (4, 1), and the panda is at (1, 1). How many grid spaces west is the panda from the tortoise?**
A. 1
B. 2
C. 3
D. 4
Answer: C. 3

17. **A point is at (2, 3). It moves 3 spaces east. Where does it arrive?**
A. (2, 6)
B. (5, 3)
C. (5, 6)
D. (3, 5)
Answer: B. (5, 3)

18. **A point is at (4, 2). It moves 3 spaces north. Where does it arrive?**
A. (7, 2)
B. (4, 5)
C. (1, 2)
D. (4, 3)
Answer: B. (4, 5)

19. **A traveller starts at (6, 4), moves 2 spaces west, and then 3 spaces south. What is the final position?**
A. (4, 1)
B. (8, 7)
C. (4, 7)
D. (3, 2)
Answer: A. (4, 1)

20. **Starting at (1, 1), a child moves 3 spaces east and 2 spaces north. What is the final position?**
A. (3, 2)
B. (4, 3)
C. (2, 4)
D. (4, 2)
Answer: B. (4, 3)

21. **A traveller moves from (8, 5) to (3, 5). In which direction did the traveller move?**
A. East
B. North
C. West
D. South
Answer: C. West

22. **A traveller moves from (4, 2) to (4, 7). How many spaces did the traveller move, and in which direction?**

A. 5 spaces north
B. 5 spaces south
C. 3 spaces east
D. 3 spaces west
Answer: A. 5 spaces north

23. **A child walks 4 spaces east and then 4 spaces west. How far is the child from the starting column?**
A. 2 spaces
B. 4 spaces
C. 8 spaces
D. 0 spaces
Answer: D. 0 spaces

24. **Each grid space is 1 cm. An ant crawls 3 spaces east and 2 spaces north. What total distance does it travel?**
A. 1 cm
B. 5 cm
C. 6 cm
D. 8 cm
Answer: B. 5 cm

25. **In the chapter's ant activity, how far and in which direction does the ant crawl to reach the laddoos?**
A. 2 cm east
B. 2 cm west
C. 1 cm north
D. 3 cm south
Answer: A. 2 cm east

26. **The ant can move along which lines to reach food on its grid?**
A. Curved lines
B. Dotted lines
C. Coloured metro lines
D. Road boundaries
Answer: B. Dotted lines

27. **Two routes cover 8 grid spaces and 6 grid spaces, respectively. If both reach the same place, which route is shorter?**
A. The 8-space route
B. The 6-space route
C. Both are always the same length
D. The route with more turns
Answer: B. The 6-space route

28. **A map shows a symbol that a reader does not recognise. What should the reader check?**
A. The map key
B. The page number
C. The nearest house
D. The road length
Answer: A. The map key

29. **What do coloured lines on a metro map represent?**
A. Different metro routes
B. Different kinds of weather
C. Different directions of the wind

D. Different sizes of stations
Answer: A. Different metro routes

30. **A bus route on a street map begins at the parking area. What should a traveller follow to trace its journey?**
A. The dotted route and road directions
B. The grid position of the panda
C. The key for classroom objects
D. The ant's movement arrows
Answer: A. The dotted route and road directions

31. **A student moves from (3, 4) to (7, 4). Which coordinate remains unchanged?**
A. Column
B. Row
C. Both coordinates
D. Neither coordinate
Answer: B. Row

32. **A student moves from (5, 2) to (5, 6). Which coordinate remains unchanged?**
A. Column
B. Row
C. Both coordinates
D. Neither coordinate
Answer: A. Column

33. **A traveller faces East and wants to walk north. Which way should the traveller turn?**
A. Left
B. Right
C. Around twice
D. Not at all
Answer: A. Left

34. **A traveller faces North and wants to walk west. Which way should the traveller turn?**
A. Right
B. Left
C. Around twice
D. Not at all
Answer: B. Left

35. **What should be added to a school map so friends can understand its symbols?**
A. A map key
B. A bus ticket
C. A ruler only
D. A list of directions without symbols
Answer: A. A map key

14.15 Best Practices Opportunity List from the Chapter: (14 Ideas)

Best Practices for Teaching "Maps and Locations":
The chapter introduces cardinal directions, room and street maps, metro routes, map keys, and grid locations. □□

(1) Begin with the students' surroundings: Ask pupils to identify the classroom door, windows and board in relation to where they are sitting.

(2) **Teach directions through movement:** Have students face the rising Sun's direction, then point East, West, North and South using their bodies.
(3) **Use a compass rose consistently:** Display a clear direction symbol and encourage students to refer to it whenever they read a map.
(4) **Practise turns with simple commands:** Give instructions such as "face North, turn right, take two steps" so students connect turning with direction.
(5) **Make a classroom floor map together:** Let students draw the room and place familiar objects in their approximate locations.
(6) **Teach map keys before map tasks:** Show how symbols represent places, then have students create a key for a simple school map.
(7) **Model how to trace a route:** Demonstrate starting at a known place, following roads, noticing turns and identifying the destination.
(8) **Use familiar maps for discussion:** Let students explore a school or neighbourhood map and describe where places are in relation to each other.
(9) **Introduce grid positions step by step:** Practise moving horizontally to a column first and vertically to a row next, as shown in the chapter.
(10) **Use floor grids or large paper grids:** Have students walk to given grid positions to make row, column and coordinate ideas concrete.
(11) **Connect grid movement to measurement:** Let students count grid spaces and use centimetres when each space represents 1 cm.
(12) **Include pair and group challenges:** Students can give each other directions or use a school map to locate marked objects.
(13) **Ask students to explain their route:** Invite them to say which direction they moved and how many spaces or turns they used.
(14) **Check understanding with quick exit questions:** Ask each student to name a direction, interpret a simple symbol, or locate a point on a small grid before leaving class.

14.16 Innovations Opportunity List from the Chapter: (14 Ideas)

Innovative Teaching–Learning Ideas: "Maps and Locations":
These ideas connect the chapter's directions, maps, metro routes and grid locations with interactive learning. □□

(1) **Classroom direction quest:** Place direction cards around the room and give students a sequence of turns to reach a chosen card.
(2) **Human grid activity:** Make a large floor grid with tape. Call out a coordinate, and let a student stand at that location.
(3) **Treasure-map challenge:** Students draw a simple school map, mark a hidden object and write clues for a classmate to follow.
(4) **Create a living compass:** Students stand in four groups for North, South, East and West, then move to the direction called out.
(5) **Route-planning game:** Give groups a street map and a destination. Ask them to trace and explain a route using directions and turns.
(6) **Design a metro map:** Students invent a small town with coloured metro lines, station symbols and a key.
(7) **Coordinate card game:** Give students cards with grid positions and have them match each card to the correct location on a displayed grid.
(8) **Map-symbol design studio:** Ask students to invent clear symbols for places such as a library, playground, classroom and bus stop, then create a key.

(9) **Digital map exploration:** If devices are available, display a map on a screen and let students identify routes, nearby places and directions together.
(10) **QR-code clue trail:** Place QR codes at selected classroom stations. Each code can reveal the next direction or grid position in a map-based hunt.
(11) **Ant's journey puzzle:** Draw a grid with food locations and let students plan different paths for an ant, then compare the number of spaces travelled.
(12) **Student-made direction videos:** In small groups, students record a short demonstration explaining a route using turns and cardinal directions.
(13) **Map error detective:** Show a simple map with a missing key, unclear symbol or incorrect route. Ask students to find the problem and suggest a correction.
(14) **Community map project:** Invite students to map familiar nearby places, such as a bus stop, shop or park, and describe how to travel between them.

14.17: Practicing Questions/Question Bank :

Question Bank: Maps and Locations:

A. Fill in the Blanks:

1. The Sun rises in the _____.
   Answer: East
2. When we face East, North is to our _____.
   Answer: Left
3. The first number in a grid position gives the _____.
   Answer: Column
4. The key on a map explains the _____ used.
   Answer: Symbols
5. The ant moves along the _____ lines on its grid.
   Answer: Dotted

B. One-Mark Questions:

1. **Name the direction opposite to South.**
   Answer: North is opposite to South.
2. **What instrument can help us find directions?**
   Answer: A compass can help us find directions.
3. **What do coloured lines on a metro map represent?**
   Answer: They represent different metro routes.
4. **What is the position of the panda on the zoo grid?**
   Answer: The panda is at (1, 1).
5. **How far east does the ant crawl to reach the laddoos?**
   Answer: The ant crawls 2 centimetres east.

C. Two-Mark Questions:

1. **When you face the rising Sun, which directions are to your left and right?**
   Answer: North is to your left. South is to your right.

2. **What does each number in the grid position (4, 1) represent?**
   Answer: The first number gives the column. The second number gives the row.

3. **How does a map key help us?**
   Answer: It explains the symbols used on the map. It helps us understand what places those symbols represent.

4. **How can a street map help someone travelling to a destination?**
   Answer: It shows roads and places along the way. It helps the traveller trace a route to the destination.

D. Three-Mark Questions:

1. **Explain how to locate a point on the zoo grid.**
   Answer: Start at zero and move horizontally to the required column. Then move vertically to the required row. Write the location as an ordered pair.

2. **What information can a metro map provide to a passenger?**
   Answer: Coloured lines show different metro routes. Station names show where passengers can get on or off. The map helps passengers trace a route.

3. **How can students use a school map to find hidden objects?**
   Answer: Draw a map showing places in the school. Add a key to explain the symbols. Mark hidden objects with dots or flags.

E. Five-Mark Questions:

1. **A child faces the rising Sun. Describe how the child can identify all four directions.**
   Answer: The Sun rises in the East. The child faces East. North is on the child's left. South is on the child's right. West is behind the child.

2. **Describe how to use a grid to locate an animal in the zoo.**
   Answer: Find the animal's position on the grid. Begin at zero. Move horizontally to the required column. Move vertically to the required row. Write the location as an ordered pair.

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5th Standard Maths Book Chapter 15

Chapter 15: Data Through Pictures

15.1 Summary of the Chapter:

Chapter 15: Data Through Pictures — Summary:

(1) **Data** is information collected about people, objects, or activities.

(2) Data can be gathered by asking questions, observing, or recording what happens—for example, how many hours children watch TV.

(3) Tables help arrange information clearly so it is easier to read and compare.

(4) A **pictograph** uses pictures or symbols to represent data.

(5) A **scale** tells us how many items each picture represents. For example, one symbol might stand for five toys or three two-wheelers.

(6) Pictographs make it easier to show large amounts of data using fewer symbols.

(7) We can read a pictograph to find totals and compare amounts across different groups or days.

(8) A **bar graph** uses bars to show and compare quantities. The chapter shows activities along the horizontal axis and the number of hours on the vertical axis.

(9) Bar graphs help us identify the greatest amount, the least amount, and the difference between amounts.

(10) We can collect information about our own routines and display it in a bar graph.

(11) Looking carefully at pictures and graphs helps us decide whether statements about the data are true or false.

(12) Data can help us think about real-life matters, such as food wastage and how it might be reduced.

15.2 Important Formulas:

Important Formulas and Rules:

The chapter mainly teaches how to read and represent data using pictographs and bar graphs. It does not introduce many formal formulas, but these rules are useful:

(1) Value shown by pictograph symbols
Number of symbols × value of each symbol = total number of items
Example: If 1 symbol represents 5 toys, then 4 symbols represent **4 × 5 = 20 toys**.

(2) Total from a table or graph
Total = add the amounts in all categories
Example: Add the amounts of food wasted on each day to find the total wastage.

(3) Difference between two amounts
Difference = larger amount − smaller amount
This helps answer questions such as how many more vehicles passed on one day than another.

(4) Daily routine total
Hours spent on all activities added together = 24 hours
The chapter asks students to record how they spend a 24-hour day.

(5) Reading a bar graph
Read the value for each bar using the number scale on the vertical axis. The bar's height shows the amount for that activity or category.

15.3 Fill-Up the Blank LOTS type questions with Answers: (35 Questions)

Fill in the Blanks — LOTS:

1. Information collected about people, objects, or activities is called _____.
Answer: data

2. Samaira and Kabir collected information about their friends' _____-watching habits.
   Answer: TV
3. Samaira and Kabir collected data from _____ friends.
   Answer: 35
4. A display that uses pictures or symbols to show data is called a _____.
   Answer: pictograph
5. In a pictograph, each picture or symbol represents a certain number of _____.
   Answer: items
6. The number of items represented by one symbol is called the _____.
   Answer: scale
7. Dipesh suggested using one picture for every _____ items in Joseph Uncle's shop.
   Answer: 5
8. Joseph Uncle's shop had toys, board games, and _____ items.
   Answer: sports
9. Deepti recorded the number of _____ passing her house on different days.
   Answer: two-wheelers
10. In Deepti's pictograph, one symbol represented _____ two-wheelers.
    Answer: 3
11. Deepti recorded the two-wheelers passing her house on Monday, Wednesday, and _____.
    Answer: Friday
12. Raman recorded how he spent his _____.
    Answer: day
13. Raman's table included the time he spent _____.
    Answer: sleeping
14. The time Raman spent in _____ was recorded in his table.
    Answer: school
15. Sheela showed the number of hours spent on each activity using a vertical _____.
    Answer: bar
16. Sheela's way of recording data is called a _____ graph.
    Answer: bar
17. In Sheela's bar graph, the different activities are shown along the _____ base.
    Answer: horizontal
18. In Sheela's bar graph, the number of hours is shown on the _____ line.
    Answer: vertical
19. The bars in a bar graph show the _____ spent on each activity.
    Answer: time
20. The chapter asks students to record their daily routine for _____ hours.
    Answer: 24
21. Students can record the time they spend sleeping, studying, playing, and _____.
    Answer: eating
22. Students are asked to make a _____ graph of the time they spend on activities.
    Answer: bar
23. To compare amounts in a graph, we should first read the graph's _____.
    Answer: scale
24. The height of a bar helps us know the _____ represented by it.
    Answer: amount

25. A graph can help us find which category has the _____ amount.
Answer: greatest
26. A graph can also help us find which category has the _____ amount.
Answer: least
27. Students use paper strips to compare the lengths of their _____ fingers.
Answer: index
28. In the finger-length activity, students paste the strips along a _____ graph.
Answer: bar
29. The length of a finger in the activity is measured in _____.
Answer: centimetres (cm)
30. Rani's school displayed the amount of food _____ in its dining hall.
Answer: wasted
31. The food-wastage graph records different food items over the _____.
Answer: weekdays
32. The food item shown for Monday in the graph is _____.
Answer: sandwich
33. The food item shown for Wednesday in the graph is _____.
Answer: khichdi
34. The food item shown for Friday in the graph is _____.
Answer: idli-sambar
35. The amount of food wastage in the graph is measured in _____.
Answer: kilograms (kg)
36. The chapter asks students to think about ways to reduce food _____.
Answer: wastage
37. In the final activity, students look carefully at a _____ and decide whether statements are true or false.
Answer: picture
38. We can use information in a graph to compare one amount with _____.
Answer: another
39. Adding the amounts for different categories helps us find the _____.
Answer: total
40. Subtracting a smaller amount from a larger amount gives the _____ between them.
Answer: difference

15.4 Fill-Up the Blank HOTS type questions with Answers: (35 Questions)

Fill in the Blanks — HOTS:

1. In a pictograph, 1 symbol represents 5 toys. If the shop has 8 symbols for toys, it has _____ toys.
Answer: 40
2. One symbol represents 5 board games. A pictograph shows 6 symbols for toys and 4 for board games. The shop has _____ more toys than board games.
Answer: 10
3. One symbol represents 3 two-wheelers. Monday has 9 symbols and Wednesday has 6 symbols. The difference is _____ two-wheelers.
Answer: 9
4. One symbol represents 3 two-wheelers. Friday has 7 symbols. The number of two-wheelers shown for Friday is _____.
Answer: 21

5. One symbol represents 5 items. A pictograph shows 3 symbols for toys, 4 for board games, and 2 for sports items. The total number of items is _____.
   Answer: 45
6. One symbol represents 5 toys. If a shop has 35 toys, its pictograph needs _____ symbols.
   Answer: 7
7. One symbol represents 5 items. A pictograph shows 4 symbols for one category and 7 for another. The total represented is _____ items.
   Answer: 55
8. A pictograph uses 1 symbol for every 5 items. If a student draws 10 symbols, they represent _____ items.
   Answer: 50
9. A student wants to show 60 items using as few symbols as possible. If each symbol represents 10 items, the student needs _____ symbols.
   Answer: 6
10. A shop has 40 toys. With a scale of 1 symbol for 5 toys, the pictograph needs _____ symbols; with a scale of 1 symbol for 10 toys, it needs _____ symbols.
    Answer: 8; 4
11. One symbol represents 3 two-wheelers. Monday has 8 symbols and Friday has 11 symbols. Friday had _____ more two-wheelers than Monday.
    Answer: 9
12. One symbol represents 3 two-wheelers. Monday has 8 symbols, Wednesday 5, and Friday 7. The total shown for the three days is _____ two-wheelers.
    Answer: 60
13. One symbol represents 3 two-wheelers. Monday has 8 symbols and Wednesday has 5. Together, the two days account for _____ two-wheelers.
    Answer: 39
14. A bar graph shows 7 hours for sleeping and 5 hours for studying. The time spent sleeping is _____ hours more.
    Answer: 2
15. A student spends 8 hours sleeping, 6 hours at school, 3 hours studying, and 2 hours eating and playing. The time left for other activities in a 24-hour day is _____ hours.
    Answer: 5
16. A student records 7 hours of sleep, 6 hours at school, 2 hours studying, and 3 hours eating and playing. The total recorded so far is _____ hours, so _____ hours remain in the day.
    Answer: 18; 6
17. Two friends spend 4 and 6 hours studying. Together, they spend _____ hours studying.
    Answer: 10
18. A bar graph shows 3 hours for studying on Monday and 5 hours on Tuesday. The student studied _____ hours more on Tuesday.
    Answer: 2
19. A bar graph uses 1 vertical step to represent 2 hours. A bar reaches 4 steps. It represents _____ hours.
    Answer: 8

20. In a bar graph, a bar for playing reaches 6 on the hours scale and a bar for eating reaches 2. The difference is _____ hours.
    Answer: 4
21. A student's daily activities add up to 26 hours. Since a day has 24 hours, the recorded total is _____ hours too many.
    Answer: 2
22. In a finger-length graph, one strip measures 7 cm and another 5 cm. The first finger is _____ cm longer.
    Answer: 2
23. The longest finger strip measures 9 cm and the shortest measures 6 cm. The difference in their lengths is _____ cm.
    Answer: 3
24. If 1 kg of leftover food could feed 3 children, then 4 kg could feed _____ children.
    Answer: 12
25. If 1 kg of leftover food could feed 3 children, then reducing wastage by 5 kg could provide food for _____ children.
    Answer: 15
26. A school wastes 3 kg of food on one day and 2 kg on another. If 1 kg could feed 3 children, the wasted food could have fed _____ children.
    Answer: 15
27. A food-wastage graph shows 6 kg for one day and 4 kg for another. The total wastage for those days is _____ kg.
    Answer: 10
28. A student records food wastage as 2 kg, 3 kg, 1 kg, 4 kg, and 2 kg over five days. The total is _____ kg.
    Answer: 12
29. If a school reduces its food wastage from 8 kg to 5 kg, it reduces wastage by _____ kg.
    Answer: 3
30. A graph shows one category at 9 units and another at 6 units. The first category is _____ units greater.
    Answer: 3
31. A pictograph has 6 symbols, each worth 5 items. If 10 items are removed, the remaining quantity is _____ items.
    Answer: 20
32. A graph shows 4 kg of wasted food on Monday and 7 kg on Tuesday. Together, these days show _____ kg of wastage.
    Answer: 11
33. A pictograph represents 45 items with symbols worth 5 items each. If 2 symbols are added, the new total is _____ items.
    Answer: 55
34. A student has 30 items to show in a pictograph. With a scale of 1 symbol for 5 items, the student needs _____ symbols.
    Answer: 6
35. A bar graph shows sleeping time as 8 hours and school time as 6 hours. Together, these activities take _____ hours.
    Answer: 14

15.5 One-mark questions with Answers of LOTS Type: (32 Questions)

One-Mark Descriptive Questions — LOTS:
Each answer is one sentence.

1. **What is data?**
   Answer: Data is information collected about people, objects, or activities.
2. **What is a pictograph?**
   Answer: A pictograph is a way of showing data using pictures or symbols.
3. **What does the scale in a pictograph tell us?**
   Answer: The scale tells how many items each picture or symbol represents.
4. **Why is a scale useful in a pictograph?**
   Answer: A scale helps show many items using fewer symbols.
5. **What did Samaira and Kabir ask their friends about?**
   Answer: They asked their friends how many hours a day they watched TV.
6. **How many friends' data did Samaira and Kabir collect?**
   Answer: They collected data from 35 friends.
7. **What kinds of play items did Joseph Uncle have in his shop?**
   Answer: His shop had toys, board games, and sports items.
8. **How many items did one symbol represent in Dipesh's pictograph?**
   Answer: One symbol represented five items.
9. **What did Deepti record near her house?**
   Answer: She recorded the number of two-wheelers passing her house.
10. **How many two-wheelers did one symbol represent in Deepti's pictograph?**
    Answer: One symbol represented three two-wheelers.
11. **On which days did Deepti record the two-wheelers?**
    Answer: She recorded them on Monday, Wednesday, and Friday.
12. **What did Raman record in his table?**
    Answer: Raman recorded the time he spent on different activities during his day.
13. **Name one activity included in Raman's daily routine table.**
    Answer: Sleeping was one of the activities in his table.
14. **What is a bar graph?**
    Answer: A bar graph shows data using bars.
15. **What does the height of a bar in a bar graph show?**
    Answer: The height of a bar shows the amount for that category.
16. **What is shown along the horizontal base of Sheela's bar graph?**
    Answer: Different activities are shown along the horizontal base.
17. **What is shown on the vertical line of Sheela's bar graph?**
    Answer: The number of hours is shown on the vertical line.
18. **What did Sheela use to show the time spent on each activity?**
    Answer: She used a vertical bar for each activity.
19. **How many hours are there in the daily routine students are asked to record?**
    Answer: Students are asked to record their routine over 24 hours.
20. **Name one activity students can include in their daily routine record.**
    Answer: Students can include studying in their daily routine record.
21. **What graph are students asked to make for their daily routine?**
    Answer: They are asked to make a bar graph.
22. **What do students compare in the "Whose Index Finger is Longer?" activity?**
    Answer: They compare the lengths of their index fingers.
23. **What unit is used to record finger length in the activity?**
    Answer: Finger length is recorded in centimetres.

24. **What information did Rani's school display in its dining hall?**
    Answer: It displayed the amount of food wasted and the number of children the food could have fed.
25. **What unit is used to show food wastage in the graph?**
    Answer: Food wastage is shown in kilograms.
26. **Name one food item shown in the food-wastage graph.**
    Answer: Khichdi is one of the food items shown in the graph.
27. **What does the chapter ask students to think about regarding leftover food?**
    Answer: It asks students to think about what can be done with leftover food.
28. **What should students do to decide if a statement about a picture is true or false?**
    Answer: They should observe the picture carefully.
29. **What can we use a graph to compare?**
    Answer: We can use a graph to compare amounts in different categories.
30. **What can we find by adding the amounts in all categories?**
    Answer: We can find the total amount.
31. **How can we find the difference between two amounts?**
    Answer: We subtract the smaller amount from the larger amount.
32. **What can a bar graph help us identify?**
    Answer: A bar graph can help us identify the greatest and least amounts.

15.6 One-mark questions with Answers of HOTS Type: (30 Questions)

One-Mark Descriptive Questions — HOTS:
Each answer is one sentence.

1. **A shop has 40 toys. If one symbol represents 5 toys, how many symbols are needed in its pictograph?**
   Answer: The pictograph needs 8 symbols.
2. **A pictograph shows 6 symbols for board games, with each symbol representing 5 games; how many board games are shown?**
   Answer: It shows 30 board games.
3. **One symbol represents 3 two-wheelers. Monday has 8 symbols and Wednesday has 5; how many more two-wheelers passed on Monday?**
   Answer: Six more two-wheelers passed on Monday.
4. **One symbol represents 3 two-wheelers. Friday has 7 symbols; how many two-wheelers does this represent?**
   Answer: It represents 21 two-wheelers.
5. **One symbol represents 5 items. A pictograph shows 3 symbols for toys and 4 for board games; how many items are shown altogether?**
   Answer: The pictograph shows 35 items altogether.
6. **A student needs to show 60 items using the fewest symbols; which scale is more suitable: 1 symbol = 5 items or 1 symbol = 10 items?**
   Answer: The scale of 1 symbol for 10 items is more suitable because it needs only 6 symbols.
7. **A pictograph uses 1 symbol for 5 items, but a reader thinks each symbol means 1 item; what mistake has the reader made?**
   Answer: The reader ignored the scale and will undercount the items.
8. **A shop has 30 toys and 20 board games, and each symbol represents 5 items; how many symbols should be drawn for each category?**
   Answer: Six symbols should be drawn for toys and four for board games.

9. **A pictograph shows 4 symbols for one category and 7 for another, with each symbol representing 5 items; which category has more items and by how many?**
   Answer: The second category has 15 more items.
10. **A student records 9 hours of sleep, 6 hours at school, 3 hours studying, and 2 hours eating and playing; how many hours remain for other activities in a 24-hour day?**
    Answer: Four hours remain for other activities.
11. **A student's routine adds up to 25 hours; what does this suggest about the recorded data?**
    Answer: The recorded times need checking because a day has only 24 hours.
12. **In a bar graph, one vertical step represents 2 hours and a bar reaches 5 steps; how many hours does the bar show?**
    Answer: The bar shows 10 hours.
13. **A bar graph shows 7 hours for sleeping and 4 hours for studying; how much more time is spent sleeping?**
    Answer: Three more hours are spent sleeping.
14. **A bar for playing is taller than a bar for studying; what can you conclude?**
    Answer: More time is spent playing than studying.
15. **Two activities have bars of the same height; what does this tell you?**
    Answer: The same amount of time is spent on both activities.
16. **A student puts the activity names on the vertical axis and the hours on the horizontal axis; what should the student check when making the graph?**
    Answer: The student should check that the graph labels match the data and are placed consistently on the axes.
17. **A graph's vertical scale goes up in twos, but a student reads each line as one unit; what kind of error may result?**
    Answer: The student may read every bar's value as too small.
18. **Two friends' finger strips measure 8 cm and 6 cm; whose index finger is longer and by how much?**
    Answer: The first friend's index finger is 2 cm longer.
19. **A class wants to compare the time students spend on activities; which display is more suitable, a bar graph or a list of unrelated sentences?**
    Answer: A bar graph is more suitable because it makes the activity times easy to compare.
20. **A picture graph uses different-sized symbols for different categories without explaining them; why might it be difficult to read?**
    Answer: Readers may not know how many items each symbol represents.
21. **If 1 kg of leftover food could feed 3 children, how many children could be fed by 5 kg?**
    Answer: Five kilograms could feed 15 children.
22. **A school reduces food wastage from 9 kg to 6 kg; how much less food is wasted afterward?**
    Answer: The school wastes 3 kg less food.
23. **A food-wastage graph shows 4 kg on one day and 7 kg on another; which day needs closer attention to reduce waste?**
    Answer: The day with 7 kg of wastage needs closer attention.
24. **A school wants to find the total food wasted over five weekdays; what should it do with the five daily amounts?**
    Answer: It should add the five daily amounts.

25. **A student says the tallest bar always represents the greatest number of items even when the vertical scale changes; what should the student read first?**
Answer: The student should read the vertical scale before comparing bar heights.
26. **A bar graph has no title; what important information is missing for the reader?**
Answer: The reader cannot tell what the graph is about.
27. **A pictograph shows 10 symbols, each representing 3 two-wheelers; how many two-wheelers are represented?**
Answer: The pictograph represents 30 two-wheelers.
28. **A student wants to show a large number of toys without drawing many pictures; what can the student change to make the pictograph shorter?**
Answer: The student can choose a scale where each symbol represents more toys.
29. **A graph shows 8 hours for school and 5 hours for study; how many hours do these two activities take together?**
Answer: Together, they take 13 hours.
30. **A friend concludes that the category with more symbols always has more items, but the categories use different scales; what should the friend compare instead?**
Answer: The friend should compare the total values after applying each category's scale.
31. **A student observes that one bar is shorter than all the others; what does this show about that activity?**
Answer: It has the smallest recorded amount.
32. **A pictograph shows 12 symbols, each representing 5 items; if 10 items are removed, how many items remain?**
Answer: Fifty items remain.

15.7 Two-mark questions with Answers of LOTS Type: (25 Questions)

Two-Mark Descriptive Questions — LOTS:
Each answer has two sentences or points.

1. **What is a pictograph? What does it use to show data?**
Answer: A pictograph is a way of presenting data. It uses pictures or symbols to represent items.
2. **What does the scale in a pictograph tell us? Why is it useful?**
Answer: The scale tells how many items each symbol represents. It helps show large amounts of data with fewer symbols.
3. **What information did Samaira and Kabir collect? How many friends did they ask?**
Answer: They collected information about how many hours their friends watched TV. They collected data from 35 friends.
4. **Which play items did Joseph Uncle have in his shop?**
Answer: His shop had toys and board games. It also had sports items.
5. **What scale did Dipesh suggest for Joseph Uncle's pictograph?**
Answer: Dipesh suggested using one picture for every five items. The same scale was used for toys, board games, and sports items.
6. **What did Deepti record? On which days did she collect the data?**
Answer: Deepti recorded the number of two-wheelers passing her house. She collected the data on Monday, Wednesday, and Friday.
7. **What did one symbol represent in Deepti's pictograph?**
Answer: One symbol represented three two-wheelers. The scale helped show the number of vehicles with fewer symbols.

8. **What is a bar graph? How does it show data?**
   Answer: A bar graph is a way of presenting data. It uses bars to show amounts for different categories.
9. **What does the horizontal base of Sheela's graph show? What does its vertical line show?**
   Answer: The horizontal base shows the different activities. The vertical line shows the number of hours.
10. **How did Sheela show the time spent on each activity? What did the bars indicate?**
    Answer: Sheela used a vertical bar for each activity. The bars showed how much time was spent on each activity.
11. **What did Raman record in his table? Name two activities included in it.**
    Answer: Raman recorded how he spent his day. His activities included sleeping and spending time at school.
12. **What are students asked to record in the "Day in My Life" activity?**
    Answer: Students are asked to record the time they spend on different activities. They can include sleeping, studying, playing, and eating.
13. **What graph are students asked to make from their daily routine data? What does it show?**
    Answer: Students are asked to make a bar graph. It shows the time spent on different activities.
14. **How do students compare index-finger lengths in the chapter activity?**
    Answer: Each student places a paper strip along their index finger and tears off the extra part. They paste the strips in a graph to compare lengths.
15. **What unit is used to show finger length in the activity? What can students find from the graph?**
    Answer: Finger length is shown in centimetres. Students can identify the longest and shortest index fingers.
16. **What information did Rani's school display in the dining hall?**
    Answer: The school displayed the amount of food wasted. It also showed how many children the food could have fed.
17. **What does the food-wastage graph compare? Over what period was the data collected?**
    Answer: The graph compares the amounts of different foods wasted. The data was collected over the weekdays.
18. **Name two foods shown in the food-wastage graph.**
    Answer: Sandwich and paratha are shown in the graph. Khichdi, puri-sabzi, and idli-sambar are also included.
19. **What unit is used to measure food wastage in the graph? Why is the graph useful?**
    Answer: Food wastage is measured in kilograms. The graph helps readers compare how much food was wasted.
20. **What questions does the chapter ask about food wastage?**
    Answer: It asks how food wastage can be reduced. It also asks what can be done with leftover food.
21. **What should students do before deciding whether a statement about a picture is true or false?**
    Answer: Students should observe the picture carefully. They should check each statement against what they see.

22. **What kinds of information can be shown in a pictograph or bar graph?**
    Answer: A pictograph or bar graph can show information arranged into categories. It can help readers compare the amounts in those categories.
23. **How can a graph help us compare two amounts?**
    Answer: We can read the values shown for both categories. We can then identify which is greater or smaller.
24. **How can we find the total shown by a graph?**
    Answer: We read the values for all the categories. Then we add those values together.
25. **How can we find the difference between two values shown in a graph?**
    Answer: We identify the larger and smaller values. Then we subtract the smaller value from the larger value.

15.8. Two-mark questions with Answers of HOTS Type: (25 Questions)

Two-Mark Descriptive Questions — HOTS:
The numbers in these questions are practice values. Each answer has two points or sentences.

1. **A pictograph uses one symbol for 5 toys. One row has 7 symbols and another has 4. How many more toys does the first row represent?**
   Answer: The first row represents 35 toys and the second represents 20 toys. The first row represents 15 more toys.
2. **One symbol represents 3 two-wheelers. Monday has 8 symbols and Wednesday has 5. Find the total for both days and the difference between them.**
   Answer: Monday and Wednesday together show 39 two-wheelers. Monday has 9 more two-wheelers than Wednesday.
3. **A student spends 8 hours sleeping, 6 hours at school, 3 hours studying, and 2 hours eating and playing. How much time remains in the day for other activities?**
   Answer: These activities take 19 hours altogether. Five hours remain for other activities.
4. **A daily routine graph adds up to 26 hours. What should the student do?**
   Answer: The student should check the recorded times because a day has 24 hours. The total is 2 hours too many.
5. **A student must show 80 items using a pictograph. Which scale needs fewer symbols: 1 symbol for 5 items or 1 symbol for 10 items?**
   Answer: The scale of 1 symbol for 10 items needs fewer symbols. It requires 8 symbols, while the other scale requires 16.
6. **A pictograph has symbols but no key showing what each symbol represents. Why is this a problem?**
   Answer: The reader cannot tell how many items each symbol stands for. This makes it difficult to work out the actual totals.
7. **Two bar graphs show the same activities, but their vertical scales are different. What should you check before comparing their bar heights?**
   Answer: Check the scale marked on each vertical axis. The same bar height may represent different amounts on the two graphs.
8. **A school wastes 6 kg of food, and 1 kg could feed 3 children. How many children could the wasted food have fed, and what does this suggest?**
   Answer: The food could have fed 18 children. The school should look for ways to reduce food wastage.
9. **A food-wastage graph shows 8 kg for one food and 3 kg for another. Which food should the school review first, and why?**

Answer: The school should review the food with 8 kg of wastage first. It has the larger recorded waste.

10. **A food item was wasted the most this week. Can we be certain it will be wasted the most next week? Explain.**
    Answer: No, we cannot be certain because next week's data may change. The school can watch that food closely and record the new results.
11. **Two students have the same total hours in their daily routines, but one spends more time sleeping and the other more time studying. Can their routines still be different?**
    Answer: Yes, their routines can be different because they divide their time differently. A graph can show how each student's hours are distributed.
12. **A student records 7 hours of sleep, 6 hours at school, 3 hours studying, and 4 hours eating and playing. How many hours are recorded, and how many remain?**
    Answer: The recorded activities take 20 hours altogether. Four hours remain in the day.
13. **A bar graph's vertical scale counts by 2s, but a student reads each line as 1. How will this affect the student's answers?**
    Answer: The student will read values that are too small. The student should use the numbers on the scale to read each bar correctly.
14. **Six symbols in a pictograph represent 30 items. What does one symbol represent, and how can you check?**
    Answer: One symbol represents 5 items. Divide 30 by 6 to check the scale.
15. **A student surveys friends about TV-watching time but asks some about one day and others about a whole week. Why is the comparison unfair?**
    Answer: The answers cover different lengths of time. Everyone should be asked about the same time period for a fair comparison.
16. **A pictograph shows 5 symbols for toys, and each symbol represents 4 toys. A student writes 5 toys as the total. What mistake did the student make?**
    Answer: The student counted the symbols instead of applying the scale. The correct total is 20 toys.
17. **A bar graph uses one step to represent 2 hours. One bar is 3 steps high and another is 5 steps high. How much greater is the second amount?**
    Answer: The bars represent 6 hours and 10 hours. The second amount is 4 hours greater.
18. **Students paste finger-length strips in a bar graph, but one strip is placed under the wrong name. What problem will this cause?**
    Answer: The graph will show the wrong finger length for that student. The labels and strips should be checked before comparing them.
19. **A bar graph has bars but no labels for the activities. What information would the reader be missing?**
    Answer: The reader would not know which activity each bar represents. Adding category labels would make the graph understandable.
20. **A student wants to compare the time spent on sleeping, school, and studying. Why might a bar graph be easier to read than a paragraph?**
    Answer: A bar graph displays the amounts side by side. This makes it easier to compare the activities quickly.
21. **A pictograph shows 4 symbols for Monday and 6 for Tuesday, with each symbol representing 3 two-wheelers. How many passed on both days, and how many more passed Tuesday?**

Answer: There were 30 two-wheelers over the two days. Tuesday had 6 more than Monday.

22. **A pictograph has 4 symbols for toys and 3 for board games, with each symbol representing 5 items. What is the total, and which category has more?**
Answer: The total is 35 items. Toys are 5 items more than board games.
23. **A class wants to show the daily number of two-wheelers passing a house for one week. What should they record each day to make a useful graph?**
Answer: They should record the number of two-wheelers during the same time period each day. They can then show the daily counts in a graph and compare them.
24. **In a picture-based true-or-false activity, a student guesses without checking every child in the picture. Why might the answer be wrong?**
Answer: The student may miss details such as who has glasses, a cap, or a book. The whole picture should be checked before deciding.
25. **A school wants to know whether its food-wastage reduction plan worked. What data should it compare?**
Answer: It should compare the amounts wasted before and after the plan. A lower amount afterward would show that wastage decreased.

15.9. Three-mark questions with Answers of LOTS Type: (15 Questions)

Three-Mark Descriptive Questions — LOTS:
Each answer has three sentences or points.

1. **What is a pictograph, and how does it show information?**
Answer: A pictograph is a way of presenting data. It uses pictures or symbols to represent items. A key or scale tells how many items each symbol stands for.
2. **What is the purpose of a scale in a pictograph?**
Answer: A scale tells the value of one symbol. It helps represent many items using fewer symbols. It helps readers calculate the actual number of items.
3. **What information did Samaira and Kabir collect?**
Answer: Samaira and Kabir acted like reporters. They asked their friends about the hours spent watching TV. They collected information from 35 friends.
4. **Which items did Joseph Uncle stock in his shop?**
Answer: Joseph Uncle had toys in his shop. He also had board games. He had sports items as well.
5. **What scale did Dipesh suggest for showing the shop items?**
Answer: Dipesh suggested using one picture for every five items. The same scale was used for toys. It was also used for board games and sports items.
6. **What did Deepti record, and what did one symbol represent?**
Answer: Deepti recorded two-wheelers passing her house. She observed them on different days. One symbol represented three two-wheelers.
7. **What is a bar graph, and what does it use to show data?**
Answer: A bar graph is a way of presenting data. It uses bars to represent amounts. The bars help readers compare categories.
8. **What information is shown on the two axes in Sheela's bar graph?**
Answer: The horizontal base shows different activities. The vertical line shows the number of hours. The bars show the time spent on each activity.
9. **What did Raman record in his daily-routine table? Give two examples of activities.**
Answer: Raman recorded the time spent on different activities. He recorded time spent sleeping. He also recorded time in school.

10. **What are students asked to do in the "Day in My Life" activity?**
    Answer: Students record how they spend their day. They include activities such as sleeping, studying, playing, and eating. They use the information to make a bar graph.
11. **How do students compare index-finger lengths in the chapter activity?**
    Answer: Each student places a paper strip along their index finger. The extra part of the strip is torn off. The strips are pasted in a graph to compare their lengths.
12. **What information does the food-wastage graph show?**
    Answer: The graph shows the amount of food wasted. It includes different food items over the weekdays. The amounts are measured in kilograms.
13. **Name three food items shown in the food-wastage graph.**
    Answer: Sandwich is one food item in the graph. Paratha is another food item. Khichdi is also shown.
14. **How can a bar graph help a reader understand data?**
    Answer: It shows the amount for each category using a bar. It helps readers compare categories. It can help identify the greatest or least amount.
15. **A pictograph uses one symbol for five items and shows four symbols. How many items are represented? Explain the calculation.**
    Answer: Each symbol represents five items. There are four symbols. Four groups of five make 20 items.

15.10. Three-mark questions with Answers of HOTS Type: (15 Questions)

Three-Mark Descriptive Questions — HOTS:
Practice values are provided where needed. Each answer has three sentences or points.

1. **A pictograph uses one symbol for 5 toys. One row has 7 symbols and another has 4. How many toys does each row show, and what is the difference?**
   Answer: The first row shows 35 toys. The second row shows 20 toys. The difference is 15 toys.
2. **One symbol represents 3 two-wheelers. Monday has 9 symbols, Wednesday has 6, and Friday has 5. How many two-wheelers passed altogether, and which day had the most?**
   Answer: Monday shows 27 two-wheelers, Wednesday 18, and Friday 15. Altogether, 60 two-wheelers passed. Monday had the most.
3. **A student spends 8 hours sleeping, 6 hours at school, 3 hours studying, and 2 hours eating and playing. How much time is recorded, and how much remains in the day?**
   Answer: The recorded activities take 19 hours altogether. A full day has 24 hours. Five hours remain for other activities.
4. **A pictograph uses one symbol for 5 items and needs 10 symbols to show a collection. If the scale changes to one symbol for 10 items, how many symbols will be needed?**
   Answer: The original pictograph shows 50 items. With the new scale, each symbol represents 10 items. Five symbols will be needed.
5. **A student needs to show 35 toys using a pictograph. Which scale is easier to use: one symbol for 5 toys or one symbol for 10 toys? Why?**
   Answer: One symbol for 5 toys is easier to use. It represents 35 toys with 7 whole symbols. The 10-toy scale would need 3½ symbols.
6. **A bar graph's vertical scale counts by 2s, but a student reads each line as 1. What mistake will this cause, and how can it be corrected?**

Answer: The student will read the amounts as too small. Each step on the graph represents 2 units. The student should follow the marked scale when reading the bars.

7. **A school wastes 7 kg of food on one day and 4 kg on another. If 1 kg could feed 3 children, how many children could the wasted food have fed altogether?**
   Answer: The two days show 11 kg of food waste altogether. Each kilogram could feed 3 children. The wasted food could have fed 33 children.
8. **A school records food wastage of 4 kg, 2 kg, 6 kg, 3 kg, and 5 kg over five days. What is the total wastage, and which day should be reviewed first?**
   Answer: The total wastage is 20 kg. The day with 6 kg has the greatest wastage. The school should review that day first.
9. **Two students each record 24 hours, but one spends more time sleeping while the other spends more time studying. What can a bar graph help them compare?**
   Answer: It can show the time each student spends on every activity. The bars make differences between the activities easier to see. The graph can help them discuss how their routines differ.
10. **Two bars in a graph are the same height. What can you infer, and what should you check before deciding?**
    Answer: The two categories may have equal amounts. The graph's scale must be read correctly. The labels should also be checked to identify the categories.
11. **A class surveys some students about TV time for one day and others about TV time for one week. Why is this data hard to compare, and how could the survey be improved?**
    Answer: The answers cover different lengths of time. This makes the results unfair to compare. The class should ask everyone about the same time period.
12. **A bar graph has no activity names along its base. What difficulty will this cause, and how can it be fixed?**
    Answer: Readers will not know what each bar represents. They may compare the bars but misunderstand the categories. Adding activity labels along the base will fix the problem.
13. **A pictograph shows 6 symbols, and the key says one symbol represents 5 items. If 10 items are removed, how many remain?**
    Answer: The pictograph originally represents 30 items. Removing 10 leaves 20 items. The remaining amount is equal to 4 symbols on the same scale.
14. **A student wants to compare how many items are in several categories and has a large collection. Why might a pictograph with a scale be useful?**
    Answer: A scale lets one symbol represent several items. This reduces the number of symbols needed. The pictograph can still be used to compare the categories.
15. **A school wants to check whether a plan reduced food wastage. What information should it collect, and how could a graph help?**
    Answer: The school should record the amount of food wasted each day before and after the plan. It should use the same units and time period for both sets of data. A graph can make the amounts easier to compare.

15.11 Five-mark questions with Answers of LOTS Type: (10 Questions)

Five-Mark Descriptive Questions — LOTS:
Each answer contains five sentences or points.

1. **What is a pictograph? Describe its main features.**
   Answer: A pictograph is a way of presenting data with pictures or symbols. Each picture represents one item or a group of items. A key explains what each picture

means. The scale shows how many items each symbol represents. Readers can use the pictograph to compare categories.

2. **A pictograph uses one symbol for every 5 items. It shows 4 symbols for toys, 3 for board games, and 2 for sports items. Find the number of each item and the total.**
   Answer: The scale is 1 symbol for 5 items. The 4 toy symbols represent 20 toys. The 3 board-game symbols represent 15 board games. The 2 sports-item symbols represent 10 sports items. There are 45 items altogether.
3. **One symbol represents 3 two-wheelers. A pictograph shows 4 symbols for Monday, 6 for Wednesday, and 5 for Friday. Find the total and identify the day with the most two-wheelers.**
   Answer: Monday's 4 symbols represent 12 two-wheelers. Wednesday's 6 symbols represent 18 two-wheelers. Friday's 5 symbols represent 15 two-wheelers. The total is 45 two-wheelers. Wednesday had the most.
4. **Describe how to record your daily routine and show it in a bar graph.**
   Answer: List activities such as sleeping, school, studying, eating, and playing. Record the time spent on each activity. Check that the hours together make 24 hours. Write the activities along the horizontal base. Draw a bar for each activity to the correct height on the hours scale.
5. **A bar graph shows 8 hours for sleeping, 6 hours for school, 3 hours for studying, and 2 hours for eating and playing. Find the total time and the time left in the day.**
   Answer: Sleeping takes 8 hours. School takes 6 hours. Studying takes 3 hours, and eating and playing take 2 hours. The recorded activities total 19 hours. Five hours remain in the 24-hour day.
6. **A practice food-wastage graph shows 4 kg for sandwiches, 2 kg for parathas, 6 kg for khichdi, 3 kg for puri-sabzi, and 5 kg for idli-sambar. Answer the following: total wastage, most wasted, least wasted, difference between most and least, and children fed if 1 kg feeds 3 children.**
   Answer: The total wastage is 20 kg. Khichdi has the greatest wastage at 6 kg. Parathas have the least wastage at 2 kg. The difference is 4 kg. The wasted food could have fed 60 children.
7. **Describe the steps in the "Whose Index Finger is Longer?" activity.**
   Answer: Give each student a paper strip of the same width. Place the strip along the student's index finger. Tear off the extra part of the strip. Paste each strip in the graph space under the student's name. Compare the strips to find the longest and shortest fingers.
8. **Describe how the axes and bars are used in a bar graph.**
   Answer: A bar graph displays data using bars. The horizontal axis shows the categories. The vertical axis shows the numbers or amounts. Each bar represents one category. The bar's height shows the value according to the graph's scale.
9. **Explain how to read a pictograph and find the total number of items.**
   Answer: First, read the key or scale. Count the symbols in each category. Multiply the number of symbols by the value of one symbol. Repeat this for each category. Add the category totals to find the overall total.
10. **A school wants to record food wastage over five weekdays. Describe five useful steps it could take.**
    Answer: Record the food wasted each day. Measure each amount in the same unit, such as kilograms. Organise the amounts by day and food item. Display the results in a graph with clear labels and a scale. Use the graph to identify which foods had the most and least wastage.

15.12 Five-mark questions with Answers of HOTS Type: (10 Questions)

Five-Mark Descriptive Questions — HOTS:

Practice values are provided where needed. Each answer has five points.

1. **A shop has 60 toys. Compare the pictographs made with a scale of 1 symbol for 5 toys and 1 symbol for 10 toys. Which scale uses fewer symbols, and what should be written so readers understand the graph?**
   Answer: With 1 symbol for 5 toys, the pictograph needs 12 symbols. With 1 symbol for 10 toys, it needs 6 symbols. The 10-toy scale uses fewer symbols. Both scales can show the same total correctly. The key should clearly state how many toys each symbol represents.
2. **A pictograph uses 1 symbol for 5 items. It shows 5 symbols for toys, 3 for board games, and 4 for sports items. Find each amount, the total, and the difference between the largest and smallest categories.**
   Answer: The pictograph shows 25 toys. It shows 15 board games. It shows 20 sports items. There are 60 items altogether. The difference between the largest and smallest categories is 10 items.
3. **A student records 8 hours sleeping, 6 hours at school, 4 hours studying, 3 hours playing, and 2 hours eating. Check the total and say what the student should do before drawing a 24-hour routine graph.**
   Answer: The recorded time adds up to 23 hours. A full day has 24 hours. One hour has not been included in the record. The student should check whether an activity was missed or a time was recorded incorrectly. After checking, the student can draw the bar graph.
4. **A practice food-wastage graph shows 5 kg for sandwiches, 3 kg for parathas, 7 kg for khichdi, 2 kg for puri-sabzi, and 3 kg for idli-sambar. Find the total and identify what the school should review first.**
   Answer: The total food wastage is 20 kg. Khichdi has the greatest wastage at 7 kg. Puri-sabzi has the least wastage at 2 kg. The school should review why khichdi wastage is highest. It can record the amounts again after making a change.
5. **One symbol represents 3 two-wheelers. Monday has 7 symbols, Wednesday has 4, and Friday has 6. Find the total, the busiest day, and the difference between the busiest and quietest days.**
   Answer: Monday shows 21 two-wheelers. Wednesday shows 12, and Friday shows 18. Altogether, 51 two-wheelers were recorded. Monday was the busiest day. The difference between Monday and Wednesday is 9 two-wheelers.
6. **A bar graph shows 9 hours sleeping, 6 hours at school, 2 hours studying, 3 hours eating, and 4 hours playing. What is the total, and what could the student consider changing to allow more study time?**
   Answer: The activities total 24 hours. The student spends 2 hours studying. The graph shows 9 hours for sleeping and 4 hours for playing. The student could review how much time is available for other activities. Any change should still leave enough time for sleep, school, meals, and play.
7. **In a finger-length graph, the strips are 6 cm, 8 cm, 7 cm, 8 cm, and 5 cm. Find the longest and shortest lengths, their difference, and what the graph shows about equal lengths.**
   Answer: The longest length is 8 cm. The shortest length is 5 cm. The difference is 3 cm. Two students have strips measuring 8 cm. The graph shows that the longest length is shared.

8. **Two bar graphs show daily activities, but one graph counts by 1s and the other by 2s. What should you check before comparing them, and why?**
   Answer: Check the scale on each vertical axis. Check that both graphs show the same activities. Read the values using the numbers marked on each scale. Do not compare bar heights alone. The scales may make equal heights represent different amounts.
9. **A class wants to find out which activity students spend the most time on. Describe how they can collect fair data and show the results clearly.**
   Answer: Ask each student about the same set of activities. Ask everyone to record time for the same length of day. Organise the answers in a table. Use a clear scale and labelled axes to make a bar graph. Compare the bar heights to find the activity with the greatest total or amount.
10. **A school wants to check whether a food-wastage plan is working. Describe how it can use graphs to assess the plan fairly.**
    Answer: Record food wastage before the plan begins. Record wastage again after the plan has been used. Use the same units and the same number of days for both records. Make graphs with clearly labelled categories and scales. Compare the totals to see whether wastage has decreased.

15.13 Five-mark questions with Answers of Applied Type: (10 Questions)

Five-Mark Descriptive Questions — HOTS:
Practice values are provided where needed. Each answer has five points.

1. **A shop has 60 toys. Compare the pictographs made with a scale of 1 symbol for 5 toys and 1 symbol for 10 toys. Which scale uses fewer symbols, and what should be written so readers understand the graph?**
   Answer: With 1 symbol for 5 toys, the pictograph needs 12 symbols. With 1 symbol for 10 toys, it needs 6 symbols. The 10-toy scale uses fewer symbols. Both scales can show the same total correctly. The key should clearly state how many toys each symbol represents.
2. **A pictograph uses 1 symbol for 5 items. It shows 5 symbols for toys, 3 for board games, and 4 for sports items. Find each amount, the total, and the difference between the largest and smallest categories.**
   Answer: The pictograph shows 25 toys. It shows 15 board games. It shows 20 sports items. There are 60 items altogether. The difference between the largest and smallest categories is 10 items.
3. **A student records 8 hours sleeping, 6 hours at school, 4 hours studying, 3 hours playing, and 2 hours eating. Check the total and say what the student should do before drawing a 24-hour routine graph.**
   Answer: The recorded time adds up to 23 hours. A full day has 24 hours. One hour has not been included in the record. The student should check whether an activity was missed or a time was recorded incorrectly. After checking, the student can draw the bar graph.
4. **A practice food-wastage graph shows 5 kg for sandwiches, 3 kg for parathas, 7 kg for khichdi, 2 kg for puri-sabzi, and 3 kg for idli-sambar. Find the total and identify what the school should review first.**
   Answer: The total food wastage is 20 kg. Khichdi has the greatest wastage at 7 kg. Puri-sabzi has the least wastage at 2 kg. The school should review why khichdi wastage is highest. It can record the amounts again after making a change.
5. **One symbol represents 3 two-wheelers. Monday has 7 symbols, Wednesday has 4, and Friday has 6. Find the total, the busiest day, and the difference between**

the busiest and quietest days.
Answer: Monday shows 21 two-wheelers. Wednesday shows 12, and Friday shows 18. Altogether, 51 two-wheelers were recorded. Monday was the busiest day. The difference between Monday and Wednesday is 9 two-wheelers.

6. **A bar graph shows 9 hours sleeping, 6 hours at school, 2 hours studying, 3 hours eating, and 4 hours playing. What is the total, and what could the student consider changing to allow more study time?**
Answer: The activities total 24 hours. The student spends 2 hours studying. The graph shows 9 hours for sleeping and 4 hours for playing. The student could review how much time is available for other activities. Any change should still leave enough time for sleep, school, meals, and play.
7. **In a finger-length graph, the strips are 6 cm, 8 cm, 7 cm, 8 cm, and 5 cm. Find the longest and shortest lengths, their difference, and what the graph shows about equal lengths.**
Answer: The longest length is 8 cm. The shortest length is 5 cm. The difference is 3 cm. Two students have strips measuring 8 cm. The graph shows that the longest length is shared.
8. **Two bar graphs show daily activities, but one graph counts by 1s and the other by 2s. What should you check before comparing them, and why?**
Answer: Check the scale on each vertical axis. Check that both graphs show the same activities. Read the values using the numbers marked on each scale. Do not compare bar heights alone. The scales may make equal heights represent different amounts.
9. **A class wants to find out which activity students spend the most time on. Describe how they can collect fair data and show the results clearly.**
Answer: Ask each student about the same set of activities. Ask everyone to record time for the same length of day. Organise the answers in a table. Use a clear scale and labelled axes to make a bar graph. Compare the bar heights to find the activity with the greatest total or amount.
10. **A school wants to check whether a food-wastage plan is working. Describe how it can use graphs to assess the plan fairly.**
Answer: Record food wastage before the plan begins. Record wastage again after the plan has been used. Use the same units and the same number of days for both records. Make graphs with clearly labelled categories and scales. Compare the totals to see whether wastage has decreased.

15.14 Multiple Choice Questions with answers for Olympiad type Competitive Exams:

Olympiad-Style Multiple-Choice Questions:
The values in these questions are for practice. Choose the correct answer.

1. One symbol in a pictograph represents 5 toys. How many toys do 7 symbols represent?
A. 30 B. 35 C. 40 D. 45
Answer: B. 35
2. A pictograph uses 1 symbol for 5 items. It shows 4 symbols for toys, 6 for board games, and 3 for sports items. How many items are shown altogether?
A. 60 B. 65 C. 70 D. 75
Answer: B. 65
3. Each symbol represents 5 items. One category has 10 symbols and another has 7. How many more items does the first category have?

A. 10 B. 15 C. 20 D. 25
Answer: B. 15

4. One symbol represents 3 two-wheelers. How many two-wheelers do 8 symbols represent?
A. 11 B. 21 C. 24 D. 27
Answer: C. 24
5. A pictograph shows 42 items using a scale of 1 symbol for 6 items. How many symbols are shown?
A. 6 B. 7 C. 8 D. 9
Answer: B. 7
6. Which scale uses fewer symbols to show 40 items?
A. 1 symbol = 4 items B. 1 symbol = 5 items C. 1 symbol = 8 items D. 1 symbol = 2 items
Answer: C. 1 symbol = 8 items
7. A collection has 36 items. Which scale shows it using fewer whole symbols?
A. 1 symbol = 3 items B. 1 symbol = 4 items C. 1 symbol = 6 items D. 1 symbol = 5 items
Answer: C. 1 symbol = 6 items
8. One symbol represents 3 two-wheelers. Monday has 7 symbols and Wednesday has 5. How many more two-wheelers passed on Monday?
A. 3 B. 6 C. 9 D. 12
Answer: B. 6
9. One symbol represents 3 two-wheelers. Monday has 4 symbols, Wednesday 6, and Friday 5. What is the total number of two-wheelers?
A. 42 B. 45 C. 48 D. 50
Answer: B. 45
10. One symbol represents 3 two-wheelers. Monday has 4 symbols, Wednesday 6, and Friday 5. Which statement is correct?
A. Monday had the most. B. Friday had the most. C. Wednesday had the most. D. Monday and Friday were equal.
Answer: C. Wednesday had the most.
11. A pictograph uses 1 symbol for 10 visitors. Four days have 2, 3, 1, and 4 symbols. How many visitors came altogether?
A. 90 B. 100 C. 110 D. 120
Answer: B. 100
12. In a bar graph, each step on the vertical scale represents 2 hours. A bar reaches 5 steps. How many hours does it show?
A. 7 B. 8 C. 10 D. 12
Answer: C. 10
13. A daily routine graph shows 4 hours for studying, 6 for school, 3 for playing, and 2 for eating. What is the total time shown?
A. 13 hours B. 14 hours C. 15 hours D. 16 hours
Answer: C. 15 hours
14. A student records 7 hours sleeping, 6 at school, 2 studying, and 4 eating and playing. How many hours remain in the day?
A. 3 B. 4 C. 5 D. 6
Answer: C. 5
15. A student records 8 hours sleeping, 6 at school, 3 studying, and 2 eating and playing. How many hours are left for other activities in a 24-hour day?

A. 4 B. 5 C. 6 D. 7
Answer: B. 5

16. A bar graph shows 9 hours for sleeping and 6 hours for school. How much more time is spent sleeping?
A. 2 hours B. 3 hours C. 4 hours D. 5 hours
Answer: B. 3 hours
17. A student's recorded routine totals 27 hours. How many hours more than a day is this?
A. 2 B. 3 C. 4 D. 5
Answer: B. 3
18. If 1 kg of leftover food could feed 3 children, how many children could 6 kg feed?
A. 9 B. 15 C. 18 D. 21
Answer: C. 18
19. A school wastes 2 kg of food on Monday, 3 kg on Tuesday, and 4 kg on Wednesday. What is the total wastage?
A. 7 kg B. 8 kg C. 9 kg D. 10 kg
Answer: C. 9 kg
20. A food-wastage graph shows 5 kg for sandwiches, 2 kg for parathas, 6 kg for khichdi, and 3 kg for idli-sambar. Which food has the least wastage?
A. Sandwiches B. Parathas C. Khichdi D. Idli-sambar
Answer: B. Parathas
21. A graph shows 7 kg wastage for one food and 2 kg for another. What is the difference?
A. 4 kg B. 5 kg C. 6 kg D. 9 kg
Answer: B. 5 kg
22. In a bar graph of daily activities, where should the activity names usually be written?
A. Along the horizontal axis B. Along the vertical axis C. Above the title D. Inside the scale
Answer: A. Along the horizontal axis
23. Two bars in the same bar graph are the same height. If the graph uses one scale for both, what does this show?
A. The categories are identical. B. The amounts are equal. C. One value is double the other. D. The graph has no scale.
Answer: B. The amounts are equal.
24. Graph A uses a scale of 1 step = 2 items, and its bar is 4 steps high. Graph B uses 1 step = 5 items, and its bar is 2 steps high. Which graph shows more items?
A. Graph A by 2 B. Graph A by 8 C. Graph B by 2 D. Graph B by 10
Answer: C. Graph B by 2
25. A pictograph shows 5 symbols at a scale of 1 symbol = 4 items and 3 symbols at a scale of 1 symbol = 6 items. What is the total?
A. 32 B. 36 C. 38 D. 40
Answer: C. 38
26. In a bar graph, each marked step represents 2 units. A bar reaches 7 steps. What is its value?
A. 9 B. 12 C. 14 D. 16
Answer: C. 14
27. A pictograph shows 6 symbols, each representing 5 items. If 2 symbols' worth of items are removed, how many items remain?
A. 10 B. 20 C. 25 D. 30
Answer: B. 20

28. A pictograph uses one symbol for every 4 items. How many items are represented by 9 symbols?
    A. 32 B. 34 C. 36 D. 40
    Answer: C. 36
29. A bar graph shows 8 hours for sleeping, 5 for school, and 3 for studying. Which two activities together take 11 hours?
    A. Sleeping and school B. Sleeping and studying C. School and studying D. All three
    Answer: A. Sleeping and school
30. A class wants to compare how much time students spend on different activities. Which display in this chapter is designed to show category amounts with bars?
    A. Bar graph B. Calendar C. Number line D. Clock face
    Answer: A. Bar graph

15.15 Best Practices Opportunity List from the Chapter: (10 Ideas)

Best Practices for Teaching "Data Through Pictures":

(1) Begin with familiar questions: Ask students about everyday topics such as travel to school, favourite games, or time spent reading. Use their answers to introduce data.

(2) Collect class data together: Let students ask the same question to classmates, record responses, and check the total number of responses.

(3) Organise data before graphing: Guide students to sort information into clear categories and record the counts in a table first.

(4) Teach the pictograph key explicitly: Before students read a pictograph, have them identify what one symbol represents and practise converting symbols into actual quantities.

(5) Use concrete objects before symbols: Make a pictograph with counters, blocks, or paper shapes so students can see how several items can be represented by one symbol.

(6) Model bar graphs step by step: Demonstrate how to label the categories, number scale, and bars. Have students check that the bar heights match the recorded values.

(7) Ask comparison questions: Use prompts such as "Which category has the most?", "Which has the least?" and "How many more?" to practise reading and comparing data.

(8) Include student-generated graphs: Invite students to record their daily activities or compare finger lengths, then make a bar graph from their own data.

(9) Use real-life data for discussion: Discuss the chapter's food-wastage example and ask students what the graph tells them and how a school might reduce waste.

(10) Check understanding with short tasks: Show a simple pictograph or bar graph and ask students to read one value, find a total, or identify a difference.

(11) Encourage peer checking: Ask pairs to review each other's graphs for a clear title, labels, scale, accurate values, and matching bars or symbols.

(12) Support different learning needs: Provide prepared category labels or partially completed axes for students who need help, while letting confident students choose a suitable scale independently.

15.16 Innovations Opportunity List from the Chapter: (10 Ideas)

Innovative Teaching–Learning Ideas for "Data Through Pictures":

(1) Classroom Data Newsroom: Students act as reporters, ask classmates a question, record answers, and present the results as a pictograph or bar graph.

(2) **Human Pictograph:** Give students category cards and have them form groups where each student represents one item. Try different scales and discuss how the display changes.
(3) **Scale Detective Challenge:** Show a pictograph with its key covered. Students infer possible scales from the data, then check which scales give whole-number counts.
(4) **Mini-Shop Stock Game:** Set up a pretend shop with toy, board-game, and sports-item cards. Students count the stock, choose a scale, and make a pictograph.
(5) **Floor-Sized Bar Graph:** Mark a number line on the floor with tape. Students place category cards at the correct values, then compare the "bars" by height or length.
(6) **Daily-Routine Graph Gallery:** Students record their daily activities, create bar graphs, and display them around the room. Classmates find similarities and differences across graphs.
(7) **Food-Waste Action Board:** Use sample or classroom food-waste data to make a graph, then have groups propose one practical way to reduce waste and explain which data supports it.
(8) **Graph Error Hunt:** Display graphs with a missing key, uneven scale, incorrect bar height, or missing label. Students find and correct each error.
(9) **Choose-the-Scale Challenge:** Give groups the same data and ask them to show it using different scales. Compare which pictograph is easiest to read and why.
(10) **Data Story Cards:** Give students a short story about vehicles, shop items, or activities with data hidden in the text. They extract the information, organise it, and choose a suitable graph.
(11) **Graph-to-Movement Game:** Call out a category and value; students move to the matching position on a classroom bar graph. Students can then create questions for classmates to solve.
(12) **Digital Graph Showcase:** Where devices are available, students enter class survey results in a simple spreadsheet or graphing app, then compare the digital graph with a hand-drawn version.

15.17: Practicing Questions/Question Bank :

Question Bank: Chapter 15 — Data Through Pictures;

A. Fill in the Blanks:

1. Samaira and Kabir collected information from _____ friends.
   Answer: 35

2. A display that uses pictures or symbols to show data is called a _____.
   Answer: pictograph

3. In Dipesh's pictograph, one symbol represented _____ items.
   Answer: 5

4. In Deepti's pictograph, one symbol represented _____ two-wheelers.
   Answer: 3

5. Food wastage in the chapter's graph is measured in _____.
   Answer: kilograms

B. One-Mark Descriptive Questions:

1. **What is data?**
   Answer: Data is information collected about people, objects, or activities.

2. **What does the key or scale in a pictograph tell us?**
   Answer: It tells how many items each symbol represents.

3. **What does the height of a bar show in a bar graph?**
   Answer: The height of a bar shows the amount for that category.

4. **What do students compare in the "Whose Index Finger is Longer?" activity?**
   Answer: They compare the lengths of their index fingers.

5. **What does Sheela's bar graph show about daily activities?**
   Answer: It shows the number of hours spent on different activities.

C. Two-Mark Descriptive Questions:

1. **Why is a scale useful in a pictograph?**
   Answer: A scale tells the value of each symbol. It helps show many items using fewer symbols.

2. **What information is shown on the two axes of Sheela's bar graph?**
   Answer: The horizontal axis shows the activities. The vertical axis shows the number of hours.

3. **Name two activities recorded in Raman's daily routine table.**
   Answer: Raman recorded his sleeping time. He also recorded the time he spent in school.

4. **What information does the food-wastage graph show?**
   Answer: It shows the amount of different foods wasted over the weekdays. The amounts are measured in kilograms.

D. Three-Mark Descriptive Questions:

1. **A pictograph uses 1 symbol for 5 items. It shows 4 symbols for toys and 3 for board games. How many of each are shown, and what is the total?**
   Answer: The pictograph shows 20 toys. It shows 15 board games. There are 35 items altogether.

2. **A student spends 8 hours sleeping, 6 hours at school, 3 hours studying, and 2 hours eating and playing. How many hours are recorded, and how many remain in a 24-hour day?**
   Answer: The recorded activities total 19 hours. A day has 24 hours. Five hours remain for other activities.

3. **One symbol represents 3 two-wheelers. Monday has 4 symbols and Wednesday has 6 symbols. How many two-wheelers were recorded, and how many more passed on Wednesday?**
   Answer: Monday had 12 two-wheelers. Wednesday had 18 two-wheelers. Wednesday had 6 more than Monday.

E. Five-Mark Descriptive Questions:

1. **A student records 8 hours sleeping, 6 hours at school, 3 hours studying, 2 hours eating and playing, and 5 hours on other activities. Explain how to check the total and show the routine in a bar graph.**
   Answer: Add the activity times to get a total of 24 hours. Write the activities along the horizontal axis. Mark the number of hours on the vertical axis. Draw one bar for each activity to the correct height. The graph shows that sleeping takes the most time.

2. **A school records food wastage of 2 kg, 3 kg, 1 kg, 4 kg, and 2 kg over five days. If 1 kg of food could feed 3 children, find the total wastage, the greatest and least daily amounts, and how many children the wasted food could have fed.**
   Answer: The total wastage is 12 kg. The greatest daily amount is 4 kg. The least daily amount is 1 kg. The wasted food could have fed 36 children. A bar graph could show the wastage for each day and make comparisons easier.

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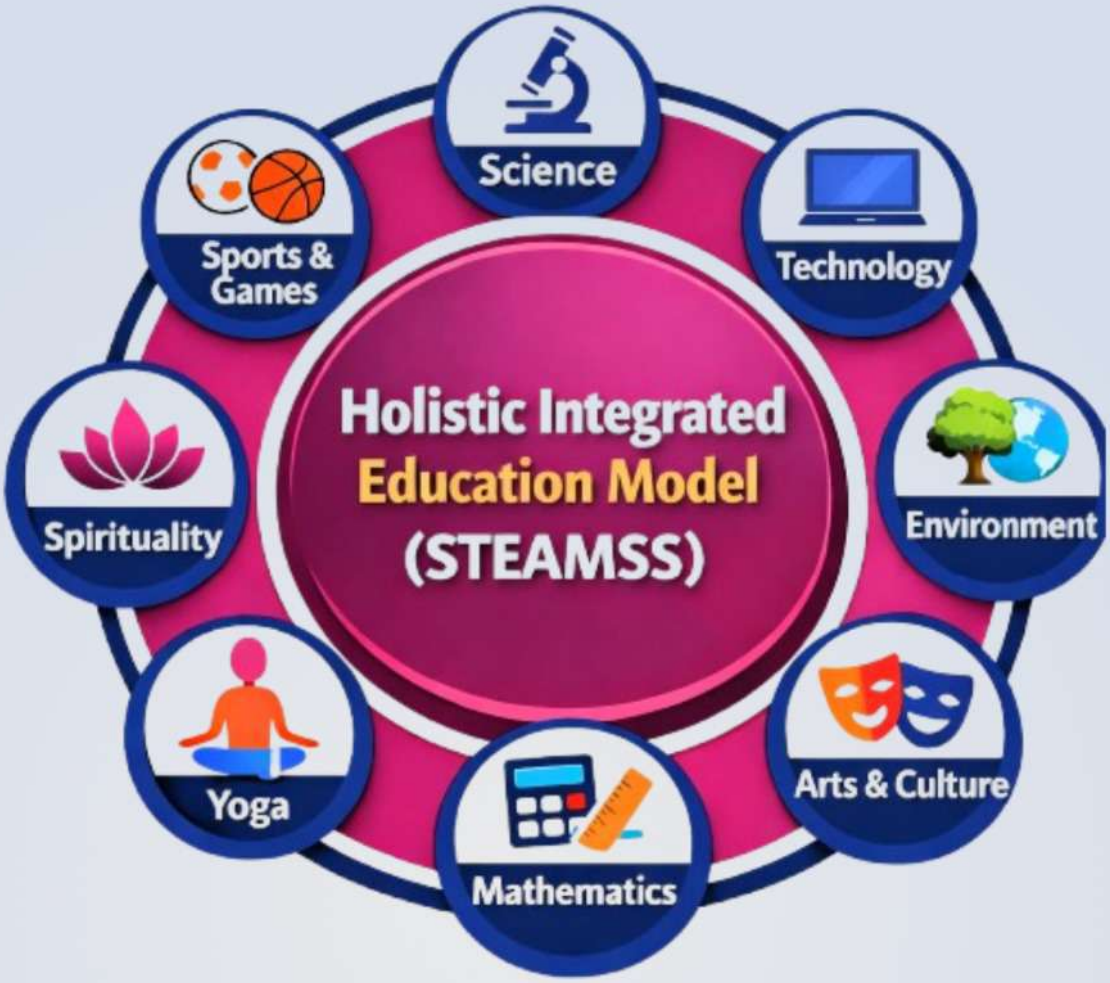

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