YOUNG STAR DEFENCE ACADEMY

Amritsar | Chandigarh | Kapurthala

MATHEMATICS

CLASS VI — AISSEE PREPARATION

All India Sainik Schools Entrance Examination

Covering complete NCERT Class V & VI syllabus | 500+ Practice Questions | Chapter-wise Exercises

About This Book

This Mathematics workbook is specially designed for students appearing in the All India Sainik Schools Entrance Examination (AISSEE) for admission to Class 6. The book covers all mathematical concepts tested in AISSEE with a focus on conceptual clarity, speed, and accuracy.

Exam Pattern	Key Features
• Total Questions: 50 (Maths) • Time: 2 hours 30 minutes • Marks: 150 (3 marks each) • Negative Marking: None • Standard: Class V NCERT	• Concept notes with examples • 500+ practice questions • AISSEE previous year patterns • Formulae boxes & tips • 2 full-length mock tests

CH 1

Number System

1.1 Numbers up to 7 Digits

In AISSEE, questions often involve large numbers — up to crores. Understanding the Indian place value system is essential.

FORMULA	Indian System: Ones | Tens | Hundreds | Thousands | Ten-Thousands | Lakhs | Ten-Lakhs | Crores

Place Value Table

Crores	Ten Lakhs	Lakhs	Ten-Thousands	Thousands	Hundreds	Tens	Ones
3	2	5	4	1	6	8	7

The number above is: 3,25,41,687 — Three crore twenty-five lakh forty-one thousand six hundred eighty-seven.

SOLVED EXAMPLE

Q: Write the numeral for: Eight crore six lakh four thousand fifty.

Solution: 8,06,04,050 — Start from crores: 8 crores = 8,00,00,000; 6 lakhs = 6,00,000; 4 thousands = 4,000; fifty = 50. So the answer is 8,06,04,050.

SOLVED EXAMPLE

Q: Find the difference between the place value and face value of 7 in 3,47,25,196.

Solution: Place value of 7 = 7,00,000 (since 7 is in the lakhs place). Face value of 7 = 7. Difference = 7,00,000 − 7 = 6,99,993.

1.2 Roman Numerals

KEY RULES	I=1, V=5, X=10, L=50, C=100, D=500, M=1000. Subtract when smaller comes before larger (IV=4, IX=9). Repeat max 3 times.

Important combinations to remember:

- IV = 4, VI = 6, IX = 9, XI = 11
- XL = 40, LX = 60, XC = 90, CX = 110
- CD = 400, DC = 600, CM = 900

SOLVED EXAMPLE

Q: Convert 2024 to Roman numerals.
Solution: 2024 = 2000 + 24 = MM + XXIV = MMXXIV

1.3 Operations on Large Numbers

Addition & Subtraction

Always align numbers by their place values before adding or subtracting.

SOLVED EXAMPLE

Q: Add 45,67,832 and 38,94,569.
Solution: 45,67,832 + 38,94,569 ---------- 84,62,401

Multiplication

TRICK	To multiply by 10, 100, 1000 — simply add that many zeros. e.g., 456 × 1000 = 4,56,000

SOLVED EXAMPLE

Q: Multiply 5,432 × 125.
Solution: 5,432 × 125 = 5,432 × 100 + 5,432 × 25 = 5,43,200 + 1,35,800 = 6,79,000

Division

FORMULA	Dividend = Divisor × Quotient + Remainder. Always verify your answer using this formula.

SOLVED EXAMPLE

Q: Divide 84,756 by 36.
Solution: 84,756 ÷ 36 = 2,354 remainder 12. Verify: 36 × 2,354 + 12 = 84,744 + 12 = 84,756 ✓

1.4 Exercise — Number System

No.	Question
1	Write in words: 5,04,07,060

2	Write the numeral: Seven crore three lakh twelve thousand forty-five
3	Find the place value of each digit in 4,56,78,903
4	What is the difference between the largest 7-digit number and the smallest 6-digit number?
5	Convert to Roman numerals: 3,549 and 1,984
6	Convert to Hindu-Arabic: MMMCMXCIX
7	Arrange in ascending order: 56,78,342 | 5,67,83,42 | 5,67,832 | 56,07,342
8	A factory produces 45,678 units per day. How many units in 365 days?
9	Divide 9,87,654 by 54 and verify your answer.
10	Find the number that is 1,00,000 more than 89,99,999.

CH 2

Fractions & Decimals

2.1 Fractions — Types and Concepts

A fraction represents a part of a whole. It is written as p/q where p is the numerator and q is the denominator (q ≠ 0).

Proper Fraction	Improper Fraction	Mixed Number	Like Fractions
p < q e.g. 3/7	p > q e.g. 9/4	2 whole + part e.g. 3½	Same denominator e.g. 2/9, 5/9

2.2 Operations on Fractions

Addition & Subtraction

RULE	Make denominators equal using LCM, then add/subtract numerators. Mixed numbers: convert to improper fractions first.

SOLVED EXAMPLE

Q: Add 3/8 + 5/12.

Solution: LCM of 8 and 12 = 24. So 3/8 = 9/24 and 5/12 = 10/24. Sum = 9/24 + 10/24 = 19/24.

SOLVED EXAMPLE

Q: Subtract 2⅓ from 5¾.

Solution: 5¾ = 23/4, 2⅓ = 7/3. LCM of 4 and 3 = 12. 23/4 = 69/12, 7/3 = 28/12. Answer = 41/12 = 3 5/12.

Multiplication & Division

RULE	Multiplication: Multiply numerators × numerators, denominators × denominators. Division: Multiply by the reciprocal of the divisor.

SOLVED EXAMPLE

Q: Divide 5/6 ÷ 10/9.

Solution: 5/6 ÷ 10/9 = 5/6 × 9/10 = 45/60 = 3/4.

2.3 Decimals

PLACE VALUES	Tenths (1/10) | Hundredths (1/100) | Thousandths (1/1000). e.g., 3.456 = 3 + 4/10 + 5/100 + 6/1000

SOLVED EXAMPLE

Q: Convert 7/8 to decimal.
Solution: 7 ÷ 8 = 0.875. Long divide: 70÷8=8 rem 6, 60÷8=7 rem 4, 40÷8=5. Answer: 0.875

SOLVED EXAMPLE

Q: A ribbon is 4.75 m long. Another is 3.8 m. What is their total length?
Solution: 4.75 + 3.80 = 8.55 m. (Align decimal points before adding.)

2.4 Exercise — Fractions & Decimals

No.	Question
1	Simplify: 144/180 to its lowest terms.
2	Which is greater: 7/9 or 5/6?
3	Add: 4⅔ + 3¾
4	Subtract: 8 1/5 − 3 7/10
5	Multiply: 4/7 × 14/16 × 2/3
6	Divide: 8¾ ÷ 1¾
7	A drum contains 45.8 litres of water. After removing 17.35 litres, how much remains?
8	Convert 0.625 into a fraction in simplest form.
9	Ramu walked 2.4 km, 3.75 km, and 1.8 km on three days. Find total distance.
10	If ¾ of a number is 63, find the number.

CH 3

HCF and LCM

3.1 Factors and Multiples

A factor of a number divides it exactly (no remainder). A multiple is obtained by multiplying a number by natural numbers.

KEY FACT Every number is a factor of itself. 1 is a factor of every number. Factors of a number are always less than or equal to that number.

3.2 Highest Common Factor (HCF)

The HCF (also called GCD) is the largest number that divides two or more numbers exactly.

Method 1: Prime Factorisation

SOLVED EXAMPLE

Q: Find HCF of 72 and 120.

Solution: $72 = 2^3 \times 3^2$ and $120 = 2^3 \times 3 \times 5$. HCF = product of common prime factors with lowest powers = $2^3 \times 3 = 8 \times 3 = 24$.

Method 2: Division Method (Euclid's Algorithm)

SOLVED EXAMPLE

Q: Find HCF of 96 and 36.

Solution: 96 ÷ 36 = 2 rem 24. Then 36 ÷ 24 = 1 rem 12. Then 24 ÷ 12 = 2 rem 0. HCF = 12.

3.3 Least Common Multiple (LCM)

The LCM is the smallest number that is divisible by two or more given numbers.

FORMULA LCM × HCF = Product of the two numbers (for exactly two numbers only).

SOLVED EXAMPLE

Q: Find LCM of 18, 24, and 36.

Solution: $18 = 2 \times 3^2$, $24 = 2^3 \times 3$, $36 = 2^2 \times 3^2$. LCM = highest power of each prime = $2^3 \times 3^2 = 8 \times 9 = 72$.

SOLVED EXAMPLE

Q: Three bells ring at intervals of 9, 12, and 15 minutes. If they ring together at 8:00 AM, when will they next ring together?

Solution: LCM of 9, 12, 15 = 180 minutes = 3 hours. They will next ring together at 11:00 AM.

3.4 Exercise — HCF and LCM

No.	Question
1	Find the HCF of 56, 84, and 112.
2	Find the LCM of 15, 25, and 40.
3	The HCF of two numbers is 18 and their LCM is 360. If one number is 72, find the other.
4	Find the greatest number which divides 445, 572, and 699 leaving remainder 4, 5, and 6 respectively.
5	Find the smallest number divisible by 12, 15, 18, and 27.
6	Two ropes are 42 m and 56 m long. Find the maximum length of pieces that can be cut from both ropes.
7	Find the least number which when divided by 15, 20, and 35 leaves remainder 11 in each case.
8	Three men step off together. Their steps measure 75 cm, 80 cm, and 90 cm. Find the minimum distance to cover with complete steps.
9	HCF of two numbers is 25. If they differ by 50, list two possible pairs of numbers.
10	Using LCM, find the smallest fraction greater than ¾ with denominator less than 20.

CH 4

Ratio, Proportion & Percentage

4.1 Ratio

A ratio compares two quantities of the same kind. Written as a:b or a/b. Always simplify ratios to their lowest form.

IMPORTANT	Ratio has no units. To compare ratios, convert them to fractions with a common denominator.

SOLVED EXAMPLE

Q: Divide Rs 1,200 in the ratio 3:5.

Solution: Total parts = 3+5 = 8. Each part = 1200/8 = Rs 150. First share = 3×150 = Rs 450. Second share = 5×150 = Rs 750.

4.2 Proportion

Four numbers a, b, c, d are in proportion if a:b = c:d, i.e., a×d = b×c (cross-product rule).

FORMULA	Product of Extremes = Product of Means. In a:b::c:d → a×d = b×c

SOLVED EXAMPLE

Q: Find the value of x in 4:6 :: x:15.

Solution: Cross multiply: 4 × 15 = 6 × x → 60 = 6x → x = 10.

4.3 Percentage

FORMULA	Percentage = (Part / Whole) × 100. To find part: Part = (Percentage/100) × Whole

SOLVED EXAMPLE

Q: A student scores 432 out of 600. What percentage did she score?

Solution: Percentage = (432/600) × 100 = 72%.

SOLVED EXAMPLE

Q: A shirt costs Rs 850 after 15% discount. What was the original price?

Solution: SP = Original × (100 − 15)/100 = 85% of Original. So Original = 850 × 100/85 = Rs 1,000.

4.4 Unitary Method

The unitary method involves finding the value of ONE unit first, then using it to find any required quantity.

SOLVED EXAMPLE

Q: If 15 books cost Rs 675, what do 8 books cost?

Solution: Cost of 1 book = 675 ÷ 15 = Rs 45. Cost of 8 books = 45 × 8 = Rs 360.

4.5 Exercise — Ratio, Proportion & Percentage

No.	Question
1	Write the ratio of 45 minutes to 3 hours in simplest form.
2	If A:B = 3:4 and B:C = 6:7, find A:B:C.
3	Divide 5,400 into three parts in the ratio 2:3:4.
4	Find the fourth proportional to 3, 7, and 15.
5	The ratio of boys to girls in a school is 5:4. If there are 270 boys, how many girls are there?
6	What percentage of 6.5 kg is 325 g?
7	A number is first increased by 10% and then decreased by 10%. Find the net change.
8	In an election, candidate A gets 55% of votes. Total votes = 80,000. How many votes did B get?
9	If 35% of a number is 84, find 65% of the number.
10	Petrol price increased from Rs 92 to Rs 102.30 per litre. Find the percentage increase.

CH 5

Profit, Loss & Simple Interest

5.1 Profit and Loss

PROFIT Formulae	LOSS Formulae
Profit = SP − CP Profit% = (Profit/CP) × 100 SP = CP × (100+P%)/100	Loss = CP − SP Loss% = (Loss/CP) × 100 SP = CP × (100−L%)/100

SOLVED EXAMPLE

Q: A cycle was bought for Rs 4,500 and sold for Rs 5,175. Find profit%.

Solution: Profit = 5175 − 4500 = Rs 675. Profit% = (675/4500) × 100 = 15%.

SOLVED EXAMPLE

Q: A shopkeeper sold a fan at 20% loss. If CP = Rs 1,250, find SP.

Solution: SP = 1250 × (100−20)/100 = 1250 × 80/100 = Rs 1,000.

5.2 Simple Interest

FORMULA	SI = (P × R × T) / 100	Amount = P + SI	P = Principal, R = Rate%, T = Time in years

SOLVED EXAMPLE

Q: Find SI on Rs 8,500 at 6% p.a. for 3 years.

Solution: SI = (8500 × 6 × 3) / 100 = 153000 / 100 = Rs 1,530. Amount = 8500 + 1530 = Rs 10,030.

SOLVED EXAMPLE

Q: In what time will Rs 6,000 amount to Rs 7,800 at 10% p.a. SI?

Solution: SI = 7800 − 6000 = Rs 1,800. T = (SI × 100) / (P × R) = (1800 × 100) / (6000 × 10) = 3 years.

5.3 Exercise — Profit, Loss & Simple Interest

No.	Question
1	A book costs Rs 240. It is sold at a profit of 12.5%. Find SP.
2	A trader bought 80 oranges for Rs 400 and sold them at Rs 7 each. Find profit or loss %.
3	By selling an article for Rs 1,332, a man gains 11%. Find the CP.
4	A shopkeeper marks a saree at Rs 2,000 and gives 15% discount. Find SP and profit% if CP = Rs 1,500.
5	Find SI on Rs 12,500 at 8% per annum for 2½ years.
6	What principal will amount to Rs 9,856 in 4 years at 6% SI?
7	At what rate will Rs 7,200 yield Rs 1,296 as SI in 3 years?
8	Ramesh deposited Rs 15,000 in a bank at 7.5% p.a. for 2 years. Find interest and amount.
9	A man loses 8% by selling a watch for Rs 1,840. Find CP. At what price should he sell to gain 10%?
10	Two items cost Rs 3,200 each. One is sold at 15% profit and other at 10% loss. Find net profit or loss.

CH 6

Geometry — Lines, Angles & Triangles

6.1 Lines and Angles

Complementary Angles	Supplementary Angles	Vertically Opposite
Sum = 90°	Sum = 180°	Always equal

SOLVED EXAMPLE

Q: Find the supplement of an angle that is 35° more than its complement.

Solution: Let angle = x. Complement = 90−x. x = (90−x)+35 → 2x = 125 → x = 62.5°. Supplement = 180−62.5 = 117.5°.

6.2 Triangles

PROPERTY Sum of all angles of a triangle = 180°. Exterior angle = Sum of two non-adjacent interior angles.

Type	Angles/Sides	Property	Area	Perimeter
Equilateral	All = 60°	All 3 sides equal	$(\sqrt{3}/4)a^2$	3a
Isosceles	Base angles equal	2 sides equal	½×b×h	2a+b
Scalene	All angles differ	All sides differ	½×b×h	a+b+c
Right-angled	One angle = 90°	$Hyp^2 = leg^2 + leg^2$	½×b×h	a+b+c

SOLVED EXAMPLE

Q: In a triangle, two angles are 65° and 48°. Find the third angle and identify the triangle type.

Solution: Third angle = 180 − 65 − 48 = 67°. All angles are different (65°, 48°, 67°), so it is a Scalene Acute triangle.

6.3 Quadrilaterals

PROPERTY Sum of angles of any quadrilateral = 360°. Rectangle: all angles = 90°. Rhombus: all sides equal. Parallelogram: opposite sides parallel and equal.

6.4 Exercise — Geometry

No.	Question
1	An angle is 40° less than its supplement. Find the angle.
2	Find all angles if two lines intersect and one angle is 3x+10 and adjacent is 5x−30.
3	In triangle PQR, angle P = 2x, angle Q = 3x, angle R = 4x. Find all angles.
4	The exterior angle of a triangle is 110°. One interior opposite angle is 45°. Find the other.
5	The angles of a quadrilateral are in ratio 2:3:4:6. Find each angle.
6	In a parallelogram, one angle is 65°. Find all other angles.
7	How many diagonals does a hexagon have?
8	A triangle has sides 5 cm, 12 cm, and 13 cm. Is it a right triangle? Find area.
9	An equilateral triangle has perimeter 42 cm. Find its area.
10	Two angles of a triangle are equal. The third is 40°. What type of triangle is it? Find base angles.

CH 7

Mensuration — Area & Perimeter

7.1 Formulae Reference Table

Shape	Perimeter	Area	Special
Square	4a	a^2	Diagonal = $a\sqrt{2}$
Rectangle	2(l+b)	l × b	Diagonal = $\sqrt{(l^2+b^2)}$
Triangle	a+b+c	½×b×h	Heron's: $\sqrt{(s(s-a)(s-b)(s-c))}$
Parallelogram	2(a+b)	b×h	h = perpendicular height
Circle	2πr	πr^2	π = 22/7 or 3.14

SOLVED EXAMPLE

Q: A rectangular garden is 75 m long and 48 m wide. Find cost of fencing at Rs 18 per metre, and cost of grass at Rs 5 per sq m.

Solution: Perimeter = 2(75+48) = 2×123 = 246 m. Fencing cost = 246×18 = Rs 4,428. Area = 75×48 = 3,600 sq m. Grass cost = 3600×5 = Rs 18,000.

SOLVED EXAMPLE

Q: A circle has radius 14 cm. Find circumference and area. (π = 22/7)

Solution: Circumference = 2×(22/7)×14 = 88 cm. Area = (22/7)×14×14 = 616 sq cm.

SOLVED EXAMPLE

Q: A triangle has sides 13 cm, 14 cm, 15 cm. Find its area using Heron's formula.

Solution: s = (13+14+15)/2 = 21. Area = $\sqrt{(21\times8\times7\times6)}$ = $\sqrt{7056}$ = 84 sq cm.

7.2 Volume of Cuboid and Cube

FORMULA Cuboid: V = l×b×h, LSA = 2h(l+b), TSA = 2(lb+bh+hl). Cube (side=a): V = a^3, TSA = $6a^2$.

SOLVED EXAMPLE

Q: A water tank is 5 m × 4 m × 3 m. How many litres does it hold? (1 m^3 = 1000 L)

Solution: V = 5×4×3 = 60 m³ = 60,000 litres.

7.3 Exercise — Mensuration

No.	Question
1	A square park has perimeter 320 m. Find its area.
2	A room 12 m × 9 m × 4 m is to be painted. Find total surface area (excluding floor).
3	Find the area of a rhombus with diagonals 24 cm and 10 cm.
4	The circumference of a circle is 132 cm. Find its radius and area. (π = 22/7)
5	A path 2 m wide is made around a rectangular field 30 m × 20 m. Find the area of the path.
6	Find the area of a trapezium with parallel sides 18 cm and 10 cm, and height 8 cm.
7	A cube has total surface area 384 sq cm. Find its volume.
8	A cylindrical tank of radius 7 m and height 5 m is filled with water. Find capacity in litres.
9	How many tiles of size 25 cm × 20 cm are needed to cover a floor 15 m × 8 m?
10	The diagonal of a square is 10√2 cm. Find its area and perimeter.

CH 8

Data Handling

8.1 Mean, Median and Mode

MEAN	MEDIAN	MODE
Sum of all values ÷ Count. The 'average'.	Middle value when arranged in order. For even count: avg of two middle values.	Most frequently occurring value. A dataset can have no mode, one mode, or more.

SOLVED EXAMPLE

Q: Find Mean, Median, and Mode of: 4, 7, 13, 2, 7, 8, 7, 3, 12, 7.

Solution: Arranged: 2, 3, 4, 7, 7, 7, 7, 8, 12, 13 (n=10). Mean = (2+3+4+7+7+7+7+8+12+13)/10 = 70/10 = 7. Median = avg of 5th and 6th values = (7+7)/2 = 7. Mode = 7 (appears 4 times).

8.2 Bar Graphs and Pictographs

In AISSEE, you may be asked to read data from bar graphs or pictographs and calculate values. Always read the scale carefully.

TIPS	Read axis labels first. Note scale (e.g. 1 unit = 50 students). Calculate differences, totals, and ratios from the graph data.

8.3 Exercise — Data Handling

No.	Question
1	Find the mean of: 23, 45, 67, 12, 89, 56, 34, 78, 90, 46.
2	Find the median of: 15, 22, 8, 45, 12, 35, 7, 28, 19, 41.
3	Find the mode of: 12, 15, 14, 12, 15, 20, 12, 15, 16, 12.
4	The mean of 5 numbers is 28. If four of them are 32, 25, 19, and 37, find the fifth.
5	A student's marks in 6 subjects are 78, 85, 92, 68, 75, 82. Find mean marks.
6	A shopkeeper sold 50, 40, 65, 55, 70, 60 items Mon–Sat. Find mean daily sales.
7	The heights (cm) of 10 students: 145, 150, 148, 155, 150, 152, 148, 150, 147, 153. Find mode and median.
8	The average of 10 numbers is 42. Six of them average 40. Find average of remaining four.

9	In a test, boys scored: 45, 55, 60, 72, 83. Girls scored: 52, 61, 70, 78, 89. Compare means.
10	From a graph: Class A = 350 students, Class B = 420, Class C = 380, Class D = 290. Find total and mean per class.

CH 9

Patterns, Puzzles & Word Problems

9.1 Number Patterns

AISSEE frequently tests pattern recognition. Look for differences, ratios, or alternating sequences.

SOLVED EXAMPLE

Q: Find next two terms: 2, 5, 10, 17, 26, __, __

Solution: Differences: 3, 5, 7, 9, 11... (odd numbers). Next terms: 26+11=37, 37+13=50.

SOLVED EXAMPLE

Q: Find next two terms: 3, 6, 12, 24, 48, __, __

Solution: Each term is multiplied by 2. Next: 48×2=96, 96×2=192.

SOLVED EXAMPLE

Q: Find missing term: 1, 1, 2, 3, 5, 8, __, 21

Solution: Fibonacci sequence (each term = sum of previous two). Missing term = 5+8 = 13.

9.2 Word Problems — Mixed

SOLVED EXAMPLE

Q: A train covers 360 km in 4 hours. How long will it take to cover 540 km at the same speed?

Solution: Speed = 360/4 = 90 km/h. Time = 540/90 = 6 hours.

SOLVED EXAMPLE

Q: A field can be ploughed by 6 men in 8 days. How many men can plough it in 4 days?

Solution: Work = 6×8 = 48 man-days. Men needed in 4 days = 48/4 = 12 men.

SOLVED EXAMPLE

Q: The ages of Rama and Shyam are in ratio 5:7. After 4 years, ratio becomes 3:4. Find current ages.

Solution: 5x+4 / 7x+4 = 3/4 → 4(5x+4) = 3(7x+4) → 20x+16 = 21x+12 → x = 4. Ages: Rama = 20 years, Shyam = 28 years.

9.3 Exercise — Patterns & Word Problems

No.	Question
1	Find next term: 3, 9, 27, 81, ___
2	Find next two terms: 1, 4, 9, 16, 25, ___, ___
3	Find missing number: 7, 14, ___, 35, 49, 70
4	If a car covers 150 km using 12.5 litres of fuel, how far can it go on a full tank of 40 litres?
5	12 workers can complete a job in 15 days. How many workers needed to finish in 9 days?
6	The ratio of income of A and B is 3:5. If A earns Rs 15,000, what does B earn?
7	A pipe fills a tank in 6 hours, another empties it in 10 hours. Both open together — when does tank fill?
8	Sum of two consecutive even numbers is 118. Find them.
9	A number is divided into two parts such that one part is 25 more than the other. If total = 175, find the parts.
10	Find a two-digit number: sum of digits = 11, number formed by reversing digits is 45 more than original.

CH
MT

Mock Test 1 — Full Length AISSEE Pattern

INSTRUCTIONS

- Total Questions: 50 | Time: 2 hours 30 minutes | Max Marks: 150
- Each question carries 3 marks. No negative marking. Attempt all questions.
- Use ONLY blue/black pen. Write clearly. Show all working.

Section A — Number System (Q1–Q10)

No.	Question
1	Write the number 5,04,30,075 in words.
2	Find the difference: largest 8-digit number − smallest 7-digit number.
3	Convert MMMCDXLIX to Hindu-Arabic numeral.
4	Find the number: 3 crore 45 lakh 7 thousand 8 = ?
5	The product of two numbers is 1,50,624. If one number is 432, find the other.
6	Round off 67,85,432 to the nearest lakh.
7	Find all prime numbers between 80 and 100.
8	What is the value of 7 in 8,67,43,219? (place value)
9	By how much is 78,54,321 less than 1,00,00,000?
10	Write predecessor and successor of 99,99,999.

Section B — Fractions, Decimals, HCF & LCM (Q11–Q22)

No.	Question
1	Simplify: 3/4 + 7/6 − 5/12
2	Find: 4⅔ × 2¼ ÷ 3½
3	Convert 0.375 to a fraction in lowest terms.
4	Arrange in descending order: 3/4, 5/7, 7/9, 2/3
5	Find HCF of 168, 196, and 252.
6	Find LCM of 24, 36, and 54.
7	The HCF and LCM of two numbers are 12 and 360. If one number is 60, find the other.
8	Subtract 3.075 from 10 and express result as a fraction.

9	Find the greatest 4-digit number divisible by 18, 24, and 32.
10	Which is greater: 7/8 or 11/13? By how much?
11	A field is 2¾ hectares. Another is 1⅝ hectares. Find total area.
12	Simplify: (0.125 + 0.375) × (0.5 − 0.25) ÷ 0.0625

Section C — Ratio, Percentage, Profit & Interest (Q23–Q35)

No.	Question
1	The ratio of copper to zinc in an alloy is 4:3. If alloy weighs 56 kg, find each metal.
2	A map scale is 1:50000. A road is 4.5 cm on map. Find actual length.
3	A student got 78% marks. He scored 702 marks. Find total marks.
4	Price of a TV was Rs 28,000. It increased by 12%. Find new price.
5	A trader sold 120 kg of wheat at 20% profit. CP = Rs 25/kg. Find total profit.
6	By selling a watch for Rs 1,404, a shopkeeper loses 1/10 of its cost price. Find CP.
7	Find SI: Principal = Rs 16,000; Rate = 7.5% p.a.; Time = 4 years.
8	Ravi deposited Rs 12,500. After 3 years at 8% SI, he withdraws Rs 5,000. How much is left?
9	Milk costing Rs 48/litre was mixed with water (cost 0) in ratio 4:1. Mixture sold at Rs 50/litre. Find profit%.
10	A number decreased by 20% gives 160. What is the original number?
11	If 5% more is gained by selling for Rs 350 than for Rs 325, find CP.
12	In what time will a sum of money double itself at 12.5% SI?
13	A dealer bought 200 chairs at Rs 450 each and sold 160 at Rs 550 and rest at Rs 400. Find profit/loss.

Section D — Geometry & Mensuration (Q36–Q45)

No.	Question
1	In a triangle, angles are in ratio 2:3:5. Identify the triangle and find each angle.
2	The base and height of a parallelogram are 18 cm and 12 cm. Find area.
3	A circular park has circumference 440 m. Find cost of levelling at Rs 50 per sq m.
4	A rectangular room 8m × 6m × 4m needs painting on all walls and ceiling. Find area to be painted.
5	The diagonal of a rectangle is 13 cm and one side is 5 cm. Find area and perimeter.

6	A quadrilateral has angles 85°, 95°, 105°, and x°. Find x and name the quadrilateral.
7	Find the area of a rhombus if its diagonals are 16 cm and 12 cm.
8	A hollow cube has outer side 12 cm and inner side 10 cm. Find volume of material used.
9	Two circles have radii 7 cm and 14 cm. Compare their areas.
10	An isosceles triangle has equal sides 10 cm and base 12 cm. Find area.

Section E — Data Handling & Patterns (Q46–Q50)

No.	Question
1	Marks of 8 students: 56, 72, 68, 80, 45, 90, 63, 72. Find Mean, Median, and Mode.
2	Average of 8 numbers is 35. Three of them are 45, 28, and 33. Find average of remaining five.
3	Find next three terms: 2, 3, 5, 8, 13, 21, ___, ___, ___
4	Three taps fill a tank in 12, 15, and 20 hours. All open simultaneously — in how long does tank fill?
5	A bus travels 60 km in 45 minutes. Find speed. At this speed, how long to travel 200 km?

Answer Key — Chapter Exercises

Chapter 1 — Number System

1. Five crore four lakh seven thousand sixty | 2. 80,12,045 | 3. Refer digit-by-digit | 4. 89,90,000 | 5. MMMDXLIX / MCMLXXXIV | 6. 3,999 | 7. 56,07,342 < 56,78,342 < 5,67,832 < 5,67,83,42 | 8. 1,66,72,470 | 9. 18,290 rem 54 | 10. 90,99,999

Chapter 2 — Fractions & Decimals

1. 4/5 | 2. 5/6 > 7/9 | 3. 8 5/12 | 4. 4 1/2 | 5. 1/6 | 6. 5 | 7. 28.45 L | 8. 5/8 | 9. 7.95 km | 10. 84

Chapter 3 — HCF & LCM

1. 28 | 2. 600 | 3. 90 | 4. 7 | 5. 1080 | 6. 14 m | 7. 311 | 8. 3600 cm | 9. 25 and 75, 50 and 100 | 10. 13/16

Chapter 4 — Ratio, Proportion & Percentage

1. 1:4 | 2. 9:12:14 | 3. 1200, 1800, 2400 | 4. 35 | 5. 216 girls | 6. 5% | 7. 1% decrease | 8. 36,000 votes (B) | 9. 156 | 10. 11.2%

Chapter 5 — Profit, Loss & SI

1. Rs 270 | 2. 8% profit | 3. Rs 1,200 | 4. SP = Rs 1,700, profit = 13.3% | 5. Rs 2,500 | 6. Rs 8,000 | 7. 6% | 8. Rs 2,250; Rs 17,250 | 9. CP=Rs 2,000, Sell at Rs 2,200 | 10. Rs 160 profit

Chapter 6 — Geometry

1. 70° | 2. x=22.5°, angles 77.5° and 82.5° | 3. 40°, 60°, 80° | 4. 65° | 5. 48°, 72°, 96°, 144° | 6. 65°, 115°, 115° | 7. 9 diagonals | 8. Yes (right), 30 sq cm | 9. 7√3 sq cm ≈ 84.87 sq cm | 10. Isosceles, base angles = 70° each

Chapter 7 — Mensuration

1. 6400 sq m | 2. 252 sq m | 3. 120 sq cm | 4. r=21 cm, Area=1386 sq cm | 5. 216 sq m | 6. 112 sq cm | 7. 512 cu cm | 8. 7,70,000 litres | 9. 2,400 tiles | 10. Area=100 sq cm, Perimeter=40 cm

Chapter 8 — Data Handling

1. 54 | 2. 18.5 | 3. Mode=12 | 4. 25 | 5. 80 | 6. 56.67 | 7. Mode=150, Median=150 | 8. 46.5 | 9. Boys mean=63, Girls mean=70 | 10. Total=1440, Mean=360

Chapter 9 — Patterns & Problems

1. 243 | 2. 36, 49 | 3. 21 | 4. 480 km | 5. 20 workers | 6. Rs 25,000 | 7. 15 hours | 8. 58 and 60 | 9. 75 and 100 | 10. 38 (3+8=11, 83−38=45 ✓)