SPECTRUM MATHEMATICS – 5

ANSWER KEY

Chapter 1 : The Fish Tale (Pages 15–19)

Exercise

Q1. Rewrite the following numerals using commas to separate periods according to the Indian and International place value systems:

S.No.	Numeral	Indian System	International System
(a)	426769804	42,67,69,804	426,769,804
(b)	999999999	99,99,99,999	999,999,999
(c)	198423007	19,84,23,007	198,423,007
(d)	453200500	45,32,00,500	453,200,500
(e)	900000000	90,00,00,000	900,000,000
(f)	30001234	3,00,01,234	30,001,234

Q2. Write the number name according to the Indian System:

(a) 8,73,991 — Eight lakh seventy-three thousand nine hundred ninety-one

(b) 72,13,535 — Seventy-two lakh thirteen thousand five hundred thirty-five

(c) 99,10,001 — Ninety-nine lakh ten thousand one

(d) 1,00,00,000 — One crore

(e) 6,97,35,787 — Six crore ninety-seven lakh thirty-five thousand seven hundred eighty-seven

(f) 88,99,77,666 — Eighty-eight crore ninety-nine lakh seventy-seven thousand six hundred sixty-six

Q3. Write the number name according to the International System:

(a) 2,561,001 — Two million five hundred sixty-one thousand one

(b) 4,353,405 — Four million three hundred fifty-three thousand four hundred five

(c) 69,600,180 — Sixty-nine million six hundred thousand one hundred eighty

(d) 79,157,287 — Seventy-nine million one hundred fifty-seven thousand two hundred eighty-seven

(e) 153,254,356 — One hundred fifty-three million two hundred fifty-four thousand three hundred fifty-six

(f) 256,545,198 — Two hundred fifty-six million five hundred forty-five thousand one hundred ninety-eight

Q4. Write the numerals for each of the following:

(a) Three lakh five thousand eight hundred thirty = 3,05,830

(b) Seven crore fifty-two thousand six hundred sixty = 7,00,52,660

(c) Three crore nineteen lakh fourteen thousand six hundred fifty-eight = 3,19,14,658

(d) Seventy lakh eighty-five thousand two hundred ninety = 70,85,290

(e) Fourteen million sixty-nine thousand three hundred fifteen = 14,069,315

(f) Twenty-nine million five hundred three thousand fourteen = 29,503,014

(g) Seven million six hundred twenty-six thousand nine hundred eighty-two = 7,626,982

(h) Two hundred sixty-five thousand five hundred thirteen = 265,513

Q5. Find the place value of:

(a) 1 in 9,36,125 → 1 is at the hundreds place → Place value = 100

(b) 4 in 46,90,37,111 → 4 is at the ten crores place → Place value = 40,00,00,000

(c) 0 in 5,69,31,075 → 0 is at the hundreds place → Place value = 0

(d) 6 in 7,06,59,318 → 6 is at the lakhs place → Place value = 6,00,000

(e) 7 in 40,97,35,009 → 7 is at the lakhs place → Place value = 7,00,000

(f) 5 in 6,06,25,321 → 5 is at the thousands place → Place value = 5,000

Q6. Write the successor and predecessor of each of the following numbers:

S.No.	Number	Successor	Predecessor
(a)	87,36,449	87,36,450	87,36,448
(b)	73,43,108	73,43,109	73,43,107
(c)	72,53,648	72,53,649	72,53,647
(d)	9,30,03,645	9,30,03,646	9,30,03,644

Q7. Arrange the following numbers in ascending and descending order:

(a) 4,36,456; 59,63,648; 59,63,739; 83,71,628; 8,37,12,694 (ascending)
Descending: 8,37,12,694; 83,71,628; 59,63,739; 59,63,648; 4,36,456

(b) 48,00,961; 67,92,318; 67,93,218; 69,72,184; 4,70,06,752 (ascending)
Descending: 4,70,06,752; 69,72,184; 67,93,218; 67,92,318; 48,00,961

(c) 57,36,173; 58,46,194; 96,26,314; 96,38,426; 96,48,326 (ascending)
Descending: 96,48,326; 96,38,426; 96,26,314; 58,46,194; 57,36,173

Q8. Write the expanded form of the following numbers:

(a) 95,56,068 = 90,00,000 + 5,00,000 + 50,000 + 6,000 + 60 + 8

(b) 53,82,981 = 50,00,000 + 3,00,000 + 80,000 + 2,000 + 900 + 80 + 1

(c) 15,35,17,765 = 10,00,00,000 + 5,00,00,000 + 30,00,000 + 5,00,000 + 10,000 + 7,000 + 700 + 60 + 5

(d) 81,12,518 = 80,00,000 + 1,00,000 + 10,000 + 2,000 + 500 + 10 + 8

(e) 28,35,17,780 = 20,00,00,000 + 8,00,00,000 + 30,00,000 + 5,00,000 + 10,000 + 7,000 + 700 + 80

(f) 17,78,45,631 = 10,00,00,000 + 7,00,00,000 + 70,00,000 + 8,00,000 + 40,000 + 5,000 + 600 + 30 + 1

Q9. Write the following numbers in short form:

(a) 6,00,00,000 + 50,00,000 + 3,00,000 + 50,000 + 4,000 + 300 + 20 + 1 = 6,53,54,321

(b) 20,00,00,000 + 20,00,000 + 30,000 + 400 + 5 = 20,20,30,405

(c) 70,00,000 + 9,00,000 + 10,000 + 5,000 + 400 + 60 + 5 = 79,15,465

(d) 5,00,00,000 + 80,00,000 + 40,000 + 200 + 3 = 5,80,40,203

(e) 10,00,00,000 + 40,00,000 + 20,000 + 700 + 7 = 10,40,20,707

(f) 80,00,000 + 7,00,000 + 50,000 + 3,000 + 40 + 4 = 87,53,044

Q10. Round off the given numbers to the nearest 10, 100 and 1000:

S.No.	Number	Nearest 10	Nearest 100	Nearest 1000
(a)	5,143	5,140	5,100	5,000
(b)	4,17,504	4,17,500	4,17,500	4,18,000
(c)	5,26,933	5,26,930	5,26,900	5,27,000
(d)	35,895	35,900	35,900	36,000
(e)	59,10,417	59,10,420	59,10,400	59,10,000

Q11. Find the speed in each case:

(a) A train covers 300 km in 4 hours.
Speed = Distance ÷ Time = 300 km ÷ 4 hr
Answer: 75 km/hr

(b) A girl walks 8 km in 2 hours.
Speed = 8 km ÷ 2 hr
Answer: 4 km/hr

(c) A car covers 54 km in 3 hours.
Speed = 54 km ÷ 3 hr
Answer: 18 km/hr

(d) A cyclist covers 35 km in 5 hours.
Speed = 35 km ÷ 5 hr

Answer: 7 km/hr

Q12. Find the distance covered in the following cases:

(a) A bus is travelling at a speed of 90 km/hr for 8 hours.

Distance = Speed × Time = 90 km/hr × 8 hr

Answer: 720 km

(b) A man is driving at a speed of 35 km/hr for 7 hours.

Distance = 35 km/hr × 7 hr

Answer: 245 km

Practice Time — The Fish Market (NCERT Corner, Page 17)

Q1. At what price per kg did Fazila sell the kingfish?

Kingfish sold for ₹1,200 for a weight of 8 kg.

Price per kg = ₹1,200 ÷ 8 kg

Answer: ₹150 per kg

Q2. Floramma has sold 10 kg prawns today. How much money did she get for that?

Price of prawns = ₹150 per kg

Money received = ₹150 × 10 kg

Answer: ₹1,500

Q3. Gracy sold 6 kg sword fish. Mini has earned as much money as Gracy. How many kg of sardines did Mini sell?

Gracy's earning = ₹60 × 6 kg = ₹360

Sardines are sold at ₹40 per kg.

Quantity sold by Mini = ₹360 ÷ ₹40 per kg

Answer: 9 kg of sardines

Q4. Basheer has ₹100. He spends one-fourth of the money on squid and another three-fourth on prawns.

(a) How many kilograms of squid did he buy?

Money spent on squid = 1/4 × ₹100 = ₹25

Squid costs ₹50 per kg, so quantity = ₹25 ÷ ₹50 per kg

Answer: ½ kg of squid

(b) How many kilograms of prawns did he buy?

Money spent on prawns = 3/4 × ₹100 = ₹75

Prawns cost ₹150 per kg, so quantity = ₹75 ÷ ₹150 per kg

Answer: ½ kg of prawns

Practice Time — Women's 'Meenkar Bank' (Page 18)

Q. How much money does the group of twenty fisherwomen collect each month?

Each of the 20 women saves ₹25 every month.

Total monthly collection = ₹25 × 20

Answer: ₹500 per month

Q. How much money will be collected in ten years?

Ten years = 10 × 12 = 120 months

Total collection in 10 years = ₹500 × 120 months

Answer: ₹60,000

Qa. Gracy took a loan of ₹4,000 to buy a net. She paid back ₹345 every month for one year. How much money did she pay back to the Bank?

One year = 12 months

Total amount paid back = ₹345 × 12

Answer: ₹4,140

Qb. Jhansi and her sister took a loan of ₹21,000 to buy a log boat. They paid back a total of ₹23,520 in one year. How much did they pay back every month?

Monthly payment = Total amount ÷ 12 months = ₹23,520 ÷ 12

Answer: ₹1,960 per month

Chapter 2 : Shapes and Angles (Pages 20–34)

Test Your Knowledge (Page 28–29)

Q1. Identify the following geometrical figures represented by symbols:

(a) Line segment ST

(b) Ray TV

(c) Point K

(d) Line LM

Q2. Using a scale, draw line segments of the following measurements:

Place the ruler's zero mark at a point and mark the required length along the straight edge, then join the two end points with a straight line.

(a) Draw a line segment of length 6 cm.

(b) Draw a line segment of length 8 cm.

(c) Draw a line segment of length 7.5 cm.

(Construction question — check the child's drawing with a ruler for accuracy.)

Q3. Look at the given figure and fill in the blanks:

(a) AB is parallel to CD.

(b) KL is perpendicular to AB and CD.

(c) AB and CD intersect KL at two different points.

(d) AB and XY are intersecting lines.

(Answer is based on the figure printed on page 28; verify letter labels against the actual diagram.)

Q4. State true (T) or false (F):

(a) Ray XY is the same as ray YX. → False — a ray is named starting from its initial point, so ray XY (starting at X) and ray YX (starting at Y) point in opposite directions and are not the same.

(b) Lines which meet at a common point are called parallel lines. → False — such lines are called intersecting lines; parallel lines never meet.

(c) A line can be measured. → False — a line has no definite length as it extends infinitely in both directions; only a line segment can be measured.

(d) A point has no length, breadth and height. → True — a point only shows a location and has no dimensions.

Q5. From the given figure, list the points which are:

(a) in the exterior of ∠PQR — points lying outside the angle's arms (e.g., points marked away from the angle opening).

(b) in the interior of ∠PQR — points lying inside the angle's arms.

(c) on ∠PQR — points lying exactly on the two arms of the angle, such as R and any point marked on ray QP or QR.

(Exact point names depend on the labelling in the figure on page 29 — apply this rule while checking against the diagram.)

Q6. Identify the angles as acute, right, obtuse, straight, reflex or complete, without measuring them:

Rule of thumb: acute < 90°; right = 90° (square corner); obtuse is between 90° and 180°; straight = 180° (a flat line); reflex is between 180° and 360°; complete = 360° (a full turn).

(Apply this rule to each lettered figure (a)–(h) on page 29 by comparing the opening of the arms to a right-angle corner.)

Q7. Measure the following angles using a protractor:

Place the centre point of the protractor exactly on the vertex of the angle, align the baseline with one arm, and read the degree value where the second arm crosses the scale.

(As this requires physically measuring the printed angles (a)–(d) on page 29, measure each with a protractor directly on the page for the exact degree value.)

Q8. Draw the following angles using a protractor. Name the angles correctly:

Draw a base ray, place the protractor's centre on its starting point, mark the required degree on the scale, and join the vertex to that mark to complete the angle. Name each angle using three capital letters with the vertex in the middle.

(a) 30° — acute angle

(b) 45° — acute angle

(c) 70° — acute angle

(d) 55° — acute angle

(e) 90° — right angle

(f) 125° — obtuse angle

(g) 120° — obtuse angle

(h) 180° — straight angle

Practice Time — I (NCERT Corner, Page 30–31)

These activities ask the student to observe coloured angles in pictures and matchstick figures directly from the printed page, so answers depend on the specific figure shown.

Q1. Look at the shape and answer — which coloured angle is the biggest?

Compare the opening between the arms of each coloured angle; the angle with the widest opening between its two arms is the biggest.

Q2. Are the angles marked with yellow/green/blue equal?

Check by placing one angle over the other (or using a protractor) — angles with arms opening by the same amount are equal.

Q3. Find other angles equal to the one marked in red (and other colours).

Compare the size (degree measure) of each marked angle with the reference angle of that colour and mark all matching ones.

Q4. How many different shapes can you make by changing the angle between the matchsticks?

This is an open hands-on activity — students experiment by opening/closing the matchsticks at different angles and sketch each shape formed. Sample expected shapes: (a) 4 matchsticks — several quadrilateral shapes; (b) 8 matchsticks — a variety of star/zig-zag shapes; (c) 5 matchsticks — different pentagon-like shapes; (d) 7 matchsticks and (e) 10 matchsticks — more complex multi-angled shapes. Accept any reasonable original shapes the child draws.

Practice Time — II (NCERT Corner, Page 31–32)

Q1. Look at the angles in the pictures and fill the table (Right angle / More than a right angle / Less than a right angle).

Compare each pictured angle to a right angle (90°, a square corner): if it opens wider, tick 'More than a right angle'; if it opens less, tick 'Less than a right angle'; if it exactly matches a square corner, tick 'Right angle'.

Q2. Colour Sukhman's picture: right angles in black, angles more than a right angle in green, angles less than a right angle in blue.

Check each angle in the picture against a square corner (e.g., the corner of a book) and colour accordingly using the rule above.

Q3. Draw anything of your choice around the given angle and name the type of angle.

This is an open-ended creative task — any drawing is acceptable as long as the angle type identified (e.g., 'less than a right angle' = acute) is correctly matched to the angle shown.

Chapter 3 : How Many Squares? (Pages 35–46)

Note: This chapter's exercise and Practice Time questions are based entirely on hand-drawn grid figures (counting squares for area, counting boundary units for perimeter) that carry no printed numeric labels in the text layer of the book. The exact figures must be viewed on the printed page to count squares. Below, each question is answered with the exact method/formula to apply directly on the printed grid, following the chapter's own worked method (Examples 1 and the Rectangle A/B/C illustration).

Test Your Knowledge (Page 41–42)

Q1. Find the perimeter of each of the following figures (area of 1 square = 1 sq. cm):

Method: These are step/L-shaped figures with side lengths marked in cm. Add the lengths of all outer sides (going all the way around the boundary) to get the perimeter. For a step-shaped figure, remember that the 'missing' horizontal and vertical segments can be found because they must add up to the same total length as the opposite full side — mark each unlabelled side by this rule before adding.

Apply the above rule to figures (a), (b) and (c) using the cm values printed on each side in the book to get the exact perimeter of each.

Q2. Find the area of the following irregular shapes drawn on a graph paper:

Method (as taught in the chapter): Area ≈ (No. of complete squares) + (No. of more-than-half squares) + ½ × (No. of half squares); ignore squares that are less than half-covered.

Count the complete / more-than-half / half squares in figures (a), (b) and (c) on the printed grid and apply the formula above.

Q3. Find the area of the following regular shapes drawn on a graph paper:

Method: Since these are regular (fully-formed) shapes on the grid, simply count every small square completely enclosed within the shape's boundary — each square = 1 sq. unit.

Count the enclosed squares in figures (a)–(f) directly on the printed grid.

Q4. Complete each shape (only two sides drawn) so that the total area equals the value given below each figure:

(a) Complete the shape so the total enclosed area = 10 sq. units.

(b) Complete the shape so the total enclosed area = 15 sq. units.

(c) Complete the shape so the total enclosed area = 18 sq. units.

Draw the remaining sides along the grid lines so that, after counting complete/half squares as in Q2's method, the total comes out to the stated value. Multiple correct drawings are possible — any shape that counts to the correct area should be accepted.

Q5. Complete the tiling patterns and colour them accordingly.

Continue the repeating unit shown in (a) and (b) across the grid, keeping the same shape, spacing and colour sequence, so the pattern tiles the surface with no gaps.

Q6. Colour the tiles to make patterns.

Follow the repeating colour sequence established at the start of each row/column in (a) and (b), and continue it consistently across the remaining tiles.

Q7. Create your own patterns and colour them.

Open-ended: any original repeating arrangement of shapes/colours that tiles without gaps or overlaps should be accepted as correct.

Practice Time — I (NCERT Corner, Page 43–44)

Q1. Complete the shape (one side given) so that its area is 4 sq. cm.

Draw the remaining sides along grid lines so the enclosed region covers exactly 4 complete unit squares.

Q2. Complete the shape (two sides given) by drawing two more sides so that its area is less than 2 sq. cm.

Draw the remaining two sides so the enclosed region covers less than 2 full unit squares (e.g., a small triangle or a shape covering 1 to 1.5 squares).

Q3. Here is a rectangle of area 20 sq. cm.

(a) Draw one straight line to divide it into two equal triangles. Each triangle's area = 20 ÷ 2 = 10 sq. cm.

(b) Draw one straight line to divide it into two equal rectangles. Each smaller rectangle's area = 20 ÷ 2 = 10 sq. cm.

(c) Draw two straight lines to divide it into one rectangle and two equal triangles.

If the rectangle formed covers half the original area, its area = 10 sq. cm, and the remaining 10 sq. cm is shared equally between the two triangles, so each triangle = 5 sq. cm. (The exact split depends on where the lines are drawn — keep the rectangle and the two triangles' areas summing to 20 sq. cm.)

Practice Time — II (NCERT Corner, Page 44)

Ziri made shapes starting with a square of side 2 cm. Which of these shapes will tile a floor without gaps? What is the area of these shapes?

A shape tiles a floor without gaps only if copies of it can be fitted together edge-to-edge with no empty spaces — shapes built by rearranging the same square's parts (like an 'L' or a 'staircase' made from a 2 cm square) will tile, because they still cover the same total area as the original square.

Area of each such shape = area of the original square = 2 cm × 2 cm = 4 sq. cm (since cutting and rearranging parts of the square does not change its total area).

Making new tiles from a triangle works the same way — as long as the pieces are rearranged without overlaps or gaps, copies of the new shape will also tile the floor.

(Chapter 3's main 'Questions and Answers' section, Q1–10 on pages 44–46, is already fully solved in the printed book and needs no separate answer key.)

Chapter 4 : Parts and Wholes (Pages 47–61)

Exercise (Page 56–58)

Q1. Convert the following improper fractions into mixed fractions:

(a) 18/7 = 2 4/7

(b) 46/13 = 3 7/13

(c) 121/8 = 15 1/8

(d) 78/9 = 8 6/9 = 8 2/3

(e) 106/11 = 9 7/11

Q2. Convert the following mixed fractions into improper fractions:

(a) 6 1/9 = (6×9+1)/9 = 55/9

(b) 3 3/11 = (3×11+3)/11 = 36/11

(c) 4 1/7 = (4×7+1)/7 = 29/7

(d) 7 1/4 = (7×4+1)/4 = 29/4

(e) 8 1/5 = (8×5+1)/5 = 41/5

(The exact numerators in Q2 were faint in the printed scan — recheck each mixed number against the book; the conversion method used above [Whole × Denominator + Numerator, over the same Denominator] applies regardless.)

Q3. Find three equivalent fractions of the following:

(a) 1/8 → 2/16, 3/24, 4/32

(b) 2/5 → 4/10, 6/15, 8/20

(c) 5/9 → 10/18, 15/27, 20/36

(d) 6/7 → 12/14, 18/21, 24/28

(e) 5/7 → 10/14, 15/21, 20/28

Q4. Check whether the pair of fractions given below are equivalent (cross-multiply: a/b and c/d are equivalent if a×d = b×c):

(a) 4/8 and 12/20 → 4×20=80, 8×12=96 → Not equivalent

(b) 2/5 and 6/15 → 2×15=30, 5×6=30 → Equivalent

(c) 7/8 and 12/16 → 7×16=112, 8×12=96 → Not equivalent

(d) 5/6 and 15/18 → 5×18=90, 6×15=90 → Equivalent

(e) 2/3 and 8/12 → 2×12=24, 3×8=24 → Equivalent

(Part (f)'s exact fraction pair was not legible in the scanned text — apply the same cross-multiplication rule shown above once confirmed from the book.)

Q5. Fill in the blanks using <, > or =:

(a) 3/4 > 2/3 (0.75 > 0.667)

(b) 4/5 > 3/4 (0.8 > 0.75)

(c) 1/12 < 5/7 (0.083 < 0.714)

(e) 7/8 > 2/3 (0.875 > 0.667)

(f) 9/10 > 7/8 (0.9 > 0.875)

(g) 3/4 > 1/5 (0.75 > 0.2)

(h) 7/10 > 3/4? — recheck values against book

(d), (h): a few fraction pairs were not clearly legible in the scanned text — compare using the same method: convert to decimals, or cross-multiply, to decide <, > or =.)

Q6. Add:

(a) 4/8 + 13/16 = 8/16 + 13/16 = 21/16 = 1 5/16

(b) 3 2/3 + 1 1/4 = 11/3 + 5/4 = 44/12 + 15/12 = 59/12 = 4 11/12

(c) 2 1/10 + 3 4/5 = 21/10 + 38/10 = 59/10 = 5 9/10

(d) 3/11 + 2/5 + 4/55 = 15/55 + 22/55 + 4/55 = 41/55

(e) 1 4/9 + 2 7/24 + 23/36 = 104/72 + 165/72 + 46/72 = 315/72 = 4 27/72 = 4 3/8

(f) 3 + 1 4/9 + 2 2/3 = 3 + 13/9 + 24/9 = 3 + 37/9 = 3 + 4 1/9 = 7 1/9

Q7. Subtract:

(a) 4/5 − 1/3 = 12/15 − 5/15 = 7/15

(b) 2 4/9 − 5/12 = 22/9 − 5/12 = 88/36 − 15/36 = 73/36 = 2 1/36

(c) 3 13/36 − 1 5/9 = 121/36 − 56/36 = 65/36 = 1 29/36

(d) 3 4/7 − 3/4 = 25/7 − 3/4 = 100/28 − 21/28 = 79/28 = 2 23/28

(e) 4 1/5 − 1 2/3 = 21/5 − 5/3 = 63/15 − 25/15 = 38/15 = 2 8/15

(f) 3 3/8 − 1 3/4 = 27/8 − 14/8 = 13/8 = 1 5/8

(Exact digits in some parts of Q7 were faint in the scan — the working method shown will hold once the printed values are confirmed.)

Q8. Find:

(a) 4/11 of 55 = (4×55)/11 = 20

(d) 3/8 of 36 = (3×36)/8 = 108/8 = 13 1/2

(e) 24/25 of 35/36 = (24×35)/(25×36) = 840/900 = 14/15

(f) 7/8 of 16/21 = (7×16)/(8×21) = 112/168 = 2/3

(Parts (b) and (c) had unclear fraction values in the scanned text — apply the same 'of' rule: multiply the numerators and multiply the denominators, then simplify.)

Q9. Find the reciprocal (multiplicative inverse) of each of the following:

(a) 21/8 → 8/21
(b) 12/17 → 17/12
(c) 11/3 → 3/11
(d) 2/5 → 5/2
(e) 1 → 1
(f) 2 1/7 = 15/7 → 7/15
(g) 15/23 → 23/15
(h) 11 = 11/1 → 1/11

Q10. Divide and write the answer in the lowest term:

(a) 5/9 ÷ 15 = 5/135 = 1/27
(b) 12/13 ÷ 9 = 12/117 = 4/39
(c) 1/3 ÷ 4 = 1/12
(d) 6 ÷ 8 = 6/8 = 3/4
(e) 48 ÷ 2 2/5 = 48 ÷ 12/5 = 48 × 5/12 = 20
(f) 77 ÷ 11/3 = 77 × 3/11 = 21
(g) 72 ÷ 6/7 = 72 × 7/6 = 84
(h) 11/4 ÷ 55 = 11/220 = 1/20

Q11. There were 6 L of petrol in the scooter on Sunday morning. At night only 1 1/4 L was left. How much petrol was used?

Petrol used = 6 − 1 1/4 = 24/4 − 5/4 = 19/4

Answer: 4 3/4 L of petrol was used.

Q12. Shivani did 3/8 of her homework on Saturday and 1/4 of the homework on Sunday. How much of the homework did she do over the weekend?

Total done = 3/8 + 1/4 = 3/8 + 2/8 = 5/8

Answer: She did 5/8 of the homework over the weekend.

Q13. 2 1/4 L of paint is needed to colour 1 square metre of a wall. How much paint is required to paint 3 1/2 square metres of the wall?

Paint needed = 9/4 L/sq.m × 7/2 sq.m = 63/8 L

Answer: 7 7/8 L of paint is required.

Q14. Rahul walked 5 1/4 km in 2 1/2 hours. How much distance did Rahul walk in 1 hour?

Distance in 1 hour = (21/4) ÷ (5/2) = 21/4 × 2/5 = 42/20 = 21/10

Answer: 2 1/10 km in 1 hour.

Practice Time — I (NCERT Corner, Page 58–59)

QA. Chocolate bar — Manju gave 1/4 to Raji, 1/3 to Sugatha and 1/6 to Sheela, and ate the rest. What part of the chocolate did Manju eat?

Fraction given away = 1/4 + 1/3 + 1/6 = 3/12 + 4/12 + 2/12 = 9/12 = 3/4

Fraction Manju ate = 1 − 3/4 = 1/4

If the chocolate is thought of as 12 equal pieces: Raji got 3 pieces, Sugatha got 4 pieces, Sheela got 2 pieces, and Manju ate the remaining 3 pieces (3+4+2+3 = 12 ✓).

Answer: Manju ate 1/4 (i.e. 3 out of 12 pieces) of the chocolate.

QB. Colour the hats — colour 1/3 of the hats red and 3/5 of the hats blue. How many are red, how many blue, what part is not coloured?

This depends on the total number of hats shown in the picture. Taking the standard set of 15 hats (a common multiple of 3 and 5, so both fractions divide evenly):

(Red) 1/3 of 15 = 5 hats

(Blue) 3/5 of 15 = 9 hats

(Not coloured) 15 − 5 − 9 = 1 hat, i.e. 1/15 of the hats

(Recount using the actual number of hats printed in your copy of the book if it differs from 15.)

QC. Equal parts of a triangle — divide the triangle into three equal parts in a different way and colour each third.

Any division that creates three regions of equal area counts as correct — e.g., three thin triangles meeting at a common point, drawn by joining the three vertices to a common interior point such as the centroid; each of the three triangles formed has equal area (1/3 of the whole) because they share the same height from the common point to each side and the sides are of related proportion. Accept any drawing where the three parts can be shown to be equal in area (e.g., by cutting out and overlapping the pieces).

QD. Six parts of a rectangle — divide each of three rectangles into six equal parts in three different ways.

Possible ways: (i) 6 equal vertical strips; (ii) 6 equal horizontal strips; (iii) 2 rows × 3 columns of equal small rectangles. Any arrangement that produces 6 congruent (equal-area) parts is correct.

Practice Time — II (NCERT Corner, Page 60)

Q1. Raheem's journey — Raheem has to travel 1 1/4 km to reach school. What distance does he travel to go to school and come back home?

Round trip = 2 × 1 1/4 km = 2 × 5/4 km = 10/4 km = 2 1/2 km

Answer: 2 1/2 km

Q2. What coins? — Latha bought a pencil and a pen for seven and a half rupees. She gave ₹10. The shopkeeper gave back the money in half and quarter rupees. What are the coins she got?

Change = ₹10 − ₹7.50 = ₹2.50

₹2.50 can be made using half-rupee (50 paisa) and quarter-rupee (25 paisa) coins, for example: 5 half-rupee coins (5 × ₹0.50 = ₹2.50), or 4 half-rupee coins + 2 quarter-rupee coins (₹2.00 + ₹0.50 = ₹2.50). Any combination of 50-paisa and 25-paisa coins totalling ₹2.50 is correct.

Q3. At the railway station — The correct time is a quarter to 7 (6:45), and the train is running late by half an hour.

(a) What time is the train expected today?

6:45 + 0:30 = 7:15 — the train is expected at 7:15.

(b) Nazia gets off after 2 1/2 hours from this station. What time will she get off?

7:15 + 2:30 = 9:45

(c) Shaji will take 5 hours to reach Ernakulam. At what time will he reach there?

7:15 + 5:00 = 12:15

(Chapter 4's 'Questions and Answers' section, Q1–8 on page 61, is already fully solved in the printed book and needs no separate answer key.)

Chapter 5 : Does it Look the Same? (Pages 62–74)

Note: This chapter is built around symmetry, rotation and reflection of drawn shapes and letters. Questions 1–6 of the Exercise and most of the Practice Time activities ask the student to look at specific printed shapes/figures and mark, draw or count directly on them — these are answered below with the exact rule to apply on the printed figure. Questions that use plain text (numbers, letters, words) are fully solved.

Exercise (Page 68–69)

Q1. Tick the objects that are NOT symmetrical.

Rule: An object is symmetrical if a line can be drawn through it so that one half is the exact mirror image of the other. Objects with uneven, one-sided shapes (like a scalene-triangle-type outline or an object with parts only on one side) are NOT symmetrical — tick those figures among (a)–(h) on the printed page.

Q2. Draw the line(s) of symmetry in the following figures.

Draw a line through each figure such that folding along it makes both halves coincide exactly. Regular shapes typically have more than one line of symmetry (e.g. a square has 4, a rectangle has 2, an equilateral triangle has 3), while irregular shapes may have only one or none — apply this while checking figures (a)–(h).

Q3. Give each shape a quarter turn to complete the pattern.

A quarter turn rotates the shape by 90° in the same direction each time (e.g. clockwise). Draw the shape rotated 90° for the '¼ turn' column, and rotated 180° (a further quarter turn) for the '½ turn' column, keeping the size and proportions unchanged — only the orientation changes.

Q4. Make a list of capital alphabet letters which have:

(a) Horizontal line of symmetry only: B, C, D, E, K

(b) Vertical line of symmetry only: A, M, T, U, V, W, Y

(c) Both horizontal and vertical lines of symmetry: H, I, O, X

(d) Neither horizontal nor vertical line of symmetry: F, G, J, L, N, P, Q, R, S, Z

Q5. Complete the second half of each picture (a)–(c).

Reflect the drawn half exactly across the line shown — every point on the finished half should be the same distance from the line of symmetry as the matching point on the given half, just on the opposite side.

Q6. Write the order of rotational symmetry of each of the following shapes.

The order of rotational symmetry = the number of times a shape matches its original position during one full 360° turn. For example: a square has order 4, an equilateral triangle has order 3, a regular pentagon has order 5, a regular hexagon has order 6, and a shape with no repeat position other than the full turn has order 1. Apply this rule to figures (a)–(h) based on how many equal sides/repeating parts each shape has.

Q7. Find the pattern and complete the sequence:

(a) 3, 6, 7, 10, 11, ... → pattern alternates +3, +1 → next terms: 14, 15, 18, 19

(b) 9, 13, 14, 18, 19, ... → pattern alternates +4, +1 → next terms: 23, 24, 28, 29

(c) 8, 16, 23, 31, 38, ... → pattern alternates +8, +7 → next terms: 46, 53, 61

(d) 8, 17, 23, 32, 38, ... → pattern alternates +9, +6 → next terms: 47, 53, 62

(e) 9, 11, 18, 20, 27, ... → pattern alternates +2, +7 → next terms: 29, 36, 38

(f) 9, 13, 22, 26, 35, ... → pattern alternates +4, +9 → next terms: 39, 48, 52

Practice Time — I (NCERT Corner, Page 69–70)

Q1. Find out which letters of the English alphabet look the same after half a turn.

Answer: H, I, N, O, S, X, Z

Q2. Which of these English words reads the same on half a turn — ZOOM, MOW, SWIMS, SIS, NOON?

A word looks the same after a half turn only if rotating each letter 180° and reversing their order gives back the same word (letters like M and W swap into each other on rotation, along with H, I, N, O, S, X, Z mapping to themselves).

Answer: MOW, SIS, NOON and SWIMS all look the same after a half turn; ZOOM does not (the M does not match up correctly).

Q3. Give a half turn to the numbers from 0 to 9. Find which of them still look the same.

Answer: 0, 1 and 8 look the same after a half turn. (6 and 9 swap into each other, but neither looks the same as itself.)

Q4. Think of all 2, 3 and 4 digit numbers which look the same on a half turn.

(2-digit) 11, 88, 69 (69 rotated 180° reads as 69 again)

(3-digit) 101, 111, 808, 818, 888, 609 (the outer digits must rotate into each other and the middle digit must be 0, 1 or 8)

(4-digit) 1001, 1111, 8008, 8118, 8888, 1691, 6009 (the 1st & 4th digits must rotate into each other, and so must the 2nd & 3rd digits)

Q5. Which among the given pictures will look the same on a half turn?

Apply the rule: a picture looks the same after a half turn only if it has point (rotational) symmetry about its centre — check each printed picture by mentally turning it upside down and seeing if it matches its original appearance.

Practice Time — II (NCERT Corner, Page 70–71)

QA. Find which shapes look the same after a ¼ turn (✓) and which do not look the same after a half turn (✗).

A shape looks the same after a ¼ turn only if it has 4-fold rotational symmetry (like a square or a plus/'+' sign). A shape fails to look the same after a half turn if it has no point symmetry about its centre (e.g. an uneven or lop-sided shape). Apply both checks to figures (a)–(h).

QB. Change the shapes so the new shape stays the same after a half turn.

Add or adjust parts of each shape (a)–(e) so that it becomes point-symmetric about its centre — i.e., so that whatever appears on one side is mirrored through the centre point on the opposite side.

QC. Draw what the shapes would look like on a ¼ turn and a half turn.

Rotate each given shape (a)–(d) by 90° for the '¼ turn' column and by 180° for the 'half turn' column, keeping its size and shape exactly the same — only its orientation changes.

QD. Which shapes do not look the same on a ¼ turn / half turn? Which fan looks the same on a ⅓ turn?

A fan looks the same after a ⅓ turn only if it has 3 (or a multiple of 3) equally spaced blades, since a ⅓ turn = 120°, matching the spacing between blades.

Practice Time — III (NCERT Corner, Page 72–73)

Q1. Draw how the given shapes will look on a ⅓ turn and a ⅙ turn.

A ⅓ turn = rotate the shape by 120°; a ⅙ turn = rotate the shape by 60°. Redraw each shape (a)–(d) rotated by these amounts about its centre, keeping the shape itself unchanged.

Q2. Which figures look the same on a ⅓ turn (✓) and which do not (✗)? Then adjust the shapes so they do look the same.

A shape looks the same after a ⅓ turn only if it has 3-fold (or a multiple of 3) rotational symmetry — such as an equilateral triangle or a shape with three identical, evenly-spaced parts. Add or remove parts, spaced evenly at 120° intervals, to make an unmarked shape 3-fold symmetric.

Q3. Draw some shapes which will look the same after a ⅓ turn.

Any shape with three identical parts arranged at equal 120° intervals around a centre (e.g. a three-bladed pinwheel, an equilateral triangle, or a three-petal flower) will look the same after a ⅓ turn.

Q4. Draw some shapes which will look the same after a ¼ turn.

Any shape with four identical parts arranged at equal 90° intervals around a centre (e.g. a square, a plus/'+' sign, or a four-petal flower) will look the same after a ¼ turn.

(Chapter 5's 'Questions and Answers' section, Q1–10 on pages 73–74, is already fully solved in the printed book and needs no separate answer key.)

Chapter 6 : Be My Multiple, I'll be Your Factor (Pages 75–86)

Test Your Knowledge (Page 83–84)

Q1. Which of the following are even numbers? 16, 27, 31, 38, 44, 48, 55, 61, 68, 77, 84, 89, 92, 97

Answer: 16, 38, 44, 48, 68, 84, 92

Q2. List all the prime numbers between:

(a) 10 and 30 → 11, 13, 17, 19, 23, 29

(b) 42 and 60 → 43, 47, 53, 59

(c) 75 and 95 → 79, 83, 89

Q3. Which of the following pairs of numbers are twin primes (both prime, differing by 2)?

(a) 5, 7 → both prime, differ by 2 → Twin primes

(b) 27, 31 → 27 is not prime → Not twin primes

(c) 71, 73 → both prime, differ by 2 → Twin primes

(d) 41, 47 → both prime but differ by 6 → Not twin primes

Q4. Which of the following pairs are co-primes (HCF = 1)?

(a) 16 and 21 → factors of 16: 1,2,4,8,16; factors of 21: 1,3,7,21; common factor only 1 → Co-prime

(b) 12 and 35 → factors of 12: 1,2,3,4,6,12; factors of 35: 1,5,7,35; common factor only 1 → Co-prime

(c) 24 and 39 → common factors 1, 3 (HCF = 3) → Not co-prime

Q5. Write the factors of the following numbers:

(a) 46 → 1, 2, 23, 46

(b) 85 → 1, 5, 17, 85

(c) 124 → 1, 2, 4, 31, 62, 124

(d) 280 → 1, 2, 4, 5, 7, 8, 10, 14, 20, 28, 35, 40, 56, 70, 140, 280

Q6. Make a factor tree for the following numbers (prime factorisation shown):

(a) $98 = 2 \times 7 \times 7$

(b) $35 = 5 \times 7$

(c) $24 = 2 \times 2 \times 2 \times 3$

(d) $132 = 2 \times 2 \times 3 \times 11$

(e) $125 = 5 \times 5 \times 5$

Q7. Write the following numbers as the product of their prime factors, using the division method:

(a) $156 = 2 \times 2 \times 3 \times 13$

(b) $500 = 2 \times 2 \times 5 \times 5 \times 5$

(c) $750 = 2 \times 3 \times 5 \times 5 \times 5$

(d) $864 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

(e) $242 = 2 \times 11 \times 11$

Q8. Find the HCF by prime factorisation method:

(a) 15 and 30 → $15 = 3\times5$; $30 = 2\times3\times5$ → HCF = 15

(b) 72 and 84 → $72 = 2^3\times3^2$; $84 = 2^2\times3\times7$ → HCF = $2^2\times3 = 12$

(c) 28 and 35 → $28 = 2^2\times7$; $35 = 5\times7$ → HCF = 7

(d) 99 and 33 → $99 = 3^2\times11$; $33 = 3\times11$ → HCF = 33

(e) 24, 32 and 56 → $24=2^3\times3$; $32=2^5$; $56=2^3\times7$ → HCF = $2^3 = 8$

(f) 20, 50 and 90 → $20=2^2\times5$; $50=2\times5^2$; $90=2\times3^2\times5$ → HCF = $2\times5 = 10$

(g) 80, 120 and 200 → $80=2^4\times5$; $120=2^3\times3\times5$; $200=2^3\times5^2$ → HCF = $2^3\times5 = 40$

(h) 45, 65 and 75 → $45=3^2\times5$; $65=5\times13$; $75=3\times5^2$ → HCF = 5

Q9. Find the HCF using the long division method:

(a) 10, 16 → HCF = 2

(b) 27, 30 → HCF = 3

(c) 28, 56 → HCF = 28

(d) 15, 45 → HCF = 15

(e) 18, 20 → HCF = 2

(f) 25, 36, 80 → HCF(25,36) = 1, so overall HCF = 1

(g) 30, 75, 15 → HCF(30,75) = 15, HCF(15,15) = 15 → HCF = 15

(h) 60, 100, 125 → HCF(60,100) = 20, HCF(20,125) = 5 → HCF = 5

Q10. Find the LCM using the prime factorisation method:

(a) 42 and 70 → LCM = $2\times3\times5\times7 = 210$

(b) 18 and 27 → LCM = $2\times3^3 = 54$

(c) 12 and 15 → LCM = $2^2\times3\times5 = 60$

(d) 40 and 32 → LCM = $2^5\times5 = 160$

(e) 24, 36 and 45 → LCM = $2^3\times3^2\times5 = 360$

(f) 12, 15 and 40 → LCM = $2^3\times3\times5 = 120$

(g) 15, 25 and 30 → LCM = $2\times3\times5^2 = 150$

(h) 20, 30 and 50 → LCM = $2^2\times3\times5^2 = 300$

(i) 35, 40 and 60 → LCM = $2^3\times3\times5\times7 = 840$

Q11. Find the LCM by the short division method:

(a) 15, 45 → LCM = 45

(b) 72, 32 → LCM = 288

(c) 12, 20 → LCM = 60

(d) 30, 55 → LCM = 330

(e) 14, 16, 8 → LCM = 112

(f) 10, 15, 25 → LCM = 150

(g) 21, 14, 35 → LCM = 210

(h) 16, 32, 40 → LCM = 160

(i) 12, 60, 120 → LCM = 120

Q12. Solve:

(a) LCM of 25 and 65 is 325. Find their HCF.

HCF = $(25 \times 65) \div 325 = 1625 \div 325 = 5$

(b) LCM of two co-prime numbers is 156. If one of them is 13, find the other.

For co-prime numbers, LCM = product of the numbers, so the other number = $156 \div 13 = 12$

(c) The product of two numbers is 3072. If the LCM of the numbers is 192, find the HCF.

HCF = Product ÷ LCM = $3072 \div 192 = 16$

Q13. Solve the following:

(a) A milkman has containers of capacity 180 L and 162 L. What is the capacity of the largest container that can completely fill both?

Required capacity = HCF(180, 162) = 18 litres.

(b) Find the largest number that divides 249 and 309, leaving remainder 9 in each case.

Subtract the remainder first: $249 - 9 = 240$, $309 - 9 = 300$. Required number = HCF(240, 300) = 60.

(c) Three bells toll at intervals of 12, 18, 20 minutes. If they start together, after what time will they toll together again?

Required time = LCM(12, 18, 20) = 180 minutes = 3 hours.

(d) 350 boys and 450 girls are to be grouped with an equal number of boys or girls per group. Find the maximum number of such groups, and the children in each.

Maximum number of groups = HCF(350, 450) = 50 groups.

Each group then has 350 ÷ 50 = 7 boys and 450 ÷ 50 = 9 girls, i.e. 16 children per group.

(e) 210 green, 252 red and 294 orange balls are equally distributed among students with none left over. What is the largest possible number of students?

Required number of students = HCF(210, 252, 294) = 42.

Practice Time — NCERT Corner (Page 84–85)

Q1. Anu's garden path is tiled in three separate rows using 2 ft, 3 ft and 5 ft tiles respectively, with no tile cut. What is the shortest possible length of the path?

The path length must be exactly divisible by 2, 3 and 5, so the shortest such length = LCM(2, 3, 5) = 30 feet.

Answer: 30 feet

Q2. Manoj's room is 9 ft × 12 ft. Square tiles are available in 1 ft, 2 ft and 3 ft sizes. Which size can be laid without cutting any tile?

A tile's side must divide both 9 and 12 exactly. Factors of 9: 1, 3, 9; factors of 12: 1, 2, 3, 4, 6, 12; common factors: 1 and 3. So only the 1 ft and 3 ft tiles will fit without cutting — the 2 ft tile will not, since 2 does not divide 9 evenly.

Answer: The 3 ft × 3 ft tile is the best choice (largest tile that fits exactly, i.e. HCF(9,12) = 3), needing the fewest tiles; the 1 ft tile would also work but require many more pieces.

Q3. Rani, Geetha and Naseema each tile a 90-foot path to the road using tiles of a single length each (Rani's shortest, Geetha's middle, Naseema's longest), with no cutting. Suggest three different solutions.

Each person's tile length must be a factor of 90 (factors of 90: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90), and the three lengths chosen must be in increasing order.

(Solution 1) Rani = 2 ft, Geetha = 5 ft, Naseema = 9 ft (90 ÷ 2 = 45, 90 ÷ 5 = 18, 90 ÷ 9 = 10 — all whole numbers)

(Solution 2) Rani = 3 ft, Geetha = 6 ft, Naseema = 15 ft (90 ÷ 3 = 30, 90 ÷ 6 = 15, 90 ÷ 15 = 6)

(Solution 3) Rani = 1 ft, Geetha = 9 ft, Naseema = 18 ft (90 ÷ 1 = 90, 90 ÷ 9 = 10, 90 ÷ 18 = 5)

(Chapter 6's 'Questions and Answers' section, Q1–10 on pages 85–86, is already fully solved in the printed book and needs no separate answer key.)

Chapter 7 : Can You See the Pattern? (Pages 87–101)

Test Your Knowledge (Page 94–96)

Q1. Complete the following geometrical patterns (a)–(c).

Figure-based: continue each row's repeating shape/rotation sequence exactly as it progresses in the printed figure.

Q2. Find the picture that breaks the rule in each row, and correct it.

Figure-based: compare each picture in the row against the established repeating rule and identify the one that doesn't match; redraw it to match the rule.

Q3. What will come after these? Give three more terms:

(a) 2, 5, 7, 10, 12, ... → pattern alternates +3, +2 → next: 15, 17, 20

(b) A, AA, AAA, AAAA, AAAAA, ... → next: AAAAAA, AAAAAAA, AAAAAAAA

(c) 2A4, 2B4, 2C4, 2D4, 2E4, ... → next: 2F4, 2G4, 2H4

(d) aab, aab, aab, aab, aab, ... → next: aab, aab, aab (the block simply repeats)

(e) AbC, DeF, GhI, JkL, MnO, ... → the alphabet runs consecutively in groups of 3 → next: PqR, StU, VwX

(f) 7, 8, 10, 13, 17, ... → differences increase by 1 each time (+1,+2,+3,+4) → next: 22, 28, 35

(g) 1, 2, 4, 8, 16, ... → each term doubles → next: 32, 64, 128

(h) 144, 140, 136, 132, 128, ... → decreases by 4 → next: 124, 120, 116

(i) 5, 10, 15, 20, 25, ... → increases by 5 → next: 30, 35, 40

(j) 10, 60, 110, 160, 210, ... → increases by 50 → next: 260, 310, 360

(k) 0, 1, 1, 2, 3, ... → Fibonacci pattern (each term = sum of the two before it) → next: 5, 8, 13

Q4. Identify the pattern and fill in the blank:

(a) 37×3=111; 37×6=222; 37×9=333; 37×12 = 444; 37×15 = 555

(b) (9−1)÷8=1; (98−2)÷8=12; (987−3)÷8=123; (9876−4)÷8 = 1234; (98765−5)÷8 = 12345

(c) 1×9−1=8; 21×9−1=188; 321×9−1=2888; 4321×9−1 = 38888; 54321×9−1 = 488888

(d) 12×2+3=27; 12×3+3=39; 12×4+3=51; 12×5+3 = 63; 12×6+3 = 75

Q5. Solve these magic squares:

(a) Magic Sum = 60, with the middle row given as 18, 20, 22:

Solved grid — Row 1: 23, 16, 21; Row 2: 18, 20, 22; Row 3: 19, 24, 17 (every row, column and diagonal sums to 60).

(c) Magic Sum = 45, to be filled with numbers 11–19:

This is the same magic square worked out in the chapter's Example 7 — Row 1: 18, 11, 16; Row 2: 13, 15, 17; Row 3: 14, 19, 12 (every row, column and diagonal sums to 45).

(b) and (d): a few grid cell positions were not clearly distinguishable from the scanned layout. Use the same method as (a) and (c): the magic sum minus any two known numbers in a row/column/diagonal gives the third missing number in that line — work outward from the most complete row or column first.

Q6. Complete the number pyramids (a)–(d).

Rule: in a number pyramid, each number equals the sum of the two numbers directly below it (or, moving up, each block below shows the two addends whose sum appears in the block above). Fill missing blocks by adding the pair below, or by subtracting one known lower block from the block above it to find the other.

Q7. Write down the:

(a) 8th triangular number = 8×9/2 = 36

(b) 12th triangular number = 12×13/2 = 78

(c) 16th triangular number = 16×17/2 = 136

(d) 19th triangular number = 19×20/2 = 190

Q8. Fill in the blanks by observing the pattern:

(a) 1×1 = 1 = 1; 2×2 = 4 = 1+2+1; 3×3 = 9 = 1+2+3+2+1; 4×4 = 16 = 1+2+3+4+3+2+1; 5×5 = 25 = 1+2+3+4+5+4+3+2+1; 6×6 = 36 = 1+2+3+4+5+6+5+4+3+2+1

(b) 2×2−1×1 = 2×2−1 = 3; 3×3−2×2 = 2×3−1 = 5; 4×4−3×3 = 2×4−1 = 7; 5×5−4×4 = 2×5−1 = 9; 6×6−5×5 = 2×6−1 = 11

Q9. Fill the missing numbers (figures).

Figure-based: apply the arithmetic rule shown by the other filled cells in each grid/diagram to work out the missing values.

Q10. Complete the following pattern:

(a) 3+6=9=3×3; 6+10=16=4×4; 10+15=25=5×5; 15+21 = 36 = 6×6; 21+28 = 49 = 7×7

(b) 1×2/2=1=1; 2×3/2=3=1+2; 3×4/2=6=1+2+3; 4×5/2 = 10 = 1+2+3+4; 5×6/2 = 15 = 1+2+3+4+5

Practice Time — NCERT Corner (Page 97–99)

Q1. What should come next in each picture pattern (a)–(d)?

Figure-based: identify the repeating rule in each row (e.g. rotation, colour change, size change) and draw/select the next item that continues it.

Q2. Continue the 45°-turning pattern until it returns to the starting position.

Since 360° ÷ 45° = 8, the shape returns to its original position after 8 quarter-turns of 45° each — continue rotating the figure by 45° each step through all 8 positions.

Q3. State the rule for each pattern (a)–(d) and tick what comes next.

Figure-based: examine how each item changes from one step to the next (turn, flip, size, colour, count) to state the rule, then apply that same rule once more to pick the next item.

Q4. Number Surprises:

(a) Take your age, add 5, multiply the sum by 2, subtract 10, then divide by 2 — what do you get?

Let age = a. (a+5)×2 − 10 = 2a+10−10 = 2a; then 2a÷2 = a.

Answer: You get your original age back.

(b) Take a number, double it, multiply that by 5, then divide by 10 — what do you get?

Let the number = n. Double: 2n. Multiply by 5: 10n. Divide by 10: n.

Answer: You get back the original number.

(c) Take a number, double it, double it again, add the original number, double the result again, then divide by 10 — what do you get?

Let the number = n. Double: 2n. Double again: 4n. Add original: 4n+n = 5n. Double again: 10n. Divide by 10: n.

Answer: You get back the original number.

(d) Continue the pattern: 1 = 1×1; 121 = 11×11; 12321 = 111×111; 1234321 = ?

1234321 = 1111 × 1111. Continuing further: 123454321 = 11111 × 11111.

(Chapter 7's 'Questions and Answers' section, Q1–9 on pages 99–101, is already fully solved in the printed book and needs no separate answer key.)

Chapter 8 : Mapping Your Way (Pages 102–109)

Exercise (Page 105–106)

Q1. What is the opposite direction of the following?

(a) West → East

(b) South → North

(c) North-East → South-West

Q2. Write the definitions with one example each:

(a) Western state — a state located in the western part of the country, e.g. Gujarat or Rajasthan (western India).

(b) Southern state — a state located in the southern part of the country, e.g. Kerala or Tamil Nadu (southern India).

(c) Northern state — a state located in the northern part of the country, e.g. Punjab or Himachal Pradesh (northern India).

Q3. On a map, the distance between two cities is 25 cm. If 1 cm = 8 km, what is the actual distance between the two cities?

Actual distance = 25 × 8 km

Answer: 200 km

Q4. The actual distance between two towns is 360 km. If 1 cm = 15 km, what will be the distance shown on the map?

Map distance = 360 ÷ 15

Answer: 24 cm

Q5. Observe Anaya's classroom layout and answer the questions based on it (a)–(f).

Figure-based: this question refers to the specific classroom floor-plan diagram printed on the page (position of the blackboard, rows of desks, bulletin board, teacher's table, and windows). Read each

answer directly off the printed layout — e.g. the blackboard is generally shown at the front of the room, the teacher's table near the blackboard, and windows along the side walls.

Q6. Answer the following questions regarding the political map of India shown (a)–(e).

Figure-based: locate each named state/region on the printed map and trace direction/adjacency directly from it — e.g. moving north from Karnataka toward Delhi, or identifying which state borders Madhya Pradesh to the west.

(Chapter 8's 'Questions and Answers' section, Q1–10 on pages 107–109, is already fully solved in the printed book — covering the Rajpath/India Gate map, the Red Fort area map and the village-route map — and needs no separate answer key.)

Chapter 9 : Boxes and Sketches (Pages 110–118)

Test Your Knowledge (Page 115–117)

Q1. Write the name of each shape (a)–(i).

Figure-based: name each pictured shape using the definitions in the chapter — cube, cuboid, cylinder, cone, sphere, or a 2D shape (triangle, square, rectangle, circle, hexagon) as shown.

Q2. Which of the following nets can be used to form a cube?

Rule: a net folds into a cube only if it has exactly 6 congruent square faces arranged so that, when folded, no face overlaps another and every face gets a matching opposite face. Check each net (a)–(f) against this rule — the common valid layouts are the 'cross' shape and the 'staircase' (offset row) shape of 6 squares; layouts with squares that would overlap when folded are not valid.

Q3. Write the name of the shapes represented by the following objects:

(a) Book → Cuboid
(b) Orange → Sphere
(c) Circular pipe → Cylinder
(d) Trunk (storage box) → Cuboid
(e) Tennis ball → Sphere
(f) Dice → Cube
(g) Birthday cap → Cone
(h) Tube light → Cylinder

Q4. Fill in the blanks:

(a) A cuboid has 6 faces, 12 edges and 8 vertices.
(b) A cube has 6 faces, 12 edges and 8 vertices.
(c) The opposite faces of a cuboid are identical.
(d) An object that occupies space is called a solid (3D shape).
(e) A sphere has a curved surface.
(f) A tennis ball is an example of a sphere.

Q5. Draw the deep drawings of the given floor maps (a)–(b).

Figure-based: convert each 2D floor map into a 3D-looking sketch by adding walls with height and a roof, keeping the position of doors, windows and rooms exactly where the floor map shows them.

Q6. Draw the floor maps of the given deep drawings (a)–(b).

Figure-based: do the reverse — flatten each 3D house sketch into a simple top-down 2D layout, marking the position of each wall, door and window as seen from above.

Q7. Draw the front view, side view and top view of the given objects (a)–(f).

Figure-based: for each object (tent, table, nut, hexagonal block, dice, solid), sketch what you would see looking straight at it from the front, from the side, and from directly above — using the given orientation arrows as reference.

Q8. Count and write the number of cubes in the given arrangements (a)–(c).

Figure-based: count layer by layer — count the cubes visible in the bottom layer, then add any cubes stacked in higher layers (including ones hidden behind visible cubes, inferred from the shape of the stack).

Practice Time — I (NCERT Corner, Page 117)

Q1. Add doors and windows to the deep drawing of the house shown in the floor map. Circle any windows that couldn't be shown.

Figure-based: match each door/window position from the floor map onto the corresponding wall in the 3D deep drawing. Windows on walls that aren't visible in the deep-drawing's angle (e.g. the back wall) cannot be shown and should be circled on the floor map instead.

Q2. Make a floor map of your own house.

Open-ended: draw a simple top-down layout of your own home, marking rooms, doors and windows — any accurate personal floor plan is correct.

Practice Time — II (NCERT Corner, Page 118)

Q1. Draw the bridge as seen from the top, front and side.

Figure-based: sketch the outline of the bridge as viewed straight-on from each of the three directions.

Q2. Make a matchbox model matching the given top/front/side views, and its deep drawing.

Figure-based, hands-on: arrange the matchboxes so that the resulting shape, viewed from the top, front and side, matches the three given views; then sketch the 3D model.

Q3. How many cubes are needed to make the model? Mark the correct top view with 'T' and the correct side view with 'S'.

Figure-based: count the total cubes by examining the stack layer by layer (as in Exercise Q8), then compare drawings (a)–(d) against the model to identify which matches the true top view and which matches the true side view.

(Chapter 9's 'Questions and Answers' section, Q1–10 on pages 117–118, is already fully solved in the printed book and needs no separate answer key.)

Chapter 10 : Tenths and Hundredths (Pages 119–129)

Exercise (Page 123–124)

Q1. Solve the following:

(a) 15.246 + 304.36 − 242.84 = 319.606 − 242.84 = 76.766

(b) 9.045 − 0.264 + 12.264 = 8.781 + 12.264 = 21.045

(c) 243.3 + 0.438 − 62.004 = 243.738 − 62.004 = 181.734

(d) 18.46 − 3.1 + 40.2 = 15.36 + 40.2 = 55.56

Q2. Fill in the blanks:

(a) 5.4 × 10 = 54

(b) 26.78 ÷ 10 = 2.678

(c) 273.2 × 100 = 27,320

(d) 242.84 ÷ 100 = 2.4284

(e) 0.964 ÷ 100 = 0.00964

(f) 4.268 × 100 = 426.8

(g) 5.4 × 1000 = 5400

(h) 0.943 ÷ 1000 = 0.000943

Q3. Write the decimal numbers for the shaded parts (a)–(c).

Figure-based: count the shaded small squares out of 100 in each hundredths grid — the decimal equals (shaded squares) ÷ 100, e.g. 47 shaded squares = 0.47.

Q4. Write the decimals:

(a) five-tenths = 0.5

(b) three point three four = 3.34

(c) two hundred and one-thousandths = 200.001

(d) thirty-nine point six three seven = 39.637

(e) one thousand and eight-tenths = 1000.8

(f) six-thousandths = 0.006

Q5. Write in words:

(a) 0.943 = zero point nine four three

(b) 41.07 = forty-one point zero seven

(c) 9.008 = nine point zero zero eight

(d) 58.076 = fifty-eight point zero seven six

(e) 0.6 = zero point six

(f) 8.73 = eight point seven three

Q6. Convert the following:

(a) 375 paise = ₹3.75

(b) ₹4.65 = 465 paise

(c) 65 mm = 6.5 cm

(d) 354 m = 0.354 km

(e) 32 cm = 0.32 m

(f) 82 mm = 0.082 m

Q7. Fill in the blanks with the sign >, < or =:

(a) 3.8 < 4.08

(b) 7.25 = 7.250

(c) 5.6 < 6.5

(d) 9.04 < 9.4

(e) 12.3 > 12.03

(f) 8.75 > 8.57

Q8. Convert the following temperatures into Fahrenheit (°F = °C × 9/5 + 32):

(a) 42°C → 107.6°F

(b) 34°C → 93.2°F

(c) 68°C → 154.4°F

(d) 19°C → 66.2°F

(e) 21°C → 69.8°F

Q9. Convert the following temperatures into Celsius (°C = (°F − 32) × 5/9):

(a) 48.2°F → 9°C

(b) 86.9°F → 30.5°C

(c) 59°F → 15°C

(d) 104°F → 40°C

(e) 37.4°F → 3°C

Q10. Solve the following word problems:

(a) Nayan purchased a bat for ₹450.25, a ball for ₹110.85, gloves for ₹212.90 and a water bottle for ₹18.25. How much did he spend in all?

Total = 450.25 + 110.85 + 212.90 + 18.25

Answer: ₹792.25

(b) Mr. Rajesh has 193.55 m of rope. Mr. Sujoy's rope is 42.75 m shorter. Find Mr. Sujoy's rope length.

Sujoy's rope = 193.55 − 42.75

Answer: 150.80 m

(c) A ball costs ₹275.60. There are 85 balls in a carton. Find the cost of all the balls.

Total cost = 275.60 × 85

Answer: ₹23,426.00

(d) A train covers 1120.46 km in 22 hours. Find the distance covered in 1 hour.

Distance per hour = 1120.46 ÷ 22

Answer: 50.93 km

Practice Time — I (NCERT Corner, Page 125–126)

Q1. Read the length of the nail using the ruler shown (in cm and mm, and as a decimal).

Figure-based: read the exact mark where the nail ends on the printed ruler; e.g. if it ends at 2 cm plus 4 more small mm-marks, the length is 2 cm 4 mm = 2.4 cm.

Q2. Read the length of the lady's finger (bhindi) using the same ruler.

Figure-based: same method — read the cm mark and the extra mm marks directly from the printed ruler and combine them into a single decimal length in cm.

Q3. Find the difference in length between candle 1 and candle 3 using the scale on the page.

Figure-based: measure each candle's length in cm+mm from the ruler, convert both to a decimal in cm, and subtract the smaller from the larger.

Practice Time — II (NCERT Corner, Page 126)

Match each white (fraction) box with one grey (paise) box and one pink (decimal rupee) box.

Using ₹1 = 100 paise, the standard matching set is:

(1/20 rupee) = 5 paise = ₹0.05

(1/10 rupee) = 10 paise = ₹0.10

(1/4 rupee) = 25 paise = ₹0.25

(1/2 rupee) = 50 paise = ₹0.50

(3/4 rupee) = 75 paise = ₹0.75

(99/100 rupee) = 99 paise = ₹0.99

(Match each of these triples to the corresponding boxes printed on the page — the printed fraction values were partly unclear in the scan, but the value-based matching above is the correct method and set of equivalences.)

Practice Time — III (NCERT Corner, Page 127–128)

Q1. Currency from different countries (using the given exchange-rate table):

(A) The English Pound costs the most in Indian Rupees (₹77.76 per unit — the highest rate in the table).

(B) Mithun's uncle sent 10 US dollars; Mithun used ₹350 for a school trip. How much is left?

10 dollars = 10 × ₹39.70 = ₹397.00. Money left = ₹397.00 − ₹350 = ₹47.00.

(C) Majeed's father gets 1000 Dirham; Arun's father gets 2000 Sri Lankan Rupees. Who gets more in Indian Rupees?

1000 Dirham = 1000 × ₹10.80 = ₹10,800. 2000 LKR = 2000 × ₹0.37 = ₹740. Majeed's father gets more.

(D) Leena's present from China cost 30 Yuan. What does it cost in Indian Rupees?

30 × ₹5.50 = ₹165.00

(E) How many Won for ₹4? For ₹400? How many Hong Kong Dollars for ₹508?

Since 1 Won = ₹0.04, ₹4 buys 4 ÷ 0.04 = 100 Won, and ₹400 buys 400 ÷ 0.04 = 10,000 Won.

Since 1 HKD = ₹5.10, ₹508 buys 508 ÷ 5.10 ≈ 99.6 Hong Kong Dollars.

Q2. Kiran went shopping with ₹200. Put the decimal point correctly in each price (given without a point) and find the bill total.

Placing the point 2 digits from the right (rupees.paise) in each price: Soap = ₹12.50; Greengram (1 kg) = ₹50.25; Tea (250 g) = ₹27.25; Coconut Oil (1 L) = ₹60.00.

Total = 12.50 + 50.25 + 27.25 + 60.00

Answer: ₹150.00 (well within Kiran's ₹200 — she has ₹50.00 left over).

Q3. Which city is cooler — Himachal (2°C in winter) or Rajasthan (48°C)?

Answer: Himachal is far cooler (2°C, cold enough for water to freeze) compared to Rajasthan's 48°C.

Sub-questions 1–4 in this activity refer to a separate '3 pm temperature' table/graphic that is not present as extractable text in the scanned page — read each city's 3 pm value directly from that table/graphic to answer them.

(5(a)) From the 3 am table given, Srinagar has the lowest temperature (1.3°C) — a place this cold would feel very chilly, likely with frost or icy conditions.

(5(b) needs each city's 3 pm reading, which is on the missing table/graphic — subtract the 3 am value given [Chennai 21.1°C, Bhopal 9.8°C] from the corresponding 3 pm value once available.)

(Chapter 10's 'Questions and Answers' section, Q1–10 on pages 128–129, is already fully solved in the printed book and needs no separate answer key.)

Chapter 11 : Area and Its Boundary (Pages 130–147)

Exercise (Page 140–141)

Q1. Complete the table (Perimeter = 2 × (Length + Breadth)):

(a) Length = 720 cm (7.2 m), Breadth = 5.4 m → Perimeter = 2×(7.2+5.4) = 25.2 m = 2520 cm

(b) Breadth = 188 cm, Perimeter = 756 cm → Length = 756÷2 − 188 = 378 − 188 = 190 cm

(c) Breadth = 9 km, Perimeter = 40.5 km → Length = 40.5÷2 − 9 = 20.25 − 9 = 11.25 km

(d) Breadth = 3.8 cm, Perimeter = 34.96 cm → Length = 34.96÷2 − 3.8 = 17.48 − 3.8 = 13.68 cm

(e) Length = 25 m, Breadth = 5 m → Perimeter = 2×(25+5) = 60 m

Q2. Find the perimeter of a square whose side is:

(a) 5 cm → 20 cm

(b) 7.5 cm → 30 cm

(c) 2.45 m → 9.8 m

(d) 8.36 m → 33.44 m

Q3. Find the side of a square whose perimeter is:

(a) 24 cm → side = 6 cm

(b) 16 m → side = 4 m

(c) 30 cm → side = 7.5 cm

(d) 15 cm → side = 3.75 cm

Q4. Find the area of the following irregular shapes drawn on a graph paper (a)–(c).

Figure-based: use the square-counting method shown in Example 11/12 of the chapter — count full squares as 1 sq. unit, more-than-half squares as 1 sq. unit, half squares as ½ sq. unit, and ignore less-than-half squares.

Q5. Find the area of the square whose side is given below:

(a) 18 cm → 18×18 = 324 sq. cm

(b) 8.5 cm → 8.5×8.5 = 72.25 sq. cm

(c) 3.1 cm → 3.1×3.1 = 9.61 sq. cm

(d) 4 m 20 cm = 4.2 m → 4.2×4.2 = 17.64 sq. m

Q6. Find the area of the regions in the given figures (a)–(c).

Figure-based: split each irregular (L-shaped/step-shaped) region into simple rectangles using the marked cm values, find each rectangle's area (length × breadth), and add them together — exactly as demonstrated in the chapter's Example 13.

Q7. Find the area of the following figures (a)–(f).

Figure-based: apply the same 'split into rectangles/squares and add' method as Q6, using the specific cm measurements marked on each printed figure.

Q8. Areena wants to tile her bathroom floor with square tiles of side 20 cm. The floor is 300 cm long and 200 cm wide. How many tiles will she need?

Area of floor = 300 × 200 = 60,000 sq. cm. Area of one tile = 20 × 20 = 400 sq. cm.

Number of tiles = 60,000 ÷ 400

Answer: 150 tiles

Q9. A school playground is 50 m long and 30 m wide. The principal wants a wire fence around it.

(a) Total length of wire needed = Perimeter = 2×(50+30) = 160 m

(b) If the wire costs ₹100 per metre, total cost = 160 × 100 = ₹16,000

Q10. What will be the perimeter of a square garden having area 256 sq. m?

Side = √256 = 16 m. Perimeter = 4 × 16

Answer: 64 m

Practice Time — I (NCERT Corner, Page 142–143)

Q1. Arbaz tiles his kitchen floor with square tiles of side 10 cm. His kitchen is 220 cm long and 180 cm wide. How many tiles will he need?

Number of tiles = (220 ÷ 10) × (180 ÷ 10) = 22 × 18

Answer: 396 tiles

Q2. The fencing of a square garden is 20 m in length. How long is one side of the garden?

Side = Perimeter ÷ 4 = 20 ÷ 4

Answer: 5 m

Q3. A thin 20 cm wire is formed into a rectangle of width 4 cm. What is its length?

Perimeter = 20 cm = 2×(length + 4) → length + 4 = 10 → length = 6 cm

Answer: 6 cm

Q4. A square carrom board has a perimeter of 320 cm. How much is its area?

Side = 320 ÷ 4 = 80 cm. Area = 80 × 80

Answer: 6400 sq. cm

Q5. How many triangle tiles (each half of a 1 cm square) will fit in the white design? Make your own designs of area 4 and 6 sq. cm.

Figure-based: count how many unit squares the white design covers, then double that count (since each unit square = 2 triangle tiles) to get the number of triangles needed. For the 'make your own' part, any shape built from 4 (or 6) unit squares — each optionally split into 2 triangles — is a valid design.

Q6. Complete the table for the greeting cards made by Sanya, Manav, Aarushi and Kabir:

(Sanya) Length 10 cm, Width 8 cm → Perimeter = 2×(10+8) = 36 cm; Area = 10×8 = 80 sq. cm

(Manav) Length 11 cm, Perimeter 44 cm → Width = 44÷2 − 11 = 11 cm; Area = 11×11 = 121 sq. cm

(Aarushi) Width 8 cm, Area 80 sq. cm → Length = 80÷8 = 10 cm; Perimeter = 2×(10+8) = 36 cm

(Kabir) Perimeter 40 cm, Area 100 sq. cm → Length + Width = 20 and Length × Width = 100, giving Length = Width = 10 cm (a square)

Practice Time — II (NCERT Corner, Page 143–144)

Q1. Which unit (sq. cm / sq. m / sq. km) would you use to state the area of each item?

(Handkerchief) square centimetres
(Sari) square metres
(Page of your book) square centimetres
(School land) square metres
(Total land of a city) square kilometres
(Door of your classroom) square metres
(Chair seat) square centimetres
(Blackboard) square metres
(Indian flag) square centimetres (or square metres for a large flag)
(Land over which a river flows) square kilometres

Q2. Draw a square of 9 sq. cm (square A). Draw another square with double the side (square B).

Since 3 × 3 = 9, square A has side 3 cm; square B then has side 3 × 2 = 6 cm.
(a) Perimeter of square A = 4 × 3 = 12 cm
(b) Side of square B = 6 cm
(c) Area of square B = 6 × 6 = 36 sq. cm
(d) Area of square B is 36 ÷ 9 = 4 times the area of square A
(e) Perimeter of square B = 4 × 6 = 24 cm
(f) Perimeter of square B is 24 ÷ 12 = 2 times the perimeter of square A
(Chapter 11's 'Questions and Answers' section, Q1–10 on pages 145–147, is already fully solved in the printed book and needs no separate answer key.)

Chapter 12 : Smart Charts (Pages 148–163)

Note: This chapter is built entirely around tables, tally charts, bar graphs, pictographs, pie charts and line graphs printed as images. Wherever a question needs an exact value read off a printed bar, tally mark, or pie slice, the method and formula are given in full — the specific reading should be checked against the actual chart in the book, since some of the finer numeric labels could not be captured reliably from the scanned page.

Test Your Knowledge (Pages 157–160)

Q1. Complete the fruit-basket table by converting tally marks into numbers.

Method: count the tally marks for each fruit — every complete bundle of 5 (four uprights crossed by a diagonal stroke) counts as 5, then add any leftover single strokes.
Read the tally bundles for Mango, Apple, Orange, Coconut, Pomegranate and Banana directly from the table on page 157 using this rule to fill the 'No. of fruits' column.

Q2. Number of students present in a week (bar graph) — answer the questions:

(a) Read off the longest bar — that day had the maximum number of students present.
(b) Read off the shortest bar — that day had the least number of students present.
(c) Read the value where the Thursday bar ends on the scale.
(d) Read the value where the Tuesday bar ends on the scale.
(e) Students absent on Wednesday = 40 − (number present on Wednesday, read from the graph).

Q3. Make a tally chart for the number of items sold in five days:

Convert each given number into tally marks (bundles of 5):

Day	Number Sold	Tally Marks
Monday	16	3 bundles of 5 + 1
Tuesday	14	2 bundles of 5 + 4
Wednesday	23	4 bundles of 5 + 3
Thursday	11	2 bundles of 5 + 1
Friday	17	3 bundles of 5 + 2

Q4. Cold-drink bar graph — answer the questions:

(a) The drink with the tallest bar is the most popular.

(b) The drink with the shortest bar is the least popular.

(c) Compare the heights of the Cola and Lemonade bars directly.

(d) Compare the heights of the Mango and Orange bars directly.

(e) Compare the heights of the Cola and Mango bars directly.

(Read the exact number of children for each drink from the bar heights on the graph on page 158, then compare as above.)

Q5. Draw a bar graph for the fruit-collection data:

Item	Number
Apple	14
Pear	6
Watermelon	2
Strawberry	20
Peach	10
Cherry	18
Pineapple	14
Blue berry	12
Orange	18

Draw two perpendicular axes; mark the items along the horizontal axis and choose a suitable scale (e.g., 1 division = 2 units) on the vertical axis; draw bars of equal width to the height matching each number given above.

Q6. Pictograph of stamps collected (each symbol = 8 stamps, half symbol = 4 stamps):

Count the symbols for each student and multiply by 8 (counting a half-symbol as 4) to get the total stamps, then answer:

(a) The student with the most symbols has collected the most stamps.

(b) Peter's stamps − John's stamps = the difference asked.

(c) Aman's stamps − Mala's stamps = the difference asked.

(d) Amrit's stamps × ₹10 = value of Amrit's stamps.

(e) Sweety's stamps × ₹10 = amount Sweety spent.

(Exact stamp counts depend on the number of symbols drawn for each student in the pictograph on page 159.)

Q7. Circle graph of after-school activities (out of 200 students):

Multiply each activity's fraction (as marked on the pie chart) by 200 to get the number of students, then answer the questions by comparing/subtracting these values.

(Exact fractions for each sector — Sports, TV, Homework, Chores — should be read from the pie chart on page 159.)

Q8. Raman's monthly test-marks line graph (July to March):

Read the point plotted for each month directly off the graph for (a) and (b); for (c), add the marks for all months from July to March and divide by the number of months (9) to get the average; for (d) compare the November and February points; for (e) subtract January's marks from September's marks.

(Exact monthly marks should be read from the line graph on page 160.)

Practice Time — Survey Activity (NCERT Corner, Page 161)

Q1. Ask 10 friends what they like to do most after school and tally the results.

This is a hands-on survey activity — record each friend's answer as a tally mark against 'Watching TV', 'Playing football' or 'Reading story books', then total each row. Since it depends on real responses collected by the student, there is no single fixed answer; any correctly tallied table (with the three totals adding up to 10) is acceptable.

Chapter 13 : Ways to Multiply and Divide (Pages 164–179)

Test Your Knowledge (Pages 172–174)

Q1. Find the product (using the box/area method):

(a) 48 × 35 = (40×30) + (40×5) + (8×30) + (8×5) = 1200 + 200 + 240 + 40

Answer: 1,680

(b) 54 × 31 = (50×30) + (50×1) + (4×30) + (4×1) = 1500 + 50 + 120 + 4

Answer: 1,674

Q2. Multiply:

	Multiplication	Working	Product
(a)	54 × 37	54×30=1620; 54×7=378	1,998
(b)	39 × 27	39×20=780; 39×7=273	1,053
(c)	288 × 43	288×40=11,520; 288×3=864	12,384
(d)	362 × 95	362×90=32,580; 362×5=1,810	34,390
(e)	591 × 53	591×50=29,550; 591×3=1,773	31,323

Q3. Divide and check the answer by multiplying:

(The divisors printed inside the long-division brackets were not fully legible from the scanned page; the workings below use the most likely divisors — 4, 12, 25 and 9 — based on the visible digits. Please cross-check each divisor against the printed page.)

	Division	Quotient	Remainder	Check
(a)	724 ÷ 4	181	0	4×181+0=724 ✓
(b)	4826 ÷ 12	402	2	12×402+2=4826 ✓
(c)	8035 ÷ 25	321	10	25×321+10=8035 ✓
(d)	90247 ÷ 9	10027	4	9×10027+4=90247 ✓

Q4. Solve both sides first, then put the correct sign (<, > or =):

(a) 343 ÷ 7 = 49 ; 7 × 7 = 49 → 343 ÷ 7 = 7 × 7

(b) 216 ÷ 6 = 36 ; 10 × 4 = 40 → 216 ÷ 6 < 10 × 4

(c) 171 ÷ 19 = 9 ; 3 × 2 = 6 → 171 ÷ 19 > 3 × 2

(d) 63 ÷ 9 = 7 ; 7 × 2 = 14 → 63 ÷ 9 < 7 × 2

(e) 36 ÷ 4 = 9 ; 3 × 3 = 9 → 36 ÷ 4 = 3 × 3

(f) 625 ÷ 25 = 25 ; 25 × 2 = 50 → 625 ÷ 25 < 25 × 2

Q5. Choose the correct operation (+, −, ×, ÷) to make the equation true:

(a) 90 − 45 = 45

(b) 12 × 4 = 48

(c) 120 ÷ 10 = 12

(d) 15 + 15 = 30

(e) 600 − 200 = 400

(f) 8 × 7 = 56

Q6. Weekly earnings — Rahul ₹450, Sanya ₹320, Vikram ₹500, Aditi ₹210 (per week):

(a) Rahul in 4 weeks = 450 × 4

Answer: ₹1,800

(b) Aditi in 3 months (taken as 12 weeks) = 210 × 12

Answer: ₹2,520

(c) Vikram for 14 days (2 weeks) = 500 × 2

Answer: ₹1,000

(d) Sanya + Aditi in one week = 320 + 210

Answer: ₹530

Q7. Cryptarithms — find the value of each letter:

(a) mm × mm, given m=1: mm=11; 11×11=121, written as 'mnm' → 1 2 1

Answer: m = 1, n = 2 (11 × 11 = 121)

(b) pp × pp, given p=2: pp=22; partial product 22×2=44 (=qq, so q=4); 22×20=440; sum=484, written as 'qrq' → 4 8 4

Answer: p = 2, q = 4, r = 8 (22 × 22 = 484)

Q8. Fill the empty ring by multiplication.

(Picture puzzle of linked circles — figure required. Method: multiply the two connected numbers and write the product in the empty ring.)

Q9. Fill the empty ring by division.

(Picture puzzle — figure required. Method: divide the outer circle's number by the inner circle's number and write the quotient in the empty ring.)

Word Problems (Q10, Page 174)

(a) 1,440 slices ÷ 120 students = 1440 ÷ 120

Answer: 12 slices per student

(b) 45 rows × 32 trees per row

Answer: 1,440 trees

(c) 4,580 kg ÷ 4 villages

Answer: 1,145 kg per village

(d) 24 loaves × 31 days

Answer: 744 loaves

(e) 15 books × 42 shelves

Answer: 630 books

(f) 45 laps × 12 visits

Answer: 540 laps

Practice Time — Bela's Method (NCERT Corner, Page 174)

Q1. Use Bela's method to multiply these numbers:

(a) 32 × 46 = (32×6) + (32×40) = 192 + 1280

Answer: 1,472

(b) 67 × 18 = (67×8) + (67×10) = 536 + 670

Answer: 1,206

Q2. Do these using Bela's method:

	Multiplication	Working	Product
(a)	47 × 19	47×9=423; 47×10=470	893
(b)	188 × 91	188×1=188; 188×90=16,920	17,108

(c)	63 × 57	63×7=441; 63×50=3,150	3,591
(d)	225 × 22	225×2=450; 225×20=4,500	4,950
(e)	360 × 12	360×2=720; 360×10=3,600	4,320
(f)	163 × 42	163×2=326; 163×40=6,520	6,846

Practice Time — Word Problems (NCERT Corner, Page 175)

(a) Sukhi: ₹98/day × 52 days

Answer: ₹5,096

(b) Hariya: ₹2,750/month × 24 months (2 years)

Answer: ₹66,000

(c) Ratiram: 13 litres × ₹23/litre

Answer: ₹299 per day

(d) Farmer: 210 litres × ₹11/litre

Answer: ₹2,310 per month

(e) Shopkeeper: 240 litres × ₹12/litre

Answer: ₹2,880

Practice Time — Quick Division (NCERT Corner, Page 175)

Q1. Try to solve these using as few steps as you can:

	Division	Answer
(a)	4228 ÷ 4	1,057
(b)	770 ÷ 22	35
(c)	9872 ÷ 8	1,234
(d)	672 ÷ 21	32
(e)	772 ÷ 7	110, remainder 2
(f)	639 ÷ 13	49, remainder 2

Practice Time — Division Word Problems (NCERT Corner, Page 176)

Q1. 576 books packed, 24 books per box. How many boxes?

576 ÷ 24

Answer: 24 boxes

Q2. 836 people, hall of 44 rows. People per row?

836 ÷ 44

Answer: 19 people per row

Q3. 458 apple trees, 15 per row. Rows, and trees left over?

458 ÷ 15 = 30, remainder 8

Answer: 30 rows; 8 trees left over

Make the Best Story Problem (NCERT Corner, Page 176–177)

Q1. Shopkeeper has 50 boxes, 48 fruits per box.

Answer: (b) How many fruits are there in all? — 50 × 48. (a) fails as no price is given; (c) fails as no target number of boxes is mentioned.

Q2. 352 children, 4 per tent.

Answer: (b) How many tents do they need? — 352 ÷ 4 = 88 tents

Q3. 204 eggs, 12 per tray.

Answer: **(c) How many egg trays does he need? — 204 ÷ 12 = 17 trays**

Q4. Cost of one book ₹47; Sonu buys 23 books.

Answer: **(b) How much money does she pay? — 47 × 23 = ₹1,081**

Practice Time — Divide and Check (NCERT Corner, Page 177)

Q1. Do these divisions. Check by multiplication:

	Division	Quotient	Remainder
(a)	438 ÷ 9	48	6
(b)	3480 ÷ 12	290	0
(c)	450 ÷ 7	64	2
(d)	900 ÷ 10	90	0
(e)	678 ÷ 6	113	0
(f)	2475 ÷ 11	225	0

Q2. Solve the sums (answers used to colour the grid puzzle):

Expr.	Ans.	Expr.	Ans.	Expr.	Ans.
21×16	336	26×26	676	85×30	2550
15×7	105	77×10	770	64×42	2688
93×2	186	50×10	500	3200÷40	80
17×5	85	11×11	121	19×3	57
10×10	100	59×7	413	248÷8	31
31×19	589	432÷18	24	729÷9	81
825÷5	165	221÷13	17	576÷12	48
288÷4	72	869÷11	79	847÷7	121
981÷3	327	475÷19	25		

Colour every grid cell matching one of these answers; the coloured cells reveal a hidden picture on the grid printed on page 177.

Chapter 14 : How Big? How Heavy? (Pages 180–189)

Test Your Knowledge (Pages 183–186)

Q1. A sack of 10 gold coins weighs 120 g. How much will a set of 500 gold coins weigh?

Weight of 1 coin = 120 g ÷ 10 = 12 g

Weight of 500 coins = 12 g × 500

Answer: **6,000 g = 6 kg**

Q2. A marble symbol represents a unit weight; 1 marble = 50 g. Find the total weight of the objects shown.

Count the number of marble symbols in each picture and multiply by 50 g.

(Exact totals depend on the number of marble symbols drawn in each picture on page 184 — apply the rule 'count × 50 g' to get the answer.)

Q3. Blue ball = 5 g, Yellow ball = 9 g, Orange ball = 12 g. Find the total weight of:

(a) 15 blue balls = 15 × 5

Answer: **75 g**

(b) 30 yellow balls = 30 × 9

Answer: **270 g**

(c) 25 orange balls = 25 × 12

Answer: **300 g**

(d) 40 blue balls and 12 yellow balls = (40×5) + (12×9) = 200 + 108

Answer: 308 g

(e) 10 orange balls and 55 blue balls = (10×12) + (55×5) = 120 + 275

Answer: 395 g

(f) 10 blue, 10 yellow and 10 orange balls = (10×5) + (10×9) + (10×12) = 50 + 90 + 120

Answer: 260 g

Q4. The volume of one small cube is 1 cm³.

(a) A cuboid box with 5 cubes along the length, 3 along the width, and 7 along the height: Volume = 5 × 3 × 7

Answer: 105 cm³

(b) A cargo container 4 m wide, 30 m long, 7 m tall: Volume = 4 × 30 × 7

Answer: 840 m³

(c) Each such box (from part a) is 7 cm tall (7 unit cubes along the height); 6 boxes stacked one on top of another: Height = 7 × 6

Answer: 42 cm

Q5. The weight of a single marble is 8 g. Find the total weight of:

(a) 5 marbles = 5 × 8

Answer: 40 g

(b) 12 marbles = 12 × 8

Answer: 96 g

(c) 20 marbles = 20 × 8

Answer: 160 g

(d) 50 marbles = 50 × 8

Answer: 400 g

Q6. Find the volume (of the solids shown in the figure).

Method: count how many unit cubes fit along the length, breadth and height of each solid, then multiply Length × Breadth × Height (or count the unit cubes directly if the figure is built of unit cubes).

(Exact dimensions depend on the two figures printed on page 185 — apply V = l × b × h once the dimensions are read off.)

Q7. Maya's chocolate box is a cube of edge 4 cm. Leo's box has twice the edge length.

(a) Volume of Maya's box = 4 × 4 × 4

Answer: 64 cm³

(b) Edge length of Leo's box = 2 × 4 cm

Answer: 8 cm

(c) Volume of Leo's box = 8 × 8 × 8

Answer: 512 cm³

(d) Number of Maya's boxes that fit inside Leo's box = 512 ÷ 64

Answer: 8 boxes

Q8. A wooden crate is 20 cm × 10 cm × 15 cm. A foam block inside is 12 cm × 5 cm × 8 cm. How much empty space is left?

Volume of crate = 20 × 10 × 15 = 3,000 cm³

Volume of foam block = 12 × 5 × 8 = 480 cm³

Empty space = 3,000 − 480

Answer: 2,520 cm³

Q9. Water in a graduated cylinder rises by 5 ml for every metal bolt dropped in. Complete the table:

Case	Number of Bolts	Water Raised (ml)
(a)	2	10 ml (2 × 5)
(b)	5 (25 ÷ 5)	25 ml
(c)	7	35 ml (7 × 5)
(d)	10 (50 ÷ 5)	50 ml
(e)	12	60 ml (12 × 5)

Q10. Fill in the blanks with the correct term or value:

(a) The amount of space occupied by a three-dimensional object is known as its volume.

(b) The standard SI unit for measuring the volume of solids is the cubic metre (m^3).

(c) To measure a small amount of liquid medicine, we typically use millilitre (ml) as the unit.

(d) The volume of a cuboid with length 5 cm, breadth 3 cm and height 2 cm = 5 × 3 × 2 = 30 cm^3.

(e) If a container can hold 2 litres of water, its capacity is said to be 2 litres.

(f) The volume of a cube with an edge of 10 cm = 10 × 10 × 10 = 1,000 cm^3.

(g) 1 litre is equal to 1,000 millilitres (ml).

Practice Time — NCERT Corner (Page 187)

Q1. A stage (platform) is made with 5 Math-Magic books. Its volume is the same as how many cm cubes?

This is an estimation activity: first estimate (or measure) the volume of one Math-Magic book in cm^3 (length × breadth × height of the closed book), then multiply that figure by 5 to get the stage's volume.

(There is no single fixed numeric answer — it depends on the actual measured dimensions of the book — but the method above gives the correct estimate.)

Q2. Guess the volume of a matchbox, a geometry box, and an eraser in cm cubes.

This is an open estimation activity meant to build a sense of volume by comparison. Reasonable estimates: a matchbox ≈ 15–20 cm^3; a geometry box ≈ 300–400 cm^3; an eraser ≈ 8–15 cm^3.

To check the guess: measure the length, breadth and height of each object with a ruler and calculate Volume = l × b × h, then compare with the guess.

Practice Time — Matchbox Activity (NCERT Corner, Page 187)

Q1. Mohan arranged his matchboxes into a shape. How many matchboxes did he use, and what is the volume in matchboxes?

(This depends on the specific arrangement shown in the figure on page 187 — count the total number of matchboxes visible in the picture; that count is itself the volume, expressed in 'matchboxes' as the unit.)

Appendix : Alternative Methods of Mathematics (Pages 190–195)

This is the last 'Test Your Knowledge' section in the book, covering the Urdhva Triyak method of multiplication and the Bijank (digital root) method of checking multiplication and division.

Test Your Knowledge (Page 193)

Q1. Multiply the following by the Urdhva Triyak method:

(a) 52 × 18

Step 1 (ones): 2×8 = 16 → write 6, carry 1

Step 2 (cross): (5×8)+(2×1) = 42, + carry 1 = 43 → write 3, carry 4

Step 3 (tens): 5×1 = 5, + carry 4 = 9 → write 9

Answer: 936

(b) 231 × 42 (treat 42 as 042 to match 3 digits)

Step 1: 1×2 = 2 → write 2, carry 0

Step 2: (3×2)+(1×4) = 10, + 0 = 10 → write 0, carry 1
Step 3: (2×2)+(3×4)+(1×0) = 16, + carry 1 = 17 → write 7, carry 1
Step 4: (2×4)+(3×0) = 8, + carry 1 = 9 → write 9

Answer: 9,702

(c) 252 × 143
Step 1: 2×3 = 6 → write 6, carry 0
Step 2: (5×3)+(2×4) = 23, + 0 = 23 → write 3, carry 2
Step 3: (2×3)+(5×4)+(2×1) = 30, + carry 2 = 32... using standard 3×3 cross: (2×3)+(5×4)+(2×1)=28, +carry2 = 30 → write 0, carry 3
Step 4: (2×4)+(5×1) = 13, + carry 3 = 16 → write 6, carry 1
Step 5: 2×1 = 2, + carry 1 = 3 → write 3

Answer: 36,036

Q2. Check the product of 43 × 27 by the Bijank method.
Actual product: 43 × 27 = 1,161
Bijank of 43 = 4+3 = 7; Bijank of 27 = 2+7 = 9
Product of bijanks = 7 × 9 = 63 → 6+3 = 9
Bijank of 1,161 = 1+1+6+1 = 9

Answer: Both bijanks are 9 — the product 1,161 is correct.

Q3. Check the product of 273 × 258 by the Bijank method.
Actual product: 273 × 258 = 70,434
Bijank of 273 = 2+7+3 = 12 → 1+2 = 3; Bijank of 258 = 2+5+8 = 15 → 1+5 = 6
Product of bijanks = 3 × 6 = 18 → 1+8 = 9
Bijank of 70,434 = 7+0+4+3+4 = 18 → 1+8 = 9

Answer: Both bijanks are 9 — the product 70,434 is correct.

Q4. Solve 845 ÷ 14 and check the answer by the Bijank method.
845 ÷ 14 → 14 × 60 = 840, remainder 5. Quotient = 60, Remainder = 5
Bijank of dividend 845 = 8+4+5 = 17 → 1+7 = 8
Bijank of quotient 60 = 6; Bijank of divisor 14 = 5; Bijank of remainder 5 = 5
Check: (6 × 5) + 5 = 35 → 3+5 = 8, which equals the dividend's bijank (8)

Answer: Quotient = 60, Remainder = 5 — verified correct.

Q5. Divide 4287 by 15 and check the answer.
4287 ÷ 15 → 15 × 285 = 4275, remainder 12. Quotient = 285, Remainder = 12
Bijank of dividend 4287 = 4+2+8+7 = 21 → 2+1 = 3
Bijank of quotient 285 = 2+8+5 = 15 → 1+5 = 6; Bijank of divisor 15 = 6; Bijank of remainder 12 = 3
Check: (6 × 6) + 3 = 39 → 3+9 = 12 → 1+2 = 3, which equals the dividend's bijank (3)

Answer: Quotient = 285, Remainder = 12 — verified correct.

Q6. A farmer harvested 3,264 apples and packed them equally into 16 crates. How many apples are in each crate?
3,264 ÷ 16

Answer: 204 apples per crate

Q7. A factory produced 7,589 kg of sugar, filled into bags of 32 kg each. Find the number of full bags and the weight of remaining sugar.
7,589 ÷ 32 → 32 × 237 = 7,584, remainder 5

Answer: 237 full bags; 5 kg sugar left over

Q8. A merchant has 5,290 kg of rice, packed into bags of 22 kg each. Find the number of full bags and the weight of remaining rice.
5,290 ÷ 22 → 22 × 240 = 5,280, remainder 10

Answer: 240 full bags; 10 kg rice left over

Q9. Divide 3845 by 17 and check the answer by the Bijank method.

3,845 ÷ 17 → 17 × 226 = 3,842, remainder 3. Quotient = 226, Remainder = 3

Bijank of dividend 3845 = 3+8+4+5 = 20 → 2+0 = 2

Bijank of quotient 226 = 2+2+6 = 10 → 1+0 = 1; Bijank of divisor 17 = 8; Bijank of remainder 3 = 3

Check: (1 × 8) + 3 = 11 → 1+1 = 2, which equals the dividend's bijank (2)

Answer: Quotient = 226, Remainder = 3 — verified correct.

Q10. Check the product of 257 and 29 by the Bijank method.

Actual product: 257 × 29 = 7,453

Bijank of 257 = 2+5+7 = 14 → 1+4 = 5; Bijank of 29 = 2+9 = 11 → 1+1 = 2

Product of bijanks = 5 × 2 = 10 → 1+0 = 1

Bijank of 7,453 = 7+4+5+3 = 19 → 1+9 = 10 → 1+0 = 1

Answer: Both bijanks are 1 — the product 7,453 is correct.

Practice Time — Urdhva Triyak + Bijank Check (NCERT Corner, Page 194)

For each pair, the product (by Urdhva Triyak) and the common bijank (digital root) used to verify it are given below.

	Multiplication	Product	Common Bijank
1	12 × 22	264	3
2	32 × 21	672	6
3	61 × 21	1,281	3
4	43 × 42	1,806	6
5	45 × 85	3,825	9
6	88 × 22	1,936	1
7	122 × 211	25,742	2
8	121 × 212	25,652	2
9	322 × 211	67,942	1
10	511 × 224	114,464	2
11	333 × 222	73,926	9
12	555 × 555	308,025	9

Method for each row: multiply using Urdhva Triyak (cross-multiplication); then find the bijank of each factor, multiply those bijanks and reduce to a single digit, and compare with the bijank of the product — they should match, as shown in the last column.

Practice Time — Divide and Check (NCERT Corner, Page 194)

	Division	Quotient	Remainder
1	72 ÷ 9	8	0
2	180 ÷ 5	36	0
3	5240 ÷ 20	262	0
4	2395 ÷ 23	104	3
5	1239 ÷ 12	103	3
6	4150 ÷ 89	46	56

Check each using: Dividend = Divisor × Quotient + Remainder.