Day 241 **C Tier 10-a-day: Model Solutions**

1 Rotational symmetry

Write down the order of rotational symmetry of
(a) a parallelogram
(b) an isosceles triangle

(a) A parallelogram fits onto itself 2 times in a full turn
(b) An isosceles triangle fits onto itself 1 time in a full turn
Answer: (a) 2 (b) 1

2 Place value

Write down the value of the digit 5 in the number 1523.

The digit 5 is in the hundreds column
5 × 100 = 500
Answer: 500

3 Mass and capacity conversions

Change
(a) 3 litres into cl
(b) 8 litres into cl

(a) 1 litres = 100 cl, so multiply by 100: 3 × 100 = 300
(b) 1 litres = 100 cl, so multiply by 100: 8 × 100 = 800
Answer: (a) 300 cl (b) 800 cl

4 Ordering fractions

Write these fractions in order, starting with the smallest.
$\frac{7}{9}, \frac{8}{9}, \frac{3}{9}$

The denominators are all 9, so compare the numerators
3, 7, 8 (numerators in order)
Answer: $\mathbf{\frac{3}{9}, \frac{7}{9}, \frac{8}{9}}$

5 Distance from speed and time

A train travels at 80 mph for 2½ hours.
How far does it travel?

Distance = speed × time
80 × 2.5 = 200
Answer: 200 miles

6 Sequences

Here are the first four terms of a sequence.
5, 13, 21, 29
Is 77 a term in this sequence?
You must show your working.

The terms go up by 8 each time
Continue the sequence: 5, 13, 21, 29, 37, 45, 53, 61, 69, 77, 85
77 is in the list
Answer: Yes

7 Enlargement

A square has sides of length 3 cm.
It is enlarged by scale factor 3.
Work out the length of a side of the enlarged square.

Multiply the side by the scale factor
3 × 3 = 9
Answer: 9 cm

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8 Venn diagrams

Some students were asked whether they like swimming or cycling.
The Venn diagram shows the results.
How many students are in at least one circle?

Add the numbers inside the circles: 6 + 4 + 7 = 17
Answer: 17

9 Substitution

Work out the value of m + 5 when m = −5.

−5 + 5 = 0
Answer: 0

10 Pie chart angles

20 students were asked about their way of travelling to school.
2 of them walk to school.
The results are shown in a pie chart.
Work out the angle of the sector for those students.

360° ÷ 20 = 18° for each student
2 × 18° = 36°
Answer: 36°