Day 171 **C Tier 10-a-day: Model Solutions**

1 Substitution

Work out the value of 3z when z = 9.

3z means 3 × z
3 × 9 = 27
Answer: 27

2 Angles in a right angle

A right angle is split into two angles by a line.
Work out the size of angle p.
The diagram is not drawn accurately.

The square corner is a right angle, which is 90°
90 − 65 = 25
Answer: p = 25°

3 Sequences

Here is a sequence with one number missing.
15, ?, 33, 42, 51
Work out the missing number.

The terms go up by 9 each time
15 + 9 = 24
Answer: 24

4 Angles in parallel lines

Two parallel lines are crossed by a straight line.
Work out the size of angle q.
Give a reason for your answer.

The angles are on opposite sides of the transversal between the parallel lines, so they are alternate angles
Alternate angles are equal
q = 50°
Answer: q = 50° (alternate angles)

5 Average speed

A cyclist travels 60 km in 2 hours.
Work out its average speed.

Speed = distance ÷ time
60 ÷ 2 = 30
Answer: 30 km/h

6 Percentages of amounts

Work out 5% of £160.

5% is half of 10%, so divide by 20
160 ÷ 20 = 8
Answer: £8

7 Cost from area

A rectangular floor is 5 m long and 3 m wide.
Carpet costs £12 per m^2.
Work out the cost of covering the floor.

Area = 5 × 3 = 15 m^2
Cost = 15 × £12 = £180
Answer: £180

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8 Negative numbers

Work out $-7 - 8$.

Use a number line

$-7 - 8 = -15$

Answer: -15

9 Pattern sequences

The diagram shows the first three patterns in a sequence made by Leah.
Each pattern is made from counters.
How many counters are in Pattern 4?

Pattern n is n rows of (n + 1): 1×2, 2×3, 3×4

Pattern 4 is $4 \times 5 = 20$

Answer: 20

10 Probabilities add up to 1

A game uses a four-coloured spinner.
The table shows the probability of each colour.
The probabilities add up to 1.
Work out the missing probability.

Add the known probabilities: $0.2 + 0.45 + 0.05 = 0.7$

$1 - 0.7 = 0.3$

Answer: 0.3