Day 124 **C Tier 10-a-day: Model Solutions**

1 Negative numbers: temperature

The temperature is −6°C.
It rises by 9°C.
What is the new temperature?

−6 + 9 = 3
Answer: 3°C

2 Angles in parallel lines

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

The angles are in matching positions, so they are corresponding angles
Corresponding angles are equal
a = 110°
Answer: a = 110° (corresponding angles)

3 Stem and leaf diagrams

The stem and leaf diagram shows the times, in seconds, taken by runners.
How many values are there altogether?

Count the leaves in each row: 3 + 2 + 5 = 10
Answer: 10

4 Solving equations

Solve $\frac{q}{9} = 6$

$\frac{q}{9}$ means q ÷ 9, so multiply both sides by 9
q = 6 × 9 = 54
Answer: q = 54

5 Currency conversion

£1 = $1.25
Change £100 into US dollars.

£100 × 1.25 = $125
Answer: $125

6 Pattern sequences

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

The patterns have 1, 3, 6 dots
Each pattern has one more row than the last: add 1, then 2, then 3, ...
Counting on: 1, 3, 6, 10
Answer: 10

7 Fractions of amounts

Work out $\frac{1}{5}$ of 45 kg.

Divide by 5
45 ÷ 5 = 9
Answer: 9 kg

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8 Function machines

Here is a function machine.
The output is 48.
Work out the input.

Work backwards using the opposite operations
48 ÷ 3 = 16
16 − 13 = 3
Answer: 3

9 Division in context

Each minibus holds 30 people.
87 people need a lift.
How many minibuses are needed?

87 ÷ 30 = 2 remainder 27
The extra people need another minibus
Answer: 3

10 Perimeter from area

A rectangle has an area of 24 cm^2.
Its width is 4 cm.
Work out the perimeter of the rectangle.

Length = area ÷ width = 24 ÷ 4 = 6
Perimeter = 6 + 4 + 6 + 4 = 20
Answer: 20 cm