Day 259 **C Tier 10-a-day: Model Solutions**

1 Compass directions and turns

Tom is facing west.
Tom turns 180° clockwise.
Which direction is Tom facing now?

180° is 2 quarter turns
Turning clockwise from west: west → north → east
Answer: east

2 Function machines

Here is a function machine.
Work out the output when the input is 8.

8 − 5 = 3
3 + 4 = 7
Answer: 7

3 Scaling a recipe

A recipe for a rice dish for 5 people uses 175 g of sugar.
Work out how much sugar is needed for 20 people.

20 people is 4 times as many as 5 people
175 × 4 = 700
Answer: 700 g

4 Simplifying fractions

Write $\frac{6}{9}$ in its simplest form.

Divide the top and bottom by 3
$\frac{6}{9} = \frac{2}{3}$
Answer: $\frac{2}{3}$

5 Substitution

Work out the value of 2d + 7 when d = 9.

2d = 2 × 9 = 18
18 + 7 = 25
Answer: 25

6 Volume of a cuboid

The diagram shows a cuboid.
Work out the volume of the cuboid.
The diagram is not drawn accurately.

Volume = length × width × height
3 × 2 × 6
3 × 2 = 6, then 6 × 6 = 36
Answer: 36 m^3

7 Metric units

Change 6 metres to centimetres.

1 m = 100 cm
6 × 100 = 600
Answer: 600 cm

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8 Equations of lines

A straight line passes through the points
(2, 2), (6, 6), (8, 8)
Write down the equation of the line.

In every point the y-coordinate is equal to the x-coordinate
Answer: y = x

9 Probability of not getting a colour

A bag contains 8 white counters, 4 red counters and 4 black counters.
One is taken at random.
Write down the probability that it is not black.

Number that are not black: 8 + 4 = 12
Total: 16

Probability = $\frac{12}{16} = \frac{3}{4}$

Answer: $\frac{3}{4}$

10 Length conversions

Change 4.5 m into cm.

1 m = 100 cm, so multiply by 100: 4.5 × 100 = 450
Answer: 450 cm