Day 175 **C Tier 10-a-day: Model Solutions**

1 Fractions, decimals and percentages

Write 0.3 as a fraction in its simplest form.

$0.3 = \frac{30}{100}$

Simplify the fraction

Answer: $\frac{3}{10}$

2 Function machines

Here is a function machine.
Work out the output when the input is 5.

5 × 5 = 25
25 − 11 = 14
Answer: 14

3 Probability with dice

A fair 10-sided dice numbered 1 to 10 is rolled.
Write down the probability of rolling
(a) a number greater than 4
(b) a number less than 10

(a) 6 out of 10 numbers: $\frac{6}{10} = \frac{3}{5}$

(b) 9 out of 10 numbers: $\frac{9}{10}$

Answer: (a) $\frac{3}{5}$ **(b)** $\frac{9}{10}$

4 Subtracting decimals

Work out 7.8 − 3.2.

Line up the decimal points
7.8 − 3.2 = 4.6
Answer: 4.6

5 Substitution

Work out the value of 5b + 8 when b = 5.

5b = 5 × 5 = 25
25 + 8 = 33
Answer: 33

6 Reflecting a point

The point P has coordinates (−4, −1).
P is reflected in the line y = 1.
Write down the coordinates of the image of P.

The point is 2 from the line, so the image is 2 on the other side: 1 + 2 = 3
Answer: (−4, 3)

7 Average speed

A car travels 200 miles in 4 hours.
Work out its average speed.

Speed = distance ÷ time
200 ÷ 4 = 50
Answer: 50 mph

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8 Coordinates

ABCD is a rectangle.
A is the point (2, 0), B is the point (2, 7) and C is the point (7, 7).
Write down the coordinates of D.

AB is vertical so D has the same y-coordinate as A: 0
BC is horizontal so D has the same x-coordinate as C: 7
Answer: (7, 0)

9 Length conversions

Change
(a) 2 m into cm
(b) 4500 m into km

(a) 1 m = 100 cm, so multiply by 100: 2 × 100 = 200
(b) 1000 m = 1 km, so divide by 1000: 4500 ÷ 1000 = 4.5
Answer: (a) 200 cm (b) 4.5 km

10 Finding a missing value from the mean

The mean of five numbers is 8.
Four of the numbers are 10, 13, 8 and 4.
Work out the other number.

Total of all the numbers: 8 × 5 = 40
Total of those given: 10 + 13 + 8 + 4 = 35
40 − 35 = 5
Answer: 5