Day 290 **C Tier 10-a-day: Model Solutions**

1 Writing ratios

A shelf has 11 fiction books and 8 non-fiction books.
Write down the ratio of fiction to non-fiction.

The ratio of fiction to non-fiction is written 11 : 8
Answer: 11 : 8

2 Substitution

Work out the value of $\frac{p}{8}$ when p = 40.

$\frac{p}{8}$ means p ÷ 8
40 ÷ 8 = 5
Answer: 5

3 Prime numbers

Write down the prime number in this list.
27, 45, 43, 15

A prime number has exactly two factors, 1 and itself
27 = 3 × 9
45 = 3 × 15
15 = 3 × 5
Answer: 43

4 Perimeter of an L-shape

The diagram shows an L-shape.
All the corners are right angles.
Work out the perimeter of the shape.
The diagram is not drawn accurately.

Find the two missing sides.
Missing horizontal side: 14 − 4 = 10
Missing vertical side: 11 − 3 = 8
Add all six sides: 14 + 3 + 10 + 8 + 4 + 11 = 50
Answer: 50 m

5 Average speed

A train travels 48 miles in 4 hours.
Work out its average speed.

Speed = distance ÷ time
48 ÷ 4 = 12
Answer: 12 mph

6 Reflecting a point

The point P has coordinates (3, −2).
P is reflected in the line y = 0.
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: 0 + 2 = 2
Answer: (3, 2)

7 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: 0.4 + 0.2 + 0.25 = 0.85
1 − 0.85 = 0.15
Answer: 0.15

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8 Number puzzles

I think of a number.
I subtract 3.
My answer is 7.
What number did I think of?

Work backwards: add 3
7 + 3 = 10
Answer: 10

9 Vertically opposite angles

The diagram shows two straight lines crossing.
(a) Work out the size of angle y.
(b) Work out the size of angle a.
The diagram is not drawn accurately.

(a) Vertically opposite angles are equal
y = 75°
(b) Angles on a straight line add up to 180°
180 − 75 = 105
Answer: (a) y = 75° (b) a = 105°

10 Equations of lines

A straight line passes through the points
(1, 1), (3, 3), (4, 4)
Write down the equation of the line.

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