Day 297 **C Tier 10-a-day: Model Solutions**

1 Perimeter and area of a square

A square playground has sides of length 3 mm.
(a) Work out its perimeter.
(b) Work out its area.

(a) A square has 4 equal sides: 4 × 3 = 12
(b) Area = side × side: 3 × 3 = 9
Answer: (a) 12 mm (b) 9 mm^2

2 Simplifying ratios

Write the ratio 36 : 4 in its simplest form.

Divide both numbers by 4
36 ÷ 4 = 9 and 4 ÷ 4 = 1
Answer: 9 : 1

3 Reading a table

The table shows the number of tickets each day.
Work out the total number of tickets on Monday and Thursday.

Monday: 30, Thursday: 23
30 + 23 = 53
Answer: 53

4 Probability of an event not happening

The probability that the post arrives before 9 am is $\frac{1}{8}$.

Work out the probability that this does not happen.

P(not) = 1 − P(event)
$1 - \frac{1}{8} = \frac{7}{8}$
Answer: $\frac{7}{8}$

5 Fractions of amounts

Work out $\frac{1}{10}$ of 110 kg.

Divide by 10
110 ÷ 10 = 11
Answer: 11 kg

6 Simplifying expressions

Simplify 3b + x + 2b + 4x

Collect the b terms: 3 + 2 = 5b
Collect the x terms: 1 + 4 = 5x
Answer: 5b + 5x

7 Area of a triangle

The diagram shows a triangle.
Work out the area of the triangle.
The diagram is not drawn accurately.

Area of a triangle = base × height ÷ 2
8 × 4 = 32
32 ÷ 2 = 16
Answer: 16 m^2

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8 Division in context

Each minibus holds 25 people.
82 people need a lift.
How many minibuses are needed?

82 ÷ 25 = 3 remainder 7
The extra people need another minibus
Answer: 4

9 The median of an even number of values

Here are the times, in minutes, of some bus journeys.
20 29 22 19 30 9 28 16
Work out the median.

Put the numbers in order: 9 16 19 20 22 28 29 30
The middle two numbers are 20 and 22
Halfway between them: (20 + 22) ÷ 2 = 21
Answer: 21

10 Substitution

Work out the value of z − 5 when z = −5.

−5 − 5 = −10
Answer: −10