Day 132 **C Tier 10-a-day: Model Solutions**

1 Units of time

How many minutes are there in 8 hours?

1 hour = 60 minutes
8 × 60 = 480
Answer: 480

2 Function machines

Here is a function machine.
Work out the output when the input is 12.

12 + 15 = 27
27 − 5 = 22
Answer: 22

3 Compass directions and turns

A cyclist is facing south.
A cyclist turns 270° clockwise.
Which direction is the cyclist facing now?

270° is 3 quarter turns
Turning clockwise from south: south → west → north → east
Answer: east

4 Scatter graphs

Here is a scatter graph of journey time against speed.
Describe the correlation.

As speed increases, journey time decreases
This is negative correlation
Answer: Negative correlation

5 Volume by counting cubes

A toy box holds 1 cm cubes in layers.
Each layer is 3 cubes long and 2 cubes wide.
There are 2 layers.
How many cubes are there altogether?

Cubes in one layer: 3 × 2 = 6
Number of layers: 2
6 × 2 = 12
Answer: 12 cubes

6 Distance from speed and time

A car travels at 40 mph for 3 hours.
How far does it travel?

Distance = speed × time
40 × 3 = 120
Answer: 120 miles

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7 Pattern sequences

Matchsticks are used to make a pattern of triangles.
The diagram shows the first three patterns.
How many matchsticks are needed for
(a) Pattern 4
(b) Pattern 9

Pattern 1, 2, 3 have 3, 5, 7 matchsticks
Each pattern has 2 more matchsticks than the one before
Pattern 4: $3 + 2 \times 3 = 9$
Pattern 9: $3 + 2 \times 8 = 19$
Answer: (a) 9 (b) 19

8 Multiples: smallest common

Find the smallest number that is a multiple of both 4 and 5.

Multiples of 4: 4, 8, 12, 16, 20
Multiples of 5: 5, 10, 15, 20
20 is in both lists
Answer: 20

9 Cost from area

A rectangular hall floor is 3 m long and 7 m wide.
Flooring costs £10 per m^2.
Work out the cost of covering the hall floor.

Area = $3 \times 7 = 21$ m^2
Cost = $21 \times$ £10 = £210
Answer: £210

10 Stem and leaf diagrams

The stem and leaf diagram shows the ages, in years, of people in a club.
Write down the largest value.

The last row has the largest stem and its last leaf is the largest
47
Answer: 47