Day 81 **C Tier 10-a-day: Model Solutions**

1 Compass directions and turns

A cyclist is facing east.
A cyclist turns 90° anticlockwise.
Which direction is the cyclist facing now?

90° is 1 quarter turn
Turning anticlockwise from east: east → north
Answer: north

2 Negative numbers: temperature

The temperature is −3°C.
It rises by 11°C.
What is the new temperature?

−3 + 11 = 8
Answer: 8°C

3 Angles round a point

The diagram shows 3 angles round a point.
Work out the size of angle y.
The diagram is not drawn accurately.

Angles round a point add up to 360°
135 + 125 = 260
360 − 260 = 100
Answer: y = 100°

4 The mode

Here are the shoe sizes of some students.
7 8 3 9 3 5 3 4 4 5
Write down the mode.

The mode is the value that appears most often
3 appears 3 times
Answer: 3

5 Ordering decimals

Write these numbers in order, starting with the smallest.
0.5, 0.45, 0.41, 0.35

Write each with the same number of decimal places
0.35, 0.41, 0.45, 0.50
Answer: 0.35, 0.41, 0.45, 0.5

6 Number puzzles

Zoe thinks of a number.
Zoe divides it by 9.
The answer is 6.
What number did Zoe think of?

Multiply 6 by 9
6 × 9 = 54
Answer: 54

7 Negative numbers

Work out −5 + 12.

Use a number line
−5 + 12 = 7
Answer: 7

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8 Volume and surface area of a cube

A cube has sides of length 3 cm.
(a) Work out the volume of the cube.
(b) Work out the total surface area of the cube.

(a) Volume = 3 × 3 × 3 = 27
(b) Each face is a square of area 3 × 3 = 9
A cube has 6 faces: 6 × 9 = 54
Answer: (a) 27 cm^3 (b) 54 cm^2

9 Probabilities add up to 1

A spinner has four colours.
The table shows the probability of each colour.
The probabilities add up to 1.
Work out the missing probability.

Add the known probabilities: 0.5 + 0.2 + 0.2 = 0.9
1 − 0.9 = 0.1
Answer: 0.1

10 Forming and solving equations

There are x pencils in each box.
8 boxes hold 40 pencils in total.
(a) Write down an equation using x.
(b) Solve your equation to find how many pencils are in each box.

(a) 8x = 40
(b) x = 40 ÷ 8 = 5
Answer: (a) 8x = 40 (b) x = 5