Day 294 **C Tier 10-a-day: Model Solutions**

1 Function machines

Here is a function machine.
Work out the output when the input is 7.

7 × 5 = 35
35 − 11 = 24
Answer: 24

2 Compass directions and turns

Sam is facing east.
Sam turns 180° clockwise.
Which direction is Sam facing now?

180° is 2 quarter turns
Turning clockwise from east: east → south → west
Answer: west

3 Pictograms

The pictogram shows the number of ice creams sold at a kiosk.
How many ice creams on Mon?

Mon has 1.5 symbols
1.5 × 2 = 3
Answer: 3

4 Negative numbers: temperature

At midday the temperature in Oslo is 5°C.
At midnight it is −2°C.
How many degrees lower is the temperature at midnight?

Count from −2 up to 0, then from 0 up to 5
2 + 5 = 7
Answer: 7°C

5 Map scales

On a map, 1 cm represents 200 m.
On the map, two towns are 11 cm apart.
Work out the real distance between the towns.

1 cm represents 200 m
11 × 200 = 2200
Answer: 2200 m

6 Simplifying fractions

Write $\frac{20}{45}$ in its simplest form.

Divide the top and bottom by 5
$\frac{20}{45} = \frac{4}{9}$

Answer: $\mathbf{\frac{4}{9}}$

7 Stem and leaf diagrams

The stem and leaf diagram shows the marks in a test.
Write down the smallest value.

The first row has the smallest stem and the first leaf is the smallest
11
Answer: 11

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8 Angles in parallel lines

Two parallel lines are crossed by a straight line.
Work out the size of angle y.
Give a reason for your answer.

The angles are on opposite sides of the transversal between the parallel lines, so they are alternate angles
Alternate angles are equal
y = 75°
Answer: y = 75° (alternate angles)

9 Probability of not getting a colour

A bag contains 7 yellow beads, 7 black beads and 4 blue beads.
One is taken at random.
Write down the probability that it is not black.

Number that are not black: 7 + 4 = 11
Total: 18
Probability = $\frac{11}{18}$
Answer: $\mathbf{\frac{11}{18}}$

10 Substitution

Work out the value of 4y when y = 6.

4y means 4 × y
4 × 6 = 24
Answer: 24