**Day 335** **B Tier 10-a-day: Model Solutions**

## 1 Angles on a line and round a point

The diagram shows 2 angles on a straight line.
Work out the value of x.
The diagram is not drawn accurately.

Angles on a straight line add up to 180°
(2x + 25) + (2x + 7) = 180
4x + 32 = 180
4x = 148
x = 148 ÷ 4 = 37
**Answer: x = 37°**

## 2 Bar charts

The bar chart shows some information.
(a) Write down the mode.
(b) What fraction of the total is Squash? Give your answer in its simplest form.

(a) The tallest bar is Squash
(b) Total = 8 + 6 + 4 + 12 + 2 = 32
Squash = 12, so the fraction is 12 out of 32
**Answer: (a) Squash (b) $\frac{3}{8}$**

## 3 Equations with fractions

Solve $\frac{4x + 8}{4} = 5$

Multiply both sides by 4: 4x + 8 = 20
Subtract 8 from both sides: 4x = 12
Divide both sides by 4
**Answer: x = 3**

## 4 Surface area of cuboids

A cube has side length 10 cm.
Work out the total surface area of the cube.

A cube has 6 identical square faces
Area of one face = 10 × 10 = 100
6 × 100 = 600
**Answer: 600 cm$^2$**

## 5 Factorising quadratics

Factorise $x^2 - x - 2$

Find two numbers that multiply to give −2 and add to give −1
The numbers are −2 and 1
**Answer: (x − 2)(x + 1)**

## 6 Two-way tables

The table shows some information about 57 students.
One person from the group "Girls" is chosen at random.
Find the probability that this person chose "Walk".

Girls total = 57 − 29 = 28
Girls who chose Walk = 28 − 9 = 19
P = 19 out of 28
**Answer: $\frac{19}{28}$**

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## 7 HCF and LCM from prime factors

A = $2^2 \times 3^2 \times 5$
B = $2 \times 5 \times 7$
Write down, as a product of prime factors,
(a) the HCF of A and B
(b) the LCM of A and B

(a) HCF: take the smaller power of each prime that is in both: $2 \times 5$

(b) LCM: take the larger power of every prime: $2^2 \times 3^2 \times 5 \times 7$

**Answer: (a) $2 \times 5$ (b) $2^2 \times 3^2 \times 5 \times 7$**

## 8 Area of a triangle using sine

In triangle XYZ, XY = 9 cm, YZ = 10 cm and angle XYZ = 40°. (Calculator)
Work out the area of the triangle.
Give your answer correct to 1 decimal place.

Area = ½ab sin C
Area = ½ × 9 × 10 × sin 40°
= 28.925...
= 28.9 $cm^2$ (1 d.p.)

**Answer: 28.9 $cm^2$**

## 9 Bounds

The length of a rectangle is 25 cm and its width is 18 cm.
Both measurements are correct to the nearest cm.
Work out the upper bound for the perimeter of the rectangle.

Upper bound of each side = value + 0.5: 25.5 cm and 18.5 cm
Perimeter = 2 × (25.5 + 18.5) = 88 cm

**Answer: 88 cm**

## 10 Scatter graphs

The scatter graph shows information about temperature and ice creams sold.
A line of best fit is drawn.
(a) Describe the correlation.
(b) Use the line of best fit to estimate the ice creams sold when temperature is 16.

(a) As one variable goes up, the other goes up
This is positive correlation
(b) Go up from 16 on the horizontal axis to the line, then across to the vertical axis
The reading is about 38

**Answer: (a) Positive correlation (b) about 38**