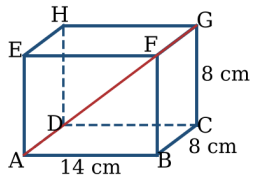
Day 71 **S Tier 10-a-day**

1 The diagram shows a cuboid ABCDEFGH.
(Calculator)
(a) Work out the length of the diagonal AG.
(b) Work out the angle between AG and the base ABCD, to 1 decimal place.
The diagram is not drawn accurately.

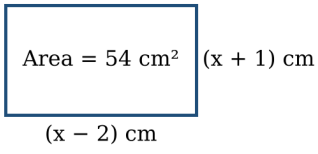


2 Factorise fully $25x^2 - 49y^2$

3 A bag contains 6 orange cubes, 2 purple cubes and 3 pink cubes.
Two cubes are taken at random without replacement.
Work out the probability that (a) at least one is purple, (b) exactly one is purple.

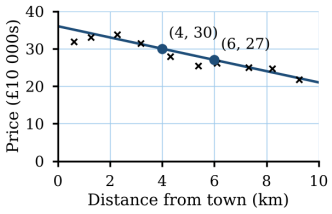
4 Simplify $(27x^3y^6)^{\frac{4}{3}}$

5 The diagram shows a rectangle of length $(x - 2)$ cm, width $(x + 1)$ cm and area 54 cm^2.
(a) Show that $x^2 - x - 56 = 0$.
(b) Work out the perimeter of the rectangle.



Day 71 **S Tier 10-a-day**

6 The scatter graph shows distance from town (x) and price (y).
The equation of the line of best fit is $y = -1.5x + 36$.
(a) Estimate y when x = 3.
(b) Explain why an estimate of y when x = 15 may be unreliable.



7 Write $\frac{8}{2+\sqrt{10}}$ in the form $\frac{p+q\sqrt{10}}{r}$
where p, q and r are integers and r > 1,
and the fraction is in its simplest form.

8 The equation $x^2 + kx + 5 = 0$ has exactly one solution.
Find the possible values of k.
Give any surds in their simplest form.

9 The point P(−3, 1) is rotated 180° about the origin.
The image is then reflected in the y-axis.
(a) Write down the coordinates of the final image of P.
(b) Describe fully the single transformation that is equivalent to these two transformations.

10 Find the smallest positive integer k such that 35 × k is a cube number.