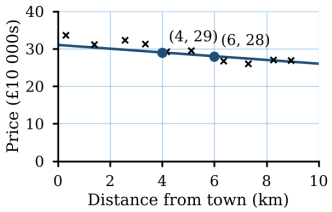
Day 45 **S Tier 10-a-day**

1 Zip Taxis has a fixed charge of £1 plus £5.50 per mile.
Go Cabs has a fixed charge of £10 plus £4 per mile.
(a) Work out the number of miles for which the two costs are the same.
(b) Which is cheaper for 14 miles, and by how much?

2 Simplify fully $5\sqrt{3} \times \sqrt{24}$

3 The scatter graph shows distance from town (x) and price (y).
The equation of the line of best fit is $y = -0.5x + 31$.
(a) Estimate y when x = 7.
(b) Explain why an estimate of y when x = 15 may be unreliable.

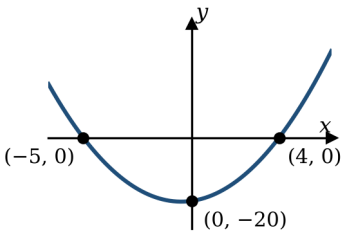


4 Simplify fully $\frac{6x^3y^6 \times 7x^3y^5}{3x^2y^2}$
Give your answer in the form kx^ay^b

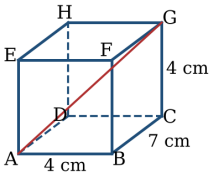
5 (a) Write 135 and 300 as products of prime factors.
(b) Find the HCF and the LCM of 135 and 300.
Give your answers as numbers.

Day 45	S Tier 10-a-day

6 The diagram shows a sketch of a quadratic curve. It crosses the axes at the points shown.
Find an equation of the curve.
Give your answer in the form $y = ax^2 + bx + c$.



7 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.



8 Here are five numbers: $x + 2$, $2x - 2$, $x + 5$, 3, 6.
The mean of the five numbers is 10.
(a) Work out the value of x.
(b) Work out the range of the five numbers.

9 Given that $(a + \sqrt{2})(b + \sqrt{2}) = 9 + 8\sqrt{2}$, where a and b are positive integers with $a < b$, find the values of a and b.

10 Two shapes are mathematically similar.
The smaller has height 30 cm and area 36 cm^2.
The larger has area 12.96 cm^2.
Work out the height of the larger shape.