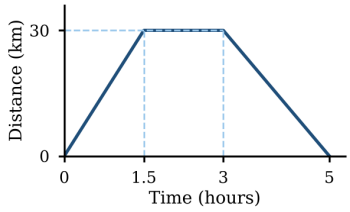
Day 38 **IGCSE 10-a-day**

1 The graph shows Amir's cycle ride to a café and back.
(a) Work out Amir's speed on the way back.
(b) Work out Amir's average speed for the whole ride, including the stop.

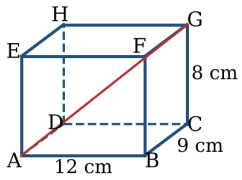


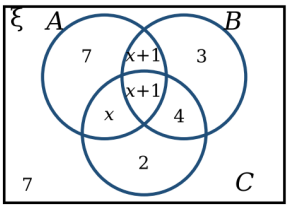
2 Given that $(a + \sqrt{15})^2 = 64 + 14\sqrt{15}$, where a is a positive integer, find the value of a.

3 A ball is thrown upwards. Its height above the ground, h metres, after t seconds is given by $h = -2t^2 + 12t + 2$
(a) Work out the greatest height reached by the ball.
(b) Work out the velocity of the ball when t = 9. State whether it is moving up or down.

4 $f(x) = 4x - 1$ and $g(x) = 5x^2 - 8$
(a) Find fg(x).
(b) Solve fg(x) = 467

5 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.



Day 38	IGCSE 10-a-day
6 A curve has equation $y = x^4 - 8x^2 + 7$. Find the coordinates of the stationary points of the curve and determine the nature of each.	
7 OA = **a** and OB = **b**. OP = 4**a** + **b**, OQ = 7**a** + 4**b** and OR = 8**a** + 5**b**. (a) Show that P, Q and R lie on a straight line. (b) Work out the ratio PQ : QR in its simplest form.	
8 The Venn diagram shows information about 34 shoppers. A: bought fruit B: bought bread C: bought milk (a) Find the value of x. (b) Find n(A) and n(B ∪ C)′. 	
9 The normal to the curve $y = x^2 + 3x + 6$ at the point P where $x = -2$ meets the curve again at Q. Find the coordinates of Q.	
10 The mass M kg of a sphere of a metal is directly proportional to the cube of its radius r cm. When r = 6, M = 324 kg. Find the value of M when r = 5.	