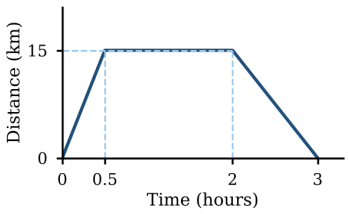
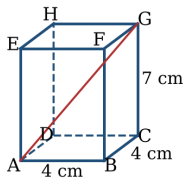
Day 161 **IGCSE 10-a-day**

1 $f(x) = 3x^2 + 3x + 1$
(a) Find $f'(x)$.
(b) Work out the value of $f'(0)$.

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

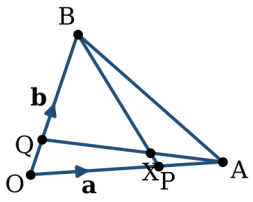


3 The diagram shows a cuboid ABCDEFGH.
(Calculator)
(a) Work out the length of the diagonal AG.
(b) Work out the angle between AG and the base ABCD, to 1 decimal place.
The diagram is not drawn accurately.



4 A is directly proportional to d.
When d = 10, A = 70.
(a) Find a formula for A in terms of d.
(b) Find A when d = 8.

5 A rectangle has length 6.9 cm and width 6.5 cm, both correct to 1 decimal place.
Work out the upper bound of the perimeter of the rectangle.

Day 161	IGCSE 10-a-day
6 A company makes and sells x thousand items. All amounts are in thousands of pounds. The revenue is R = x(50 − 3x) and the cost is C = 15 + 8x. (a) Show that the profit P = R − C is P = $-3x^2$ + 42x − 15. (b) Find the number of items that must be sold for the profit to be a maximum, and this maximum profit.	
7 Solve $x^2 > 25$	
8 A curve has equation y = $-2x^3$ + 6x − 9. The point A (0, k) lies on the curve. Work out the value of k and the gradient of the curve at A.	
9 $\mathbf{OA} = \mathbf{a}$, $\mathbf{OB} = \mathbf{b}$, $\mathbf{OP} = \frac{2}{3}\mathbf{a}$ and $\mathbf{OQ} = \frac{1}{4}\mathbf{b}$. AQ and BP meet at X. (a) Find **OX** in terms of **a** and **b**. (b) Find the ratio AX : XQ. 	
10 a = 0.43 and b = 5.06, both correct to 3 significant figures. Work out a × b. Write down your answer to a suitable degree of accuracy. You must show your working and give a reason for your answer. (Calculator)	