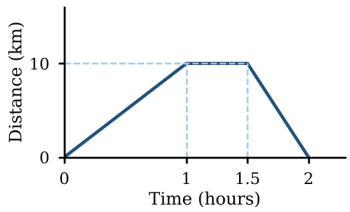
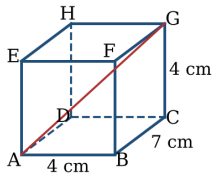
Day 15	IGCSE 10-a-day
1 The graph of $y = 3x^2 + 12x + 7$ has a turning point at P. Find the equation of the tangent to the curve at P.	
2 Solve $\frac{x + 7}{2} + \frac{x + 4}{8} = 9$	
3 A particle moves in a straight line. Its velocity, v m/s, at time t seconds is given by $v = 18t - 3t^2$ for $0 \leq t \leq 6$ Find the time at which the speed of the particle is greatest, and this greatest speed.	
4 An arithmetic sequence has term 4 equal to 1 and term 10 equal to -53. (a) Find an expression for the nth term. (b) Find the first term of the sequence that is less than -100.	
5 The graph shows Carlos's cycle ride to a café and back. (a) Work out Carlos's speed on the way back. (b) Work out Carlos's average speed for the whole ride, including the stop. 	

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6 R is the region that satisfies all of these inequalities:
$y < 2x$ $x + y > 10$ $x > 1$
Which of these points lie in R?
A(1, 1) B(3, 3) C(4, 0) D(8, 4) E(8, 7)

7 Write $\frac{1}{x-6} + \frac{x+2}{x-3}$ as a single fraction.
Simplify the numerator.

8 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.



9 The tangent to the curve $y = x^3 - 3x^2 + 6x + 3$ at the point P where $x = 2$ meets the curve again at Q.
Find the coordinates of Q.

10 $N = 2^2 \times 3^3 \times 7^2$
How many factors does N have?
Include 1 and N.