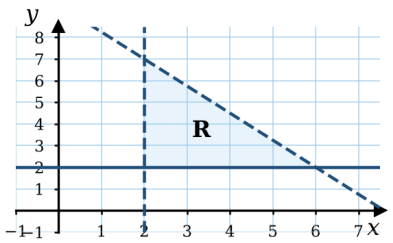
Day 137 **IGCSE 10-a-day**

1 A particle P moves in a straight line. After t seconds its displacement from a fixed point O is s metres, where

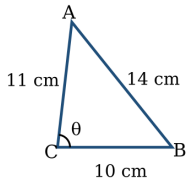
$s = 3t^2 - 5t + 5 + \frac{8}{t}$ $(t > 0)$

Find (a) the velocity of P, (b) the acceleration of P, when t = 1.

2 Region R is shaded. Solid boundaries are included, dashed ones are not.
(a) Write down the three inequalities that define R.
(b) How many points with integer coordinates lie in R?



3 The diagram shows triangle ABC. (Calculator)
(a) Work out angle ACB, marked θ, to 1 decimal place.
(b) Work out the area of triangle ABC to 3 significant figures.
The diagram is not drawn accurately.



4 Solve the simultaneous equations
$4x + 2y = 10$
$-4x + 6y = -2$

5 A particle moves in a straight line. Its velocity, v m/s, at time t seconds is given by
$v = 36t - 3t^2$ for $0 \leq t \leq 12$
Find the time at which the speed of the particle is greatest, and this greatest speed.

Day 137	IGCSE 10-a-day
6 Triangle T has vertices A(3, 1), B(−5, −3), C(5, 7). T is enlarged with scale factor $\frac{1}{2}$ and centre (1, 1). (a) Write down the coordinates of the image of A. (b) The area of T is 18 square units. Work out the area of the image of T.	
7 A particle moves in a straight line. After t seconds its displacement from a fixed point is s metres, where $s = 2t^3 - 6t^2 + 11t - 2$ (a) Show that the particle is never at rest. (b) Find the least speed of the particle and the time it occurs.	
8 V is inversely proportional to r. When r = 4, V = 3. Find the positive value of r when V = 6.	
9 p = 6.3 and r = 7.1, each correct to 1 decimal place. q = 3.86, correct to 2 decimal places. Work out the upper bound of $\frac{p - q}{r}$. Give your answer correct to 3 significant figures. (Calculator)	
10 Solve $4^{2x+2} = 2^{2x+4}$	