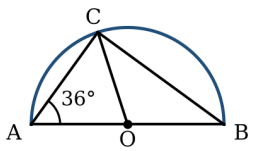
Day 22	IGCSE 10-a-day
1 A particle moves in a straight line. After t seconds its displacement from a fixed point is s metres, where $s = t^3 - 12t^2 + 52t - 1$ (a) Show that the particle is never at rest. (b) Find the least speed of the particle and the time it occurs.	
2 A flight leaves London at 08:10 (London time). It takes 5 hours 20 minutes. When it is 12:00 in London it is 04:00 in Los Angeles. At what time, in Los Angeles time, does the flight land? Say if it is on a different day.	
3 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 36°. (a) Work out the size of angle ACB. (b) Work out the size of angle COB. The diagram is not drawn accurately. 	
4 Make x the subject of $y = 3x^3 + 15$	
5 $f(x) = \frac{-x - 5}{3x + 2}$, $x \neq -\frac{2}{3}$. Find $f^{-1}(x)$.	

Day 22 **IGCSE 10-a-day**

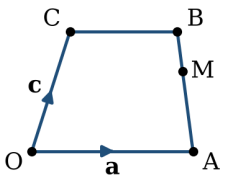
6 The population of a town is increased by 60%. The new amount is then decreased by 25%. Work out the overall percentage change.

7 OABC is a trapezium. OA is parallel to CB and CB = $\frac{2}{3}$OA.

$\mathbf{OA} = \mathbf{a}$ and $\mathbf{OC} = \mathbf{c}$.

(a) Find $\mathbf{AB}$ in terms of $\mathbf{a}$ and $\mathbf{c}$.

(b) AM : MB = 2 : 1. Find $\mathbf{OM}$.



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

$s = -2t^3 + 30t^2 + 9t$ for $t \geq 0$

Find the greatest speed of the particle, and the value of t at which it occurs.

9 (a) Show that the equation $x^3 - 2x - 23 = 0$ has a solution between x = 3 and x = 4.

(b) Show that the equation can be rearranged to give $x = \sqrt[3]{2x + 23}$

10 A curve has equation $y = -x - \frac{2}{x}$.

Find the coordinates of the points on the curve where the gradient is 1.