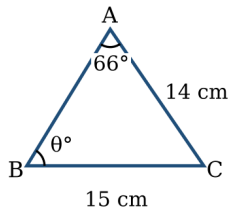
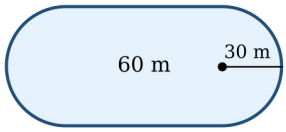
Day 170	IGCSE 10-a-day
1 $f(x) = \frac{3x - 6}{2x + 4}$, $x \neq -2$. Find $f^{-1}(x)$.	
2 The graph of $y = -x^2 - 2x - 3$ has a turning point at P. Find the equation of the tangent to the curve at P.	
3 The 4-digit number 61k0 is a multiple of 9. k is a single digit. Find all the possible values of k.	
4 The diagram shows triangle ABC. (Calculator) Angle BAC = 66° and angle ABC is acute. Work out the size of angle ABC, marked θ. Give your answer correct to 1 decimal place. The diagram is not drawn accurately. 	
5 A particle moves in a straight line. After t seconds its displacement from a fixed point is s metres, where $s = t^3 - 12t^2 + 50t + 5$ (a) Show that the particle is never at rest. (b) Find the least speed of the particle and the time it occurs.	

Day 170	IGCSE 10-a-day
6 $\mathbf{OA} = -2\mathbf{b}$, $\mathbf{OB} = 3\mathbf{a} + \mathbf{b}$ and $\mathbf{OC} = 4\mathbf{a} + 2\mathbf{b}$. Show that A, B and C lie on a straight line.	
7 The ratio of men to women people at a meeting is 7 : 9. Then $\frac{1}{3}$ of the men and $\frac{2}{3}$ of the women are taken out. Work out the ratio of men to women now.	
8 The lengths of the sides of a right-angled triangle are (x + 8) cm, (x + 1) cm and (x + 9) cm. The longest side is (x + 9) cm. (a) Show that $x^2 - 16 = 0$ (b) Hence work out the area of the triangle.	
9 The diagram shows a running track made from a rectangle and two semicircles. (a) Work out the total length of the boundary of the track. (b) Work out the area enclosed by the track. Give your answers in terms of π. The diagram is not drawn accurately. 	
10 The number of fish in a lake, N, after t months is modelled by $N = -t^3 + 6t^2 + 1000$ for $0 \leq t \leq 8$ Find the time at which N is increasing most rapidly, and the rate of increase at this time.	