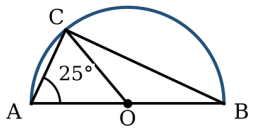
Day 309	IGCSE 10-a-day
1 $y = (x + 6)(x - 4)$ Find $\frac{dy}{dx}$.	
2 Factorise fully $75x^2 - 12y^2$	
3 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 25°. (a) Work out the size of angle ACB. (b) Work out the size of angle COB. The diagram is not drawn accurately. 	
4 $\mathbf{v} = \begin{pmatrix} 1 \\ -4 \end{pmatrix}$. Find $\lvert\mathbf{v}\rvert$. Give your answer as a surd in its simplest form.	
5 Here are six numbers. $\sqrt{8} \times \sqrt{2}, \sqrt{2} + \sqrt{8}, \sqrt{49}, 0.\dot{4}, 2\pi - \pi, \pi \div 2$ Write down the rational numbers.	

Day 309	IGCSE 10-a-day
6 A bag contains 6 red beads, 4 blue beads and 1 green bead. Two beads are taken at random without replacement. Work out the probability that (a) exactly one is red, (b) they are different colours.	
7 A curve has equation $y = 3x - \frac{4}{x}$. Find the coordinates of the points on the curve where the gradient is 4.	
8 The nth term of a sequence is $4n^2 + 5n - 4$. (a) Show that the difference between the (n + 1)th term and the nth term is 8n + 9. (b) Two consecutive terms of the sequence differ by 49. Find the value of n for the first of these two terms.	
9 An open box has a square base of side x cm and height h cm. The total outside surface area is 300 cm^2. (a) Show that the volume of the box is $V = \frac{1}{4}(300x - x^3)$ cm^3. (b) Find the maximum volume of the box, proving that it is a maximum.	
10 y is directly proportional to x and inversely proportional to z. When x = 3 and z = 6, y = 1. Work out the value of y when x = 6 and z = 6.	