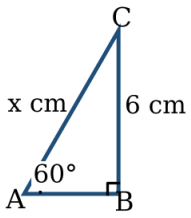
Day 133	IGCSE 10-a-day
1 $f(x) = 5x - 4$ and $g(x) = 3x^2 + 3x + 5$. (a) Find $f^{-1}g(x)$. (b) Work out $f^{-1}g(1)$.	
2 ABC is a right-angled triangle. Work out the exact value of x. Give your answer in its simplest form. The diagram is not drawn accurately. 	
3 The ratio of Year 10 students to Year 11 students in a school is 4 : 2. 85% of the Year 10 students and 10% of the Year 11 students have a part-time job. What percentage of all of these students have a part-time job?	
4 $A = \begin{pmatrix} 3 & -1 \\ 4 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 11 & 9 \\ 15 & 13 \end{pmatrix}$. $AM = B$, where M is a 2×2 matrix. Find M.	
5 A rectangular pen is x metres wide and y metres long. It is fenced all round and divided into two equal parts by a fence each of length x metres, parallel to the width. The total length of fencing used is 48 m. (a) Show that the area of the pen is $A = -\frac{3}{2}x^2 + 24x$. (b) Find the maximum possible area, justifying that it is a maximum.	

Day 133	IGCSE 10-a-day
6 Make r the subject of $P = \frac{4r + 4}{r - 6}$	
7 Two curves have equations $y = 3x^2 + 2x - 7$ and $y = 2x^2 + 8x + 8$. Find the value of x at which the curves have the same gradient.	
8 The line $y = kx - 5$ is a tangent to the curve $y = x^2 - 1$. Find the possible values of k. Give any surds in their simplest form.	
9 A curve has equation $y = x^3 + 7x + 4$. The tangent to the curve at the point A, where $x = 1$, meets the curve again at the point B. Find the coordinates of B.	
10 A rectangle has length 21 cm and width 20 cm. Both measurements are correct to the nearest centimetre. Chen says that the perimeter of the rectangle could be exactly 84 cm. Is Chen correct? You must show your working.	