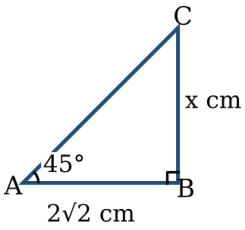
Day 160	IGCSE 10-a-day
1 Write these numbers in order of size, starting with the largest. $\frac{2}{3}$, 0.9, 0.54, $\frac{3}{5}$	
2 The curve $y = x^3 + 3x^2 + x - 1$ crosses the y-axis at the point A. The tangent to the curve at A meets the x-axis at B. Find the coordinates of B.	
3 On a school trip there are x adults and y children. There are at most 60 people. There are at least 2 children for every adult. There are at least 4 adults. (a) Write down three inequalities for x and y. (b) Find the greatest number of children on the school trip.	
4 A particle P moves in a straight line. After t seconds, its displacement from a fixed point O is s metres, where $s = t^3 - 12t^2 + 45t + 4$ $(t \geq 0)$ Find the distance between the two positions where P is at rest.	
5 The probability that a bus is more than 5 minutes late on any morning is $\frac{3}{10}$. Events on different occasions are independent. Work out the smallest number of mornings needed so that the probability of this happening at least once is greater than 0.95. (Calculator)	

Day 160	IGCSE 10-a-day
6 Show algebraically that $(m + 5)^2 - (m - 5)^2$ is a multiple of 20 for all integer values of m.	
7 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. 	
8 A curve has equation $y = x^3 - x^2 - 2x - 4$. The tangent to the curve at the point A, where x = 2, meets the curve again at the point B. Find the coordinates of B.	
9 The nth term of a sequence is $2n^2 - 2n - 3$. (a) Show that the difference between the (n + 1)th term and the nth term is 4n. (b) Two consecutive terms of the sequence differ by 72. Find the value of n for the first of these two terms.	
10 F is directly proportional to the square of m and inversely proportional to the square of d. When m = 6 and d = 3, F = 48. Work out the value of F when m = 2 and d = 2.	