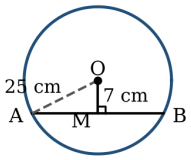
Day 235	IGCSE 10-a-day
1 Work out the value of $\sqrt{y^2 - 4xz}$ when x = 2, y = 1 and z = −3.	
2 A spinner numbered 1 to 4 and a spinner numbered 1 to 5 are each thrown once. The first score and the second score are recorded. (a) Work out the probability that the sum is greater than 7. (b) Given that at least one number is 3, work out the probability that the sum is greater than 7.	
3 The speed of a cyclist is 51 km/h, truncated to a whole number. Write down the error interval for the speed of a cyclist, using s.	
4 AB is a chord of a circle, centre O. M is the midpoint of AB. (Calculator) (a) Work out the length of the chord AB. (b) Work out angle AOB, to 1 decimal place. The diagram is not drawn accurately. 	
5 A curve has equation y = (x + 1)(x + 1)(x + 2). Find the equation of the tangent to the curve at the point where x = 2.	

Day 235	IGCSE 10-a-day
6 The nth term of a sequence is $n^2 - 2$. (a) Work out the 8th term. (b) One term of the sequence is 119. Work out the value of n for this term.	
7 The cost, C pence per kilometre, of running a van at a steady speed of v km/h is modelled by $C = \frac{1}{10}v + \frac{160}{v}$ $(v > 0)$ Find the speed at which the cost per kilometre is least, and show that it is a minimum. Work out the least cost per kilometre.	
8 A shop mixes two types of tea. Type A costs £12.00 per kg and type B costs £14.00 per kg. They are mixed in the ratio A : B = 5 : 3. The mixture is sold for £17.85 per kg. Work out the percentage profit.	
9 $A = \begin{pmatrix} -2 & 6 \\ -2 & 1 \end{pmatrix}$. $A^2 = pA + qI$, where I is the 2 × 2 identity matrix. Find the value of p and the value of q.	
10 The number of bacteria in a culture, N, after t hours is modelled by $N = -t^3 + 15t^2 + 5t + 200$ for $0 \leq t \leq 20$ Find the time at which N is increasing most rapidly, and the rate of increase at this time.	