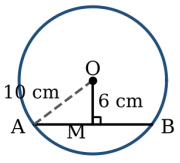
Day 21	IGCSE 10-a-day
1 The 6th term of an arithmetic sequence is 44. The 11th term of the sequence is 59. (a) Find an expression for the nth term of the sequence. (b) Is 102 a term of the sequence? You must show your working.	
2 $y = x^3 + 3x^2 - 8$ Find the range of values of x for which y is increasing.	
3 $f(x) = 2x - 1$ and $g(x) = x^2 + 3$. Solve $gf(x) = 39$.	
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 Nadia invests £9,500. The rates of interest for the next 3 years are 4%, 2% and 4%. Compound interest is paid. Work out the value of the investment after 3 years. Give your answer to the nearest penny. (Calculator)	

Day 21 **IGCSE 10-a-day**

6 B is 30% more than S.
S is 25% more than A.
Work out B as a percentage of A.

7 The number of bacteria in a culture, N, after t hours is modelled by
$N = -t^3 + 9t^2 + 8t + 200$ for $0 \leq t \leq 12$
Find the time at which N is increasing most rapidly, and the rate of increase at this time.

8 $\mathbf{v} = \begin{pmatrix} k \\ 15 \end{pmatrix}$ and $|\mathbf{v}| = 17$.
Find the two possible values of k.

9 The table gives information about the masses of some eggs.
An estimate for the mean is 43.5.
Work out the value of x.

Mass, m (g)	Frequency
$0 < m \leq 20$	6
$20 < m \leq 40$	13
$40 < m \leq 60$	x
$60 < m \leq 80$	12

10 A particle moves in a straight line. After t seconds its displacement from a fixed point is s metres, where
$s = 2t^3 - 12t^2 + 32t - 2$
(a) Show that the particle is never at rest.
(b) Find the least speed of the particle and the time it occurs.