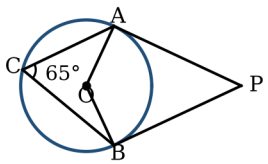
Day 125	IGCSE 10-a-day
1 Sparkle Cleaners has a call-out fee of £8 plus £2 per hour. Fresh Start has a call-out fee of £13.50 plus £1.50 per hour. (a) Work out the number of hours for which the two costs are the same. (b) Which is cheaper for 18 hours, and by how much?	
2 $y = -2x^3 + 3x^2 + 36x + 2$ (a) Find the coordinates of the stationary points. (b) Use $\frac{d^2y}{dx^2}$ to decide whether each is a maximum or a minimum.	
3 PA and PB are tangents to a circle, centre O. C is a point on the circle. Angle ACB = 65°. (a) Work out the size of angle AOB. (b) Work out the size of angle APB. The diagram is not drawn accurately. 	
4 $M = \begin{pmatrix} -1 & -2 \\ 2 & -5 \end{pmatrix}$. (a) Work out the determinant of M. (b) Find M^{-1}.	
5 The line $y = -3x + k$ is a tangent to the curve $y = x^2 - 5x - 2$. Find the value of the constant k.	

Day 125 **IGCSE 10-a-day**

6 The table shows information about 134 students.
(a) A student who studies French is chosen at random. Work out the probability that this student is a girl.
(b) Two of the 134 students are chosen at random. Work out the probability that both are girls.

	French	Spanish	German
Boys	11	21	25
Girls	29	29	19

7 A particle moves in a straight line. After t seconds its displacement from a fixed point is s metres, where
$s = 2t^3 - 6t^2 + 8t - 5$
(a) Show that the particle is never at rest.
(b) Find the least speed of the particle and the time it occurs.

8 Write $\frac{1+\sqrt{7}}{5-\sqrt{7}}$ in the form $p + q\sqrt{7}$
where p and q are rational numbers.

9 A bag contains x black counters and 6 blue counters.
Two counters are taken at random without replacement.
The probability that both are black is $\frac{3}{8}$.
(a) Show that $5x^2 - 41x - 90 = 0$.
(b) Hence work out the number of counters in the bag.

10 Tap A can fill an empty tank in 24 minutes.
Tap B can fill an empty tank in 40 minutes.
Both are turned on at the same time.
How long do they take to fill an empty tank?