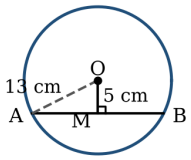
Day 55	IGCSE 10-a-day
1 A bag contains 3 green and 6 black cubes. Two cubes are taken at random without replacement. Work out the probability that the two cubes are the same colour.	
2 Differentiate $-5x^2 + 2x - \frac{7}{x^2}$ with respect to x.	
3 Solve $3x^2 - 8x + 3 = 0$ Give your answers in surd form.	
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 Show that $\sqrt{37 + 20\sqrt{3}} = 5 + 2\sqrt{3}$	

Day 55 **IGCSE 10-a-day**

6 A particle moves in a straight line. After t seconds, its displacement from a fixed point O is s metres, where

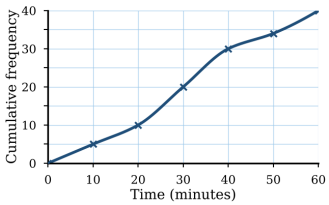
$s = -2t^3 + 24t^2 + 4t$ for $t \geq 0$

Find the greatest speed of the particle, and the value of t at which it occurs.

7 The cumulative frequency graph shows the times, in minutes, taken by 40 runners to finish a race.

(a) Find the median. (b) Find the interquartile range.

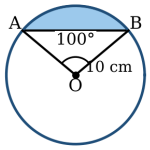
(c) How many runners took more than 20?



8 The circle has centre O and radius 10 cm. A and B are points on the circle and angle AOB = 100°. (Calculator)

Work out the area of the shaded segment. Give your answer correct to 3 significant figures.

The diagram is not drawn accurately.



9 A curve has equation $y = x^3 - 2x^2 - 9x + 5$.

The tangent to the curve at the point A, where x = 3, meets the curve again at the point B.

Find the coordinates of B.

10 A bag contains some beads. 6 of them are blue and the rest are black.

Two beads are taken at random without replacement.

The probability that both are blue is $\frac{3}{11}$.

Work out how many beads are black.