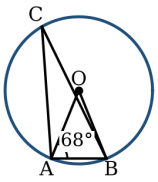
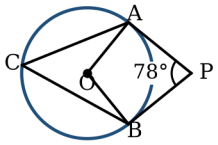
Day 15	S Tier 10-a-day
1 Write these numbers in order of size, starting with the smallest. $\frac{9}{17}$, 0.79, 0.56, $\frac{3}{7}$	
2 A, B and C are points on a circle, centre O. Angle OAB = 68°. (a) Work out the size of angle AOB. (b) Work out the size of angle ACB. The diagram is not drawn accurately. 	
3 The population of a village decreased by 40% in 2023. In 2024 the population decreased by a further 40%. Work out the overall percentage decrease over the two years.	
4 A concrete slab in the shape of a cuboid weighs 690 N. Its smallest face has area 150 cm^2. Its largest face has area 1,200 cm^2. Pressure = force ÷ area Work out (a) the greatest pressure and (b) the least pressure the concrete slab can exert on the ground, in N/m^2.	
5 $\mathbf{a} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}$ and $\mathbf{c} = \begin{pmatrix} 5 \\ 5 \end{pmatrix}$ $\mathbf{a} + k\mathbf{b}$ is parallel to $\mathbf{c}$. Work out the value of k.	

Day 15	S Tier 10-a-day

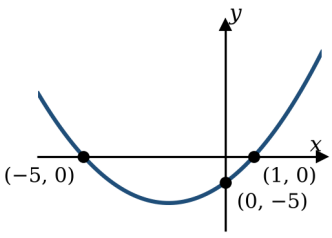
6 The 2nd term of a geometric sequence is 192.
The 4th term of the sequence is 1728.
All the terms of the sequence are positive.
(a) Work out the common ratio.
(b) Work out the first term.

7 The time taken for a journey is inversely proportional to the speed.
The speed is increased by 300%.
Work out the percentage change in the time taken for a journey.

8 PA and PB are tangents to a circle, centre O. C is a point on the circle. Angle APB = 78°.
(a) Work out the size of angle AOB.
(b) Work out the size of angle ACB.
The diagram is not drawn accurately.



9 The diagram shows a sketch of a quadratic curve. It crosses the axes at the points shown.
Find an equation of the curve.
Give your answer in the form $y = ax^2 + bx + c$.



10 x : y = 7 : 2
Work out the ratio (5x − 5y) : (1x + 5y)
Give your answer in its simplest form.