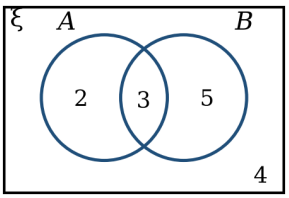
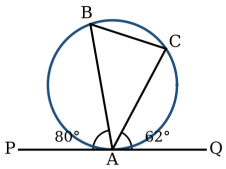
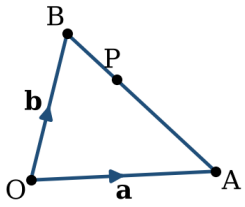
Day 311	IGCSE 10-a-day
1 $y = \frac{x^4 - 7x^3 - x}{x}$ Find $\frac{dy}{dx}$.	
2 y is directly proportional to the square of x and inversely proportional to the square of z. When x = 3 and z = 2, y = 18. Work out the value of y when x = 1 and z = 2.	
3 $y = 2x^3 - x^2 + 4x - 8$ The curve crosses the y-axis at the point A. Work out the coordinates of A and the gradient of the curve at A.	
4 Fatima drives 105 km at an average speed of 70 km/h. The drive then continues for another 15 km at an average speed of 30 km/h. Work out the average speed for the whole journey.	
5 The Venn diagram shows information about 14 employees. A: speak German B: speak Italian (a) Find n(A′ ∪ B′). (b) Find n(A′ ∩ B).  	

Day 311 **IGCSE 10-a-day**

6 PAQ is a tangent to the circle at A. B and C are points on the circle. Angle PAB = 80° and angle CAQ = 62°.
(a) Work out the size of angle ABC.
(b) Work out the size of angle ACB.
The diagram is not drawn accurately.



7 In triangle OAB, **OA** = **a** and **OB** = **b**.
P is on AB so that AP : PB = 2 : 1.
(a) Find **AB**.
(b) Find **OP** in terms of **a** and **b**.



8 The value of a car is decreased by 80%.
By what percentage must the new value be increased to get back to the original value?

9 The lengths of the sides of a right-angled triangle are (x + 3) cm, (x + 5) cm and (x + 7) cm.
The longest side is (x + 7) cm.
(a) Show that $x^2 + 2x - 15 = 0$
(b) Hence work out the area of the triangle.

10 $y = -x^3 + 3x^2 + 9x + 9$
Use the second derivative to show that the curve has a maximum at x = 3.