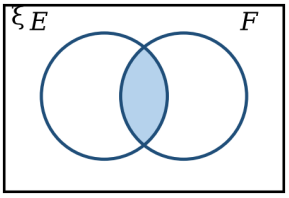
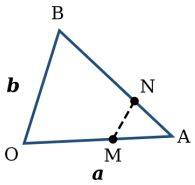
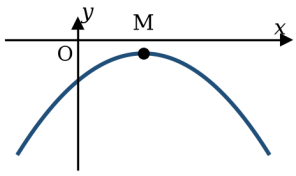
Day 248	IGCSE 10-a-day
1 $y = x^4 + x^2 + 5x - 9$ The curve crosses the y-axis at the point A. Work out the coordinates of A and the gradient of the curve at A.	
2 Prove that $(m + 4)^2 - (m - 4)^2$ is a multiple of 16 for all integer values of m.	
3 Write down the set notation for the region shaded in the Venn diagram. 	
4 The price of a laptop is decreased by 25%. The new amount is then decreased by 15%. Work out the overall percentage change.	
5 A particle P moves in a straight line. After t seconds, its displacement from a fixed point O is s metres, where $s = t^3 - 6t^2 + 9t + 5$ $(t \geq 0)$ Find the acceleration of P at each instant when it is at rest.	

Day 248 **IGCSE 10-a-day**

6 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 3 : 2. N is on AB with AN : NB = 1 : 2.
(a) Find ON in terms of **a** and **b**.
(b) Find MN in terms of **a** and **b**.
The diagram is not drawn accurately.



7 The diagram shows a sketch of the curve $y = ax^2 + bx - 12$.
The curve has a turning point at M(2, −4).
Find the values of a and b.



8 54 pupils were asked which activities they do.
A: play football B: play netball C: play rugby
n(A) = 25, n(B) = 31, n(C) = 19, n(A ∩ B) = 11, n(A ∩ C) = 10, n(B ∩ C) = 9, n(A ∩ B ∩ C) = 2.
(a) Work out how many are in none of A, B and C.
(b) Work out how many are in exactly one of A, B and C.

9 Write $\frac{2+\sqrt{2}}{2-\sqrt{2}}$ in the form $p + q\sqrt{2}$
where p and q are rational numbers.

10 Alloy A holds copper and tin in the ratio 4 : 2.
Alloy B holds copper and tin in the ratio 3 : 2.
12 kg from alloy A is mixed with some of alloy B.
The ratio of copper to tin in the mixture is 8 : 5.
Work out how many kg were taken from alloy B.