Day 75 **IGCSE 10-a-day**

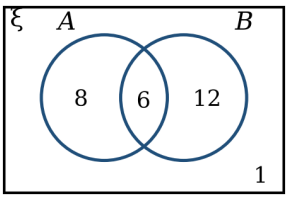
1 A curve has equation $y = 2x^3 - 6x^2 - 18x + 2$.
Find the coordinates of the stationary points of the curve.

2 $A = \begin{pmatrix} 8 \\ 6 \end{pmatrix}$ and $B = \begin{pmatrix} 3 \\ -3 \end{pmatrix}$.
(a) Work out A + B.
(b) Work out 4A − 2B.

3 $y = -8x^{3/2} - \frac{8}{\sqrt{x}}$
Find $\frac{dy}{dx}$. Give each term of your answer in the form ax^n.

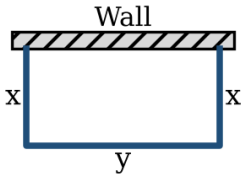
4 Uma spent $\frac{3}{7}$ of her money on a coat.
She then spent $\frac{7}{8}$ of the money that was left on a bag.
A bag cost £280.
How much money did Uma have to start with?

5 The Venn diagram shows information about 27 visitors.
A: bought a drink B: bought a snack
(a) Find n(A′ ∪ B′).
(b) Find n(A′ ∩ B).



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6 A farmer uses 108 m of fencing to enclose a rectangle against a wall, as shown.
(a) Show that the area, A m^2, is $A = 108x - 2x^2$.
(b) Find the maximum area, proving it is a maximum.



7 The probability that a light bulb in a hallway fails in any month is $\frac{3}{10}$.
Events on different occasions are independent.
Work out the probability that this happens at least once in 3 months.
Give your answer correct to 3 significant figures. (Calculator)

8 Show that the line $y = -3x - 30$ is a tangent to the circle $x^2 + y^2 = 90$.
Find the coordinates of the point where the line touches the circle.

9 Grace drives 135 km at an average speed of 45 km/h.
The drive then continues for another 60 km at an average speed of 30 km/h.
Work out the average speed for the whole journey.

10 A cone is cut parallel to its base to make a smaller cone and a frustum.
The frustum has height 9 cm, top radius 4 cm and base radius 16 cm.
Work out the volume of the frustum. Give your answer in terms of π.

