Day 171 **IGCSE 10-a-day**

1 Work out the value of $(x - y)^2 - (x + y)^2$ when $x = -2$, $y = -2$ and $z = -3$.

2 A curve has equation $y = x^2 - \frac{16}{x}$.

(a) Show that the curve has a stationary point at $x = -2$.

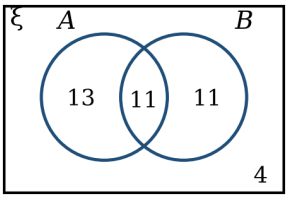
(b) Find the y coordinate of this point and decide whether it is a maximum or a minimum.

3 The Venn diagram shows information about 39 pupils.

A: walk to school B: cycle to school

(a) Find $n(A' \cap B)$.

(b) Find $n(A')$.



4 A curve has equation $y = x^2 - 6x - 6$.

Find the equation of the normal to the curve at the point where $x = -1$.

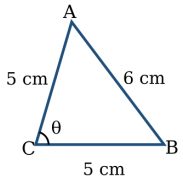
5 (a) Write 99 and 432 as products of prime factors.

(b) Find the HCF and the LCM of 99 and 432.

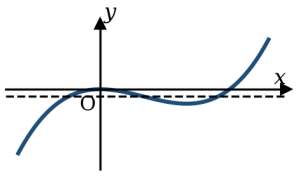
Give your answers as numbers.

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6 The diagram shows triangle ABC. (Calculator)
(a) Work out angle ACB, marked θ, to 1 decimal place.
(b) Work out the area of triangle ABC to 3 significant figures.
The diagram is not drawn accurately.



7 The diagram shows a sketch of the curve $y = 2x^3 - 6x^2$ and the line $y = k$.
The line meets the curve at three different points.
Find the range of possible values of k.



8 x : y = 8 : 3
Work out the ratio (3x − 2y) : (3x + 5y)
Give your answer in its simplest form.

9 $A = \begin{pmatrix} 2 & 3 \\ -2 & -2 \end{pmatrix}$ and $B = \begin{pmatrix} -8 & -11 \\ 4 & 7 \end{pmatrix}$.
MA = B, where M is a 2 × 2 matrix.
Find M.

10 A train travels at a constant speed of 72 km/h.
It takes 35 seconds to go completely through a tunnel which is 630 m long.
Work out the length of the train, in metres.