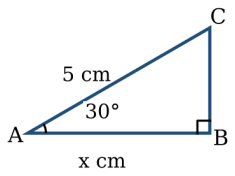
Day 263 **IGCSE 10-a-day**

1 A virus has a diameter of 1.25×10^{-9} metres.
Viruses are placed in a straight line, touching, to make a length of 1.225×10^{-3} metres.
How many viruses are in the line?
Give your answer in standard form.

2 The equation of a curve is $y = -2x^2 - \frac{8}{x}$.
Work out the gradient of the curve at the point where $x = 4$.

3 (a) Write $2x^2 - 4x + 8$ in the form $a(x + p)^2 + q$
(b) Write down the coordinates of the turning point of the curve $y = 2x^2 - 4x + 8$

4 ABC is a right-angled triangle.
Work out the exact value of x. Give your answer in its simplest form.
The diagram is not drawn accurately.



5 The matrix $\begin{pmatrix} k & 2 \\ -1 & 2 \end{pmatrix}$ has no inverse.
Find the value of k.

Day 263	IGCSE 10-a-day
6 Work out $(4.6 \times 10^{-3}) + (1.5 \times 10^{-6})$ Give your answer in standard form.	
7 $n(\xi) = 80$, $n(A) = 33$, $n(B) = 21$ and $n(A \cap B) = 11$. An element of ξ is chosen at random. (a) Find the probability that it is in $A \cup B$. (b) Given that it is in B, find the probability that it is also in A.	
8 A curve has equation $y = 3x^2 - \frac{6}{x}$. (a) Show that the curve has a stationary point at $x = -1$. (b) Find the y coordinate of this point and decide whether it is a maximum or a minimum.	
9 Rhys and Beth play a match. The first to win 2 chess games wins the match. The probability that Rhys wins any one of the chess games is $\frac{1}{3}$. Work out the probability that the match needs a third one to decide it.	
10 The normal to the curve $y = x^2 + x$ at the point P where $x = 0$ meets the curve again at Q. Find the coordinates of Q.	