Day 214 **IGCSE 10-a-day**

1 $A = \begin{pmatrix} 1 & 4 \\ 3 & -4 \end{pmatrix}$ and $B = \begin{pmatrix} -3 & -2 \\ -3 & -4 \end{pmatrix}$.

(a) Work out AB.

(b) Work out BA.

2 A flight leaves London at 16:40 (London time). It takes 5 hours 15 minutes.
When it is 12:00 in London it is 21:00 in Sydney.
At what time, in Sydney time, does the flight land? Say if it is on a different day.

3 The graph of $y = 2x^2 - 16x$ has a turning point at P.
Find the equation of the tangent to the curve at P.

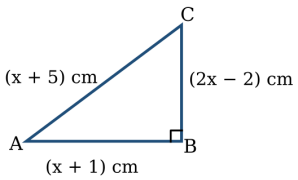
4 10 workers can build a wall in 10 days.
After 6 days, 2 of the workers leave. The rest carry on working at the same rate.
How many more days does it take to finish?

5 ABC is a right-angled triangle with sides (x + 1) cm, (2x − 2) cm and (x + 5) cm. The longest side is (x + 5) cm.

(a) Find the value of x.

(b) Work out the area of the triangle.

The diagram is not drawn accurately.

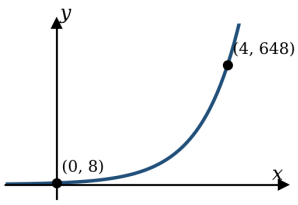


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6 A curve has equation $y = 2x + \frac{4}{x}$.

Find the coordinates of the points on the curve where the gradient is 1.

7 The diagram shows part of the graph of $y = ab^x$.
The curve passes through (0, 8) and (4, 648).
(a) Find the values of a and b. (b) Work out the value of y when x = 6.



8 Show that the line $y = -x + 14$ is a tangent to the circle $x^2 + y^2 = 98$.
Find the coordinates of the point where the line touches the circle.

9 $N = 2^4 \times 3^3 \times 7$
How many of the factors of N are odd numbers?

10 The curve C has equation $y = 2x^2 + 6x + 6$.
The points A and B on C have x coordinates 0 and 2.
The tangents to C at A and at B meet at the point T. Find the coordinates of T.