Day 271 **IGCSE 10-a-day**

1 A flight leaves London at 07:05 (London time).
It takes 7 hours 10 minutes.
When it is 12:00 in London it is 16:00 in Dubai.
At what time, in Dubai time, does the flight land? Say if it is on a different day.

2 $f(x) = \frac{x + 5}{3}$.

(a) Find $f^{-1}(x)$.

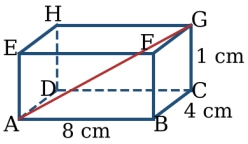
(b) Find $f^{-1}(-1)$.

3 $y = \frac{5x^5 - 7x^2 + 7x}{x^2}$

Find $\frac{dy}{dx}$.

4 Here are five numbers: $2x - 2$, $x + 5$, $x + 6$, 2, $2x + 3$.
The mean of the five numbers is 10.
(a) Work out the value of x.
(b) Work out the median of the five numbers.

5 The diagram shows a cuboid ABCDEFGH.
(Calculator)
(a) Work out the length of the diagonal AG.
(b) Work out the angle between AG and the base ABCD, to 1 decimal place.
The diagram is not drawn accurately.



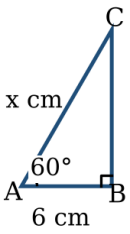
Day 271 **IGCSE 10-a-day**

6 $y = \frac{(x + 5)^2}{x}$ $(x \neq 0)$

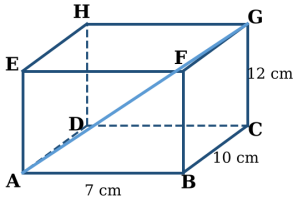
(a) Show that $\frac{dy}{dx} = \frac{(x - 5)(x + 5)}{x^2}$.

(b) Find the gradient when $x = 2$.

7 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.



8 ABCDEFGH is a cuboid. AB = 7 cm, BC = 10 cm and CG = 12 cm.
(a) Work out the length of AG.
(b) Work out the size of angle GAB.
Give answers to 3 significant figures or 1 decimal place. (Calculator)



9 $y = 2x^4 - 16x^2 + 3$
Find the coordinates of the stationary points of the curve and determine the nature of each.

10 The line $y = kx - 3$ is a tangent to the curve $y = x^2 + 5$.
Find the possible values of k.
Give any surds in their simplest form.