Day 325 **IGCSE 10-a-day**

1 Solve $\frac{x+1}{2} - \frac{x-6}{8} = 2$

2 $y = x^3 - 3x^2 - 4x + 3$

Find $\frac{dy}{dx}$

3 Write $\sqrt{63} - \sqrt{28} + \sqrt{175}$ in the form $a\sqrt{7}$ where a is an integer.

4 A curve has equation $y = -2x^2 - 4x - 3$.
The gradient at the point P on the curve is -4.
Find the coordinates of P.

5 The table gives information about the times of some people.
Work out an estimate for the mean time.
Give your answer correct to 1 decimal place.
(Calculator)

Time, t (minutes)	Frequency density
$0 < t \leq 10$	0.4
$10 < t \leq 30$	2
$30 < t \leq 60$	1
$60 < t \leq 100$	1

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6 $f(x) = 3x - 6$. (a) Find $f^{-1}(3)$. (b) Express $ff(x)$ in the form $px + q$.	
7 (a) Show that the equation $x^3 + 4x - 33 = 0$ has a solution between $x = 2$ and $x = 3$. (b) Show that the equation can be rearranged to give $x = \sqrt[3]{33 - 4x}$	
8 A rectangle has area 25 cm^2, correct to 2 significant figures. Its length is 5.200000000000000177635683940025046467781066894531 25 cm, correct to 2 significant figures. Work out the lower bound of the width of the rectangle. Give your answer correct to 3 significant figures. (Calculator)	
9 $y = -4x - \frac{36}{x}$ Find the coordinates of the stationary points and determine whether each is a maximum or a minimum.	
10 x is an acute angle and $\cos x = \frac{4}{13}$. (a) Find the exact value of $\sin x$. (b) Find the exact value of $\tan x$. Give each answer as a fraction or a surd. Do not use a calculator.	