Day 84 **IGCSE 10-a-day**

1 The table shows the heights of 55 plants.
(a) Write down the modal class.
(b) Work out an estimate for the mean. Give your answer to 1 decimal place. (Calculator)

Height (cm)	Frequency
$0 < x \leq 10$	9
$10 < x \leq 20$	19
$20 < x \leq 30$	17
$30 < x \leq 40$	10

2 The normal to the curve $y = 3x^3 + x - 5$ at the point where $x = 0$ meets the x-axis at N.
Find the coordinates of N.

3 Here are 15 numbers.
39, 15, 17, 32, 32, 21, 10, 2, 3, 30, 54, 57, 29, 52, 11
Find (a) the median (b) the interquartile range.

4 A bag contains marbles.
$\frac{1}{6}$ of the marbles are yellow and $\frac{5}{8}$ of the marbles are black.
The rest of the marbles, 10 of them, are white.
How many black marbles are there?

5 $f(x) = 2x^3 - 24x - 3$
Find the y coordinate of the local maximum point and the y coordinate of the local minimum point.

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6 The line L has equation $3x + 4y = -12$. L crosses the x-axis at the point A and the y-axis at the point B. (a) Find the coordinates of A and B. (b) Work out the area of triangle OAB, where O is the origin.	
7 $\mathbf{a} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ Work out the exact length of the vector $2\mathbf{a} + \mathbf{b}$. Give your answer as a simplified surd.	
8 V is inversely proportional to r. When r = 3, V = 4. Find the value of V when r = 2.	
9 $f(x) = x^3 - 6x^2 - 2$ for $-1 \leq x \leq 5$. Find the greatest value and the least value of f(x) on this interval.	
10 Solve $\frac{2}{x+1} + \frac{5}{x+5} = \frac{2}{3}$	