Day 291	IGCSE 10-a-day
1 A sector of a circle has radius 15 cm. The length of the arc of the sector is $\frac{25}{2}\pi$ cm. (a) Work out the angle of the sector. (b) Work out the area of the sector. Give your answer to (b) in terms of π.	
2 Work out the gradient of the curve $y = 4x^3 + 4x^2 + 1$ at the point where $x = -1$.	
3 Here are 11 numbers. 4, 33, 15, 25, 17, 18, 43, 34, 42, 24, 54 Find (a) the median (b) the interquartile range.	
4 The tangent at the point P on the curve $y = -2x^2 + x + 2$ is perpendicular to the line $x - 3y = -9$. Find the coordinates of P.	
5 A is the point (8, 7) and B is the point (10, 13). Find an equation of the perpendicular bisector of AB. Give your answer in the form $y = mx + c$.	

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6 The table shows the number of members in each of four groups.
(a) A stratified sample of 40 is taken. Work out how many come from Group B.
(b) A different stratified sample has 36 from Group D. Work out the size of this sample.

	Group A	Group B	Group C	Group D
Number	240	160	160	240

7 Hana puts £10,000 into a savings account.
The account pays 6% compound interest each year.
After how many whole years will there first be more than £13,350 in the account? (Calculator)

8 $f(x) = \frac{5x + 3}{x - k}$, where k is a constant and $x \neq k$.
The function f is its own inverse, so $f^{-1}(x) = f(x)$.
Find the value of k.

9 A curve has equation $y = x^3 + 3x^2 + 13x + 8$.
Find the minimum value of the gradient of the curve, and the value of x at which it occurs.

10 The point $P(-2, -2)$ lies on the graph of $y = f(x)$.
Write down the coordinates of the image of P on the graph of
(a) $y = \frac{1}{2}f(x)$ (b) $y = f(x) + 2$