Day 261 **IGCSE 10-a-day**

1 The table shows the number of members in each of four groups.
(a) A stratified sample of 23 is taken. Work out how many come from Group A.
(b) A different stratified sample has 9 from Group D. Work out the size of this sample.

	Group A	Group B	Group C	Group D
Number	200	140	60	60

2 $f(x) = -x^2 - 5x + 4$
(a) Find $f'(x)$.
(b) Work out the value of $f'(1)$.

3 Write $\sqrt{8} - \sqrt{2} + \sqrt{72}$ in the form $a\sqrt{2}$ where a is an integer.

4 A circle has centre C(2, −4) and passes through the point P(3, 0).
Find an equation of the circle.

5 The number of a virus sample triples every 30 hours. At the start there are 800.
How many are there after 90 hours?

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6 $f(x) = 6x^{1/2} - 2x^{-1/2}$ Find $f'(x)$ and work out the value of $f'(4)$.	
7 $n(\xi) = 40$, $n(A) = 8$, $n(B) = 19$ and $n(A \cap B) = 2$. An element of ξ is chosen at random. (a) Find the probability that it is in neither A nor B. (b) Given that it is in A, find the probability that it is not in B.	
8 Write $\frac{5+\sqrt{7}}{3-\sqrt{7}}$ in the form $p + q\sqrt{7}$ where p and q are rational numbers.	
9 ABCD is a rectangle with AB = 8 cm and AD = 12 cm. A point P inside the rectangle is such that AP $\leq$ 8 cm and P is nearer to A than to B. Work out the area of the region in which P can lie. Give your answer in terms of π and surds.	
10 A curve has equation $y = -x^2 - \frac{4}{x}$. Find the equation of the tangent to the curve at the point where x = 1.	