Day 265 **IGCSE 10-a-day**

1 The table shows the number of members in each of four groups.
(a) A stratified sample of 20 is taken. Work out how many come from Group D.
(b) A different stratified sample has 6 from Group C. Work out the size of this sample.

	Group A	Group B	Group C	Group D
Number	350	250	150	250

2 $f(x) = ax^2 + b$, where a and b are constants.
$f(1) = 6$ and $f(6) = -64$.
Find the value of a and the value of b.

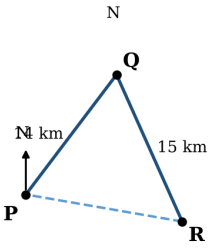
3 A particle P moves in a straight line. After t seconds its displacement from a fixed point O is s metres, where
$s = 2t^3 + 8t^2 + 7t + 4$ $(t > 0)$
Find (a) the velocity of P, (b) the acceleration of P, when $t = 3$.

4 The 4-digit number 78k3 is a multiple of 3.
k is a single digit.
Find all the possible values of k.

5 $y = 3x^3 - 27x^2 + 6x + 7$

(a) Find $\frac{d^2y}{dx^2}$.

(b) Find the value of x for which $\frac{d^2y}{dx^2} = 0$, and work out the gradient of the curve at this value of x.

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6 Triangle T has vertices A(2, 3), B(0, 0), C(3, 0). T is enlarged with scale factor −2 and centre (3, 2). (a) Write down the coordinates of the image of A. (b) The area of T is 18 square units. Work out the area of the image of T.	
7 Make t the subject of $T(t + 4) = t - T$	
8 A ship sails 14 km from P to Q on a bearing of 037°. It then sails 15 km from Q to R on a bearing of 156°. (a) Work out PR (3 s.f.). (b) Work out the bearing of R from P (nearest degree). (Calculator) 	
9 $y = 2x + \frac{32}{x}$ Find the values of x for which y is increasing.	
10 Dina invests £10,000 for 7 years at 2.5% per year compound interest. Work out the value of the investment at the end of the 7 years. Give your answer to the nearest penny. (Calculator)	