Day 302 **S Tier 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 C.
(b) A different stratified sample has 6 from Group A. Work out the size of this sample.

	Group A	Group B	Group C	Group D
Number	150	350	450	200

2 Solve $\frac{x-5}{2} + \frac{x-4}{4} = -5$

3 A rectangle has length 4.5 cm and width 5.1 cm, both correct to 1 decimal place.
Work out the lower bound of the area of the rectangle.

4 Write $\sqrt{80} + \sqrt{180} + \sqrt{20} + \sqrt{125}$ in the form $a\sqrt{5}$ where a is an integer.

5 The point P(6, −3) is rotated 90° anticlockwise about the origin.
The image is then reflected in the line y = x.
(a) Write down the coordinates of the final image of P.
(b) Describe fully the single transformation that is equivalent to these two transformations.

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6 Priya and Uma play a match. The first to win 2 chess games wins the match. The probability that Priya wins any one of the chess games is $\frac{3}{5}$. Work out the probability that the match needs a third one to decide it.	
7 (a) Show that the equation $x^3 + x - 7 = 0$ can be rearranged to give $x = \sqrt[3]{7 - x}$ (Calculator) (b) Use the iteration formula $x_{n+1} = \sqrt[3]{7 - x_n}$ with $x_0 = 1$ to work out x_1 and x_2. Give each answer correct to 3 decimal places.	
8 A right-angled triangle has base $(5 + \sqrt{7})$ cm and height $(5 - \sqrt{7})$ cm. Show that the area of the triangle is a rational number. Work out the area.	
9 In a bag, the ratio of the number of red counters to the number of blue counters is 4 : 3. Then 10 red counters are removed and 10 blue counters are removed. The ratio is now 7 : 4. How many red counters were there at the start?	
10 ABC is a right-angled triangle with sides (x) cm, (x + 7) cm and (x + 9) cm. The longest side is (x + 9) cm. (a) Find the value of x. (b) Work out the area of the triangle. The diagram is not drawn accurately. 	