Day 138 **S Tier 10-a-day**

1 The table shows the number of members in each of four groups.
(a) A stratified sample of 42 is taken. Work out how many come from Group D.
(b) A different stratified sample has 14 from Group C. Work out the size of this sample.

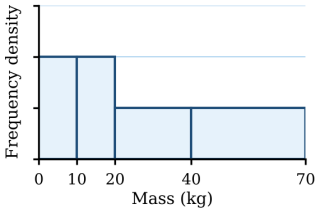
	Group A	Group B	Group C	Group D
Number	300	300	175	275

2 Solve $\frac{x+7}{3} + \frac{x+4}{2} = 6$

3 Two shapes are mathematically similar.
The smaller has height 18 cm and area 12 cm^2.
The larger has area $\frac{100}{3}$ cm^2.
Work out the height of the larger shape.

4 Here are six numbers.
$0.\dot{4}$, $\sqrt{49}$, $(\sqrt{6}+2)(\sqrt{6}-2)$, $(\sqrt{3})^2$, $3+\sqrt{12}$, $\sqrt{2}\times\sqrt{6}$
Write down the irrational numbers.

5 Triangle P has vertices A(5, 5), B(6, 6) and C(6, 3).
Triangle Q has vertices A'(2, −4), B'(0, −6) and C'(0, 0).
Q is an enlargement of P.
Describe fully the single transformation that maps P onto Q.

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6 The number of members of a club is decreased by 5% in one year. The next year the number of members is increased by 40%. There are now 532 members. How many members were there to begin with?	
7 Make r the subject of $P(r + 4) = r - P$	
8 The histogram shows the masses of parcels delivered by a courier. 20 of them had a mass between 0 and 10 kg. (a) How many had a mass between 20 and 40 kg? (b) How many parcels are there in total?  	
9 Given that $(a + \sqrt{2})(b + \sqrt{2}) = 14 + 7\sqrt{2}$, where a and b are positive integers with $a < b$, find the values of a and b.	
10 A is the point $(-7, 3)$ and B is the point $(3, -1)$. Find an equation of the perpendicular bisector of AB. Give your answer in the form $y = mx + c$.	