Day 293 **S Tier 10-a-day**

1 A metal pipe is a hollow cylinder with outer radius 5 cm and inner radius 4.5 cm.
(Calculator)
The density of the metal is 11.3 g/cm^3.
The mass of the pipe is 12.6 kg.
Work out the length of the pipe. Give your answer in centimetres correct to 3 significant figures.

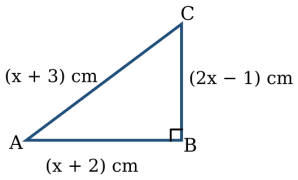
2 The table shows the number of members in each of four groups.
(a) A stratified sample of 24 is taken. Work out how many come from Group D.
(b) A different stratified sample has 6 from Group C. Work out the size of this sample.

	Group A	Group B	Group C	Group D
Number	300	150	150	600

3 A flight leaves London at 14:30 (London time).
It takes 8 hours 55 minutes.
When it is 12:00 in London it is 14:00 in Cairo.
At what time, in Cairo time, does the flight land? Say if it is on a different day.

4 The mean of 9 numbers is 6.
A new number is added and the mean of all 10 numbers is 11.
Work out the new number.

5 ABC is a right-angled triangle with sides (x + 2) cm, (2x − 1) cm and (x + 3) cm. The longest side is (x + 3) cm.
(a) Find the value of x.
(b) Work out the area of the triangle.
The diagram is not drawn accurately.



Day 293	S Tier 10-a-day
6 A rectangle has length (x + 6) cm and width (x + 4) cm. The area of the rectangle is 195 cm^2. (a) Show that $x^2 + 10x - 171 = 0$ (b) Work out the perimeter of the rectangle.	
7 The point P(−4, 3) is rotated 90° clockwise 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.	
8 A bag contains marbles. $\frac{1}{4}$ of the marbles are yellow and $\frac{3}{5}$ of the marbles are black. The rest of the marbles, 9 of them, are white. How many marbles are in the bag?	
9 The value of a car is decreased by 50%. The new amount is then decreased by 25%. Work out the overall percentage change.	
10 Solve $\frac{2}{x+2} - \frac{5}{x+5} = \frac{3}{4}$	