Day 232 **S Tier 10-a-day**

1 Write these numbers in order of size, starting with the smallest.

69%, $\frac{13}{18}$, 0.71, $\frac{1}{3}$

2 Use the iteration formula $x_{n+1} = \sqrt[3]{2x_n + 10}$ with $x_0 = 1$ (Calculator)

to work out x_1, x_2 and x_3.

Give each answer correct to 3 decimal places.

3 Leila changes £700 into euros at £1 = €1.3.

Leila spends €340 and then changes the rest back into pounds at £1 = €1.5.

How many pounds does Leila get back?

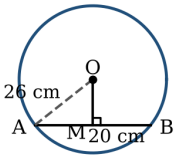
4 Solve $x - 13\sqrt{x} + 42 = 0$

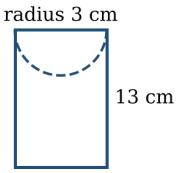
5 AB is a chord of a circle, centre O. M is the midpoint of AB. (Calculator)

(a) Work out the length OM.

(b) Work out angle AOB, to 1 decimal place.

The diagram is not drawn accurately.



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6 A atom has a diameter of 2×10^{-8} metres. Atoms are placed in a straight line, touching, to make a length of 5.6×10^{-3} metres. How many atoms are in the line? Give your answer in standard form.	
7 In a fruit box, the ratio of the number of apples to the number of pears is 3 : 4. Then 19 more apples are added and 8 more pears are added. The ratio is now 1 : 1. How many apples were there at the start?	
8 A solid cylinder of radius 3 cm and height 13 cm has a hemispherical hollow of the same radius cut out of the top. Work out the volume of the solid that is left. Give your answer in terms of π. 	
9 The price of a television is increased by x%. The new price is then decreased by x%. The final price is 25% less than the original price. Work out the value of x.	
10 A solid metal sphere of radius 6 cm is melted down and recast into a solid cylinder of radius 8 cm. Work out the height of the cylinder. The volume of a sphere of radius r is $\frac{4}{3}\pi r^3$.	