Day 38 **S Tier 10-a-day**

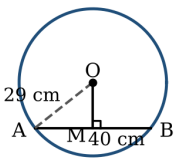
1 The edge length of a cube is decreased by 40%.
Work out the percentage change in the volume of the cube.

2 Solve $2 \cos x - 1 = 0$ for $0° \leq x \leq 360°$.
(Calculator)
Give your answers correct to 1 decimal place.

3 The table shows the number of members in each of four groups.
(a) A stratified sample of 30 is taken. Work out how many come from Group B.
(b) A different stratified sample has 27 from Group C. Work out the size of this sample.

	Group A	Group B	Group C	Group D
Number	180	180	180	60

4 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.



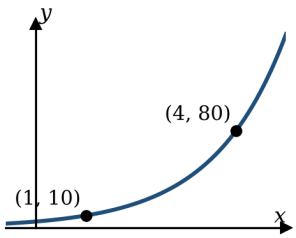
5 A flight leaves London at 19:15 (London time).
It takes 7 hours 20 minutes.
When it is 12:00 in London it is 16:00 in Dubai.
At what time, in Dubai time, does the flight land? Say if it is on a different day.

Day 38	S Tier 10-a-day

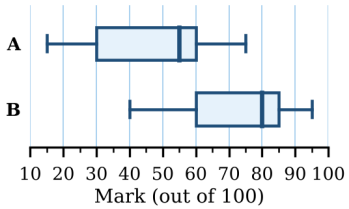
6 Solve $x^4 - 41x^2 + 400 = 0$

7 A rare car is worth £1,000.
Its value increases by 12% each year.
After how many whole years will it first be worth more than £1,500? (Calculator)

8 The diagram shows the graph of $y = ka^x$, where k and a are constants and $a > 0$.
The curve passes through the points (1, 10) and (4, 80).
Find the value of k and the value of a.



9 The box plots show the test marks of the students in two classes, A and B.
(a) Work out the interquartile range for each.
(b) Compare the distributions of A and B.



10 The line $y = -2x + k$ is a tangent to the curve $y = 2x^2 + x + 4$.
Find the value of k.