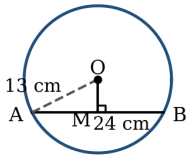
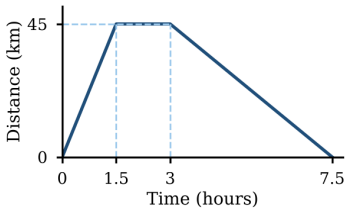
Day 60 **S Tier 10-a-day**

1 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.



2 Show that $\frac{x+3}{2x-1} - \frac{6}{x+5}$ can be written as $\frac{x^2-4x+21}{(2x-1)(x+5)}$

3 The graph shows Callum's cycle ride to a café and back.
(a) Work out Callum's speed on the way back.
(b) Work out Callum's average speed for the whole ride, including the stop.



4 A fuel tank is $\frac{3}{4}$ full.
18 more litres of petrol are added and the fuel tank is then $\frac{4}{5}$ full.
Work out the capacity of the fuel tank.

5 In triangle PQR, PQ = 18 cm and angle PQR = 150°.
The area of the triangle is 45 cm^2.
Work out the length of QR.
Do not use a calculator.

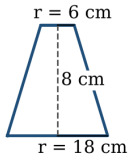
Day 60	S Tier 10-a-day

6 The population of a town grows by 10% each year.
After 4 years the population is 24,889.
Work out the population 4 years ago.
(Calculator)

7 Write $\frac{4^{n+3} \times 8^{n+3}}{4^n}$ in the form 2^{an+c}
where a and c are integers.

8 Show that the equation $x^2 + kx - 6 = 0$ has two distinct real solutions for all values of k.

9 A cone is cut parallel to its base to make a smaller cone and a frustum.
The frustum has height 8 cm, top radius 6 cm and base radius 18 cm.
Work out the volume of the frustum. Give your answer in terms of π.



10 $f(x) = 3x + 5$ and $g(x) = x^2 - 2$
Solve $fg(x) = gf(x)$