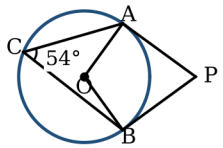
Day 102	S Tier 10-a-day

1 PA and PB are tangents to a circle, centre O. C is a point on the circle. Angle ACB = 54°.
(a) Work out the size of angle AOB.
(b) Work out the size of angle APB.
The diagram is not drawn accurately.

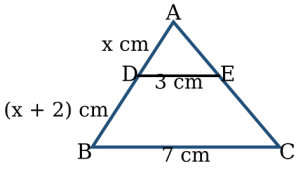


2 The mean of 7 numbers is 20.
A new number is added and the mean of all 8 numbers is 25.
Work out the new number.

3 (a) Solve $1 - 6x < -17$
(b) n is an integer. Write down all the values of n that satisfy
$3 < 3n + 3 \leq 24$

4 Write $\frac{2+\sqrt{6}}{3-\sqrt{6}}$ in the form $p + q\sqrt{6}$
where p and q are rational numbers.

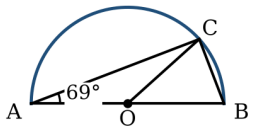
5 In the diagram, DE is parallel to BC.
AD = x cm, DB = (x + 2) cm, DE = 3 cm and BC = 7 cm.
(a) Find the value of x.
(b) Work out the length of AB.
The diagram is not drawn accurately.



Day 102 **S Tier 10-a-day**

6 A bag contains 2 red cubes, 3 blue cubes and 2 green cubes.
Two cubes are taken at random without replacement.
Work out the probability that (a) they are different colours, (b) both are the same colour.

7 AB is a diameter of a circle, centre O. C is a point on the circle. Angle BAC = 69°.
(a) Work out the size of angle ACB.
(b) Work out the size of angle COB.
The diagram is not drawn accurately.



8 A metal block has a mass of 180 g, correct to 2 significant figures.
Its volume is 13 cm^3, correct to the nearest whole number.
Work out the lower bound of the density.
Give your answer correct to 3 significant figures. (Calculator)

9 $f(x) = \frac{3x - 6}{2x - 3}$ where $x \neq \frac{3}{2}$
(a) Show that ff(x) = x.
(b) Write down $f^{-1}(x)$.

10 The histogram shows the lengths of leaves collected from a tree.
100 of them had a length between 60 and 80 cm.
(a) How many had a length between 40 and 60 cm?
(b) How many leaves are there in total?

