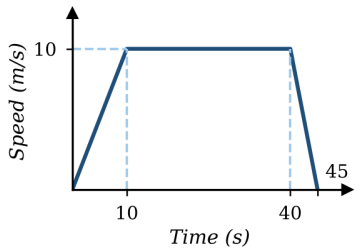
Day 54	S Tier 10-a-day

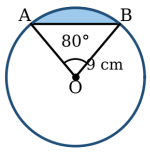
1 A flight leaves London at 06:40 (London time).
It takes 9 hours 40 minutes.
When it is 12:00 in London it is 20:00 in Tokyo.
At what time, in Tokyo time, does the flight land? Say if it is on a different day.

2 In triangle PQR, side QR is extended to S.
Angle QPR = (2x)°
Angle PQR = (3x + 5)°
Angle PRS = (4x + 34)°
(a) Work out the value of x.
(b) Work out the size of angle PRQ.

3 The graph shows the speed of a train between two stations.
(a) Work out the acceleration in the first 10 seconds.
(b) Work out the total distance.



4 The circle has centre O and radius 9 cm. A and B are points on the circle and angle AOB = 80°.
(Calculator)
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.
The diagram is not drawn accurately.



5 A bag contains some sweets. 3 of them are red and the rest are yellow.
Two sweets are taken at random without replacement.

The probability that both are red is $\frac{1}{5}$.

Work out how many sweets are yellow.

Day 54	S Tier 10-a-day
6 In a group of students, 30% are boys and the rest are girls. 30% of the boys and 40% of the girls walk to school. What percentage of all the students walk to school?	
7 $f(x) = -2x + 3$ and $g(x) = x^2 - 2$ Solve $fg(x) = gf(x)$	
8 Hassan invested £16,500 in a savings account for 2 years. Compound interest was paid at a fixed rate per year. At the end of the 2 years the account held £17,504.85. Work out the annual rate of interest. (Calculator)	
9 A circle has equation $x^2 + y^2 = 625$. The point $P(-7, 24)$ lies on the circle. (a) Find the equation of the tangent to the circle at P. Give your answer in the form $ax + by = c$, where a, b and c are integers. (b) The tangent meets the x-axis at the point T. Write down the coordinates of T.	
10 Show algebraically that $n(n + 1)(n + 2)(n + 3) + 1$ is a square number for all positive integer values of n.	