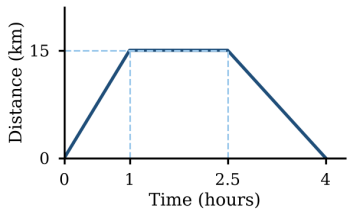
Day 304 **S Tier 10-a-day**

1 A factory makes 3.9×10^2 bottles each day.
It runs for 8×10^3 days.
How many bottles does it make?
Give your answer in standard form.

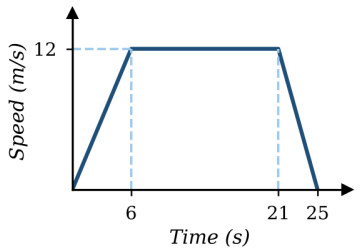
2 In triangle PQR, side QR is extended to S.
Angle QPR = $(2x - 10)°$
Angle PQR = $(2x + 25)°$
Angle PRS = $(2x + 51)°$
(a) Work out the value of x.
(b) Work out the size of angle PRQ.

3 Here are six numbers.
$\sqrt{49}$, $(1 + \sqrt{2})^2$, $\frac{1}{\sqrt{3}}$, $0.\dot{4}$, $(\sqrt{3})^2$, $(\sqrt{6} + 2)(\sqrt{6} - 2)$
Write down the rational numbers.

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



5 The graph shows the speed of a train between two stations.
(a) Work out the acceleration in the first 6 seconds.
(b) Work out the total distance.



Day 304	S Tier 10-a-day
6 The price of a bike is increased by 25%. Later the new price is reduced by 40% in a sale. The sale price is £82.50. Work out the price before the increase. (Calculator)	
7 The 2nd term of a geometric sequence is -24. The 5th term of the sequence is 3. (a) Work out the common ratio. (b) Work out the first term.	
8 Solve $2 \sin x = -\sqrt{3}$ for $0° \leq x \leq 360°$. Do not use a calculator.	
9 Write $\frac{1+\sqrt{3}}{2-\sqrt{3}}$ in the form $p + q\sqrt{3}$ where p and q are rational numbers.	
10 The diagram shows a cuboid ABCDEFGH. (Calculator) (a) Work out the length of the diagonal AG. (b) Work out the angle between AG and the base ABCD, to 1 decimal place. The diagram is not drawn accurately. 