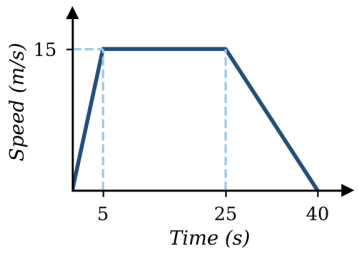
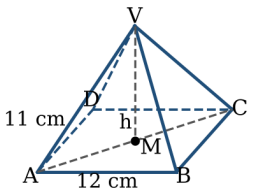
Day 166	S Tier 10-a-day
1 A runner covers a distance of 60 m, correct to 1 significant figure. The race takes 8.4 s, correct to 2 significant figures. Work out the lower bound of the speed. Give your answer correct to 3 significant figures. (Calculator)	
2 The ratio of blue to green sweets in a tin is 9 : 8. Then $\frac{2}{3}$ of the blue and $\frac{1}{2}$ of the green are taken out. Work out the ratio of blue to green now.	
3 A solid metal sphere of radius 6 cm is melted down and recast into a solid cylinder of radius 12 cm. Work out the height of the cylinder. The volume of a sphere of radius r is $\frac{4}{3}\pi r^3$.	
4 The graph shows the speed of a train between two stations. (a) Work out the acceleration in the first 5 seconds. (b) Work out the total distance. 	
5 Leila and Tariq play a match. The first to win 2 table tennis games wins the match. The probability that Leila wins any one of the table tennis games is $\frac{3}{5}$. Work out the probability that the match needs a third one to decide it.	

Day 166 **S Tier 10-a-day**

6 Write $36^3 \div 6^3$ as a product of powers of prime numbers.

7 VABCD is a pyramid on a square base. V is directly above the centre M.
(a) Work out the height VM of the pyramid.
(b) Work out the volume of the pyramid.
The diagram is not drawn accurately.



8 The table gives information about the times of some people.
Work out an estimate for the mean time.
Give your answer correct to 1 decimal place.
(Calculator)

Time, t (minutes)	Frequency density
$0 < t \leq 10$	1.1
$10 < t \leq 30$	1.9
$30 < t \leq 60$	1
$60 < t \leq 100$	0.3

9 How many factors does 13,500 have?
Include 1 and 13,500.

10 The equation $x^2 + kx + 4 = 0$ has exactly one solution.
Find the possible values of k.
Give any surds in their simplest form.