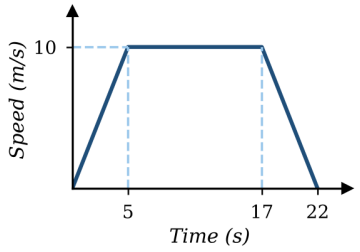
Day 141	IGCSE 10-a-day
1 A ball is thrown upwards. Its height above the ground, h metres, after t seconds is given by $h = -2t^2 + 4t + 5$ (a) Work out the greatest height reached by the ball. (b) Work out the velocity of the ball when t = 5. State whether it is moving up or down.	
2 On a minibus there are x adults and y children. There are at most 60 people. There are at least 3 children for every adult. There are at least 4 adults. (a) Write down three inequalities for x and y. (b) Find the greatest number of children on the minibus.	
3 Factorise fully $5x^2 + 10x - 75$	
4 A bag contains 4 orange cubes, 3 purple cubes and 3 pink cubes. Two cubes are taken at random without replacement. Work out the probability that (a) both are the same colour, (b) at least one is purple.	
5 A particle moves in a straight line. Its velocity, v m/s, at time t seconds is given by $v = 20t - 5t^2$ for $0 \leq t \leq 4$ Find the time at which the speed of the particle is greatest, and this greatest speed.	

Day 141 **IGCSE 10-a-day**

6 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.



7 A company sells x thousand items each month.
The price of each item is £56 − 4x.
The monthly revenue is £R thousand.
(a) Show that $R = 56x - 4x^2$.
(b) Find the maximum monthly revenue, showing that it is a maximum.

8 Here are the first five terms of a sequence.
4, 12, 32, 70, 132
The nth term is of the form $an^3 + bn + c$.
Find the values of a, b and c.

9 A fuel tank is $\frac{2}{5}$ full.
72 more litres of petrol are added and the fuel tank is then $\frac{5}{8}$ full.
Work out the capacity of the fuel tank.

10 OAB is a triangle. OA = **a** and OB = **b**.
M is on OA with OM : MA = 1 : 4. N is on OB with ON : NB = 2 : 3. AN and BM intersect at X.
(a) Find BM in terms of **a** and **b**.
(b) Find OX in terms of **a** and **b**.
The diagram is not drawn accurately.

