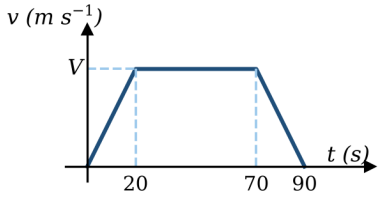
Day 358	A Level Maths: A Tier 10-a-day
1 Find the coefficient of x^2 in the expansion of $(4 + 3x)^8$.	
2 Summary statistics for the daily total rainfall (mm) in the same month are: Hurn: mean 20.5, standard deviation 1.5; Beijing: mean 29.5, standard deviation 3.5. Make two comparisons.	
3 The diagram shows the speed-time graph for a train journey of 1400 m. Find (a) V, (b) the deceleration in the final stage. 	
4 The random variable X has $P(X = x) = kx^2$ for $x = 2, 3, 4, 5, 6$. (a) Show that $k = \frac{1}{90}$. (b) Find E(X) and Var(X). (c) Find $P(X \geq 4)$.	
5 Solve $\sin 2x = \sqrt{2} \sin x$ for $-180° \leq x \leq 180°$.	

Day 358	A Level Maths: A Tier 10-a-day
6 A circle touches both coordinate axes and passes through the point (5, −10). Its centre lies in the fourth quadrant. Find the equations of the two possible circles.	
7 Solve $4\text{cosec}^2 x - 4\cot x - 12 = 0$ for $0° < x < 180°$. Give answers to 1 d.p.	
8 Given that $\sum_{r=1}^{n}(4r + 2) = 240$, find the value of n.	
9 A ball is projected from a point O on horizontal ground at angle α above the horizontal, $\tan\alpha = \frac{4}{3}$, and passes through A, 36 m horizontally from O and 28.4 m above the ground. Find the speed of projection. Take g = 9.8.	
10 The line l has equation $\mathbf{r} = \begin{pmatrix} 0 \\ -6 \\ 1 \end{pmatrix} + t\begin{pmatrix} 1 \\ 2 \\ 1 \end{pmatrix}$. Find the coordinates of the foot of the perpendicular from P(4, −2, 1) to l, and the exact distance from P to l.	