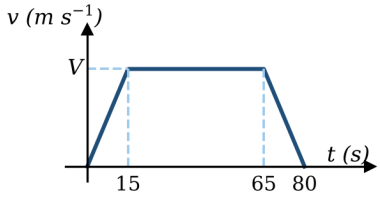
Day 15	A Level Maths: A Tier 10-a-day
1 A stratified sample of 30 students is taken from three groups. 5 of the sample are from Arts, which has 40 students. (a) Find the total number of students. (b) Science has 96 students. How many are sampled?	
2 The diagram shows the speed-time graph for a train journey of 1430 m. Find (a) V, (b) the deceleration in the final stage. Give answers to 3 s.f. if not exact. 	
3 Solve $2\log_2 x - \log_2(x + 48) = 2$.	
4 Show by counter-example that the statement "If ab is a multiple of 6, then a or b is a multiple of 6" is false.	
5 Solve $\sin 2x = -\sqrt{2} \sin x$ for $0° \leq x \leq 360°$.	

Day 15	A Level Maths: A Tier 10-a-day
6 Show that $\frac{2}{\sqrt{5}-2}+\frac{4}{\sqrt{5}+2}$ can be written as $p+q\sqrt{5}$, and find p and q.	
7 A particle moves on the x-axis. At time t s its acceleration is $(12t-12)$ m s^{-2}. When t = 0 it is at O with velocity 10 m s^{-1}. Find (a) its velocity when the acceleration is zero, (b) its displacement from O then.	
8 A car costs £12000 new. Its value falls by 10% each year, so after t years its value is £V. (a) Write down V in terms of t. (b) Find, to 3 s.f., the time when the value is £6000.	
9 Eggs are defective with probability 0.2, independently. A tray of 9 eggs is rejected if it has at least 2 defective. From 6 such trays, find the probability that exactly 3 are rejected (3 s.f.).	
10 Find the coefficient of x^{-15} in the expansion of $(3x-\frac{1}{x^2})^9$.	