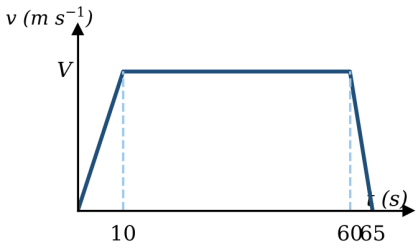
Day 97	A Level Maths: B Tier 10-a-day
1 A curve has parametric equations $x = 2t$, $y = \frac{3}{t}$, $t \neq 0$. Find a Cartesian equation of the curve.	
2 The random variable X has E(X) = 6 and Var(X) = 9. Find (a) E(5X + 3), (b) Var(5X + 3), (c) $E(X^2)$.	
3 Two forces of magnitude 24 N and 32 N act at right angles on a particle. Find the magnitude of the resultant, and the angle it makes with the 24 N force, to 1 d.p.	
4 (a) Show that $x^3 - 5x - 4 = 0$ can be written as $x = \sqrt[3]{5x + 4}$. (b) Use $x_{n+1} = \sqrt[3]{5x_n + 4}$ with $x_0 = 2$ to find x_1, x_2, x_3 to 4 d.p.	
5 Evaluate $\sum_{r=1}^{50}(3r + 5)$.	

Day 97 **A Level Maths: B Tier 10-a-day**

6 A lift travels between floors in 65 s. The speed-time graph is a trapezium, with the maximum speed V m s^{-1} held from t = 10 to t = 60.
The floors are 345 m apart. Find V, and the deceleration in the final stage.



7 The line $y = x - 1$ meets the circle $x^2 + (y + 3)^2 = 100$ at the points A and B. Find the coordinates of A and B, and the exact length of the chord AB.

8 An open tank has a square base of side x m and volume 256 m^3.
Show that its surface area is $S = x^2 + \frac{1024}{x}$,
and find the minimum value of S.

9 A seed supplier says that 0.1 of seeds germinate. In a sample of 20 seeds, 5 germinate.
Test, at the 1% level, whether the true proportion is higher than claimed.

10 The variables x and y satisfy $y = ab^x$. A graph of ln y against x is a straight line with gradient ln 3 that passes through (0, ln 2).
Find the values of a and b.