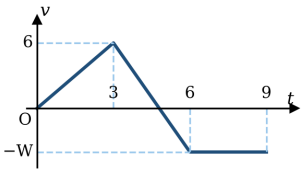
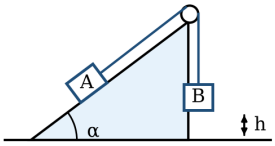
Day 6	A Level Maths: S Tier 10-a-day
1 Find the sum of all the integers from 1 to 642 inclusive that are divisible by 3 or by 4, but not by both.	
2 Solve $\cot(2\theta - 30°) = \frac{1}{\sqrt{3}}$ for $-180° \leq \theta \leq 180°$.	
3 The diagram shows the velocity-time graph of a particle P moving on a straight line (velocity in m s^{-1}, time in s). At time 9 s, P is back at its starting point. Find (a) the value of W, (b) the greatest distance of P from its starting point. 	
4 The sum of the first n terms of a sequence is $S_n = 3n^2 + 7n$. (a) Find an expression for u_n. (b) Find the least n for which $u_n > 268$.	
5 Large Data Set, daily mean air temperature (°C), Heathrow, July 2015 (n = 30): mean 18.9, sd 3. (F = 1.8C + 32) (a) Find the mean and sd in °F. (b) Is a reading of 23.4 more than 2 sd above the mean?	

Day 6 **A Level Maths: S Tier 10-a-day**

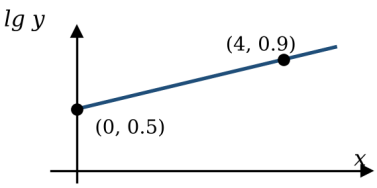
6 Particles A (5 kg) and B (5 kg) are joined by a light string over a smooth pulley (see diagram). A lies on a smooth slope, $\sin\alpha = \frac{3}{5}$, and B is 3 m above the ground.
Released from rest, find the further distance A moves up the slope after B lands (A does not reach the pulley).



7 Solve $5^{2x} - 123 \times 5^{x} - 250 = 0$.

8 The points A, B, C have coordinates (5, 5, 0), (5, 1, 2), (0, −1, −1).
Find angle ABC to 1 d.p., and the exact area of triangle ABC.

9 $y = ab^{x}$. The graph of lg y against x is the straight line shown.
Find a and b to 3 significant figures.



10 A curve has parametric equations $x = 4t$, $y = te^{-t}$, for $0 \leq t \leq 1$.
Find the exact area under the curve between t = 0 and t = 1,
above the x-axis.