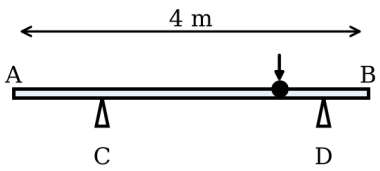
Day 249	A Level Maths: B Tier 10-a-day
1 A lift of mass 600 kg is raised and lowered by a vertical cable. The lift accelerates upwards at 1.5 m s^{-2}. Take g = 9.8 m s^{-2}. Find the tension in the cable.	
2 X ~ B(27, 0.1). Find, to 3 significant figures, (a) P(X ≥ 4) (b) P(1 ≤ X ≤ 4)	
3 The radius of a circular oil slick increases at 0.25 cm per second. Find the rate at which its area is increasing when r = 12 cm, in terms of π.	
4 A uniform beam AB of length 4 m and mass 10 kg rests horizontally on supports at C and D, where AC = 1 m and BD = 0.5 m. A particle of mass 10 kg is placed on the beam 1 m from B. Take g = 9.8 m s^{-2}. Find the reactions at C and D. 	
5 $f(x) = x^2 - 2x + 7$ for x ≤ 0. Find the range of f.	

Day 249	A Level Maths: B Tier 10-a-day
6 Solve $2^x = 5^{x+1}$, giving your answer to 3 s.f.	
7 (a) Expand $(1 - 3x)^{\frac{1}{3}}$ up to the x^2 term. (b) Use $x = 0.01$ to estimate $\sqrt[3]{0.97}$ to 5 decimal places.	
8 X ~ B(50, 0.6). Use a normal approximation to find $P(X \leq 25)$, to 3 significant figures.	
9 Solve $\cot^2 x - 4 \operatorname{cosec} x + 4 = 0$ for $0 \leq x \leq 360°$, giving answers to 1 d.p.	
10 $f(x) = 4x - 3$ and $g(x) = x^2 + 6$ for $x \in \mathbb{R}$. (a) Find $fg(x)$. (b) Solve $gf(x) = 87$.	