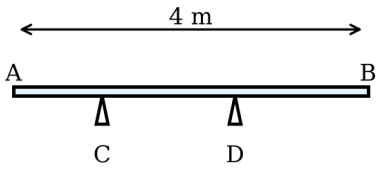
Day 128	A Level Maths: B Tier 10-a-day
1 Solve $8^{-2x+3} = 4^{-x+3}$.	
2 Find the exact value of $\int_0^{\frac{\pi}{2}} (5\sin 2x + 4\cos 2x)\,dx$.	
3 60 members: 30 swim, 18 cycle, 15 do neither. (a) How many do both? (b) Given a person who cycles, find P(this person swims).	
4 A curve has parametric equations $x = 4 + 3\cos t$, $y = -2 + 3\sin t$, for $0 \leq t < 2\pi$. Find a Cartesian equation of the curve.	
5 Solve $7^x = 37$, giving your answer to 3 s.f.	

Day 128	A Level Maths: B Tier 10-a-day
6 A uniform rod AB of length 2 m and mass 12 kg is hinged at A and held horizontal by a light string attached at B. The string makes an angle θ with the rod, where $\sin\theta = \frac{3}{5}$. Take g = 9.8 m s^{-2}. Find the tension in the string.	
7 Given that $20\cos\theta + 21\sin\theta \equiv 29\cos(\theta - 46.4°)$, solve $20\cos\theta + 21\sin\theta = -4.5$ for $0 \leq \theta \leq 360°$. (1 d.p.)	
8 Prove by contradiction that there are no integers m and n such that 15m + 25n = 114.	
9 A uniform plank AB of length 4 m and mass 40 kg rests horizontally on supports at C and D, where AC = 1 m and DB = 1.5 m. A girl of mass 20 kg walks from D towards B. Find how far she is from D when the plank is about to tilt. 	
10 X ~ B(120, 0.4). Use a normal approximation to find $P(X \geq 43)$, to 3 significant figures.	