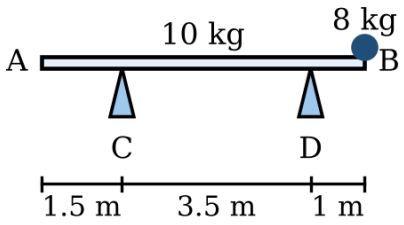
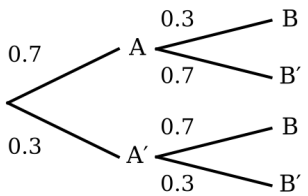
Day 30	A Level Maths: A Tier 10-a-day
1 Solve $\log_2(x + 1) + \log_2(x - 2) = 2$.	
2 A ball is thrown vertically upwards at 39.2 m s^{-1} from a point h m above horizontal ground, and hits the ground 11 s later. Find (a) h, (b) the greatest height above the ground. Take g = 9.8.	
3 Show that $\frac{2}{\sqrt{11} - 1} + \frac{4}{\sqrt{11} + 1}$ can be written as $p + q\sqrt{11}$, and find p and q.	
4 A uniform beam AB rests on supports at C and D, with a particle attached at B. Find the reactions at C and D. Take g = 9.8. 	
5 The tree diagram shows probabilities for events A and B. (a) Find P(B′). (b) Find P(A′ | B′). 	

Day 30	A Level Maths: A Tier 10-a-day
6 (a) Express $8\cos x - 15\sin x$ in the form $R\cos(x + \alpha)$, where $R > 0$ and $0° < \alpha < 90°$. Give α to 1 d.p. (b) Solve $8\cos x - 15\sin x = 5$ for $0° \leq x < 360°$, giving answers to 1 d.p.	
7 Solve $3 \times 3^{2x} - 4 \times 3^{x} + 1 = 0$.	
8 Solve the differential equation $(1 + x^2)\frac{dy}{dx} = xy$, given that $y = 3$ when $x = 0$ ($y > 0$). Give y in terms of x.	
9 A circle passes through A(−4, 13) and B(−4, −7). Its centre lies on the line $y = 3x + 15$. Find the equation of the circle.	
10 $X \sim N(57, 5^2)$. Find $P(X > 62 \mid X > 60)$ to 3 significant figures.	