Day 118	A Level Maths: B Tier 10-a-day
1 A curve has parametric equations $x = t + 2$, $y = 2t^2 + 4t - 4$. The line $y = 2x - 4$ meets the curve at two points. Find the coordinates of these points.	
2 A woman of mass 40 kg stands on weighing scales in a lift. The lift decelerates at 0.25 m s^{-2} while moving downwards. Take g = 9.8 m s^{-2}. Find the force exerted on the woman by the scales.	
3 A circle has centre $(-2, -4)$ and passes through the point $(-2, 5)$. Find an equation of the circle.	
4 A toy car slides from rest down a line of greatest slope of a smooth plane inclined at α, where $\sin\alpha = \frac{3}{5}$ to the horizontal. Take g = 9.8 m s^{-2}. Find its acceleration, and the distance it travels in 2 s.	
5 Given that $\tan\theta = 3$ and θ is acute, find the exact value of $\sec\theta$.	

Day 118	A Level Maths: B Tier 10-a-day
6 Solve $\|2x - 3\| = \|-x + 4\|$.	
7 Find the exact value, in radians, of (a) $\arccos(-\frac{1}{2})$ (b) $\arcsin(\frac{1}{2})$	
8 Meteors are seen at random at an average rate of 1.5 per hour. Find the probability that in 90 minutes there are at least 3 (3 s.f.).	
9 Solve $\ln(5x - 5) = 5$, giving your answer to 3 s.f.	
10 The continuous random variable X has pdf f(x) = $\frac{2x}{36}$ for $0 \leq x \leq 6$, and 0 otherwise. (a) Find P(X > 2). (b) Find the median of X, to 3 significant figures.	