Day 344	A Level Maths: C Tier 10-a-day
1 a = $3\mathbf{i} - 3\mathbf{j} + \mathbf{k}$ and b = $2\mathbf{i} - \mathbf{j} + 2\mathbf{k}$. Find the angle between a and b, to 1 decimal place.	
2 A model relates the mass, m kg, of a puppy to its age, w weeks by m = 4 + 1.2w. Interpret the value 1.2 in this context.	
3 A train starts from rest and moves in a straight line with constant acceleration 2 m s^{-2}. It travels 49 m. Find the time taken.	
4 Emails arrive at an average rate of 3.5 per hour, at random. Find the probability of exactly 7 in 2 hours, to 3 s.f.	
5 A curve has parametric equations $x = 2t - 3$, $y = 3t^2 - 5$. The point P has y-coordinate -2 and positive t. Find the coordinates of P.	

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6 Car A passes a point O at constant speed 9 m s^{-1}. At that instant car B starts from rest at O with constant acceleration 2 m s^{-2} in the same direction. Find the time when B catches up A.	
7 Solve $2^{x+2} = 200$. Give your answer to 3 significant figures.	
8 Sketch $y = \|4x - 9\|$. Write down the coordinates of the vertex and of the point where the graph meets the y-axis.	
9 θ is acute and $\cos\theta = \frac{15}{17}$. Find the exact values of $\sin\theta$ and $\tan\theta$.	
10 Sketch $y = \frac{-4}{x+2} - 1$. Write down the equations of the asymptotes and the coordinates where the curve meets the axes.	