Day 65	A Level Maths: C Tier 10-a-day
1 Solve $e^{3x + 3} = 12$. Give your answer to 3 significant figures.	
2 A particle of mass 3 kg hangs from a light string and is raised at constant speed. Taking g = 9.8 m s^{-2}, find the tension in the string.	
3 Find the first four terms, in ascending powers of x, of the expansion of $(1 + x)^4$.	
4 For events A and B, P(A) = 0.45, P(B) = 0.7 and P(A ∪ B) = 0.8. (a) Find P(A ∩ B). (b) Find P(A′ ∩ B′).	
5 A block of mass 2 kg is pulled along rough horizontal ground by a horizontal force of 8.92 N. The coefficient of friction is 0.2. Take g = 9.8 m s^{-2}. Find the acceleration.	

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6 For 7 data pairs, with temperature (°C) from 10 to 22, the regression line is S = 6 + 8T. Estimate ice cream sales when T = 16 and comment on the reliability.	
7 An arithmetic series has first term 5 and common difference 4. Find the smallest n for which the sum of the first n terms exceeds 800.	
8 A curve has equation $y^2 = 3x - 2$. Find dy/dx in terms of x and y, and hence the gradient at (2, 2).	
9 Solve the simultaneous equations: $y = x^2 - 9x + 10$, $y = -2x - 2$.	
10 $\mathbf{a} = -2\mathbf{i} + 2\mathbf{j} + 3\mathbf{k}$ and $\mathbf{b} = -2\mathbf{j} + \mathbf{k}$. Find the angle between a and b, to 1 decimal place.	