Day 141	A Level Maths: C Tier 10-a-day
1 A lorry moving in a straight line with constant acceleration increases its speed from 2 m s^{-1} to 15 m s^{-1} in 12 s. Find the distance it travels in this time.	
2 Expand and simplify $(3 + \sqrt{3})(3 - \sqrt{3})$.	
3 Solve $\log_2 (2x + 1) = 2$.	
4 Solve the simultaneous equations: $y = x^2 + 2x$, $y = -3x - 4$.	
5 A golf ball is projected from level ground with velocity $(15\mathbf{i} + 9.8\mathbf{j})$ m s^{-1} ($\mathbf{i}$ horizontal, $\mathbf{j}$ vertically up). Take g = 9.8 m s^{-2}. (a) Find the time of flight. (b) Find the horizontal range.	

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6 For data set A, r = 0.42. For data set B, r = 0.87. Which data set has the stronger linear correlation? Give a reason.	
7 A farmer has 60 m of fencing for three sides of a rectangular pen; the fourth side is a wall. Find the maximum area of the pen.	
8 X ~ B(40, 0.25). Use a normal approximation to find P(X ≥ 10), to 3 s.f.	
9 Solve $2\sin^2 x + 3\sin x + 1 = 0$ for $0° \leq x \leq 360°$.	
10 Sketch $y = \|2x - 6\|$. Write down the coordinates of the vertex and of the point where the graph meets the y-axis.	