Day 8	A Level Maths: C Tier 10-a-day
1 The vector $\mathbf{p} = -5\mathbf{i} - 12\mathbf{j}$. Find (a) $\lvert\mathbf{p}\rvert$, (b) the angle p makes with the positive x-axis, measured anticlockwise (1 d.p.).	
2 Two forces of magnitudes 6 N and 8 N act on a boat at right angles to each other. Find (a) the magnitude of the resultant, (b) the angle it makes with the 6 N force, to 1 d.p.	
3 Solve $x^2 - 10x - 5 = 0$, giving your answers in the form $p \pm \sqrt{q}$.	
4 $X \sim B(50, p)$ and $E(X) = 5$. Find p and Var(X).	
5 $x_{n+1} = 1 + \frac{4}{x_n}$, with $x_0 = 1$. Find x_1, x_2 and x_3 to 3 decimal places.	

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6 The point P(4, −1) lies on the curve y = f(x). Write down the coordinates of the image of P on (a) y = f(2x) (b) y = f(x − 3)	
7 Solve $-2\cos^2 x - 3\sin x + 3 = 0$ for $0° \leq x \leq 360°$.	
8 A light plank rests on a pivot. A child of mass 30 kg sits 2 m from the pivot on one side. Where must a child of mass 25 kg sit on the other side for the plank to balance horizontally?	
9 The line y = −x + k is a tangent to the curve $y = x^2 - 5x - 1$. Find the value of k.	
10 X ~ B(20, p). H_0: p = 0.2, H_1: p ≠ 0.2. In a sample, x = 6. Test at the 10% significance level.	