Day 263	A Level Maths: C Tier 10-a-day
1 M(−6, 0) is the midpoint of the line segment AB. A is the point (−5, −5). Find the coordinates of B.	
2 Solve $2 \times 7^x = 20$. Give your answer to 3 significant figures.	
3 A car travelling at 20 m s^{-1} brakes uniformly and comes to rest after travelling 40 m. (a) Find the deceleration. (b) Find the time taken to stop.	
4 (a) Show that $x^3 - 2x - 3 = 0$ can be rearranged to $x = (2x + 3)^{\frac{1}{3}}$. (b) Use x_{n+1} = this formula with $x_0 = 2$ to find x_1, x_2 to 3 d.p.	
5 Solve $x^2 + 2x - 1 = 0$, giving your answers in the form $p \pm \sqrt{q}$.	

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6 Three forces $(-4\mathbf{i} - 4\mathbf{j})$ N, $(2\mathbf{i})$ N and $(p\mathbf{i} + q\mathbf{j})$ N act on a particle which is in equilibrium. $\mathbf{i}$ and $\mathbf{j}$ are perpendicular unit vectors. Find the values of p and q.	
7 X is the number of heads when a fair coin is tossed 8 times. Can X be modelled by a binomial distribution? Give a reason.	
8 Express $\frac{-4x - 14}{(x + 3)(x + 5)}$ in the form $\frac{A}{x + 3} + \frac{B}{x + 5}$. Find the values of A and B.	
9 The probability that a patient takes the drug is 0.6. If so, the probability that the patient recovers is 0.7; otherwise it is 0.3. Given that the patient recovers, find the probability that a patient takes the drug.	
10 The nth term of an arithmetic sequence is 3n + 2. Find the smallest n for which the term exceeds 400.	