Day 118	A Level Maths: C Tier 10-a-day
1 X ~ B(20, 0.5). Find P(X ≤ 8), giving your answer to 3 s.f.	
2 When $x^3 + kx^2 - 2x + 9$ is divided by (x + 1), the remainder is 8. Find the value of k.	
3 A particle starts from rest and moves in a straight line with constant acceleration 1.5 m s^{-2}. It travels 3 m. Find the time taken.	
4 Expand and simplify $(2 - \sqrt{5})^2$.	
5 Car P passes a point O at constant speed 5.25 m s^{-1}. At that instant car Q starts from rest at O with constant acceleration 1.5 m s^{-2} in the same direction. Find the time when Q catches up P.	

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6 Variables x and y satisfy $y = ax^n$. A graph of $\log_{10} y$ against $\log_{10} x$ is a straight line with gradient $\frac{1}{2}$ and intercept 0.6. Find n and a, giving a to 3 significant figures.	
7 A circle has equation $(x - 3)^2 + (y - 2)^2 = 9$. Determine whether the point P(5, −2) is inside, outside or on the circle.	
8 $\frac{x + 6}{(x + 3)(x + 4)} \equiv \frac{A}{x + 3} + \frac{B}{x + 4}$. Find A and B, and hence find $\int \frac{x + 6}{(x + 3)(x + 4)}\, dx$.	
9 X ~ B(80, 0.3). Use a normal approximation to find P(X ≤ 22), to 3 s.f.	
10 Use integration by parts to find $\int x\, e^{2x}\, dx$.	