Day 107	A Level Maths: C Tier 10-a-day
1 The values x are coded using $y = (x - 50) \div 5$. The coded values have mean $\bar{y} = 0.9$ and standard deviation 0.7. Find the mean and standard deviation of x.	
2 Solve $e^{5x + 2} = 20$. Give your answer to 3 significant figures.	
3 $f(x) = 4x + 4$ and $g(x) = 5x + 4$. Solve $fg(x) = 0$.	
4 A car travelling at 30 m s^{-1} brakes uniformly and comes to rest after travelling 75 m. (a) Find the deceleration. (b) Find the time taken to stop.	
5 Sketch $y = \frac{5}{x - 3} - 4$. Write down the equations of the asymptotes and the coordinates where the curve meets the axes.	

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6 Solve $(\cos x - 1)(2\cos x - 1) = 0$ for $0° \leq x \leq 360°$.	
7 A particle of mass 3 kg slides from rest down a smooth plane inclined at angle α to the horizontal, where $\sin\alpha = \frac{3}{5}$. Take $g = 9.8$ m s^{-2}. Find (a) its acceleration, (b) its speed after 4 s.	
8 $X \sim B(150, 0.4)$. Use a normal approximation to find $P(X \geq 54)$, to 3 s.f.	
9 The line $y = 2x + k$ is a tangent to the curve $y = x^2 + 6x - 2$. Find the value of k.	
10 Use the substitution $u = x^2 + 2$ to find $\int 2x(x^2 + 2)^2 \, dx$.	