Day 322	A Level Maths: C Tier 10-a-day
1 Simplify $1 - \cos^2 x$.	
2 Solve $x + 4 \leq 12$.	
3 $X \sim N(50, 10^2)$. Given that $P(X > a) = 0.2$, find a to 3 s.f.	
4 Solve $x^2 + 4x + 1 = 0$, giving your answers in the form $p \pm \sqrt{q}$.	
5 $f(x) = x^3 - 4x - 6$. Use the Newton-Raphson method with $x_0 = 2$ to find x_1, giving your answer to 3 decimal places.	

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6 Car P passes a point O at constant speed 6 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.	
7 X ~ B(12, p). H_0: p = 0.3, H_1: p ≠ 0.3. In a sample, x = 6. Test at the 10% significance level.	
8 Solve log x + log (x − 1) = log 30, x > 1.	
9 Prove by contradiction that there are no integers x and y such that 12x + 9y = 74.	
10 A lamp of weight 60 N hangs from a light string, pulled aside by a horizontal force P N so that the string makes an angle θ with the vertical, where $\tan\theta = \frac{5}{12}$. Find P and the tension T N.	