Day 120	A Level Maths: C Tier 10-a-day
1 Show, by a counter-example, that the statement "If n^2 is a multiple of 25 then n is a multiple of 25" is false, where n is a positive integer.	
2 A block of mass 5 kg is pulled along rough horizontal ground by a horizontal force of 12.3 N. The coefficient of friction is 0.2. Take g = 9.8 m s^{-2}. Find the acceleration.	
3 Write down the exact values of (a) cosec 30° (b) cosec 60°	
4 A box of mass 5 kg rests on rough horizontal ground. The coefficient of friction is 0.25. Taking g = 9.8 m s^{-2}, find the maximum friction force that can act on the box.	
5 X ~ B(10, 0.4). Find P(X > 2), giving your answer to 3 s.f.	

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6 $f(x) = e^x - 5$. Use the Newton-Raphson method with $x_0 = 1$ to find x_1, giving your answer to 3 decimal places.	
7 The table shows grouped data. Class: $50 \leq x < 55$; $55 \leq x < 60$; $60 \leq x < 65$; $65 \leq x < 70$ Frequency: 9, 10, 2, 6 Estimate the mean, to 3 s.f.	
8 The line $y = -4x + k$ is a tangent to the curve $y = x^2 - 8x + 5$. Find the value of k.	
9 Differentiate $y = \tan 4x$ with respect to x.	
10 Prove that $(n + 5)^2 - (n - 5)^2$ is a multiple of 4 for every integer n.	