Day 147	A Level Maths: B Tier 10-a-day
1 A geometric sequence has first term 200 and common ratio 0.5. Find the smallest n for which the nth term is less than 0.01.	
2 Given that $y = (3x^2 + 4)^3$, find $\frac{dy}{dx}$, and the gradient of the curve when x = 0.	
3 A particle moving in a straight line with constant acceleration increases its speed from 7 m s^{-1} to 16 m s^{-1} while covering 103.5 m. Find (a) the acceleration, (b) the time taken.	
4 Prove that the sum of 5 consecutive integers is always a multiple of 5.	
5 Solve $\log_5(x + 23) - \log_5(x - 1) = 1$.	

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6 The curve C has equation $y = x^2 + 4x + 5$. C is reflected in the x-axis. Find its new equation.	
7 A particle moves in a straight line. At time t s its velocity is $v = 30t - 5t^2$ m s^{-1}, for $t \geq 0$. Find the maximum speed of the particle and the time at which it occurs.	
8 The probability that a student passes a driving test first time is thought to be 0.3. In a sample of 30 students, 6 pass first time. Test, at the 5% significance level, whether the probability is different from 0.3.	
9 Given that $\sin A = \frac{4}{5}$ and $\sin B = \frac{7}{25}$, where A and B are acute, find the exact value of sin(A + B).	
10 A and B are mutually exclusive events with P(A) = 0.3 and $P(A \cup B) = 0.55$. (a) Find P(B). (b) Find $P(A' \cap B')$.	