Day 340	A Level Maths: B Tier 10-a-day
1 Statement: "8n + 11 is prime for every positive integer n." Show that this statement is false by finding a counter-example.	
2 X ~ B(21, 0.1). Find, to 3 significant figures, (a) P(X = 1) (b) P(X > 1)	
3 A sector of a circle has radius 7 cm and area $\frac{147\pi}{4}$ cm^2. Find the angle of the sector in degrees.	
4 A particle moves in a straight line. At time t seconds its velocity is $v = 3t^2 - 3t + 4$ m s^{-1}. Find the distance moved between t = 2 and t = 6. (The particle does not change direction.)	
5 The volume of a sphere increases at a constant rate of 20 $cm^3 s^{-1}$. Find the rate at which the radius is increasing when r = 3 cm, to 3 s.f.	

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6 Find the coefficient of x^2 in the expansion of $(3 - 4x)(1 + 2x)^7$.	
7 A particle P moves on a straight line from O. At time t s its velocity is $6t^2 - 36t + 48$ m s^{-1}. Find the first time P is at instantaneous rest, and its distance from O then.	
8 Solve the equation $3^{2x} + 3^x - 12 = 0$.	
9 Given that each component fails independently with probability 0.3, find the least number of components needed for the probability of at least one success to exceed 0.95.	
10 The region R is bounded by the curve $y = x^2 + 2$, the x-axis and the lines $x = 0$ and $x = 1$. R is rotated through 360° about the x-axis. Find the exact volume generated.	