Day 238	A Level Maths: C Tier 10-a-day
1 A circular ripple has radius r cm, increasing at 0.1 cm/s. Find the rate at which the area is increasing when r = 4, in terms of π.	
2 A particle moves in a straight line with constant acceleration. Its speed increases from 8 m s^{-1} to 13 m s^{-1} as it travels 35 m. Find the acceleration.	
3 The journey times in minutes for two groups: Route A has mean 79, standard deviation 19; Route B has mean 61, standard deviation 17. Compare the two sets of data.	
4 Find the coefficient of x^2 in the expansion of $(3 - x)^6$.	
5 θ is small and measured in radians. Use the small angle approximations to find an approximation for $1 - \cos 3\theta$.	

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6 A uniform rod AB of mass 15 kg and length 3 m is supported by a pivot 1.25 m from A. A particle of mass m kg is attached at A and the rod rests horizontally in equilibrium. Find m.	
7 Expand $(1 + 3x)^{-\frac{1}{2}}$ in ascending powers of x up to and including the term in x^2. State the range of values of x for which the expansion is valid.	
8 A curve has equation $x^2 + y^2 = 25$. Find dy/dx in terms of x and y, and hence the gradient at $(-3, -4)$.	
9 X ~ B(25, p). H_0: p = 0.5, H_1: p < 0.5. In a sample, x = 9. It is given that $P(X \leq 9) = 0.1148$. Test H_0 at the 10% significance level.	
10 The diagram shows a sketch of a quadratic curve. Find its equation in the form $y = a(x - p)^2 + q$. 	