Day 55	A Level Maths: C Tier 10-a-day
1 A company says that the probability a customer buys a ticket is 0.75. A researcher believes that the probability is lower. Let p be the probability that customer buys a ticket. Write down suitable hypotheses for a test on p.	
2 A line has parametric equations $x = 2t + 1$, $y = 2t - 5$. Find its equation in the form $y = mx + c$.	
3 A particle of mass 10 kg hangs from a light string and is raised vertically with acceleration 1 m s^{-2}. Taking g = 9.8 m s^{-2}, find the tension.	
4 (a) Convert 120° to radians, giving your answer in terms of π. (b) Convert $\frac{\pi}{12}$ radians to degrees.	
5 Find the remainder when $-x^3 + 4x^2 + 2x - 2$ is divided by $(x - 4)$.	

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6 Find the equation of the tangent to the curve $y = 3x^3 + x^2 - 2$ at the point where $x = 1$.	
7 $X \sim B(80, 0.3)$. Use a normal approximation to find $P(X \geq 22)$, to 3 s.f.	
8 Expand $(1 + 2x)^{-\frac{1}{2}}$ 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.	
9 Use the product rule to differentiate $y = x^3 \cos 4x$.	
10 A box of mass 4 kg rests on rough horizontal ground. The coefficient of friction is 0.4. Taking $g = 9.8$ m s^{-2}, find the maximum friction force that can act on the box.	