Day 171	A Level Maths: C Tier 10-a-day
1 Evaluate $100^{-\frac{1}{2}}$.	
2 A shop says that a customer pays by card with probability 0.3. A researcher thinks that the probability is different. Let p be the probability that a customer pays by card. Write down suitable hypotheses for a test on p.	
3 A particle of mass 2 kg hangs from a light string and is raised vertically with acceleration 1.5 m s^{-2}. Taking g = 9.8 m s^{-2}, find the tension.	
4 Evaluate $\sum_{r=1}^{13} (6r + 8)$.	
5 Express $\frac{-x}{(x + 2)(x + 3)}$ in the form $\frac{A}{x + 2} + \frac{B}{x + 3}$. Find the values of A and B.	

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6 A is $(-6, -1)$ and B is $(-2, -7)$.
Find the equation of the perpendicular bisector of AB, in the form $ax + by = c$ with integer a, b and c.

7 A population is $N(\mu, 4^2)$. H_0: $\mu = 130$, H_1: $\mu > 130$.
A sample of 9 has mean $\bar{x} = 131.6$.
Test at the 5% level. Critical value: $z = 1.645$.

8 θ is acute and $\cos\theta = \frac{40}{41}$.
Find the exact values of $\sin\theta$ and $\tan\theta$.

9 A body moves in a straight line. Its displacement from O at time t seconds is s metres, where $s = 2t^3 + 5t^2 - 4t$.
Find its velocity when $t = 1$.

10 The diagram shows the graph of $y = a \sin bx$ for $0° \leq x \leq 360°$, where a and b are positive integers.
Find a and b.

