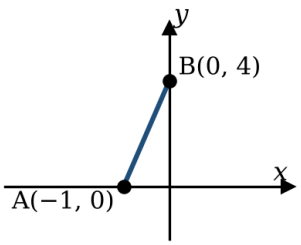
Day 208 **A Level Maths: C Tier 10-a-day**

1 The diagram shows a line meeting the axes at A and B.
Find (a) the equation of AB in the form px + qy = r with integers p, q and r, (b) the length AB.



2 For 10 values, $\Sigma x = 390$ and $\Sigma x^2 = 15240$.
Find the mean and the standard deviation.

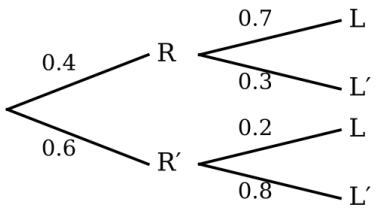
3 θ is acute and $\cos\theta = \frac{24}{25}$.
Find the exact values of $\sin\theta$ and $\tan\theta$.

4 Two cyclists start at the same time from points P and Q, 35 m apart, and cycle directly towards each other at constant speeds of 3 m s^{-1} and 2 m s^{-1}. Find the time until they meet.

5 Find the equation of the tangent to the curve $y = 2\sqrt{x} - x$ at the point where $x = 1$.

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6 The tree diagram shows probabilities for events R and L.
Find the probability that exactly one of R and L happens.



7 θ is small and measured in radians.
Use the small angle approximations to find an approximation for $\sin 4\theta \tan \theta$.

8 Expand $(1 - 2x)^{\frac{1}{3}}$ 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 A lorry travelling at 20 m s^{-1} brakes uniformly and comes to rest after travelling 100 m.
(a) Find the deceleration.
(b) Find the time taken to stop.

10 The line $y = -4x + k$ is a tangent to the curve $y = x^2 - 6x - 4$.
Find the value of k.