QCE Mathematical Methods Formula Book

Original worked revision examples with notes on units and assumptions.

Use the board PDF below for the official sheet. Coverage of examples varies by subject.

Official reference material

QCAA Mathematical Methods formula book

What to work out beyond the sheet

Translate wording such as at least or exactly into events before calculating. A single binomial term handles exactly one count.

Formulas and worked examples

Calculus · derivative of a product

Formula or reference: $(uv)' = u'v + uv'$

Units and conditions: Both factors are differentiable functions of the same variable.

Worked example: If $y = xe^x$, then $y' = e^x + xe^x$, so the gradient at $x = 0$ is 1.

Probability · binomial distribution

Formula or reference: $P(X = k) = C(n,k)p^k(1 - p)^{n-k}$

Units and conditions: Use independent trials with a common success probability.

Worked example: Exactly two successes in four trials at $p = 0.25$ has probability $6 \times 0.25^2 \times 0.75^2 \approx 0.211$.