Binomial, Poisson, and Normal Probabilities

Measure	Formula	Excel Formula
Binomial Probability $X \sim \text{Bin}(n, p)$	$P(X = k) = nCk \times p^k \times (1 - p)^{n-k}$	=BINOM.DIST(k, n, p, 1) → cumulative =BINOM.DIST(k, n, p, 0) → exact
Poisson Probability $X \sim \text{Pois}(\mu)$	$P(X = k) = \dfrac{e^{-\mu} \mu^k}{k!}$	=POISSON.DIST(k, μ, 1) → cumulative =POISSON.DIST(k, μ, 0) → exact
Standard Normal $X \sim N(0, 1)$	$z = \dfrac{x - \mu}{\sigma}$	=NORM.S.DIST(z, 1) =NORM.S.INV(probability) → Reverse Lookup
Normal $X \sim N(\mu, \sigma^2)$	$x = z * \sigma + \mu$	=NORM.DIST(x, mean, standard deviation, 1) =NORM.INV(probability, mean, standard deviation) → Reverse Lookup