QUICK REFERENCE SHEET

Probability and Counting Methods Cheat Sheet

A fuller cheat sheet for combinations, permutations, and binomial-style reasoning, built around order, constraints, and event definition.

QUICK OVERVIEW

Category: statistics data

Includes 2 related guide pages.

Links back to 3 calculator tools.

FORMULA HIGHLIGHTS

Combinations

nCr = n! / (r!(n - r)!)

Binomial probability

P(X = k) = nCk x p^k x (1 - p)^(n - k)

CHOOSE THE MODEL

- Order matters -> permutations
- Order does not matter -> combinations
- Repeated yes/no trials with fixed probability -> binomial thinking

FORMULA HIGHLIGHTS

- nPr = n! / (n - r)!
- nCr = n! / (r!(n - r)!)
- Binomial probabilities require clear event definition and model assumptions

WORKED EXAMPLES

Committee selection uses combinations.

Role assignment uses permutations.

At least one success is often easiest through the complement event.

QUICK CHECKS

- State what counts as success before calculating.
- Check whether the trials are independent enough for a binomial model.
- Remember that large factorial-based answers are normal.