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Problem Solving Methods: Permutations and Combinations

Video companion

1 Introduction

Topic: Probability of events occurring in an order or the probability of a group of events occurring

$\frac{n!}{(n-m)!}$

Definitions

permutation—order matters, e.g. placing five people in five different positions: 120 ways

combination—order does not matter, e.g. forming a five-person team from five people: 1 way

$\frac{n!}{(n-m)!\,m!} = \binom{n}{m}$

2 Replacement

Sampling *with replacement* (independent), e.g. drawing a card and putting it back in the deck

Sampling *without replacement*, e.g. drawing a card from a deck and not putting it back

With the options permutation, combination, with replacement, and without replacement, we have most of the probability situations that are likely to arise in a basic probability course.