

A Solution with a Problem

You wish to count the number of 5-card hands with at least 3 aces.

There are 4 Aces (and 48 non aces)

$$\binom{4}{3} \cdot \binom{49}{2}$$

Choose the three aces. Then of the 49 remaining cards (the last ace is allowed as well, because we're allowed to have all 4)

What's wrong with this calculation?

What's the right answer?

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Another Problem

You have to choose 8 pieces of fruit. There are apples, oranges, and bananas.

You need to pick at most 2 apples and at least 1 banana. How many sets of fruit can you choose?

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Last Time

Sample Space

A sample space Ω is the set of all possible outcomes of an experiment.

Event

An event $E \subseteq \Omega$ is a subset of possible outcomes (i.e. a subset of Ω)

Probability

A probability is a number between 0 and 1 describing how likely a particular outcome is.

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More Examples!

Suppose you roll two dice. Each die is fair and they don't affect each other. What is the probability of both dice being even?

What is your sample space?

What is your probability measure \mathbb{P} ?

What is your event?

What is the probability?

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