

Introduction to Probability

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Preface

This book is an open text.

Chapter 1

Fundamentals of Probability and Its Axioms

1.1 Combinations and Permutations

Counting plays a very important role in probability. In probability, we often deal with sets, and counting methods such as combinations and permutations help us find the number of elements in a set. Specifically, in probability, we deal with a set called the **sample space** which is the set of all possible outcomes of some random experiment and **events**, which are subsets of the sample space. Typically, the sample space is denoted by S or Ω . Consider the following example:

Example 1.1. Suppose a fair coin is flipped twice. What is the probability of flipping at least one head?

Chapter 2

Basic Probability