Probability for Equally Likely Outcomes

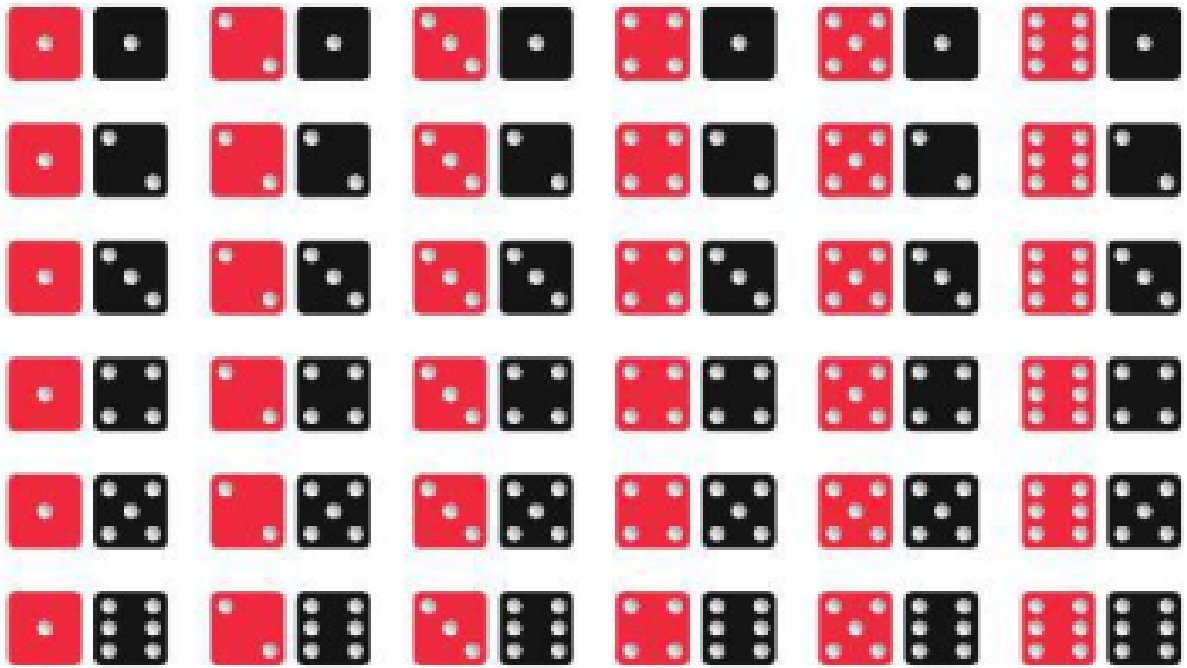
Suppose an experiment has N possible outcomes, all equally likely. An event that can occur in f ways has probability f/N of occurring:

$$\text{Probability of event} = \frac{f}{N}$$

Note: your textbook refers to this as the "equal-likelihood model".

Example: Dice

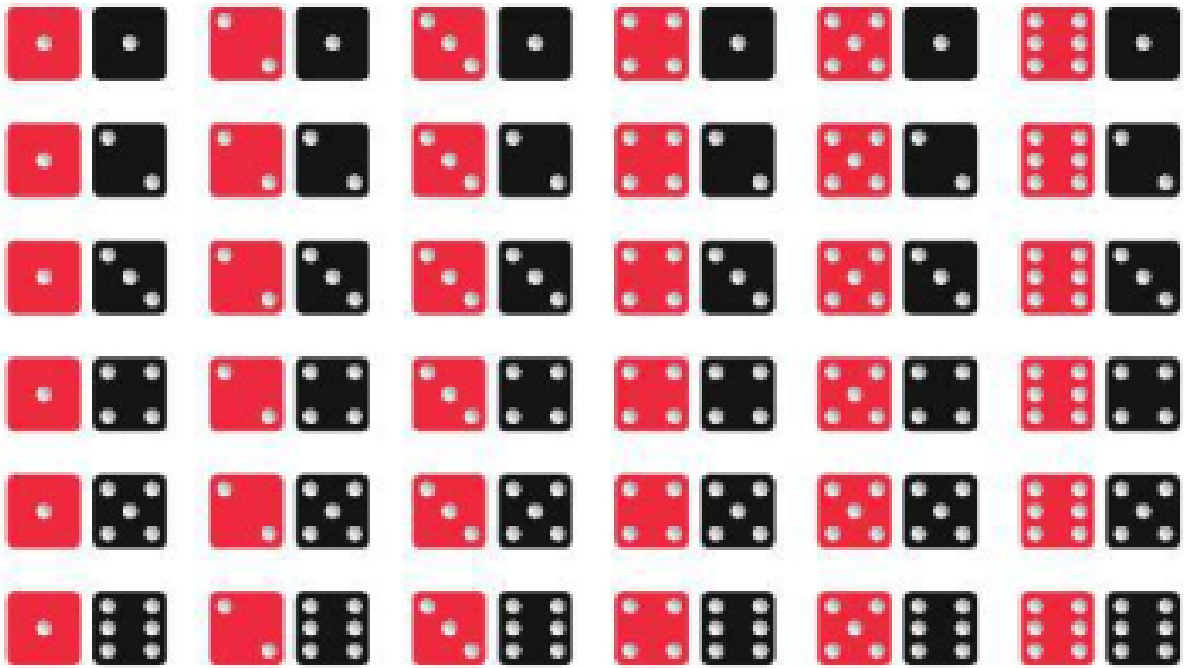
Imagine we will roll two six-sided dice. There are 36 possible outcomes:



What is the probability the sum of the dice is 11?

Example: Dice

Imagine we will roll two six-sided dice.



What is the probability we roll doubles?

Interpretation

We interpret probability as the proportion of time an event occurs in a large number of experimental repetitions*.

A **probability model** is a mathematical description of an experiment based on certain primary aspects and assumptions.

*Your textbook refers to this as the "frequentist interpretation of probability".

Basic Properties of Probabilities

1. The probability of an event is always between 0 and 1.
2. The probability of an event that cannot occur is 0.
   - This is called an **impossible event**.
3. The probability of an event that must occur is 1.
   - This is called a **certain event**.