Study Guide and Intervention

6SDAP3.3

Simple Events

The **probability** of a simple event is a ratio that compares the number of favorable outcomes to the number of possible outcomes. Outcomes occur at **random** if each outcome occurs by chance.

Two events that are the only ones that can possibly happen are **complementary events**. The sum of the probabilities of complementary events is 1.

Example 1 **What is the probability of rolling a multiple of 3 on a number cube marked with 1, 2, 3, 4, 5, and 6 on its faces.**

$P(\text{multiple of 3}) = \dfrac{\text{multiples of 3 possible}}{\text{total numbers possible}}$

$\qquad\qquad = \dfrac{2}{6}$ Two numbers are multiples of 3: 3 and 6.

$\qquad\qquad = \dfrac{1}{3}$ Simplify.

The probability of rolling a multiple of 3 is $\dfrac{1}{3}$ or about 33.3%.

Example 2 **What is the probability of *not* rolling a multiple of 3 on a number cube marked with 1, 2, 3, 4, 5, and 6 on its faces?**

$P(A) + P(\text{not }A) = 1$

$\dfrac{1}{3} + P(\text{not }A) = 1$ Substitute $\dfrac{1}{3}$ for $P(A)$.

$\underline{-\dfrac{1}{3}\qquad\qquad -\dfrac{1}{3}}$ Subtract $\dfrac{1}{3}$ from each side

$\qquad\quad P(\text{not }A) = \dfrac{2}{3}$ Simplify.

The probability of *not* rolling a multiple of 3 is $\dfrac{2}{3}$ or about 66.7%.

Exercises

A set of 30 cards is numbered 1, 2, 3, …, 30. Suppose you pick a card at random without looking. Find the probability of each event. Write as a fraction in simplest form.

1. $P(12)$

2. $P(2 \text{ or } 3)$

3. $P(\text{odd number})$

4. $P(\text{a multiple of 5})$

5. $P(\text{not a multiple of 5})$

6. $P(\text{less than or equal to 10})$