

2-6

Study Guide**Probability: Simple Probability**

Probability The probability of a **simple event** is a ratio that tells how likely it is that the event will take place. It is the ratio of the number of favorable outcomes of the event to the number of possible outcomes of the event. You can express the probability either as a fraction, as a decimal, or as a percent.

Probability of a Simple EventFor an event a , $P(a) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$ **Example 1**

Mr. Babcock chooses 5 out of 25 students in his algebra class at random for a special project. What is the probability of being chosen?

$$P(\text{being chosen}) = \frac{\text{number of students chosen}}{\text{total number of students}}$$

The probability of being chosen is $\frac{5}{25}$ or $\frac{1}{5}$.

Example 2

A bowl contains 3 pears, 4 bananas, and 2 apples. If you take a piece of fruit at random, what is the probability that it is *not* a banana?

There are $3 + 4 + 2$ or 9 pieces of fruit.

There are $3 + 2$ or 5 pieces of fruit that are not bananas.

$$P(\text{not banana}) = \frac{\text{number of other pieces of fruit}}{\text{total number of pieces of fruit}} = \frac{5}{9}$$

The probability of *not* choosing a banana is $\frac{5}{9}$.

Exercises

*ALL WORK
ON
LOOSELEAF

A card is selected at random from a standard deck of 52 cards. Determine each probability.

1. $P(10)$

2. $P(\text{red } 2)$

3. $P(\text{king or queen})$

4. $P(\text{black card})$

5. $P(\text{ace of spades})$

6. $P(\text{spade})$

Two dice are rolled and their sum is recorded. Find each probability.

7. $P(\text{sum is } 1)$

8. $P(\text{sum is } 6)$

9. $P(\text{sum is less than } 4)$

10. $P(\text{sum is greater than } 11)$

11. $P(\text{sum is less than } 15)$

12. $P(\text{sum is greater than } 8)$

A bowl contains 4 red chips, 3 blue chips, and 8 green chips. You choose one chip at random. Find each probability.

13. $P(\text{not a red chip})$

14. $P(\text{red or blue chip})$

15. $P(\text{not a green chip})$

A number is selected at random from the list $\{1, 2, 3, \dots, 10\}$. Find each probability.

16. $P(\text{even number})$

17. $P(\text{multiple of } 3)$

18. $P(\text{less than } 4)$

19. A computer randomly chooses a letter from the word *COMPUTER*. Find the probability that the letter is a vowel.