

## Section 7.7 Probability

**Objective:** In this lesson you learned how to find the probability of events and their complements.

Course Number

Instructor

Date

### Important Vocabulary

Define each term or concept.

**Independent events**

**Complement of an event**

### I. The Probability of an Event (Pages 552–555)

An happening whose result is uncertain is called a(n) \_\_\_\_\_ . The possible results of the experiment are \_\_\_\_\_ , the set of all possible outcomes of the experiment is the \_\_\_\_\_ of the experiment, and any subcollection of a sample space is a(n) \_\_\_\_\_ .

The measure of the likelihood that an event will occur based on chance is called the \_\_\_\_\_ of an event. If an event  $E$  has  $n(E)$  equally likely outcomes and its sample space  $S$  has  $n(S)$  equally likely outcomes, the probability of event  $E$  is \_\_\_\_\_ .

The probability of an event must be between \_\_\_\_\_ and \_\_\_\_\_ .

If  $P(E) = 0$ , the event  $E$  \_\_\_\_\_ occur, and  $E$  is called a(n) \_\_\_\_\_ event. If  $P(E) = 1$ , the event  $E$  \_\_\_\_\_ occur, and  $E$  is called a(n) \_\_\_\_\_ event.

**Example 1:** A box contains 3 red marbles, 5 black marbles, and 2 yellow marbles. If a marble is selected at random from the box, what is the probability that it is yellow?

***What you should learn***  
How to find the probability of an event

**II. Mutually Exclusive Events** (Pages 556–557)

Two events  $A$  and  $B$  (from the same sample space) are \_\_\_\_\_ if  $A$  and  $B$  have no outcomes in common.

If  $A$  and  $B$  are events in the same sample space, the probability of  $A$  or  $B$  occurring is given by  $P(A \cup B) =$  \_\_\_\_\_.

To find the probability that one or the other of two mutually exclusive events will occur, . . .

**Example 2:** A box contains 3 red marbles, 5 black marbles, and 2 yellow marbles. If a marble is selected at random from the box, what is the probability that it is either red or black?

***What you should learn***  
How to find the probabilities of mutually exclusive events

**III. Independent Events** (Page 558)

If  $A$  and  $B$  are independent events, the probability that both  $A$  and  $B$  will occur is  $P(A \text{ and } B) =$  \_\_\_\_\_.

That is, to find the probability that two independent events will occur, . . .

**Example 3:** A box contains 3 red marbles, 5 black marbles, and 2 yellow marbles. If two marbles are randomly selected with replacement, what is the probability that both marbles are yellow?

***What you should learn***  
How to find the probabilities of independent events

**IV. The Complement of an Event** (Page 559)

Let  $A$  be an event and let  $A'$  be its complement. If the probability of  $A$  is  $P(A)$ , the probability of the complement is  $P(A') =$  \_\_\_\_\_.

***What you should learn***  
How to find the probability of the complement of an event

**Homework Assignment**

Page(s)

Exercises