NAME _____ DATE _____ PERIOD _____

12-2 Study Guide and Intervention

6SDAP3.I

Probability of Compound Events

The probability of two independent events can be found by multiplying the probability of the first event by the probability of the second event.

Example 1 **Two number cubes, one red and one blue, are rolled. What is the probability that the outcome of the red number cube is even and the outcome of the blue number cube is a 5?**

P(red number cube is even) $= \frac{1}{2}$

P(blue number cube is a 5) $= \frac{1}{6}$

P(red number cube is even and blue number cube is a 5) $= \frac{1}{2} \cdot \frac{1}{6}$ or $\frac{1}{12}$

The probability that the two events will occur is $\frac{1}{12}$.

If two events, *A* and *B*, are dependent, then the probability of both events occurring is the product of the probability of *A* and the probability of *B* after *A* occurs.

Example 2 **There are 6 black socks and 4 white socks in a drawer. If one sock is taken out without looking and then a second is taken out, what is the probability that they both will be black?**

P(first sock is black) $= \frac{6}{10}$ or $\frac{3}{5}$ — 6 is the number of black socks; 10 is the total number of socks.

P(second sock is black) $= \frac{5}{9}$ — 5 is the number of black socks after one black sock is removed; 9 is the total number of socks after one black sock is removed.

P(two black socks) $= \frac{3}{5} \cdot \frac{5}{9}$ or $\frac{1}{3}$

The probability of choosing two black socks is $\frac{1}{3}$.

Exercises

A card is drawn from a deck of 10 cards numbered 1 through 10 and a number cube is rolled. Find each probability.

1. P(10 and 3)

2. P(two even numbers)

3. P(two prime numbers)

4. P(9 and an odd number)

5. P(two numbers less than 4)

6. P(two numbers greater than 5)

There are 4 red, 6 green, and 5 yellow pencils in a jar. Once a pencil is selected, it is not replaced. Find each probability.

7. P(red and then yellow)

8. P(two green)

9. P(green and then yellow)

10. P(red and then green)