13-5

Name _____ Date _____

# Probability of Independent Events

(pages 536–539)

In some board games, you get to repeat your turn if you roll doubles. What is the probability of rolling two 3s? You know that the probability of rolling any given number on one number cube is $\frac{1}{6}$. Since the number that comes up on one number cube does not affect the number that comes up on the second number cube, they are called **independent events**.

| **Probability of Two Independent Events** | The probability of two independent events, A and B, is the product of the probability of event A and the probability of event B.<br>$P(\text{A and B}) = P(\text{A}) \cdot P(\text{B})$ |
|---|---|

## EXAMPLES

**A** What is the probability of rolling two 3s in a board game?

$$P(3) = \frac{1}{6}$$

$$P(\text{double 3s}) = P(3) \cdot P(3)$$

$$= \frac{1}{6} \cdot \frac{1}{6}$$

$$= \frac{1}{36} \qquad \textit{Multiply.}$$

*The probability of rolling double 3s is $\frac{1}{36}$.*

**B** What is the probability of tossing a coin two times and getting heads both times?

$$P(\text{tossing heads once}) = \frac{1}{2}$$

$$P(\text{tossing heads twice}) = \frac{1}{2} \cdot \frac{1}{2}$$

$$= \frac{1}{4} \qquad \textit{Multiply.}$$

*The probability of tossing a coin two times and getting heads both times is $\frac{1}{4}$.*

### Try These Together

**1.** You have two bags. Each contains a yellow, blue, green, and red marble. What is the probability of choosing a blue marble from each bag?
*Hint: Find the probability of each event. Then multiply.*

**2.** With the same bags as Exercise 1, what is the probability of choosing either a yellow or green out of each bag?
*Hint: Find the probability of each event. Then multiply.*

## PRACTICE

***One of 4 different colored balls is chosen from a bag and a number cube is rolled. Find the probability of each event.***

**3.** $P(\text{red and 2})$

**4.** $P(\text{green and 1 or 2})$

**5.** **Standardized Test Practice** Danika and Chantal each have identical boxes of crayons that contain eight different crayons each. What is the probability that they will both pick red when they each pull a crayon out of their boxes?

**A** $\frac{1}{64}$ **B** $\frac{1}{16}$ **C** $\frac{1}{6}$ **D** $\frac{1}{24}$

**Answers:** 1. $\frac{1}{16}$ 2. $\frac{1}{4}$ 3. $\frac{1}{24}$ 4. $\frac{1}{12}$ 5. A