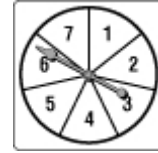


**Lesson 12-2**

**Example 1 Probability of Independent Events**  
**The two spinners are spun. What is the probability that both spinners will show an odd number?**



$$P(\text{first spinner is odd}) = \frac{1}{2}$$

$$P(\text{second spinner is odd}) = \frac{4}{7}$$

$$P(\text{both spinners are odd}) = \frac{1}{2} \cdot \frac{4}{7} \text{ or } \frac{2}{7}$$

**Example 2 STANDARDIZED TEST PRACTICE**  
**EXAMPLE**

Use the information in the table at the right. What is the probability that a student picked at random will be an eighth grade girl?

- A  $\frac{1}{10}$       B  $\frac{3}{10}$       C  $\frac{1}{3}$       D  $\frac{2}{5}$

Jefferson Middle School	
Group	Fraction of the Population
6th grade	$\frac{2}{9}$
7th grade	$\frac{4}{9}$
8th grade	$\frac{1}{3}$
boys	$\frac{7}{10}$
girls	$\frac{3}{10}$

**Read the Test Item**

You are asked to find the probability that a student picked at random will be an eighth grader and a girl. The events are independent because the grade of the student does not determine the gender.

**Solve the Test Item**

First, find the probability of each event.

$$P(\text{8th grade}) = \frac{1}{3}$$

$$P(\text{girl}) = \frac{3}{10}$$

Then, find the probability of both events occurring.

$$P(\text{8th grade and girl}) = \frac{1}{3} \cdot \frac{3}{10} \text{ or } \frac{1}{10}$$

The probability that the two events will occur is  $\frac{1}{10}$ , which is A.

**Example 3 Probability of Dependent Events**

**There are 3 red, 6 blue, and 11 green marbles in a bag. Once a marble is selected, it is not replaced. Find the probability that 2 red marbles are chosen.**

Since the first marble is not replaced, the first event affects the second event. These are dependent events.

$$P(\text{first marble is red}) = \frac{3}{20} \quad \begin{array}{l} \leftarrow \text{number of red marbles} \\ \leftarrow \text{total number of marbles} \end{array}$$

$$P(\text{second marble is red}) = \frac{2}{19} \quad \begin{array}{l} \leftarrow \text{number of red marbles after one red marble is removed} \\ \leftarrow \text{total number of marbles after one red marble is removed} \end{array}$$

$$P(\text{two red marbles}) = \frac{3}{20} \cdot \frac{2}{19} \text{ or } \frac{3}{190}$$

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