

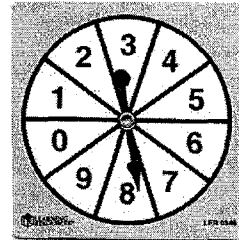
AIM: How do you find the probability of independent events?

A **compound event** consists of 2 or more separate events.

Independent events are when one event does not affect the other.

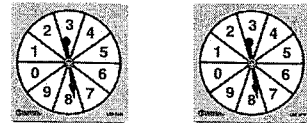
Example 1:

An experiment consists of spinning the spinner two times. What is the probability of spinning an 8 two times?



Notation: P (8, 8)

- Step 1:** Determine if the event is independent or dependent.
- Step 2:** How many events are taking place?
- Step 3:** Find the probability of each event.
- Step 4:** Multiply the probabilities.



Independent
 2 events
 $\frac{1}{10} \cdot \frac{1}{10} = \frac{1}{100}$

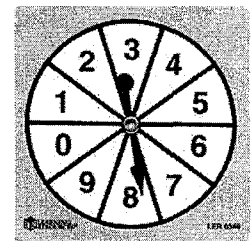
★ ****IMPORTANT:** In probability the word "and" means to multiply. **

Try It!

Find the probability of spinning a 2 followed by an odd number.

P (2, odd number) =

$$\frac{1}{10} \cdot \frac{5}{10} = \frac{5}{100}$$

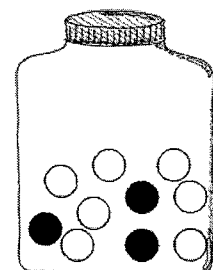


Example 2:

A jar contains 7 white marbles and 3 black marbles. You draw a marble at random, replace it, and then draw another marble.

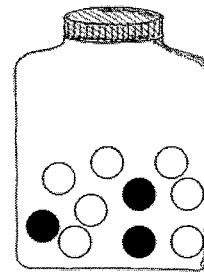
Find the probability that both marbles are black.

$$P(\text{black and black}) = \frac{3}{10} \cdot \frac{3}{10} = \frac{9}{100}$$



Try It!

A jar contains 7 white marbles and 3 black marbles. You draw a marble at random, replace it, and then draw another marble. Find the probability that both marbles are white.



$$P(\text{white, white}) = \frac{7}{10} \cdot \frac{7}{10} = \frac{49}{100}$$

Example 3:

A jar contains 2 yellow marbles, 3 red marbles and 5 blue marbles. You draw a marble at random and replace it, and then draw another marble.

$$P(\text{yellow, blue}) = \frac{2}{10} \cdot \frac{5}{10} = \frac{10}{100}$$

Try It!

A jar contains 2 yellow marbles, 3 red marbles and 5 blue marbles. You draw a marble at random and replace it, and then draw another marble.

$$P(\text{blue, red}) = \frac{5}{10} \cdot \frac{3}{10} = \frac{15}{100}$$

On Your Own!

- 1.) A bag contains 2 A's, 3 B's and 1 C. You choose a letter from the bag at random, replace it, and then choose a second letter. Find the probability of getting two B's.

$$P(B, B) = \frac{3}{6} \cdot \frac{3}{6} = \frac{9}{36}$$

- 2.) If you toss a coin and then roll a die, what is the probability of landing on heads and rolling an even number?

$$P(\text{heads, even}) = \frac{1}{2} \cdot \frac{3}{6} = \frac{3}{12}$$