LESSON 30

Probability of Independent Events

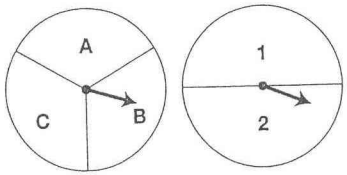
Review It! When you find the probability of independent events, remember these words:

independent events one event does not affect the other event

probability a ratio that measures the chance that an event will happen

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

Each spinner is divided into equal parts. Find the probability of spinning each spinner once and getting an A and a 1.



Step 1 Find the probability of spinning the first spinner and getting an A.

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

$$P(\text{A}) = \frac{\text{number of parts with A}}{\text{total number of parts}} = \frac{\square}{\square}$$

THINK The probability can be written $\frac{1}{2}$, 0.5, or 50%.

Step 2 Find the probability of spinning the second spinner and getting a 1.

$$P(1) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}} = \frac{\text{number of sections with a 1}}{\text{total number of sections}} = \frac{\square}{\square}$$

Step 3 Multiply the probabilities.

$$P(\text{A}) \times P(1) = \frac{1}{3} \times \frac{1}{2} = \frac{\square}{\square}$$

REMEMBER Multiply numerators. Multiply denominators.

So, the probability of spinning each spinner once and getting an A and a 1 is _____.

Try It! Use the deck of cards below for questions 1–6.

Ask Yourself

1	2	3	4	5	6	7	8	9	10	11	12

A card is drawn from the deck without looking. Find the probability of each event.

1. drawing a 4 _____

2. drawing a 1 or a 9 _____

3. drawing a number less than 5 _____

4. drawing a 2 or an 8 _____

5. drawing a number greater than 9 _____

6. drawing an even number _____

1. How many possible outcomes are there? 4, or 12?

2. How many cards show a 1 or a 9? 1, or 2?

Solve.

7. Jon tosses a penny twice. What is the probability that he will get heads both times?

_____

7. How many possible outcomes are there? 2, or 4?

8. A bag contains 8 red, 4 green, and 2 yellow marbles. A marble is drawn without looking and returned to the bag. Then a second marble is drawn without looking. What is the probability that both marbles are red?

_____

On Your Own!

Circle the best answer for each question.

Use the following information to answer questions 1–3.

Tony has 6 blue cubes, 3 green cubes, and 1 white cube in a bag.

1. Tony draws a cube without looking from the bag. What is the probability that the cube is white?

   A. $\frac{1}{10}$ C. $\frac{1}{3}$

   B. $\frac{1}{9}$ D. $\frac{1}{2}$

2. Tony draws a cube without looking from the bag. What is the probability that the cube is green or white?

   A. $\frac{1}{3}$ C. $\frac{2}{3}$

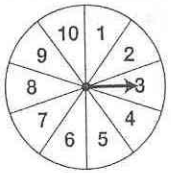
   B. $\frac{2}{5}$ D. $\frac{3}{4}$

3. Tony draws a cube without looking and returns it to the bag. Then he draws a second cube without looking. What is the probability that both cubes are white?

   A. $\frac{1}{2}$ C. $\frac{1}{5}$

   B. $\frac{1}{4}$ D. $\frac{1}{100}$

The spinner below is divided into 10 equal parts. Use the spinner to answer questions 4–6.



4. What is the probability of spinning the spinner once and getting a number less than 8?

   A. $\frac{3}{10}$ C. $\frac{7}{10}$

   B. $\frac{1}{2}$ D. $\frac{4}{5}$

5. What is the probability of spinning the spinner twice and getting a 5 both times?

   A. $\frac{1}{1{,}000}$ C. $\frac{1}{10}$

   B. $\frac{1}{100}$ D. $\frac{1}{5}$

6. What is the probability of spinning the spinner twice and getting an even number on the first spin and a number greater than 9 on the second spin?

   A. $\frac{1}{100}$ C. $\frac{1}{10}$

   B. $\frac{1}{20}$ D. $\frac{1}{2}$

7. Florence rolls a number cube with faces marked 1-6 twice. What is the probability that she will get an even number the first time and a number less than 3 the second time?

8. Jim tosses a coin three times. What is the probability that Jim will get heads on the first toss and tails on the second and third tosses?

Math Words

Fill in the blanks.

9. Tossing a coin and rolling a number cube are _____

   _____ because the outcome of the first event does not affect the outcome of the second event.

10. A ratio that measures the chance that an event will happen is called a

    _____.