

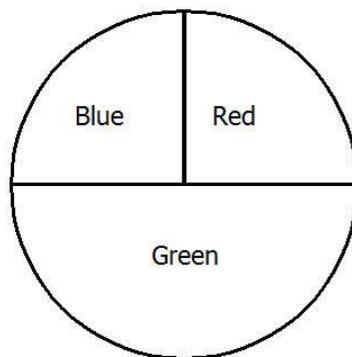
Lesson 1: Chance Experiments

Classwork

Have you ever heard a weatherman say there is a 40% chance of rain tomorrow or a football referee tell a team there is a 50/50 chance of getting a head on a coin toss to determine which team starts the game? These are probability statements. In this lesson, you are going to investigate probability and how likely it is that some events will occur.

Example 1: Spinner Game

Suppose you and your friend will play a game using the spinner shown here:



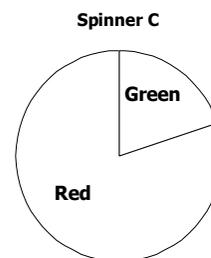
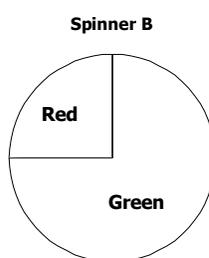
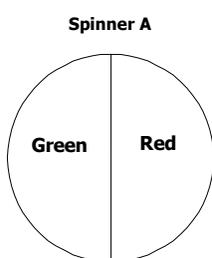
Rules of the game:

1. Decide who will go first.
2. Each person picks a color. Both players cannot pick the same color.
3. Each person takes a turn spinning the spinner and recording what color the spinner stops on. The winner is the person whose color is the first to happen 10 times.

Play the game and remember to record the color the spinner stops on for each spin.

Exercises 1–4

1. Which color was the first to occur 10 times?
 2. Do you think it makes a difference who goes first to pick a color?
 3. Which color would you pick to give you the best chance of winning the game? Why would you pick that color?
4. Below are three different spinners. If you pick green for your color, which spinner would give you the best chance to win? Give a reason for your answer.

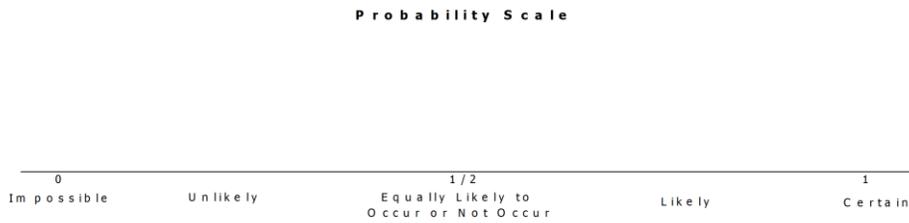


Example 2: What is Probability?

Probability is about how likely it is that an event will happen. A probability is indicated by a number between 0 and 1. Some events are certain to happen, while others are impossible. In most cases, the probability of an event happening is

Lesson Summary

- **Probability** is a measure of how likely it is that an event will happen.
- A probability is a number between 0 and 1.
- The probability scale is:



6. Design a spinner so that the probability of green is 1.
7. Design a spinner so that the probability of green is 0.
8. Design a spinner with two outcomes in which it is equally likely to land on the red and green parts.

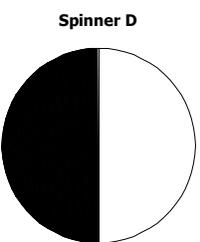
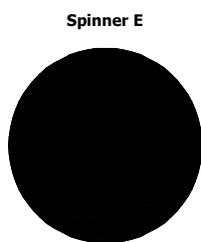
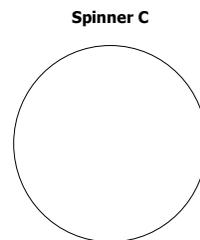
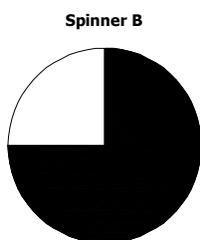
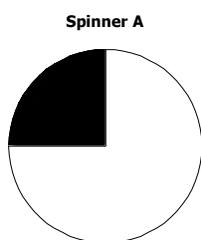
Exercises 9–10

An event that is impossible has probability 0 and will never occur, no matter how many observations you make. This means that in a long sequence of observations, it will occur 0% of the time. An event that is certain, has probability 1 and will always occur. This means that in a long sequence of observations, it will occur 100% of the time.

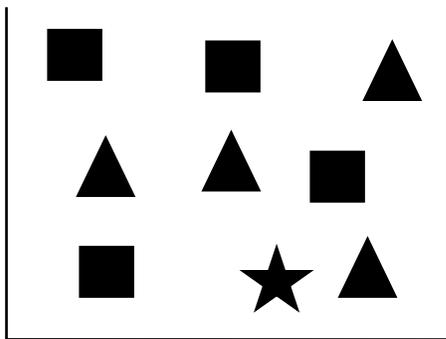
9. What do you think it means for an event to have a probability of $\frac{1}{2}$?
10. What do you think it means for an event to have a probability of $\frac{1}{4}$?

Problem Set

1. Match each spinner below with the words Impossible, Unlikely, Equally likely to occur or not occur, Likely and Certain to describe the chance of the spinner landing on black.



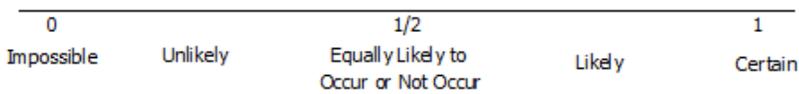
2. Decide if each of the following events is Impossible, Unlikely, Equally likely to occur or not occur, Likely, or Certain to occur.
 - a. A vowel will be picked when a letter is randomly selected from the word “lieu.”
 - b. A vowel will be picked when a letter is randomly selected from the word “math.”
 - c. A blue cube will be drawn from a bag containing only five blue and five black cubes.
 - d. A red cube will be drawn from a bag of 100 red cubes.
 - e. A red cube will be drawn from a bag of 10 red and 90 blue cubes.
3. A shape will be randomly drawn from the box shown below. Decide where each event would be located on the probability scale. Then, place the letter for each event on the appropriate place on the probability scale.



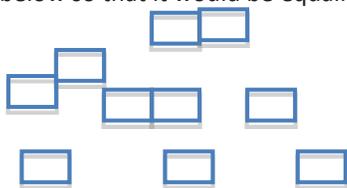
Probability Scale

Event:

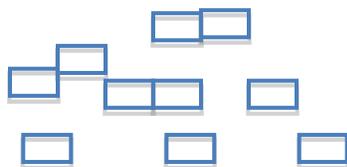
- A. A circle is drawn.
- B. A square is drawn.
- C. A star is drawn.
- D. A shape that is not a square is drawn.



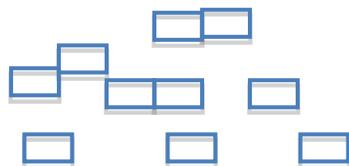
4. Color the cubes below so that it would be equally likely to choose a blue or yellow cube.



5. Color the cubes below so that it would be likely but not certain to choose a blue cube from the bag.



6. Color the cubes below so that it would be unlikely but not impossible to choose a blue cube from the bag.



7. Color the cubes below so that it would be impossible to choose a blue cube from the bag.

