

Objectives

- Determine the fraction of a set
- Determine probability using a spinner

Teacher Materials

- Shapes Kit: 9 green squares
- Fraction of a Set transparency, page IA20 (CD)
- Spinner transparency, page IA21 (CD)
- Multiplication flashcards: 7 as a factor, and previously reviewed division facts

Student Materials

- Shapes Kit: 9 green squares
- Fraction of a Set, page IA20 (CD)
- Number Cards: 0–9

Note

At the end of this lesson, you may want to conduct a probability activity using the spinner at the top of the Spinner transparency. If so, place a paper clip on the spinner so that one end of the paper clip is in the center of the spinner. In order to spin the paper clip, place a pencil point inside the end of the paper clip so that the pencil point is touching the center of the spinner, holding the paper clip in place.

Practice and Review

Word form of a number

Guide the students in writing these numbers in word form. Remind them to use a hyphen when needed (e.g., forty-three) and to write a comma to separate periods.

3,472 15,435 67,243,108 965,510

Multiplication facts: 7 as a factor

Introduce the Lesson

Probability is defined as the likelihood that an event will occur. Many events occur in our lives for which we cannot be certain of the outcome. God’s Word tells of events that are certain. For example, after His Resurrection, Jesus told the disciples that He was going to prepare a place in heaven for the believers. [BAT: 8a Faith in God’s promises]

Teach for Understanding

Determine the fraction of a set

- Write $\frac{1}{2}$ of 8 = ___ for display. Distribute the green squares and direct each student to make a set of 8 squares. Demonstrate each step.
 - **How would you find $\frac{1}{2}$ of 8? Elicit by making 2 equal parts.**
- Direct the students to find $\frac{1}{2}$ of 8, using the squares.
 - **How many equal parts did you divide the set of 8 into? Why? 2; when you divide a set in half, you make 2 equal parts.**
 - **How do the 2 equal parts compare to the set of 8 that you started with? They are smaller or have fewer squares.** Explain that these smaller equal parts are also called sets.
 - **What does the fraction $\frac{1}{2}$ tell you to do? Select 1 of the 2 parts or sets.**

- **How many squares are in 1 of the 2 sets? 4**
 - **What is $\frac{1}{2}$ of 8? 4** Complete the number sentence.
 - **What did you do to find $\frac{1}{2}$ of 8 squares? divided the 8 squares into 2 equal parts, or sets, and selected the squares in 1 of the sets**
 - **How did the number sentence help you know what to do? Elicit that you began with 8 squares. The denominator of the fraction tells you to divide the squares into 2 equal sets, and the numerator tells you to select 1 of the sets to find what $\frac{1}{2}$ of 8 equals.**
- Direct each student to make a set of 9 squares. Write $\frac{1}{3}$ of 9 = ___ for display.
 - **How many equal sets should you divide 9 squares into? Why? 3; the denominator 3 tells you to divide the whole set into 3 equal parts or thirds.**
- Instruct the students to separate the whole set of 9 squares into 3 equal sets. Demonstrate.
 - **What does the fraction $\frac{1}{3}$ tell you to do? Select 1 of the 3 sets.**
 - **How many squares are in 1 of those 3 sets? 3**
 - **What is $\frac{1}{3}$ of 9? 3** Complete the number sentence.
- Write $\frac{2}{3}$ of 9 = ___. Explain that since you know that $\frac{1}{3}$ of the whole set of 9 squares equals 3 squares, you can also find $\frac{2}{3}$ of the whole set of 9 squares.
 - **How do you think you can find $\frac{2}{3}$ of 9? Elicit that you separate or divide the 9 squares into 3 equal sets and select the squares in 2 of the 3 sets.**
 - **How many squares are in 2 of the 3 sets? 6**
 - **What is $\frac{2}{3}$ of 9? 6** Complete the number sentence.
- Follow a similar procedure for $\frac{1}{2}$ of 6 = 3, $\frac{1}{4}$ of 8 = 2, $\frac{2}{4}$ of 8 = 4, and $\frac{1}{3}$ of 6 = 2.
- Distribute the Fraction of a Set worksheets and direct attention to the number sentences in the first section on the Fraction of a Set transparency.
 - **How many equal parts should you divide the first set into? How do you know? 4; elicit that the denominator 4 tells you to divide the set into fourths.**
- Point out that the set is arranged in 5 vertical rows and 4 horizontal rows.
 - **Which rows make it easier to see fourths? Why? The 4 horizontal rows; elicit that each of the 4 horizontal rows can be circled to show 4 equal sets.** Circle the 4 sets. Direct each student to do the same on his worksheet. Call attention to $\frac{1}{4}$ of 20 = ___.
 - **What is the numerator in $\frac{1}{4}$? 1**
 - **What does the numerator 1 tell you? Select 1 of the 4 equal parts.**
 - **How many circles are in 1 of the 4 sets? 5**
 - **What is $\frac{1}{4}$ of 20? 5**
- Direct the students to write 5 on the answer line as you do the same.
- Repeat the procedure for $\frac{2}{4}$ of 20 = 10 and $\frac{3}{4}$ of 20 = 15.
- Follow a similar procedure for the remaining sections.
 - $\frac{1}{5}$ of 25 = 5 $\frac{2}{5}$ of 25 = 10 $\frac{3}{5}$ of 25 = 15 $\frac{4}{5}$ of 25 = 20
 - $\frac{1}{3}$ of 12 = 4 $\frac{2}{3}$ of 12 = 8

Determine probability

- Display the Spinner transparency. Explain that since the spinner is divided into 8 equal parts, there are 8 equally possible outcomes each time you spin the spinner.
 - **What fraction of the circle is labeled A? $\frac{4}{8}$**
 - **What do you think is the probability or chance that the spinner will land on A? Elicit 4 out of 8 or $\frac{4}{8}$.**

Circle 3 equal sets to find thirds.

count 1 set count 2 sets

$\frac{1}{3}$ of 15 = 5 $\frac{2}{3}$ of 15 = 10

Circle the sets. Write the answer.

1. Circle 4 sets to find fourths.



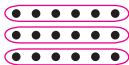
$\frac{1}{4}$ of 16 = 4 $\frac{3}{4}$ of 16 = 12

2. Circle 5 sets to find fifths.



$\frac{1}{5}$ of 20 = 4 $\frac{2}{5}$ of 20 = 8

3. Circle 3 sets to find thirds.



$\frac{1}{3}$ of 18 = 6 $\frac{2}{3}$ of 18 = 12

4. Circle 4 sets to find fourths.



$\frac{1}{4}$ of 12 = 3 $\frac{3}{4}$ of 12 = 9

Mark the answer.

5. What is the probability that the spinner will land on green rather than yellow?

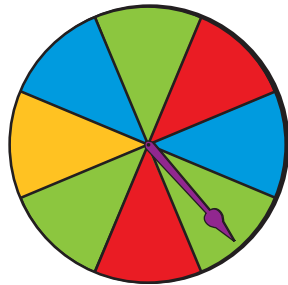
equally likely more likely less likely

6. What is the probability that the spinner will land on blue rather than green?

less likely impossible certain

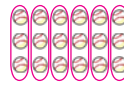
7. What is the probability that the spinner will land on red?

3 out of 8 1 out of 8 2 out of 8



Circle the sets. Write the answer.

1. Circle 6 sets to find sixths.



$\frac{1}{6}$ of 18 = 3 $\frac{2}{6}$ of 18 = 6

2. Circle 5 sets to find fifths.



$\frac{1}{5}$ of 15 = 3 $\frac{3}{5}$ of 15 = 9

3. Circle 8 sets to find eighths.



$\frac{1}{8}$ of 16 = 2 $\frac{5}{8}$ of 16 = 10

4. Circle 3 sets to find thirds.



$\frac{1}{3}$ of 9 = 3 $\frac{2}{3}$ of 9 = 6

Mark the answer.

5. What is the probability that the spinner will land on red rather than blue?

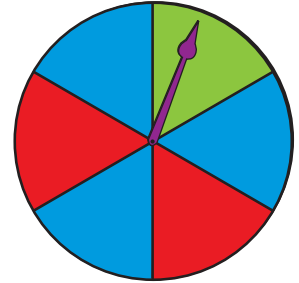
equally likely less likely certain

6. What is the probability that the spinner will land on blue rather than green?

impossible less likely more likely

7. What is the probability that the spinner will land on green?

2 out of 6 1 out of 6 3 out of 6



Write the fraction for the set.

8. What part of the set of caps is red?



9. What part of the set of bats is brown?



Complete **Daily Review** on page 84.

- ▶ What fraction of the circle is labeled B? $\frac{2}{8}$
 - ▶ What is the probability that the spinner will land on B? **2 out of 8 or $\frac{2}{8}$**
 - ▶ What fraction of the circle is labeled C? $\frac{1}{8}$ D? $\frac{1}{8}$
 - ▶ What is the probability that the spinner will land on C? **1 out of 8 or $\frac{1}{8}$ D? 1 out of 8 or $\frac{1}{8}$**
2. Write for display the words *impossible*, *less likely*, *equally likely*, *more likely*, and *certain*. Tell the students that each of these terms can be used to predict outcomes.
 3. Explain that since C and D are each $\frac{1}{8}$ of the spinner, the probability that the spinner will land on C or land on D is *equally likely*, 1 out of 8.
 - ▶ What is the probability that the spinner will land on A rather than B? Why? **More likely; answers will vary, but elicit that the probability or chance of the spinner landing on A is 4 out of 8, which is greater than the 2 out of 8 chance that the spinner will land on B, $\frac{4}{8} > \frac{2}{8}$.**
 - ▶ What is the probability that the spinner will land on C rather than B? Why? **Less likely; answers will vary, but elicit that the probability of the spinner landing on C is only 1 out of 8, which is less than the 2 out of 8 chance that the spinner will land on B, $\frac{1}{8} < \frac{2}{8}$.**
 - ▶ Can you be certain that the spinner will land on A? Why? **No; there are other letters that the spinner can land on.**
 - ▶ What would need to be true in order for you to be certain of the spinner landing on A? **Answers will vary, but elicit that all of the parts would need to be labeled A.**
 - ▶ What is the probability that the spinner will land on E? Why? **Impossible; there is no E.**

4. Guide a discussion about the spinners at the bottom of the transparency; use these or similar questions. Direct students to explain their answers.
 - ▶ On which spinner can you know for certain what you will spin? **4**
 - ▶ On which spinner is it impossible to spin an A? **4**
 - ▶ On which spinner would you be more likely to spin an A rather than a B? **5 B rather than an A? 3**
(Note: Spinner 4 is not an acceptable answer because there are no parts labeled A, so no comparison can be made.)
 - ▶ On which spinner would you be less likely to spin an A rather than a B? **3 B rather than an A? 5**
 - ▶ Which spinners show an equally likely probability of spinning an A or a B? **1, 2, 6**

Worktext pages 71–72, 84 (c)