LESSON OVERVIEW

Lesson 14
Understand What a Fraction Is

Lesson Objectives

Content Objectives

- Understand that a fraction is a whole divided into some number of equal parts.
- Understand and recognize the parts of a fraction.
- Understand that unit fractions are the building blocks of fractions in the same way that 1 is the building block of whole numbers.

Language Objectives

- Write the fraction shown by an area model.
- Shade an area model to represent a given unit fraction.
- Shade area models to represent a variety of fractions.
- Orally define and use the key mathematical terms *denominator, fraction, numerator,* and *unit fraction* when describing reasoning to a partner.

Standards for Mathematical Practice (SMP)

2 Reason abstractly and quantitatively.

3 Construct viable arguments and critique the reasoning of others.

4 Model with mathematics.

6 Attend to precision.

Prerequisite Skills

- Partition circles and rectangles into two, three, or four equal shares.
- Describe parts of circles and rectangles using the words halves, thirds, half of, a third of, etc., including describing the wholes as two halves, etc.

Lesson Vocabulary

- **fraction** a number that names equal parts of a whole; a fraction names a point on the number line.
- **numerator** the number above the fraction bar in a fraction that tells the number of equal parts that are being described
- **denominator** the number below the fraction bar in a fraction that tells the number of equal parts in the whole
- **unit fraction** a fraction with a numerator of 1; other fractions are built from unit fractions.

Learning Progression

In Grade 2 students used fraction language to describe dividing shapes into equal parts. They divided squares, circles, and rectangles into equal parts and named the parts as halves, thirds, and fourths. Through their work with models, students began to understand the concept of dividing a whole into equal parts.

In Grade 3 students develop a more formal understanding of fractions. **In this lesson** students focus on the meaning of fractions and name fractions by the number of equal parts in the whole, such as *sixths* or *eighths*. Students learn about the structure of fractions, identifying the denominator as the number of equal parts in the whole and the numerator as the number of parts being considered. Students identify unit fractions such as $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{8}$ by using models with one part shaded out of a number of equal parts. Students apply their understanding of unit fractions to understanding greater fractions that are built from unit fractions, such as $\frac{2}{3}$, $\frac{3}{4}$, $\frac{4}{6}$, and $\frac{5}{8}$.

This lesson builds a foundation **for subsequent Grade 3 lessons** that develop an understanding of fractions as numbers on a number line and introduce the concepts of equivalent fractions and comparing fractions by reasoning about their size.

In Grade 4 students will use their understanding of fractions and fraction equivalency to work with fractions greater than 1 and add and subtract fractions.

Lesson Pacing Guide

Whole Class Instruction

Day 1
45–60 minutes

Toolbox: Interactive Tutorial*
Understand What a Fraction Is

Introduction
- Think It Through Question *10 min*
- Think *5 min*
- Think *15 min*
- Reflect *5 min*

Practice and Problem Solving
Assign pages 161–162.

Day 2
45–60 minutes

Guided Practice

Think About Describing Parts of a Whole with Fractions
- Let's Explore the Idea *20 min*
- Let's Talk About It *15 min*
- Try It Another Way *10 min*

Practice and Problem Solving
Assign pages 163–164.

Day 3
45–60 minutes

Guided Practice

Connect Parts of a Whole with Fractions
- Create *5 min*
- Explain *5 min*
- Compare *5 min*

Independent Practice

Apply Ideas About Parts of a Whole with Fractions
- Put It Together *15 min*
- Intervention, On-Level or Challenge Activity *15 min*

Practice and Problem Solving
Assign pages 165–166.

Toolbox: Lesson Quiz
Lesson 14 Quiz

*We continually update the Interactive Tutorials. Check the Teacher Toolbox for the most up-to-date offerings for this lesson.

Small Group Differentiation

Teacher-Toolbox.com

Reteach
Ready Prerequisite Lessons *45–90 min*

Grade 1
- Lesson 28 *Understand* Breaking Shapes Into Parts

Grade 2
- Lesson 28 *Understand* Halves, Thirds, and Fourths in Shapes

Teacher-led Activities
Tools for Instruction *15–20 min*

Grade 1 *(Lesson 28)*
- Plane Figures: Making Equal Shares

Grade 2 *(Lesson 28)*
- Make Equal Shares

Grade 3 *(Lesson 14)*
- Part of a Whole
- Part of a Set

Student-led Activities
Math Center Activities *30–40 min*

Grade 2 *(Lesson 28)*
- 2.53 Equal Shares Vocabulary
- 2.54 Draw Equal Shares

Grade 3 *(Lesson 14)*
- 3.25 Write the Fraction
- 3.26 Show Fractions

Personalized Learning

i-Ready.com

Independent
i-Ready Lessons* *10–20 min*

Grade 2 *(Lesson 28)*
- Fraction of a Whole: Halves and Fourths

Introduction

At A Glance

Students explore what a fraction is. They learn how to name a fraction. Then students explore how unit fractions can help you to understand fractions with numerators greater than 1.

Step By Step

- Introduce the question at the top of the page. Explain that fractions are used to describe equal parts of a whole.
- Ask students to think of things that they eat that are cut into equal parts. Expect students to say pizzas, apples, cakes, etc. Check to see if students understand what it means for parts to be equal in size.
- Focus students' attention on the rectangle. Ask: *How many equal parts are there?* [3] Draw the rectangle with $\frac{1}{3}$ shaded on the board and point out the three equal parts. Point out the one part that is shaded. Then write the fraction $\frac{1}{3}$ and explain how each number in the fraction relates to the rectangle.

▶ Mathematical Discourse 1 and 2

- Emphasize the point made in **Think**, that fractions always show equal parts.

▶ Mathematical Discourse 3

SMP TIP Attend to Precision
Throughout this lesson, students think about why partitions in a whole must be precisely drawn in order to show a fraction. *(SMP 6)*

▶ Hands-On Activity

Think It Through

How can we describe equal parts?

Fractions are numbers that tell about equal parts of a whole. A fraction is named by the number of equal parts. One of three equal parts is one third. One of four equal parts is one fourth, and so on. One third and one fourth are fractions.

There are two parts to a fraction. The bottom number is the **denominator**. It tells how many equal parts are in the whole. The top number is the **numerator**. It tells how many equal parts you have.

$\frac{1}{3}$ ← numerator; denominator

$\frac{1 \text{ part shaded}}{3 \text{ equal parts in the whole}}$

Think **Fractions always show equal parts.**

To use a fraction to tell about the parts of a whole, all the parts must be the same size. Think about sharing a cake with some friends. You cut the cake into pieces that are the same size so that it is fair.

There are 6 equal parts.
These parts are sixths.
Each part is $\frac{1}{6}$.

All the parts are not the same size.
These parts are not sixths.

Circle the model that shows equal parts.

▶ Mathematical Discourse

1 *How can you change the fraction so it shows how much of the rectangle is NOT shaded?*
Change the numerator from 1 to 2.

2 *Why do you need two numbers (numerator and denominator) to show a fraction?*
The two numbers give different information. The denominator shows how many equal parts are in the whole. The numerator shows which of those parts you are talking about.

3 *In $\frac{1}{6}$, what does the denominator tells you? the numerator?*
The denominator tells there are 6 equal parts in the whole. The numerator tells there is 1 part you are talking about, such as the number of parts that are shaded.

▶ Hands-On Activity

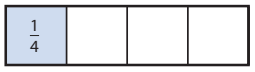
Focus on equal parts.

Materials: paper cut into 4-in. by 4-in. squares

- Have students practice dividing a whole into equal parts. Ask students to work in pairs and fold their paper into 2 equal parts. Instruct them to unfold their paper, hold it up, and point to one-half of the whole paper. Ask: *How many halves are there?* [2]
- Ask students how they could use their folded paper to divide the paper into 4 equal parts. Have students unfold the paper and confirm that all parts are equal. Ask them to point to one fourth of the whole paper. Ask: *How many fourths are there?* [4]
- You may wish to continue and have students fold the paper into 8 equal parts.

Think **Unit fractions help us understand other fractions.**

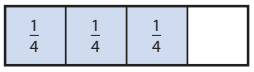
A **unit fraction** has a 1 in the numerator. $\frac{1}{4}$ is a unit fraction. It names 1 part of a whole that has 4 equal parts.



You can count unit fractions like you count whole numbers. Instead of 1, 2, 3, count $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$.

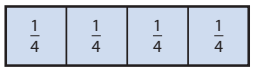
If you know the name of 1 part of the whole, you can count to name more parts of that whole.

Look at the rectangle below. It has 4 equal parts. Each part is $\frac{1}{4}$. The rectangle has three parts shaded. Three $\frac{1}{4}$s is $\frac{3}{4}$.



When you count the shaded parts of this rectangle, you say: one fourth, two fourths, three fourths. Three fourths of the rectangle is shaded.

You can also describe the whole rectangle by counting the number of $\frac{1}{4}$s. There are four $\frac{1}{4}$s in the rectangle, or $\frac{4}{4}$.



Reflect

1 Mike draws a large rectangle. He wants to color $\frac{3}{8}$ of the rectangle blue. How many equal parts should he make? What fraction names each part? How many parts should he color?

Possible answer: Mike should divide the rectangle into 8 equal parts to make parts that are each $\frac{1}{8}$. Then he should count and shade 3 of them.

▶ English Language Learners

- Some students, especially ELL students, may need additional support with understanding and using the word *unit*. Connect the term to the base-ten blocks they use. Remind them the ones blocks are called "unit" cubes.

▶ Mathematical Discourse

4 *How is counting by $\frac{1}{4}$s to find the fraction $\frac{3}{4}$ the same as counting by ones? How is it different?*

It is the same because you are counting by ones. It is different because, when you count by unit fractions, you count by one part, not one whole.

5 *Why doesn't the denominator change when you are counting by the unit fraction $\frac{1}{4}$ to reach $\frac{3}{4}$?*

The parts are all fourths, so the denominator doesn't change.

Step By Step

- Read the **Think** statement together.
- Direct students to the rectangle showing $\frac{1}{4}$. Review key ideas by asking how many parts are in the whole, how many parts are shaded, and how the drawing relates to the number $\frac{1}{4}$. Introduce the term *unit fraction*. Explain that the word *unit* often refers to *one* and that a unit fraction names one equal part of a whole.

▶ English Language Learners

- Model using the unit fraction $\frac{1}{4}$ to figure out the fraction shown. $\left[\frac{3}{4}\right]$ Count aloud: *one fourth, two fourths, three fourths.* Ask the class to count along with you and count the parts again. Emphasize that the fraction $\frac{3}{4}$ is 3 equal parts that are each $\frac{1}{4}$ of the whole. Use the speech bubble text on the right side of the page to point out how counting fraction parts is like counting whole numbers, except you are counting parts.

▶ Mathematical Discourse 4 and 5

- Ask students to read and respond to the **Reflect** questions. Ask students to share their answers.

SMP TIP **Reason Quantitatively**
Throughout this lesson, students reason quantitatively about relationships between parts and wholes and how greater fractions are built from unit fractions. *(SMP 2)*

Ready Mathematics PRACTICE AND PROBLEM SOLVING

Assign *Practice and Problem Solving* **pages 161–162** after students have completed this section.

Guided Instruction

At A Glance

Students write fractions for the shaded parts of wholes by reasoning about the number of equal parts and the number of shaded parts. They identify unit fractions and shade figures to write fractions with numerators greater than 1. Then students revisit problems 4 and 5 and explain how they figured out the unit fractions and shaded fractions for each model. Then students are given one part of a whole and draw a greater fraction of the whole.

Step By Step

Let's Explore the Idea

▶ Visual Model

- Tell students that they will have time to work individually on the problems on this page and then share their responses in groups. You may choose to work through problem 2 as a class.
- As students work individually, circulate among them. This is an opportunity to assess student understanding and address student misconceptions.
- Discuss what students wrote for each problem. For problem 3, ask students to describe the drawing for $\frac{3}{3}$. [All $\frac{1}{3}$s are shaded.] Point out that there are two ways to describe the drawing: *three thirds* or *one whole*.
- Some students may struggle with problem 8 as the shaded regions are not adjacent. Make sure students understand it does not matter if the shaded parts are next to each other. You may want to draw this rectangle on the board but this time shade 5 adjacent parts. Then ask what fraction of this rectangle is shaded. Guide students to understand that the two diagrams show the same fraction.

▶ Mathematical Discourse 1 and 2

- Take note of students who are still having difficulty and wait to see if their understanding progresses as they work in their groups during the next part of the lesson.

Think About **Describing Parts of a Whole with Fractions**

Let's Explore the Idea You can use models to help you think about fractions.

2 

How many equal parts are shown in this model? 3

How many parts are shaded? 1

Write the fraction that names the shaded part. $\frac{1}{3}$

Circle the name for this fraction: one half **(one third)** one fourth

3 

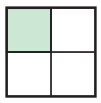
How many equal parts are shown in this model? 3

How many parts are shaded? 3

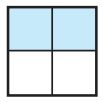
Write the fraction that names the shaded parts. $\frac{3}{3}$

Circle the name for this fraction: three halves **(three thirds)** three fourths

First write the unit fraction shown. Then shade the given number of parts. Write the fraction that names the shaded parts.

4 

Unit fraction: $\frac{1}{4}$

Shade 2 parts: 

What fraction of the square did you shade? $\frac{2}{4}$

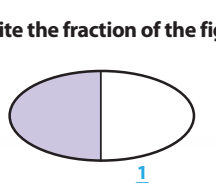
5 

Unit fraction: $\frac{1}{8}$

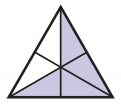
Shade 6 parts: 

What fraction of the circle did you shade? $\frac{6}{8}$

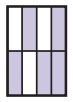
Write the fraction of the figure that is shaded. The parts in each model are all equal.

6 

Fraction: $\frac{1}{2}$

7 

Fraction: $\frac{4}{6}$

8 

Fraction: $\frac{5}{8}$

▶ Mathematical Discourse

1 *How would a model showing $\frac{0}{3}$ look?*
The whole is divided into 3 equal parts, but no parts are shaded.

2 *What patterns do you notice in the way we say fraction denominators? What are some fraction names that don't follow the pattern?*
Students should notice most fraction names end in "*ths*" (*fourths, fifths, sixths* and so on) and *halves* and *thirds* are exceptions to this pattern.

3 *When you want to identify a fraction shown by a model or in real life, what do you look at first? Why? Next? Why?*
Answers will vary. Have students explain their answers.

▶ Visual Model

Discover unit fractions in real life.

Materials: library books that show examples of real-world fractions

- Consult with your librarian to find several books that show colorful and easy-to-see fractions. Plan to share the books over time so students see a variety of unit fractions and fractions built from unit fractions in real life. When sharing books, ask questions, such as *How do you know this is a fraction? How many equal parts are in this whole? What is the unit fraction that makes up this whole?*

Let's Talk About It

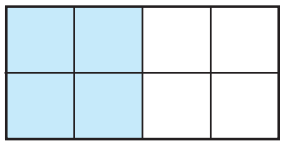
Solve the problems below as a group.

9 Look at your answers to problems 4 and 5. Explain how you figured out what unit fraction was shown in each model. Possible answer: First I counted the number of equal parts to find the denominator. Because there was one part shaded, 1 was the numerator.

Explain how you figured out what fractions to write for the parts you shaded. Possible answer: I looked at how many parts I shaded, and put that as the numerator. The number of equal parts was the denominator.

Do you think you could have shaded the number of parts another way in each model? Explain. Answers will vary. Look for answers that express that it doesn't matter which of the parts are shaded, as long as the correct number of parts are shaded.

10 Look at the rectangle below.



What unit fraction is each part? $\frac{1}{8}$ Now shade $\frac{4}{8}$ of the rectangle.

Try It Another Way

Work with your group to use the pictures to draw the figure described.

11 The model below shows $\frac{1}{3}$ of a square. Draw what $\frac{2}{3}$ of the square looks like.

12 The model below shows $\frac{1}{6}$ of a shape. Draw what $\frac{3}{6}$ of the shape could look like. Possible drawing:

Concept Extension

Finding equal parts that are different shapes.

Materials: 3-square by 3-square sections of paper, 3 individual squares from the same squared paper, crayons or markers

- Draw a 3-row by 3-column square on the board to duplicate the squares the students have. Model shading the bottom two squares of the first column and the bottom square of the middle column, for a total of 3 shaded squares that form a right angle. Point out that this is one equal part. Direct students to place the 3 individual squares on top of their shaded squares. Check to see they have positioned these squares correctly and have them color the squares underneath all the same color.
- Explain that *equal parts* for fractions means the parts are the same size; they do not have to be the same shape. Ask students to find as many equal parts of that same size as they can, using the 3 individual squares, and color each equal part a different color.
- Have students display their completed squares and discuss what they show. [Each of the 3 different colored parts of the large square are the same size even if their 3 squares are not next to each other.]

Step By Step

Let's Talk About It

Mathematical Discourse 3

- Discuss the last question of problem 9 as a class. Take a poll of student answers (yes or no). If some students think it matters which parts out of the whole you shade, ask for volunteers on each side of the question to defend their thinking and give examples. It's important that students understand the naming of a fraction depends on the number of shaded parts within a whole, not the location of those shaded parts.

SMP TIP Construct Arguments
Students practice constructing arguments and use examples to support their thinking. *(SMP 3)*

Try It Another Way

- Direct students' attention to **Try It Another Way**. Read the directions, then discuss what they are to do in problem 11. Ask: *The model shows $\frac{1}{3}$ of a square. How many of those parts are in the whole square?* [3] *How many of those parts do you need to draw?* [2] *Will you draw the whole square, less than the whole square, or more than the whole square?* [less than] Have a volunteer from each group come to the board to draw and explain the group's solutions to problems 11 and 12.

Concept Extension

Ready Mathematics PRACTICE AND PROBLEM SOLVING

Assign *Practice and Problem Solving* **pages 163–164** after students have completed this section.

Guided Practice

At A Glance

Students demonstrate their understanding of the meaning of fractions and how to represent them. Then students demonstrate that they understand fractions by dividing wholes into fractional parts, shading some of the parts, and then explaining how they knew what to draw.

Step By Step

- Discuss each problem as a class using the discussion points outlined below.

Create

- Explain to students that one way to draw a model of a whole when they know what a fraction of the whole looks like is to first draw the part represented by the fraction. Then they can draw copies of that part until they have drawn a number equal to the total number of parts (the denominator). For problem 13, students can draw one square to show $\frac{1}{6}$ of the rectangle. Then they can draw five more sixths to make $\frac{6}{6}$ or the whole, drawing the parts to form a rectangle. Students can also build the whole using square tiles or squared paper.

Explain

- For problem 14, be sure students understand that it doesn't matter what shape the shaded part representing $\frac{1}{4}$ is. What is important is that it is one out of four equal parts in that whole.

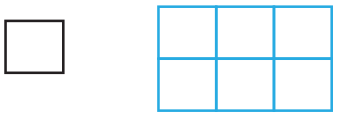
Compare

- For problem 15, it's critical that students understand that each model is showing one part shaded of two equal parts of that whole. The models show $\frac{1}{2}$ of different-size wholes. To further illustrate the concept, use the example of $\frac{1}{2}$ of a banana and $\frac{1}{2}$ of an apple. Each shows one part out of two equal parts of that whole piece of fruit.

Connect Parts of a Whole with Fractions

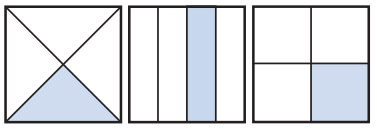
Talk through these problems as a class, then write your answers below.

13 Create The part shown below is $\frac{1}{6}$ of a rectangle. Draw a model to show what the whole rectangle might look like.



Possible drawing shown.

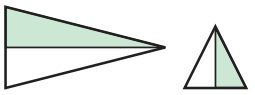
14 Explain Look at the squares below. Each square is divided into equal parts.



Lynn says each square has the same fraction shaded. Rose says each square has a different fraction shaded. Explain who is correct and why.

Lynn is correct; Possible explanation: Each square is the same size and is divided into 4 equal parts. 1 of the 4 parts is shaded, so each square has $\frac{1}{4}$ shaded.

15 Compare Look at the triangles below. Each triangle is divided into equal parts.



What is the same about the fraction of each model that is shaded?

Possible answer: The fractions are each $\frac{1}{2}$, because each is divided into 2 equal parts and has 1 part shaded.

What is different about the fraction of each model that is shaded?

Possible answer: The wholes are different sizes, so the amount shown by $\frac{1}{2}$ is different.

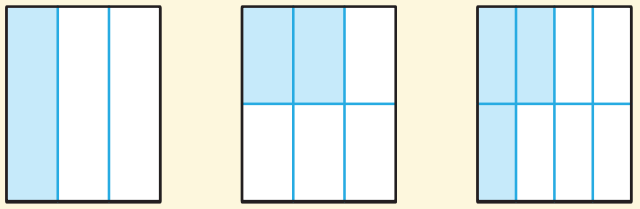
SMP TIP Reason Quantitatively

Students reason about a fraction as it relates to a particular whole $\left(\frac{1}{2}\right.$ of an apple is one part of two parts of that apple$\left.\right)$. *(SMP 2)*

Apply Ideas About Parts of a Whole with Fractions

16 Put It Together Use what you have learned to complete this task.

Adam has $\frac{1}{3}$ of a pizza, Hillary has $\frac{2}{6}$ of a pizza, and John has $\frac{3}{8}$ of a pizza.



Adam Hillary John

Part A Show the number of equal parts in each pizza. Then shade each pizza to show the fraction each person has. **Possible drawings shown above.**

Part B Circle one of the pizzas. Explain how you knew how many equal parts to show and how many parts to shade.

Possible answer: I looked at the denominator to know how many parts to divide the pizza into. Then I looked at the numerator to know how many parts to shade.

Independent Practice

Step By Step

Put It Together

- Direct students to complete the **Put It Together** task on their own.
- Go over the directions with students. For **Part B**, make sure they understand they are to choose one of the fractions to circle and then explain how they knew what to draw to show the fraction.
- As students work on their own, walk around to assess their progress and understanding, to answer their questions, and to give additional support, if needed.
- If time permits, have students volunteers share how they decided what to draw for each of the 3 pizzas.

Ready Mathematics PRACTICE AND PROBLEM SOLVING

Assign *Practice and Problem Solving* **pages 165–166** after students have completed Guided Practice.

Scoring Rubrics

Part A

Points	Expectations
2	The student showed the correct number of parts in each pizza and shaded the correct number of parts for the three pizzas.
1	The student showed the correct number of parts for each pizza, but did not shade in pieces correctly, or the student showed an incorrect fraction for one of the pizzas.
0	The student was unable to show the fractions for the three pizzas.

Part B

Points	Expectations
2	The student provided a clear explanation of how to figure out the number of equal parts to show in the pizza and the number of parts to shade.
1	The explanation provided was not clear about how to figure out the number of equal parts to show in the pizza or how many parts to shade.
0	No explanation was provided or the explanation was incorrect or unclear.

Differentiated Instruction

▶ Intervention Activity

Practice building and naming fractions.

Materials: colored tiles, 1 inch (or larger) square paper, scissors, sketchbook or several sheets of blank paper stapled together

Have students make a "Fraction Study" book that includes drawings of fractions for halves, thirds, fourths, sixths, eighths and tenths. This activity gives students practice reasoning about, drawing, and labeling fractions.

To start, have students draw a rectangle composed of 2 squares on the 1-inch square paper. Students then use tiles to model all the possible fractions for halves. $\left[\frac{0}{2}, \frac{1}{2}, \frac{2}{2}\right]$ Next, they draw each fraction on graph paper, shade to show the numerator, and cut it out. Students paste the fraction models onto a page and label them.

Have students follow the same steps to make pages showing thirds, fourths, sixths, eighths, and tenths. Instruct students to model and draw at least three different fractions for each denominator. For example, for sixths, student may choose to build and draw $\frac{1}{6}$, $\frac{3}{6}$, and $\frac{5}{6}$.

▶ On-Level Activity

Take a "fraction field trip."

Materials: cardboard picture frames (to help students focus on sites outside), disposable camera(s) (if possible), sketchbook or several sheets of blank paper stapled together, pencils

Plan to take a "fraction walk" in the neighborhood or on the school grounds with students.

Have students work in pairs or small groups to look for examples of fractions they see in the real world and identify the unit fractions each example is composed of. Possible examples might include: a window pane divided into 8 equal sections, "monkey bars" divided into 10 equal sections, and a four-square court divided into 4 equal sections. Emphasize that examples must show equal parts of one whole (not a sidewalk that goes on and on and has different-sized parts).

Ask students to sketch at least 5 different examples of fractions. If possible, have each group or pair use a disposable camera to take a picture of their favorite example. After the walk, have students finalize their sketches and share them with the class. You may choose to create a class book on fractions and display it in the school library.

▶ Challenge Activity

Find fractions at home.

Materials: sketchbook or several sheets of blank paper stapled together, disposable camera(s) (if possible)

As a homework assignment, ask students to find at least one example in their homes or neighborhoods of halves, thirds, fourths, fifths, sixths, and one other fraction of their choosing. Ask students to draw each fraction or take a photo using a disposable camera. Have each student choose their favorite fraction drawing to include in a class book. Display the book in the school library.

Teacher Notes

LESSON QUIZ

Lesson 14
Understand What a Fraction Is

Teacher-Toolbox.com

Overview

Assign the Lesson 14 Quiz and have students work independently to complete it.

Use the results of the quiz to assess students' understanding of the content of the lesson and to identify areas for reteaching. See the Lesson Pacing Guide at the beginning of the lesson and the Differentiated Instruction activities that follow for suggested instructional resources.

Tested Skills

Problems on this assessment form require students to be able to write the fraction shown by an area model, shade an area model to represent a given fraction, and use the key mathematical terms *denominator*, *fraction*, *numerator*, and *unit fraction*. Students will also need to be familiar with partitioning shapes into equal shares and visually comparing relative sizes of shapes.

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Lesson 14 Quiz

Solve the problems.

1 The parts in this model are all equal.

Which fraction names the shaded part of the model?

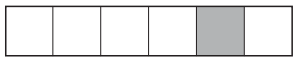
A $\frac{1}{2}$

B $\frac{1}{3}$

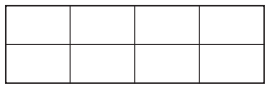
C $\frac{2}{2}$

D $\frac{2}{3}$

2 The rectangle shows $\frac{1}{6}$. Finish shading the model to show $\frac{4}{6}$ shaded.



3 Abigail draws a rectangle. The parts in her rectangle are all equal.



Write the unit fraction shown by each part of Abigail's rectangle.

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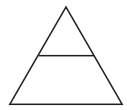
Lesson 14 Quiz continued

4 Does the model show one half?

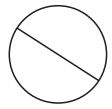
Choose *Yes* or *No* for each model.

a.



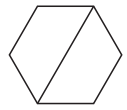
☐ Yes ☐ No

b.



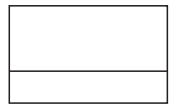
☐ Yes ☐ No

c.



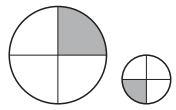
☐ Yes ☐ No

d.



☐ Yes ☐ No

5 Each circle is divided into equal parts.



Compare the fraction of each model that is shaded. Explain what is the same and what is different about the shaded parts.

Common Misconceptions and Errors

Errors may result if students:

- identify the unshaded part instead of the shaded part.
- name the total number of parts of the whole, rather than the size of each equal part.
- think that all the shaded parts must be next to each other.
- confuse the number of lines inside a model with the number of parts inside the model.

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Lesson 14 Quiz Answer Key

1. D
DOK 1

2. Possible student shading (any 3 parts plus the given one can be shaded):

DOK 2

3. $\frac{1}{8}$
DOK 1

4. **a.** No
b. Yes
c. Yes
d. No
DOK 1

5. Possible answer: Each model has 1 of 4 equal parts shaded, so each circle shows the fraction $\frac{1}{4}$. However, the wholes are different sizes, so the $\frac{1}{4}$ amount shaded in each circle is different.
DOK 3