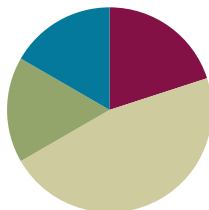


## Lesson 9

**Objective:** Build and write fractions greater than one whole using unit fractions.

### Suggested Lesson Structure

■ Fluency Practice	(12 minutes)
■ Application Problem	(10 minutes)
■ Concept Development	(28 minutes)
■ Student Debrief	(10 minutes)
<b>Total Time</b>	<b>(60 minutes)</b>



### Fluency Practice (12 minutes)

- Multiply by Eight Sprint **3.OA.2** (8 minutes)
- Find the Missing Part **3.NF.3d** (2 minutes)
- Skip-Count by Halves on the Clock **3.G.2, 3.NF.1** (2 minutes)

### Multiply by Eight Sprint (8 minutes)

Materials: (S) Multiplication by Eight Sprint

### Find the Missing Part (2 minutes)

Materials: (T) Blank number bond

T: (Project number bond with  $\frac{3}{3}$  as the whole and  $\frac{2}{3}$  as a part.) Say the whole.

S: 3 thirds.

T: Say the given part.

S: 2 thirds.

T: Say the missing part.

S: 1 third.

T: (Writes  $\frac{1}{3}$  in the missing part space.)

Continue with whole and part sequence:  $\frac{6}{6}$  and  $\frac{1}{6}, \frac{8}{8}$  and  $\frac{3}{8}, 1$  whole and  $\frac{3}{10}, 1$  whole and  $\frac{7}{12}$ .

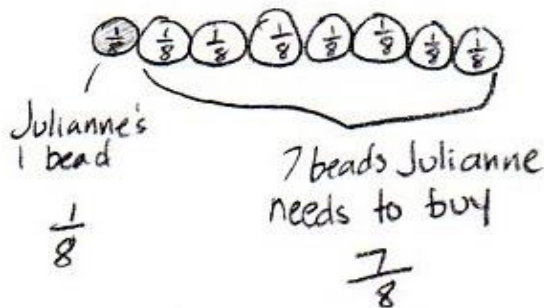
**Skip-Count by Halves on the Clock (2 minutes)**

- T: (Hold or project a clock.) Let’s skip-count by halves on the clock starting with 5.
- S: 5 o’clock, half past 5, 6, half past 6, 7.
- T: Stop. Skip-count by halves backwards starting with 7.
- S: Half past 6, 6, half past 5, 5, half past 4, 4, half past 3, 3.

Continue counting up and down.

**Application Problem (10 minutes)**

Julianne’s friendship bracelet has 8 beads. When it broke, the beads fell off. She could only find 1 of the beads. To fix her bracelet, what fraction of the beads does she need to buy?



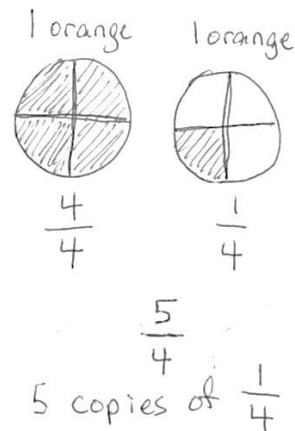
**NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**

For students above grade level, extend the “application problem” with an open-ended prompt, such as, “If Julianne adds another bead of the same size and shape to her necklace, what fraction would the new bead represent? Why do you think so?”

**Concept Development (28 minutes)**

Materials: (S) Personal white boards, fraction strips

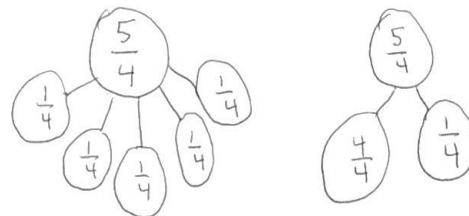
- T: I brought 2 oranges for lunch today. I cut each one into fourths so that I could eat them easily. Draw a picture on your personal board to show how I cut my 2 oranges.
- S: (Students draw.)
- T: If 1 orange represents 1 whole, how many copies of 1 fourth are in 1 whole?
- S: 4 copies.
- T: Then what is our unit?
- S: Fourths.
- T: How many copies of 1 fourth in two whole oranges?
- S: 8 copies.
- T: Let’s count them.



- S: 1 fourth, 2 fourths, 3 fourths, (up to 8 fourths).
- T: Are you sure our unit is still fourths? Talk with your partner.
- S: No, it's in eighths because there are 8 pieces. → I disagree, because the unit is fourths in each orange. → Remember, each orange is a whole so the unit is fourths. 2 oranges aren't the whole!
- T: I was so hungry I ate 1 whole orange and 1 piece of the second orange. Shade in the pieces I ate.
- S: (Students shade.)
- T: How many pieces did I eat?
- S: 5 pieces.
- T: And what's our unit?
- S: Fourths.
- T: So we can say that I ate 5 fourths of an orange for lunch. Let's count them.
- S: 1 fourth, 2 fourths, 3 fourths, 4 fourths, 5 fourths.
- T: On your personal board, work together to show 5 fourths as a number bond of unit fractions.
- T: Compare the number of pieces I ate to 1 whole orange. What do you notice?
- S: The number of pieces is bigger! → You ate more pieces than the whole.
- T: Yes. If the number of parts is greater than the number of equal parts in the whole, then you know that the fraction describes more than 1 whole.
- T: Can you make a number bond with 2 parts, one part showing the pieces that make up the whole and the other part showing the pieces that are more than the whole?

**NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**

Turn-and-talk is an excellent way for ELLs to use English to discuss their math thinking. Let ELLs choose the language they wish to discuss their math reasoning, particularly if their English language fluency is limited.



Demonstrate again using another concrete example. Follow by working with fraction strips. Fold fraction strips so that students have at least 2 strips representing halves, at least 2 strips representing each of the following fractions: thirds, fourths, sixths and eighths. Students can then build and identify fractions greater than 1 and less than 3 with the sets of fraction strips. Note that these fraction strips will be used again in Lesson 10. You may want to collect them or have students store them in a safe place.

**NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**

For students below grade level, respectfully facilitate self-assessment of personal goals. Guide students to reflect upon questions such as, "Which fraction skills am I good at? What would I like to be better at? What is my plan to improve?" Celebrate improvement.

### Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

### Student Debrief (10 minutes)

**Lesson Objective:** Build and write fractions greater than one whole using unit fractions.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

You may choose to use any combination of the questions below to lead the discussion.

- Problem 3 is likely to be challenging, and may result in confusion about whether the children ate  $\frac{10}{8}$  or  $\frac{10}{16}$ .  $\frac{10}{8}$  represents the amount of pans they ate, and  $\frac{10}{16}$  represents the number of brownies they ate. The question asks for the number of pans. Have students share their work to spark a discussion that helps clarify this. The student work sample shows 2 different ways to write the answer.
- Although students have not been introduced to mixed fractions, it may be an intuitive way for them to answer the question. If so, you may have a natural opportunity to briefly examine and discuss the 2 ‘different’ answers. Have students then return to clarify the lesson’s objective. Have them discuss with a partner how to identify a fraction greater than one whole. If they are ready, advance to how they can identify a fraction greater than 2 wholes, etc.

Name: Gina Date: 3/9

1. Each shape represents 1 whole. Fill in the chart.

	Fractional Unit	Total Number of Units Shaded	Fraction Shaded
Sample: 	$\frac{1}{2}$	5	$\frac{5}{2}$
b) 	$\frac{1}{8}$	15	$\frac{15}{8}$
c) 	$\frac{1}{6}$	14	$\frac{14}{6}$
d) 	$\frac{1}{5}$	8	$\frac{8}{5}$
e) 	$\frac{1}{4}$	9	$\frac{9}{5}$
f) 	$\frac{1}{3}$	7	$\frac{7}{3}$

2. Estimate to draw and shade units on the fraction strips. Solve.

Sample:  
5 thirds =  $\frac{5}{3}$

a) 8 sixths =  $\frac{8}{6}$

b) 7 fourths =  $\frac{7}{4}$

c) 6 fifths =  $\frac{6}{5}$

d) 5 halves =  $\frac{5}{2}$

3. Mrs. Jawlik baked 2 pans of brownies. Draw the pans and estimate to partition each pan into 8 equal pieces.

a) Mrs. Jawlik's children gobble up 10 pieces. Shade the amount that was eaten.

b) Write a fraction to show how many pans of brownies her children ate.  $\frac{10}{8}$  brownies. OR 1 pan and  $\frac{2}{8}$  more.

**Exit Ticket (3 minutes)**

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

**A**

# Correct \_\_\_\_\_

Multiply.

1	$8 \times 1 =$		23	$9 \times 8 =$	
2	$1 \times 8 =$		24	$3 \times 8 =$	
3	$8 \times 2 =$		25	$8 \times 8 =$	
4	$2 \times 8 =$		26	$4 \times 8 =$	
5	$8 \times 3 =$		27	$7 \times 8 =$	
6	$3 \times 8 =$		28	$5 \times 8 =$	
7	$8 \times 4 =$		29	$6 \times 8 =$	
8	$4 \times 8 =$		30	$8 \times 5 =$	
9	$8 \times 5 =$		31	$8 \times 10 =$	
10	$5 \times 8 =$		32	$8 \times 1 =$	
11	$8 \times 6 =$		33	$8 \times 6 =$	
12	$6 \times 8 =$		34	$8 \times 4 =$	
13	$8 \times 7 =$		35	$8 \times 9 =$	
14	$7 \times 8 =$		36	$8 \times 2 =$	
15	$8 \times 8 =$		37	$8 \times 7 =$	
16	$8 \times 9 =$		38	$8 \times 3 =$	
17	$9 \times 8 =$		39	$8 \times 8 =$	
18	$8 \times 10 =$		40	$11 \times 8 =$	
19	$10 \times 8 =$		41	$8 \times 11 =$	
20	$1 \times 8 =$		42	$12 \times 8 =$	
21	$10 \times 8 =$		43	$8 \times 12 =$	
22	$2 \times 8 =$		44	$13 \times 8 =$	

**B**

Improvement \_\_\_\_\_

# Correct \_\_\_\_\_

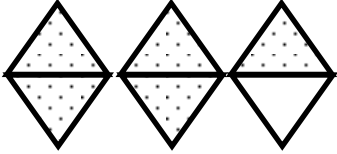
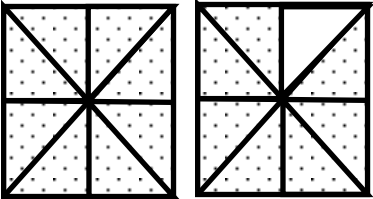
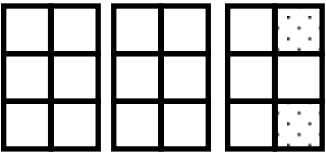
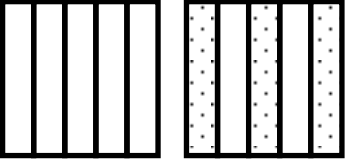
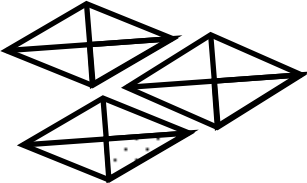
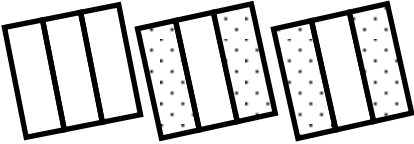
Multiply.

1	$1 \times 8 =$		23	$10 \times 8 =$	
2	$8 \times 1 =$		24	$9 \times 8 =$	
3	$2 \times 8 =$		25	$4 \times 8 =$	
4	$8 \times 2 =$		26	$8 \times 8 =$	
5	$3 \times 8 =$		27	$8 \times 3 =$	
6	$8 \times 3 =$		28	$7 \times 8 =$	
7	$4 \times 8 =$		29	$6 \times 8 =$	
8	$8 \times 4 =$		30	$8 \times 10 =$	
9	$5 \times 8 =$		31	$8 \times 5 =$	
10	$8 \times 5 =$		32	$8 \times 6 =$	
11	$6 \times 8 =$		33	$8 \times 1 =$	
12	$8 \times 6 =$		34	$8 \times 9 =$	
13	$7 \times 8 =$		35	$8 \times 4 =$	
14	$8 \times 7 =$		36	$8 \times 3 =$	
15	$8 \times 8 =$		37	$8 \times 2 =$	
16	$9 \times 8 =$		38	$8 \times 7 =$	
17	$8 \times 9 =$		39	$8 \times 8 =$	
18	$10 \times 8 =$		40	$11 \times 8 =$	
19	$8 \times 10 =$		41	$8 \times 11 =$	
20	$8 \times 3 =$		42	$12 \times 8 =$	
21	$1 \times 8 =$		43	$8 \times 12 =$	
22	$2 \times 8 =$		44	$13 \times 8 =$	

Name \_\_\_\_\_

Date \_\_\_\_\_

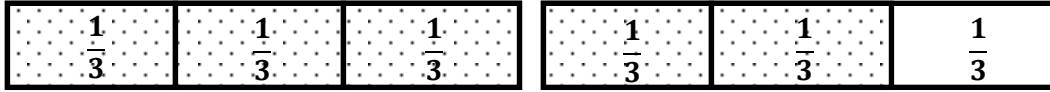
1. Each figure represents 1 whole. Fill in the chart.

	Unit Fraction	Total Number of Units Shaded	Fraction Shaded
a. Sample: 	$\frac{1}{2}$	5	$\frac{5}{2}$
b. 			
c. 			
d. 			
e. 			
f. 			

2. Estimate to draw and shade units on the fraction strips. Solve.

Sample:

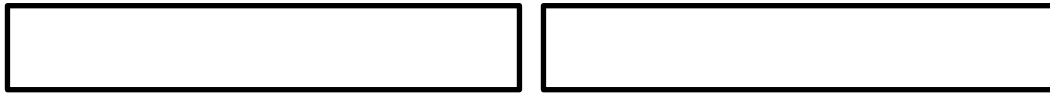
5 thirds =  $\frac{5}{3}$



a. 8 sixths =



b. 7 fourths =



c. \_\_\_\_\_ =  $\frac{6}{5}$



d. \_\_\_\_\_ =  $\frac{5}{2}$



3. Mrs. Jawlik baked 2 pans of brownies. Draw the pans and estimate to partition each pan into 8 equal pieces.

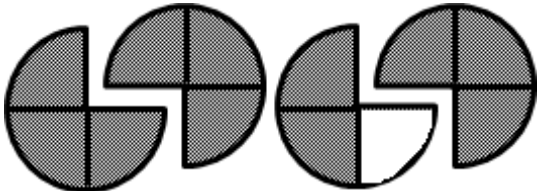
a. Mrs. Jawlik’s children gobble up 10 pieces. Shade the amount that was eaten.

b. Write a fraction to show how many pans of brownies her children ate.

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Each shape represents 1 whole. Fill in the chart.

	Fractional Unit	Total Number of Units Shaded	Fraction Shaded
			

2. Estimate to draw and shade units on the fraction strips. Solve.

a. 4 thirds =

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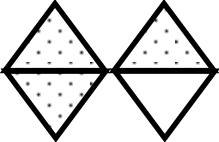
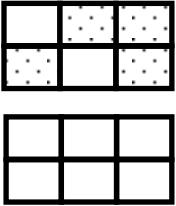
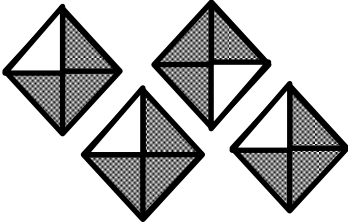

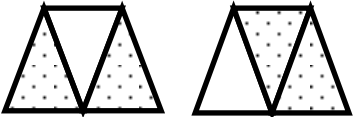
b. \_\_\_\_\_ =  $\frac{10}{4}$

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Name \_\_\_\_\_

Date \_\_\_\_\_

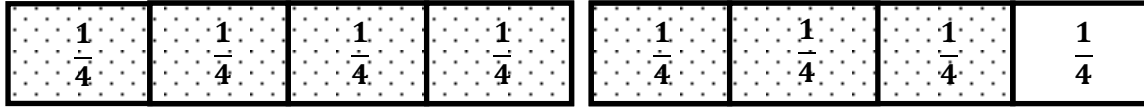
1. Each shape represents 1 whole. Fill in the chart.

	Fractional Unit	Total Number of Units Shaded	Fraction Shaded
a. Sample: 	$\frac{1}{2}$	3	$\frac{3}{2}$
b. 			
c. 			
d. 			
e. 			
f. 			

2. Estimate to draw and shade units on the fraction strips. Solve.

Sample:

$$7 \text{ fourths} = \frac{7}{4}$$



a. 5 thirds =



b. \_\_\_\_\_ =  $\frac{9}{3}$



3. Reggie bought 2 candy bars. Draw the candy bars and estimate to partition each bar into 4 equal pieces.

a. Reggie ate 5 pieces. Shade the amount that was eaten.

b. Write a fraction to show how many pieces of the candy bar Reggie ate.