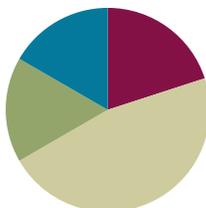


## Lesson 7

**Objective:** Identify and represent shaded and non-shaded parts of one whole as 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)

- Group Counting **3.OA.1** (2 minutes)
- Sprint: Divide by Seven **3.OA.4** (8 minutes)
- Skip-Count by Halves on the Clock **3.G.2, 3.NF.1** (2 minutes)

### Group Counting (2 minutes)

Materials: (S) Personal white board

Note: Group counting reviews interpreting multiplication as repeated addition.

Direct students to count forward and backward by nines to 90 on their personal white boards.

T: Circle 27. How many nines did you count?

S: 3 nines.

T: What is 27 divided by 9?

S: 3.

Continue with the following possible sequence: 18, 6, 30, 24, 3, 12, 21, 9, and 15.

### Sprint: Divide by Seven (8 minutes)

Materials: (S) Divide by Seven Sprint

Note: This Sprint supports fluency with division using units of 7.

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

Materials: (T) Clock

Note: This activity reviews counting by halves on the clock from Module 2.

T: (Hold or project a clock.) Let's skip-count by halves on the clock starting with 1 o'clock.

S: 1, half past 1, 2, half past 2, 3, half past 3, 4, (switch direction), half past 3, 3, half past 2, 2, half past 1, 1.

Continue counting up and down.

### Application Problem (10 minutes)

Robert ate half of the applesauce in a container. He split the remaining applesauce equally into 2 bowls for his mother and sister. Robert said, "I ate 1 half, and each of you gets 1 half." Is Robert right? Draw a picture to prove your answer.

Extension:

- What fraction of the applesauce did his mother get?
- What fraction of the applesauce did Robert's sister eat?

*You can only have 2 halves in a whole. Robert is wrong!!!  
So 3 people cannot have 1/2 each.  
His mom and sister got 1/2 together!*

Extension:

*Robert's mom and sister each ate 1/4 of the applesauce.*

Note: This problem reviews the concept that a whole is made of 2 halves. The extension challenges students to see the whole partitioned into halves and fourths.

### Concept Development (28 minutes)

Materials: (T) 1-liter beaker, water (S) Paper, scissors, crayons, math journal

Show a beaker of liquid half full.

T: Whisper the fraction of liquid that you see to your partner.



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

Give explicit steps for problem solving to students working below grade level. These steps can be organized as a checklist such as, "Underline important words, draw a model, label your model."



#### NOTES ON MULTIPLE MEANS OF REPRESENTATION:

These daily class discussions, as well as "Think-pair-share," support English language learners' English language acquisition. They offer students an opportunity to talk about their math ideas in English and actively use the language of mathematics.



#### NOTES ON MATERIALS:

If a beaker is not available, use a clear container that has a consistent diameter from bottom to top and measure the amount of liquid to precisely show the container half full.

- S: 1 half.
- T: What about the part that is not full? Talk to your partner: Could that be a fraction, too? Why or why not?
- S: No, because there's nothing there. → I disagree. It's another part. It's just not full. → It's another half. Because half is full and half is empty. Two halves make one whole.
- T: Even though parts might not be full or shaded, they are still part of the whole. Let's explore this idea some more. I'll give you 1 sheet of paper. Partition it into any shape you choose. Just be sure of these 3 things:
1. The parts must be equal.
  2. There are no fewer than 5, and no more than 20 parts in all.
  3. You use the entire sheet of paper.
- S: (Partition by estimating to fold the paper into equal parts.)
- T: Now, use a crayon to shade one unit.
- S: (Shade one part.)
- T: Next, you're going to cut your whole into parts by cutting along the lines you created when you folded the paper. You'll reassemble your parts into a unique piece of art for our fraction museum. As you make your art, make sure that all parts are touching but not on top of or under each other.
- S: (Cut along the folds and reassemble pieces.)
- T: As you tour our museum admiring the art, identify which unit fraction the artist chose and identify the fraction representing the unshaded equal parts of the art. Write both fractions in your journal next to each other.
- S: (Walk around and collect data, which will be used in the Debrief portion of the lesson.)

### 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 should solve these problems using the RDW approach used for Application Problems.



#### NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Offer students working above grade level a Problem Set alternative of constructing a word problem for one of the models (pictured in number 10 of the Problem Set). Constructively review errors with students who are accustomed to always scoring correctly or who may be perfectionists.

### Student Debrief (10 minutes)

**Lesson Objective:** Identify and represent shaded and non-shaded parts of one whole as 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.

Any combination of the questions below may be used to lead the discussion.

MP.3

- Show examples of student work for Problem 11. Avanti read  $\frac{1}{6}$  of her book. What fraction of her book has she not read yet? Isn't Avanti's goal to read the whole book? (Guide the students to notice that the whole book can be depicted as the part she has read and the part she has not read.)
- From the discussion above you might briefly return to the *shaded* and *unshaded* figures in Problem 1 and help students notice that the whole can be expressed as two parts—the shaded and unshaded.
- Revisit students' art. Guide a discussion helping them recognize that while each student's art depicts a whole, each whole is composed of different unit fractions (e.g., fourth, fifths, or sixths).

**Exit Ticket (3 minutes)**

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 7 Problem Set 3•5

Name: Gina Date: \_\_\_\_\_

Whisper the fraction of the shape that is shaded. Then match the shape to the amount that is *not* shaded.

1. \_\_\_\_\_ 2 thirds

2. \_\_\_\_\_ 6 sevenths

3. \_\_\_\_\_ 4 fifths

4. \_\_\_\_\_ 8 ninths

5. \_\_\_\_\_ 1 half

6. \_\_\_\_\_ 5 sixths

7. \_\_\_\_\_ 7 eighths

8. \_\_\_\_\_ 3 fourths

COMMON CORE Lesson 7: Identify and represent shaded and non-shaded parts of one whole as fractions. 7/19/14 engage<sup>ny</sup>

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 7 Problem Set 3•5

9. a. How many eighths are in 1 whole? 8  
 b. How many ninths are in 1 whole? 9  
 c. How many twelfths are in 1 whole? 12

10. Each strip represents 1 whole. Write a fraction to label the shaded and unshaded parts.

11. Avanti read  $\frac{1}{6}$  of her book. What fraction of the book has she not read yet?  
 She has not read  $\frac{5}{6}$  of her book.

COMMON CORE Lesson 7: Identify and represent shaded and non-shaded parts of one whole as fractions. 7/19/14 engage<sup>ny</sup>

**A**

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

Multiply or divide.

1	$2 \times 7 =$		23	$\_\_ \times 7 = 70$	
2	$3 \times 7 =$		24	$\_\_ \times 7 = 14$	
3	$4 \times 7 =$		25	$\_\_ \times 7 = 21$	
4	$5 \times 7 =$		26	$70 \div 7 =$	
5	$1 \times 7 =$		27	$35 \div 7 =$	
6	$14 \div 7 =$		28	$7 \div 7 =$	
7	$21 \div 7 =$		29	$14 \div 7 =$	
8	$35 \div 7 =$		30	$21 \div 7 =$	
9	$7 \div 7 =$		31	$\_\_ \times 7 = 42$	
10	$28 \div 7 =$		32	$\_\_ \times 7 = 49$	
11	$6 \times 7 =$		33	$\_\_ \times 7 = 63$	
12	$7 \times 7 =$		34	$\_\_ \times 7 = 56$	
13	$8 \times 7 =$		35	$49 \div 7 =$	
14	$9 \times 7 =$		36	$63 \div 7 =$	
15	$10 \times 7 =$		37	$42 \div 7 =$	
16	$56 \div 7 =$		38	$56 \div 7 =$	
17	$49 \div 7 =$		39	$11 \times 7 =$	
18	$63 \div 7 =$		40	$77 \div 7 =$	
19	$42 \div 7 =$		41	$12 \times 7 =$	
20	$70 \div 7 =$		42	$84 \div 7 =$	
21	$\_\_ \times 7 = 35$		43	$14 \times 7 =$	
22	$\_\_ \times 7 = 7$		44	$98 \div 7 =$	

**B**

Improvement \_\_\_\_\_

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

Multiply or divide.

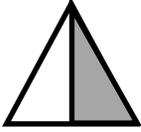
1	$1 \times 7 =$		23	$\_\_ \times 7 = 14$	
2	$2 \times 7 =$		24	$\_\_ \times 7 = 70$	
3	$3 \times 7 =$		25	$\_\_ \times 7 = 21$	
4	$4 \times 7 =$		26	$14 \div 7 =$	
5	$5 \times 7 =$		27	$7 \div 7 =$	
6	$21 \div 7 =$		28	$70 \div 7 =$	
7	$14 \div 7 =$		29	$35 \div 7 =$	
8	$28 \div 7 =$		30	$21 \div 7 =$	
9	$7 \div 7 =$		31	$\_\_ \times 7 = 21$	
10	$35 \div 7 =$		32	$\_\_ \times 7 = 28$	
11	$10 \times 7 =$		33	$\_\_ \times 7 = 63$	
12	$6 \times 7 =$		34	$\_\_ \times 7 = 49$	
13	$7 \times 7 =$		35	$56 \div 7 =$	
14	$8 \times 7 =$		36	$63 \div 7 =$	
15	$9 \times 7 =$		37	$42 \div 7 =$	
16	$49 \div 7 =$		38	$49 \div 7 =$	
17	$42 \div 7 =$		39	$11 \times 7 =$	
18	$56 \div 7 =$		40	$77 \div 7 =$	
19	$70 \div 7 =$		41	$12 \times 7 =$	
20	$63 \div 7 =$		42	$84 \div 7 =$	
21	$\_\_ \times 7 = 7$		43	$13 \times 7 =$	
22	$\_\_ \times 7 = 35$		44	$91 \div 7 =$	

Name \_\_\_\_\_

Date \_\_\_\_\_

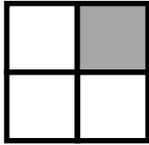
Whisper the fraction of the shape that is shaded. Then, match the shape to the amount that is not shaded.

1.



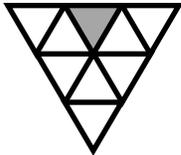
- 2 thirds

2.



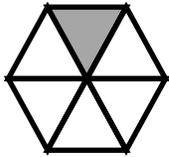
- 6 sevenths

3.



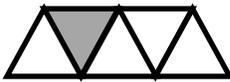
- 4 fifths

4.



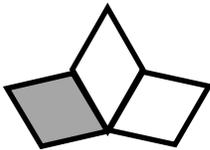
- 8 ninths

5.



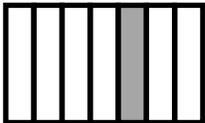
- 1 half

6.



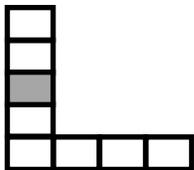
- 5 sixths

7.



- 7 eighths

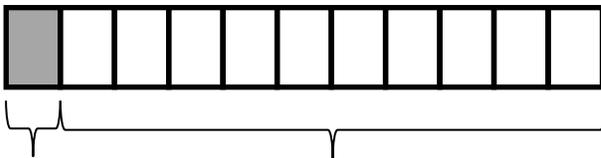
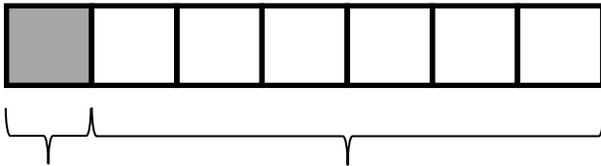
8.



- 3 fourths

9. a. How many eighths are in 1 whole? \_\_\_\_\_
- b. How many ninths are in 1 whole? \_\_\_\_\_
- c. How many twelfths are in 1 whole? \_\_\_\_\_

10. Each strip represents 1 whole. Write a fraction to label the shaded and unshaded parts.



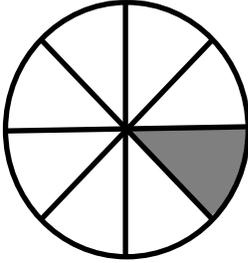
11. Avanti read  $\frac{1}{6}$  of her book. What fraction of the book has she not read yet?

Name \_\_\_\_\_

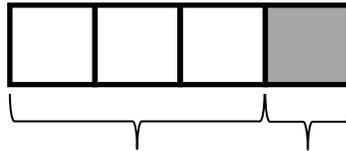
Date \_\_\_\_\_

1. Write the fraction that is not shaded.

2. There are \_\_\_\_\_ sixths in 1 whole.



3. The fraction strip is 1 whole. Write fractions to label the shaded and unshaded parts.

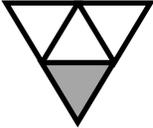
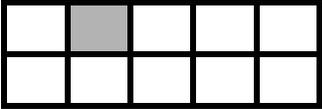
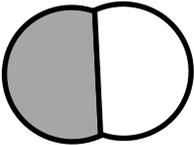
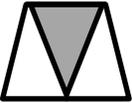
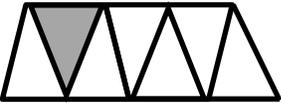
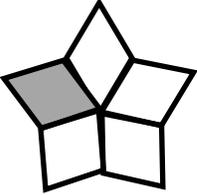
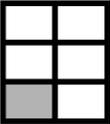


4. Justin mows part of his lawn. Then, his lawnmower runs out of gas. He has not mowed  $\frac{9}{10}$  of the lawn. What part of his lawn is mowed?

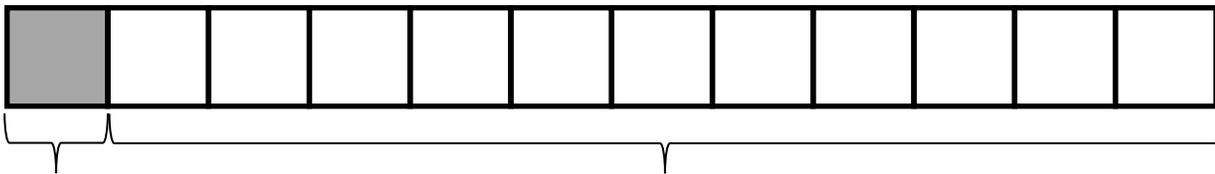
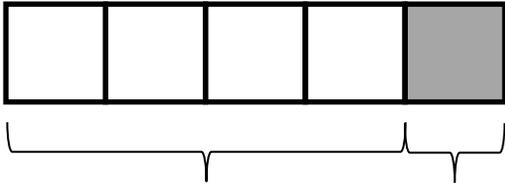
Name \_\_\_\_\_

Date \_\_\_\_\_

Whisper the fraction of the shape that is shaded. Then, match the shape to the amount that is not shaded.

1. 
  - 9 tenths
  
2. 
  - 4 fifths
  
3. 
  - 10 elevenths
  
4. 
  - 5 sixths
  
5. 
  - 1 half
  
6. 
  - 2 thirds
  
7. 
  - 3 fourths
  
8. 
  - 6 sevenths

9. Each strip represents 1 whole. Write a fraction to label the shaded and unshaded parts.



10. Carlia finished  $\frac{1}{4}$  of her homework on Saturday. What fraction of her homework has she not finished? Draw and explain.

11. Jerome cooks 8 cups of oatmeal for his family. They eat  $\frac{7}{8}$  of the oatmeal. What fraction of the oatmeal is uneaten? Draw and explain.