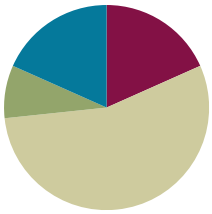
Lesson 13

Objective: Identify a shaded fractional part in different ways depending on the designation of the whole.

Related Topics: More Lesson Plans for the Common Core Math

Suggested Lesson Structure

Fluency Practice	(11 minutes)
Application Problem	(5 minutes)
Concept Development	(33 minutes)
Student Debrief	(11 minutes)
Total Time	**(60 minutes)**



Fluency Practice (11 minutes)

- Skip-Count by Fourths on the Clock **3.G.2, 3.NF.1** (2 minutes)
- Unit Fraction Counting **3.NF.1** (3 minutes)
- Division **3.OA.2** (3 minutes)
- Draw a Unit Whole **3.NF.3c** (3 minutes)

Skip-Count by Fourths on the Clock (2 minutes)

Materials: (T) Clock

T: (Hold or project a clock.) Let's skip-count by fourths on the clock starting with 1.
S: 1, quarter past 1, half past 1, quarter 'til 2, 2, quarter past 2, half past 2, quarter 'til 3, 3.
T: Stop. From 3:00, skip-count by fourths backwards.
S: 3, quarter 'til 3, half past 2, quarter past 2, 2, quarter 'til 2, half past 1, quarter past 1, 1.

Unit Fraction Counting (3 minutes)

T: (Draw a number line.) Count by halves to 2 halves, then back to zero.
S: 1 half, 2 halves, 1 half, 0.
T: This time count by halves to 2 halves.
S: 1 half, 2 halves.
T: Good. Count backwards by halves starting with one whole.
S: 1 whole, 1 half, 0.

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Continue, possibly with thirds, fourths, and eighths.

Division (3 minutes)

T: (Write 4 ÷ 2 =_____.) Say the number sentence and the answer.
S: 4 divided by 2 equals 2.

Continue with possible sequence: 6 ÷ 2, 6 ÷ 3, 8 ÷ 2, 8 ÷ 4, 10 ÷ 2, 10 ÷ 5, 12 ÷ 2, 12 ÷ 6, 12 ÷ 4, 12 ÷ 3.

Draw a Unit Whole (3 minutes)

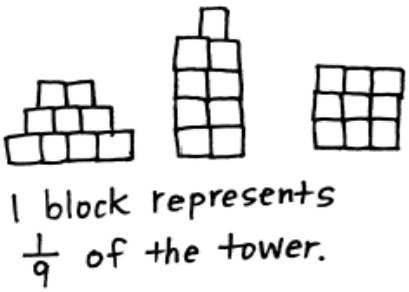
Materials: (S) Personal white boards

T: Draw 1 unit on your personal board.
S: (Students draw 1 unit.)
T: Label the unit $\frac{1}{3}$. Now draw the whole that corresponds to your unit of $\frac{1}{3}$.

Continue with possible sequence: $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{4}$, and $\frac{1}{2}$.

Application Problem (5 minutes)

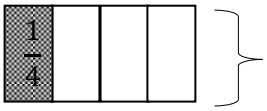
Davis wants to make a picture using 9 square tiles. What fraction of the picture does 1 tile represent? Draw 3 different ways Davis could make his picture.



Concept Development (33 minutes)

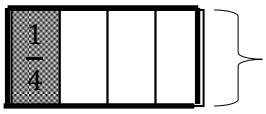
Materials: (S) 1 index card per student or partners, black markers, fraction strips, personal white boards

T: Fold your index card to make 4 equal units. Shade and label the first unit. Each part is equal to what fraction of the whole?



1 card is 1 whole

S: 1 fourth.
T: What is the whole?
S: The index card.
T: Take a black marker and trace the outside of your card to show what is the whole.



1 card is 1 whole

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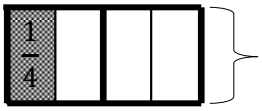
T: Flip your index card over so you cannot see the fraction you wrote. The new whole is half of the card. Outline it with marker. Use your pencil to shade the same amount of space you shaded on the other side. Talk with your partner about how to label the shaded amount on this side of the card.



$\frac{1}{2}$ card is 1 whole

S: The shaded part is $\frac{1}{2}$ because the new whole is different. I see the whole. The shaded part is just half of that.

T: Changing the whole changed the unit fraction that we use to describe the shaded part. What was 1 fourth of the whole card is 1 half of the new, smaller whole.

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Instead of discussing with a partner "What you should label?", have above grade level students answer an open-ended question that requires higher-level thinking. For example, ask, "What number patterns (or relationships) do you notice?"

Display the following figure, and give students a fraction strip of the same length.

T: This time the whole is the entire rectangle. Trace the outline of your fraction strip and then shade to draw the model on your board.

S: (Draw the model.)

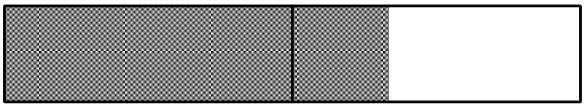
T: Tell your partner how you can figure out what fraction is shaded.

S: I can estimate and draw lines to partition the rectangle. → I can fold my fraction strip to figure out the unit fraction. → Either way 2 thirds are shaded.

MP.3

T: Now use your fraction strip to measure, partition and label.

T: (Show the figure below and have students draw it on boards using fraction strips for accuracy.) If both of the outlined rectangles represent 1 whole, then what fraction is shaded? Discuss with your partner.



S: I can fold my fraction strip to measure the parts. → I can estimate to draw lines inside the small rectangles and partition each into 3 equal pieces. → Then 1 whole rectangle and 1 third are shaded, or $\frac{4}{3}$.

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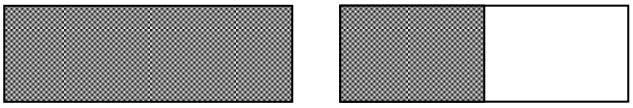
T: Talk with your partner about why it's important to know the whole.

Display the following picture.



MP.3

T: Kyle's mom brought his class cake for his birthday. When she picked up the 2 cake pans at the end of the day, she said, "Wow, your friends ate $\frac{3}{4}$ of the cake." Kyle said, "No mom, we ate $\frac{6}{4}$ cakes." Who is right? Talk about it with your partner. Use your personal boards to help prove your answer.

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.

Distribute the Problem Set. Students work independently until there are 11 minutes remaining in the lesson.

Student Debrief (11 minutes)

Lesson Objective: Identify a shaded fractional part in different ways depending on the designation of the whole.

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.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Support ELLs as they construct their written response to Problem 7. Read the prompt aloud or have students read chorally. Provide sentence starters and a word bank.

Sentence starters may include:

- "I agree with….because…"
- "I think ____ is right because…."

Possible words for the word bank may include:

specify	shaded	rectangle
whole	fourths	halves

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Model a few examples of the Problem Set activities to support students working below grade level. Make sure they can specify the whole. Ask, "Trace the whole with your finger."

To aid partitioning in Part B, cover all but the shaded part.

For Problem 6, have students organize the data with a chart or table to facilitate comparisons, if needed.

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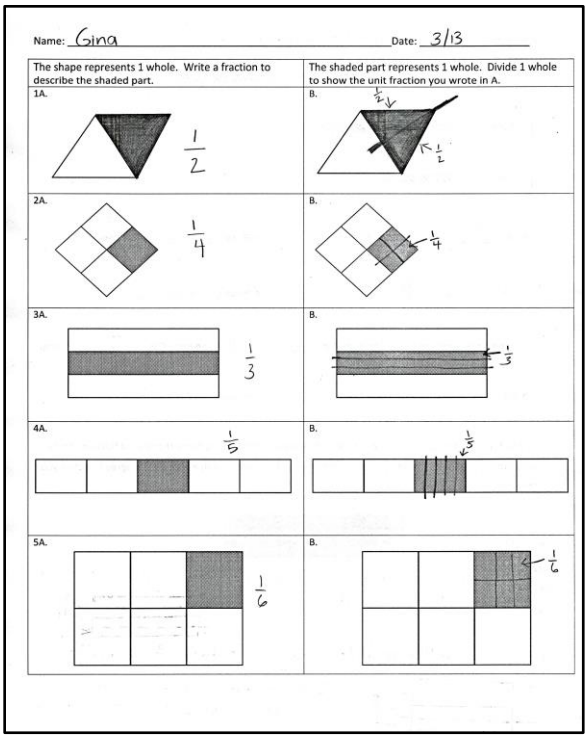
You may choose to use any combination of the questions below to lead the discussion.

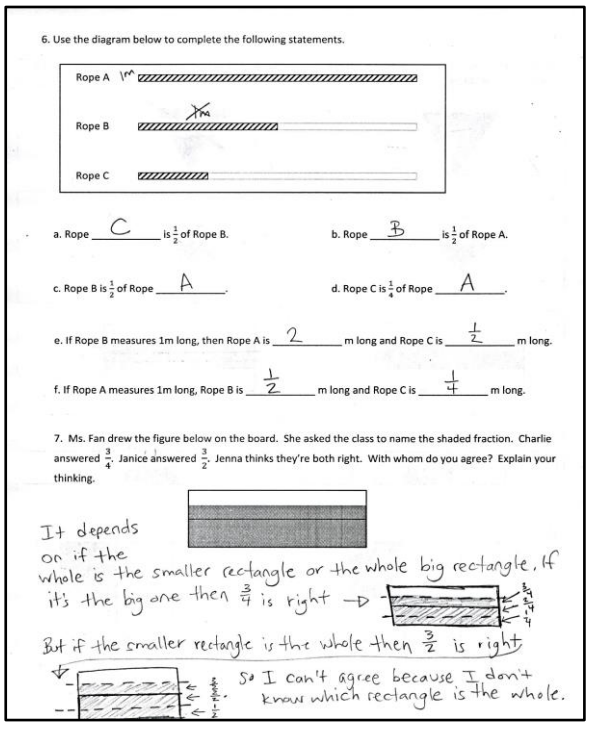
- In Problems A–D, box the rope that represents the whole and circle the rope that represents the part.
- Compare Problems E and F to illustrate the part-whole relationship.
- Compare Rope C in Problems A and D.
- Compare Rope B in Problems A and B.

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.


Name: Gina Date: 3/13

The shape represents 1 whole. Write a fraction to describe the shaded part.	The shaded part represents 1 whole. Divide 1 whole to show the unit fraction you wrote in A.
1A. $\frac{1}{2}$	B. $\frac{1}{2}$ $\frac{1}{2}$
2A. $\frac{1}{4}$	B. $\frac{1}{4}$
3A. $\frac{1}{3}$	B. $\frac{1}{3}$
4A. $\frac{1}{5}$	B. $\frac{1}{5}$
5A. $\frac{1}{6}$	B. $\frac{1}{6}$


6. Use the diagram below to complete the following statements.

Rope A 1m
Rope B
Rope C

a. Rope C is $\frac{1}{2}$ of Rope B.

b. Rope B is $\frac{1}{2}$ of Rope A.

c. Rope B is $\frac{1}{2}$ of Rope A.

d. Rope C is $\frac{1}{4}$ of Rope A.

e. If Rope B measures 1m long, then Rope A is 2 m long and Rope C is $\frac{1}{2}$ m long.

f. If Rope A measures 1m long, Rope B is $\frac{1}{2}$ m long and Rope C is $\frac{1}{4}$ m long.

7. Ms. Fan drew the figure below on the board. She asked the class to name the shaded fraction. Charlie answered $\frac{3}{4}$. Janice answered $\frac{3}{2}$. Jenna thinks they're both right. With whom do you agree? Explain your thinking.

It depends on if the whole is the smaller rectangle or the whole big rectangle. If it's the big one then $\frac{3}{4}$ is right →

But if the smaller rectangle is the whole then $\frac{3}{2}$ is right

So I can't agree because I don't know which rectangle is the whole.

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Name _____ Date _____

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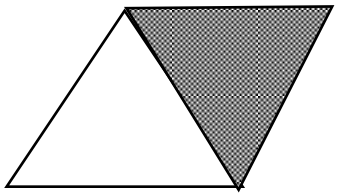
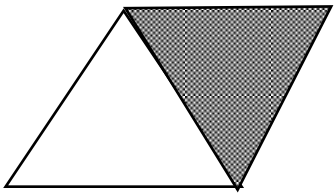
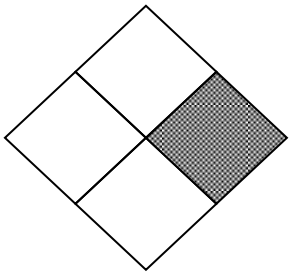
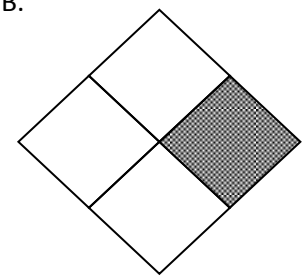
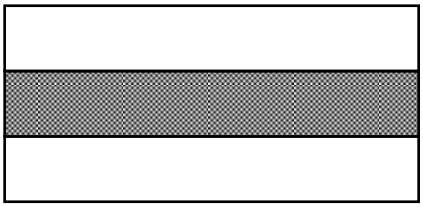
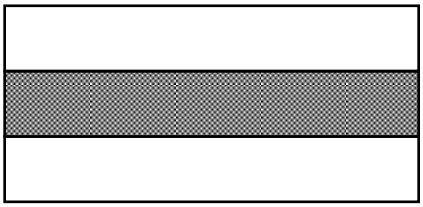
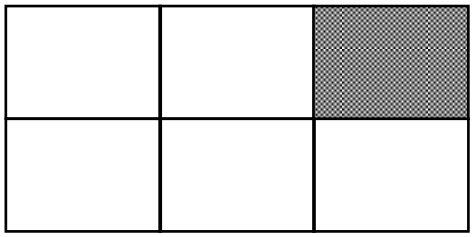
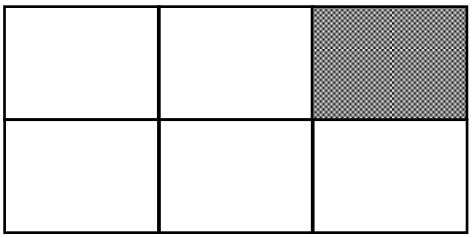
1A. 	B. 
2A. 	B. 
3A. 	B. 
4A.	B.
5A. 	B. 

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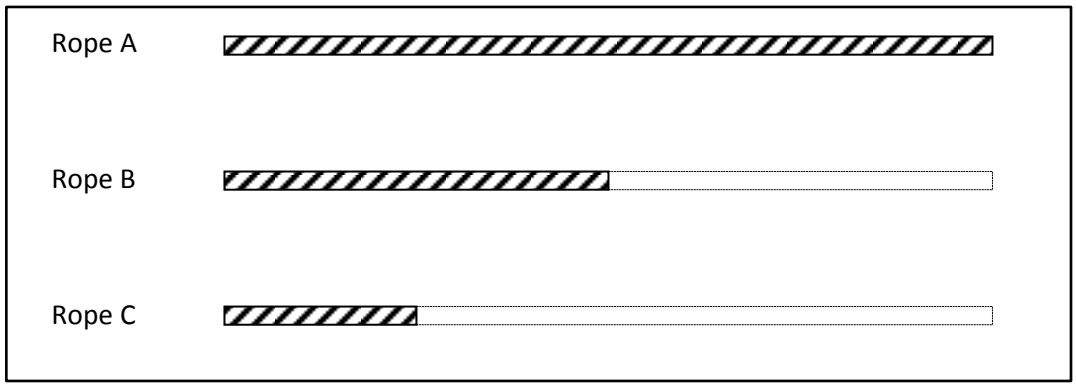
6. Use the diagram below to complete the following statements.



a. Rope _____ is $\frac{1}{2}$ the length of Rope B.

b. Rope _____ is $\frac{1}{2}$ the length of Rope A.

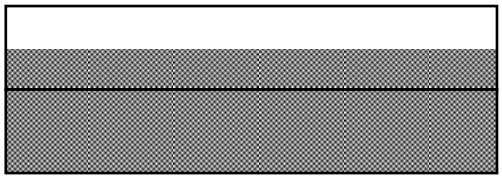
c. Rope B is $\frac{1}{2}$ the length of Rope _____.

d. Rope C is $\frac{1}{4}$ the length of Rope _____.

e. If Rope B measures 1m long, then Rope A is _____ m long and Rope C is _____ m long.

f. If Rope A measures 1m long, Rope B is _____ m long and Rope C is _____ m long.

7. Ms. Fan drew the figure below on the board. She asked the class to name the shaded fraction. Charlie answered $\frac{3}{4}$. Janice answered $\frac{3}{2}$. Jenna thinks they're both right. With whom do you agree? Explain your thinking.



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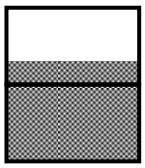
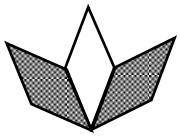
Name _____ Date _____

Ms. Silverstein asked the class to draw a model showing $\frac{2}{3}$ shaded. Karol and Deb drew the models below. Which is correct? Explain how you know.



Karol's



Deb's

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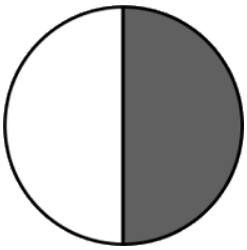
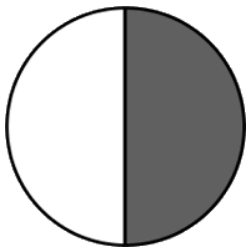
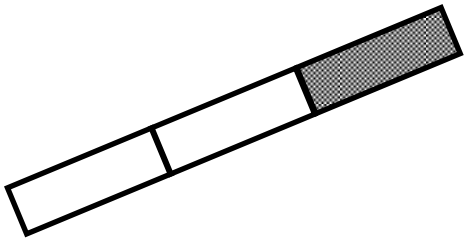
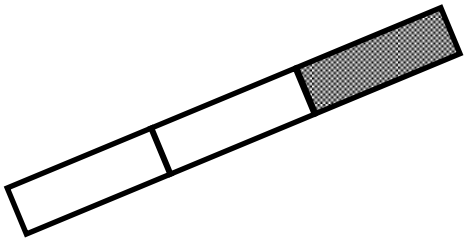
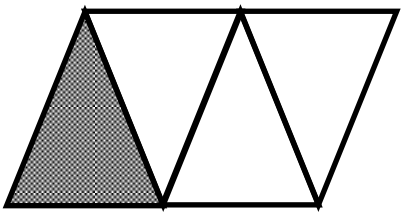
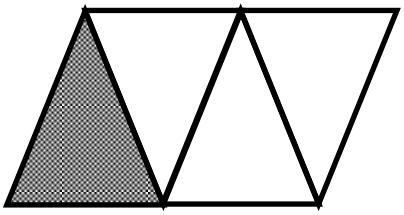
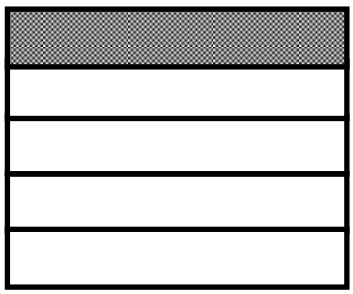
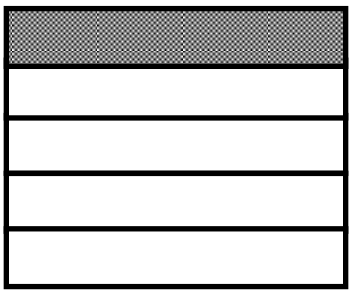
1A. 	B. 
2A. 	B. 
3A. 	B. 
4A. 	B. 

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5. Use the pictures below to complete the following statements.

Towel Rack A

Towel Rack B

Towel Rack C

a. _____ is about $\frac{1}{2}$ the length of Towel Rack C.

b. _____ is about $\frac{1}{3}$ the length of Towel Rack C.

c. If Towel Rack C measures 6 ft. long, then Towel Rack B is about _____ ft. long and Towel Rack A is about _____ ft. long.

d. About how many copies of Towel Rack A equal the length of Towel Rack C? Write number bonds to help you.

e. About how many copies of Towel Rack B equal the length of Towel Rack C? Write out number bonds to help you.

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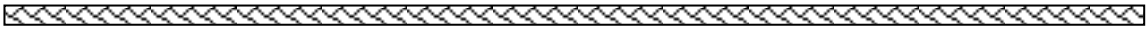
6. Draw 4 strings, A, B, C, and D by following the directions below. String A is already done for you.

- String B is $\frac{1}{3}$ of String A.
- String C is $\frac{1}{2}$ of String B.
- String D is $\frac{1}{3}$ of String C.

BONUS: String E is 5 times the length of String D.

String A 

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