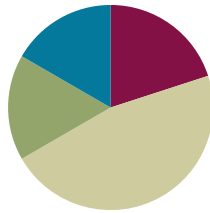# Lesson 8

Objective: Represent parts of one whole as fractions with number bonds.

Related Topics: [More Lesson Plans for the Common Core Math](#)

Suggested Lesson Structure

■ Fluency Practice   (12 minutes)
■ Application Problem   (10 minutes)
■ Concept Development   (28 minutes)
■ Student Debrief   (10 minutes)
    Total Time   **(60 minutes)**

Fluency Practice (12 minutes)

▪ Unit and Non-Unit Fractions of 1 Whole **3.NF.1**   (2 minutes)
▪ Sprint: Identify Fractions **3.G.2, 3.NF.2**   (10 minutes)

Unit and Non-Unit Fractions of 1 Whole (2 minutes)

Materials: (S) Personal white boards

    T: (Draw a shape partitioned in halves with 1 half shaded.) Write the fraction that is shaded.

    S: (Students write $\frac{1}{2}$.)

    T: Write the fraction that is not shaded.

    S: (Students write $\frac{1}{2}$.)

Continue with a possible sequence that includes the following shaded or non-shaded parts:

    $\frac{2}{3}$ and $\frac{1}{3}$, $\frac{4}{5}$ and $\frac{1}{5}$, $\frac{9}{10}$ and $\frac{1}{10}$, $\frac{7}{8}$ and $\frac{1}{8}$.

### Sprint: Identify Fractions (10 minutes)

Materials: (S) Identify Fractions Sprint

Important: Have the students keep Sprint B to use in the Concept Development lesson.

Application Problem (10 minutes)

Mr. Schwartz went to a coffee shop before school. He spent

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1 sixth of his money on a coffee and 1 sixth of his money on a bagel with cream cheese. How much of his money did Mr. Schwartz spend before school?
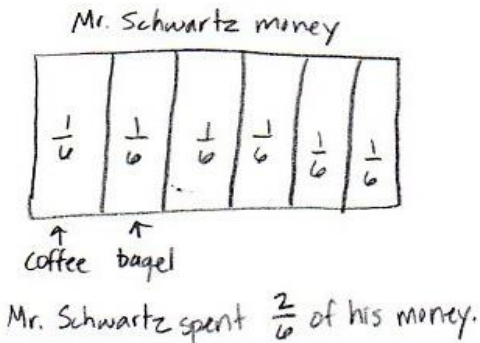
Concept Development (28 minutes)

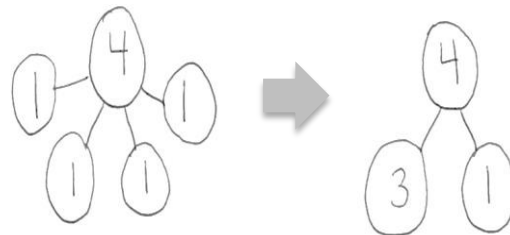Materials: (S) Personal white boards, Sprint B from the fluency

Problem 1: Decomposing 4 into ones

T: On your personal white board, write a number bond decomposing 4 into 4 ones.

S: (Students do so.)

T: Now, work with your partner to show a number bond decomposing 4 into 2 parts, one of which is composed of 3 ones.

S: (Students do so.)

T: It took 3 copies of one to make 3.

T: What are the two parts of your number bond? Please specify the unit.

S: 3 ones and 1 one.

T: Talk to your partner about the difference between these two number bonds.

S: The first bond has the ones all separated. → The second bond has 3 instead of 3 ones. → Both bonds are different ways of showing the same number, 4. → You could also show 4 as one part 2 and one part two. → The first bond has more parts than the second one.

Lesson 8:   Represent parts of one whole as fractions with number bonds.
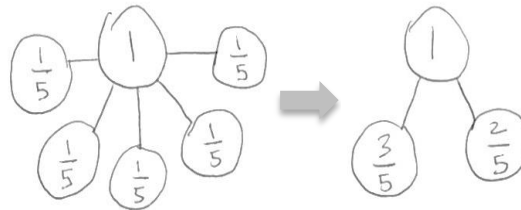Date: 3/28/14

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Problem 2: Decomposing 1 into fourths

MP.7

T: Write a number bond decomposing 1 into 4 unit fractions.

S: (Students do so.)

T: Now, work with your partner to show a number bond decomposing 1 into 2 parts, one part of which is composed of 3 copies of the unit fraction.

T: What unit did we copy to make the number 3 fourths?

S: 1 fourth.

T: What are the two parts of your number bond? Please specify the unit.

S: 3 fourths and 1 fourth.

T: (Encourage students to compare the two number bonds just as they did with the number bond of 4.)

T: Look at your Sprint B. Discuss with your partner which of figures matches your number bond.

S: (#s 3, 6, 11, 18 – 25.)
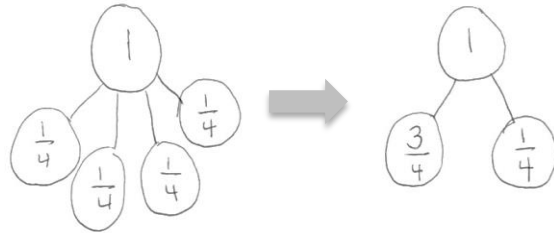
Problem 3: Decomposing 1 into fifths (two non-unit fractions)

T: Write a number bond decomposing 1 into 5 unit fractions.

S: (Students do so.)

T: Now, work with your partner to show a number bond decomposing 1 into 2 parts, one part of which is 2 copies of 1 fifth.

S: What unit did we copy to make the number 2 fifths?

S: 1 fifth.

T: What are the two parts of your number bond? Please specify the unit.

S: 2 fifths and 3 fifths.

T: Look at your sprint side B. Discuss with your partner which of these wholes matches your number bond.

S: (#'s 30 -33)

T: Yes, 3 fourths can represent either the shaded or un-shaded part.

Having done these three problems, you might have the students use same process to model Questions 1, 12, 28, 39, and 44 from Sprint B. Ask them to find other models on the Sprint which are represented by the same bond.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

As you support a small group, go step by step. Avoid talking and doing at the same time. Draw a number bond in silence. Turn and face the group and ask them to explain to a partner what you just did. Then take the next action in silence. Ask them to explain your action again. This gives them the opportunity to analyze and reconstruct your actions so that they internalize a process they can use.

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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: Represent parts of one whole as fractions with number bonds.

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.

- Share different representations for Problem 6 about the hamburger. Guide the students to see that the chef's refrigerated meat can be made into 3 more burgers and that each of those burgers is ¼ of the meat.

- As in Lesson 7's debrief, return to the shaded and un-shaded figures so that students articulate that 1 whole can ultimately be decomposed into unit fractions. The number bond is a perfect tool for seeing the transition from 1 whole to two parts to unit fractions. It is analogous as well to our beginning problem wherein we decomposed 4 into 4 ones.

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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

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A
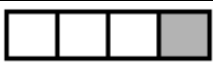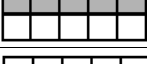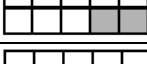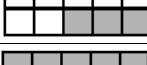
 # Correct _____

Write the fraction that is shaded.

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

B   Improvement _____   # Correct _____

Write the fraction that is shaded.

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

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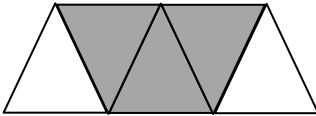
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Show a number bond representing what is shaded and unshaded in each of the figures. Draw a different visual model that would be represented by the same number bond.
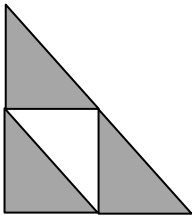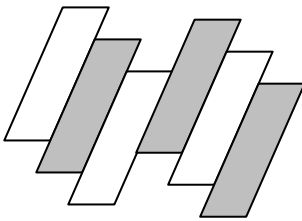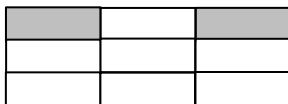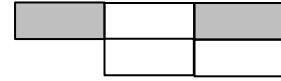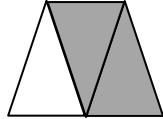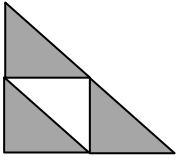
Sample:

1.

2.

3.

4.

5. Draw a number bond with 2 parts showing the shaded and unshaded fractions of each figure.
   Decompose both parts of the number bond into unit fractions.

6. The chef put $\frac{1}{4}$ of the meat on the grill to make one burger and put the rest in the refrigerator. Draw a 2-part number bond showing the fraction of the meat on the grill and the fraction in the refrigerator. Draw a visual model of all the meat. Shade what is in the refrigerator.

    a. What fraction of the meat was in the refrigerator?

    b. How many other such burgers can the chef make from what is in the refrigerator?

    c. Show the refrigerated meat broken into unit fractions on your number bond.
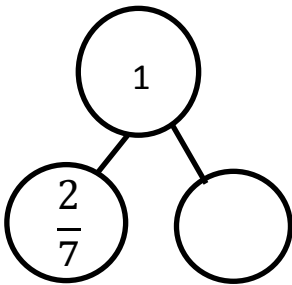
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1. Draw a number bond that shows the shaded and the unshaded parts of the shape below. Then show each part decomposed into unit fractions.
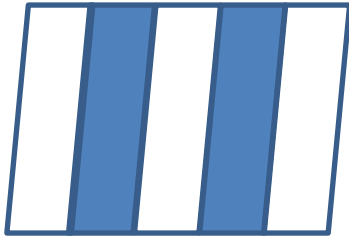
2. Complete the number bond. Draw a shape that has shaded and unshaded parts that match the completed number bond.
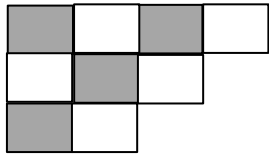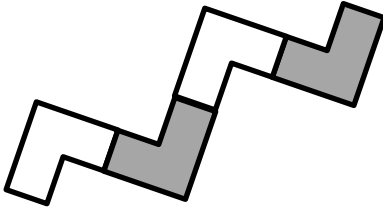
Name _____   Date _____

Show a number bond representing what is shaded and unshaded in each of the figures. Draw a different visual model that would be represented by the same number bond.
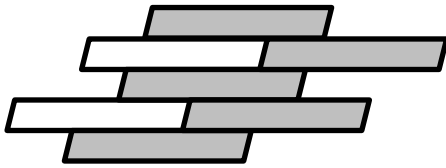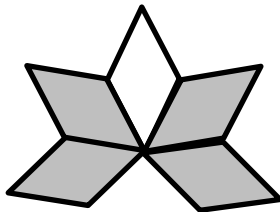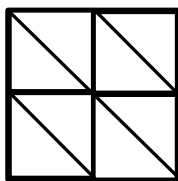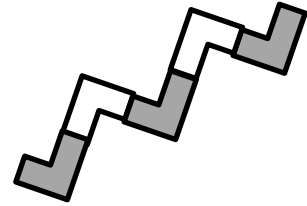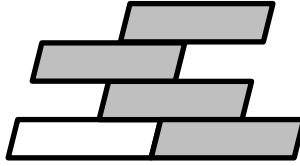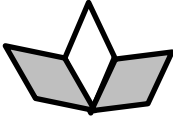
Sample:

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1.

2.

3.

4.

5. Draw a number bond with 2 parts showing the shaded and unshaded fractions of each figure. Decompose both parts of the number bond into unit fractions.

6. Johnny made a square peanut butter and jelly sandwich. He ate $\frac{1}{3}$ of it and left the rest on his plate. Draw a picture of Johnny's sandwich. Shade the part he left on his plate then draw a number bond that matches what you drew. What part of his sandwich did Johnny leave on his plate?

Lesson 8: Represent parts of one whole as fractions with number bonds.
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