

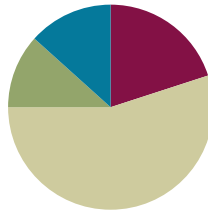
Lesson 14

Objective: Place unit fractions on a number line with endpoints 0 and 1.

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

Suggested Lesson Structure

■ Fluency Practice	(12 minutes)
■ Application Problem	(7 minutes)
■ Concept Development	(33 minutes)
■ Student Debrief	(8 minutes)
Total Time	(60 minutes)



Fluency Practice (12 minutes)

- Division **3.OA.2** (8 minutes)
- Unit Fraction Counting **3.NF.1, 3.NF.3** (3 minutes)
- Unit Fractions in 1 Whole **3.NF.1** (1 minute)

Division (8 minutes)

- T: Write as many different division facts as you can in the next 2 minutes. Take your mark, get set, go.
- S: (Students work independently.)
- T: (At three minutes.) Share your work with your partner. Check to see if their problems are correct.
- T: Try again for three minutes. Take your mark, get set, go.
- T: Check your work with your partner. Tell them what division facts are easy for you.
- T: Who improved? How did you improve? What helped you do more problems correctly?

Unit Fraction Counting (3 minutes)

T: (Project a number line.) Count by 1 eighth to 8 eighths.

S: $\frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \frac{4}{8}, \frac{5}{8}, \frac{6}{8}, \frac{7}{8}, \frac{8}{8}, \frac{7}{8}, \frac{6}{8}, \frac{5}{8}, \frac{4}{8}, \frac{3}{8}, \frac{2}{8}, \frac{1}{8}$

Continue with possible sequence: fifths, thirds, and fourths.



NOTES ON MULTIPLE MEANS FOR ENGAGEMENT:

- Change directions so that the sequence stays unpredictable.
- React to misunderstandings by repeating transitions until mastery.
- Support by recording on a number line as students count.
- Extend by having students say “1” or “1 whole” instead of a fraction. (E.g., “...6 eighths, 7 eighths, 1, 7 eighths, 6 eighths...”)

Unit Fractions in 1 Whole (1 minute)

T: I'll say a unit. You say how many there are in 1 whole. 1 fifth.

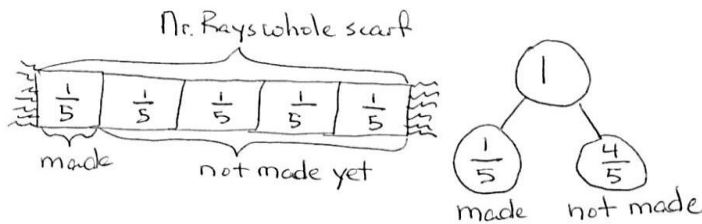
S: 5 fifths are in 1 whole.

Continue with possible sequence: 1 tenth, 1 fourth, 1 third, 1 eighth, 1 half.

Application Problem (7 minutes)

Mr. Ray is knitting a scarf. He says that he has completed 1 fifth of the total length of the scarf.

Draw a picture of the final scarf. Label what he has finished and what he still has to make. Draw a number bond with 2 parts to show the fraction he has made and the fraction he has not made.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

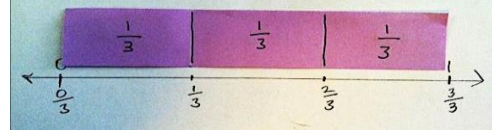
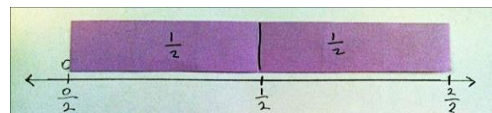
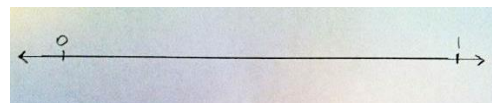
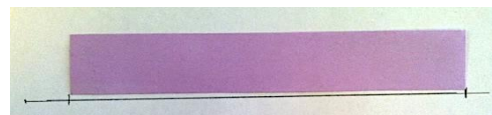
Empower ELLs to solve word problems by activating prior knowledge. Guide students to make personal connections. Discuss their own experiences with knitting and scarves.

Concept Development (33 minutes)

Materials: (T) Board space, yard stick, large fraction strip for modeling (S) Fraction kit, blank paper, rulers, pencils

Measure a Line of Length 1 Whole:

1. Draw a horizontal line with your ruler that is a bit longer than 1 of your fraction strips.
2. Place a whole fraction strip just above the line you drew.
3. Make a small mark on the left end of your strip.
4. Label that mark 0 above the line. This is where we start measuring the length of the strip.
5. Make a small mark on the right end of your strip.
6. Label that mark 1 above the line. If we start at 0, the 1 tells us when we've travelled 1 whole length of the strip.

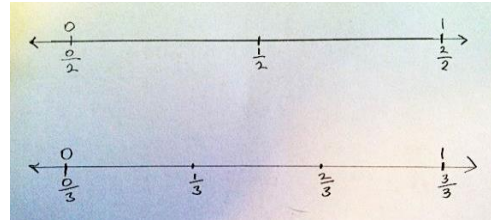


MP.7

MP.7

Measure the Unit Fractions:

1. Place your fraction strip with halves above the line.
2. Make a mark on the number line at the right end of 1 half. This is the length of 1 half of the fraction strip.
3. Label that mark $\frac{1}{2}$. Label 0 halves and 2 halves.
4. Repeat the process to measure and make other unit fractions on a number line.



Draw Number Bonds to Correspond to the Number Lines:

Once students have gotten good at making and labeling fraction number lines using strips to measure, have them draw number bonds to correspond. Use questioning as you circulate to help them see similarities and differences between the bonds, the fraction strips, and the fractions on the number line. You may want to use the following suggestions:

- What do both the number bond and number line show?
- Which model shows you how big the unit fraction is in relation to the whole? Explain how.
- How do your number lines help you to make number bonds?

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 (8 minutes)

Lesson Objective: Place unit fractions on a number line with endpoints 0 and 1.

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

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

This lesson gradually leads the student from the concrete level (fraction strips) to the pictorial level (number lines).

Name: Gina Date: 3/14

1. Write number bonds. Partition the fraction strip to show the unit fractions of the number bond. Use the fraction strip to help you label the unit fractions on the number line. Include 0 unit fractions.

Halves:

Thirds:

Fourths:

Fifths:

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.

- Describe the process for labeling unit fractions on the number line.
- Why is the fraction strip an important tool to use when labeling unit fractions?
- What does the fraction strip help you measure?
- Look at the number line you made for Problem 3 on the Problem Set. What does each point on the number line mean? (Possible response: “ $\frac{1}{5}$ marks the distance from 0 – the end of the ribbon – to where Mrs. Lee sews on the first bead.”)
- In the puppy-walking problem, the point is a point in time, not the whole length. In the ribbon problem, the point describes the length of the ribbon. Let them have fun with the difference between these two problems.

The puppy is in one location, like the mark on the line. The ribbon is the entire length. You may want to use the following suggestions to guide the discussion:

- Think about the units of measure in Problem Set Problems 2 and 3. How are they the same? How are they different?
- How does the unit of measure change what’s happening in the problem? How does that change what the number line shows?
- How does what each number line shows stay the same?

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.

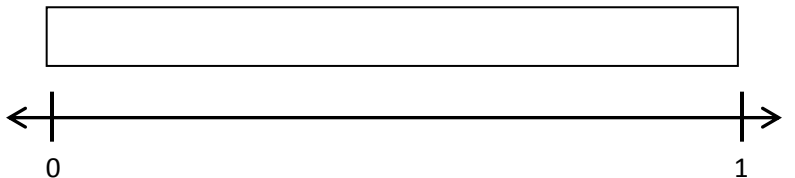
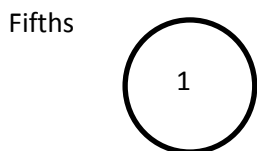
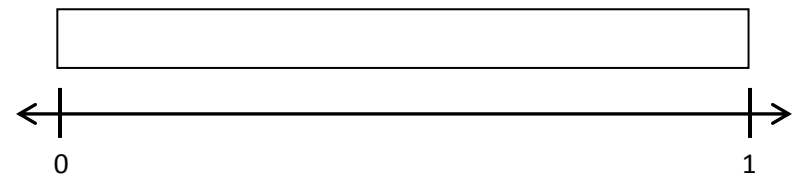
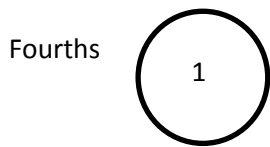
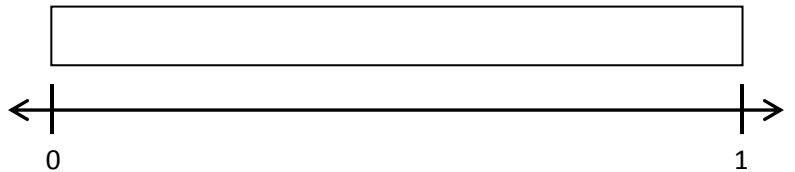
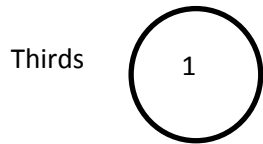
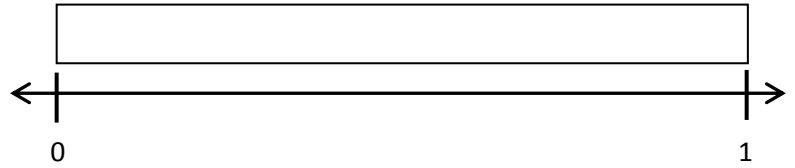
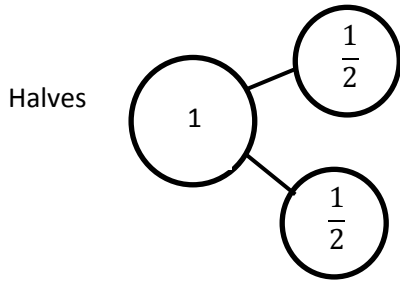
2. Trevor needs to let his puppy outside every quarter (1 fourth) hour to potty train him. Draw and label a number line from 0 hours to 1 hour to show every 1 fourth hour. Include 0 fourths and 4 fourths hour. Label 0 hours and 1 hour, too.

3. A ribbon is one meter long. Mrs. Lee wants to sew a bead every $\frac{1}{5}$ m. The first bead is at $\frac{1}{5}$ m. The last bead is at the 1 m. Draw and label a number line from 0 m to 1 m to show where Mrs. Lee will sew in a bead. Label all the fractions including 0 fifths and 5 fifths. Label 0 meters and 1 meter, too.

Name _____

Date _____

1. Write number bonds. Partition the fraction strip to show the unit fractions of the number bond. Use the fraction strip to help you label the unit fractions on the number line. Include 0 unit fractions.



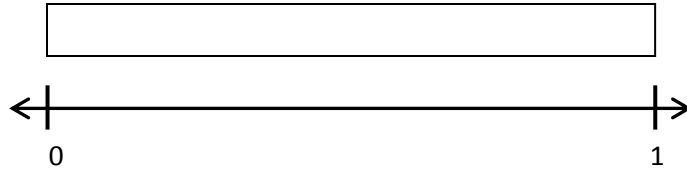
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Name _____

Date _____

- Write a number bond. Partition the fraction strip and draw and label the fractional units on the number line. Be sure to label 0 unit fractions.

Sixths



Write number bonds and draw a number line to help explain Problem 2.

- Ms. Metcalf wants to share \$1 equally between 5 students.

a. What fraction of a dollar will each student get?

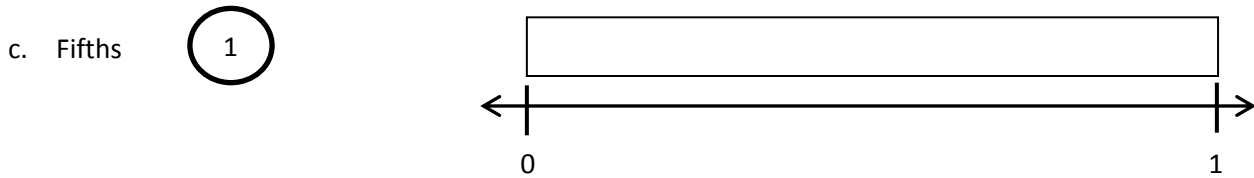
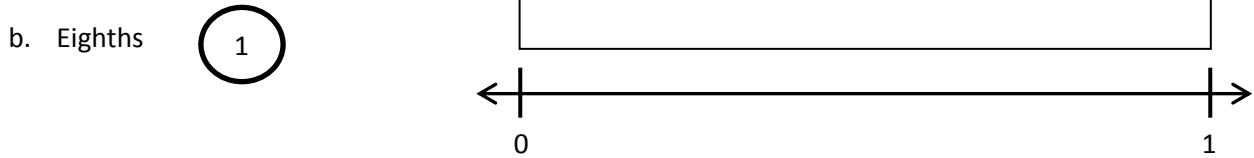
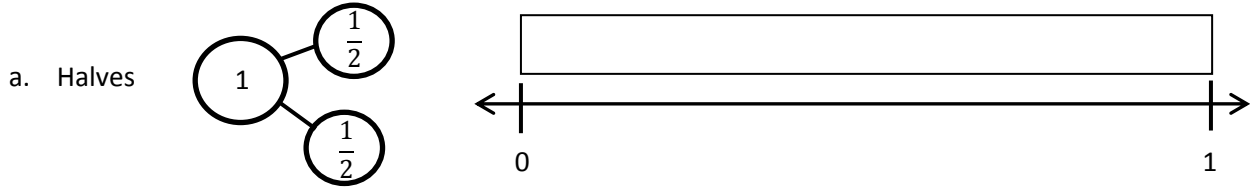
b. How much money will each student get?

Name _____

Date _____

1. Write number bonds. Partition the fraction strip to show the unit fractions of the number bond. Use the fraction strip to help you label the unit fractions on the number line. Include 0 unit fractions.

Sample:



2. Carter needs to wrap 6 presents. He lays the ribbon out flat and says, "If I make 6 equally spaced cuts, I'll have just enough pieces. I can use 1 piece for each package, and I won't have any pieces left over." Does he have enough pieces to wrap all the presents?
3. Mrs. Rivera is planting flowers in her 1 meter long rectangular plant box. She divides the plant box into sections $\frac{1}{9}$ m in length, and plants 1 seed in each section. Draw and label a fraction strip representing the plant box from 0m to 1m. Represent each section where Mrs. Rivera will plant a seed. Label all the fractions.
- a. How many seeds will she be able to plant in 1 plant box?
- b. How many seeds will she be able to plant in 4 plant boxes?
- c. Draw a number line below your fraction strip and mark all the fractions.