

Fractions On A Number Line: Lesson Plan

Overview:

In this lesson students will be introduced to the idea of fractions on a number line. This lesson only uses halves, thirds, and fourths as a starting point for this concept.

Objectives:

- Students will see fractions as numbers on a number line.
- Students will represent fractions on a number line.
- Students will use a number line to solve basic problems involving fractions.

Materials:

- Fraction bars (one copy for each student) and Fractions on a Number Line activity sheets - See attached.
- Sticky notes (one for each student)
- *Optional for Extension* Fractions on a Number Line Task Cards - Find them [HERE](#).

Activating Prior Knowledge - Spend a few minutes reviewing what students already know (3 minutes).

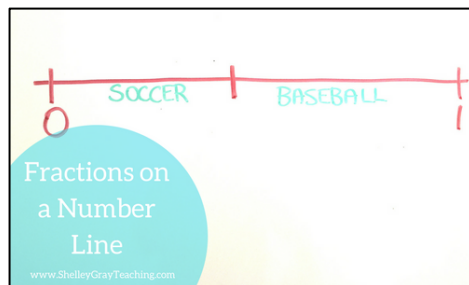
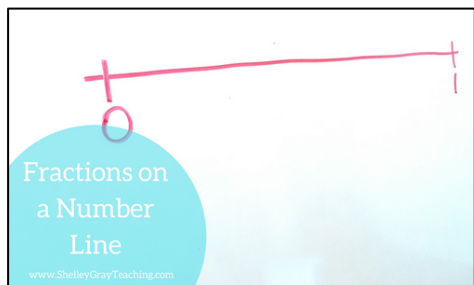
By this time you have spent time teaching students about fractions as part of a whole or part of a set. Review this concept:

- Show students a rectangular piece of paper. Say, "We have worked with fractions as part of a whole. Here I have one whole piece of paper. If I cut this piece of paper in half, what does each piece represent?" Cut the paper in half. Students should identify that each piece represents one-half of the whole.
- Say, "What if I cut each piece in half again?" Cut each half in half again so that you have four pieces. Ask, "Now what fraction of the whole does each piece represent?" Students should identify that each piece represents one-fourth.

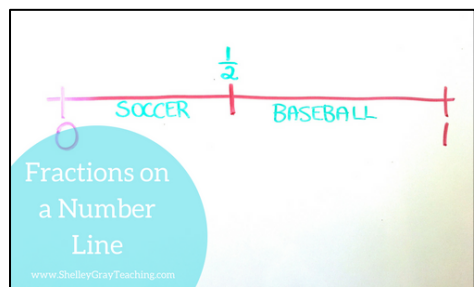


Acquiring New Knowledge- In this part of the lesson our students will acquire new knowledge. Let's help them see the number line as a tool to use with fractions. (8 minutes)

- Say, "We know that we can divide any whole into parts. But what if we want to divide something into parts that we can't touch? What about dividing one hour into parts? How could we represent one hour?" Let students come up with ways to represent one hour. Write their responses down on the whiteboard. Guide them towards using a horizontal line to represent one hour. You may have to ask, "What about a line? Could we use a line to represent one hour?"
- Write a large horizontal line on the whiteboard. Make one mark at the beginning and one mark at the end. Ask your students, "If this entire line represents one hour, what should I write beside these notches?" Guide students toward answering "0" for the line at the beginning and "1" for the line at the end.
- Say, "Suppose that we play soccer for the first half of the hour, and then we play baseball for the last half of the hour. How could we represent that on this line?" Help students see that we could divide the line in half as shown below.



- Ask, "If we wanted to write the fraction 'one-half' on this number line, where would we write it?" Students should be able to identify that if we wanted to write one-half, we would write it at the middle point as shown below.

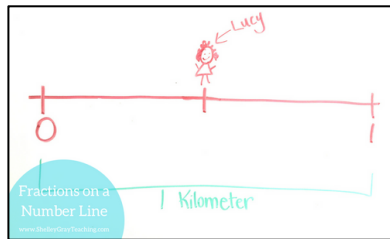
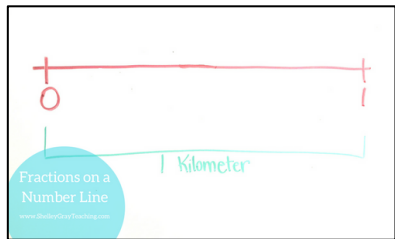


- Explain that each half of the number line represents one-half of the hour.

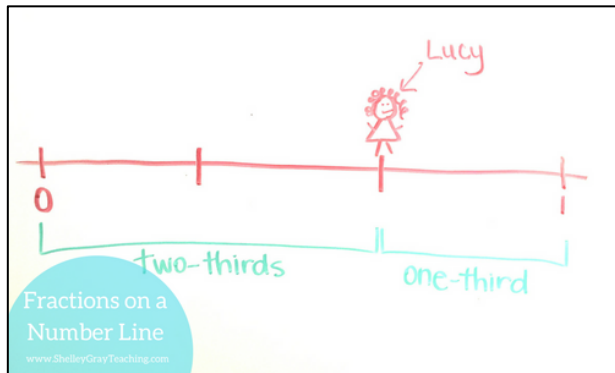
- Do another example using fourths of an hour. Have the students generate the ideas for how the hour could be divided into fourths.

NEXT EXAMPLE- Let's try another example with distance rather than time.

- Say, "Let's suppose that we want to divide one kilometer into parts. Could we use a number line to represent one kilometer?" Guide students toward the idea that we can use a similar number line, with 0 at one end and 1 at the other to represent one whole kilometer.
- "Let's suppose that there is a girl named Lucy who is running one kilometer. So far she has run one-half of a kilometer. How could we show the distance that she has run on the number line?" Students should identify that we can divide the number line in half and show Lucy at the one-half point.



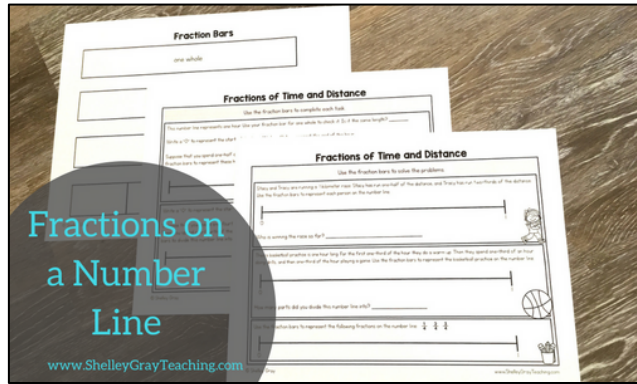
- Ask, "What if Lucy has run two-thirds of the kilometer? How could we show that?" Guide students toward the idea that we can divide the number line into three equal parts and show Lucy at the two-thirds point.



- As a class, do another example using fourths of a kilometer. Have the students generate the ideas for how the hour could be divided into fourths.

Guided Practice- In this part of the lesson students will work with fraction bars to enhance their understanding. (25 minutes)

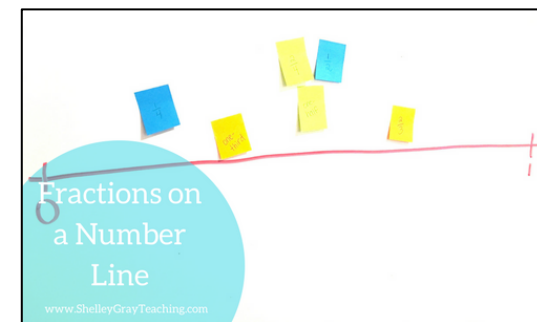
- Give each student a set of fraction bars and the number line activity sheets (see attached).



- Work together to label the fraction pieces on the fraction bar sheet. Have students carefully cut out their fraction bars.
- Have students work with a partner to complete their activity sheets. As they work, circulate the room and ask questions to check for understanding. Your questions might start with:
 - “How do you know that ...”
 - “What if...”
 - “How can you tell if...”
 - “What do these pieces represent?”
- Circulating the room as students work will also serve as your assessment of this lesson. This will help to drive your future instruction. Do your students understand this concept? Are they ready to move on to the next part of fractions on a number line? Is re-teaching required? Do you need to work with small groups on any of the concepts?

Wrap-Up- Let's consolidate learning and reinforce the fact that fractions are numbers that can be represented on a number line. (3 minutes)

- Draw a giant number line on the whiteboard. Label it with 0 and 1.
- Give each student a sticky note. Ask students to write a fraction between 0 and 1 on their sticky note.
- In groups, have students approach the board and place the sticky note on the number line where they think it should go.
- This is another opportunity to check for any misunderstandings.



NEXT STEPS

- Now that students have been introduced to the concept of fractions on a number line, we can keep reinforcing this concept. In upcoming lessons, be sure to focus on the following concepts:
 - ordering fractions on a number line
 - comparing fractions on a number line
 - finding equivalent fractions using number lines
 - problem solving with fractions using a number line
 - relating number lines to other visual models (example: representing a fraction as a part of a whole circle, and as a part of a set, and on a number line)



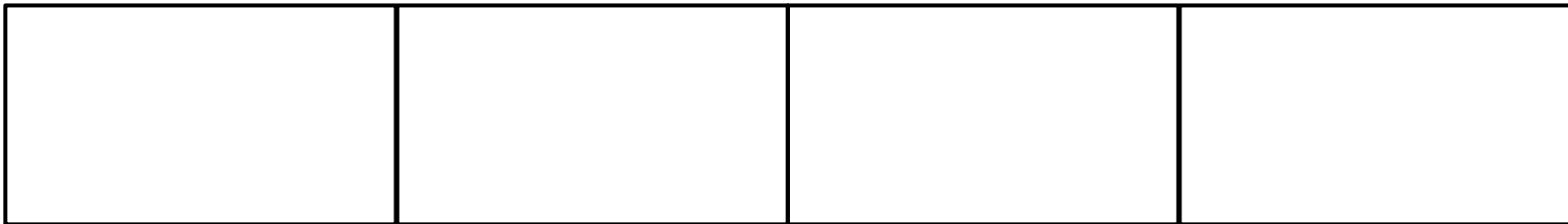
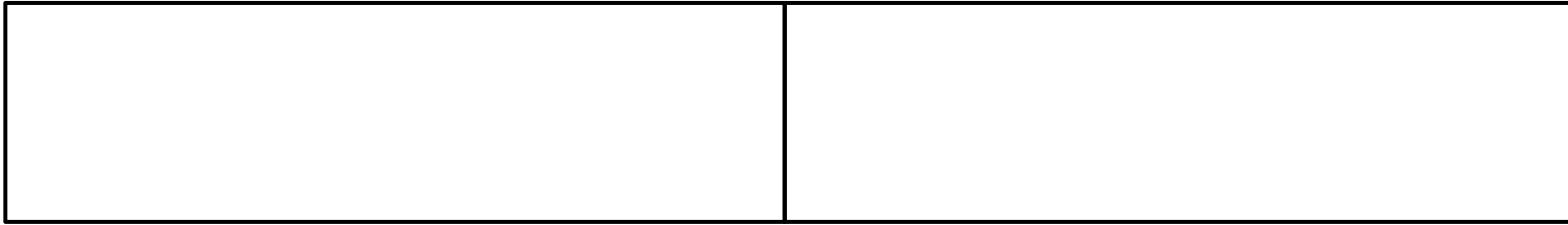
Feeling overwhelmed and wondering how to fit this all into your curriculum? The Fraction Station is a self-paced, student-centered approach to teaching fractions. Students work at their own pace to complete the levels, each of which includes independent activity sheets and hands-on activities. Check it out here

<https://www.teacherspayteachers.com/Product/The-Fraction-Station-Grades-3-4-Combo-Pack-3064881>

Fraction Bars

one whole

Label each fraction piece. What does each one represent?



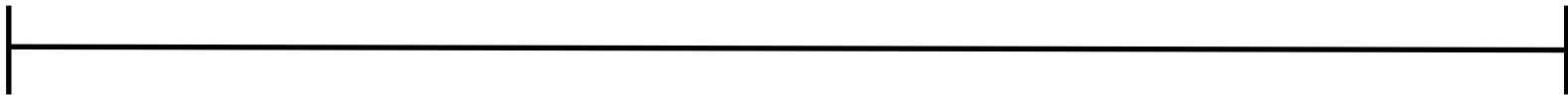
Fractions of Time and Distance

Use the fraction bars to complete each task.

This number line represents one hour. Use your fraction bar for one whole to check it. Is it the same length? _____

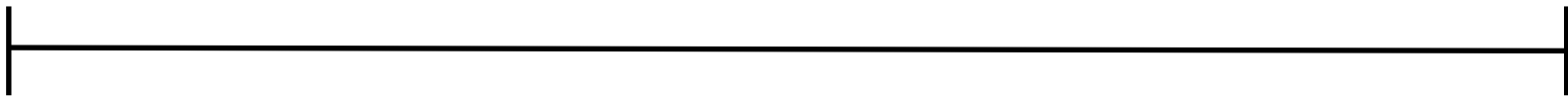
Write a "0" to represent the start of the hour. Write a "1" to represent the end of the hour.

Suppose that you spend one-half of the hour watching television, and another one-half of the hour playing outside. Use your fraction bars to represent these halves on the number line.



Write a "0" to represent the start of the hour. Write a "1" to represent the end of the hour.

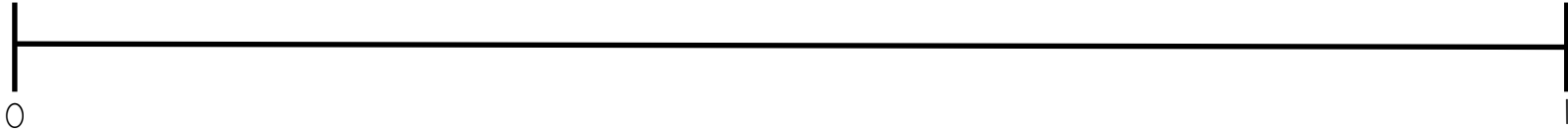
Suppose that you spend one-fourth of the hour having breakfast. Then you spend one-fourth of the hour walking to school. Then you spend one-fourth of the hour doing math. Then you spend one-fourth of the hour writing a story. Use the fraction bars to divide this number line into fourths and represent each part.



Fractions of Time and Distance

Use the fraction bars to solve the problems.

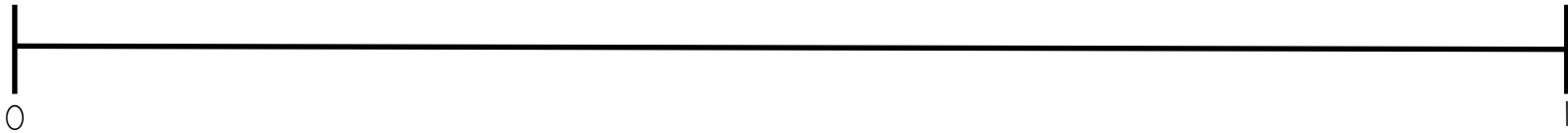
Stacy and Tracy are running a 1 kilometer race. Stacy has run one-half of the distance, and Tracy has run two-thirds of the distance. Use the fraction bars to represent each person on the number line.



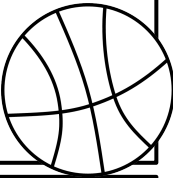
Who is winning the race so far? _____



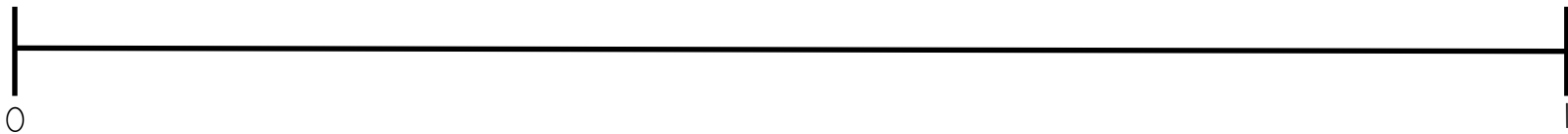
Theo's basketball practice is one hour long. For the first one-third of the hour they do a warm up. Then they spend one-third of an hour doing drills, and then one-third of the hour playing a game. Use the fraction bars to represent the basketball practice on the number line.



How many parts did you divide this number line into? _____

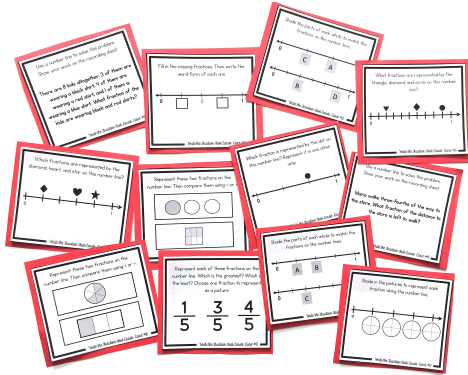


Use the fraction bars to represent the following fractions on the number line: $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$



Next Steps:

I would love to help you dive even deeper into teaching fractions in your classroom! Here are some resources that you'll find useful!



Fractions on a Number Line Task Cards

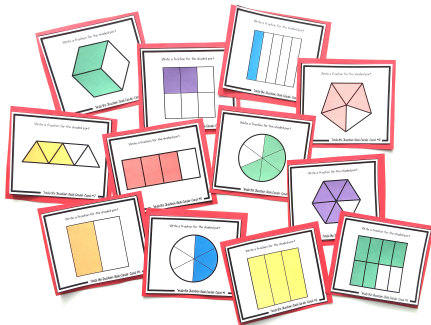
Help your students practice this essential skill in a variety of different ways for maximum understanding!

<https://www.teacherspayteachers.com/Product/Fractions-on-a-Number-Line-Task-Cards-Fraction-Practice-3666955>



Are you looking for even more support with teaching fractions in your classroom? You might be interested in the self-paced, student-centered **Fraction Station** that will allow your students to master fraction concepts at their own pace. Find the Fraction Stations for **third and fourth grade** here:

<https://www.teacherspayteachers.com/Product/The-Fraction-Station-Grades-3-4-Combo-Pack-3064881>



See all fraction resources here:

<https://www.teacherspayteachers.com/Store/Shelley-Gray/Category/Fractions-281943>