



Partitioning Line Segments



Purpose In this Master activity, students partition line segments into fractional parts and explain their thinking.

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|----------------------------------------------|--------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> Introduction | <input checked="" type="checkbox"/> Partitioning | <input checked="" type="checkbox"/> Linear Model | <input type="checkbox"/> Teacher-Facilitated |
| <input checked="" type="checkbox"/> Practice | <input type="checkbox"/> Representing | <input type="checkbox"/> Area Model (Square) | <input checked="" type="checkbox"/> Tutoring/Intervention |
| <input type="checkbox"/> Posttest | <input type="checkbox"/> Counting | <input type="checkbox"/> Area Model (Circle) | <input checked="" type="checkbox"/> Small group |
| | <input type="checkbox"/> Examples/Non-examples | <input type="checkbox"/> Any Model | <input checked="" type="checkbox"/> Centers |
| | | | <input type="checkbox"/> Challenge! |



Setting Up For Instruction

- Make 1 copy of **Lines, Words, & Parts** for each student.
- Make 1 copy of **Lines, Words, & Parts Journal** for each pair of students. Cut in half.
- Gather 2 different colors of **highlighters** for each pair of students.
- (Optional) Gather **math journals** and **glue sticks**.



How-To Guide

1. Put students in pairs and hand out materials.
2. Have students work together to solve the problems.
3. Have students respond individually to the journal prompt.
(Optional) Have students glue their responses into their **math journals**.



Thought Extenders

- When you divided the line, how many parts did you make?
- How many parts does it take to make 1 whole?
- How do you know that you have divided the line into fractional parts?



Answer Key

1. The race was divided into 4 equal parts because there were 4 runners, and each ran the same distance. These parts are called fourths because it takes 4 equal parts to make one whole.
2. They split the rope into 8 equal parts because there were 8 students and each student painted the same amount of the rope. These parts are called eighths because it takes 8 equal parts to make one whole.
3. They divided the distance into 2 equal parts because each sister got to ride the bike the same distance (halfway). These parts are called halves because it takes 2 equal parts to make one whole.
4. They cut the ribbon into 4 equal parts because they needed to share fairly with 4 people. These parts are called fourths because it takes 4 equal parts to make one whole.



+ Why Don't We Use Fraction Symbols in 2nd Grade? (2.ID, 2.IG)

For many elementary and middle school students, fraction concepts are difficult to understand. Many students lack the fraction foundations necessary to understand the math they are expected to do with fractions in the upper grades. As a result, students use rules and processes incorrectly because they don't understand when to apply the rules and processes. This misunderstanding often begins with fraction notation.

By focusing on the conceptual development of fractional parts in Grade 2, we set the course for future success! In 2nd grade, students learn what fractional parts are. They learn the language and vocabulary of fractions and become fluent in defining, identifying, naming, and counting fractional parts. Students gain exposure to, and experience with, a wide variety of models including area models and linear models so that they see fractions in a variety of ways and begin to compare the relative sizes of fractional parts. With sufficient time and appropriate experiences, Grade 2 students speak fluently about fractional parts, and deeply understand the meaning of fractions.

Since the goal is to make sense of fractions in Grade 2, there is no need to complicate matters by throwing fraction symbolism into the mix. For this reason, writing the symbolic notation of fractions using numbers is reserved for discussion and implementation in Grade 3.

Taking time to develop the conceptual understanding of fractions will pay big dividends in the future!

+ Partitioning Line Segments (2.1B, 2.1C)

When students solve a fraction problem they must first identify the whole and then partition the whole into the required number of equal parts. For line segments, identifying the fractional parts can be challenging. Many students count the hashmarks when they should count the spaces between the hashmarks.

Here are some strategies to avoid developing this misconception:

- Highlight the spaces between the hashmarks using alternating colors.
- Have students slide their finger along the line between the hashmarks when identifying the fractional parts.



Directions: Partition, explain, and name.

1 Darius and his three friends ran a relay race. They each ran the same distance.

Partition the Line

Use the line below to show the part of the race each person ran.



Explain in Words

The race was divided into _____ equal parts because

Name the Parts

These parts are called _____ because it takes _____ equal parts to make _____ whole.



- 2** Each team in art class got one rope from the teacher. Each of the 8 students on the team painted the same amount of the rope.

Partition the Line

Use the line below to show how much of the rope each student painted.



Explain in Words

They split the rope into _____ equal parts because

Name the Parts

These parts are called _____ because it takes _____ equal parts to make _____ whole.



3 Alaina and her sister share a bike. Each sister gets to ride the bike halfway to school.

Partition the Line

Use the line below to show how the sisters share the bike on the way to school.



Explain in Words

They divided the distance into _____ equal parts because

Name the Parts

These parts are called _____ because it takes _____ equal parts to make _____ whole.



- 4 Jessica, Raymond, Ahmed, and Johanna are wrapping presents. They have one long piece of ribbon to share.

Partition the Line

If they each get the same amount of ribbon, use the picture below to show how they shared it fairly.



Explain in Words

They cut the ribbon into _____ equal parts because

Name the Parts

These parts are called _____ because it takes _____ equal parts to make _____ whole.



LINES, WORDS, & PARTS JOURNAL

Name: _____

Pretend you have a garden shaped like a rectangle. You have three friends who want to help you plant flowers in it. Use the picture below to show how you could give everyone a fair share of the garden. Then show a non-example of fair sharing using the second picture.



**Fair Shares—
Example**

**Fair Shares—
Non-Example**

Explain

Why does the first picture show fair shares?
What are these fractional parts called and why?



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