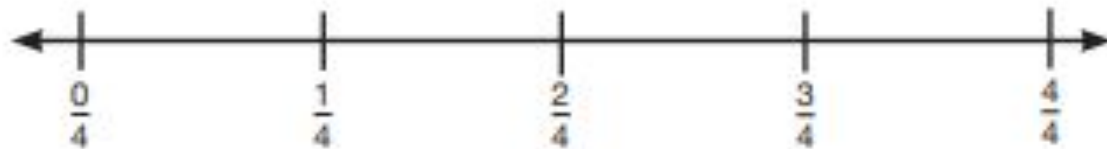


Classroom Conversations: Video Lesson Introduction to Fractions on a Number Line





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Goals For Today:

- **Introduce you to this resource-quick navigation through the different parts**
- **Share how I used this in my 5th grade classroom to help fill some gaps**
- **Answer questions you have about this resource or how I used it with my students.**

Introduction to Fractions on a Number Line

Introduction to Fractions Using a Number Line

Grade: 3rd to 5th

What you will learn from this video:

- We'll learn that a fraction represents PART of a whole.
- That a fraction can be represented as a point on a number line between 0 and 1.
- And we'll discover that this knowledge can help us plan a trip, share a meal, and even play music.

Activity

I used this with my striving students in my 5th grade classroom during WIN time

*I think this would be a great lesson with 3rd graders when introducing the concepts of fractions, as a review in 4th grade and with students still struggling in 5th.



Under Classroom Resources, go to Video Lessons



Classroom Resources

Publications

Standards & Positions

Advocacy

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Notice and Wonder

The Year Game

Back to School Resources

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Problems of the Week Resources

Reasoning & Sense Making Task
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Student Explorations in Mathematics

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Illuminations

Figure This!

Activities with Rigor & Coherence -
ARCs

Designing Innovative Lessons and
Activities

pets! Before the video: Ho



Place Value: Ones, Tens & Hundreds

Grades K-2

What you will learn from this video: About place value with Ones, Tens and Hundreds. That any 3-digit number can be broken down into groups of hundreds, tens and ones. How this knowledge can help us have a bake sale, make fruit juice, and even make our very ow



Introduction to Fractions Using a Number Line

Grades 3-5

What you will learn from this video: We'll learn that a fraction represents PART of a whole. That a fraction can be represented as a point on a number line between 0 and 1. And we'll discover that this knowledge can help us plan a trip, share a meal, an

Reading the teacher guide prior to the lesson is a great way to building your own capacity and identify misconceptions



GENERATIONGENIUS
ALWAYS QUESTION. ALWAYS WONDER.

TEACHER GUIDE

INTRO TO FRACTIONS USING THE NUMBER LINE GRADES 3-5

COMMON MISCONCEPTIONS

- **Students believe the size of the fraction depends on the size of the whole.**

Many students will compare fractions using the absolute size of the object instead of the relative size. For example, students will say that “half of a cake is larger than three-quarters of an apple because with the cake you get more food.” The concept of a fraction describes the number of parts one has relative to the number of parts the whole is partitioned into. This meaning of fraction is easily represented on a number line where the whole is defined as the space between zero and one. In the number line context, you can offer problems comparing fraction size where the whole has the same



Lesson Plan

My WIN classes are 30 minutes long (on a good day) so I actually did this lesson across five 30-minute WIN periods. On day 1, focusing on the engagement and explore activity and video, the extended practice worksheet in collaborative groups the second day, added some clothesline math for practice and extension on the third day and did review Kahoot and Assessment on the last two days.

There are many Supplemental Materials that can help guide and enrich your lesson. I will highlight which ones I used with my students.

Supplemental Materials

[Reading Material](#)[Teacher Guide](#)[Lesson Plan](#)[Practice Number Problems](#)[Practice Word Problems](#)[Quiz](#)[Online Quiz Game](#)

Engage and Explore



ENGAGE AND EXPLORE

At my school we have a die-cut machine that makes perfect shapes-you could also use clip art shapes for this activity-I only used this with my striving group during WIN time.

In this exercise, students will activate their prior knowledge of partitioning geometric shapes into equal parts to create halves, thirds, and fourths. Have students work in small groups. Each group must try to find as many ways as possible to partition each shape into halves, thirds, and fourths. Have students fold the shapes and mark the creases with a marker. Then have them label the parts as halves, thirds, or fourths. Remind students that each part must have the same size. Once the groups have folded, marked, and labeled their shapes, have them present their shapes to the class. Keep a sketch of each new partition on the board.

Before viewing the video:

Supplemental Materials

- Reading Material
- Teacher Guide
- Lesson Plan
- Practice Number Problems
- Practice Word Problems
- Quiz
- Online Quiz Game

I had my students answer these questions on personal whiteboards and hold them up for a quick formative assessment.

INTRO TO FRACTIONS USING THE NUMBER LINE DISCUSSION QUESTIONS

How do you show a fraction on a number line?

You partition the space from 0 to 1 into equal-sized pieces.

What is a numerator?

The numerator represents the number of parts we have or the number of spaces we have traveled away from 0 on the number line.

What is a denominator?

The denominator represents the number of pieces the whole is partitioned into, or the number of spaces between 0 and 1 on the number line.

Does the size of the object we are partitioning affect the value of the fraction?

No. Fractions are showing the part-whole relationship, so the value of the fraction $\frac{1}{2}$ is the same whether it represents one part of a cake partitioned in two pieces or one part of an apple partitioned in two pieces.

Which fraction will have larger spaces between 0 and 1 on the number line, $\frac{1}{2}$ or $\frac{1}{4}$?

$\frac{1}{2}$ will have larger spaces because the whole is partitioned into fewer pieces with $\frac{1}{2}$ than with $\frac{1}{4}$.

Short Video-this will help confirm conversations and misconceptions from pre-viewing questions and help visual and auditory learners understand the foundational concepts.

I showed this after the pre-viewing questions and then followed up with the post-viewing questions and anything else they were still wondering about in regards to fractions.





Extended Practice-I did these at vertical whiteboard spots to promote collaboration


EXTENDED PRACTICE

INTRO TO FRACTIONS USING THE NUMBER LINE

- Marcus, Oliver, Janelle, and Sandy divide a canvas into four equal pieces to make a painting. Partition and label the number line that models this situation.


- Venktesh has drawn this number line to represent $\frac{1}{2}$. Mandeeep thinks this is not correct, because the number line is broken into more than two pieces. Who do you agree with? Why?


- Emily has a candy bar she wants to share with five friends. All together they need six pieces. Emily decides to partition her candy bar using a number line. What will her number line look like?


- Suppose only three of Emily's friends eat a piece of the chocolate bar. Using the number line from question three, show the fraction of the chocolate bar that Emily has given away.
- Jordan says that $\frac{2}{8}$ is larger than $\frac{2}{6}$ because 8 is larger than 6. Is Jordan correct? Why or why not?

Supplemental Materials

Reading Material

Teacher Guide

Lesson Plan

Practice Number Problems

Practice Word Problems

Quiz

Online Quiz Game

About 60% of my whole group lesson in my classroom is student discourse
-when using this resource, the engage and explore activity was done with table teams
(I did this lesson with my striving students in my Math WIN group-groups of 3 in table team.

I also use the Building Thinking Classrooms structure within my classroom so the extended practice activities I did in table teams (These are not pictures from the actual activity but this is what it looks like in this structure.)



Evaluate and Check for Understanding

I used the online Quiz Game (a Kahoot) to review the concepts learned within the lesson and then used the paper/pencil quiz so I could check for understanding and could see the work on the number lines and find errors to review and reteach if needed.

Supplemental Materials

Reading Material

Teacher Guide

Lesson Plan

Practice Number Problems

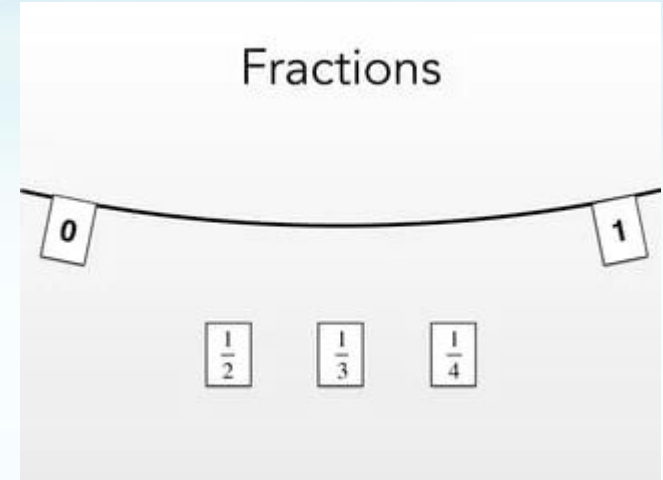
Practice Word Problems

Quiz

Online Quiz Game

CLOTHESLINE MATH!

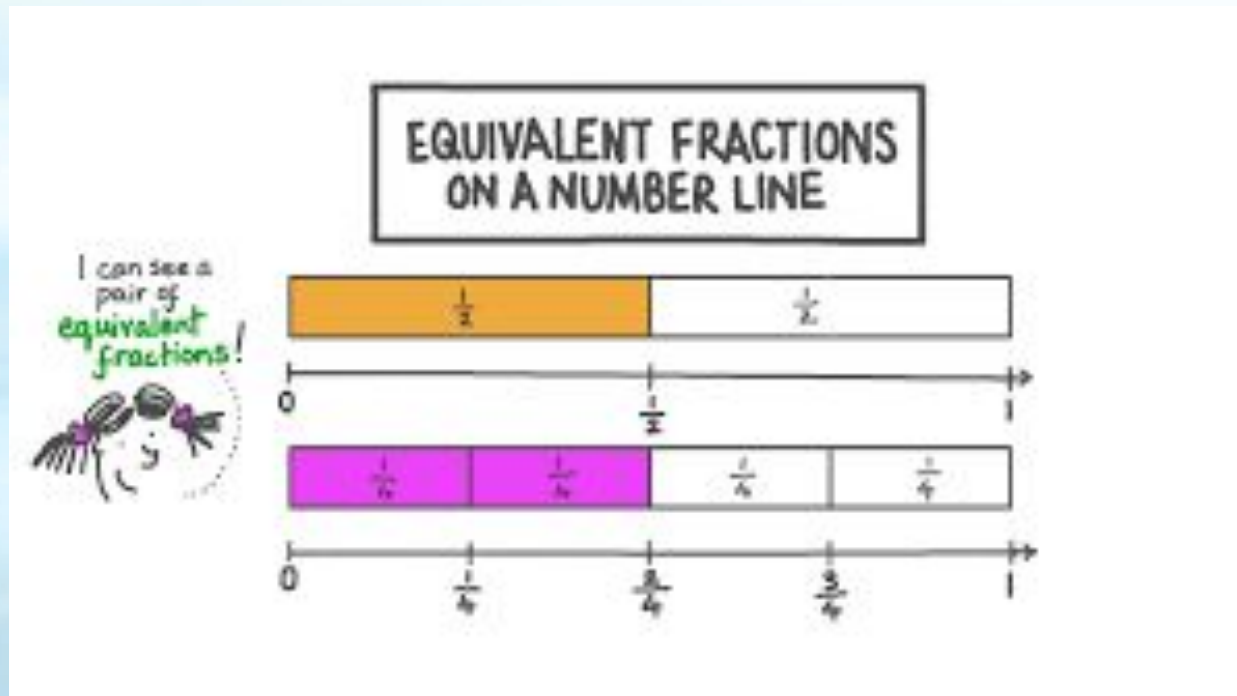
Having hands on opportunities prior to or after drawing it on whiteboards/worksheets can help students make sense of what is happening



Easy to see misconceptions and then talk about them together.

Extensions

*Begin to explore equivalent fractions with number lines



Extensions

*Create number lines that go beyond 1 (label with fractions greater than one and mixed numbers)



Extensions

*Make connections between fractions on a number line and fractions on a ruler/tape measure-why are these fractional parts on a ruler/number line?

