

# Fractions on Number Line - Same Numerator and Denominator Equals 1.

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### Differentiate and Assess

Not every student will be ready to investigate this concept at this Level and so we will need to differentiate to ensure every student is learning at their leading edge.

### Integrate

Every mathematical concept is integrally related to other mathematical concepts. Teaching and learning related concepts simultaneously develops deep relational understanding.

### Intervene

Some students may not yet be ready to investigate this concept at any Level, and so we will need to provide some intervention.

# FRACTIONS ON NUMBER LINE - SAME NUMERATOR AND DENOMINATOR EQUALS 1.

## EXPLICIT TEACHING PLAN OVERVIEW PAGE

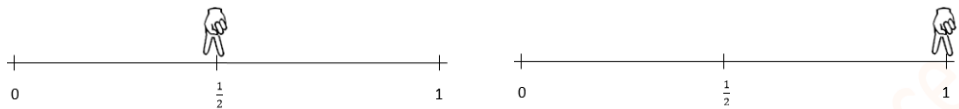
THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESCRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

RESOURCES: [FRACTION CARDS](#), PENCIL, PAPER

### WHAT COULD WE DO?

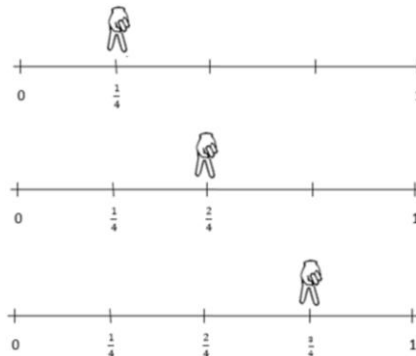
Children:

- place halves on a number line, by walking their fingers half way to 1, 2 halves of the way to 1, for example,



- identify that 2 halves equals 1

- place quarters on a number line, by walking their fingers a quarter of the way to 1, 2 quarters of the way to 1, 3 quarters of the way to 1, 4 quarters of the way to 1 for example,



- identify that 4 quarters equals 1

### WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

Children:

- ask one another questions about placing fractions on a number line, for example:
  - ▶ How could we walk halfway to 1 on this number line?
  - ▶ What fraction of the number line have we walked?
  - ▶ How can we walk the other half of the way to 1 on this number line?
  - ▶ How many halves of the way have we walked?
  - ▶ What does 2 halves equal?
  - ▶ How could we walk quarter of the way to 1 on this number line?
  - ▶ What fraction of the number line have we walked?
  - ▶ How can we walk another quarter of the way to 1 on this number line?
  - ▶ What fraction of the number line have we walked?
  - ▶ How can we walk another quarter of the way to 1 on this number line?
  - ▶ What fraction of the number line have we walked?
  - ▶ How can we walk another quarter of the way to 1 on this number line?
  - ▶ How many quarters of the way have we walked?
- ▶ What does 4 quarters equal?

# FRACTIONS ON NUMBER LINE - SAME NUMERATOR AND DENOMINATOR EQUALS 1.

## EXPLICIT TEACHING PLAN

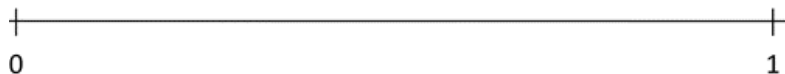
FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

### WHAT COULD WE DO?

Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.

Record, for example, 'A fraction is a part.'

Record a number line from zero to one, for example,



Place your first 2 fingers on zero in a walking stance, for example,



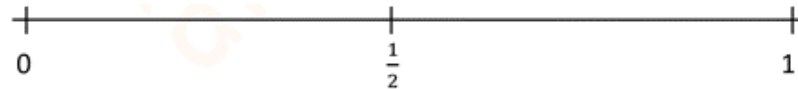
### WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

- ▶ Today brings an investigation about fractions.
- ▶ What do you know about fractions?
- ▶ Talk about fractions with a friend.
- ▶ Is anyone ready to share what they are thinking about fractions?
  
- ▶ We've investigated fractions.
- ▶ And we found that when we have a fraction of something, we don't have the whole thing. We just have part of it.
- ▶ So we found that a fraction is a part.
- ▶ In Mathematics, we love to measure things!
- ▶ So when we measure the part, we call it a fraction!
  
- ▶ Today we're going to place fractions on a number line.
- ▶ If we are going to place fractions on a number line, where will the fractions go?
- ▶ Do fractions go between whole numbers? Let's investigate!
- ▶ Let's start our number line at zero and end it at 1.

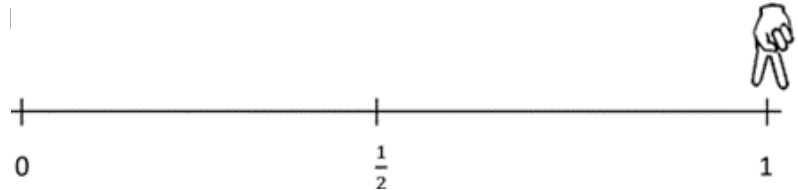
Walk your fingers along the number line as children tell you to stop when they think you are half way to 1, for example,



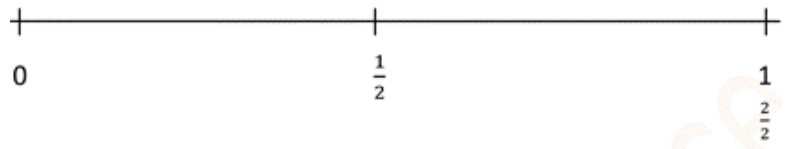
Record a half, half way between zero and one, for example,



Walk your fingers along the number line to 1, for example,



Record two-halves, under one, for example,

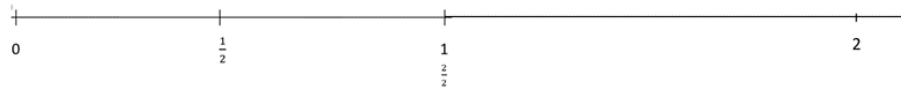


Record, for example,  $\frac{2}{2} = 1$

- ▶ Let's imagine we are a little ant and we're going for a walk along the number line, starting at zero.
- ▶ Imagine the ant is walking to 1.
- ▶ When the ant gets to half way, it wants to stop for a rest.
- ▶ Tell me when the ant is half way to 1.
  
- ▶ Is the ant half way between zero and one?
  
- ▶ If the ant is half way between zero and one, could we record the fraction 'half' on the number line here?
  
- ▶ So the ant has had a rest half way between zero and one.
- ▶ Now the ant is going to continue walking to 1.
- ▶ The ant has already walked one half of the way to 1.
- ▶ Will the ant walk the other half of the way?
- ▶ How many halves will the ant have walked when it gets to one?
- ▶ Will the ant have walked two-halves?
- ▶ Could we record that the ant has walked two-halves?
  
- ▶ When we have 1, do we have two-halves?
- ▶ When we have two-halves, do we have 1?

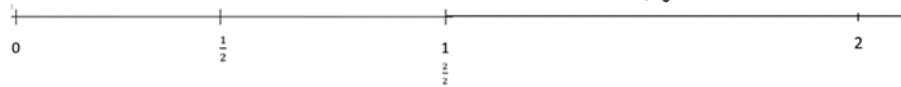
As children continue to develop their understanding of the meaning of the denominator (the number we divided by), and the meaning of the numerator (the number of parts that we have), they relate it to understanding that when the numerator is the same as the denominator, the fraction is equal to 1.

Extend the number line to 2, for example,

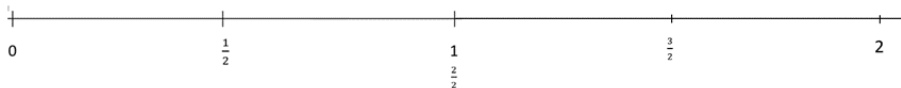


Walk your fingers along the number line as children tell you to stop when they think you are half way between 1 and 2, for example,

□

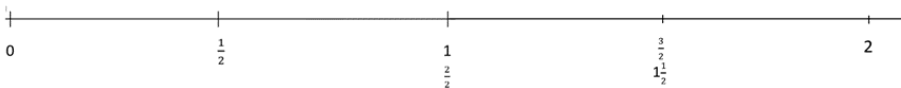


Record 3 halves, half way between 1 and 2, for example,



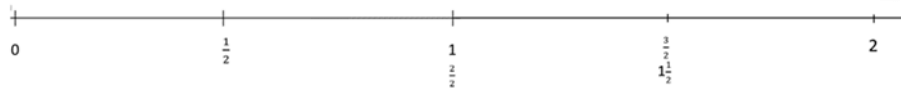
Record, for example,  $\frac{3}{2} = 1 \frac{1}{2}$

Record 1 and a half, half way between 1 and 2, for example,

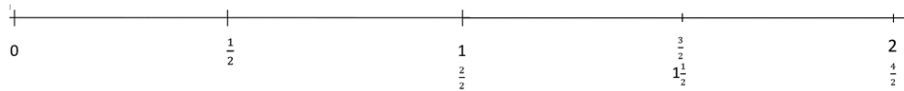


Walk your fingers along the number line to 1, for example,

- ▶ What if the ant walked another half?
- ▶ Could the ant walk halfway between 1 and 2?
- ▶ Tell me when the ant is half way between 1 and 2.
  
- ▶ Is the ant half way between 1 and 2?
- ▶ How many halves has the ant walked?
- ▶ Has the ant walked 3 halves?
  
- ▶ Could we record 3 halves on the number line here?
- ▶ We've investigated the numerator. And we found that the numerator tells how many of the parts we have.
- ▶ Does the numerator 3 tell us that we have 3 halves?
- ▶ Is the numerator larger than the denominator?
- ▶ If the numerator is larger than the denominator, do we have more than 1?
- ▶ Is 3 halves more than 1?
- ▶ Is 3 halves, 1 and a half?
- ▶ Could we record 1 and a half on the number line here?



Record 4 halves, under 2, for example,



Record, for example,  $\frac{4}{2} = 2$

- ▶ So the ant has had a rest half way between 1 and 2.
- ▶ Now the ant is going to continue walking to 2.
- ▶ The ant has already walked half of the way between 1 and 2.
- ▶ Will the ant walk the other half of the way between 1 and 2?
- ▶ How many halves will the ant have walked when it gets to one?
- ▶ Will the ant have walked 4 halves?
- ▶ Could we record that the ant has walked 4 halves?
- ▶ Is the numerator larger than the denominator?
- ▶ If the numerator is larger than the denominator, do we have more than 1?
- ▶ Is 4 halves more than 1?
- ▶ Is 4 halves, 2?

Repeat this strategic questioning as children investigate placing quarters, eighths, fifths, tenths, thirds, sixths, and twelfths on a number line between zero and 1, and beyond 1, explaining that when the numerator and denominator are the same, the fraction is equal to 1.

$$\frac{1}{2}$$

$$\frac{2}{2}$$

$$\frac{1}{3}$$

$$\frac{2}{3}$$

$$\frac{3}{3}$$

$$\frac{1}{4}$$

$$\frac{2}{4}$$

$$\frac{3}{4}$$

$$\frac{4}{4}$$

$$\frac{1}{5}$$

$$\frac{2}{5}$$

$$\frac{3}{5}$$

$$\frac{4}{5}$$

$$\frac{5}{5}$$

$$\frac{1}{6}$$

$$\frac{2}{6}$$

$$\frac{3}{6}$$

$$\frac{4}{6}$$

$$\frac{5}{6}$$

$$\frac{6}{6}$$

$$\frac{1}{8}$$

$$\frac{2}{8}$$

$$\frac{3}{8}$$

$$\frac{4}{8}$$

$$\frac{5}{8}$$

$$\frac{6}{8}$$

$$\frac{7}{8}$$

$$\frac{8}{8}$$

$$\frac{1}{10}$$

$$\frac{2}{10}$$

$$\frac{3}{10}$$

$$\frac{4}{10}$$



$\frac{5}{10}$	$\frac{6}{10}$	$\frac{7}{10}$	$\frac{8}{10}$
$\frac{9}{8}$	$\frac{10}{8}$	$\frac{1}{12}$	$\frac{2}{12}$
$\frac{3}{12}$	$\frac{4}{12}$	$\frac{5}{12}$	$\frac{6}{12}$
$\frac{7}{12}$	$\frac{8}{12}$	$\frac{9}{12}$	$\frac{10}{12}$

$$\frac{11}{12}$$

$$\frac{12}{12}$$

1

0