# Fractions as Numbers

## Grade 3: Unit 5

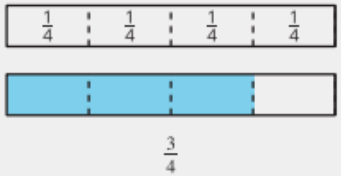
Standards addressed: 3.G.A.2, 3.NF.A.1, 3.NF.A.2, 3.NF.A.3, 3.MD.B.4,

# Unit 5 Progression Overview

## Fractions as Numbers

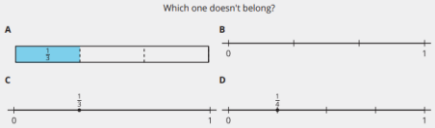
### Section A
Lessons 1-4
3.G.A.2, 3.NF.A.1

- Understand that fractions are built from unit fractions such that a fraction a/b is the quantity formed by a parts of size 1/b .
- Understand that unit fractions are formed by partitioning shapes into equal parts



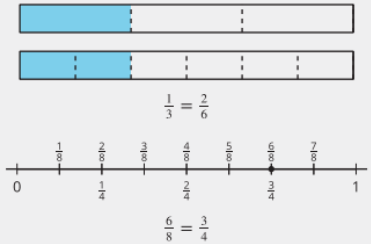

### Section B
Lessons 5-9
3.NF.A.2, 3.NF.A.2.a, 3.NF.A.2.b, 3.NF.A.3.c

- Understand a fraction as a number and represent fractions on the number line. .



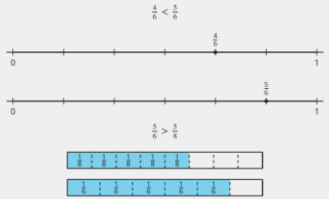

### Section C
Lessons 10-13
3.NF.A.3.a, 3.NF.A.3.b, 3.NF.A.3.c

- Explain equivalence of fractions in special cases and express whole numbers as fractions and fractions as whole numbers.




### Section D
Lessons 14-19
3.MD.B.4, 3.NF.A.2, 3.NF.A.3, 3.NF.A.3.d

- Compare two fractions with the same numerator or denominator, record the results with the symbols >, =, or <, and justify the conclusions.



# Unit 5 Quick Links

Adapt 1 | Adapt 2 | L1 | L2 | L3 | L4 | L5

L6 | L7 | L8 | L9 | L10 | L11 | L12

L13 | L14 | L15 | L16 | L17 | L18 | L19

Adaptation
Lesson 1

# Are All Parts Created Equal?

Let’s make halves, thirds, and fourths in different ways.

2.G.A.3

# Number Talk: Subtracting Multiples of 5 from Multiples of 5

Warm up

Find the value of each difference mentally.

$$25 - 15$$

Be prepared to explain your reasoning.

# Number Talk: Subtracting Multiples of 5 from Multiples of 5

Warm up

Find the value of each difference mentally.

$$40 - 15$$

Be prepared to explain your reasoning.

# Number Talk: Subtracting Multiples of 5 from Multiples of 5

Warm up

Find the value of each difference mentally.

$$65 - 25$$

Be prepared to explain your reasoning.

# Number Talk: Subtracting Multiples of 5 from Multiples of 5

Warm up

Find the value of each difference mentally.

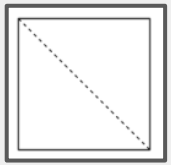
$$60 - 35$$

Be prepared to explain your reasoning.

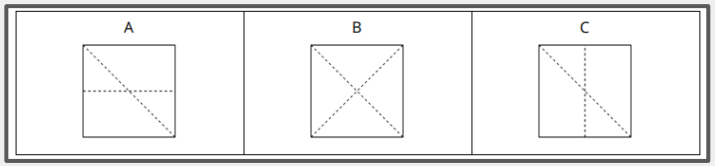
Activity #1

# Make Quarters and Halves

Lin wanted to partition this square into quarters. She started by splitting the square into halves.

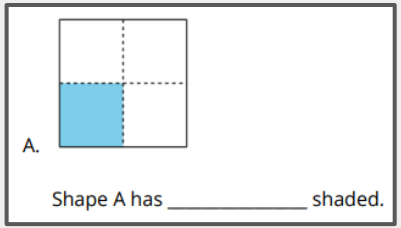


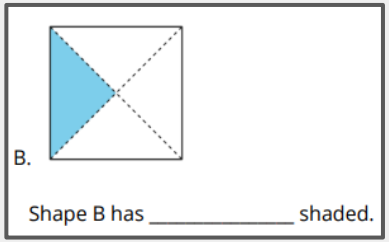
After she drew the first line, she tried 3 different ways to make fourths.




1. Which of these shows fourths or quarters? Explain to your partner.

2. Name the shaded part.



Activity #1

# Make Quarters and Halves

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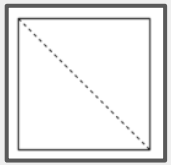

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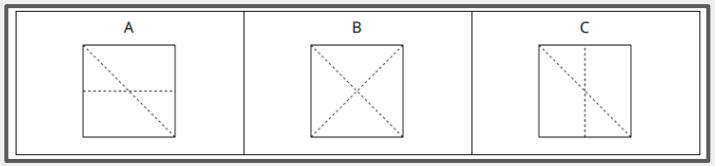



3. Is the same amount shaded in each square? Explain your thinking

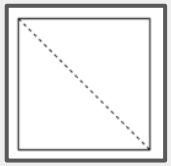
4. Show 2 different ways to split the rectangle into quarters or fourths.

Shade in one fourth of each rectangle.

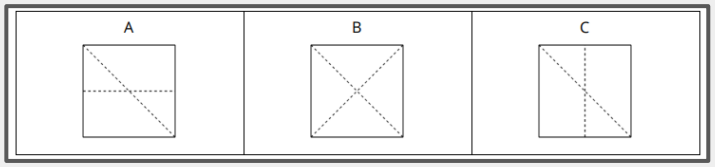
Activity #1

# Make Quarters and Halves

Lin wanted to partition this square into quarters. She started by splitting the square into halves.

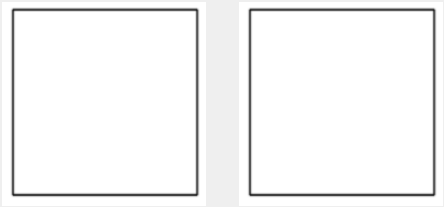


After she drew the first line, she tried 3 different ways to make fourths.




5. Show 2 different ways to split the square into halves.

Shade in one half of each square.

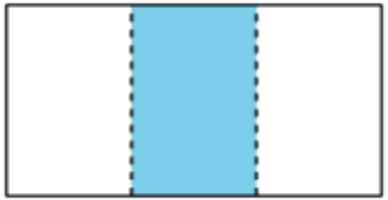


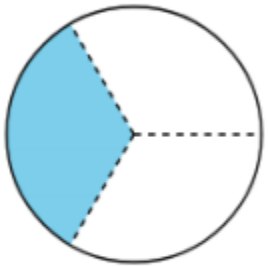
# Make Equal Shares

Activity #2

1. Lin, Mai, and Andre were asked to shade in one third of a shape.

Lin 

Mai 

Andre 

Do all their shapes show one third shaded?

Explain and share with a partner.

# Make Equal Shares

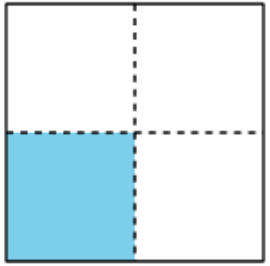
Activity #2

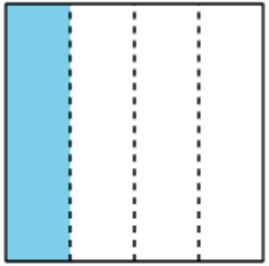
2. Split the rectangle into thirds and shade a third of the shape.

# Make Equal Shares

Activity #2

3. Diego's dad made 2 square pans of cornbread and sliced them up for the family.

Diego's brother 

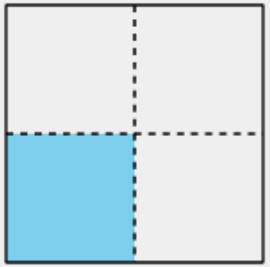
Diego's 

Diego's little brother was upset because he thought his piece of cornbread was smaller than Diego's. What would you tell him?

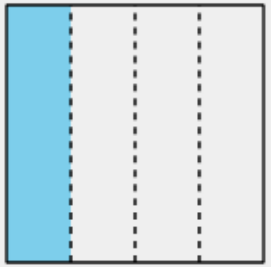
Lesson Synthesis

Today you learned that if a shape is split into the same number of parts, but in different ways, the parts of the shapes will have the same name, even though they look different.

Diego's brother



Diego



How could we help Diego's little brother?

Since both pans are the same size, we know that both brothers got one quarter even though it looks different.

Adaptation
Lesson 2

# You Ate the Whole Thing

Let’s talk about the whole.

# Number Talk: Add Multiples of 5 to Multiples of 5

Warm up

Find the value of each sum mentally.

$$20 + 10 + 10 + 5$$

Be prepared to explain your reasoning.

# Number Talk: Add Multiples of 5 to Multiples of 5

Warm up

Find the value of each sum mentally.

$$30 + 25$$

Be prepared to explain your reasoning.

# Number Talk: Add Multiples of 5 to Multiples of 5

Warm up

Find the value of each sum mentally.

$$35 + 15$$

Be prepared to explain your reasoning.

# Number Talk: Add Multiples of 5 to Multiples of 5

Warm up

Find the value of each sum mentally.

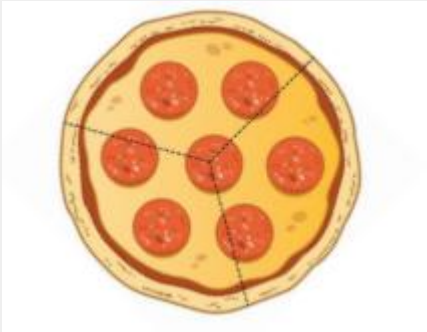
$$15 + 25 + 15$$

Be prepared to explain your reasoning.

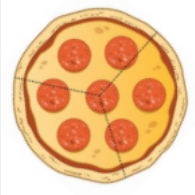
# Pizza to Share

Activity #1

Clare's friends were going to share a pizza. The image below shows how they cut the pizza.



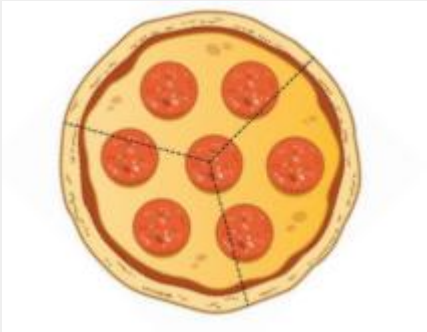
The table shows 3 pizzas and the names of the friends who shared each one.

| Pizza Parts | Names |
| --- | --- |
|  | Group A<br>Priya Han Diego |
| 2. Priya will eat _____ of the pizza.<br><br>Together they will eat _____ of the pizza. | |

# Pizza to Share

Activity #1

Clare's friends were going to share a pizza. The image below shows how they cut the pizza.



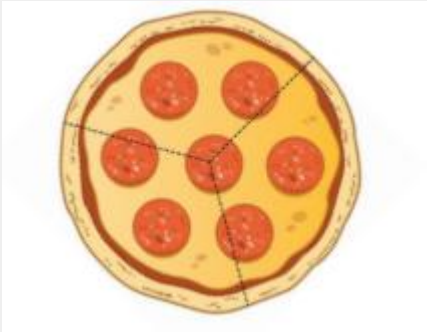
The table shows 3 pizzas and the names of the friends who shared each one.

| Pizza Parts | Names |
|---|---|
|  | Group B<br>Jada Mai |
| 3. Each girl will eat _____ of the pizza.<br><br>Together they will eat _____ of the pizza. | |

# Pizza to Share

Activity #1

Clare's friends were going to share a pizza. The image below shows how they cut the pizza.



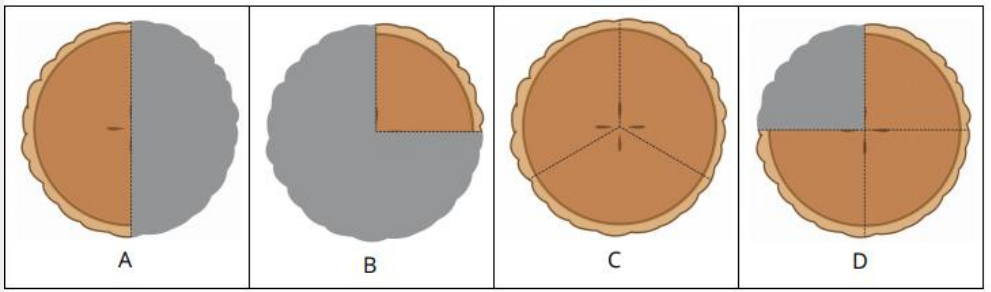
The table shows 3 pizzas and the names of the friends who shared each one.

| Pizza Parts | Names |
| --- | --- |
|  | Group C<br>Elena Tyler Lin Kiran |
| 4. How much pizza will each child eat?<br><br>How much pizza will they eat in all? | |

# Equal Shares of Pies and Tarts

Activity #2

Write the letter of each image next to the matching story.




1. Noah ate most of the pie. He left a quarter of the pie for Diego. _____
2. Lin gave away half of her pie and kept half of the pie for herself. _____
3. Tyler cut a pie into four equal parts. He ate a quarter of the pie. _____
4. Mai sliced the pie to share it equally with Clare and Priya. _____
    a. What part of the pie will they each get? _____
    b. How much of the pie will they eat in all? _____

# Equal Shares of Pies and Tarts

Activity #2

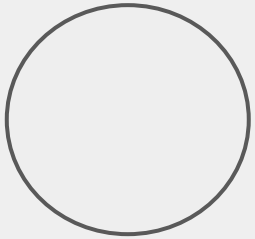
Now you try.

5.

Partition the circle into four equal parts.

Shade in a quarter of the circle red.

Shade in the rest of the circle blue.



Which part of the circle is red? _____

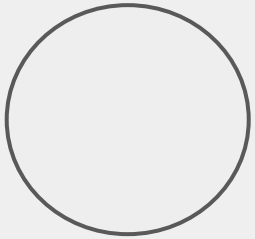
How much of the circle is shaded?

6.

Partition the circle into 2 equal parts.

Shade one half of the circle blue.

Color the other part green.

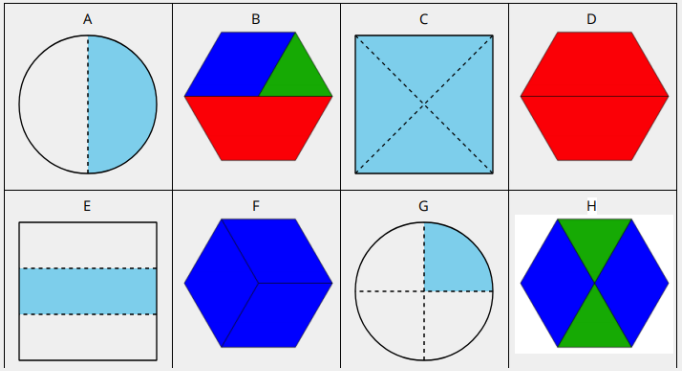


What part of the circle is green? _____

How much of the circle is shaded?

Lesson Synthesis

We have learned a lot about composing and decomposing shapes. Sometimes the parts make up a whole, but all the parts are not equal. Sometimes the whole is partitioned into equal parts and they have special names.




Each of these shapes has parts shaded. How would you name each one?" "Are there any that will not have names? Explain.

1

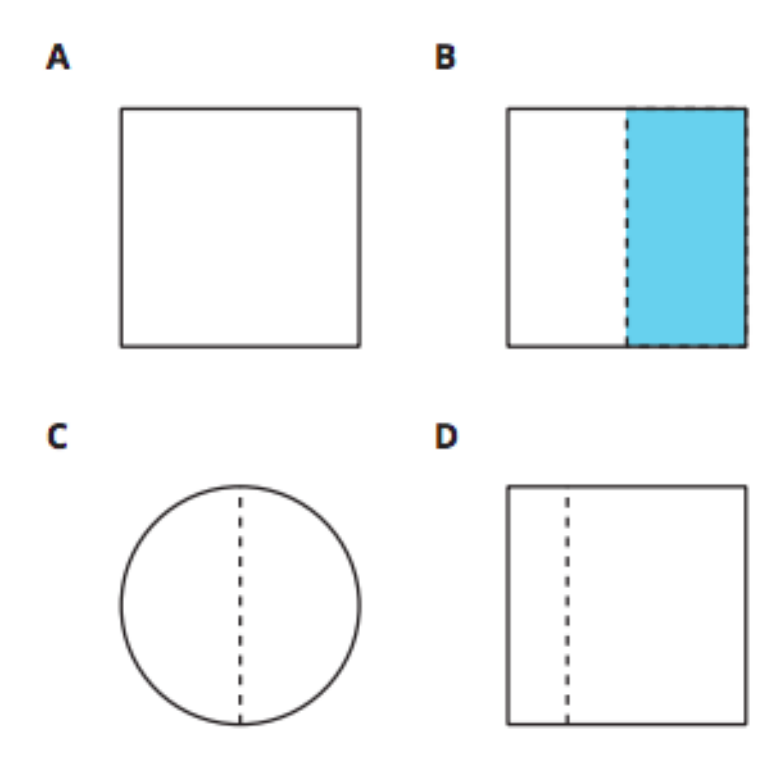
# Name the Parts

Let’s name parts of a whole

3.OA.A.3, 3.OA.B.5

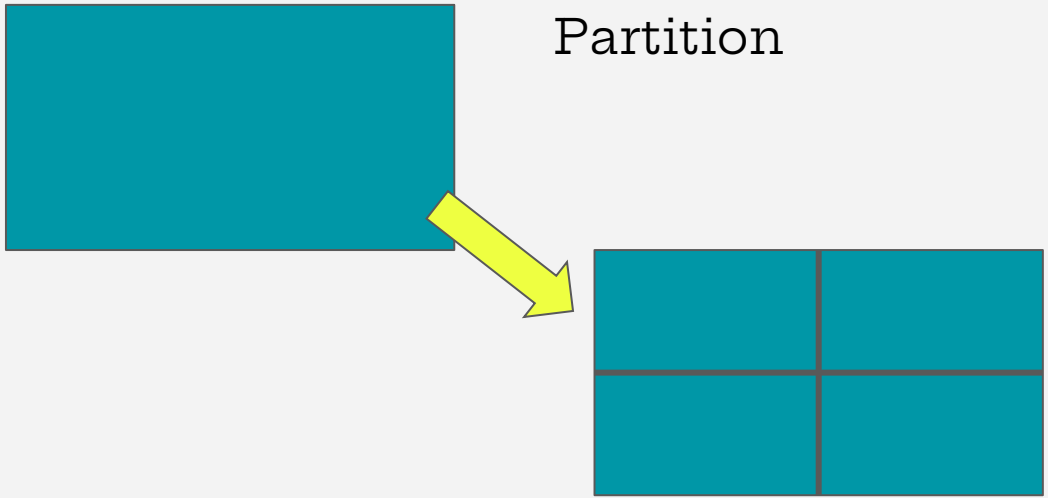
Warm up

# Which One Doesn't Belong?



Warm up

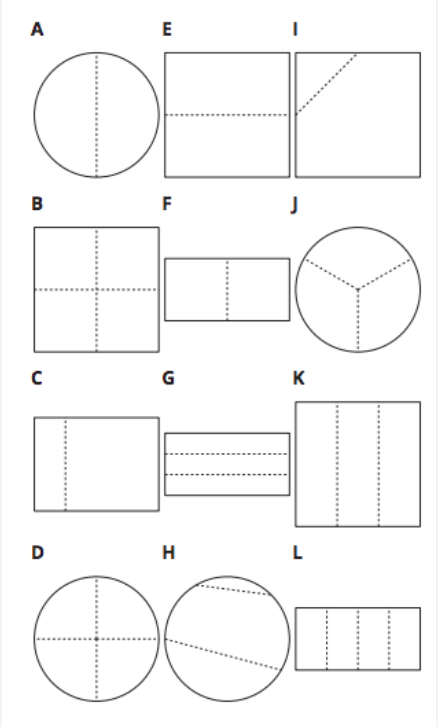
# Which One Doesn't Belong?



Activity 1

# Card Sort: Partitions

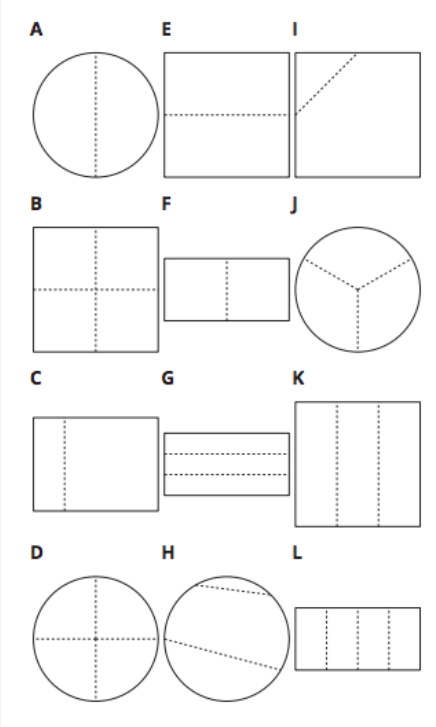
What do you notice?




What do you wonder?

Activity 1

# Card Sort: Partitions




Work with your partner to sort the cards into categories of your choosing.

Activity 1

# Card Sort: Partitions

## How we sorted

Activity 2

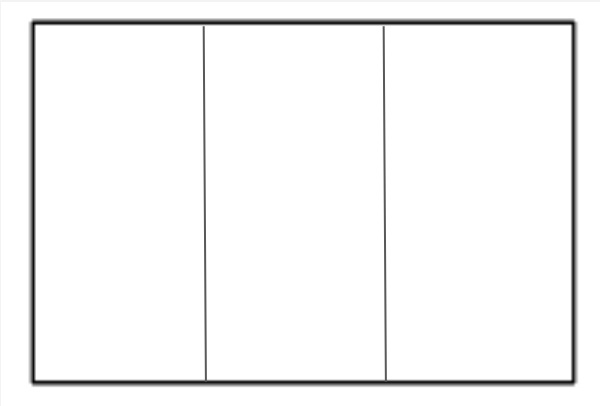
# Fold and Name

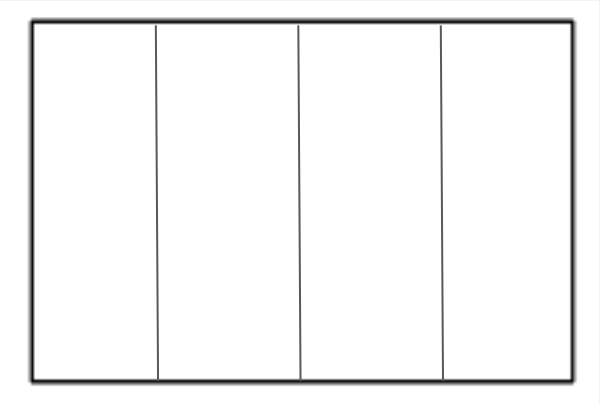
Fold each rectangle into 3, 6, 4, or 8 pieces. Draw lines where you folded to partition the rectangle.

Be prepared to share how you folded your rectangles.

Activity 2

# Fold and Name





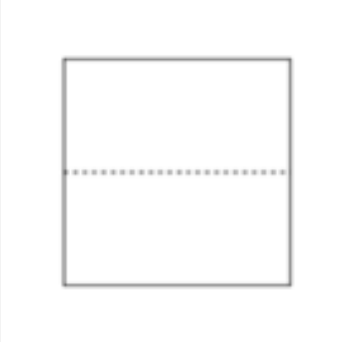
Activity 2

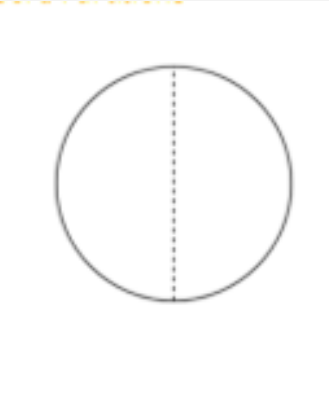
# Fold and Name

| Number of equal parts | Name of each part |
|---|---|
| 3 | third |
| 4 | fourth |
| 6 | |
| 8 | |

Lesson Synthesis

Today we partitioned rectangles into equal parts. A **fraction** is a number we use to describe the parts of a whole that has been partitioned into equal parts.





2

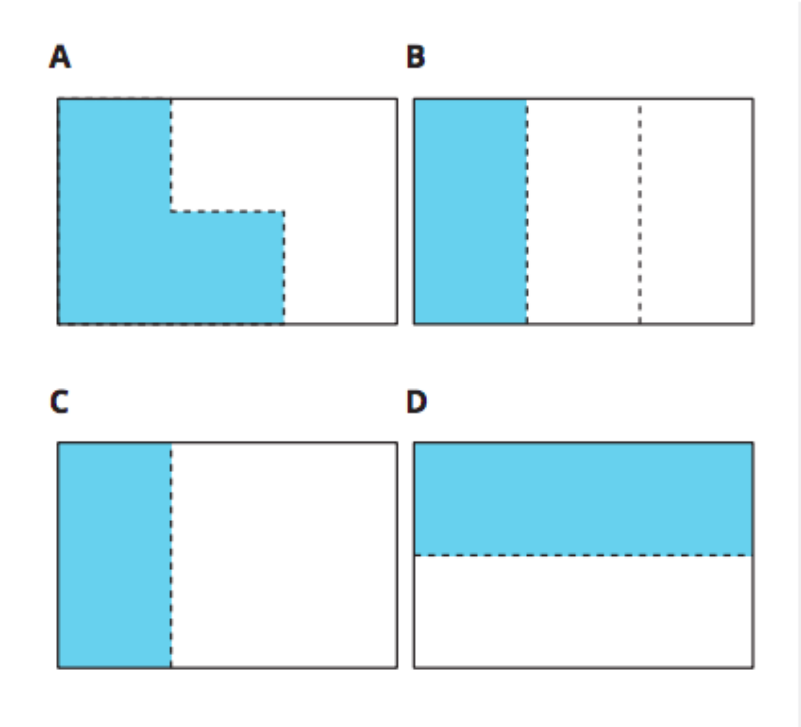
# Name Parts as Fractions

Let’s use fractions to describe parts.

3.OA.A.3, 3.OA.B.5

Warm up

# Which One Doesn't Belong?



Activity 1

# Partition the Strips

## unit fraction

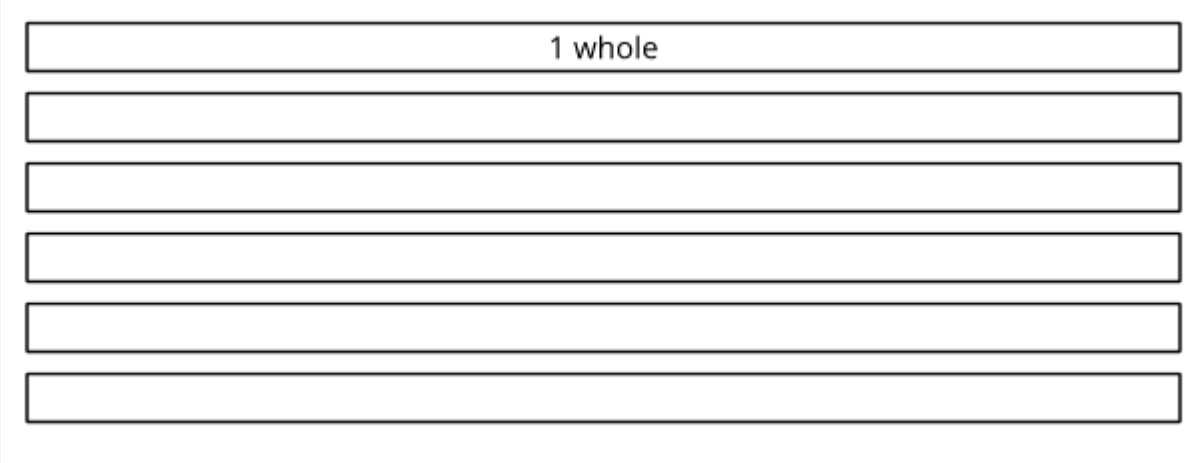
Fraction that describe 1 equal-sized part

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{1}{6}$ $\frac{1}{8}$

Activity 1

# Partition the Strips

1. Partition your fraction strips to represent halves, fourths, eighths, thirds, and sixths. Use one strip for each fraction.
2. Label each part with the correct unit fraction.

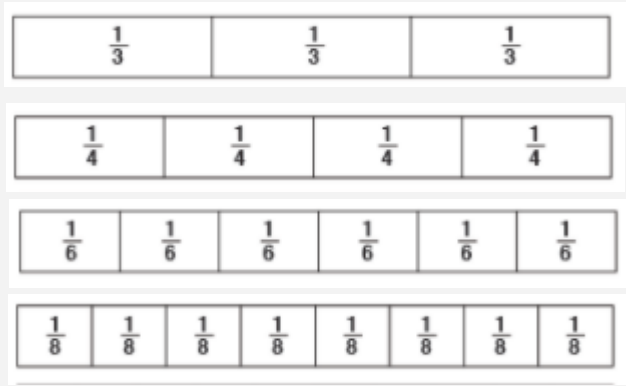


Activity 1

# Partition the Strips



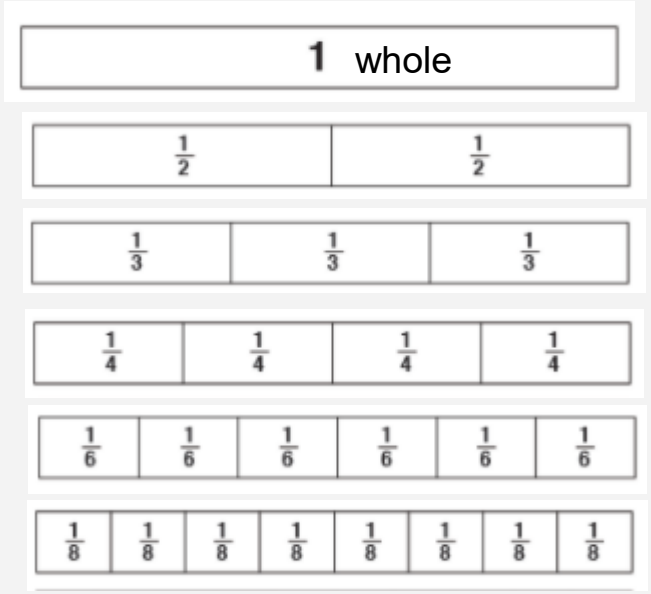
I had to partition my fraction strip into fourths and started by doing this. How can this help me partition my fraction strip into fourths?



Activity 1

# Partition the Strips

What other fractions could be partitioned to find different fractions?

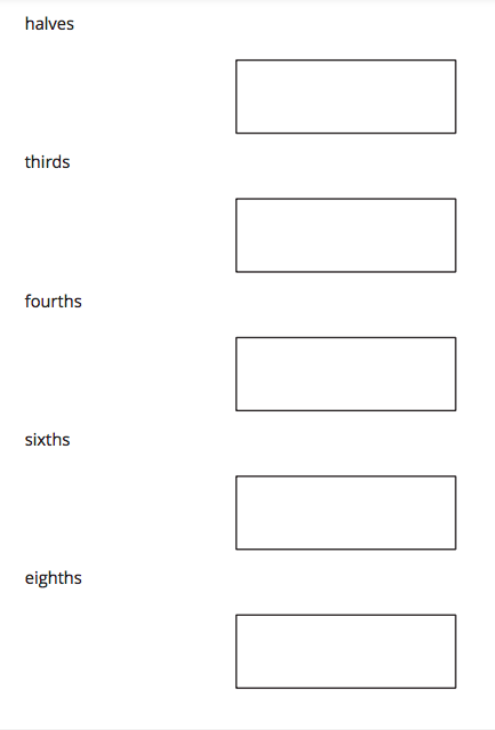


Activity 2

# Partition, Shade, Trade

Work with your partner to complete problem 1.

- Partition each rectangle
- Label each part



Activity 2

# Partition, Shade, Trade

halves

thirds

fourths

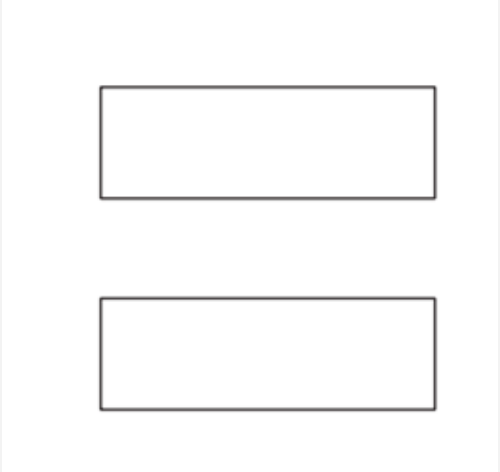
sixths

eighths

Activity 2

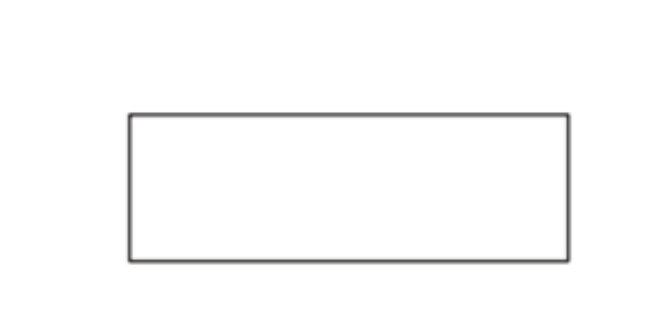
# Partition, Shade, Trade

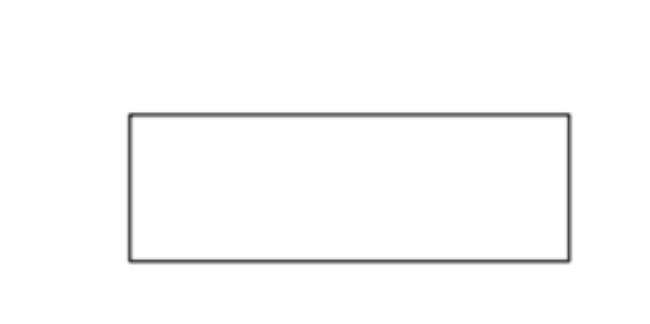
1. Draw a rectangle on your whiteboard
2. Partition the rectangle into equal sized parts
3. Shade one of the parts
4. Show the rectangle to your partner.
5. Ask your partner what number is represented by the shaded part.
6. Ask your partner how they know.



Activity 2

# Partition, Shade, Trade

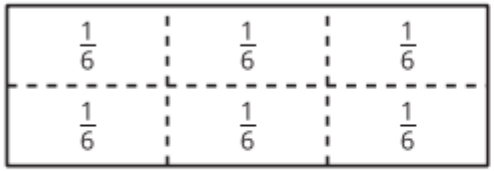




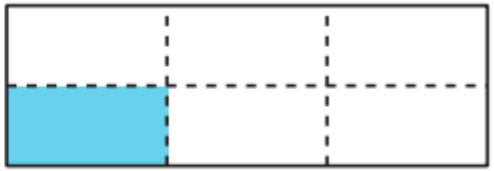
How did you know what fraction of the rectangle your partner shaded?

Lesson Synthesis

# Partition, Shade, Trade




sixths



one sixth or $\frac{1}{6}$

How do you know this diagram shows sixths?

Why do you think the second diagram is labeled one-sixth?

3

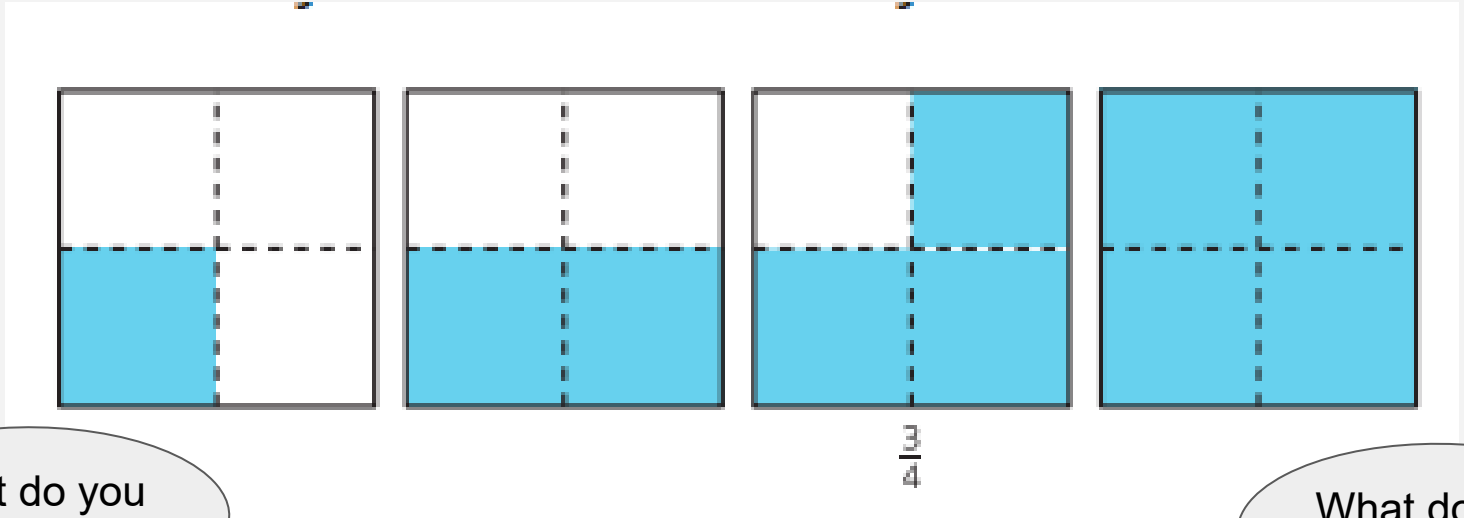
# Non-unit Fractions

Let’s learn about non-unit fractions

3.OA.A.3, 3.OA.B.5

Warm up

# Notice and Wonder

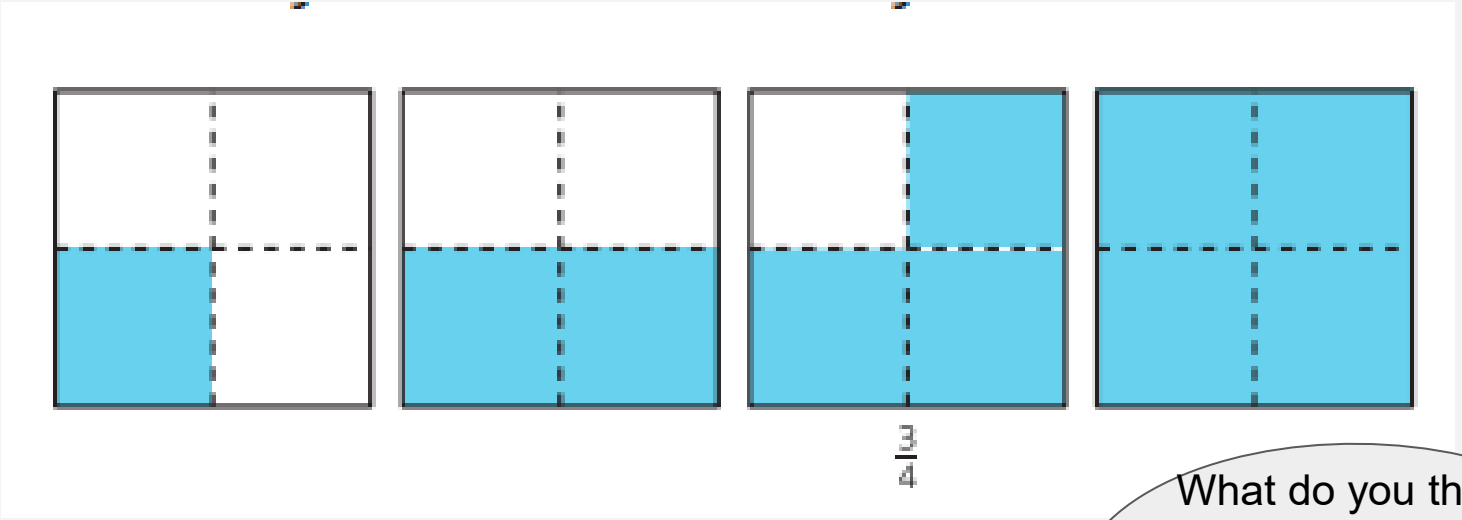



What do you notice?

What do you wonder?

Warm up

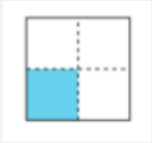
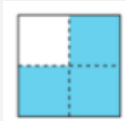
# Notice and Wonder



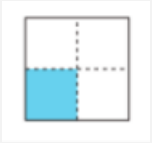
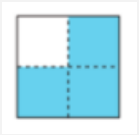
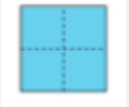

What do you think the 3 and the 4 stand for in the number below the 3 squares?

Activity 1

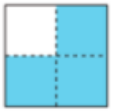
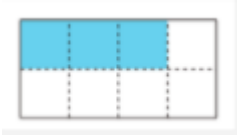
# Write and Read Fractions

| | Number of shaded parts | Size of each part | Number that represents the total amount shaded |
|---|---|---|---|
|  | **1** | $\frac{1}{4}$ | $\frac{1}{4}$ |
|  | **3** | $\frac{1}{4}$ | $\frac{3}{4}$ |

Activity 1

| | Number of shaded parts | Size of each part | Number that represents the total amount shaded |
|---|---|---|---|
|  | **1** | $\frac{1}{4}$ | $\frac{1}{4}$ |
|  | **3** | $\frac{1}{4}$ | $\frac{3}{4}$ |
|  | | | |
|  | | | |

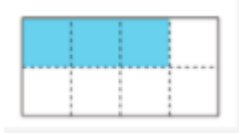
Activity 1

| | Number of shaded parts | Size of each part | Number that represents the total amount shaded |
|---|---|---|---|
|  | **1** | $\frac{1}{4}$ | $\frac{1}{4}$ |
|  | **3** | $\frac{1}{4}$ | $\frac{3}{4}$ |
|  | **4** | $\frac{1}{4}$ | $\frac{4}{4}$ |
|  | **2** | $\frac{1}{3}$ | $\frac{2}{3}$ |
|  | **3** | $\frac{1}{8}$ | $\frac{3}{8}$ |

What do you notice?

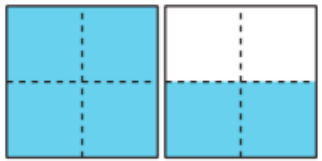
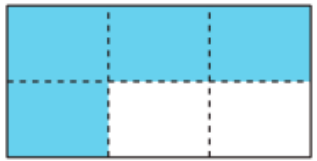
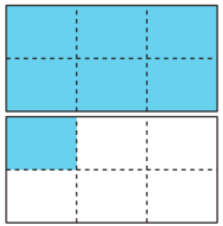
What do you wonder?

Activity 1

| | Number of parts | | Number that represents the total amount shaded |
|---|---|---|---|
|  | | | $\frac{1}{4}$ |
|  | **3** | $\frac{1}{4}$ | $\frac{3}{4}$ |
|  | **4** | $\frac{1}{4}$ | $\frac{4}{4}$ |
|  | **2** | $\frac{1}{3}$ | $\frac{2}{3}$ |
|  | **3** | $\frac{1}{8}$ | $\frac{3}{8}$ |

The number in the second row is read "three-fourths" How do you think the other numbers could be read?

Activity 1

| | Number of shaded parts | Size of each part | Number that represents the total amount shaded |
|---|---|---|---|
|  | **6** | $\frac{1}{4}$ | $\frac{6}{4}$ |
|  | **4** | $\frac{1}{6}$ | $\frac{4}{6}$ |
|  | **7** | $\frac{1}{6}$ | $\frac{7}{6}$ |

Activity 2

# Fraction Match

1. Play Fraction Match
    a. Arrange the cards face down in an array.

    b. Take turns choosing 2 cards. If the cards match, keep them and go again. If not, return them to where they were, face down. You can’t keep more than 2 matches on each turn.

    c. After all the matches have been found, the player with the most cards wins.

Activity 2

# Fraction Match - Part 2

2. Use the new set of cards to create 4 new pairs of cards to add to the set.

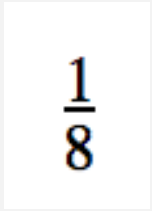
Activity 2

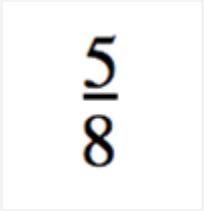
# Fraction Match - Part 2

Activity 2

# Fraction Match - Synthesis

Lesson Synthesis

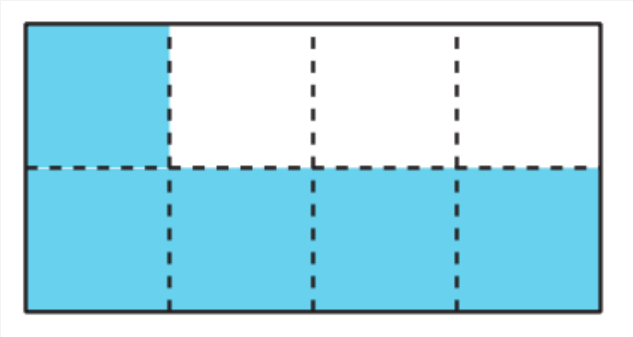



Today we learned how to build more fractions, like ⅝, from fractions we already knew, like ⅛ . We call fractions, like ⅛ , that describe one equal-sized part, unit fractions. How did you see unit fractions helping us build new fractions today?

Lesson Synthesis

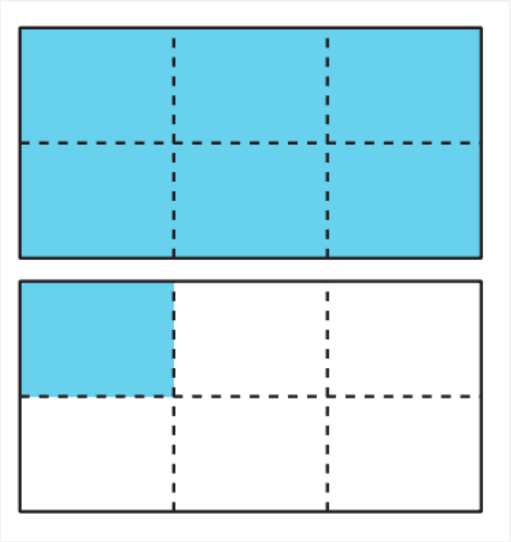
$\frac{5}{8}$



Look at the fraction $\frac{5}{8}$ What does each part of the number tell us?

Lesson Synthesis

$\frac{7}{6}$



Look at the fraction $\frac{7}{6}$. What does each part of the number tell us?

4

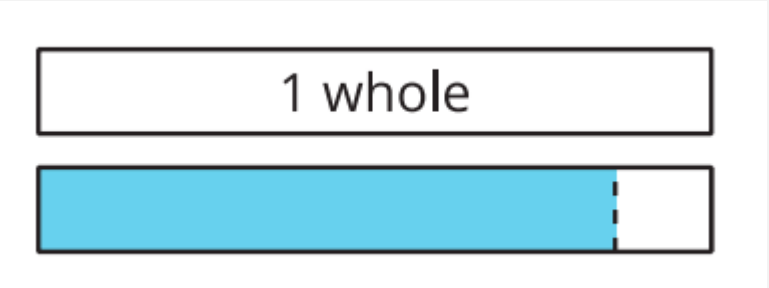
# Build Fractions from Unit Fractions

Let’s build fractions from unit fractions.

3.OA.A.3, 3.OA.B.5

Warm up

# Estimation Exploration: How Much is Shaded?




Record an estimate that is:

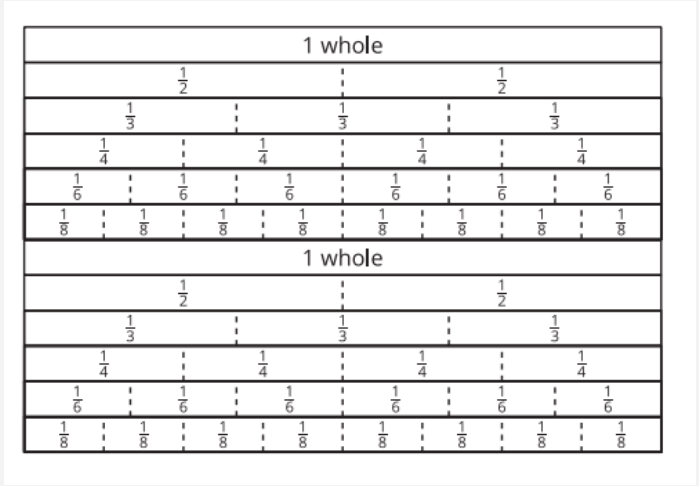
| too low | just right | too high |
| --- | --- | --- |
| | | |

Activity 1

# Secret Fractions

How to Play:

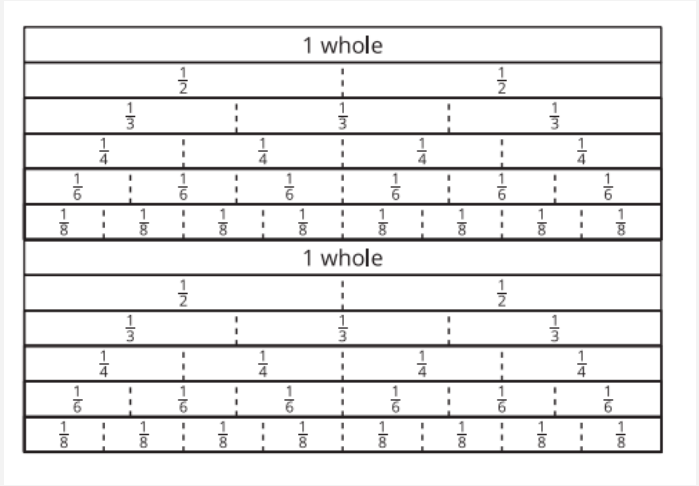
1. Place the secret fraction cards in a stack face down.
2. Place the unit fraction cards in a stack face down.
3. Each player: draw 2 secret fraction cards. These are the fractions you are trying to make with your unit fractions.
4. On your turn you can either:
    a. Pick up one unit fraction card.
    b. Trade both of your secret fractions for 2 new secret fractions from the
5. When you have enough unit fractions to make your secret fraction, fill in your secret fraction on the gameboard and pick a new secret fraction.
6. First one to make 3 secret fractions wins.



Activity 1

# Secret Fractions

What were some strategies you used while playing the game?



Activity 2

# Represent Fraction Situations

Activity 2

# Represent Fraction Situations

1. A student walks $\frac{4}{8}$ the length of the street and hides a rock.

2. A student walks $\frac{2}{3}$ the length of the street and hides a penny.

3. A student walks $\frac{3}{4}$ the length of the street and hides a stick.

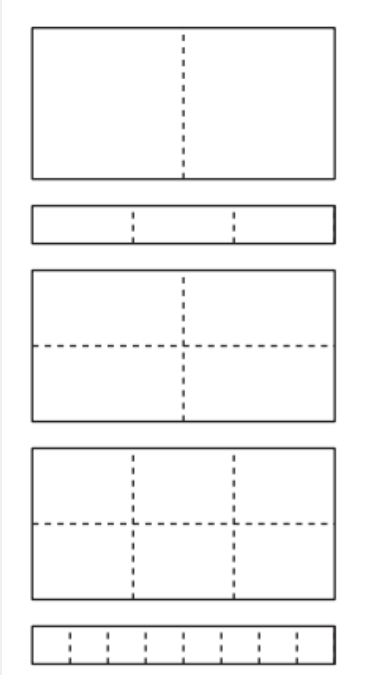
4. A student walks $\frac{5}{6}$ the length of the street and hides a penny.

Lesson Synthesis

How was making the fractions in the game like representing the situations? How was it different?

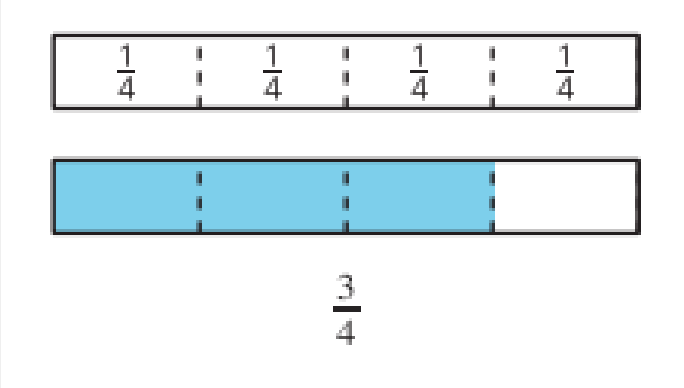
# Section Summary

In this section, we learned how to partition shapes into halves, thirds, fourths, sixths, and eighths.



# Section Summary

We learned that the numbers we use to describe these equal-sized parts are fractions and that we can use unit fractions, like ¼ to build other fractions like ¾ . We learned that the bottom part of the fraction tells us how many equal parts we partitioned the whole into. The top part of the fraction tells us how many of the equal parts are being described.



5

# To the Number Line

Let’s learn about fractions on the number line.

Warm up

# Notice and Wonder: Halves

What do you notice?


What do you wonder?

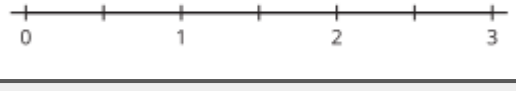
Activity #1

# Card Sort: Number Lines

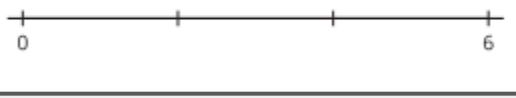
Your teacher will give you a set of cards that show number lines. Sort the cards into categories of your choosing. Be prepared to explain the meaning of your categories.

**A**


**C**

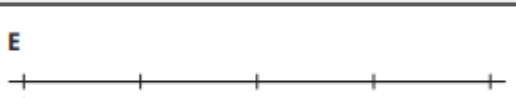



**G**

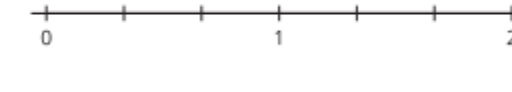



**B**

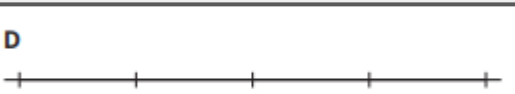

**E**



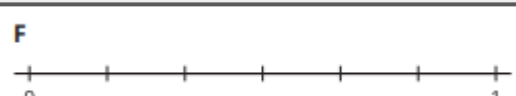

**H**



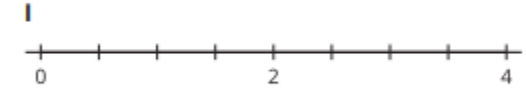

**D**




**F**




**I**

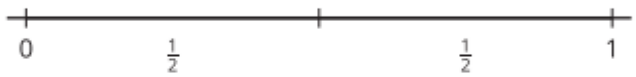


# Fold and Label the Number Line

Activity #2

Andre and Clare are talking about how to label fractions on the number line.

Andre says $\frac{1}{2}$ can be labeled like this:




Clare says $\frac{1}{2}$ can be labeled like this:

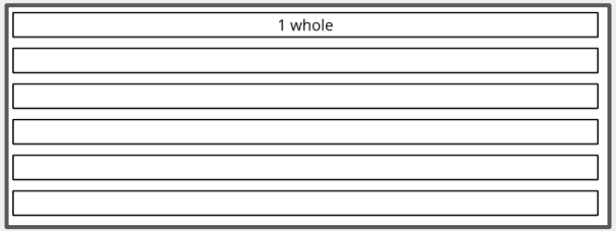

How could each student's labeling make sense?

# Fold and Label the Number Line

Activity #2

Cut your number lines apart so that you can fold each one. As you fold, discuss your strategies with your partner.

1. Fold one of the number lines into halves. Draw tick marks to show the halves. Label the number $\frac{1}{2}$.
2. Fold one of the number lines into thirds. Draw tick marks to show the thirds. Label the number $\frac{1}{3}$.
3. Fold one of the number lines into fourths. Draw tick marks to show the fourths. Label the number $\frac{1}{4}$.
4. Fold one of the number lines into sixths. Draw tick marks to show the sixths. Label the number $\frac{1}{6}$.
5. Fold one of the number lines into eighths. Draw tick marks to show the eighths. Label the number $\frac{1}{8}$.



Lesson Synthesis

Today we used what we know about fractions to think about where fractions are located on the number line. What did you learn about locating and labeling fractions on the number line today?


**How could we use this length to locate and label the number ⅓ on this number line?**

6

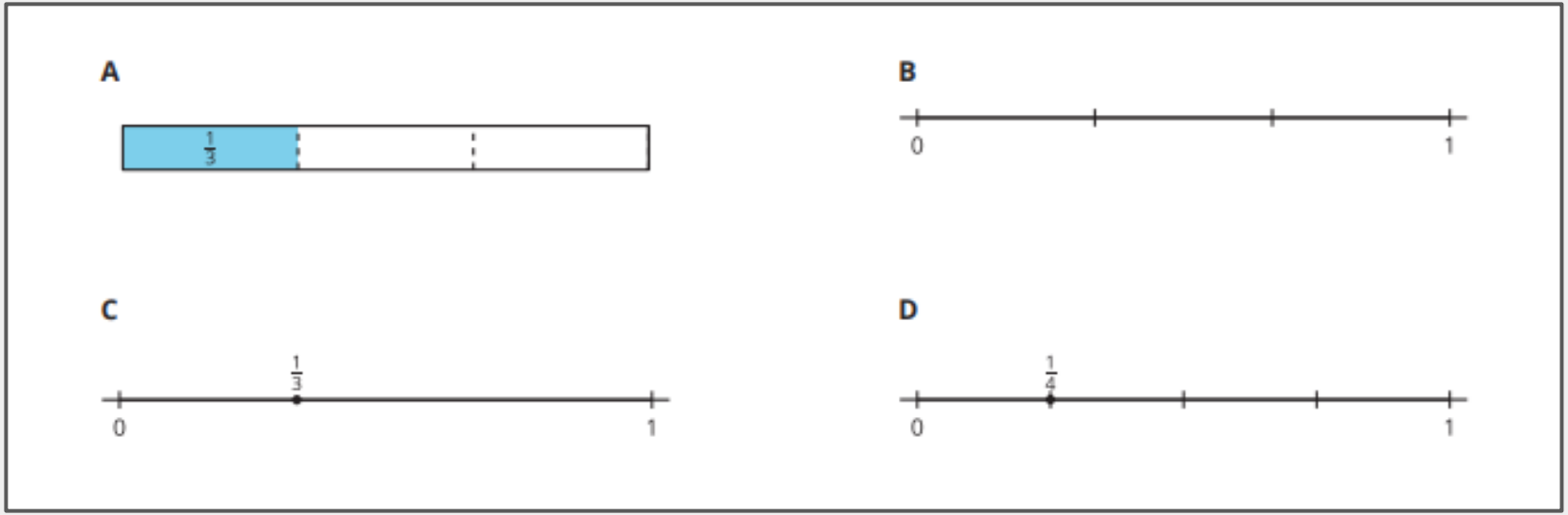
# Locate Unit Fractions on the Number Line

Let’s partition the number line to locate unit fractions.

3.NF.A.2, 3.NF.A.2.a

# Which One Doesn't Belong: It's in the Details

Warm up

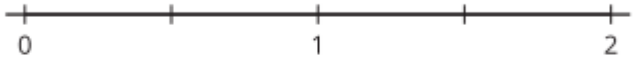


# Partition Fourths

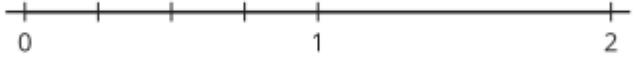
Activity #1

Three students are partitioning a number line into fourths. Their work is shown.

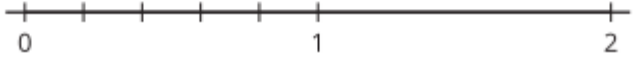
Clare's number line:




Andre's number line:




Diego's number line:

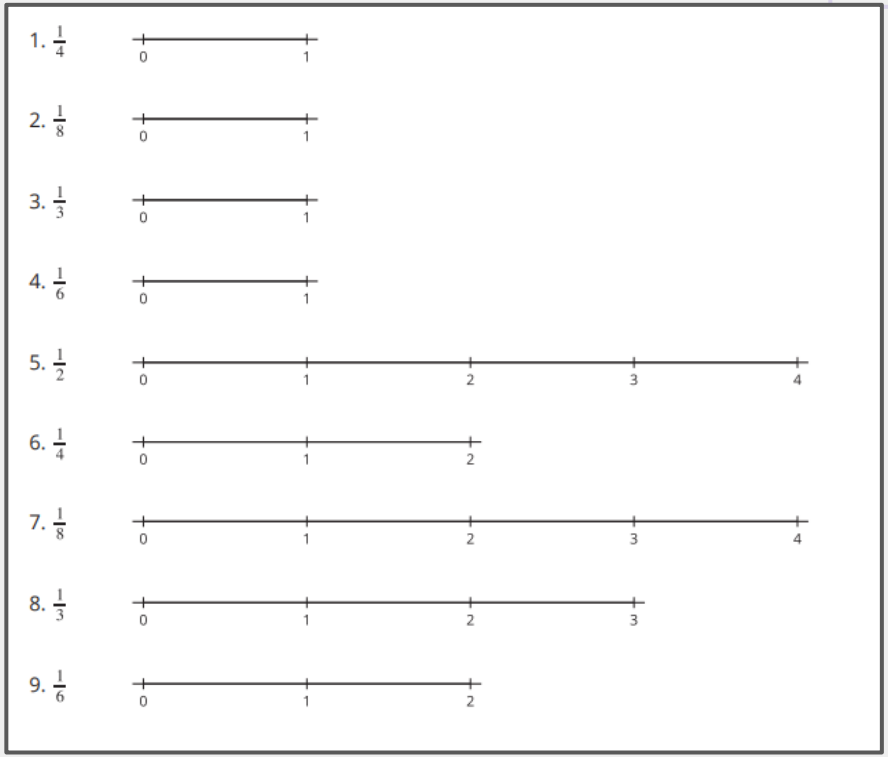



Whose partitioning makes the most sense to you? Explain your reasoning.

# Unit Fractions on the Number Line

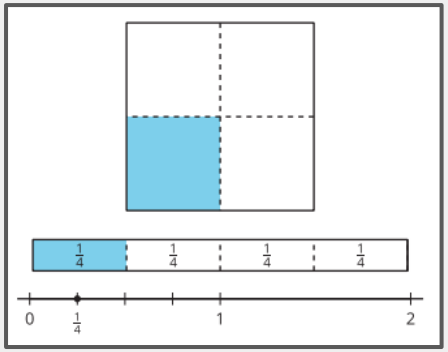
Activity #2

Partition each number line. Locate and label each fraction.



Lesson Synthesis

Today we used our knowledge of unit fractions and the number line to locate unit fractions on the number line. We have seen unit fractions represented several ways now. How would you describe a unit fraction to a friend? Use examples from these representations if it helps you.




What is particularly helpful for you to remember when you are locating unit fractions on the number line?

7

# Non-Unit Fractions on the Number Line

Let’s locate non-unit fractions on the number line

3.NF.A.2.b

# Choral Count: One-fourths

Warm up

What patterns do you see?

Count by ¼ , starting at ¼ .
Stop counting and recording at 16/4.

How is counting by fractions the same as counting by whole numbers?

# Number Line Scoot

Activity #1

1. Each player places a small cube on zero on every number line.

2. Players take turns.

3. Roll a number cube.

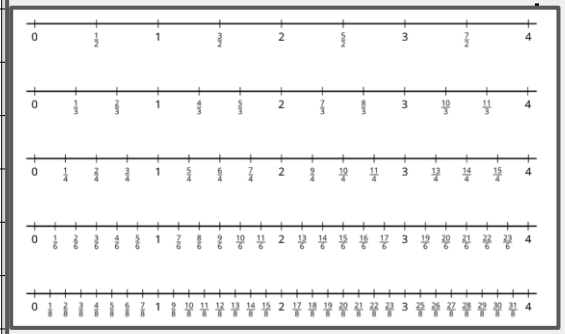
4. Write the number you rolled as the numerator of one of the given fractions for roll 1 on the recording sheet.

5. Count aloud as you move a counter that distance on the appropriate number line.

6. Each time a counter lands exactly on the last tick mark of one of the number lines, keep that counter. Put a new one at 0.

7. The player with the most counters after 20 rolls wins.

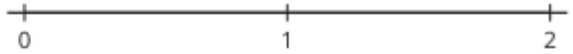
| | | | | | |
|---|---|---|---|---|---|
| **Roll 1** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 2** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 3** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 4** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 5** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 6** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 7** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 8** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 9** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |
| **Roll 10** | $\frac{\square}{2}$ | $\frac{\square}{3}$ | $\frac{\square}{4}$ | $\frac{\square}{6}$ | $\frac{\square}{8}$ |



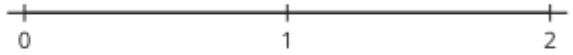
# Fractions on the Number Line

Activity #2

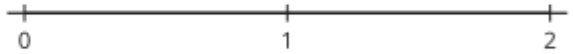
1. Locate and label $\frac{3}{4}$ and $\frac{6}{4}$.



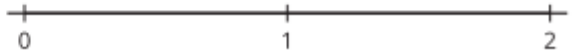

2. Locate and label $\frac{7}{8}$ and $\frac{12}{8}$.




3. Locate and label $\frac{2}{3}$ and $\frac{4}{3}$.




4. Locate and label $\frac{2}{6}$ and $\frac{7}{6}$.

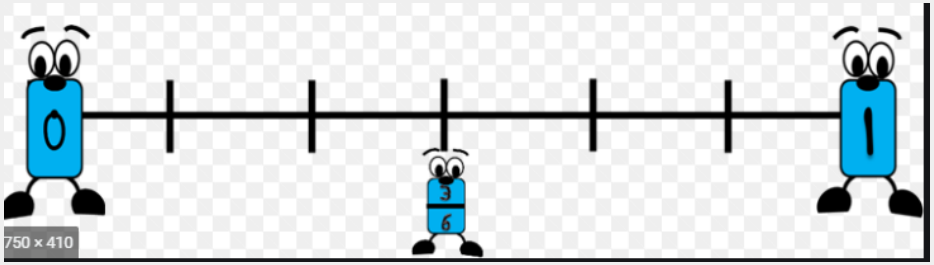


# Fractions on the Number Line

Activity #2

5. How did you partition the number line when you were locating the numbers ⅞ and 12/8 ? Explain your reasoning.

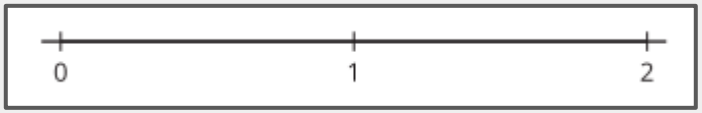
6. What patterns did you notice in the fractions you located?



# What's the Fraction?

Activity #3

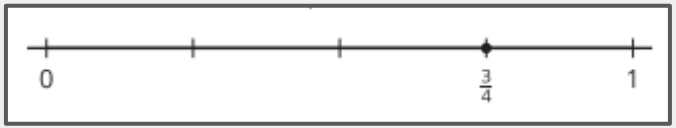
1. Partition the number line in any way you'd like in equal size parts. Locate and mark, but don't label, a fraction of your choice.

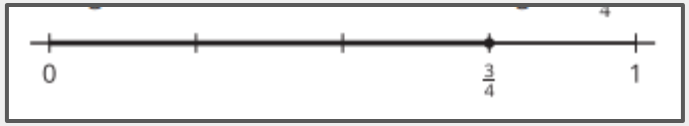



2. Trade number lines with a partner.
    a. How did your partner partition their number line? Explain your reasoning.
    b. What number did your partner mark on their number line? Explain your reasoning.

Lesson Synthesis

Today we located more fractions on the number line. In an earlier lesson, we learned how fractions are built from unit fractions. How do we see this on the number line?





Remember, when we are locating a fraction on the number line, it might be helpful to think about or show the 3 one-fourth parts, and then we mark and label the number at the end of those parts. When we locate and label fractions, you don't have to mark the length, you can just count the unit fractions and then mark and label the point at the end.

8

# Hidden Whole Numbers

Let’s work with fractions and whole numbers on the number line.

3.NF.A.2, 3.NF.A.3.c

Warm up

# Estimation Exploration: Name That Point

What number is marked on the number line?


Record an estimate that is:

| Too low | Just right | Too high |
| --- | --- | --- |
| | | |

# Fractions as Whole Numbers

Activity #1

1. Locate and label your assigned fractions on the number line. Be prepared to explain your reasoning.


a. $\frac{1}{2}, \frac{2}{2}, \frac{3}{2}, \frac{4}{2}, \frac{5}{2}, \frac{6}{2}, \frac{7}{2}, \frac{8}{2}, \frac{9}{2}, \frac{10}{2}$

b. $\frac{1}{3}, \frac{2}{3}, \frac{3}{3}, \frac{4}{3}, \frac{5}{3}, \frac{6}{3}, \frac{7}{3}, \frac{8}{3}, \frac{9}{3}$

c. $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, \frac{5}{4}, \frac{6}{4}, \frac{7}{4}, \frac{8}{4}, \frac{9}{4}, \frac{10}{4}, \frac{11}{4}, \frac{12}{4}$

2. Which fractions were located at a whole number?

3. What patterns does your group notice across the fractions? Why do those patterns make sense?

# Locate 1 on the Number Line

Activity #2

1. Locate and label 1 on each number line. Be prepared to explain your reasoning.

a.


b.


c.


d.


2. How could you locate 2 on the number lines in the previous problem?

Lesson Synthesis

Today we saw that some fractions are whole numbers. What are some examples of fractions that were whole numbers?

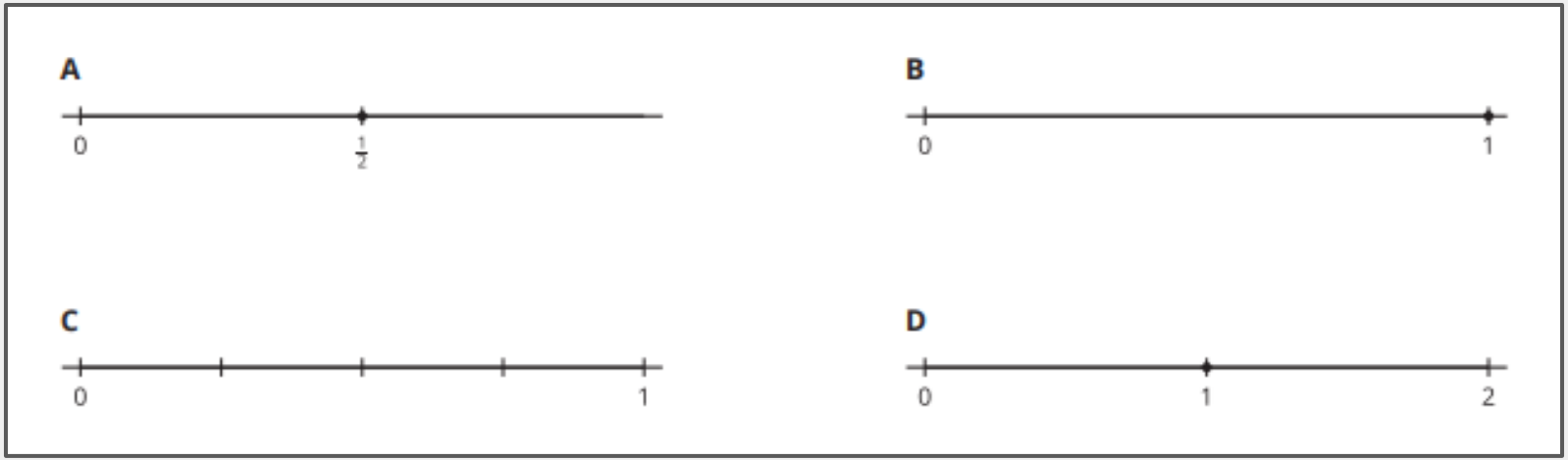
How do you know that it makes sense that those fractions are whole numbers?

# Number Line Ninja

Let’s locate numbers on the number line when we are given the location of one fraction.

# Which One Doesn't Belong: Many Lines

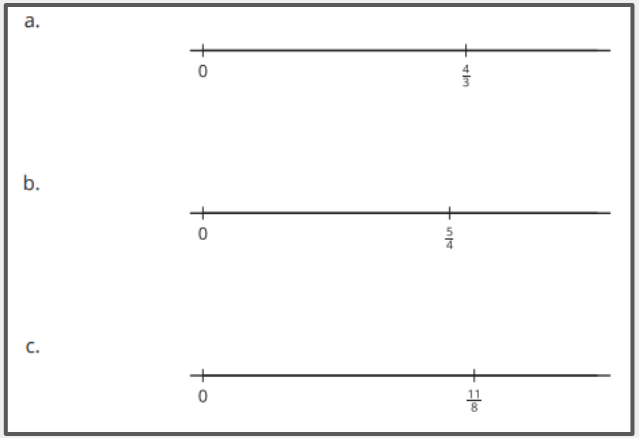
Warm up



# Locate 1 Again

Activity #1

1. Locate and label 1 on each number line.
Be prepared to explain your reasoning.



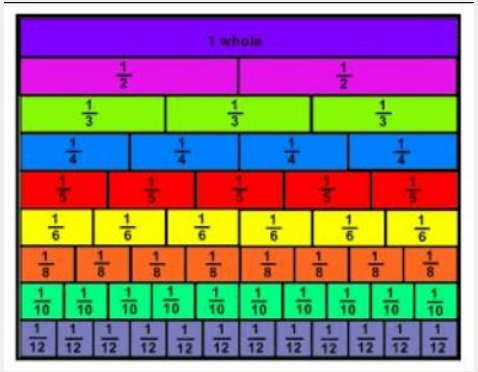

2. Explain your reasoning for one of the number lines. You can write about any of the number lines.

# Locate ¾

Activity #2

Locate and label $\frac{3}{4}$ on the number line. Be prepared to explain your reasoning.


Lesson Synthesis

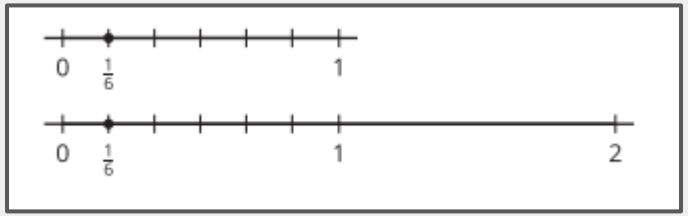




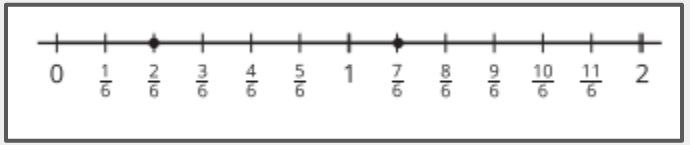
Work with your partner to brainstorm all the things you've learned about fractions so far. Then we'll share and record our ideas

# Section Summary

In this section we located and labeled fractions on the number line. We learned how to partition the number line from 0 to 1 to locate unit fractions.




Then we used the location of unit fractions to locate other fractions.



# Section Summary

We also learned that some fractions, like 2/2 and 8/4 are whole numbers because they are at the same location as whole numbers on the number line.

We used our understanding of unit fractions to locate 1 on the number line when we only knew the location of a unit fraction.

# Equivalent Fractions

Let’s identify equivalent fractions.

# Choral Count: One-halves

Warm up

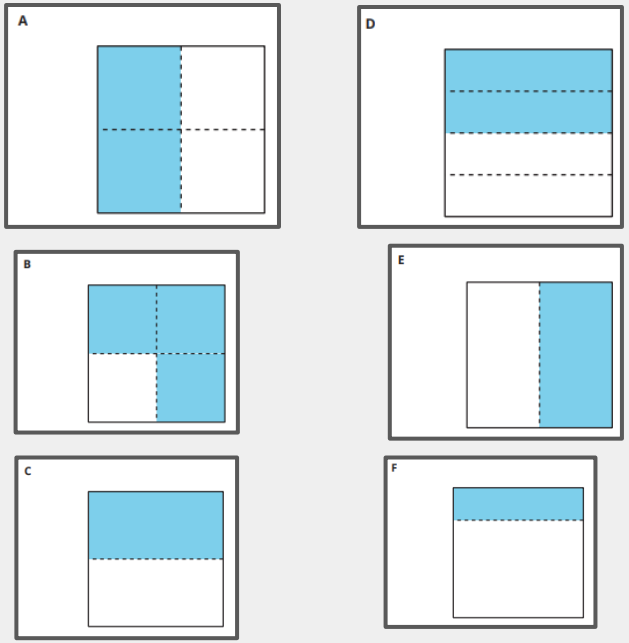
What patterns do you see?

Count by ½ , starting at ½ .
Stop counting and recording at 8/2.

# Equivalent to ½

Activity #1

1. Which shapes show ½ ? Be prepared to share your reasoning.




2. How can more than one of the shapes show ½ ?

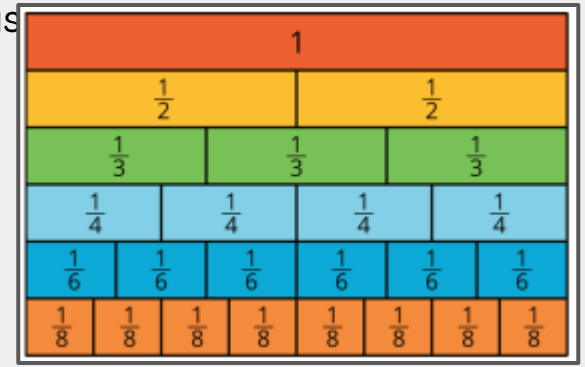
# Find Equivalent Fractions

Activity #2

Use your fraction strips to find as many equivalent fractions as you can that are equivalent to:

1. $\frac{1}{2}$
2. $\frac{2}{3}$
3. $\frac{6}{6}$
4. $\frac{3}{4}$

Explain your reas



Lesson Synthesis

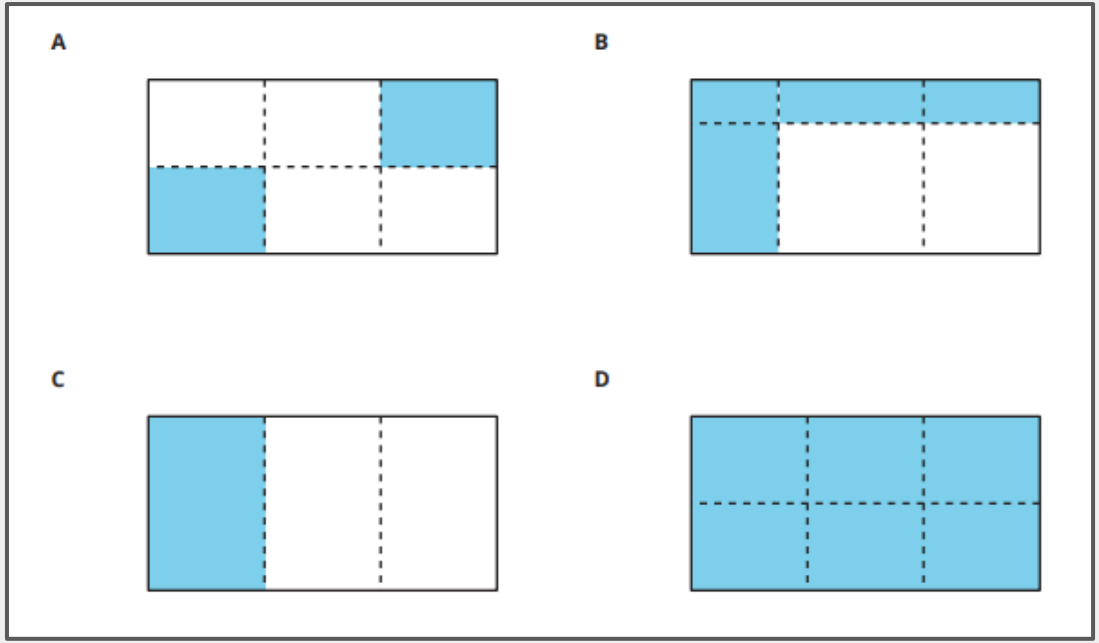
If you were given two fractions, how could you determine whether they are equivalent?

# Generate Equivalent Fractions

Let’s generate equivalent fractions.

Warm up

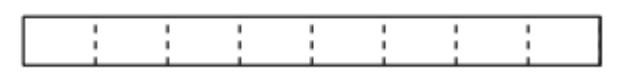
# Which One Doesn't Belong: Rectangles



# Many Names

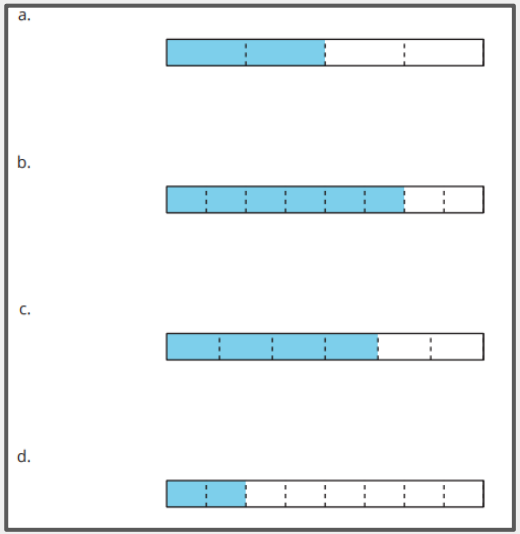
Activity #1

1. Show ½ on the fraction strip.



Be prepared to share your reasoning.

2. Name each fraction in as many ways as you can.




Be prepared to share your reasoning.

# Rolling for Equivalent Fractions

Activity #2

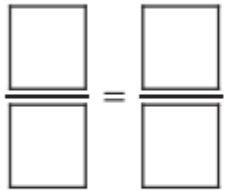
1. Roll 6 number cubes. If you roll any fives, they count as a wild card and can be any number you'd like.

2. Work with your partner to see if you can fill in a statement to show equivalent fractions.

3. If you cannot, re-roll as many number cubes as you'd like. You can re-roll your number cubes twice.

4. If you can make equivalent fractions, record your statement and show or explain how you know the fractions are equivalent. You get 1 point for each pair of equivalent fractions you write.

Round 1:



Show or explain how your fractions are equivalent.

Lesson Synthesis

What were some representations you used to recognize and generate equivalent fractions?

# Equivalent Fractions on a Number Line

Let’s find fractions at the same location.

Warm up

# Notice and Wonder: Running Part of a Field

What do you notice?

Tyler ran part of the length of the field and Han ran part of the length of the field.

What do you wonder?

# Running Part of a Mile

Activity #1

Decide whether each pair of students ran the same distance. You can use the number lines if they are helpful to you.

1. Elena ran $\frac{3}{6}$ of a mile at the park.

   Han ran $\frac{1}{2}$ of a mile at the park.

2. Jada ran $\frac{1}{4}$ of a mile at the park.

   Kiran ran $\frac{2}{8}$ of a mile at the park.

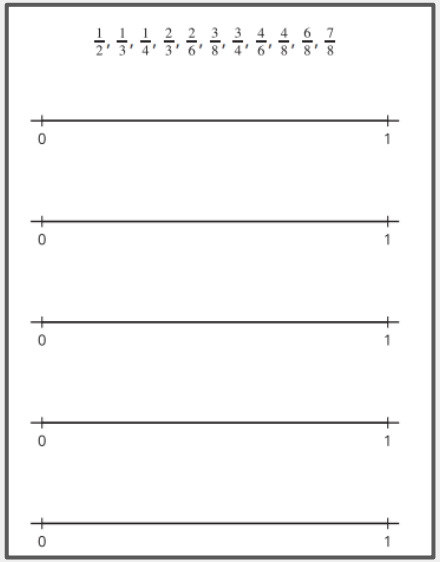
3. Lin ran $\frac{2}{3}$ of a mile at the park.

   Mai ran $\frac{5}{6}$ of a mile at the park.

# Locate and Pair

Activity #2

1. Locate and label the following numbers on the number line. You can use more than one number line if you would like to.




2. Find 4 pairs of fractions that are equivalent.

a. _____ = _____

b. _____ = _____

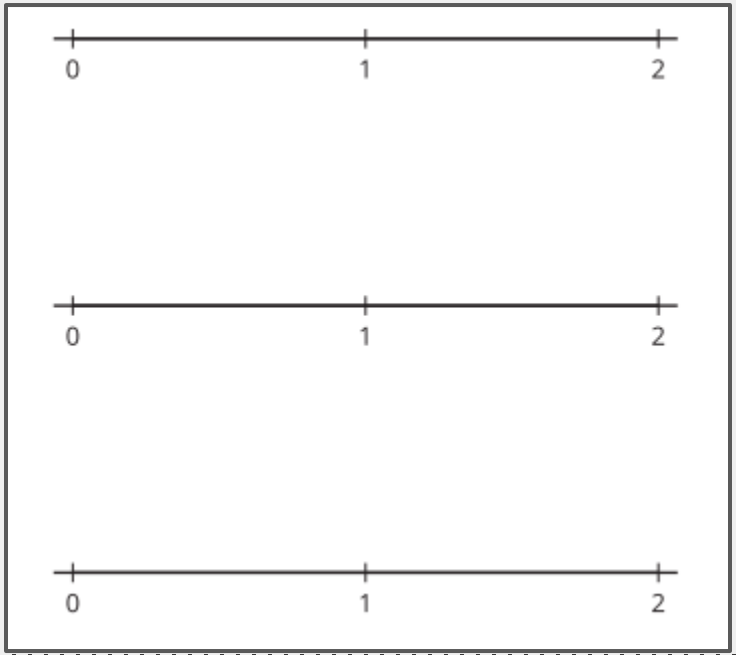
c. _____ = _____

d. _____ = _____

# Contemplate, Locate, Generate

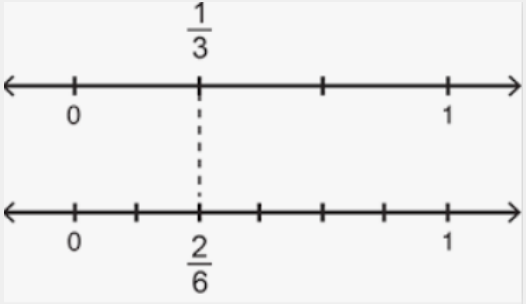
Activity #3

Use the number lines to generate as many equivalent fractions as you can.



Lesson Synthesis

Today, we saw that it can be helpful to use one or two number lines to show that fractions are equivalent. Keep that in mind during the cool-down.





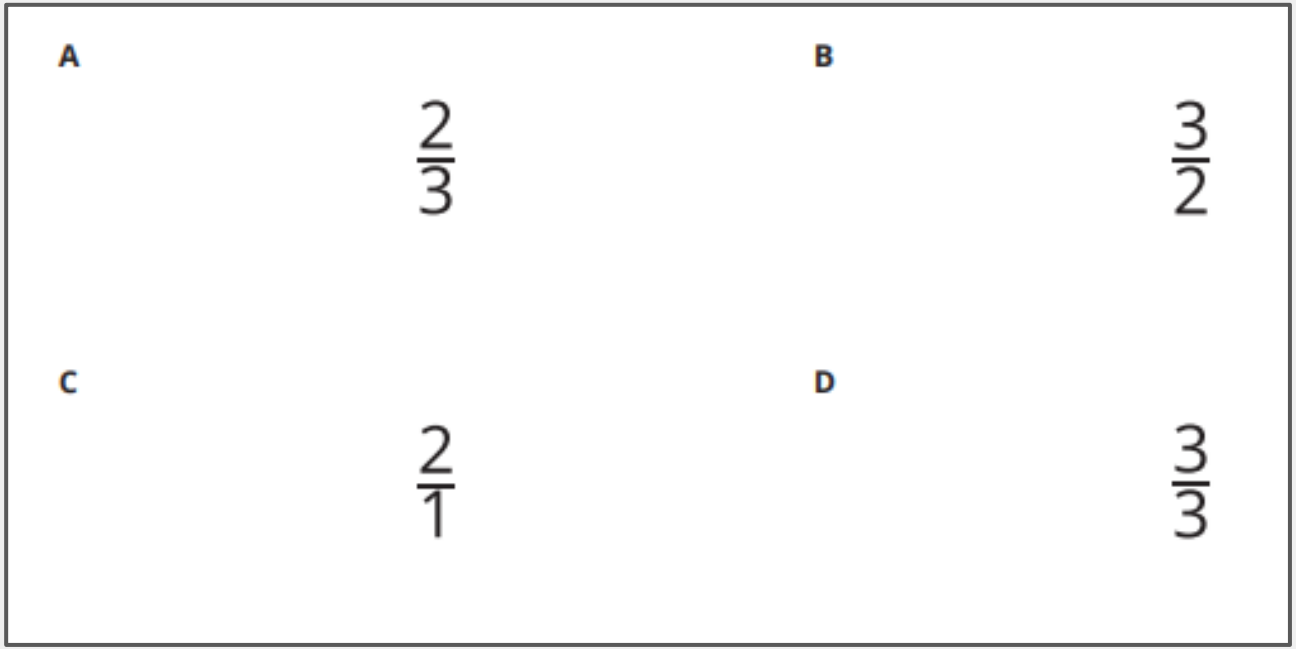
What's the same about using number lines to recognize and generate equivalent fractions as using diagrams or fraction strips? What's different

# Whole Numbers and Fractions

Let’s find fractions and whole numbers that are equivalent.

# Which One Doesn't Belong: Fractions

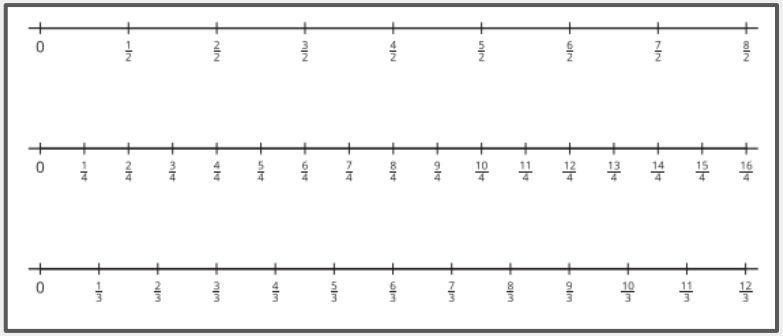
Warm up



# More Hidden Whole Numbers

Activity #1

1. Use the number lines to circle the fractions that are equivalent to whole numbers. Explain how you know.




2. Decide whether each fraction is equivalent to a whole number. Show or explain your reasoning. You can use the number lines if they are helpful to you.

a. $\frac{12}{6}$

b. $\frac{12}{8}$

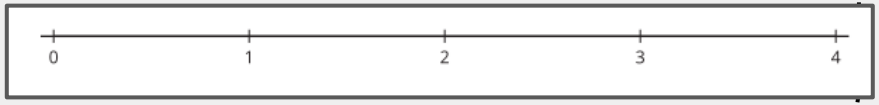
c. $\frac{24}{2}$

d. $\frac{10}{3}$

e. $\frac{5}{1}$

f. $\frac{16}{4}$

g. $\frac{11}{2}$



# Write it as a Fraction

Activity #2

1. Use what you've learned about fractions to write the whole numbers as fractions in as many ways as you can. Show or explain your reasoning.

a. 3

b. 4

c. 5

d. 6

e. 7

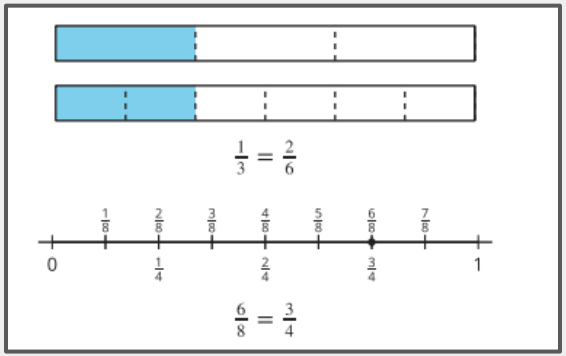
f. 8

Lesson Synthesis

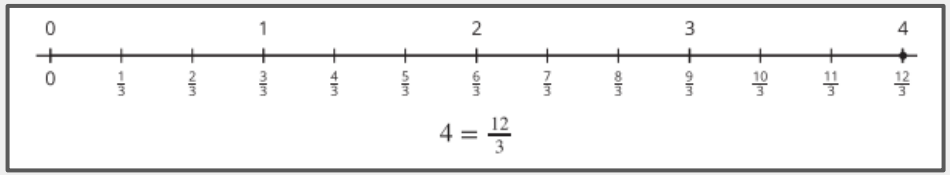
Over the last few lessons, we've learned about equivalent fractions. What are the most important things you've learned about fraction equivalence?

# Section Summary

In this section, we learned that different fractions can be equivalent. We know fractions are equivalent if they are the same size or located at the same location on the number line.




We also learned that some fractions are whole numbers and we can write whole numbers as fractions.



14

# Compare Your Way

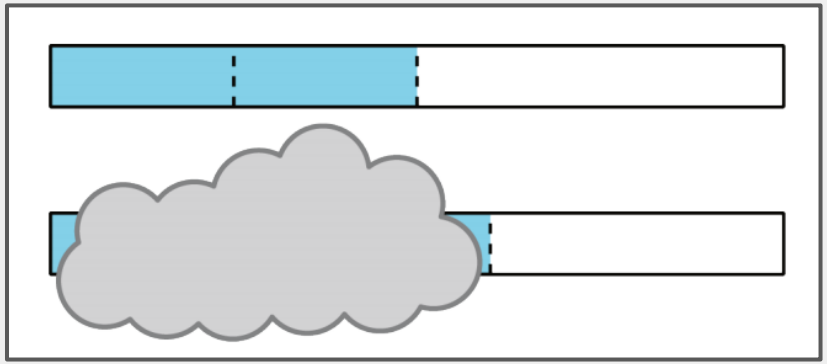
Let’s represent and compare fractions.

3.NF.A.3, 3.NF.A.3.d

Warm up

# Notice and Wonder: Two Strips

What do you notice?



What do you wonder?

# Equivalent or Not?

Activity #1

Are these fractions equivalent? Show your thinking using diagrams, symbols, or other representations.

1. $\frac{1}{2}$ and $\frac{1}{3}$

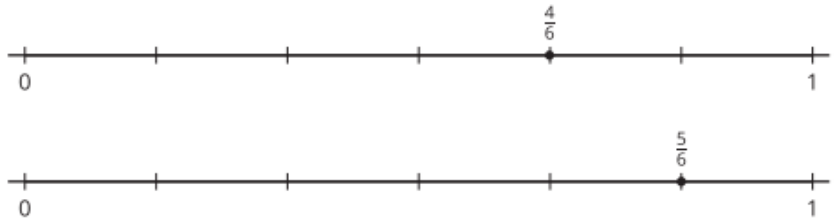
2. $\frac{4}{6}$ and $\frac{5}{6}$

3. $\frac{3}{4}$ and $\frac{6}{8}$

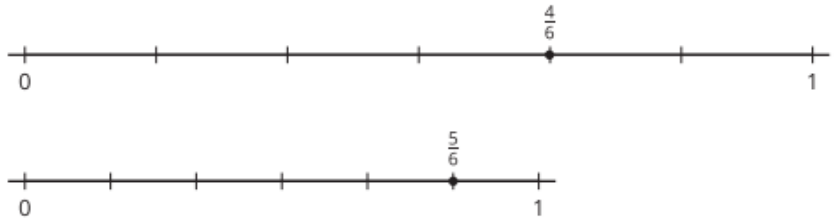
# Same Fractions, Different Result?

Activity #2

Han says $\frac{4}{6}$ is less than $\frac{5}{6}$. His work is shown.




Lin says $\frac{4}{6}$ is greater than $\frac{5}{6}$. Her work is shown.




How can Han and Lin make different comparison statements for the same fractions?

Lesson Synthesis

# How does representing fractions to compare them relate to what you did in previous lessons?

15

# Compare Fractions with the Same Denominator

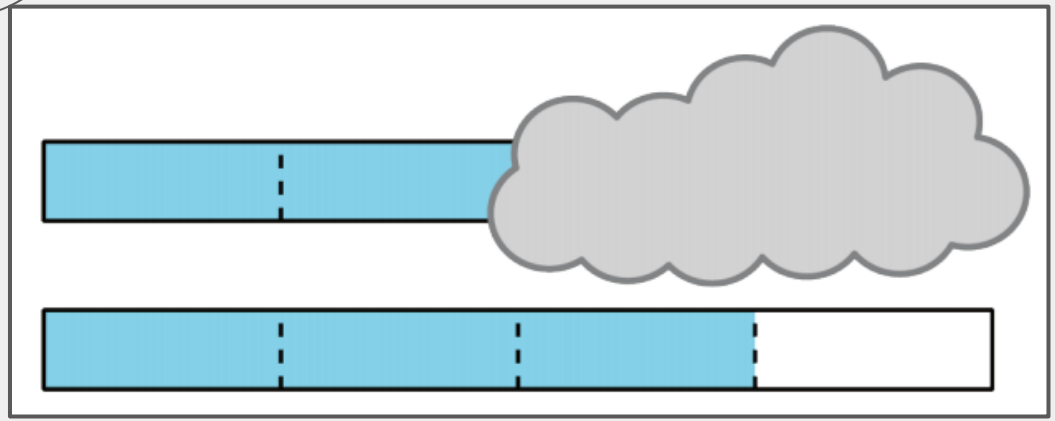
Let’s compare two fractions with the same denominator.

Warm up

# Notice and Wonder: Two More Strips

What do you notice?

What do you wonder?



# Compare Fractions with the Same Denominator

Activity #1

1. For each pair of fractions, circle the fraction that is greater. Explain or show your reasoning.

a. $\frac{1}{2}$ and $\frac{3}{2}$

b. $\frac{3}{8}$ and $\frac{2}{8}$

2. Use the symbols > or < to make each statement true. Explain or show your reasoning.

a. $\frac{1}{6}$ _____ $\frac{4}{6}$

c. $\frac{2}{3}$ _____ $\frac{1}{3}$

b. $\frac{4}{4}$ _____ $\frac{5}{4}$

d. $\frac{4}{8}$ _____ $\frac{6}{8}$

Activity #2

# What's Missing?

Write in the missing numerator of the fraction to make each statement true. Explain or show your reasoning.

1. $\frac{1}{2} < \frac{\quad}{2}$

2. $\frac{6}{4} > \frac{\quad}{4}$

3. $\frac{4}{3} < \frac{\quad}{3}$

4. $\frac{5}{8} > \frac{\quad}{8}$

Activity #3

# Play Spin to Win

Choose a different color writing utensil than your partner so you can tell whose fraction is whose on each number line.

1. Each player, spin. The player who spins the highest number is Player 1.

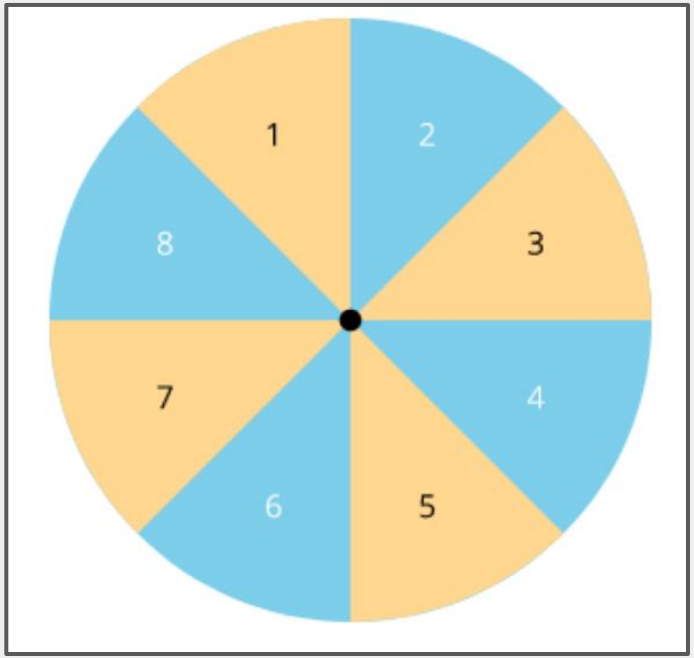
2. Player 1, choose a denominator for the first round: 2, 3, 4, 6, or 8.

3. Each player, spin for the numerator of your fraction.

4. Use the recording sheet. Each player, locate and label your fraction on the same number line on the recording sheet.

5. The greatest fraction wins and picks the denominator for the next round.

6. Repeat for 10 rounds. The player who wins the most rounds, wins the game.



Lesson Synthesis

# Today we compared fractions with the same denominator.

How do you compare fractions with the same denominator? Does your strategy always work?

# Compare Fractions with the Same Numerator

Let’s compare two fractions with the same numerator.

Warm up

# True or False: Unit Fractions

Decide whether each statement is true or false.

Be prepared to explain your reasoning.

$$\frac{1}{2} > \frac{1}{4}$$

# True or False: Unit Fractions

Warm up

Decide whether each statement is true or false.

Be prepared to explain your reasoning.

$$\frac{1}{4} > \frac{1}{3}$$

# True or False: Unit Fractions

Warm up

Decide whether each statement is true or false.

Be prepared to explain your reasoning.

$$\frac{1}{6} > \frac{1}{8}$$

# Represent Fraction Comparisons

Activity #1

Priya says that $\frac{5}{6}$ is greater than $\frac{5}{8}$.

Tyler says that $\frac{5}{8}$ is greater than $\frac{5}{6}$.

Who do you agree with? Show your thinking using diagrams or number lines.

# Compare Fractions with the Same Numerator

Activity #2

1. For each pair of fractions, circle the fraction that is greater. Explain or show your reasoning.

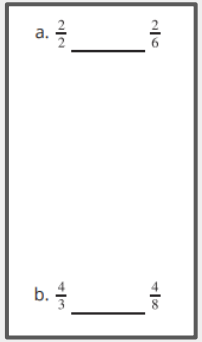
a. $\frac{1}{2}$ and $\frac{1}{3}$

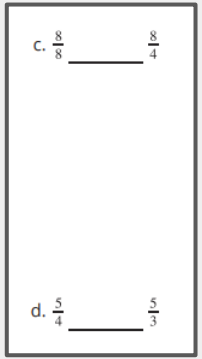
b. $\frac{3}{4}$ and $\frac{3}{8}$

c. $\frac{5}{3}$ and $\frac{5}{6}$

d. $\frac{9}{8}$ and $\frac{9}{6}$

2. Use the symbols > or < to make each statement true. Explain or show your reasoning.



# Compare Fractions with the Same Numerator

Activity #2

3. Write in the missing denominator of the fraction to make each statement true.

Explain or show your reasoning.

a. $\frac{1}{3} < \frac{1}{\_\_}$

b. $\frac{6}{4} > \frac{6}{\_\_}$

c. $\frac{4}{4} < \frac{4}{\_\_}$

d. $\frac{2}{6} < \frac{2}{\_\_}$

Lesson Synthesis

Today we compared fractions with the same numerator. How would you describe how to compare fractions with the same numerator to a friend?

# Compare Fractions

Let’s compare more fractions in and out of situations.

Warm up

# Estimation Exploration: Ladybug Length

What is the length of this ladybug?


Record an estimate that is:

| Too low | Just right | Too high |
| --- | --- | --- |
| | | |

# Don't Stop Comparing

Warm up

1. Use the symbols >, <, or = to make each statement true.

a. $\frac{2}{2}$ _____ $\frac{6}{6}$

b. $\frac{5}{3}$ _____ $\frac{2}{3}$

c. $\frac{3}{8}$ _____ $\frac{3}{6}$

e. $\frac{5}{2}$ _____ $\frac{5}{3}$

d. $\frac{7}{6}$ _____ $\frac{9}{6}$

Explain or show your reasoning.

2. Solve each problem. Show your thinking. Organize it so it can be followed by others.

a. Mai can swim $\frac{3}{8}$ of the length of the pool underwater. Lin can swim $\frac{3}{4}$ of the length of the pool underwater. Who can swim farther underwater?

b. Tyler and Han are sharing a pizza. Tyler ate $\frac{3}{8}$ of the pizza and Han ate $\frac{5}{8}$ of the pizza. Who ate more pizza?

c. Noah rode his bike $\frac{9}{6}$ of a mile to school. Kiran rode his bike $\frac{9}{8}$ of a mile to school. Who rode farther?

# What Fraction Makes Sense?

Activity #2

1. For each fraction, find a fraction that is less, a fraction that is greater, and a fraction that is equivalent. Use the symbols >, <, or = to write statements to show the relationships you find.

| | statement with: | | |
|---|---|---|---|
| | fraction less than | fraction greater than | fraction equivalent to |
| a. $\frac{4}{6}$ | | | |
| b. $\frac{3}{4}$ | | | |
| c. $\frac{1}{2}$ | | | |

# What Fraction Makes Sense?

Activity #2

2. Oh, no! Some juice spilled on Noah's fractions. Help him figure out what was written before the juice was spilled.

For each statement, find as many answers as you can that make the statement true. Explain or show your reasoning.

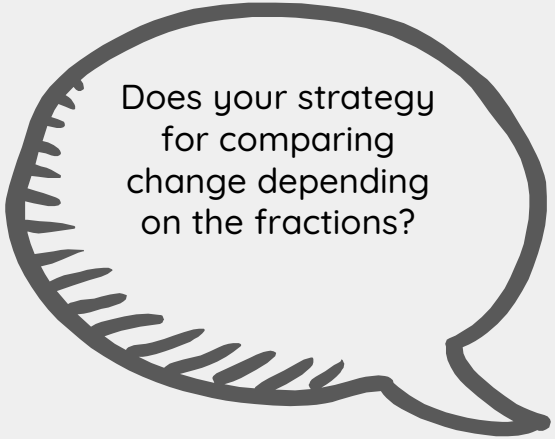
a. $\frac{2}{8} < \frac{\text{splat}}{8}$

b. $\frac{3}{6} = \text{splat}$

c. $\frac{4}{3} > \frac{4}{\text{splat}}$

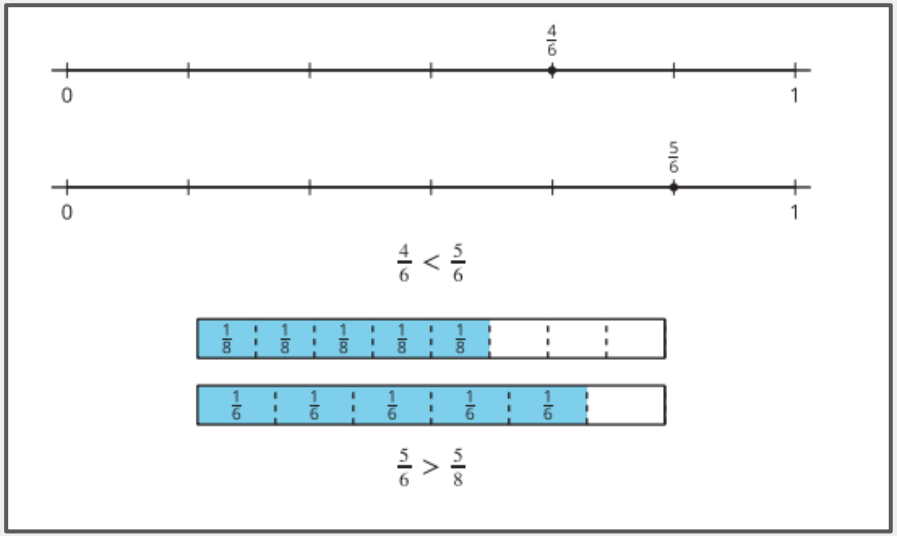
Lesson Synthesis

We have compared a lot of different fractions. Fractions with the same denominator, fractions with the same numerator, and in this lesson, we saw fractions that were equivalent again. What do you think would be some of the most important things to tell a friend who wanted to learn about comparing two fractions?




# Section Summary

In this section we compared fractions with the same numerator or denominator and used the symbols >, =, or < to record our results. We used diagrams and number lines to represent our thinking



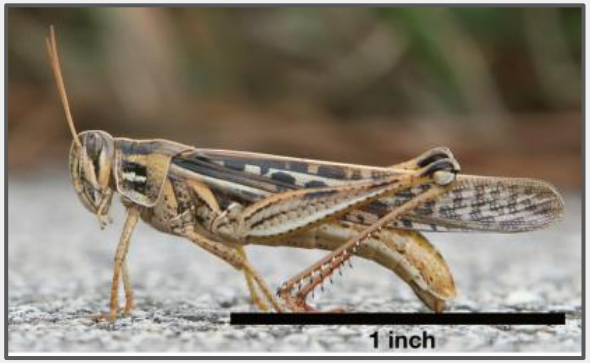
# Compare Like Ninjas

Let’s put our fraction equivalence and comparison knowledge to work.

Warm up

# Estimation Exploration: Grasshopper Growth

What is the length of this grasshopper?




Record an estimate that is:

| Too low | Just right | Too high |
| --- | --- | --- |
| | | |

# Ultimate Locate and Label

Activity #1

Locate and label each fraction on the number line. Be prepared to share your reasoning.

$\frac{1}{2}, \frac{3}{8}, \frac{13}{8}, \frac{2}{4}, \frac{3}{4}, \frac{9}{8}, \frac{5}{4}, \frac{12}{6}, \frac{5}{2}, \frac{9}{3}, \frac{20}{8}$

# Everything is Different

Activity #2

1. Use the symbols >, =, or < to make each statement true.
Explain or show your reasoning.

a. $\frac{9}{8}$ _____ $\frac{3}{4}$

b. $\frac{1}{3}$ _____ $\frac{2}{6}$

c. $\frac{2}{8}$ _____ $\frac{1}{6}$

d. $\frac{5}{4}$ _____ $\frac{3}{2}$

2. Write in the missing numerator of the fraction to make each statement true.
Explain or show your reasoning

a. $\frac{5}{8} > \frac{\quad}{4}$

b. $\frac{1}{3} < \frac{\quad}{6}$

c. $\frac{4}{2} < \frac{\quad}{3}$

d. $\frac{2}{4} > \frac{\quad}{8}$

Lesson Synthesis

In today's lesson we placed fractions on the number line and compared fractions that did not have the same numerator or denominator. How did you use your knowledge of fractions to put fractions on the number line or compare these fractions?

# Fraction Situations

Let’s compare and use fractions.

# True or False: Fraction Equivalence

Warm up

Decide whether each statement is true or false.

Be prepared to explain your reasoning.

$$\frac{2}{4} = \frac{3}{8}$$

# True or False: Fraction Equivalence

Warm up

Decide whether each statement is true or false.

Be prepared to explain your reasoning.

$$\frac{2}{4} = \frac{2}{6}$$

# True or False: Fraction Equivalence

Warm up

Decide whether each statement is true or false.

Be prepared to explain your reasoning.

$$\frac{2}{4} = \frac{4}{8}$$

# Fraction Situations 1

Activity #1

Fraction situations:

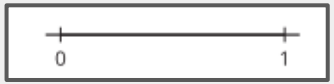
- Someone throws a ball down a field.
- Someone jumps in a sandbox.
- A car drives down a street.
- Part of the roll of tape is left.
- Someone rides a distance on a bike.
- Someone swims part of the length of the pool underwater.
- Someone runs a certain distance.
- An item is hidden partway down a street.

For each part do the following:

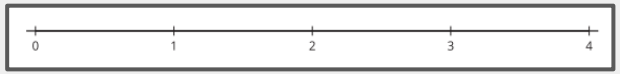
- Choose a situation (from the list or invent your own).
- Locate and label a fraction on the number line that can represent the situation.
- Draw a diagram that represents the situation.
- Write a sentence to describe the situation.

1. Choose a unit fraction between 0 and 1.


2. Choose a non-unit fraction between 0 and 1.




3. Choose a non-unit fraction between 1 and 4



# Fraction Situations 2

Activity #2

Fraction situations:

- A ball is thrown $\frac{4}{8}$ the length of a field.
- Andre jumps $\frac{2}{3}$ the length of the sandbox.
- A car drives $\frac{3}{4}$ the length of the street.
- $\frac{5}{6}$ of the roll of tape is left.
- Noah rode his bike $\frac{9}{6}$ of a mile to school.
- Mai can swim $\frac{3}{4}$ of the length of the pool underwater.
- Clare ran $\frac{2}{3}$ of a mile.

1. Partner A: Choose a fraction between 0 and 3. Partner B: Choose a fraction that either has the same numerator or the same denominator as your partner.

2. With your partner, write a situation that compares your fractions. Make sure your situation ends with a mathematical question.

3. Exchange your situation with another group and solve their problem. Show your thinking. Organize it so it can be followed by others.

Lesson Synthesis

Today we compared a lot of different fractions and we wrote situations involving fractions.

When was it challenging to compare fractions? What made it challenging?

When was it easy to compare fractions? What made it easy?

Was it easy or challenging to invent your own situations? What made it easy, what made it challenging?