Fractions

Number Talks and Do Nows

Grade 8 Diagnostic

5.2.1: Fraction Frenzy

Name:
Date:

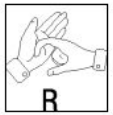
Instructions

Answer all of the questions as completely as possible.

- If you think you can explain your reasoning better by talking or by showing something to me, draw a speaker symbol beside the question.

Speaker symbol:
<)))

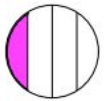
- If you need me to read something to you, show me the sign language symbol for R.



- If you want manipulatives, show me the sign language symbol for M.

- You may use a calculator for any part.

1. A circle is divided into four parts as shown in the diagram. One of the parts is shaded.



Which fraction of the whole circle is shaded?

a) one-quarter b) less than one-quarter c) more than one-quarter

Give reasons for your answer.

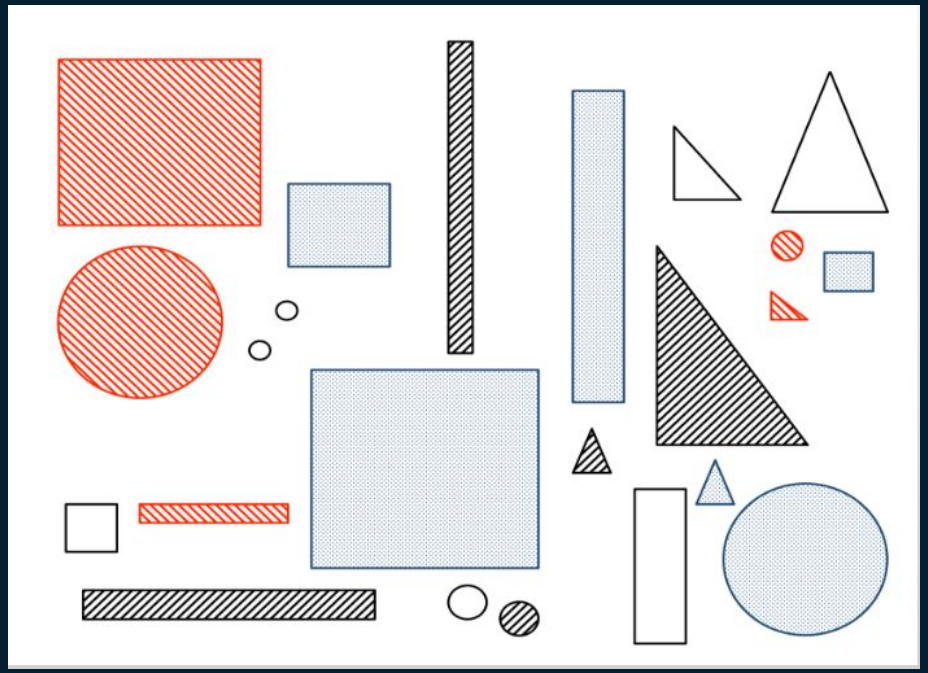
Number Talk April 12, 2017

Fraction talks

Do Now: April 12, 2017

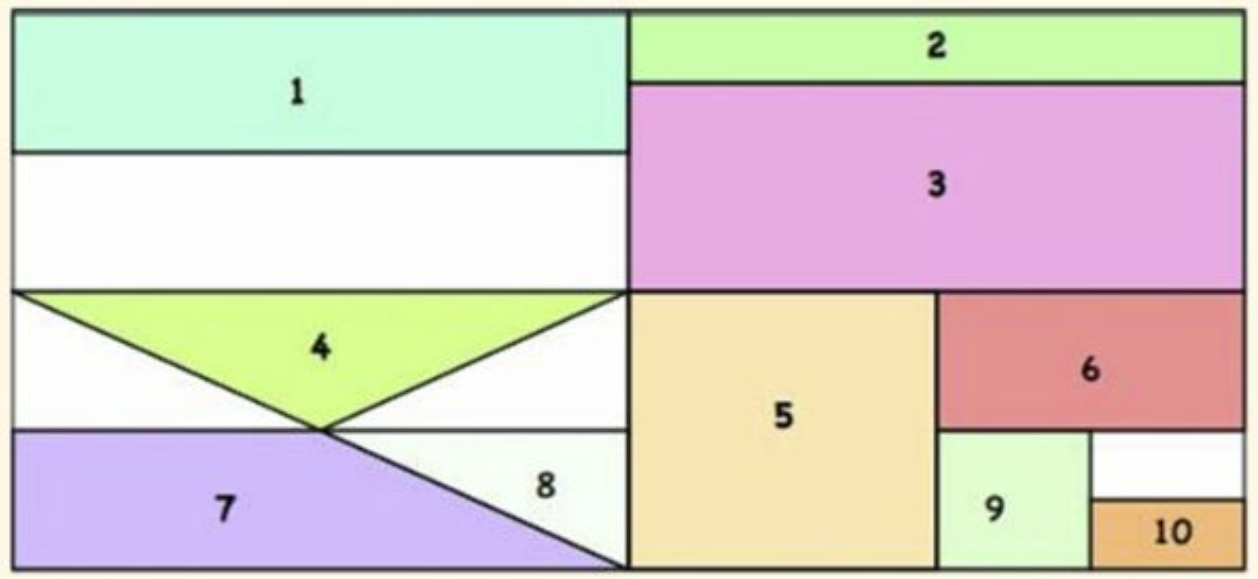
Fraction Sets

Name as many Fractions as you see.



Number Talk April 13, 2017

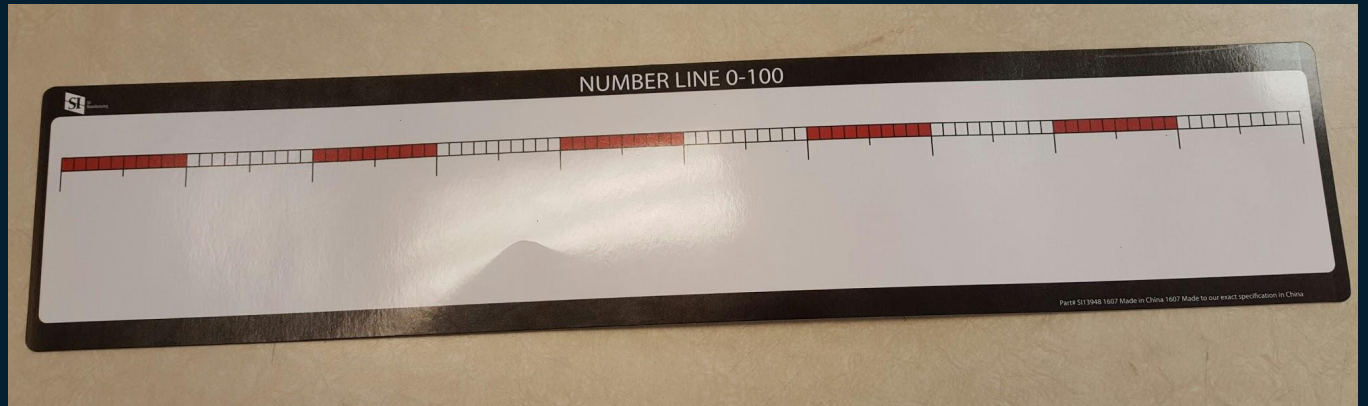
Fraction of Square: What fraction of the whole rectangle does each numbered piece represent?



Number Talk April 18, 2017

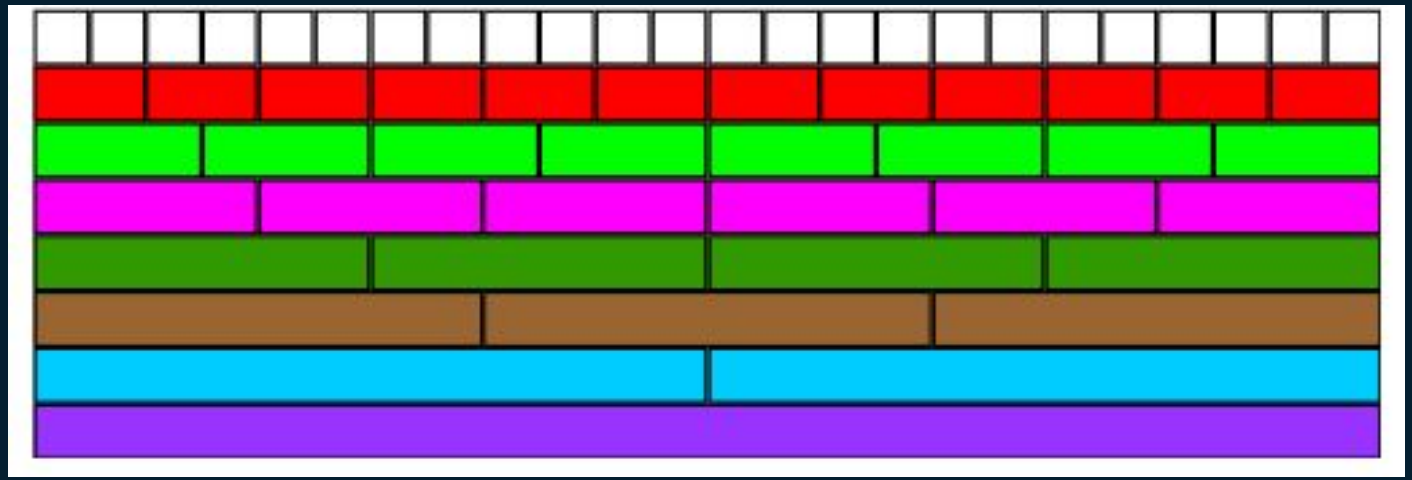
Place the following numbers on a number line:

⅓, ⅛, 1/10, 1/5



Do Now: April 18, 2017

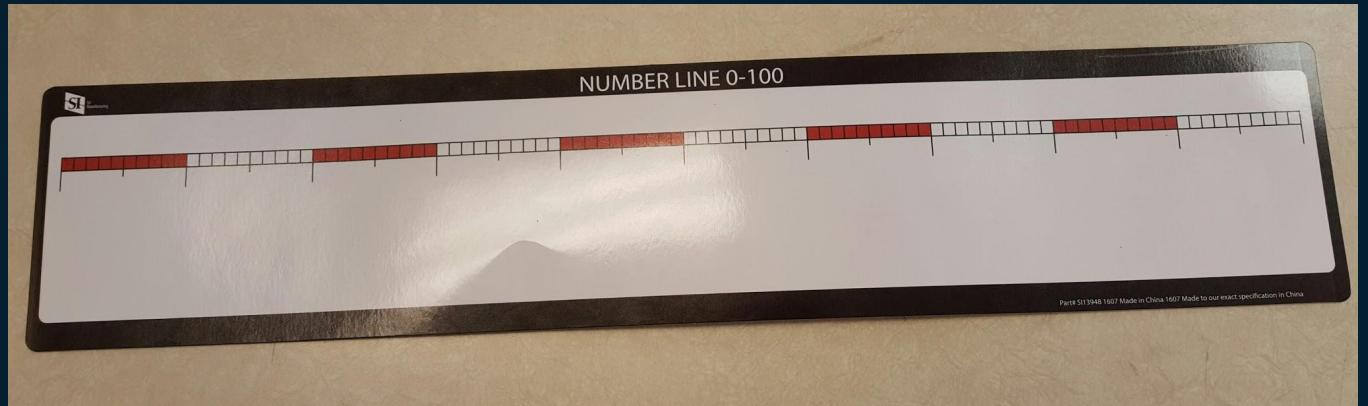
Fraction Wall: How many different ways can you find of writing ½? ⅓? ¾? Can you find "rules" for working out equivalent fractions?



Number Talk: April 19, 2017

Place the following numbers on a number line:

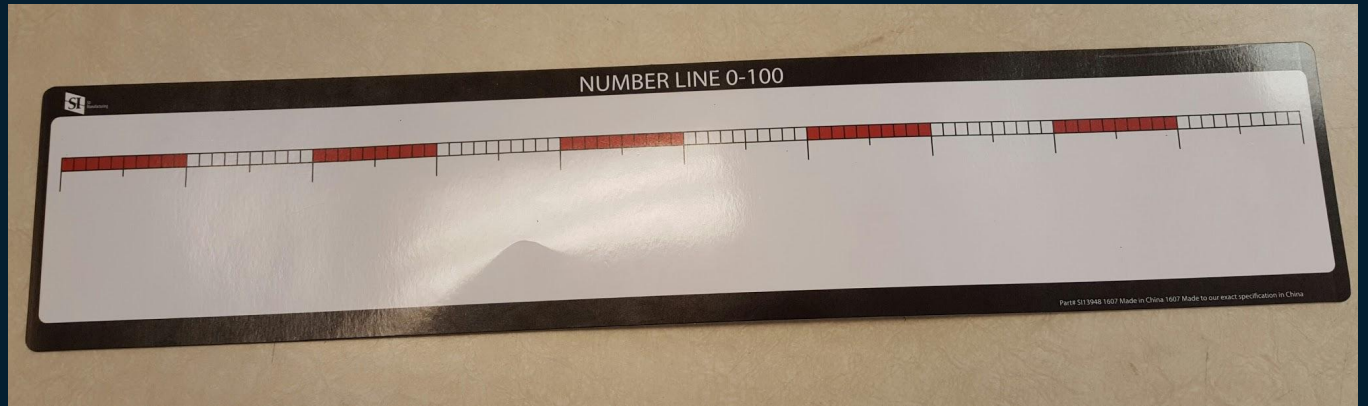
⅚, ⅔, 3/9



Number Talk: April 20, 2017

Place the following numbers on a number line:

⅜, 5/7, 1/2



Do Now: April 20, 2017

- Place these fractions in a chart like the one below: 3/10, ¾, 11/12, 2/7, ⅓, 5/10, 9/14, 4/6, 3/12

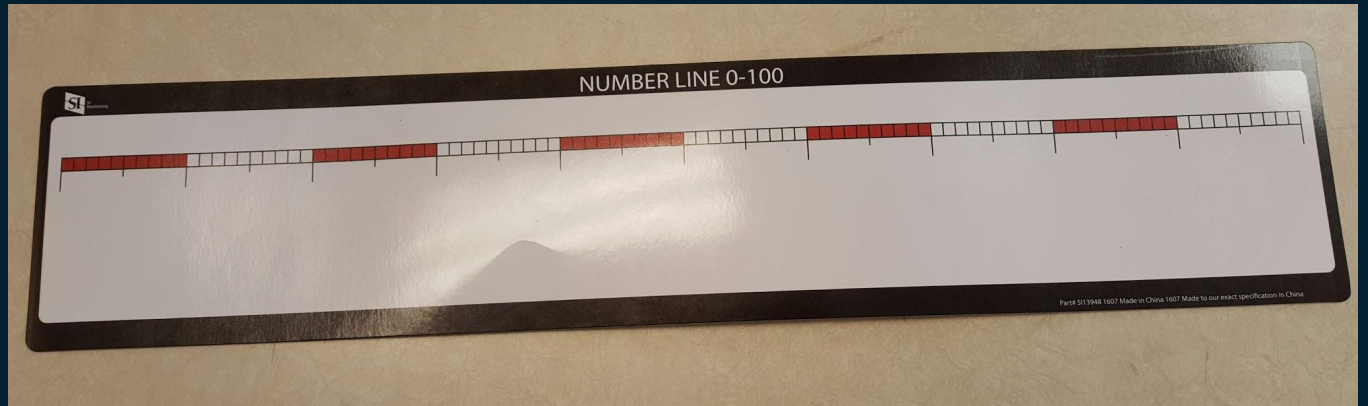
Less than ½	More than ½

- JUSTIFY where you placed them and be prepared to share your understanding.

Number Talk: April 21, 2017

Place the following fractions in order:

8/10, 9/8, ¾, 5/6



Do Now: April 21, 2017

- Which is less and how do you know?
- Use only cuisenaire rods or number lines to compare and record on paper.
- ⅛ or ⅞
- 4/7 or 5/7
- 5/3 or ⅝
- ⅘ or 4/9
- ¾ or 9/10
- Be prepared to share your group's work.

Number Talk: April 24, 2017

How many ¼'s are in 1?

In 4?

In 5?

In 6?

In 10? In 100?

What patterns do you see?

Do Now: April 24, 2017

- Which is less and how do you know? Answer on large grid paper in groups.
- Use only cuisenaire rods or number lines to compare and record on paper.
- 7/12 or 5/12
- ⅗ or 3/7
- 9/8 or 9/10
- 4/6 or 7/12
- 8/9 or 7/8
- Be prepared to share your group's work.

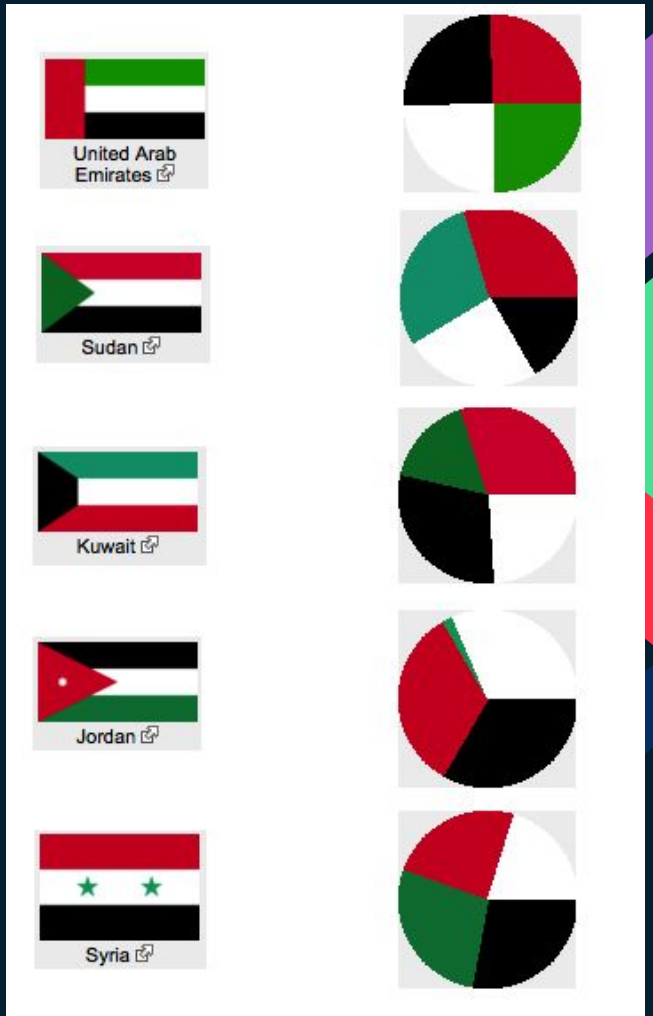
Number Talk: April 25, 2017

List as many fractions as you can that are less than ½.

Do Now: April 25, 2017

Match the flags with their circle graph representations.

Explain your thinking.



Number Talk: April 26, 2017

List as many fractions as you can that are greater than ½.

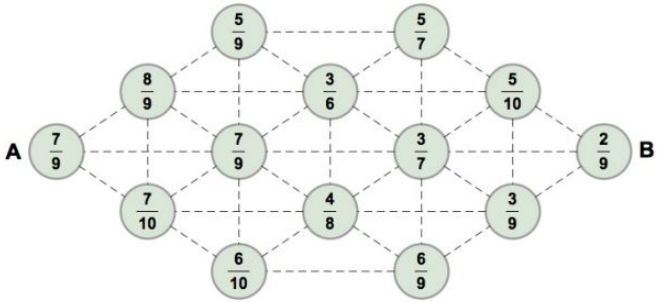
Do Now: April 26, 2017

Complete the Fraction Pathway challenge.

Fraction Pathway Challenge

Objective: To trace a path from Fraction A to Fraction B

Method: A traveller may advance from one fraction to any connected fraction that is smaller.



Alternative Suggestions:

1) Start at Fraction B and trace a path to Fraction A by connecting to a larger fraction.
2) Determine whether there is more than one possible path.

Number Talk: April 27, 2017

Find 3 equivalent fractions for 1/3.

(Hint: use cuisenaire rods and a whole of orange + red)

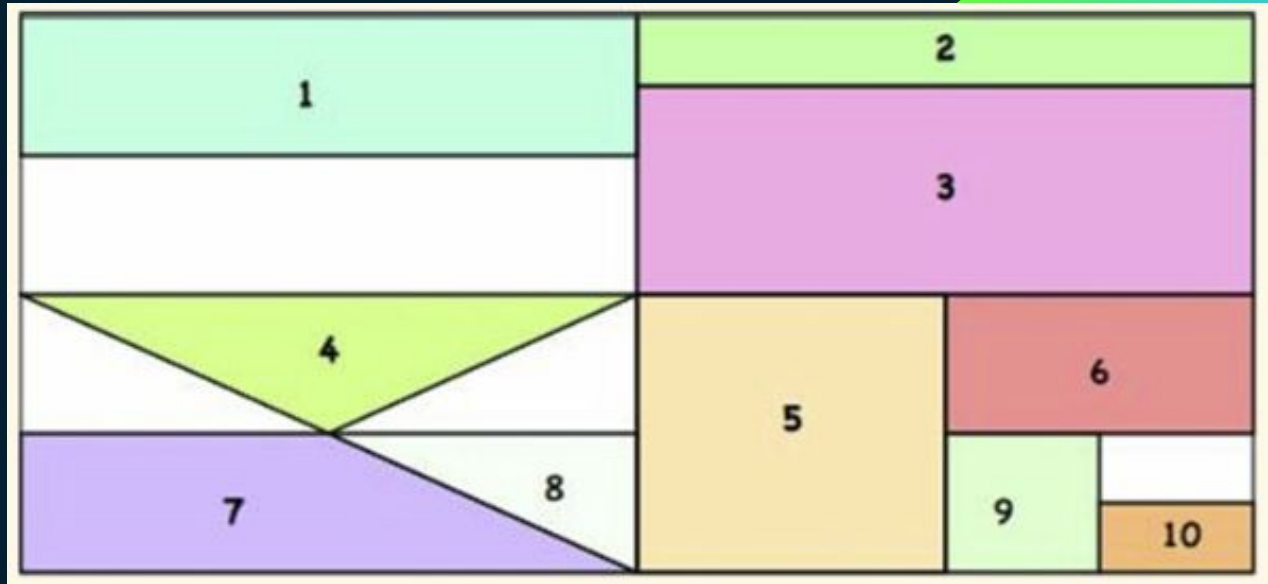
Find 3 equivalent fractions for ⅖.

(Hint: use cuisenaire rods and a whole of 2 orange)

Do Now: April 28, 2017

Fraction of Square: Based on our findings from last week, write a fraction addition equation for how the parts add up to 1 whole.

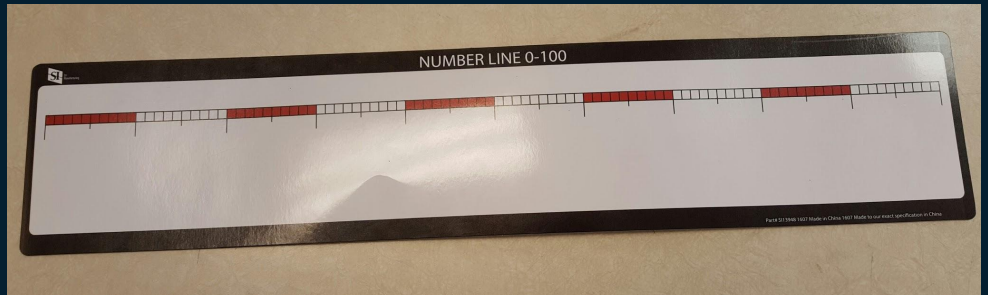
Now write a a similar equation for each ½.



Number Talk: May 1, 2017

Using a number line, how many ways can you show adding fractions to get a sum of 1?

Try to use fractions with different denominators****



Do Now: May 1, 2017

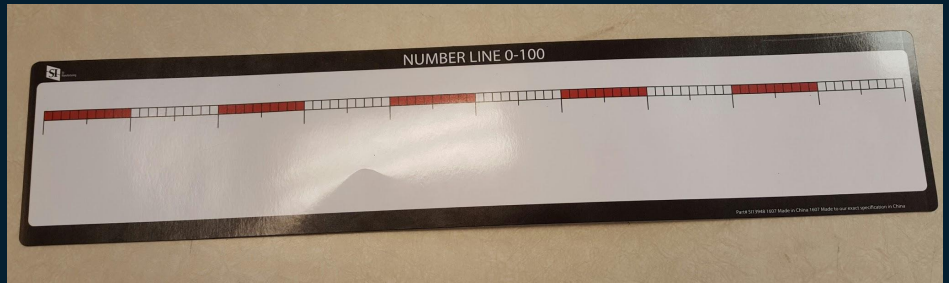
Estimating Fractions:

- **Estimate** each problem using only cuisenaire rods or a number line.
- 12/13 + ⅞
- 3 ⅛ + 2 ⅘
- 9/10 + 2 ⅞
- 1 ⅗ + 5 ¾ + 2 1/8
- Record your group's solutions on grid paper and write how you figured it out.

Number Talk: May 2, 2017

Using a number line, how many ways can you show adding fractions to get a sum of 1/2?

Try to use fractions with different denominators****.



Do Now: May 2, 2017

- List 3 different fractions equivalent to ½
- List 3 different fractions less than ½
- List 3 different fractions greater than ½
- List 3 different fractions greater than 1 (in improper fraction form)

Number Talk: May 3, 2017

- Count forward from 1 by ⅓ and stop at 3
- How could you represent this with an addition equation?
- Count backward from 3 by ¼ and stop at 1
- How could you represent this with a subtraction equation?

Do Now: May 3, 2017

- Determine the size of each fractional piece and then write an addition equation for each square.

Number Talk: May 4, 2017

- Count forward from 1 1/2 by 1/4 and stop at 3
- How could you represent this with an addition equation?
- Count backward from 3 1/3 by 2/3 and stop at 1
- How could you represent this with a subtraction equation?

Do Now: May 4, 2017

- How do you determine a fraction of a whole?
- What information do you use?
- Be prepared to share with examples.
- The picture of the square at the side
- can help with your examples/procedure.

Summary of our understanding:

Fractions:

- Standard fractions are amounts between 0 and 1.
- The top number is referred to as the NUMERATOR. It is the counting number and tells HOW MANY PIECES YOU HAVE. (e.g., 1/5; it takes 5 pieces to make a whole and I have only 1 piece)
- The bottom number is the DENOMINATOR. It tells HOW MANY PIECES IT TAKES TO MAKE THE WHOLE. (Think of Denominations in Money: It takes 100 pennies to make a whole dollar so each penny is 1/100 or 0.01 of a dollar)
- IMPROPER fractions are fractions where the NUMERATOR is LARGER than the DENOMINATOR. This means that what you have is greater than one WHOLE thing. (e.g., 12/5; it takes five pieces to make a whole. I have 12 pieces so I have 2 whole things and 2 pieces left over)
- MIXED fractions are another way to state IMPROPER fractions. You have a number of WHOLE things with some extra pieces. (e.g., 12/5 = 2 2/5; I have 2 whole things and 2 pieces but it takes 5 pieces to make a whole thing)

How to determine a fractional amount:

- How many pieces does it take to fill the whole thing?
- Pieces MUST be equal sizes
- Compare piece sizes to other pieces making up the whole
- In the example above, the whole is the whole rectangle. It would take 15 yellow and 15 black to cover the whole rectangle so each piece is 1/15 of the whole. Yellow in total is 2/15 of the rectangle.
- The red is almost 2/3 of the entire rectangle with the two yellow pieces missing. One red must equal 4/15 + 1/15 yellow (this total is 5/15 = 1/3)
- The orange is the same as the red, so 4/15.
- All pieces should add to 1!
- 1/15 + 2/15 + 4/15 + 4/15 +4/15 = 15/15 = 1

Number Talk: May 5, 2017

- Count forward from 2 1/3 by 1/6 and stop at 3 1/2
- How could you represent this with an addition equation?
- Count backward from 4 1/2 by 1/8 and stop at 3 5/8
- Represent this with a subtraction statement.

Do Now: May 5, 2017

- Determine the size of each fractional piece and then write an addition equation for each square.

Number Talk: May 8, 2017

- Count forward from 1 1/6 by ⅓ and stop at 3 1/6
- How could you represent this with an addition equation?
- Count backward from 2 3/4 by 1/2 and stop at 3/4
- Represent this with a subtraction statement.

Do Now: May 8, 2017

- What procedure do you use to compare two fractions?
- List specific examples and discuss how you would figure out which fraction was larger.
- Does your procedure change depending upon the two fractions? Discuss.

Summary of our understanding:

Comparing Fractions

- When the NUMERATORS are the same, look at the DENOMINATORS; if a denominator has a larger number, that means the pieces are smaller. e.g., $\frac{1}{4}$ *and* $\frac{1}{3}$, numerators are equal but in $\frac{1}{4}$ the pieces are smaller because it takes more of them to make one WHOLE so $\frac{1}{4}$ *is less than* $\frac{1}{3}$
- When the DENOMINATORS are the same, look at the NUMERATORS; the numerator that is larger means you have more pieces so that fraction is larger. e.g., $\frac{3}{8}$ *and* $\frac{5}{8}$, the numerator 5 means that you have 5 pieces which is more than 3 so $\frac{5}{8}$ *is greater than* $\frac{3}{8}$
- Compare the two fractions to amounts you understand like 0, $\frac{1}{2}$ or 1. e.g., $\frac{2}{5}$ *and* $\frac{5}{9}$ compare each to $\frac{1}{2}$. Half of 5 is 2.5 so $\frac{2}{5}$ *is less than* $\frac{1}{2}$. Half of 9 is 4.5 so $\frac{5}{9}$ *is greater than* $\frac{1}{2}$. That means $\frac{5}{9}$ *is greater than* $\frac{2}{5}$
- IMPROPER fractions can be restated as MIXED fractions. e.g., $\frac{11}{5}$ *and* $\frac{8}{3}$ can be restated as $2\frac{1}{5}$ *and* $2\frac{2}{3}$. Then you can just compare the fractional parts: $\frac{1}{5}$ *and* $\frac{2}{3}$. $\frac{1}{5}$ *is less than* $\frac{1}{2}$ and $\frac{2}{3}$ *is greater than* $\frac{1}{2}$ so $2\frac{2}{3}$ *or* $\frac{8}{3}$ *is greater than* $\frac{11}{5}$
- Two fractions can be restated as EQUIVALENT fractions with a COMMON DENOMINATOR (same size pieces to make one WHOLE). e.g., $\frac{2}{3}$ *and* $\frac{3}{4}$. Find a COMMON MULTIPLE of each of the DENOMINATORS. 3: 3, 6, 9, 12, 15... and 4: 4, 8, 12, 16... The lowest multiple each of these numbers has in COMMON (or the same) is 12! 3 x4 = 12 so multiply the numerator by 4 and $\frac{2}{3} = \frac{8}{12}$. 4 x3 = 12 so multiply the numerator by 3 and $\frac{3}{4} = \frac{9}{12}$. So $\frac{3}{4}$ *is greater than* $\frac{2}{3}$

Number Talk: May 9, 2017

- You are making Ms Haladay's favourite Pumpkin Chocolate Chip muffins. You are using measuring cups for dry ingredients and the recipe asks for ¾ cup of whole oats.
- If you only have dry measuring cups of ¼, ⅓, ½ and 1 cup, how do you measure ¾ cup of oats accurately and easily?
- Come up with as many ways as you can.

Do Now: May 9, 2017

- How do you determine if two fractions are EQUIVALENT?
- List specific examples and discuss how you would figure out how two fractions are equal.
- Does your procedure change depending upon the two fractions? Discuss.

Summary of our understanding:

Determining Equivalent Fractions

When asked to find if two fractions are equal:

- Try to find a COMMON DENOMINATOR for both fractions by listing the MULTIPLES of each:
- $\frac{2}{3}$ and $\frac{4}{6}$ find the MULTIPLES of 3 and 6
- 3: 3, 6, 9, 12, 15... and 6: 6, 12, 18, 24, 30... Lowest common multiple is 6 so restate the fractions as an equivalent fraction with a denominator of 6 by multiplying the numerator and denominator by the number required to reach the multiple.
- $\frac{2}{3} \cdot \frac{2}{2} = \frac{4}{6}$ so $\frac{2}{3} = \frac{4}{6}$

- Use a NUMBER LINE and divide it up appropriately into both fractional amounts. Compare

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

- Use CUISENAIRE RODS and show both fractions compared to the same size WHOLE.

Compare $\frac{1}{5}$ and $\frac{2}{10}$ 1 purple rod = $\frac{1}{5}$ and 2 red rods = $\frac{2}{10}$ and they are EQUAL

Do Now: May 10, 2017

- How do you add or subtract fractional amounts?
- What are the factors you need to consider?
- Does your procedure change depending upon the two fractions? Discuss.
- Does your procedure change if you are dealing with mixed or improper fractions? Discuss.

Number Talk: May 11, 2017

Estimate:

- 6 ¼ - 2 ⅓
- 11/12 - ¾
- 3 ½ - 9/10
- DO NOT USE PAPER and PENCIL!!!

Do Now: May 11, 2017

- Explain what you would do to add or subtract MIXED fractions.
- What procedure would you follow?
- Discuss within your groups and be ready to share.

Number Talk: May 12, 2017

- Ms Haladay is planning an art project for class. Each student will need ¾ of a package of clay to do this project. If Ms Haladay has 12 students in her class, how many packages of clay would she need?
- DO NOT USE PAPER and PENCIL!!! (number lines are okay though!)

Do Now: May 12, 2017

- Using the same ¼ measuring cup, how could you state each of the the measurements as a multiplication sentence?

Double Chocolate Chip Cookie Recipe

You want to bake these chocolate chip cookies but you only have a $\frac{1}{4}$ measuring cup. How can you use your measuring cup to measure out all of the ingredients accurately?

$\frac{3}{4}$ cup of butter

$1\frac{1}{2}$ packed brown sugar

$\frac{3}{4}$ cup of flour

$\frac{1}{2}$ cup cocoa

$2\frac{1}{4}$ cups of semi-sweet chocolate chips

Number talk: May 15, 2017

The Relay Race: Jasmine is putting together a relay team together to run a race. She will complete 1/2 of the run. Her friend, Zak will complete 1/10 of the run. If she asks some of her friends to run part of the run, what fraction of the run will each friend need to run? Use a number line to represent the race and the different distances that were run. Justify your thinking and be ready to share.

Do Now: May 15, 2017

- You want to make a double batch of our cookie recipe...this means that you need to double each of the ingredients. Work in groups to develop an accurate amount for each ingredient.

Double Chocolate Chip Cookie Recipe

You want to bake these chocolate chip cookies but you only have a $\frac{1}{4}$ measuring cup. How can you use your measuring cup to measure out all of the ingredients accurately?

$\frac{3}{4}$ cup of butter

$1\frac{1}{2}$ packed brown sugar

$\frac{3}{4}$ cup of flour

$\frac{1}{2}$ cup cocoa

$2\frac{1}{4}$ cups of semi-sweet chocolate chips

Action: May 15, 2017

For a party, Ms Haladay ordered 1 dozen cupcakes. When the party was over, she discovered there were ¾ of the cupcakes left (apparently her guests didn't like chocolate). How many cupcakes is ¾ of a dozen? Show your work.

As Ms Haladay was cleaning up, she accidentally:) ate ⅔ of the remaining cupcakes…(well, they were chocolate). How many cupcakes did she eat? How many were left? Use grid paper to show your answer. BONUS points for stating the remaining cupcakes as a fraction of the original set.

Number Talk: May 16, 2017

- Today's number of the day is $\frac{5}{8}$.
- Come up with at least two different expressions that equal the number of the day.

Do Now: May 16, 2017

Play “Fraction Action!”

Action: May 16, 2017

- Which fraction is larger, ¾ or ⅔?
- Will the product of these two numbers be smaller or larger than ¾? (a product is the answer to a multiplication question)
- Will the product be smaller or larger than ⅔?
- Determine an answer and be prepared to explain your thinking. Draw a diagram of a rectangle using grid paper to assist in your explanation or think back to yesterday's cupcake problem:)

Number Talk: May 17, 2017

- Today's number of the day is ⅔.
- Come up with at least two different expressions that equal the number of the day.

Do Now: May 17, 2017

- Estimate the answer for each of the following:
- 1 ⅔ - 7/9
- 3 ¾ + 4 ⅚
- Then calculate the answer for each.
- SHOW ALL YOUR STEPS!

Action: May 17, 2017

This chili recipe makes enough for 15 people! You want to make it for 4 people and have some left over. What fraction would you multiply each ingredient by to get the new amount for each ingredient? Show your work.

Ingredients

- 3 pounds ground beef
- 2 cans (28 ounces each) diced tomatoes, undrained
- 4 cans (16 ounces each) kidney beans or 4 cans (15 ounces each) pinto beans or black beans, rinsed and drained
- 1 pound smoked kielbasa, sliced and halved
- 2 large onions, halved and thinly sliced
- 2 cans (8 ounces each) tomato sauce
- 2/3 cup hickory-flavored barbecue sauce
- 1-1/2 cups water
- 1/2 cup packed brown sugar
- 5 fresh banana peppers, seeded and sliced
- 2 tablespoons chili powder
- 2 teaspoons ground mustard
- 2 teaspoons instant coffee granules
- 1 teaspoon each dried oregano, thyme and sage
- 1/2 to 1 teaspoon cayenne pepper
- 1/2 to 1 teaspoon crushed red pepper flakes
- 2 garlic cloves, minced

Number Talk: May 18, 2017

- How many ¼'s in 2?
- How many ⅓'s in 3?
- How many ⅔'s in 6?
- Represent each of these in a division statement.

Do Now: May 19, 2017

- A group of friends buys 3 pizzas to share equally. Each friend receives 3/8 of a pizza. (Assume no pizza will be left over)
- Show different ways to find the total number of friends in the group.

Number Talk: May 19, 2017

- How many ¼'s in 1 1/2?
- How many ⅓'s in 2 1/3?
- How many 2/5's in 1 4/5?
- Represent each of these in a division statement.

Do Now: May 19, 2019

- Get your work on the chili recipe.
- What do you notice about the relationship between dividing by 3 and multiplying by ⅓?
- Predict whether this works for other unit fractions and try it out. (e.g., x ¼ and divide by 4; x ½ and divide by 2…)
- Be prepared to share and discuss.