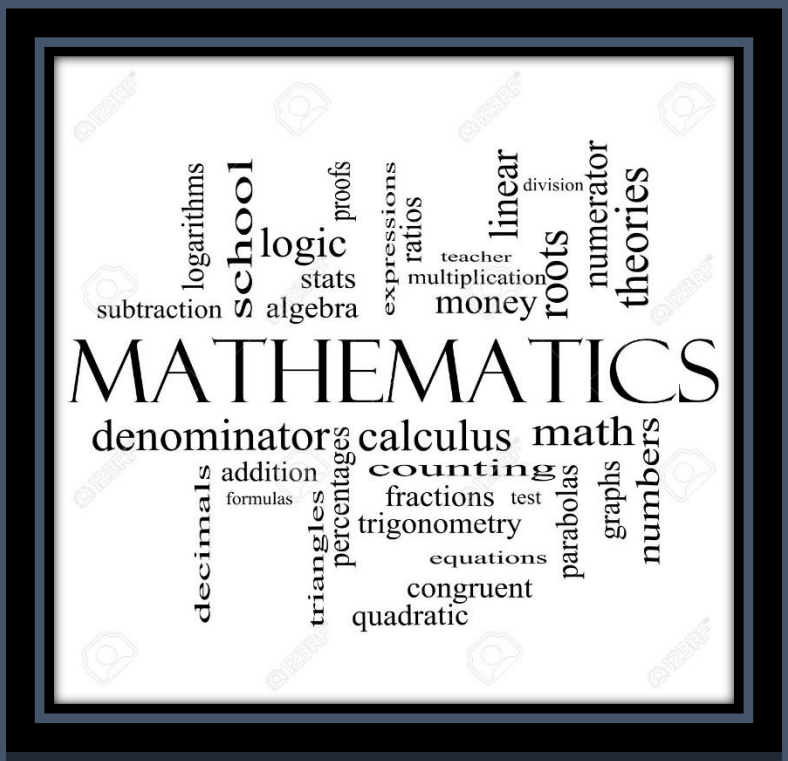
SUMMER 2016

Fractions are Fun!



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SUMMARY

At our school, fraction sense is a focus area in the intermediate grades. Students struggle with fractions and have developed a negative feeling towards them. We found activities to be used in grade 3 and in grade 5 as an intervention. We also feel that the activities found could be made more challenging for a grade 5 level.

The following activities were put together from Rational Number Project, Investigations, and Mathwire.com.

Standards according to St. Philip's School:

Grade 3:

Number and Operation: Understand the meaning and uses of fractions. Read and write with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line.

Number and Operation: Understand that the size of a fractional part is relative to the size of the whole.

Number and Operation: Order and compare unit fractions with like denominators by using models

Grade 5: Number and Operation: Read, write, represent, and compare fractions and decimals. Recognize and write equivalent fractions.

MCA Questions Addressed:

Grade 3: Cory has 2 red crayons and 1 blue crayon. What fraction of Cory's crayons is red?

A. 1/3 B. 1/2 C. 2/3 D. 3/2

Grade 5: Lydia used of her notebook paper. What decimal amount did she use?

A. 0.04 B. 0.4 C. 1.25 D. 2.5

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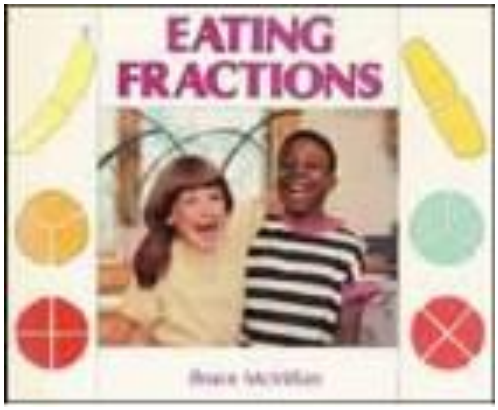
Pretest/Eating Fractions story



Objective: Students will recognize fractions in our lives.

Launch: After the pretest, introduce fraction unit by reading the book Eating Fractions by Bruce McMillan.

Explore: After reading the book, pass out a whole graham cracker to students. Make sure it is one that has the four pieces still connected.

Note: Tell students they cannot eat the graham cracker until the lesson is finished. The teacher will tell you when you can eat it.

Tell the student they have one whole graham cracker. Fractions are a whole cut into equal pieces. Have students work in their group to answer the question: What are some different ways we can share the cracker equally?

Share: Students share the ways they broke their cracker within their groups (fourths and halves).

Summarize: Tell students that fractions shows equal parts of a whole or parts of a set.

Extend: For 5^{th} grade students, instead of a graham cracker give the students a Hershey's bar.

Fractions as Parts of a Whole

Objective: Students will identify fractions as parts of a whole.

Launch: Today we will begin with fractions! (Show excitement!) We will start by exploring fraction circles. Look at your fraction circles and look at the colors and the sizes of each colors. What do you notice?

Explore: Use your fraction circles to answer these questions with your group. Be prepared to explain how you determined your answer.

- How many blues cover the black circle?
- Which is bigger, 1 brown or gray?
- How many pinks cover 1 yellow?
- How many browns cover the black?
- Which is bigger, 1 brown or 2 reds?
- How many purples cover 1 yellow?
- How many dark blues are there?
- How many light blues?

Share: Groups will share their answers to the questions and explain how they figured out the answer. As groups report out their ways of determining the answer make sure to ask if others found the answer another way.
Students will continue their exploration by using the circles to complete Student Page A.

Summarize: End the lesson by working through Transparency 1. The figure on the left represents the circle part you want to cover. Students are to determine which combination of parts will cover the shape on the left. Encourage students to make an educated guess first and then use their circles to see if it was correct.
Answer any questions students have about the fraction circles.

Name _____ Lesson 1 / Student Page A

Exploring with the Fraction Circles

1. _____ browns equal 1 whole circle.

2. 1 whole circle equals _____ pinks.

3. _____ reds equal 1 whole circle.

4. _____ pinks equal 1 brown.

5. 1 brown equals _____ reds.

6. 1 brown is (less than, equal to, greater than) 1 pink.

7. 1 red is (less than, equal to, greater than) 1 brown.

8. 1 yellow is (less than, equal to, greater than) 1 brown.

9. 1 yellow and 1 brown and 1 _____ equals 1 whole circle.

10. 1 yellow equals 1 brown and 2 _____ .

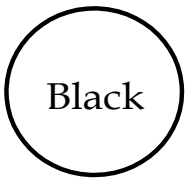
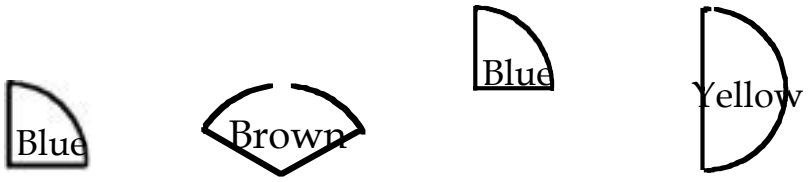
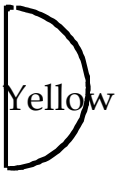
11. 3 pinks and 1 _____ equal 1 whole circle.

12. _____ grays and 1 blue and 1 yellow equals 1 whole circle.

13. 2 grays and _____ blue equals 1 yellow.

14. 1 pink equals _____ reds.

15. 4 _____ equal 1 yellow.

 Black	 Blue Brown Blue Yellow
 Yellow	 Blue Blue Pink Pink Gy
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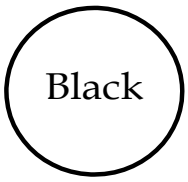
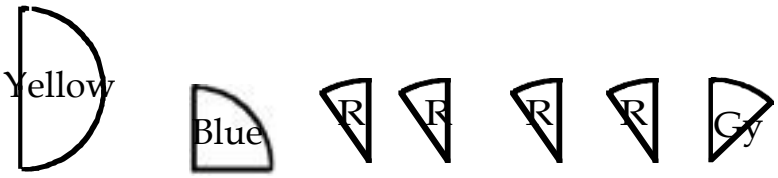
 Black	 Yellow Blue R R R R Gy
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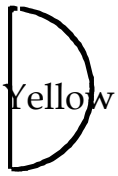
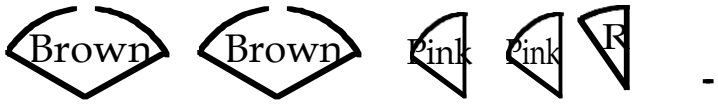
 Yellow	 Brown Brown Pink Pink R

Naming One Half, One Third, and One Fourth

Objective: Students will explore relationships among circle pieces and will name fractions amounts for one half, one third, and one fourth.

Launch: Start students with a warm up that has them use their fraction circles to review the ideas from the previous lesson.

- Find three different ways to cover 1 yellow piece.
- Find three different ways to cover 1 brown piece.

Have students show different ways that they did this especially if they used different color fraction circles to cover one yellow piece such as 1 blue and 2 gray.

Explore: Have students take out a black circle. Model how to divide the black circle into 2 equal parts by showing that 2 yellow cover the whole circle. Note that 1 black equals 2 yellows or 2 yellows equal 1 black. Conclude by stating that when 2 equal parts equal one whole, each part is called one half. The yellow piece is one half of the black circle.

- If one blue is my unit, how can we divide this into one 2 equal pieces?
- If yellow is my unit, how can we divide this into 2 equal pieces?
- Can you find other examples of one half?

Model how to divide the black circle into 3 equal pieces using the browns as thirds. Note that 3 browns equal 1 black or 1 black equals 3 browns. Conclude by stating that when 3 equal parts equal one whole, each part is called one third. The brown piece is one third of the black circle.

- If one blue is my unit, how can we divide this into one 3 equal pieces?
- If yellow is my unit, how can we divide this into 3 equal pieces?
- Can you find other examples of one third?

Model fourths using 1 black, 1 yellow and 1 brown as units. Can students find another example of one fourth?
Have students continue exploring halves, thirds, and fourths with Student Pages A and B in groups.

Share: When students have completed Student Pages A and B, bring the class together. Have people share their answers and how they determined their answer.

Assess the understanding of equal parts with a non-example. Show how 2 blues and 1 yellow cover the black circle. Pick up 1 blue and say this piece is 1 of 3 parts of the circle so it is one third of the circle. Ask: Is this true? If I wanted to know what part of the black circle 1 blue is, what must I do?

Summarize: Make sure the students understand that all parts are equal.

Name_____ Lesson 2 / Student Page A

The class will work together in groups or in pairs on these problems. Answers are to be given orally or by drawing a picture. On some of the problems children may want to use the fraction circles to help solve the problem.

1. The yellow piece is the unit.

   How many blues cover the yellow piece? _____ 1 blue is_____of the yellow.

   (Say the word)

2. The blue piece is the unit.

   How many reds cover the blue piece? _____ 1 red is____of the blue.

   (Say the word)

3. The brown piece is the unit.

   How many reds cover the brown piece? _____ 1 red is___of the brown.

   (Say the word)

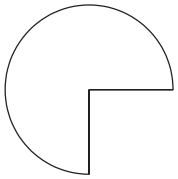
4. What color is 1-half of the blue? _____

5. What color is 1-third of the yellow? _____

6. Draw a picture of a pizza. Show on your drawing the pizza cut into 2 fair shares.

Each fair share is_____of the whole pizza. (Say the word)

7. Here is a picture of a pizza with one piece removed.



The piece is_____of the whole pizza. (Say the word)

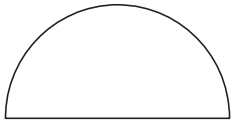
8. Here is a picture of a candy bar that someone has started to cut into pieces.

The small piece is_____of the whole candy bar. (Say the word)

Draw lines to finish cutting the candy bar into equal parts.

9. Mary's patio is a whole circle. Draw a picture of Mary's patio. Show on your drawing that the patio is in 3 equal-size parts. Each part is _____ of Mary's patio. (Say the word)

10. John has a patio that looks like this:



Draw on John's patio to show it divided into 3 equal-size parts. Each part is_____of John's patio. (Say the word)

Mary said. "John's patio is really one-half (not a whole)." What would you say to Mary?

Making Brownies Fair

Objective: Students will recognize one half, one third, and one fourth with rectangles.

Launch: Ask how many people like brownies. If your mom bought a brownie from the Cabin Coffeehouse and said you need to share it with your brother, what would be a fair way to do this? Provide students with the brownie sheets.

Explore: What are all the ways we can make two equal pieces of this brownie? Work with your group to come up with all the ways to make two equal pieces.

What would you call the share of the brownie that one person gets? (one half) What fraction does each person get? (one half)

Write the fraction name on each person's share. Tell the students that the number on the bottom (denominator) represents the total number of shares. The top (numerator) tells how many of the shares.

Students will work through Sharing One Brownie checking with their partner.

Now you are going to share this one brownie among more than two people. Remember that each person gets an equal piece. Write the fraction fame of each person's share. Check your work with a partner to see whether you cut yours the same way or differently. Then glue your brownie pieces on your worksheet.

Share: Students have worked through their exploration of the brownies with their partner. Put the "Unequal Thirds' picture on the board.

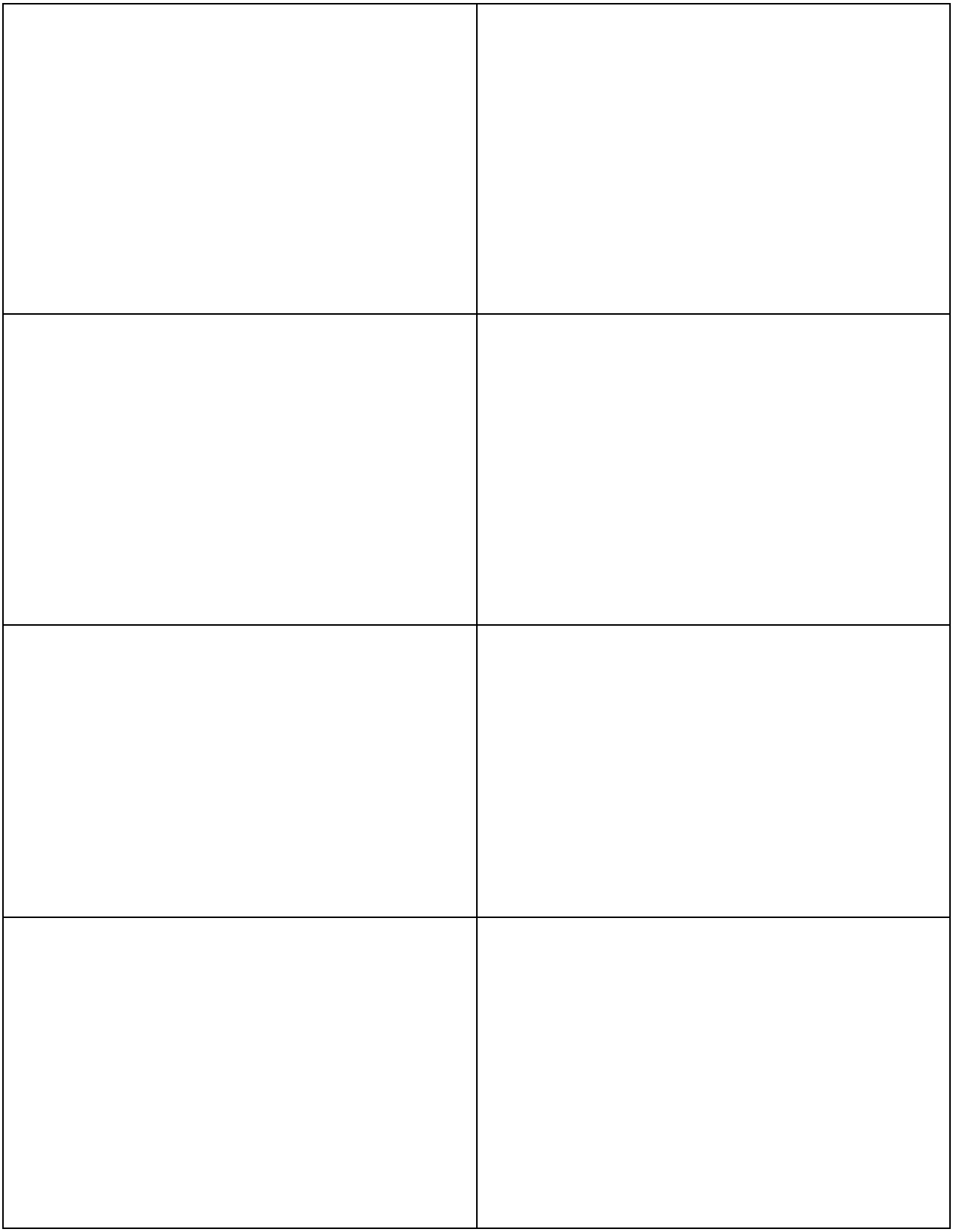
Here is a brownie that has been cut up to share among three people. Would each person get an equal share? How would you prove that the shares are equal or not equal? Students will offer different suggestions on how to prove they are not equal.

Did anyone come up with a method for sharing a brownie equally among three people? After each demonstration ask: Are these shares equal? How could you prove that the shares are equal?

What fraction of a brownie would each person get if one brownie was shared among three people? How do you write one third? What does the bottom number (denominator) stand for? What does the top number (numerator) stand for?

Summarize: Three people sharing a brownie equally results in each person getting a third of the brownie, this is written $\frac{1}{3}$. The denominator represents the number of equal pieces the brownie is broken into and the numerator is how many pieces you have.

Large Brownies



Sharing Brownies

Cut up large brownie rectangles and glue the pieces below. Show how you would make fair shares.

1. 2 people share a brownie. Each person gets _____.

2. 4 people share a brownie. Each person gets _____.

3. 8 people share a brownie. Each person gets _____.

4. 3 people share a brownie. Each person gets _____.

5. 6 people share a brownie. Each person gets _____.

Fractions with Denominators Greater than 4

Objective: Students will model and name unit fractions with denominators greater than four.

Launch: Review for warm up using fraction circles. Find the piece that is one half of each of these pieces: 1 yellow, 1 blue, 1 brown, 1 orange. Explain that since 6 red cover 1 yellow, 1 red is one sixth of the yellow.

Explore: Show one yellow piece and ask students to divide it into six equal parts. Ask students to divide the black circle into 6 equal parts. What fraction piece is one sixth of the black? As students explore divisions for equal parts, create a chart to show the relationship between the number of equal parts a unit is divided into and the word name for that number of divisions. Make sure to include two picture different representations for each.

Number of Equal Parts a unit is divided into	Word Name (singular)	Word Name (plural)	Picture representations
2	half	halves	
3	third	thirds	
4	fourth	Fourths	
5	Fifth	fifths	
6	Sixth	Sixths	
Continue to include 7, 8, 9, 10, 12, 15			

Once the chart is completed, work through the following problems:

- Using the black circle as the unit, ask students to find the color that divides the unit into 4 equal parts. Hold up 1 of 4 parts, call it “one-fourth” and record the written name as 1-fourth.
- Using the yellow circle as the unit, ask students to find the color that divides the unit into four equal parts. Hold up 1 of 4 parts and call it “one-fourth.” Record 1-fourth.
- Ask: How are the two models for 1-fourth alike? How are they different?

Repeat for sixths using two different units.
Have students work in groups on Student Page A.

Share: When students have completed Student Pages A, bring the class together. Have people share their answers and how they determined their answer. End the class with a quick review game. Say: “Two of the colors I am thinking of equal one yellow. What color is it? What fractional name can I give each piece?”

Summarize: Make sure students say that 1 blue is one half of the yellow.

Name_____ Lesson 3 / Student Page A

Naming Fraction Amounts Using Circles

Use fraction circles to find the names of the different fraction pieces.

I. The black circle is the unit. What fraction name can you give these pieces?

1 yellow 1-half 1 brown _____

1 blue _____ 1 gray _____

1 white _____ 1 green _____

1 red _____ 1 pink _____

II. Now make 1 yellow unit. What fraction name can you give these pieces?

1 blue _____ 1 gray _____

1 pink _____ 1 red _____

III. Change the unit to 1 blue. What fraction name can you give these pieces?

1 gray _____ 1 red _____

IV. Change the unit to 1 orange. What fraction name can you give these pieces?

1 purple _____ 1 green _____

Fraction Bingo

Objective: Students will practice recognizing fractions.

Launch: Have the students do this one at a time. Draw a picture for the fraction (say one from the list below) your desk.

3^{rd}:	5^{th}:
one third	four ninths
one eighth	five eighths
one sixth	four sixths

Show your neighbor. What is the same in your drawings? What is different?

Explore: Students will explore their understanding of picture representations of fractions through Bingo. Third grade students will start with Bingo sheets that have one as the numerator. Fifth grade students will play Bingo with numerators greater than and equal to one. When students have a Bingo, have them name the fraction pictures they covered to make a Bingo.

Share: Have students share their strategies for how they knew which picture representation matched the fraction called out.

Summarize: Make sure students know that each fraction number has picture representation.

Fraction Flag

Objective: Students will recognize different ways to divide a shape into equal parts.

Launch: We live in the land of Halves. We have been tasked to design a flag that is divided into halves. What are some ways we can divide our flag into two equal parts? Draw pictures on your desk. Show your neighbor. What is the same in your drawings? What is different?

Explore: Each group will be given the task to design the flag for fraction countries. You will want to come up with more than one design showing the flag divided into equal parts differently just like we did for the country of Halves. You will also be given directions for coloring the flag using their countries colors. The citizens will be voting on the flag design they feel best represents their country. Do your best and be neat. You will present your flag designs to the class.

Each group will draw on the slips on the next page to determine which country's flag they will design. Students will meet with their group members to work the rest of this day and one more. The shape of the flags would be rectangles.

Share: Day 3 of this project students will present their flags. They will share their process in determining they had all the possible ways to make equal shares with their shape.

Summarize: We have seen many representations of how to make equal shares of the same number of pieces.

Extension: The shape of the flags could be different polygons such as hexagon or pentagon.

Countries and Colors

Fifths

We are the country of Fifths. Most of our country likes the color purple but two fifths prefer the color orange. We would like a flag that represents this color preference. Thank you for designing several flags for us. Make sure each fifth is equal in size!

Sixths

We are the country of Sixths. Our country could not settle on which color was our national color. We ended up with three colors in a tie! Orange, yellow, and blue are our national colors. Make sure to use each color the same amount of times in the flag designs. Make sure each sixth is equal in size! Thank you for designing several flags for us.

Eighths

We are the country of Eighths. Our country is quite divided on which color should be our national color. We are a peaceful country so we would like to satisfy everyone. Two eighths should be yellow, three eighths should be green, and three eighths should be red. This is quite the challenge you are undertaking but we in Eighths appreciate your time in making several flag designs for us. Make sure each eighth is equal in size!

Ninths

We are the country of Ninths. Our country believes the colors of the Earth are the best colors to represent our country. Blue for the sky, yellow for the sun, and green for the grass and trees are the colors we chose. Please include each color equally as you prepare designs for us. Thank you for taking on this challenge. Make sure each ninth is equal in size!

Twelfths

We are the country of Twelfths. Our country had a very time deciding on which color would be represent our nation. We were split. We had three twelfths want red, three twelfths want blue, four twelfths want white, and two twelfths want yellow. Can you design flags to represent the color opinions of our citizens please? Thank you for taking on this design task. Remember to make all the twelfths equal in size!

Making Fraction Sets

Objective: Students will order fractions from smallest to largest.

Launch: Warm up with a review. Name the red piece in three different ways by changing the unit. What different units did you use?

Explore: Each person will be given five sheets of the same color of 8 ½" x 11" paper to make Fraction Sets. Demonstrate the process: fold a piece of paper in half, mark the fold line with pencil, unfold it, and show it your students.

Ask: How many equal pieces did I make? What fraction is each part? How do you write that?

Go over the directions and post for students to refer to as they work. After you labeled your pieces on each sheet, compare your pieces with another pair. Do you agree that you have equal pieces and that your fraction names are correct? If yes, then cut your pieces apart.

Directions for Making a Fraction Set

1. You should have 5 sheets of the same color paper.
2. Cut each sheet of paper into equal pieces.
   a. 1st sheet – 2 equal pieces
   b. 2nd sheet – 4 equal pieces
   c. 3rd sheet – 8 equal pieces
   d. 4th sheet – 3 equal pieces
   e. 5th sheet – 6 equal pieces
3. Fold the first sheet of paper into equal pieces and draw lines to separate them.
4. Label each piece with the fraction name.
5. Check with another pair to make sure that you have equal pieces and that your fraction name is correct.
6. Cut apart each equal piece.
7. Repeat steps 3-6 with each sheet until you have a complete Fraction Set.

On the next day, place one piece of each size fraction on the board in random order. Say: "I want to order these fraction pieces from smallest to largest, with the smallest to the left and largest to the right. Which of these would be smallest? Give students a minute to discuss it as a class and then let them know they should continue their discussion with their partner to order their Fraction Sets from smallest to largest.

Share: Once the groups are finished, bring the class together to share their order. Does each group agree on the order? Ask students to share their reasoning.

Some of the fractions are hard to compare. How did you compare them to make a decision in your order? What other observations did you make about comparing your Fraction Sets?

Summarize: Make sure that students recognize that they larger the denominator, the smaller each part is once divided.

Fraction I Have, Who Has

Objective: Students will practice recognizing fractions.

Launch: Use fraction circles to show these fractions. Which is the largest?

1/3 1/12 1/4

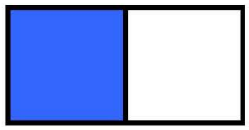
Compare with your neighbor. Do you agree? How did you determine the largest?

Explore: Students will explore their understanding of picture representations of fractions through the game I Have, Who Has.

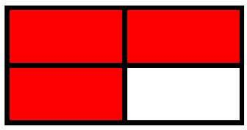
Share: Have students share their strategies for how they knew which picture representation matched the fraction called out. Wrap up with an exit slip having students draw a picture representation for three fifths and five eighths.

Summarize: This activity will reinforce recognizing fractions.

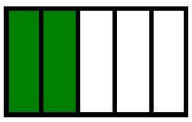
WHO HAS? Fractions

I have 

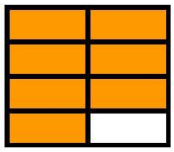
Who has $\frac{3}{4}$?

I have 

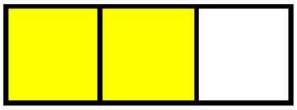
Who has $\frac{2}{5}$?

I have 

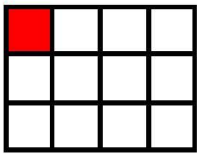
Who has $\frac{7}{8}$?

I have 

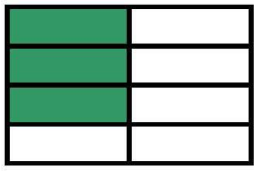
Who has $\frac{2}{3}$?

I have 

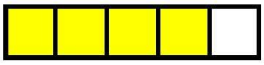
Who has $\frac{1}{12}$?

I have 

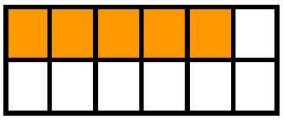
Who has $\frac{3}{8}$?

I have 

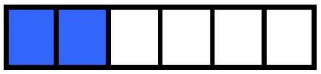
Who has $\frac{4}{5}$?

I have 

Who has $\frac{5}{12}$?

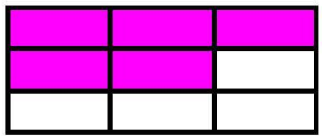
I have 

Who has $\frac{2}{6}$?

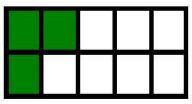
I have 

Who has $\frac{5}{9}$?

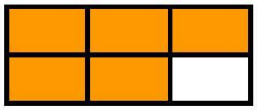
WHO HAS? Fractions

I have 

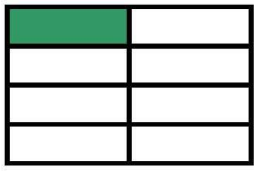
Who has $\frac{4}{7}$?

I have 

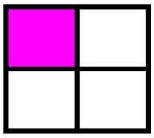
Who has $\frac{1}{3}$?

I have 

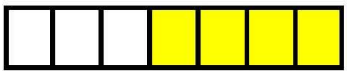
Who has $\frac{11}{12}$?

I have 

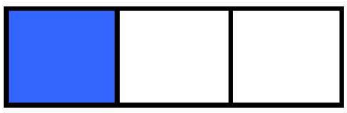
Who has $\frac{7}{10}$?

I have 

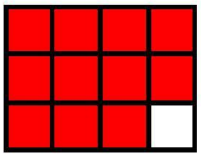
Who has $\frac{2}{9}$?

I have 

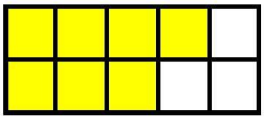
Who has $\frac{3}{10}$?

I have 

Who has $\frac{5}{6}$?

I have 

Who has $\frac{1}{8}$?

I have 

Who has $\frac{1}{4}$?

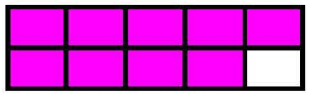
I have 

Who has $\frac{9}{10}$?

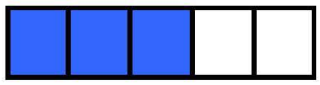
Kawas, 2000

Page 3

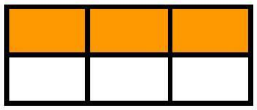
WHO HAS? Fractions

I have 

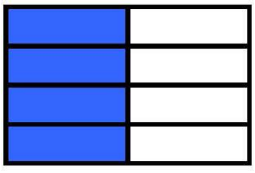
Who has $\frac{7}{9}$?

I have 

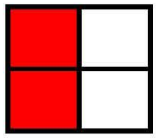
Who has $\frac{5}{10}$?

I have 

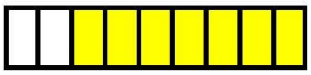
Who has $\frac{7}{12}$?

I have 

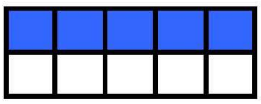
Who has $\frac{1}{10}$?

I have 

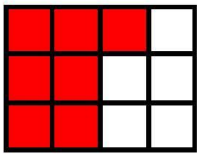
Who has $\frac{4}{9}$?

I have 

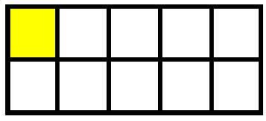
Who has $\frac{3}{5}$?

I have 

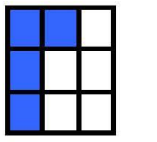
Who has $\frac{3}{6}$?

I have 

Who has $\frac{4}{8}$?

I have 

Who has $\frac{2}{4}$?

I have 

Who has $\frac{1}{2}$?

Kawas, 2000

Comparing Using Fraction Circles

Objective: Students will observe with circles that as the unit is divided into more and more equal parts, the unit parts become smaller.

Launch: Show these fractions with your fraction circles using two different units. Then draw pictures for each display.

3/4 5/6 2/3

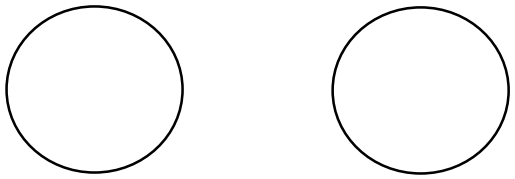
Compare with your neighbor. Do you agree? How did you determine the largest?

Explore: Review ordering whole numbers.

Which number is larger 702 or 720? What was the strategy you used to determine the larger number? Jose earns $42,175 a year. Mara earns $51,275 a year. Who earns more?

Introduce ordering fractions with the following example. Kara entered Dave's Pizza. She saw two friends in 1 booth and 3 friends in another booth. Both groups have just been served a large pizza. Which group should she sit with so she gets the most pizza to eat?

Draw the diagram:



Ask students to show Kara's share in booth 1 (with 2 friends) and in booth 2 (with 3 friends). Which group has the most people? In which group does a person have the smallest share of pizza?

Conclude that 1/3 of the pizza is more than ¼ of the pizza. Repeat with 6 people at the table and with 5 people at the table.

Work together on Student Page A to reinforce this idea using the black circle as the unit.

Share: Do you see any patterns between the number of pieces to fill the whole unit and the size of the pieces?
As a group, create a rule that is similar to the following:

- As the number of pieces needed to fill the whole decreases, the size of each piece gets larger.
- As the number of pieces needed to fill the whole increases, the size of each piece gets smaller.

Try examples using the rule that do not have circle pieces.
20 purples = 1 whole, 80 greens = 1 whole. Which is larger, 1 purple or 1 green?
18 goos = 1 whole, 12 boos = 1 whole. Which is smaller, 3 boos or 3 goos?

Have students practice with Student Practice B and C. Ask students to explain their reasoning for the second pairs of fractions on Student Page B without using manipulatives. Have them explain their thinking.

Summarize: Make sure students recognize that the larger the denominator, the small the pieces are once they are divided.

Name_____ Lesson 6 / Student Page A

Directions: Use fraction circles to fill in the table.

Color	How many cover 1 whole circle?	Which color takes MORE pieces to cover 1 whole?	Which color has SMALLER pieces?
1. Brown	**3**		
Orange	**5**	√	√
2. Orange			
White			
3. Purple			
White			
4. Gray			
Green			
5. White			
Green			
6. Orange			
Purple			
7. Gray			
Brown			
8. Brown			
Green			

Name_____ Lesson 6 / Student Page B

Directions:

Use fraction circles to compare the two fractions. Circle the larger fraction.

$\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{4}$	$\frac{3}{4}$
$\frac{4}{5}$	$\frac{3}{5}$	$\frac{2}{7}$	$\frac{2}{6}$
$\frac{6}{7}$	$\frac{2}{7}$	$\frac{4}{12}$	$\frac{4}{15}$
$\frac{8}{12}$	$\frac{11}{12}$	$\frac{6}{7}$	$\frac{3}{7}$
$\frac{2}{7}$	$\frac{2}{9}$	$\frac{9}{10}$	$\frac{3}{10}$
$\frac{4}{8}$	$\frac{4}{6}$	*Try these without* manipulatives.	
$\frac{2}{3}$	$\frac{2}{8}$	$\frac{13}{100}$	$\frac{27}{100}$

*Name*_____ *Lesson 6 / Student Page C*

Use fraction circles to solve problems.

1. Mr. Hickman made a large apple pie. His daughter ate $\frac{1}{2}$ of the pie. His son ate $\frac{1}{3}$ of the pie. Who ate less? Draw a picture to show your thinking.

2. Spinner A was divided into 6 equal parts shaded green. Spinner B was divided into 10 equal parts with 4 parts shaded green. Which spinner had the larger amount of green? Explain "in your own words" your reasoning.

3. Jessica and Kim shared a large pizza. Jessica ate 2/6 of a pizza. Kim ate 3/6 of the pizza. Who ate more? Draw a picture to show your thinking?

4. Mathew and Cassandra shared a bag of candy. Mathew ate 2/3 Cassandra ate 2/5. Who ate more? Explain your thinking.

5. Andrew spent 1/2 of his allowance on candy. Ellen spent 1/3 of her allowance on a movie. Is it possible that Ellen spent more than Andrew? Explain. Use the back of this page.

Comparing Fractions with Paper Strips

Objective: Students will compare fractions using paper strips.

Launch: Order these fraction pairs smallest to largest. Write an explanation for each pair. Use pictures in your explanation.

3/4 and 3/10 5/7 and 3/7 1/9 and 1/4

Compare with your neighbor. Do you agree? How did you determine the largest?

Explore: Ask students to fold a strip of paper into 4 equal parts. Use the same strip of paper to make 8 equal parts. Before they open the strip ask: Before you open up the strip, can you tell me if the size of the equal parts will be larger or smaller than fourths? Why?

Repeat for thirds changed to sixths and then changed to twelfths. Fourths changed to twelfths.

Ask students to fold, shade, and label these fractions with paper folding.
1/3 1/4
2/3 2/6
3/4 1/4
Which of the pair is larger? How can you tell?

Have students work in pairs on Student Page A. Student 1 will make the first fraction on a strip of paper. Student 2 will make the second fraction on a strip of paper. They will then compare and circle the larger fraction. Students may work on B and C when they finish A.

Share: Discuss Student Page A as a class. How did students reason through determining which was the larger fractions without using manipulatives? Have students share the strategies they used.

Wrap up with an exit slip having students write a real life situation when they must compare two fractions. Example: Mary had 2/4 of a large pizza; Joan had 2/4 of large pizza. Who ate more?

Summarize: Students should recognize that even with fraction strips, the larger the denominator the smaller the divided parts.

Name_____ Lesson 7/ Student Page A

Directions:

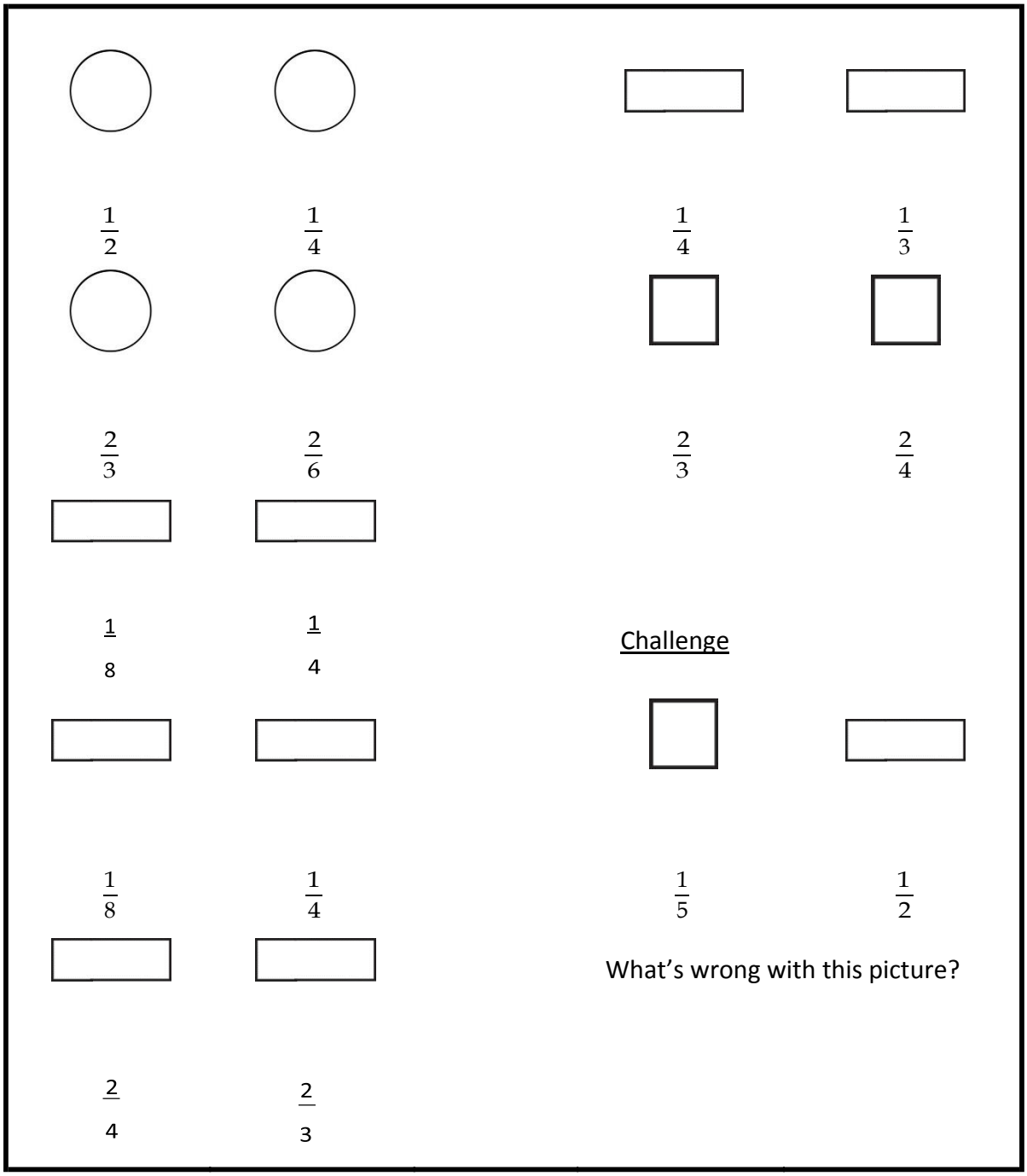
Circle the larger fraction. Use your paper strips to determine the answers.

$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{6}$	$\frac{2}{12}$
$\frac{2}{4}$	$\frac{2}{6}$	$\frac{1}{3}$	$\frac{2}{3}$
$\frac{3}{4}$	$\frac{1}{4}$	$\frac{3}{9}$	$\frac{3}{3}$
$\frac{3}{8}$	$\frac{3}{4}$	$\frac{5}{6}$	$\frac{4}{6}$
$\frac{1}{3}$	$\frac{1}{12}$	$\frac{5}{12}$	$\frac{5}{8}$
$\frac{1}{2}$	$\frac{1}{12}$	Without your paper strips, circle the larger fractions.	
		$\frac{1}{100}$	$\frac{1}{99}$
$\frac{5}{12}$	$\frac{8}{12}$	$\frac{3}{40}$	$\frac{3}{50}$

Name_____ Lesson 7/ Student Page B

Directions:

Shade each picture to show the fraction. Circle the SMALLER fraction.



Name_____ Lesson 7/ Student Page C

Directions

A friend has been out of school for two days and missed the math lessons dealing with comparing fractions. Write your friend a letter explaining how to compare fractions like the ones you have been working with. [You may want to draw pictures.]

Spin to Win Game

Objective: Students will practice estimating fractions and identifying equivalent fractions.

Launch: Joey and Ty each had a Hershey's candy bar. Joey ate 6/8 of his candy bar while Ty ate 3/4. Who ate more?

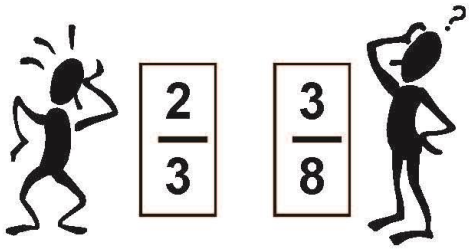
Compare with your neighbor. Do you agree? How did you determine who ate more?

Explore: Students will play the game Spin to Win. Directions on next page.

Share: Have students share their strategies to help them acquire all the fraction cards to win.

Summarize: Fractions can have more than one name.

Spin to Win Game



MATERIALS:

- fraction cards
- Spin to Win Game spinner (Place a transparent spinner on top of the spinner template or use a pencil and paper clip to create a spinner.)

DIRECTIONS:

- Deal all fraction cards to two players who place them in a pile face down.
- Each player turns over the top card of his/her pile.
- One player spins the spinner to determine the winning card for the play.
- Students then determine whose card is the closest to 0, 1/2 or 1 and that partner takes both cards.
- If the students turn over equivalent fractions or if they spin "Play for 4!" then each player turns over another card and places it on top of the original. They spin again and determine which player wins all four cards.
- Play continues until one player has won all of the cards or until time is up in which case the player with more cards wins the game.

$\frac{1}{12}$	$\frac{1}{6}$	$\frac{4}{8}$
$\frac{5}{8}$	$\frac{1}{8}$	$\frac{11}{12}$
$\frac{11}{10}$	$\frac{5}{6}$	$\frac{4}{12}$

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

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

Race to One Game

Objective: Students will practice estimating fractions and identifying equivalent fractions.

Launch: If you ran ¾ of a mile before lunch and ran 7/8 of a mile after lunch, about how many miles did you run?

Compare with your neighbor. Do you agree? How did you determine who ran more?

Explore: Students will play the game Race to One. Directions on next page.

Share: Have students share their strategies to help them win.

Summarize: Fractions add together to make one.

Extension: Race to Two Game.

Race to One Game

MATERIALS:

- folded fraction pieces
- Race to One Game spinner (Place a transparent spinner on top of the spinner template or use a pencil and paper clip to create a spinner) or fraction die (1/8, 1/8, 1/8, 1/4, 1/4, 1/2).

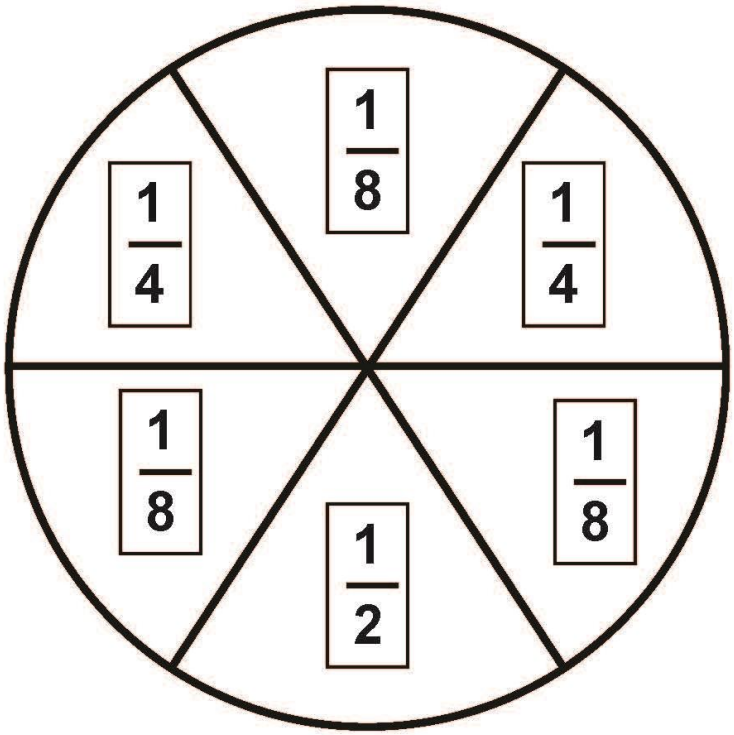
PLAYERS: 2-4

DIRECTIONS:

- First player spins spinner (or tosses die). Player adds a corresponding fractional piece to cover his/her one mat.
- Next player spins the spinner and adds a fractional piece to cover his/her one mat.
- Play continues until the first player completely covers his/her mat to win the game.

CHALLENGE:

- Winner must cover TWO wholes to win game.



Race to TWO Game: Challenge

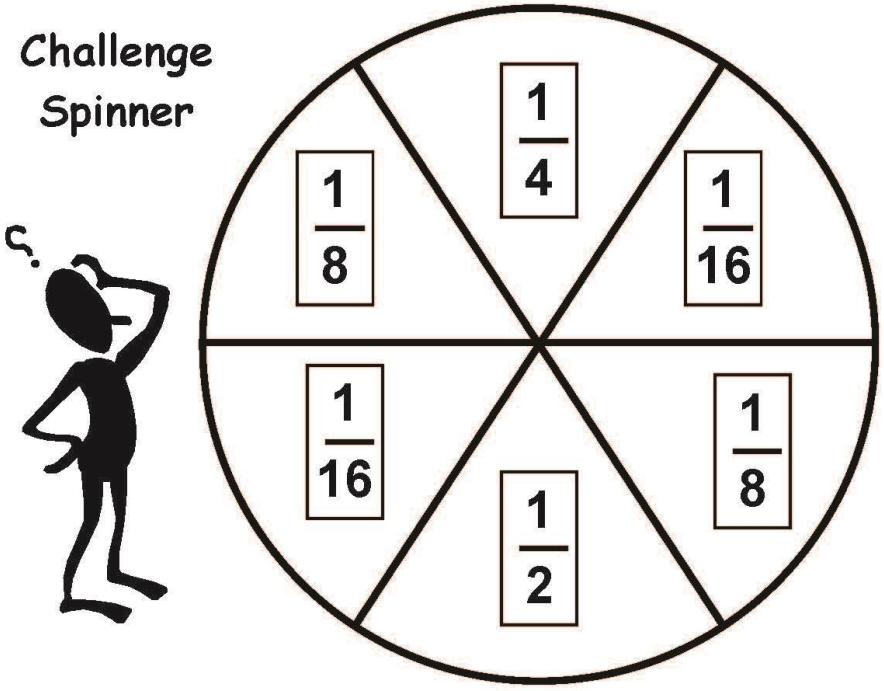
MATERIALS:

- folded fraction pieces, including 1/16 pieces, and two WHOLE mats.
- Race to One Game CHALLENGE spinner . (Place a transparent spinner on top of the spinner template or use a pencil and paper clip to create a spinner)

PLAYERS: 2-4

DIRECTIONS:

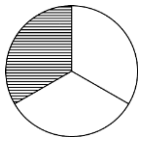
- First player spins spinner (or tosses die). Player adds a corresponding fractional piece to cover his/her whole mats.
- Next player spins the spinner and adds a fractional piece to cover his/her mats.
- Play continues until the first player completely covers BOTH mats to win the game.
- NOTE: Players may exchange equivalent pieces to completely cover mats but ALL exchanged pieces must be used. (e.g. may use two 1/16 pieces in place of a 1/8 piece in order to complete a WHOLE.

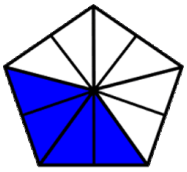


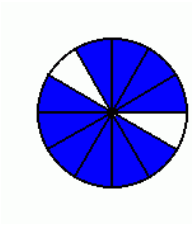
Name: _____

Pretest/Posttest

Write the fraction for the shaded part of each shape.

1. 

2. 

3. 

Circle the largest fraction of the pair.

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

5. $\frac{1}{12}$ $\frac{1}{16}$

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

6. Sarah did $\frac{4}{5}$ of her homework. Damian did $\frac{3}{5}$ of his homework. Who did more homework?

7. A ribbon is $\frac{5}{6}$ yard long. Julie uses some. She has $\frac{2}{6}$ yard left. How much of the ribbon was used?

8. Circle all of the following pictures that represent one fourth.