Lesson 3: Understanding Rational Numbers
Follow-up Discussion
By Paul and the Paulettes

Understanding Rational Numbers

Learning Objectives:

Students will
- represent parts of a whole using an area interpretation of fractions
- determine the fractional part of a whole when parts are not cut into equal-sized pieces
- develop an understanding of the quotient interpretation of fractions
- find the unit cost of items that are part of a set
- determine the relationship among parts of a whole that are unequal-sized pieces
- express fractional parts of a whole as decimal equivalents

Live Meeting Poll

Survey Question 1

To what grade did you teach lesson 3: Understanding Rational Numbers?

- Grades 3 to 4
- Grade 5
- Grade 6
- Grade 7
- Grade 8

Live Meeting Poll

Survey Question 2

How much time did you use to teach this lesson to your students?

- Less than one class period (< 40 minutes)
- One class period (approximately 40 to 60 minutes)
- Two class periods (approximately 80 to 120 minutes)
- Greater than two class periods

Live Meeting Poll

Survey Question 3

Did you find this lesson provided an opportunity for your students to share in "meaningful mathematical discourse?"

- Yes
- No
- Not sure

Live Meeting Whiteboard

Whiteboard 1

List one idea you presented with the lesson that gave your students the opportunity to engage in "meaningful mathematical discourse."

Let's Revisit Problem 1

"Customers Cut the Cake"

Each day the local baker makes several rectangular sheet cakes, which he cuts into eighths. He sells 1/8 of a sheet cake for $1.59. As part of a new promotional campaign for his store, he wants to cut his sheet cakes into eighths a different way each day. Customers who suggest a new way to cut the cakes into eighths win a free piece of cake each day for a week. What are some of the different ways to cut the cake?

Us... tangle... show how you would cut each of the rect...
eigh... ll piec... have the same area. If you need to...
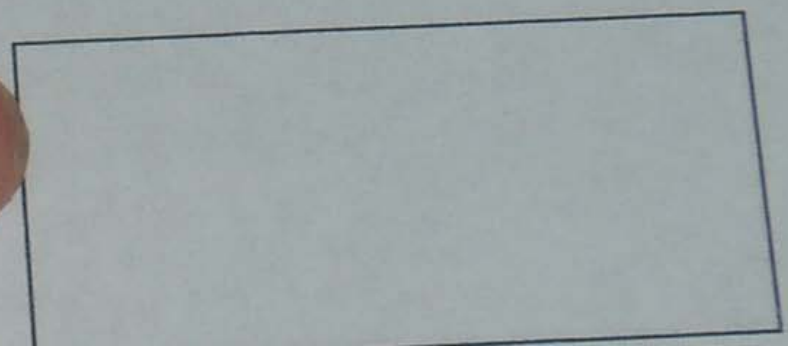
Discussion

- Were your students able to visualize equal parts?

- What methods did you use to help your students find different ways to cut the cake into eight equal parts?

- How did your students show equivalent parts?
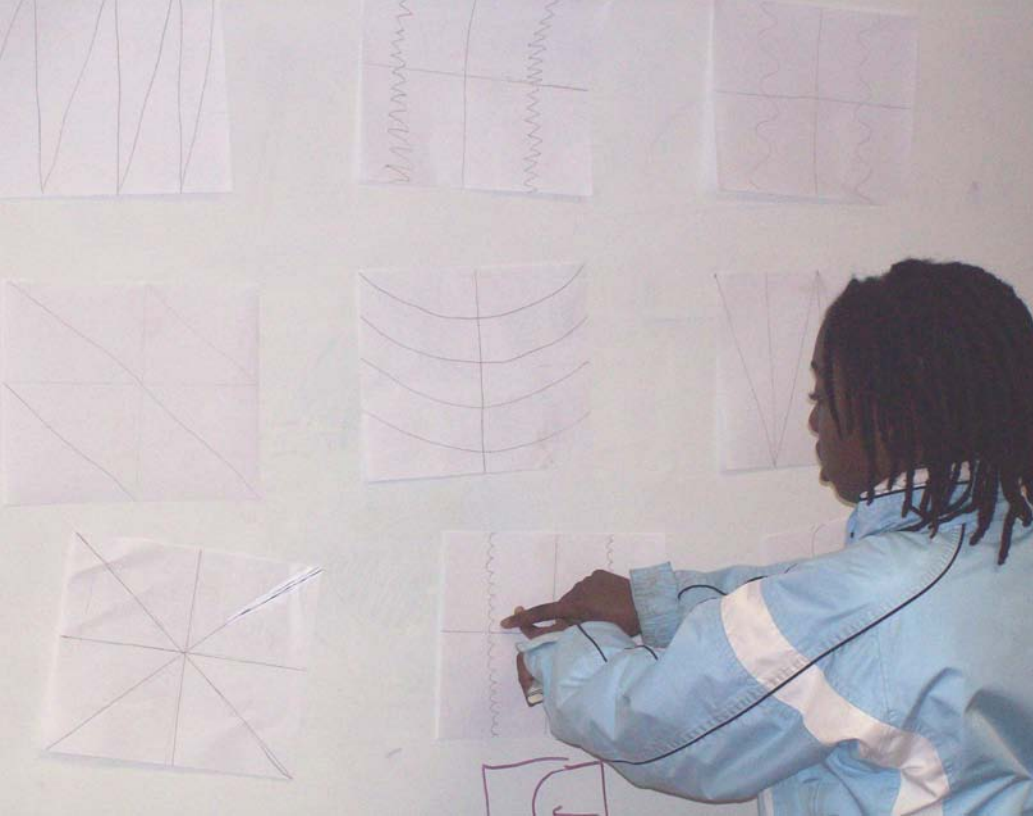
Live Meeting Poll

Survey Question 4

Did your students use curved lines or a combination of line segments to cut the cake into eight parts?

- Yes
- No

Discussion

- What questions arose when students tried to use curved or a combination of straight line segments to divide the cake into equal parts?

What do we have to remember about parts with curved lines?

Are these parts really equal?
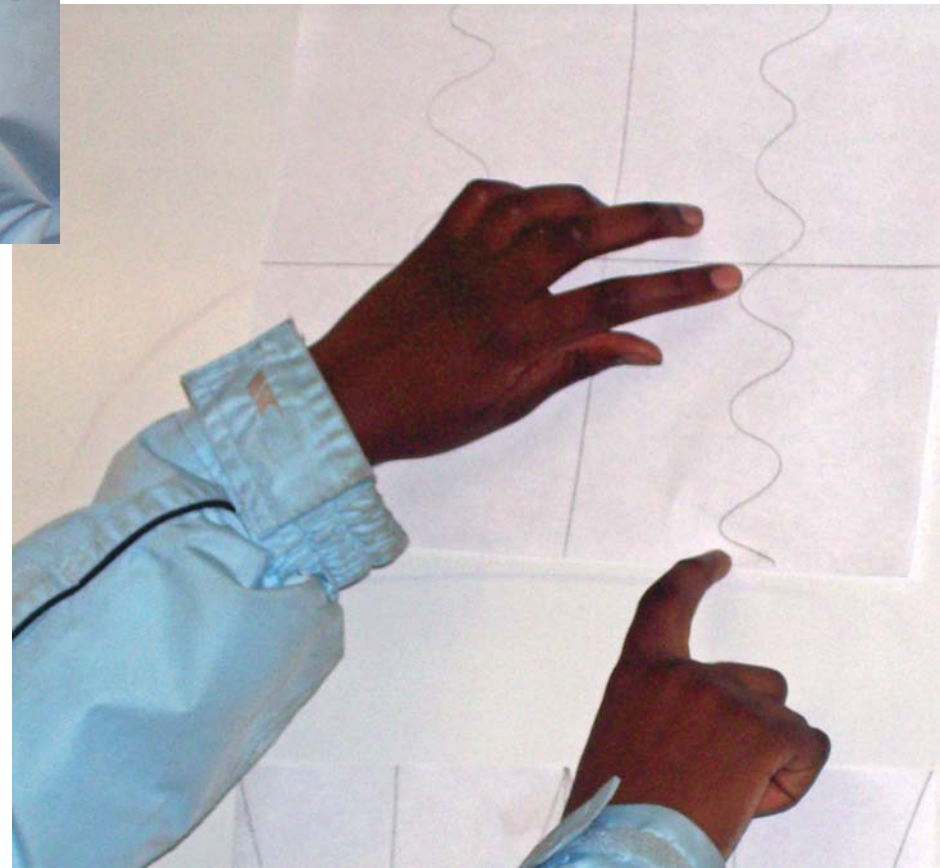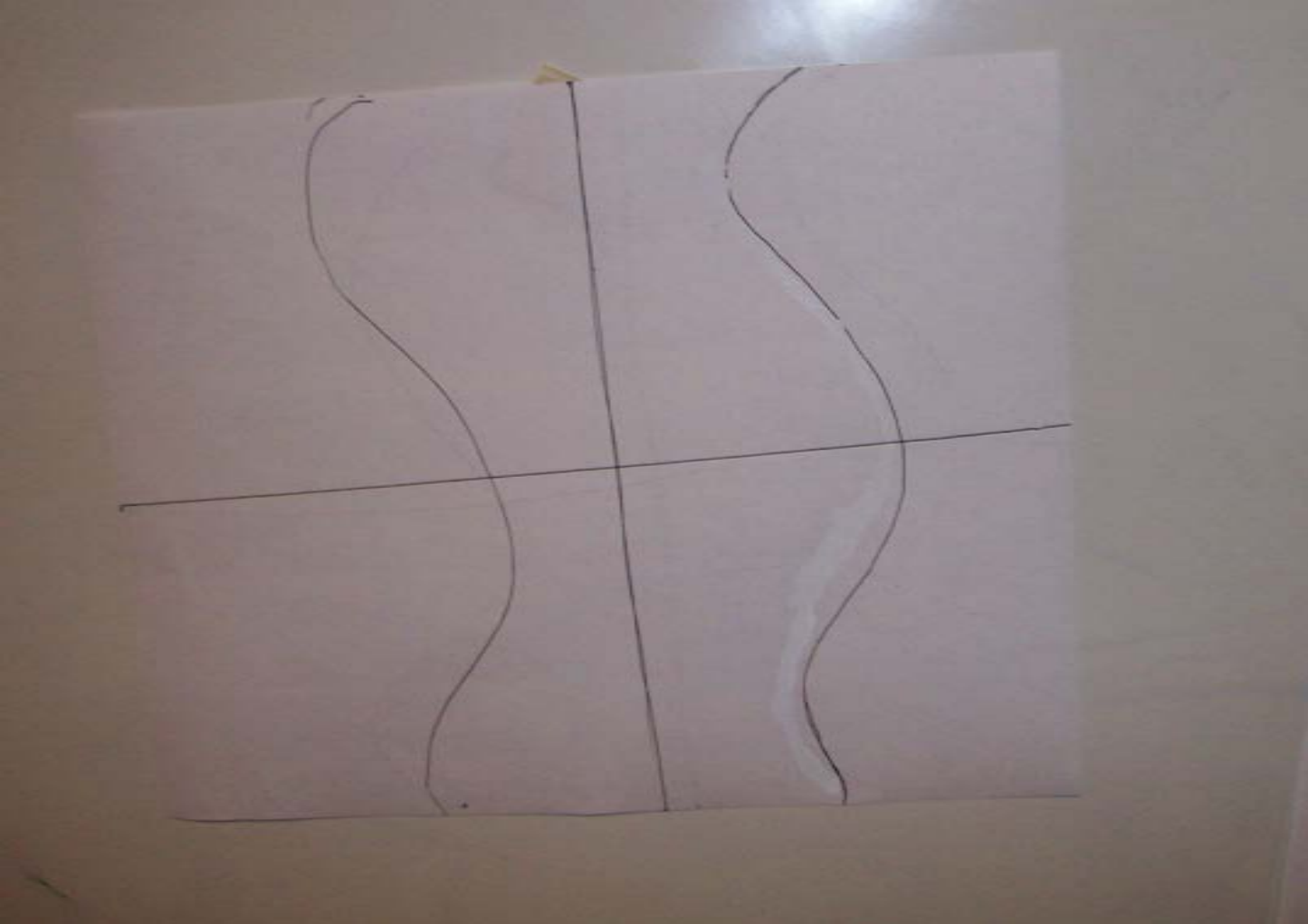
How can we prove that the eight pieces are equal parts?

Cakes Cut Into ~~Fourths~~ Eighths

NAME Emily Heck

Using the rectangles below, show how you would cut each of the "cakes" into four pieces. Each piece does not have to have the same area as the other pieces in that cake. If you need to, you may use a piece of printer paper to practice cutting before making your drawings below.

Once you have made your cuts, find out the cost of each piece of cake, assuming the bakery sells 1/8 of a sheet cake for $1.50
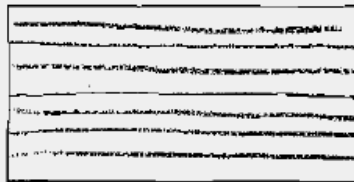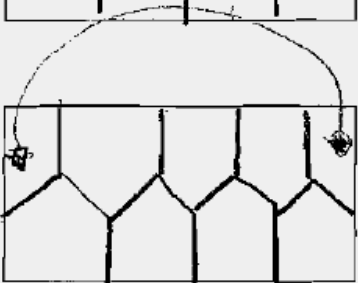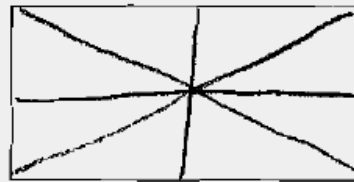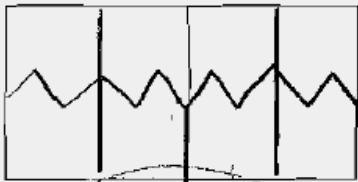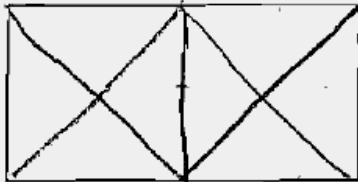
Let's Revisit Problem 2

- "You Can Eat Your Cake and Have It, Too!"

  The baker is conducting a second contest, this time for his employees. As part of a new promotional campaign for his store, each day he wants to feature sheet cakes that have been cut into four pieces in a different way. The pieces do not have to be equal for this promotion. The baker has challenged his employees to suggest interesting ways to cut the cakes into four pieces. The employees must also determine the price for each piece. The bakery sells 1/8 of a sheet cake for $1.59. What are some of the different ways the cakes can be cut, and how much should each piece cost?

Live Meeting Poll

Survey Questions 5 and 6

Were you able to present Problem 2?

- Yes
- No

What tools or materials did you make available to help students complete the activity?

- Calculators
- Rulers
- Grid paper

How does the fractional part reflect the price for each of the four pieces of cake?

Discussion

- Could your students find the total cost of the cake given the cost of 1/8 piece of cake was equal to $1.59?

- Were your students able to partition the cake into four unequal parts where they could identify the fractional part of the whole?

- Did your students use equivalent fractions to name their four parts – for example going from 2/8 to ¼ or 4/8 to ½.
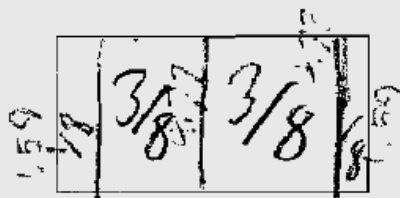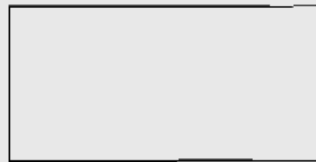
$\frac{1}{6}$ $\frac{1}{6}$

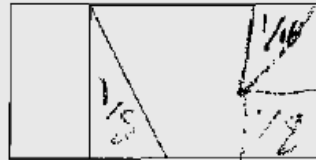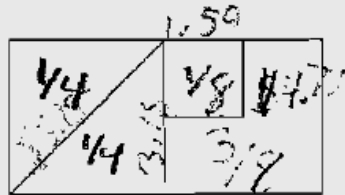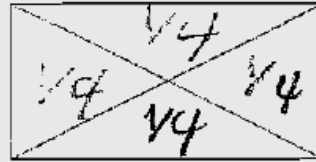$\frac{1}{6}$ $\frac{1}{6}$ = $2.00

$\frac{1}{2}$ $\frac{1}{6}$ = $2.00
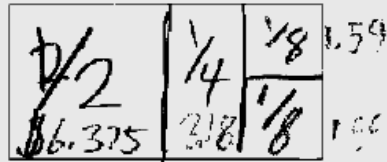
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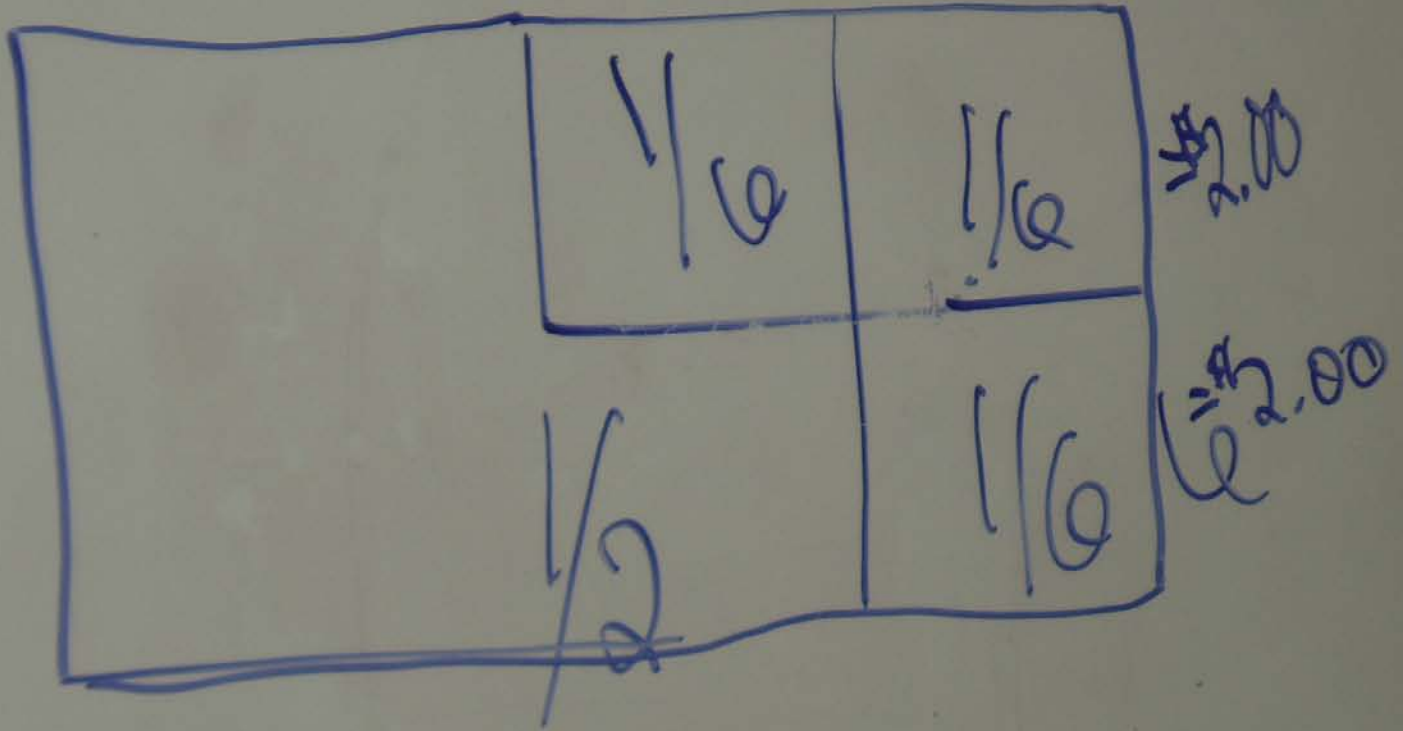
This group of students divided their cake using grid paper and determined the fractional cost of each piece based on 1/8 piece of cake is equal to $1.50.

Making Four Pieces

NAME _Sam Stei___
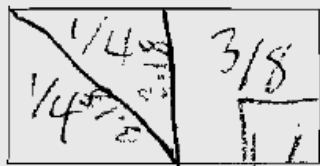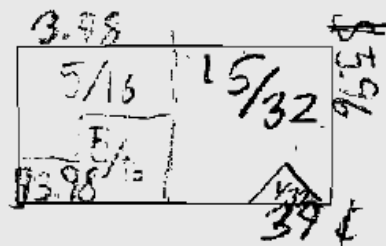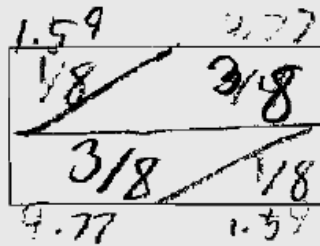
Lesson Summary

This lesson, *Understanding Rational Numbers,* helps students to:

1. Better understand the relationship of "part to the whole."

2. Better understand the concept of equivalency.

3. Better understand how the denominator of a fraction determines the number of parts in the whole.

4. Determine the relationship among parts of the whole that are unequal sized pieces.

5. Express fractional parts of the whole as equivalent decimals.

Share board

Whiteboard 2

Name one change or addition you plan to make to this lesson the next time you teach it.