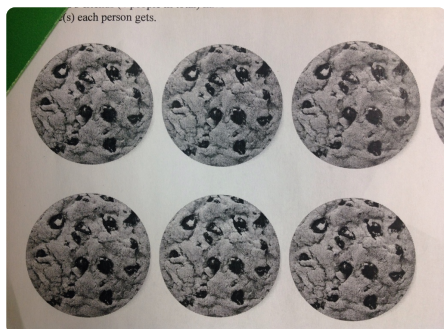


We are looking to see students' understanding of the whole in relation to the parts, and what misconceptions they may have. Also, we are observing whether students understand that in order to compare the parts, they have to be the same.

The problem

You and three friends (4 people in total) have three cookies to share **evenly**. Show and explain how much each person gets.



What we anticipated and monitored

Strategy	Key Questions to Ask	Who and What	Order
Divide cookie into quarters + equally distribute	How can you write that as a fraction?	Mike - Says each gets 3 $\frac{1}{4}$ pieces. (not seeing it as $\frac{3}{4}$ each) Olivia - each gets $\frac{3}{4}$ of one cookie	they agreed by Olivia
Immediately saw the $\frac{3}{4}$ and distributed it as final cookie	Angelo, Tanisha, Moh...	Atkash + Josh \rightarrow saw the $\frac{3}{4}$ as $\frac{12}{16}$, which is 3 whole cookies Bablen + Nulika \rightarrow first $\frac{1}{2}$ + $\frac{1}{4}$, with pictures, but then with the model, distributed quarters \rightarrow each got $\frac{3}{4}$	
Divide cookie into halves, distribute and then quarter the final cookie	In relation to the whole, how much does each person get?	Erica + Kyra - each person gets a $\frac{1}{2}$ a cookie and a $\frac{1}{4}$ - in relation to the whole, each get $\frac{3}{4}$ - each person gets a $\frac{1}{2}$ and a $\frac{1}{4}$ \rightarrow Allison	
Divide into $\frac{1}{8}$, each person gets $\frac{1}{8}$ pieces evenly distribute	Jessica, Donga	- each person gets $\frac{1}{8}$ pieces	

Student solutions

Saw the $\frac{3}{4}$ right away, and when you add that up, you get 3 whole cookies

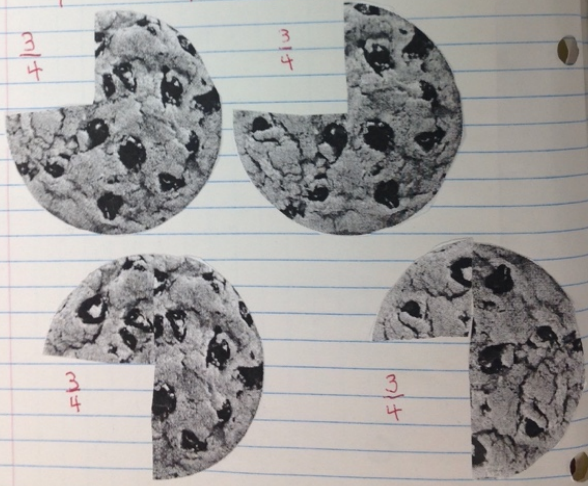

92 **Cookie Question**

You and 3 friends (4 people in total) have 3 cookies to share evenly. Fully explain/show the amount of cookie(s) each person gets. When you get the correct solution Mr. Nikolic has cookie surprise for you

$4 \div 4 = 1$ $4 \div 4 = 1$ $4 \div 4 = 1$

1 person 1 person 1 person 1 person

$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{12}{4} = 3$



Divided the cookie into quarters, each gets $\frac{3}{4}$, students were able to express that as a fraction

Cookie Question

Step 1: Q: Fully explain/show the amount of cookies each person gets?

Key words:

- 3 Friends + You = 4 people
- 3 cookies
- Share evenly
- Fully explain/show

Step 2:

We will use fractions, dividing, words, pictures, examples, and numbers.

Step 3:

People: 1 2 3 4

Cookies: 1 2 3

$4 + 4 + 4 = 12$

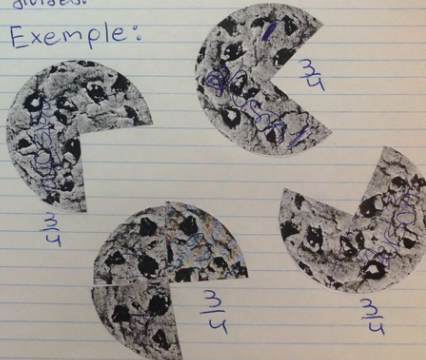
Person # 4 will get 3
 Person # 3 will get 3
 Person # 2 will get 3
 Person # 1 will get 3 = 12

$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{12}{4}$ if you divide the cookies in to 4ths = $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} = 1$ whole cookie

Step 4:

First we drew the people and the 3 cookies. Then divided each of the cookies into 4. $4 \times 4 = 12$ if you divide the cookies by 4. Then we wrote person 4. 3. 2. 1 will get 3 cookies each. $3 \times 4 = 12$ which equals to $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{12}{4}$. Next we wrote down $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} = 1$ whole cookie. So inclusion 4 people will get 3 cookies each with no left over and equally divided.

Example:



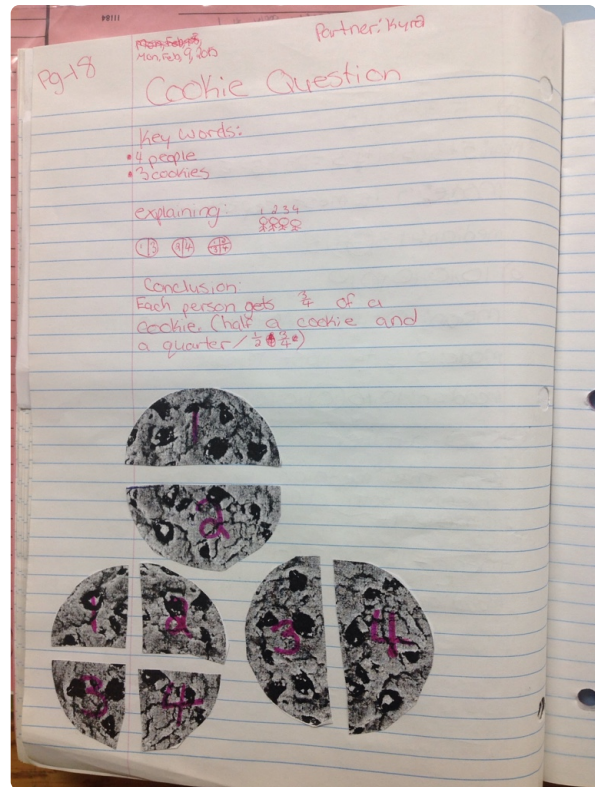
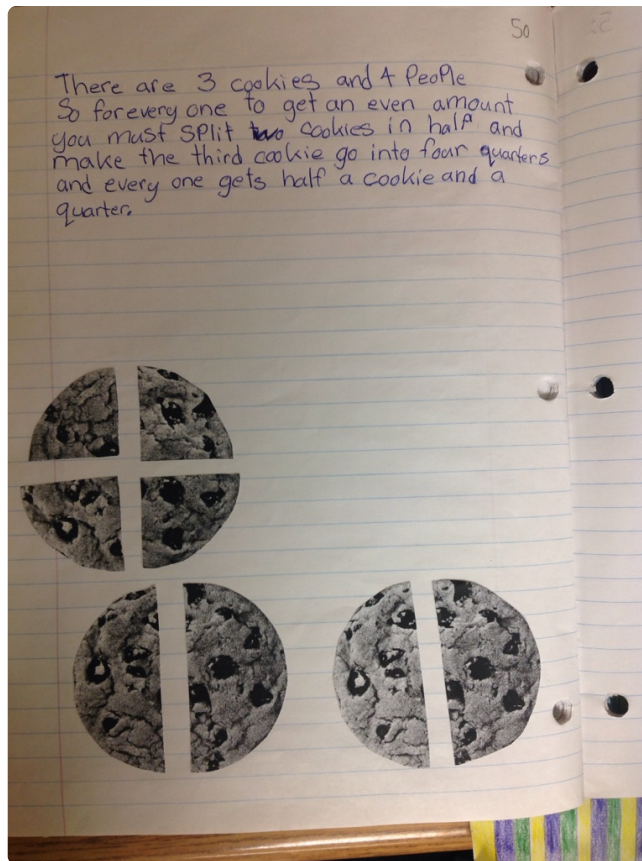
Monday, February 9th, 2015 - Day 2

cross out any mistakes:

You and 3 friends have 3 cookies to share evenly. Fully explain the amount of cookies each person gets?

$\frac{12}{3} = 4$ $\frac{56}{7} = 8$ $\frac{96}{12} = 8$

each person gets $\frac{3}{4}$ cookie

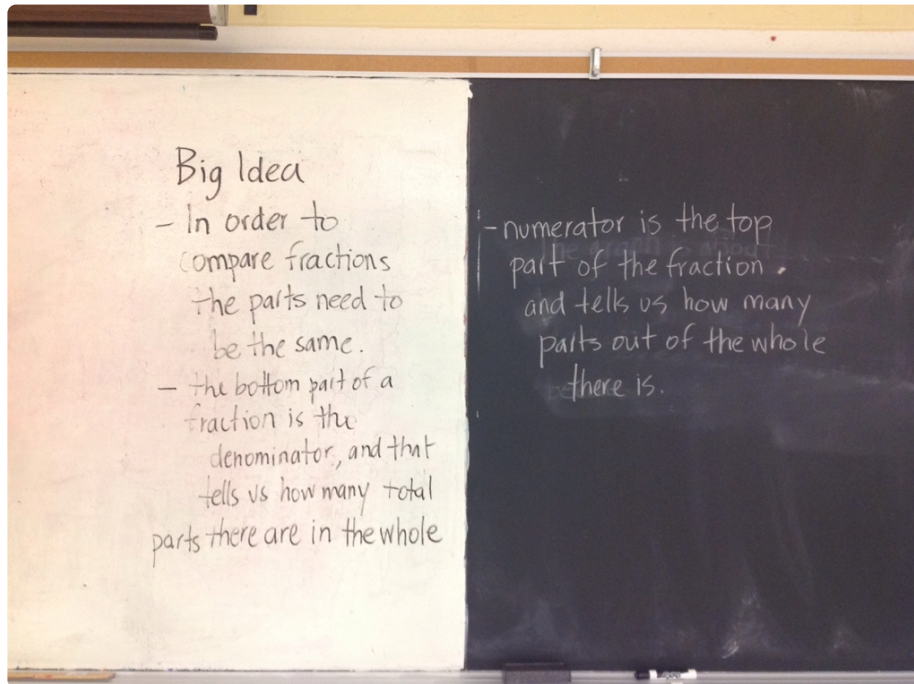


First divided the cookies in halves, and each person gets a half. Then divided the remaining cookie into quarters, and each got a quarter. When asked how much of a whole cookie did you get, could only say a half and a quarter, had difficulty expressing those words as fractions, did not see how to compare those fractions, that the parts need to be the same to combine or compare them.

Whole class discussion

After sharing two strategies or solutions, we discovered some big ideas... (we chose partners that gave each person a Half and a quarter, and then asked how much of a whole cookie did each person get? And we asked

another partnership who divided the cookies into four to share, and wondered why they cut them into quarters?)



One more, that we still need to highlight:

The parts are only meaningful if we know what the whole is

Follow up

