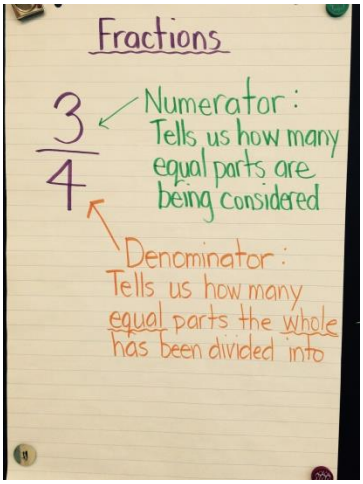
Grade 4 Intro to Fractions Lesson

Burnt Elm

Minds on:

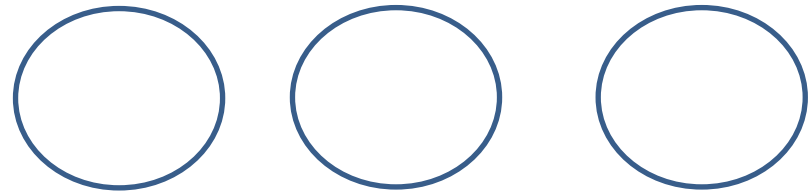
"I have one chocolate bar that I would like to share with everyone. How much of the chocolate bar should everyone get?"

We have 24 students in the class (fortunately, I found a chocolate bar already divided into 24 pieces). Students give answers and agree that everyone should get 1/24 of the chocolate bar. This leads to a conversation about fraction notation and an anchor chart is developed as seen below:

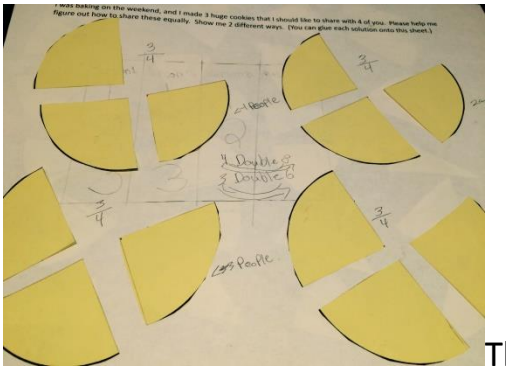


Working Through the Problem:

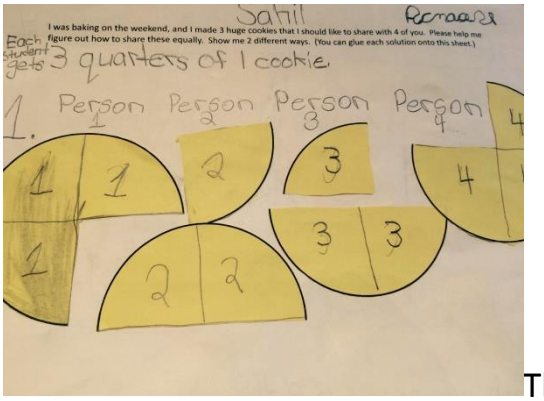
Problem: I was baking on the weekend, and I made 3 huge cookies that I would like to share with 4 of you. Please help me figure out how to share these equally. Show me 2 different ways. (You can glue each solution onto this sheet.)



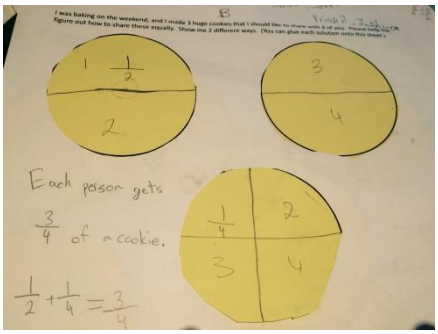
Students solved the problem in a number of ways. These student work samples are representative of the strategies used:



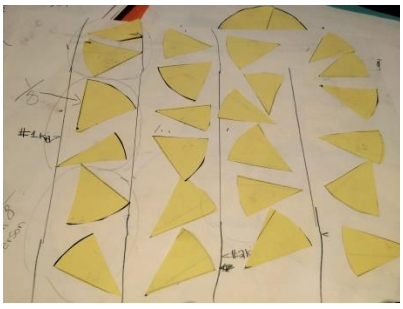
This work sample represents the most commonly used strategy. This group shared each of the 3 cookies into 4 equal parts. They then "fair shared" the 12 pieces among the 4 students getting the cookies. Each student would receive 3/4 of a cookie.

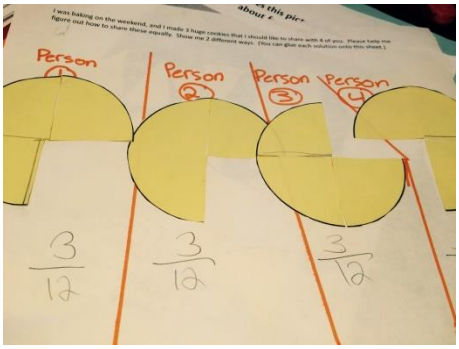


This second strategy is similar to the first. This group divided each cookie into 4 equal pieces. However, rather than "fair sharing" or dolling the pieces out, this group gave student one the first 3 pieces, student 2 the second 3 pieces and so on. Each person gets ¾ of a cookie.



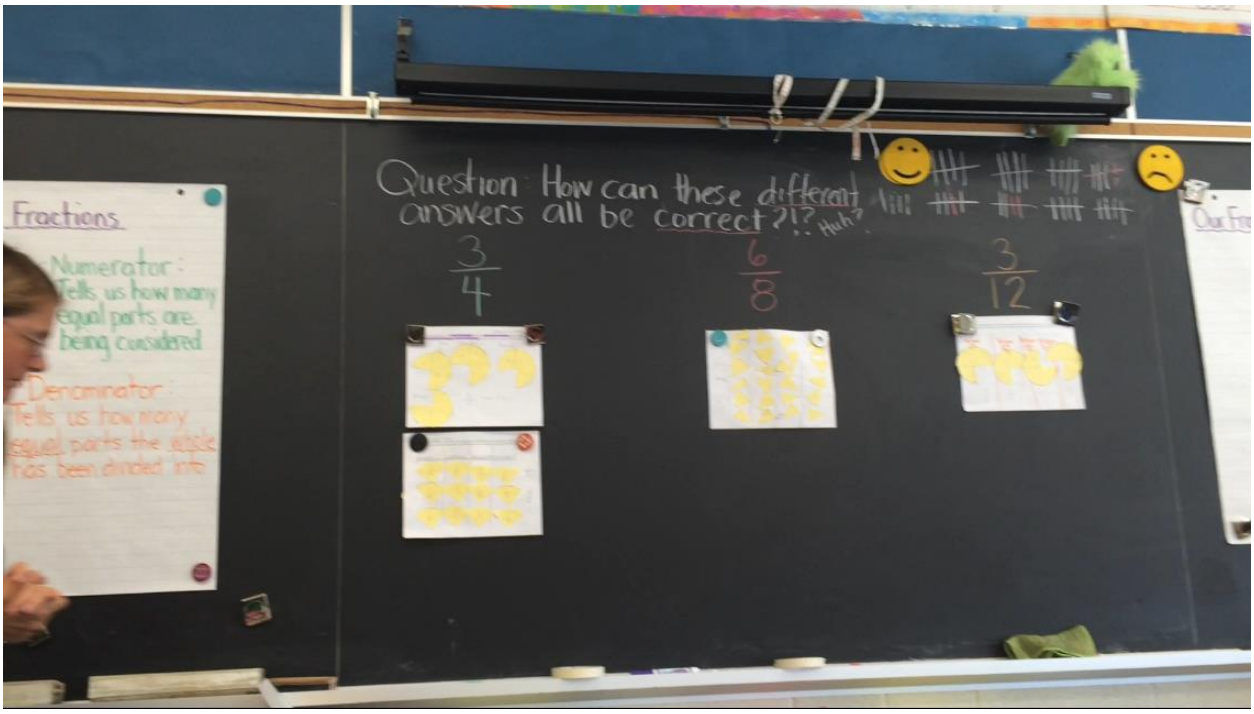
This group cut the first 2 cookies in half, and shared the 4 halves between the 4 students. They then cut the final cookie into quarters, and shared the quarters among the 4 students as well. They wrote ½ + ¼ = ¾ .


This group considered the whole to be 1 cookie. Each cookie is shared into 8 equal parts. They "fair shared" these amongst the 4 students. This pair circled groups of 2 1/8 pieces of cookies, to show how this is equal to ¼. They also recognized that they doubled the denominator 4 ->8 and then they had to double the numerator 3 -> 6. Therefore 6/8 equals ¾.



This group considered the whole to be 3 cookies. Each piece was shared into 4 pieces. Each student received 3/12 (of 3 cookies)

Debrief:



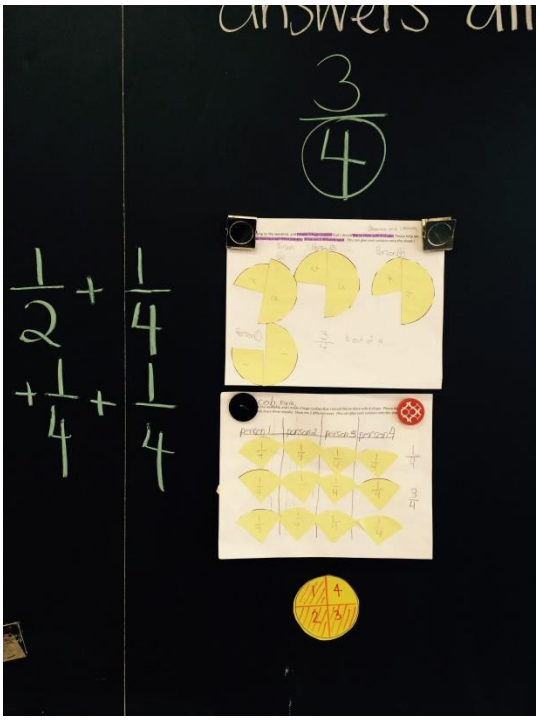
The debrief presented students with the following puzzle: How could students get ¾ of a cookie, 6/8 of a cookie, or 3/12 and all get the right answer? (as shown by the equally shared cookies glued onto their page.

The goal was to use the student work to have them develop an understanding for 2 “Big Ideas” about fractions:

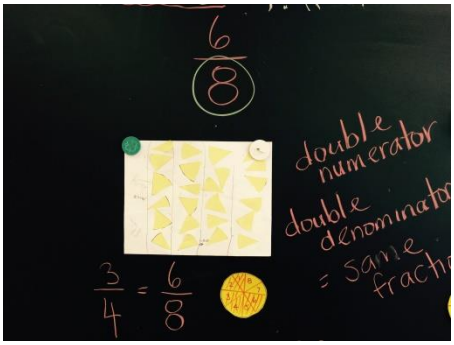
1. Factions have more than one name (Eg. ¾ = 6/8)

2. You have to know what the whole is when you are writing or understanding fractions.

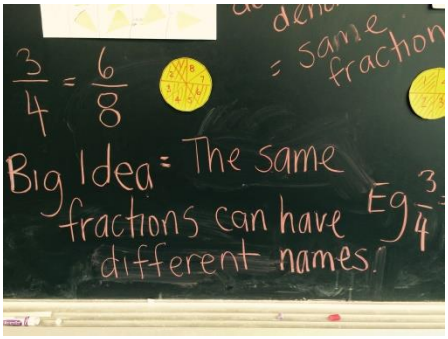
Students presented their work in sequence to help them “uncover” these ideas.



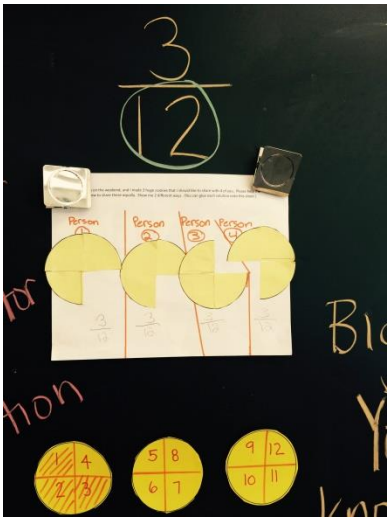
Students presented the most common strategies and answers first. All groups got ¾ as their answer for at least one of their 2 solutions. At this time, 2 groups were asked to share because they took different approaches to getting the same answer. You can see on the left side, that the first pair’s strategy involved ½ + ¼. The second pair solved the question by sharing all the cookies into quarters ¼ + ¼ + ¼. We had a discussion about how these two number sentences can have the same answer.



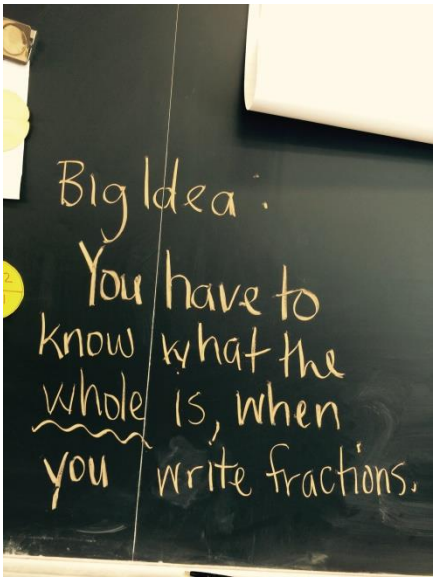
The next pair presented their strategy of sharing each cookie into 8 equal parts. They were asked to share their thinking that they could double the denominator, but then would need to double the numerator to keep the same fraction. They also shared how grouping 2 1/8 pieces together, would equal ¼, and therefore there was both 3 quarters and 6 eights represented on their page.

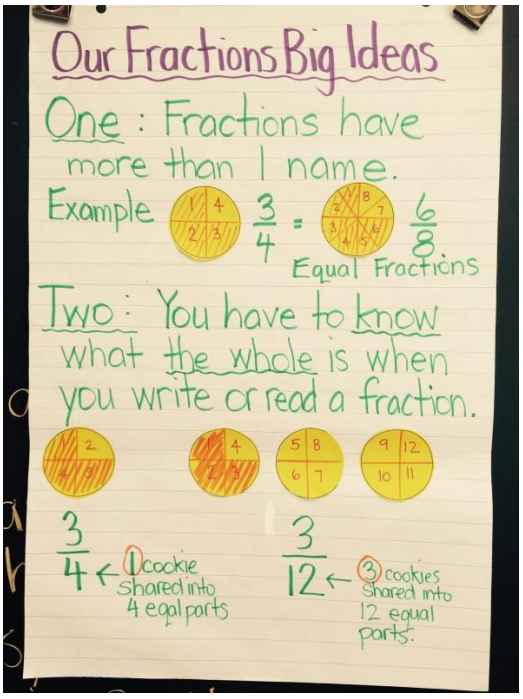


This lead to the first Big Idea: Fractions can have more than one name. Example ¾ and 6/8 are equal fractions.

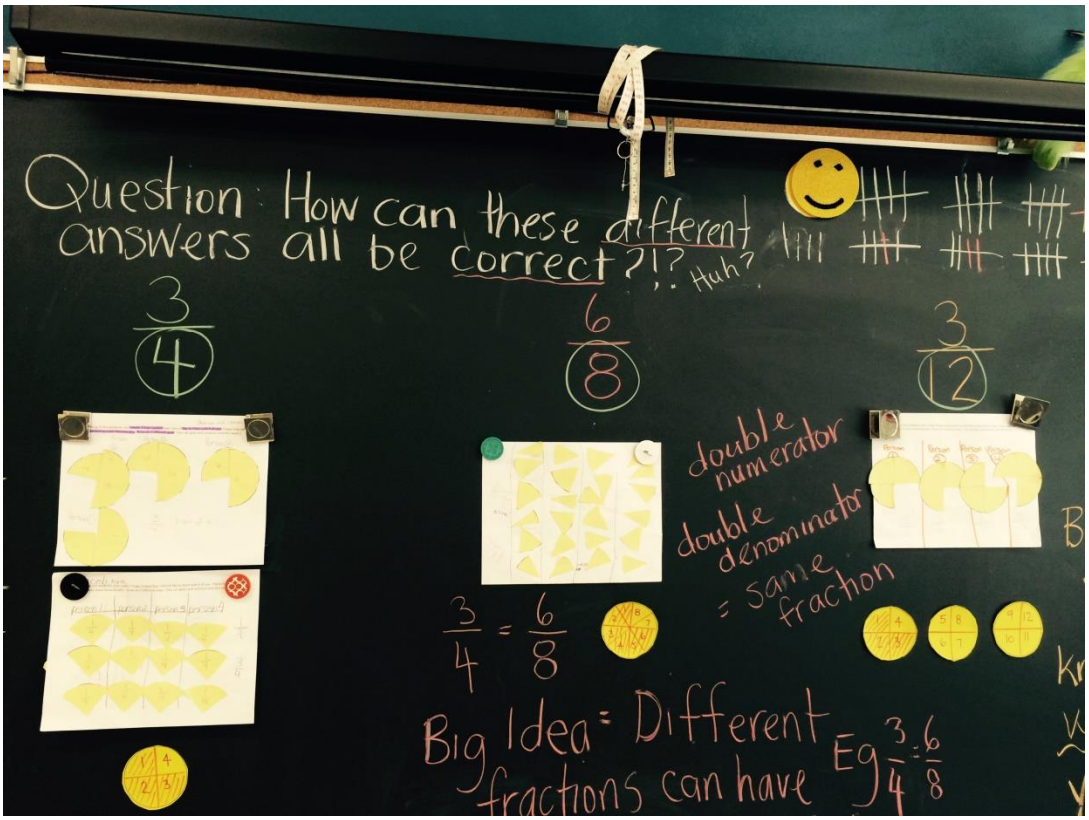


The next work sample was more puzzling. How can ¾ and 3/12 be the same amount of cookie? The answer is in understanding what the whole is. Through questioning and conversation, students recognized that the whole in the final strategy is actually 3 cookies. The whole in the other work samples was one cookie. They could see from the cookie models that each student still got the same amount of cookie. This lead to the second "Big Idea":





Big ideas are recorded onto anchor chart for student reference.



Part of the board at the end of the debrief.