DOINGWHATWORKS

VIDEO
6:46 MIN

Full Details and Transcript

Equal Sharing in Grade 1

Tollgate Elementary School, Colorado
January 2011

Topic DEVELOPING EFFECTIVE FRACTIONS INSTRUCTION FOR K-8

Practice INITIAL FRACTION CONCEPTS

Highlights

- Teacher Julia Franklin challenges her first-grade class to divide nine cookies among three kids.
- Three students use the electronic white board to demonstrate different ways to determine the fair sharing.
- She then challenges students with a sharing problem that requires them to consider fractional parts of a cookie.
- Ms. Franklin discusses building on the language of fractions, helping children develop beyond the concept of “halves.”
- She provides three differentiated practice assignments (practice with doubles, practice sharing an odd number, sharing multiple objects among multiple students) and scaffolds the thinking of a pair of students working on the latter assignment.

About the Site

Tollgate Elementary School, Aurora, Colorado

Demographics

- 45% Hispanic
- 31% Black
- 18% White
- 5% Asian/Pacific Islander
- 2% American Indian/Alaska Native
- 65% Free or Reduced-Price Lunch

Tollgate Elementary School focuses on developing mathematically powerful students using the districtwide curriculum developed by Aurora Public Schools. Features of the program include the following:

- A district mathematics coach and a school teacher leader who support classroom instruction, including collaborative lesson planning and demonstration lessons
- Use of models, manipulatives, and visual representations to support fractions instruction
- Ninety-minute blocks of math instruction, which allow for a number talk, whole-group lesson, small-group work, independent work time, and assessment
- Emphasis on mathematical discourse and communication to explain reasoning

Full Transcript

00:00 My name is Juliet Franklin. I teach first grade at Tollgate Elementary in Aurora, Colorado. In the lesson, I was teaching them first about sharing equally and how to divide things equally first, and then after that we looked a little bit at dividing a whole into halves.

Franklin (to students) **00:23** How many cookies does each kid get if they share them equally?

Student One.

Franklin So it has to be fair. There's three kids and nine cookies. Deja, how many cookies does each kid get?

Student Three.

Franklin (to students) 00:41 Three cookies. Deja, can you come show us up here how you did that? Shake your hand if you agreed with her.

Student *[Indiscernible]*.

Franklin (to Deja) 00:49 Use the arrow actually. Can you just drag them down?

Franklin (to students) Ooh, she did them two at a time. Nice job. Did anybody do it a different way? Ethan, can you come show us what you did? What were you thinking?

Ethan 01:29 I am thinking there's three people and there's nine cookies, so they need, all of them need three because there's nine.

Franklin Because there's nine? So what do you know about 3 + 3 + 3? What does it equal?

Student *[Indiscernible]*.

Franklin It's okay, you're okay.

So if there are nine cookies and three kids, how many do they each get so that it's equal?

Students Three.

Franklin Three cookies. Shake your hand if you knew 3 + 3 + 3 = 9. Lots of us know that, huh? Matthew, do you want to show us one different way to do it? Okay.

Franklin 02:20 My goal for the part where there was nine cookies and three kids was that they would be able to divide the cookies equally after using their prior knowledge of what is equal, now they can look those nine cookies and divide them. There is a lot of different ways that kids divide equally, but they all got to the same answer.

Franklin (to students) 02:38 I have a little bit of a bonus question. This one's kind of hard. I am going to have you turn and tell your neighbor when you know the answer, okay?

Student Oh.

Franklin What if there was one more cookie? What would we do with that cookie?

Student 02:54 I would, like, break three apart because if you add one more and then add a little piece of him and then of him and then of him.

Student Yeah, like, break it apart equally…

Student If we had one more cookie in there, we could break it three apart.

Franklin 03:17 So this was an extra cookie. What are you going to do with this cookie? Giovanni, come up here and show what would do with the cookie. Here is the extra cookie. What are you going to do, Giovanni?

Giovanni I would rip it in three halves and give it to all those three kids.

Franklin 03:33 Rip it in three halves. So go ahead and do it—show us how you would do it. *[Student rips paper into three parts.]* Okay, so let's stick one up there for each kid.

Student *[Indiscernible].*

Franklin Nice job, Giovanni. Have a seat. Shake your hand if that's what you were going to do. So does this look a little more equal?

Students Yeah.

Franklin A little more fair?

Franklin 04:00 One of the misconceptions that I have noticed first graders have is referring to thirds and fourths and fifths or whatever it is, all of them are a half to them. I think that this is something that is developmental, and they will learn it as they go to higher grades. And it's something that we just, in the primary grades, we need to build on that language of fractions and just kind of help them along the way. So when I hear kinds say, they take a paper and tear into thirds and they call it halves, I'll just maybe mention thirds or mention parts or something like that. In this small group, I differentiated the lesson without the kids even knowing just by having three different papers. And there was one paper where the kids were specifically working on their doubles. This paper was for kids who still needed to practice with those doubles and understand that if you know 3 + 3 is 6, then you can divide six cookies between two kids and they each get three. Another paper was for someone who already has a firm grasp on the doubles, and I threw in that extra cookie to make it an odd number to start working with the fraction part of it. There was another paper where it had multiple kids. They were good at dividing by two already, but this threw in the extra kids.

Franklin (to students) 05:10 So you have two kids and six cookies. They each get three?

Student Three.

Franklin Two kids and 12 cookies, they each get…?

Student Six.

Franklin 05:17 What did you mostly use to figure all these out? What strategy?

Student Doubles.

Franklin Doubles. You used doubles a lot—three and three, six and six, five and five, four and four, two and two, seven and seven. Nice job.

Franklin 05:30 So how many did they each get?

Student Four.

Franklin They each got four cookies?

Student Because these two are in half.

Franklin But if you are going to do four and four, then you have eight cookies, so it's too many. How many cookies all together? You guys stopped because you thought it was seven. Is it seven?

Student Look it.

Franklin It's not. Count them.

Student Because it's 4 + 4.

Franklin Is it 4 + 4? Is this a whole cookie?

Student Seven?

Franklin 05:53 So it's seven cookies. How did you know it was seven?

Student I put this one right here… *[Indiscernible]*

Franklin 3 + 4 = 7, so you actually have this as one cookie plus six more. Okay, so you have seven cookies. So how many cookies do you have?

Student Seven and a half.

Franklin Oh, there's seven all together…

Student Six and a half.

Franklin 06:14 But Giovanni, these cookies are yours, right here. How many cookies do you have?

Giovanni Three.

Franklin Three?

Student Three and a half.

Franklin There you go, so how many cookies did each kid get?

Student Three and a half.

Franklin Three and a half. How did you know, Christian?

Christian Because if you cut up that one, it would be three.

Franklin It would be three, and then they have part of one. So they don't have three and they don't have four, they have three and a half. You remembered how, right?