

00:00 So I'd like you to just maybe take a minute to talk to the person closest to you about, like, how could you build on their experiences today?

00:09 Where would you want to go next with the class?

00:13 The one who raised her hand and said, "Oh, like in sales tax, when you go shopping, there's sales tax." And it is a rate, but how does it relate to what we said?

00:21 And even after he put it up there, and connected it to rate, she says, "Well, what about that other thing we've done, with principal and tax rates.

00:33 It's just like anytime she's heard the word, it felt like it was coming out in this conversation.

00:39 Taking the rate that they worked with today, in 10 seconds, and expanding that to a minute, to an hour, and how can we take the data that we have and extrapolate?

00:49 Yeah. And I really would have liked to have seen the last 15 minutes, to see what happened with it. Particularly that idea.

00:58 So then again, you're comparing apples to apples instead of different things, like they're comparing

01:05 So yeah, because some students, like she was saying that, they don't like the decimals. But they do like the regular whole numbers.

01:12 They might not reduce to unit rate, to find a common denominator. They might try that approach. The big idea is that the denominator has to be same.

01:28 So that the comparison is easier. So if they understand that, that means they got the "big idea."

01:36 Especially, the notion too of trying to "get rid of" the decimal in the top by making the numbers on the bottom larger,

01:43 Making their denominators larger, so, making it, say, to 60 seconds.

01:48 Right.

01:49 That would again get rid of (inaudible) ... that would definitely help.

01:55 And especially if they come up with the whole number numerator, the students who really want fractions, and not decimals, or are scared of them,

02:04 They'd be able to understand, "Oh yeah, we can use this way also."

02:08 And it's still the same thing. Right. I think it's a big idea of knowing that, it's kind of like equivalent fractions.

02:16 Yeah.

02:17 Knowing that they're not really different.

02:19 The boys would have to go over whatever the second one was. In the ratio, saying "Give me the ratio of boys to girls, or boys to

totals." 02:29 So that's where they've been kind of thinking

02:32 And that was, that was clear. Certainly in terms of symbols, too. The group that I watched, one of the girls used a cone, with the kids

02:40 They'd just been on that, so that's

02:41 That came out.

02:42 Yeah. Then it kind of clouded any, uh...

02:45 But I don't see it as clouding so much as it played a role in their making sense of it. And then they're doing some thinking around..

02:53 Right. How does this relate to what we know.

02:57 Because it does, it's just another way to write rates and ratios.

03:03 And even then, when they've given the answers, I should have made them say "20 beads to 30 girls." Because sometimes I would just take "2/3". Yeah.

03:17 Sure.

03:19 That would make it clearer for them doing a lot of other things.

03:23 So even, so thinking forward to, if and when (because they will) a student says "what'd you get?" and my answer is 20 to 30, as a teacher I would think about the options of how to respond to that.

03:38 Or re-engage them in it, which is, do I say..

03:42 20 to 30 what?

03:43 Right, or just, don't forget to remind your reader, or remind us, or yourself,

03:50 What the 20 means.

03:52 Yeah. What was your story for this again? Or what were you counting? What was the...

03:56 Yeah. That's good.

03:57 What a difference, that's re-engaging the student in this, rather than.

04:01 Sometimes I'm just so happy that I get  $\frac{2}{3}$ .

04:03 It's right!

04:07 Thoughts that you'd like to share regarding your discussion with your partner?

04:12 About what would you do next? How would you address this in your classroom. Yeah.

04:16 We thought about making sure that the kids understand that you can make both of them a unit rate, meaning that you could have 10 seconds on top

04:28 And 37 pieces of rice on the bottom, and switch them, and make that the unit rate, so the rice would be the unit rate and then compare them that way.

04:37 Just kind of taking the idea that they don't necessarily have to be rice over seconds, but they could have seconds over rice, and then find a unit rate that way as well.

04:45 We thought.

04:49 I thought, too, maybe even having them read the next step, I'm trying to find some activities, say, a paragraph with a certain amount of words per second.

05:01 Even though that's time, but some more activities, I would just do some more activities where they can use this rate principle.

05:07 And then we had a discussion going back to just the rate, the discussion about what a rate is, and clearly in that class there were some difficulties,

05:17 And we're just thinking about our own classes and there're still difficulties there.

05:21 Maybe, somehow, having that discussion, about ratio versus rate. We just had it in the car, too. Because I think, I think that clarifies some of the things,

05:34 Where you see money, what is it, cost per percent tip, or something. I don't know. So maybe categorizing some kind of rates that are very common,

05:47 Compared to maybe "Are you sure this is a rate?" or "In our head, is it a real rate?" I don't know.

05:53 Comparing it with parts of a whole. The, I think it was the very first person, I think, I can't remember his name, but mentioned you to Joe,

06:02 About what's a rate, and he said, "Burgers to burgers sold." That was more of a part of a whole, rather than a rate. A comparison of two different quantities.

06:11 And maybe in that type of lesson you mix in parts of whole, and they can have discussion around that.

06:18 Talk on proportion and ratio. And they were at times getting it all mixed together when they were trying to explain rate.

06:28 So, that's what I noticed, too, from the students.

06:32 My conjecture is that it's much easier for kids to think about taking that rate and making it larger.

06:38 So when they were comparing the rice up here, they went from 10 to 30, trying to go 20 and 30 to 60.

06:47 They like to go up. And as teachers, we're always trying to get them to go back to that unit rate.

06:52 So I think I'd like to have them experiment with what comes natural, and then at some point, could I design a question where it would be more convenient to go smaller.

07:07 And trying... so, if I were in a lesson study group, I'd like to try to figure out after they'd had some more experience,

07:14 What would be that question that would get them to see, "Oh, how useful that is!"

07:21 And I don't know what that would be right now.

07:25 The same thing, the denominator or the time term, because that's the natural term to work with.

07:30 How to set up a rate where the numerator term would be the natural one to work with,

07:36 I'm at a loss right now, but yeah, so you want to set it up so it's a natural thing, we need to figure out how many seconds it takes to count 43 rice.

07:48 Or actually something better than that.

07:51 This whole notion about rate comes to mind, especially teaching 5th graders, the whole notion about "You know, I have 2 cents, and 8 gumballs come out."

08:03 So if I put in 4 cents, how many gumballs will come out? So the rate is the amount of money to the number of gumballs.

08:09 It doesn't really have anything to do with time. But it's still a whole measurement issue that...

08:17 You put time as the most common rate, it seems, and what they immediately go to is miles per hour, per second.

08:24 With that time thing on the bottom, they're always working with time. So that's good, yeah. I like gumballs per quarter.

08:33 Yeah, or nickel. That they would have to... and then, could I buy 1? You know, if you went back the other way. That would be one more way you would work it out.

08:43 Especially starting nowadays with a quarter, because you can't buy anything for 2 cents anymore.

08:48 You'd get some quantity.

08:50 I went shopping! And I did the rate, the tax rate! And so then in her group she was talking about "And we did something with, something else with the tax rate, with principal."

09:00 "Remember? We did it." So anytime she'd ever heard the word "rate," it was related to "tax" for her, I think. For her, it just kept coming up. "Tax rate, tax rate."

09:07 And it is, but how can you relate that to what her understanding is and to what the lesson is.

09:14 Rate comes in that also, in that case, it's nothing but the time. I agree with you, if they have seen the word anywhere, they could use that vocabulary for this.

09:27 Whereas the meaning of this, the big idea of this lesson is totally different from the rate and interest in a simpler problem, yeah.

09:37 Those kinds of rates are the things that are very common, but maybe, I guess, for the 12 year old, maybe not.

09:44 But that's the kind of things I would want to categorize and get out there. I think those are real life ones that they could know.

09:51 So that's like your gumball.

09:52 You know, get a Costco box of Cheerios, you know, Safeway box of Cheerios, and deal with that. You know, cents per ounce, dollars per ounce, whatever it works out to be.

10:04 Better deals. What's the better deal.

10:08 It reminds me a bit of the cereal problem, too.

10:11 Again, thank you team, and thank you Robert for the use of your students and classroom.