

00:00 It went well, it actually has left... the whole... I stayed and wrapped it up. I couldn't just cut it off.

00:07 So I stayed and wrapped it up. I think it took maybe 15 more minutes, and that's with the debrief, with them writing responses to the question

00:16about the three different rice rates. Did you get—were you there? Was everybody there?

00:24 Okay, so, after the experiment, when I cut off the experiment, I asked them to share three different rates.

00:32 Of counting rice. And I made certain to collect data from three different groups, so that the seconds would be different.

00:45 And I asked them, you know, who's the fastest? You know, a couple people raise their hand, most people didn't.

00:51 And so the question out there was, why can't we tell from our raw data... who's the fastest?

01:01 And they wrote, they had some really interesting comments about it. And then we discussed it at the end, what they thought.

01:13 Their ideas, should I share at this point what I thought—what they came up with?

01:23 So they were right on it as far as knowing that one of the terms had to be the same, and they focused solely, almost solely--

01:32 Becca found a couple who didn't—almost solely on the demoninator, the time term.

01:39 And some of them had changed the ten to 30 seconds, and then changed the two 30s to 60 and the 20 to 60.

01:52 And then one young guy explained unit rate to us, which was I think, most of the class was lost on, at that point.

02:04 So they really were clear on comparing these proportional comparisons, and that the terms had to be the same, but the term "unit rate" and the concept of unit rate,

02:19 There was only a couple of kids that knew, and even that child who was sharing how to get it to number of rice per second didn't know that he was working with a unit rate.

02:32 Didn't know how that was, didn't seem to know how that was similar to miles per hour or feet per second.

02:37 Just happened to use one as the term to compare. But you know, the responses we have, you know, and we'll pass these around, were really interesting,

02:51 So. It was, turned out well. This same lesson is, I've done a couple times this week, and we've modified it and talked about it.

03:02 And it seems that it's not a 38 minute lesson, it might be more of a 50 minute lesson, but it fits in that time frame with a lot of possibilities afterwards.

03:12 Their reflections, and again, the two questions that we asked, were just highlighted: Why can't we tell from our raw data who counts the rice fastest?

03:24 But just in looking at it, just about every student was able to recognize, either they used the word "it wasn't fair," or they mentioned the idea of the time not being the same.

03:33 So students got that and were able to articulate that. What I would like to do next would be to actually group and tally up,

03:43 And as a teacher where I would go next would be to tally up, so, who already was able to articulate something about needing to get the same amount of time,

03:52 or even has a strategy for that? And there certainly were, as Joe mentioned, there were some students who had additional strategies.

04:01 So there was at least one that said, and the quote here is "they have to have the same amount of things." So that would be looking at the numerator.

04:09 There was at least one student who used the word "denominator," saying that he got the same denominator.

04:15 And, I can't... compare the ratios. There are some that are, this one says "and multiply them diagonally." So there are a couple that are procedural.

04:26 Dividing the ratios. So that's where I would want to go, is sort of looking at what the kids understood procedurally,

04:34 and how they were connecting them with a real idea, which they owned from the conversation about rate being something that tells you, could be how fast something is.

04:44 In observing the group in the middle, that I was watching, they were talking about, they went straight to the idea of dividing.

04:54 And so a conversation that Joe and I had afterwards was, we're really curious about unit rate,

05:00 And while on the one hand it seems to be that the students don't articulate the idea of a unit rate and what it means in terms of comparing,

05:08 They also sort of procedurally know that this is a good way to do it.

05:12 And so that's something to explore, and a hypothesis is that we do this for fractions, we divide our numerator by our denominator,

05:20 We can compare fractions. So they can compare a bigger number, a mixed number, and that's a great idea.

05:29 Where we want to go in terms of our conceptual foundation for rate is to see that as a unit rate, to keep those units involved.

05:40 Two more comments, one was looking at their data sheets. I did get a chance to quickly tally, because we said we were curious about this unit,

05:47 Because that is sort of a measure that we're thinking about, the students' conceptual understanding.

05:55 So as one little measure, we looked at, is we asked the students to respond in a sentence and in a ratio.

06:03 18 students used their units of rice or, and all of these are beads or cubes and seconds.

06:11 in both their sentence and in the ratio. There were only three students who used it in their sentences and then did not use it in the ratio.

06:24 And then—is this adding up right? About 30 students— 9 students who did something a little bit different.

06:27 They were sort of incomplete, they didn't quite get a full sentence, or you know, so lots of different little things happened in that group.

06:35 But with that, what I wanted to say, I was observing two of those three kids, who used the units in the sentence and not in the ratio.

06:43 And my sense was that that was a saving grace for at least one of those students.

06:50 She was actually making sense, and didn't write a sentence, well, she wrote a question.

06:54 Before, um, before she experimented. Instead of sort of recording, "Oh, you know, my partner or I counted this many pieces of rice,"

07:08 She made sense of the question, or of what she was about to do, by saying, "How many pieces of rice do you count in..." and theirs was "in 20 seconds."

07:18 And that was... she was engaged, whereas up until that point she had been silent.

07:23 She even, once the experimenting started, she was sitting there holding papers and sort of trying to figure out

07:30 She was distracted, and I felt maybe letting herself be distracted, and this pulled her in. I felt like the sentence was a key piece to continue to think about.

07:38 Having kids sort of make sense with more than just a symbolic notation.