Description: Clip 5 of 6: Comparing one half and one third: Part 1 **Parent Tape: Reassigning the number name one, and introduction to fraction comparison** **Date: 1993-09-24** **Location: Colts Neck Elementary School** **Researcher: Carolyn Maher**	**Transcriber(s): Yankelewitz, Dina** **Verifier(s): Yedman, Madeline** **Date Transcribed: Spring 2009** **Page: 1 of 5**

3.0.201	T/R 1:	Now, I have one last problem for you to do. I think we still have 10 minutes. We're gonna go til ten after. One last problem. I wanna see if you fall into the trap. If we agree on we must keep whatever it is we're comparing the same unit. So if I'm comparing one half and one third, what I call one has to be the same for one half and it has to be the same for one third. Is that clear here? [Mmm hmm.] Alright. I want you to draw me a model with your, make me a model with your Cuisenaire rods and to show me which is bigger one half or one third. And I want you to tell me, show me which is bigger and I want you to tell me how much bigger and be able to convince me. Which is bigger, one half or one third?
3.0.202	Erik:	[some argument about who gets rods] Let's see…
3.0.203	T/R 1:	You want to put these in the middle, Erik, so that you and Alan can share them? [similar talk]
3.0.204	Erik:	One third and one half
3.0.205	Alan:	One third. [some more arguing] The blue can be divided into thirds.
3.0.206	Erik:	You think I care? You don't need that
3.0.207	Alan:	[inaudible, David borrows yellow rods from Erik and Alan]
3.0.208	Erik:	See, Alan, you messed it all up!
3.0.209	T/R 1:	Ok, please remember the ground rules. As I walk around and I watch what you're doing, are we allowed to switch candy bars?
3.0.210	Students:	No.
3.0.211	T/R 1:	Are we allowed, if we're making a half and third, are we allowed to have different size candy bars?
3.0.212	Students:	No.
3.0.213	T/R 1:	No. We have to not- we are not allowed to switch candy bars. Remember that's the rule from now on in mathematics.
3.0.214	Alan:	Get the model of a half
3.0.215	Erik:	What?
3.0.216	Alan:	Get the model of a half.
3.0.217	Erik:	No! So do I. Unfair info, this is no model of a half.
3.0.218	Alan:	A half would be bigger nevertheless.
3.0.219	Erik:	What?
3.0.220	Alan:	A half would be bigger nevertheless.
3.0.221	Erik:	There's no half of a blue, then why did you pick the blue? [Alan puts a purple rod up to his model of a blue rod and three green rods. Erik grabs it back] And give this back - you don't need it.

3.0.222	Alan:	There's nothing else that can be divided into thirds and halves.
3.0.223	Erik:	Yeah, I'm sure there isn't.
3.0.224	Alan:	You'd have to make your own rod for each one 'em.
3.0.225	Dr. Landis	[Sitting with Danielle and Gregory, who have built a model of a green rod, three red rods, and two light green rods]
3.0.226	Erik:	You don't need the blue. We're not using the blue. We're using the brown.
3.0.227	Alan:	The brown can be divided into thirds?
3.0.228	Erik:	Can blue?
3.0.229	Alan:	Yes.
3.0.230	Erik:	Can blue be divided into halves?
3.0.231	Alan:	No. Can brown be divided into thirds?
3.0.232	Erik:	It doesn't matter. You bet it can. If I just find the right rod. [Erik experiments silently.] Ok, what rod are we going to use then? It can't be divided into anything.
3.0.233	Alan:	Your own rod. [hums]
3.0.234	Erik:	What are you doing? Get off! [Some arguing about who owns the rods. Alan constructs a balance, David complains that he's copying him.]
3.0.236		[David begins to construct a balance beams with rods for their model. Meredith builds an upright staircase model] Some of their interaction is not transcribed. The other students work on the problem as they had worked on the others]
3.0.237	Meredith	Let's do the model that I did before. Remember?
3.0.238	David:	[To Meredith] That's nine remember. You can only make it with the even bars.
3.0.239	Brian C.:	[To Jakki] Now let's get three of these [light greens] and make a half out of that, if we can.
3.0.240	Jacquelyn:	Wait, let me do the red ones.
3.0.241	T/R 1:	Ok, please remember the ground rules. As I walk around and I watch what you're doing, are we allowed to switch candy bars?
3.0.242	Students:	No.
3.0.243	T/R 1:	Are we allowed, if we're making a half and third, are we allowed to have different size candy bars?
3.0.244	Students:	No.
3.0.245	T/R 1:	No. We have to not- we are not allowed to switch candy bars. Remember that's the rule from now on in mathematics.

3.0.246	Brian C.:	And you take two light greens and that would be equal, and they'd be equal. And if you take the purple and the dark greens and you made the purple a third and then the greens a half, then they'd be equal. [Brian attempts to make thirds and halves "equal" so that they both represent the same whole.]
3.0.247	Jacquelyn:	That's what you're gonna tell the class (laugh). We can raise our hands. [They raise their hands.]
3.0.248	Brian C.:	Wait, let's, in the meantime, let me try to figure out another way. How about three of these [white rods]. I don't think there's any other ways.
3.0.249	Jacquelyn:	Only three reds, and two light green, and three purples, two dark greens
3.0.250	Brian C.:	Wait, wait, wait, wait, if we take three blacks, and we take two oranges, and that'd be, it's not equal
3.0.251	Jacquelyn:	How many ways can you get?
3.0.252	Brian C.:	It's not equal!
3.0.253	Jacquelyn:	Oh!
3.0.254	Brian C.:	What's smaller than this [black rod]?
3.0.255	Jacquelyn:	Dark green.
3.0.256	Brian C.:	Ok. What's-
3.0.257	Jacquelyn:	And smaller than that? Yellow. I'm trying yellow. What half of an orange? This [She has a model of one orange and two yellows]. What's third of an orange? Oh, do you have one more purple? No, that wouldn't work either.
3.0.258	T/R 1:	What do you have here?
3.0.259	Brian C.:	We found out if you take two dark greens and you make each one a half and you make these [purple] a third, they'd be equal.
3.0.260	T/R 1:	So which is bigger?
3.0.261	Brian C.:	They're equal in these colors [indicates the length of the whole – which train is he using?]
3.0.262	T/R 1:	What number name is this [a dark green rod]?
3.0.263	Brian C.:	A half.
3.0.264	T/R 1:	What number name is this [purple]?
3.0.265	Jacquelyn:	One third.
3.0.266	Brian C.:	A third.
3.0.267	T/R 1:	Which is bigger a half or a third?
3.0.268	Brian C.:	The half.
3.0.269	T/R 1:	The half is bigger
3.0.270	Jacquelyn:	Oh yeah.

3.0.271	T/R 1:	Right, by how much?
3.0.272	Jacquelyn:	By an inch.
3.0.273	Brian C.:	No, by a….
3.0.274	T/R 1:	By a red. And what number name would you give the red then?
3.0.275	Brian C.:	A quarter.
3.0.276	T/R 1:	Remember what you called one.
3.0.277	Jacquelyn:	A quarter.
3.0.278	T/R 1:	What number name, prove to me that red is a quarter. [Jacquelyn moves closer to Brian to see what he is doing.] If this is red, that's a half [the dark green rod]. Prove to me. Sure it's a quarter?
3.0.279	Jacquelyn:	Oh.
3.0.280	T/R 1:	Change your mind?
3.0.281	Jacquelyn, Brian C.:	Yeah.
3.0.282	T/R 1:	Okay, great. Okay, can you explain that?
3.0.283	Brian C.:	Maybe…
3.0.284	Jacquelyn:	Not real-
3.0.285	Brian C.:	[T/R 1 walks away as the students continue] Okay, so what would these be? [Jacquelyn counts the red rods.] They're six.
3.0.286	Jakki:	One fourth. And one half. A half plus a fourth. Oh God.
3.0.287	Brian C.:	Wouldn't they be one third? A third? No. [Jacquelyn sighs as Brian C. continues thinking.] What would we call that? Two of these white ones.
3.0.289	T/R 1:	Ok, uh, I know we're not going to have enough time to hear from all these wonderful solutions I'm seeing, but I'm hoping that on Monday if you don't forgotten what you've done you can start thinking about it, and Dr. Landis said she may stop by here on Monday, and Dr. Martino will be here, and we hope you'll share your solutions and write about it, but let's hear a real quick one from, from Laura and from Jessica?
3.0.290	Jessica:	[Laura and Jessica use a train of three purples and a train of two dark greens as their model] Well this, this here would be one third, the pink would be one third. And one half would be the green, the dark green.
3.0.291	T/R 1:	So which is bigger?
3.0.292	Jessica:	The one half.
3.0.293	T/R 1:	Okay now the next question I asked, the dark green is bigger. You can all see that right? How much bigger is it? So the next question, how much bigger?

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3.0.294	Jessica:	[Jessica shows that the red rod fills in the space] It's the size of the red.
3.0.295	T/R 1:	It's that much bigger. It's a red bigger. Okay so the question is what number name would you give to the red? We know it's bigger by a red. What number name would you give to the red? [reconstruct original model] So you're saying it's a red bigger. You're saying a half is bigger than a third because the green is a half and the, you called it, the pink is a third and it's a red bigger. What number name would you give to the red and why? You don't have to tell me that now. Do you think you know? Why don't you think about that. We're going to have to stop I'm afraid because of time. How many of you think you know what number name you would give to the piece that's bigger? How many of you think you've answered that problem? Gregory did you figure that out yet? James, did you figure that out? Okay, this is what I want you to think about this weekend. If you had to give this a number- What did you call one? [Laura and Jessica point to the orange and red train] What did you call one here? One candy bar. Okay this is one, right? So the question I'm asking you is if that's [the orange and red train] 'one', what would be the number name would you give to red? Do you understand the question? How many of you think you know the answer to that? Alan?
3.0.296	Alan:	One sixth.
3.0.297	T/R 1:	Alan thinks one sixth. Why do you think so Alan?
3.0.298	Alan:	Because we know already that, that, three reds would make a dark green and if there are two dark greens to make the orange and the, and the red rod then it would take six red rods to make the orange and the red rod.
3.0.299	T/R 1:	So you think one sixth. You think one sixth. That's something we'll have to think about. I'm afraid we have to stop. But, we're gonna start Monday with this problem and we're going to ask you to build it again and come up with your solution, and I think I saw about four different solutions and I would like you to be ready to come up and share them. I want to thank you for a fun week and I hope you have a great weekend.