

Description: Clip 2 Brian's conjecture Parent Tape: Building large models to show equivalence: A generalization Date: 1993-10-11 Location: Colts Neck Elementary School Researcher: Professor Carolyn Maher	Transcriber(s): Yankelewitz, Dina Verifier(s): Yedman, Madeline Date Transcribed: Spring 2009 Page: 1 of 4
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- 11.0.67 T/R 1: Ok, my next question is, can you make one that shows the comparison of three quarters and two thirds, that's bigger than this? Are there others?
- 11.0.68 Students: Yeah.
- 11.0.69 Michael: I know, I just did one.
- 11.0.70 T/R 1: Ok, um, you think there are others, ok. You have another one?
- 11.0.71 Michael: Yeah.
- 11.0.72 T/R 1: I would like one, that uh, is the next smallest.
- 11.0.73 Michael: Next sma-
- 11.0.74 T/R 1: Can you predict something about the one that would be next smallest? I mean next largest, I'm sorry. The one that's the next largest. Brian, what's your prediction?
- 11.0.75 Brian: I think it would be twenty-four.
- 11.0.76 T/R 1: You think what would be twenty-fourths? What rods?
- 11.0.77 Brian: Well, the next, the next, the next larger one will be, I think the whole will be twenty-four.
- 11.0.78 T/R 1: But we, we call the whole one.
- 11.0.79 Brian: Yeah, I know, but what I mean
- 11.0.80 Michael: No, no, it would take twenty four ones to equal a whole.
- 11.0.81 T/R 1: What would be, what would be twenty-fourths?
- 11.0.82 Brian: Like the, there would be, there would take twenty-four white cubes to equal up to a whole
- 11.0.83 Student: I, I also have a strategy
- 11.0.84 T/R 1: Wait, wait a second, you're saying twenty-four white ones would equal your train.
- 11.0.85 Brian: Yeah, yeah.
- 11.0.86 T/R 1: That you're going to call one. So then what would one white one be called in that next model do you think?
- 11.0.87 Michael: One twelfth
- 11.0.88 Brian: I think, um
- 11.0.89 T/R 1: What would that white one be called?
- 11.0.90 Michael: Well it's not gonna, we're not gonna. Let me see this [Michael begins to build the model]
- 11.0.91 Brian: Um, one twenty-fourth I think.
- 11.0.92 T/R 1: Brian thinks then white ones in the next train would be one twenty-fourth. You think that too?
- 11.0.93 Erik: Yeah, Alan and I made that same model. We made the same model that was, I think it was two oranges and like one purple, yeah it was two oranges and one purple and then it had the thirds
- 11.0.94 T/R 1: Ok, why don't the rest of you sit down and let's have Erik and Alan make that model. Did you make it too, Michael? Is that what you had?

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- 11.0.95 David: I made that also
- 11.0.96 T/R 1: Ok, you watch what they're doing, and seeing if -leave that other one up there ohhh! Ok, can you leave the other one up there maybe while you're making that?
- 11.0.97 Erik: Sure we can.
- 11.0.98 T/R 1: Keep the other one up there. Erik: Just move this over.
- 11.0.99 T/R 1: James, why don't you make the other one too, so it doesn't go away on the bottom.
- 11.0.100 Brian: Kaitlin, can I borrow some oranges. [whispering, inaudible] 2 more, no [starts to count something in his model] 6 more
- 11.0.101 T/R 1: The rest of you could be making these if you haven't already, in your seats just so you have them in front of you. I would suggest you to make both models in your seats and keep them in front of you.
- 11.0.149 Amy: Wait, no, twelve plus two, wait twelve plus twelve, twenty-four, twenty-four here. You've got twenty-four plus twenty-four is forty-eight.
- 11.0.150 James: I need those. I need another red. I need thirty-six whites.
- 11.0.151 Amy: Thirty-six? Why?
- 11.0.152 Jacquelyn: Why? Why are you saying thirty-six?
- 11.0.153 Amy: I need the reds, I'm trying to prove a point here.
- 11.0.154 Jacquelyn: You can have all the reds you want. I'm going to sit here and watch you guys.
- 11.0.155 James: We're in battle
- 11.0.157 T/R 1: Ok. Now I know, I know you're building these models and I know you don't have enough rods so I know that you have to uh, share some of your uh rods and sometimes you can only build one model on a desk, and I know some of you are able to imagine the models now too. How many of you could imagine what it looks like, even though you haven't quite built it? Raise your hand if you could imagine what it looks like. [A few children raise their hands] I'm kind of curious, what do you imagine that you don't have there, Jessica? I see that you built a model that has two oranges and a purple that you're calling one.
- 11.0.158 Jessica: Well, I imagine the white ones.
- 11.0.159 T/R 1: And you're imagining the whites, and how many do you imagine are there?
- 11.0.160 Jessica: Twenty-four.
- 11.0.161 T/R 1: You're imagining twenty-four. And Andrew, I see, built it. And how many do you have there, Andrew?
- 11.0.162 Andrew: Um, twenty-four whites.

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- 11.0.163 T/R 1: Andrew has twenty-four. And can you see on the overhead how many whites, those of you who don't have enough? Can you see? I know it's hard, I have trouble counting when it's not nearby when there's so many little pieces. But you built it too, Amy, how many do you have, Amy?
- 11.0.164 Amy: Twenty-four.
- 11.0.165 T/R 1: Twenty-four? Yes?
- 11.0.166 Student: Twenty-four.
- 11.0.167 T/R 1: Twenty-four also. How many of you are convinced that with the model, that Alan and Erik have up on the overhead, how many of you are convinced of the number of white cubes there? [Two hands visible are raised]. How many of you are convinced how many are up there? Raise your hand if you're convinced how many. Because if you're not, you may want to go up and count them to be sure or go to someone else who built the model and count them.
- 11.0.168 Michael: I, I built the model.
- 11.0.169 T/R 1: How many of you have a model that shows that there are twenty-four? Raise your hand if you have a model nearby. Ok, so Sarah and Beth, you built one, you don't have enough?
- 11.0.170 Beth: No.
- 11.0.171 T/R 1: I'm sure Andrew will lend you a few if you want to complete your model. I guess you need some whites and some reds. Ok, they don't need quite that many. Ok, do you believe there are - Sarah and Beth?
- 11.0.172 Beth: Yeah [Sarah nods]
- 11.0.173 T/R 1: Are you convinced, Kelly and Graham? You're convinced? Let's see, Michael and Brian I know you're convinced, I saw you had that built. Kimberly and Audra, are you convinced? [Audra nods] What about Gregory and Danielle - are you convinced [mmm hmmm] You're convinced also? Erin and Jackie? Ok, I know David and Meredith are convinced, and ok, so it sounds as if everyone is convinced that that's the case. So now, let's talk about, um, Erik's theory, Erik says now that the white one on this model, the larger model, where we called one the train that was made up of two orange and one purple, right? That particular train that he built? That he's now going to give the white one the number name, what, class?
- 11.0.174 Students: One twenty-fourth.
- 11.0.175 T/R 1: One twenty-fourth. So you agree with Brian's conjecture. Right? Brian says one twenty-fourth. How many of you agree with Brian's conjecture? [All students visible raise hands] The white one in that model has the number name one twenty-fourth. Now how does that

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- help you solve the problem what is the difference between two thirds and three quarters, gentlemen who are up there? We know the white one has number name one twenty-fourth in that model.
- 11.0.176 Erik: Uh, see what we did here was we have the fourths and the thirds.
- 11.0.177 Alan: Yes, mmm hmmm.
- 11.0.178 Erik: And then the twelfths and they, they said that the twelfths would do it.
- 11.0.179 Alan: mmm hmmm
- 11.0.180 Erik: So the twelfths would be the reds which is one, which is two whites, and then people think the twelfths would be the answer, but if you take two of the twenty-fourths
- 11.0.181 Alan: It would equal up to a red rod.
- 11.0.182 Erik: It would equal up to a red rod.
- 11.0.183 Alan: Which would be equal to twelfths.
- 11.0.184 Erik: Which would be one twelfth. So, see, we think, I think that the answer is either two twenty-fourths or one twelfth.
- 11.0.185 Alan: Mmm hmmm.
- 11.0.186 T/R 1: How many of you agree with what they said?
- 11.0.187 Alan: So there are two answers. Both the same
- 11.0.188 T/R 1: You agree the answer is either two twenty-fourths or one twelfth. Does anyone think the answer is one twenty fourth? Ok, that's very interesting, that's very nice, gentlemen, thank you that's lovely.