

<p><b>Description: Clip 1 of 4 Is there a larger model?</b>  <b>Parent Tape: Building Large Models to Show Equivalence: An Exploration (classroom view)</b>  <b>Date: 1993-10-07</b>  <b>Location: Colts Neck Elementary School</b>  <b>Researcher: Professor Carolyn Maher</b></p>	<p><b>Transcriber(s): Yankelewitz, Dina</b>  <b>Verifier(s): Yedman, Madeline</b>  <b>Date Transcribed: Spring 2009</b>  <b>Page: 1 of 6</b></p>
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9.2.169 T/R 1: Gentlemen, gentlemen.  
9.2.170 Alan: Ok, that's the second one.  
9.2.171 T/R 1: Oh, what do we have here? Tell me what we have here.  
9.2.172 Both: An orange and a red  
9.2.173 Alan: And purples for thirds  
9.2.174 Erik: And three purples  
9.2.175 Alan: And light green for fourths.  
9.2.176 T/R 1: Ok, right.  
9.2.177 Alan: And, um, here how I used to figure it out.  
9.2.178 Erik: Twelfths! Oh no, those are singles  
9.2.179 T/R 1: Honestly, Erik, I could imagine if you explained to me what I'm supposed to imagine.  
9.2.180 Alan: Ok.  
9.2.181 T/R 1: Ok? I'll try real hard, but I'll try to imagine  
9.2.182 Alan: Suppose there are twelfths under that.  
9.2.183 T/R 1: I can imagine that.  
9.2.184 Alan: And you took out two of those purples and three light greens  
9.2.185 T/R 1: I could imagine  
9.2.186 Alan: It would take one of those twelfths to fill in the gap between the, between the um um  
9.2.187 Erik: See?  
9.2.188 Alan: Two thirds and three fourths  
9.2.189 T/R 1: I see that.  
9.2.190 Erik: And we came to up here  
9.2.191 Alan: So Three fourths is bigger than two thirds by one twelfth  
9.2.192 Erik: And what we came to up here, two thirds and three fourths, it would be bigger by one twelfth or-  
9.2.193 Both: Two twenty-fourths.  
9.2.194 Erik: Because two of 'em equal up to a red like the orange and the  
9.2.195 T/R 1: Why is it a red here and why is it a white here?  
9.2.196 Alan: Well  
9.2.197 Erik: Well, because, see each model is different  
9.2.198 T/R 1: In what way?  
9.2.199 Erik: Because this model is bigger than this model  
9.2.200 Alan: Erik! You could put the reds on that model and make it sixths!  
9.2.201 Erik: But then it would be- so why would we need sixths on that model?  
9.2.202 Alan: Oh yeah, you're right. So either it's one twelfth or one twenty-fourths  
9.2.203 Erik: Two twenty-fourths

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- 9.2.204 Alan: Two twenty-fourths on this one. This is probably the only model that can get the twenty-fourths cuz you can't, you'd have to halve each white to get twenty-fourths there.
- 9.2.205 Erik: But what if you get three three, um uh, three oranges together
- 9.2.206 Alan: We tried that already
- 9.2.207 Erik: No we didn't we could get like fiftieths.
- 9.2.208 T/R 1: You think it would be fiftieths if there would be three oranges?
- 9.2.209 Erik: Well, I don't know exactly but it would be a lot.
- 9.2.210 T/R 1: Do you still expect that you would get the same answer?
- 9.2.211 Erik: Well, we can divide it.
- 9.2.212 Alan: Looking at this it would not be fiftieths.
- 9.2.213 T/R 1: Why not?
- 9.2.214 Alan: I'm imagining a this (takes another orange) instead of the purple there.
- 9.2.215 T/R 1: Instead of the purple?
- 9.2.216 Alan: It would take another six of those so it would only be thirtieths
- 9.2.217 T/R 1: I'd like you to try that other model.
- 9.2.218 Alan: Three oranges?
- 9.2.219 T/R 1: Well whatever you think it is, um, I'd like you find a third model and I think Dr. Martino said to think big. I'd like you to find a third model thinking big.
- 9.2.220 Alan: Ok
- 9.2.221 Erik: We could think real big.
- 9.2.222 T/R 1: And see what you come up if you work on that.
- 9.2.223 Erik: Dr. Martino said the key is think big, so
- 9.2.224 T/R 1: Well, maybe, we'll see if it works.
- 9.2.225 Erik: So now were gonna think real big!
- 9.2.226 Alan: Yeah, four of 'em
- 9.2.227 Erik: Three, give me three of these. Let me just put these back...
- 9.2.228 Alan: Four of 'em that would be right!
- 9.2.229 Erik: Fiftieths, I told ya.
- 9.2.230 Alan: Four of 'em, make four, then it would be two yellows
- 9.2.231 Erik: Friar tuck, may I have them? I think Friar Tuck's going to have to go around
- 9.2.232 Alan: Two four six eight, there would be eighths
- 9.2.233 Erik: Alan, Friar Tuck's have to go around, ok?
- 9.2.234 Alan: Uh, what do you need?
- 9.2.235 Erik: I'm probably going to need whites.
- 9.2.236 Alan: How many?
- 9.2.237 Erik: Well, it's going to be fiftieths, and we only have twenty-eight.

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9.2.238 Alan: Ok.

9.2.239 Erik: So we're going to need about fifty thousand. We're going for three.

9.2.240 Alan: I think Erik you better go.

9.2.241 Erik: No

9.2.242 Voice: You don't need fifty singles. We trust you on that.

9.2.243 Alan: Ok.

9.2.244 Voice: Because otherwise no one's going to have any.

9.2.245 Alan: Right.

9.2.246 Erik: I know what the thirds are.

9.2.247 Alan: What?

9.2.248 Erik: Oranges

9.2.249 Alan: Oranges?

9.2.250 Jessica: Are you figuring out the big one again?

9.2.251 Erik: No

9.2.252 Alan: No, we're trying to...

9.2.253 Erik: Three oranges.

9.2.254 Alan Erik, use the yellows. Think big.

9.2.255 T/R 1: A suggestion I have, Alan and Erik, if you can find another table who's solving the same problem then maybe you can combine

9.2.256 Erik: Well, we need a lot more Cuisenaire Rods. Well, let's work with three and then we'll do four.

9.2.257 Alan: Right.

9.2.258 Erik: Ok, what would be the thirds. Thirds would easily be the oranges. One two three.

9.2.259 T/R 1: Well, just build your big model and we could use Meredith and David's smaller model. And then you could come together to put all your models together.

9.2.260 Alan: And then show them on the overhead?

9.2.261 T/R 1: Yes.

9.2.262 Alan: Ok.

9.2.263 T/R 1: So work on the big model. See what you can do.

9.2.264 Alan: Erik,

9.2.265 Erik: we need oranges. [to next group] Do you have three oranges we can borrow?

9.2.266 T/R 1: Here

9.2.267 Erik: Oh, good. I'll just pour them into the little - Ah!

9.2.268 Alan: Ok,

9.2.269 Erik: Now we need,

9.2.270 Alan: Ok, perfect! There are thirds

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- 9.2.271 Erik: Right, now fourths, would be two smaller than an orange, a brown, no, yeah! Three, no that's too big. Two smaller, what's two smaller than a brown. Not a black, but a yellow, no, not a yellow
- 9.2.272 Alan: Yes,
- 9.2.273 Erik: No
- 9.2.274 Alan: A dark green - look it look it for your answer.
- 9.2.275 Erik: The dark green would be the fourths?
- 9.2.276 Alan: Mmm hmmm. Believe it or not, they are. They might be the fifths.
- 9.2.277 Erik: They're the fifths. Then what would be the-
- 9.2.278 Alan: Blues would be the
- 9.2.279 Erik: This would only be thirty. This would only be thirty because ten twenty thirty.
- 9.2.280 Alan: Thirty plus twelve. Forty-two
- 9.2.281 Erik: Wait a minute. Since we got these two packs, couldn't we have, Alan, couldn't we have like, um, Alan, couldn't we have, ten twenty thirty forty fifty sixty, wait, ten twenty thirty forty fifty sixty seventy if we all put them
- 9.2.282 Alan: Erik, those aren't tens, those are twelves
- 9.2.283 Erik: Yeah those are tens.
- 9.2.284 Alan: You know what tens are? The browns.
- 9.2.285 Erik: Look at this.
- 9.2.286 Alan: Prove it.
- 9.2.287 Erik: Look at this
- 9.2.288 Alan: Put ten up to that.
- 9.2.289 Erik: Ok.
- 9.2.290 Alan: Ten. Put ten. Put ten up to that. [Erik does so] Maybe it is ten. Ok, ten twenty thirty forty fifty, it would have to be ten,
- 9.2.291 Erik: Ten twenty thirty forty fifty sixty seventy
- 9.2.292 Alan: Here we go again.
- 9.2.293 Erik: Let's just start with thirty.
- 9.2.294 Alan: Yeah, let's eliminate two of the tens.
- 9.2.295 Erik: Ok, what would be the fourths?
- 9.2.296 Alan: Fourths of that
- 9.2.297 Erik: Brown could be in here somewhere
- 9.2.298 Alan: Nope, nnnnope
- 9.2.299 Erik: Blues
- 9.2.300 Alan: Nope. Too big. Eew! Erik, wipe those rods off immediately. Erik, you're thinking. Hold it...
- 9.2.301 Erik Blacks

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- 9.2.302 Alan Blacks blacks blacks blacks, right right right, go go go go go. Yup, told you. They're one short. Oh
- 9.2.303 Erik: Four long? No. Hah. Alan. Whoops, never mind, that's a five. We didn't forget how to make a big one. We're just experimenting. Perfect! Now just do that, one two three, [noise] No, one larger than this would be the [noise. Erik has built a model of three oranges and a dark green] I got the fourths.
- 9.2.304 Alan: Now make the thirds.
- 9.2.305 Erik: Ok, what if we did this? I bet I could make the thirds
- 9.2.306 Alan: I think uh, yo, Erik, I think we were just tipped. Erik, come here, go go go. Go go. Alright.
- 9.2.307 Erik: Bigger than a dark green, well, how much bigger do I need it then, how much bigger can it get?
- 9.2.308 Alan: Erik, hold it, the thirds.
- 9.2.309 Erik: I am trying to do something.
- 9.2.310 Alan: Thirds thirds thirds. Wait a second, three oranges would have to be the thirds.
- 9.2.311 Erik: What? What?
- 9.2.312 Alan: [looking at model that Jessica and Andrew built] That would be two oranges and a yellow. Two oranges and a purple
- 9.2.313 Erik: We already did that.
- 9.2.314 T/R 1: How are you gentlemen doing, did you get another new model?
- 9.2.315 Alan: Yeah
- 9.2.316 Erik: Not exactly, actually. You see
- 9.2.317 T/R 1: You might want to study, you might want to study Andrew's model to see what you have to do to make it bigger.
- 9.2.318 Erik: Well, that's the exact same thing we did. We did two oranges and a purple.
- 9.2.319 T/R 1: Yeah, but I want you to make one bigger than his.
- 9.2.320 Erik: We're trying, but we can only divide it into one two three four fifths. I can divide it into thirds, but I can't divide it into fourths.
- 9.2.321 T/R 1: Well, maybe you gotta make it bigger. See my problem? This is a good challenge for you two. Study that, yeah.
- 9.2.322 Erik Those are twelfths.
- 9.2.323 Alan: Make six of those and it would be ten greens.
- 9.2.324 Erik We want thirds and fourths, not tens.
- 9.2.325 T/R 1: I wonder if Meredith and David made any progress. Meredith and David [walks away]

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- 9.2.326 Alan: Thirds. Erik, there's one prob. Using oranges, you can't third. You can't third, look, even if you subtracted two you couldn't third that. Because orange is twelve, there's five.
- 9.2.327 Erik: Oranges are tens!
- 9.2.328 Alan: I know, tens, you can make it into fourths but you couldn't third it.
- 9.2.329 Erik: Wait you gave me, oh no.
- 9.2.330 Alan: You just gave up
- 9.2.331 Erik: Yup.
- 9.2.332 Alan: Hold on a sec, look, look, you take that off, you could use that
- 9.2.333 Erik: That's way too big, Andrew, I don't think you can divide it into anything
- 9.2.334 Andrew: Yeah, if you make two browns, two blues are thirds. If you can make a train for a whole you can make a train for a third and a fourth.
- 9.2.335 Erik: Ohhh!
- 9.2.336 [taken from other view, but can be heard partially here] That's very interesting. That's an interesting theory. Why don't you test the theory with Michael and Alan, I think they would like to hear this theory. Would you like to hear - I think David has a theory - why don't you come over here. They have an interesting -
- 9.2.337 Erik: So do they have a theory.