Line	Time	Speaker	Transcript	Code
1		David	I don't think that you can do that because if you put two yellows that'd be too big, but then if you put two purples that's uh, that's uh, that'd be too short and	
2		T/R 1	What about something between purple and yellow?	
3		David	I don't think there is anything.	
4		T/R 1	Why not? [David pauses.]	
5			Show us what you have there, David. Why do you think there isn't any? Cause I think you built it to show us. Can you show us your yellow and your purple?	
6		David	Well, I was thinking. Cause there's usually, the tall one… [inaudible]	
7		T/R 1	David, why don't you come up here and explain your reasoning. David doesn't think it's possible because Mr. Purdy said, "Well, maybe it's not possible." So let's, let's see. Let's help him out a little. Here's the two yellows and here's the two purples. What's, what's your reasoning? Let's listen to what David has to say.	
8		David	[F - Meredith builds some erect models on her desk as David explains] [He comes to the overhead and puts a blue rod onto it. He places a yellow rod and a purple rod, end to end, with one white rod] All right. You see usually, um, they are only one, with the shorter one, only one block apart. Like that and so these, but then if you have for the blues, like if you have two yellows, it would be too tall and if you have two purples [He puts two yellow rods, end to end, next to the blue rod and then two purples next to another blue rod]	
9		T/R 1	Do you need another purple? Here	

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10		David	That'd be too short and then there's really nothing in between 'cause if you do [He builds a 'staircase' of rods, beginning with the longest, orange rod, then places blue, etc. until he reaches the shortest rod, the white one.] And then here [between the yellow and the purple rods], there's nothing in between, right here, so there's no way that you can do that.	
11		T/R 1	Are you all convinced? Jessica? Jessica has a question for you, David.	
12		Jessica	But if you put three greens to it you could	
13		David	Yeah, but Erik said, Erik wants the half. [inaudible]…'cause I figured that out, too.	
14		Erik	I think you could do it, but they're… See, I figure if you take a yellow and a purple it's equal [to the length of the blue rod]. They're not exactly the same, but they're both halves. Because the purple would be half of this even though the yellow is bigger because if you put the purple on the bottom and the yellow on top it's equal, so they're both halves, but only one's bigger than the other. So it equals up to the same thing.	
15		T/R 1	Did you all hear what Erik said? Erik, do you want to say that one more time? How many heard what Erik said? How many would like to hear it a second time? Ok, Erik, would you say that one more time to David and the rest of us?	
16		Erik	If this would be one whole [the blue rod], you could take the yellow to be and you could call it one half [holding a yellow rod next to the blue]. But if you took another yellow it would be too big. But if you took a purple with the yellow, and put it on top of yellow, it equaled to the blue. So, the purple would be a half and the yellow would be a	

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			half, except that the yellow would just be one bigger than the other. Or maybe you could call this three quarters [holding the yellow rod] and you could call this one quarter [holding the purple rod]. And, but it would still equal up to the whole. [F - As Erik speaks, Jessica models the blue rod and the yellow and purple train at her desk]	
17		T/R 1	What do you think, David?	
18		David	I didn't think of that. [Erik chuckles. David places a yellow and a purple rod end to end, next to a blue rod.] Like that. Cause I was thinking that, um, that you would need the same.	
19		T/R 1	You think you would need the same?	
20		David	Yeah, but that might	
21		Erik	You don't really.	
22		T/R 1	You don't need the same? In other words, I could call this a half [the yellow rod] and I can call this a half [the purple rod]. Suppose this is a brick of gold and we're going to share it, Erik. And I'm going to take the yellow half and you get the purple half. Fair?	
23		Erik	Yeah.	
24		T/R 1	Do the rest of you agree? Do you like that? [Chorus of no's] Beth? No. Beth doesn't like that. Kimberly? Does it matter? Erik doesn't care. Do you care?	
25		Erik	Well, well I mean-	
26		Kimberly	Yes, cause the pink is, the purple is smaller than the yellow and the person who got the purple wouldn't have as much.	
27		Erik	Yeah, but you could call this three quarters and this one quarter and it would still be equal up to the whole. Then it, just wouldn't be halves, it would be quarters. But it would still look like you're dividing it into halves,	

			but you're really dividing into quarters.	
28		F T/R 1	What do you think, Brian?	
29		Brian	Well, you could, you could use say, if there, if there was three people – you could at least split it into thirds, you could at least split it into thirds.	
30		T/R 1	Is that, is that the question?	
31		David	Well, no. It's not. You see we're trying to do it in halves.	
32		T/R 1	[To Brian] We're trying to work on halves.	
33		Brian	Oh.	
34		T/R 1	Okay. Alan.	
35		Alan	When you're dividing things into halves, both halves have to be equal – in order to be considered a half.	
36		Jessica	[inaudible] this isn't a half. Those two aren't both even halves.	
37		T/R 1	Erik?	
38		Erik	Yeah?	
39		T/R 1	What do you think of that?	
40		Erik	Well	
41		T/R 1	Can you divide things in halves and have them different sizes? I think that's what Jessica is asking and Alan and David.	
42		Erik	Well, see. This isn't exactly dividing into halves. But I'm still using two blocks, but not… I'm dividing it in half still using two blocks, but one block is bigger than the other block. So it's like using three quarters and one quarter, but you're only using two blocks so it's almost like dividing it in half.	
43		T/R 1	Andrew? What do you think about that, Andrew?	
44		Andrew	Well if he's saying, he's saying that he wants a half, but if he puts that, a purple and a yellow, he won't have a half. He would have three quarters and one quarter. And he	

			wants a half.	
45		T/R 1	It seems to me we have some differences here, don't we? Um. How many of you agree with Erik? [no hands are raised, children giggle] How many of you disagree with Erik? [all hands are raised, more giggling]. Hm, okay, what's the issue, do you think, here in the disagreement? Can somebody summarize the issue? Alan, do you want to try again?	
46		Alan	Um. You can't, if you're div, you can't divide that into halves, because you'd have to use rods that are of different sizes, but you could divide it into thirds using rods that are the same size which, which is the light green rods.	
47		Erik	But I didn't want thirds.	
48		T/R 1	[inaudible] can be very helpful to Mr. Purdy. Because I think, go ahead, David. What do you think?	
49		David	[at OHP, pointing to the rods on the OHP] I think that some of these that you can't do like this would be odd. [David moves the white rod to one side.] this could be even. [David begins a new group with the red rod.] This would be odd. [He moves the light green rod next to the white rod.] Be even. [He moves the purple rod next to the red rod. Continuing in this manner, he moves the yellow, black and blue rods next to the white and light green rods. He moves the dark green, brown and orange rods next to the red and purple rods.] This, be, you see, then when you get up to here, blue would be odd, but like with brown, you could take these two [He places two purple rods next to the brown rod.] and put them together and that would be even. Take the	

			orange, put the yellows, with the orange and that would be even [He does this as he is speaking].	
50		T/R 1	Okay, let me see, I think that we have. Maybe, Erik, the way we can resolve this is, I don't think I'm hearing you say, Erik, that you want to call yellow one half and purple one half. I don't, I don't hear you say that. You're not saying that, are you?	
51		Erik	No [agreeing that he is not saying that].	
52		T/R 1	You're saying that you agree with the rest of the class that if you call something one half of something	
53		Erik	Yeah	
54		T/R 1	They have to be the same size.	
55		Erik	Yeah, yeah.	
56		T/R 1	Right?	
57		Erik	Yeah.	
58		T/R 1	You are in essence answering a different question, maybe?	
59		Erik	Yeah.	
60		T/R 1	Where you were saying, "Well, if I call this one, there are other rods that make up one and maybe they're not the same size." I think you're very generous, Erik. Not as generous as Beth and Kimberly. And if we're talking about bricks of gold, letting me have the larger one if we're sharing one half. I, I really appreciate your generosity. I know Mr. Purdy wouldn't be so generous. Is that right, Mr. Purdy?	
61		Tom	That's right.	
62		T/R 1	That's right. But I do appreciate your generosity, so we'll have to talk later about some, some sharing. Um. We could go into business together, Erik. But I think that what we're saying from this is the point that David is making and Alan and some of you	

			have expressed very nicely, that if we are calling a rod one half, okay, if we call a rod one half, of, let's say, a rod that we called one, was given a number rod one, there are two conditions that have to be satisfied. Can you tell me what those conditions are? And I think one more time as a summary because you're saying that purple could not be considered one half because one of the conditions isn't met, right? I mean, they're both [two purple rods] the same size.	
63		David	Um, hm. But they don't, um, if you put like that [He puts two purple rods together.], they don't, uh, they're not as big as the blue.	
64		T/R 1	Do you agree? Do you all see the second condition that's not met? See the space in here? Or if you can put them like this, see that space? And I think that David has made another very powerful, interesting argument that I'd like you to think about.	