Description: Sharing Strategies (Clip 3 of 3) **Parent Tape: Fraction problems: Sharing Candy Bars (Front View)** **Date: 1993-10-29** **Location: Colts Neck Elementary School** **Researcher: Professor Carolyn Maher**	**Transcriber(s): Yankelewitz, Dina** **Verifier(s): Reid, Adrienne; Farhat, Marcelle** **Date Transcribed: Spring 2009** **Page: 1 of 6**

1.		T/R 1:	So what do you have here? What did you come up with, Kelly?
2.		Kelly:	One thirty-sixth.
3.		T/R 1:	How many? What's the difference?
4.	1:02:27	Graham:	Well, there's thirty-six. [In addition to the larger model of a train of three orange rods and a dark green rod, nine purple rods, four blue rods, and thirty-six white rods, there is a small model of a blue rod, a purple rod, and five white rods]
5.	1:02:30	T/R 1:	There's thirty-six of these?
6.	1:02:30	Graham:	Yeah, the whites.
7.	1:02:32	T/R 1:	And what's the difference between the two? How many of the thirty-sixths?
8.	1:02:38	Graham:	Five.
9.	1:02:39	T/R 1:	So, the difference between one ninth and one quarter is how much?
10.	1:02:40	Graham:	Five
11.		Kimberly:	Thirty-sixths.
12.		T/R 1:	Five thirty-sixths.
13.		Meredith:	And one fifth.
14.		T/R 1:	Well, where's the one fifth?
15.		Meredith:	Well, if you had one
16.		Kelly:	There's no one fifth.
17.	1:02:49	T/R 1:	Do you think that this is five thirty-sixths. If you could imagine one fifth in here,
18.	1:02:56	Meredith:	Yeah.
19.	1:02:56	T/R 1:	Right?
20.	1:02:56	Meredith:	Uh huh
21.	1:02:56	T/R 1:	You could imagine one fourth, it's the blue, right? Is this [yellow rod] one fifth? For one fifth, [T/R 1 places five yellow rods on the model] Could that be one fifth? Is that big enough to be one fifth?
22.		Kelly:	I don't think it's one fifth.
23.	1:03:14	Meredith:	Well, but it does have uh five thirty-sixths in there.
24.	1:03:19	T/R 1:	It's this length, but this has the number name, what, what, the yellow has what number name?
25.	1:03:29	Meredith:	Five thirty-sixths.
26.	1:03:30	T/R 1:	Five thirty-sixths. Not one fifth, right?
27.	1:03:33	Meredith:	Uh huh.
28.	1:03:33	T/R 1:	Think about what is causing the difficulty, ok, Meredith? [to class] Ok, is this a good time maybe to pull together for a few minutes and do some sharing? [no] Is this a good time? [to Kelly] Keep your model here. [to class] Ok. Is it possible, can, can I have your attention for a minute, we have a little bit of extra time thanks to Dr. Landis, uh, she's given us a little extended time, but we have

			some interesting ideas here and I think it's really important to share our ideas, I see some wonderful models another model here, right, with, um, Mark and Audra, right? You have another model. I guess, um, I was very interested in listening to your ideas as I walked around and I heard um our, does anyone, did anyone change their mind what they thought the difference between, uh, one quarter and a ninth were? Did anybody change their mind? Some of you changed your minds? How many of you still aren't sure about that difference [some students raise their hands]. Ok, so, so we had a theory, let's call it Meredith's theory, but she may have changed her mind she may not have, but Meredith's theory seems to suggest that if you wanted to find the difference between one fourth and one ninth that it's one fifth. That was the theory that we were testing, right? Now, if you used that same theory and I asked you what the difference was between one quarter and a third, and you applied that theory, what would you have said the difference was between a quarter and a third?
29.	1:05:48	Meredith:	A quarter and a third?.
30.		T/R 1:	Using that same theory.
31.		Meredith:	A quarter and a third would be, well, how big would the third be.
32.	1:06:06	T/R 1:	Ok, well one of the gentlemen here who have built the models up here, can you all kind of listen for a minute to what Michael and Erik and um James have built
33.	1:06:15	Students:	James?
34.	1:06:16	T/R 1:	I'm sorry, not James, it's David.
35.	1:06:21	Michael:	Um, uh, well, what me and Erik, me and Erik started building models like these to try and help us figure out how to one fourth and one ninth, and Dr. Ma- and um, and then we were on the edge of trying to find it out and then we had another model we started just we lost the idea of that was that we had before and
36.	1:06:53	T/R 1:	Do you want to tell us what that idea was?
37.	1:06:54	Michael:	Well, that idea was, try to get, try to um find the number and divide, um, divide it and see if it equals nine, then you've got a ninth, but we found that every single one that we tried there wasn't a fourth if there was a ninth, and if there was fourth there wasn't a ninth. So, um, we, we, um, we decided to try a new idea it turns out when we, uh, when we tried the new idea, the first time we tried it we were wrong.
38.	1:07:28	T/R 1:	What was that new idea?
39.	1:07:31	Michael:	Well, I don't really remember what we were thinking.
40.	1:07:34	T/R 1:	Was it the odd and even?

41.	1:07:40	Michael:	Yeah, I think so, yeah, what I also figured, um, is that you, it's so hard, like if you had you had to make a model with one fourth and one eighth in it, we could make a ton of them, but it's hard to make a model that has an odd number, like one ninth, and a even number, which is one fourth. So I figured that that was really hard and we made only like two models or so of it and it was really hard to find to get a train to something like that.
42.	1:08:11	T/R 1:	Ok, so where did that leave you. You told me there couldn't be any models when you had an odd and even.
43.	1:08:17	Michael:	I know. But then we figured that it had to be, because there was no other way to do it.
44.	1:08:22	T/R 1:	But you built two models here and you're comparing fractions where, you have an odd and even number on
45.	1:08:28	Michael:	Well, I didn't really, I was just trying to get an idea from these old models and I didn't get one, but I guess Dr. Maher did, so she wanted us to come up and say what we were thinking, I was just trying to get an idea from it.
46.	1:08:46	T/R 1:	When you compare this top one, what numbers were you comparing when you built this model here? [Continuing figure 10-29-20]
47.	1:08:50	Michael:	One third and one fourth.
48.	1:08:52	T/R 1:	And what did you find?
49.	1:08:53	Michael:	We found that it worked.
50.	1:08:53	T/R 1:	What worked?
51.	1:08:54	Michael:	That an odd and an even can go into a whole.
52.	1:09:02	T/R 1:	So, you mean you compared the quarter and the third, what did you find to be that difference?
53.	1:09:07	Michael:	The difference would be, the difference would be one twelfth. But in this model with the half and the third it would be one sixth.
54.	1:09:18	T/R 1:	Ok, so you could do that. Ok, um, alright, now James did James has some idea here let's here what James says and we all know that Graham and, why don't you sit down? Thank you very much, gentlemen. And let's, let's hear what James' idea is and then we'll hear if Graham and Kelly agree. Where did Graham go?
55.	1:09:40	James:	[at OHP] can I take this off?
56.	1:09:40	T/R 1:	Yeah, sure.
57.	1:10:26	James:	[James put an overhead transparency on OHP, Figure 10-29-21] Well, like, I got a huge model for this problem. First, but by experimenting I tried nine yellows and four oranges, for the ninths and the fourths. and I found out they weren't equal so I tried something else. I lowered its size so orange and uh the orange and

			the yellow and we got blue as the fourths and purple as the ninths and they were equal. So I just had to find a whole for that and I found out it was I just took three oranges and one dark green so then I had then I put up thirty-six whites on up to the whole and there, it took five whites to make the purple equal to the blue, so I think the answer would be five thirty-sixths.
58.	1:10:38	T/R 1:	Anybody do anything like that?
59.	1:10:40	Erik:	Well I guess I sort of
60.	1:10:43	T/R 1:	Oh, Erin, Jackie, Beth, what did you do? Did you do something like that?
61.	1:10:47	Erin and Beth:	Uh, yes.
62.	1:10:48	T/R 1:	Just tell us about it.
63.	1:10:48	Jackie:	Um, well, we did the same thing we have the same fourths and the same ninths
64.	1:11:52	Beth:	But we have a different whole.
65.	1:11:58	T/R 1:	So you called one and you used different rods to show your one?
66.	1:12:01	Beth:	Yeah.
67.	1:12:02	T/R 1:	Ok, and so, uh, can you move aside a little bit, Erik, so the class can see? Uh, so your model here, it looks very much the same as James' model
68.	1:12:12	Jackie:	Except we have, instead of three oranges and one dark green we have one dark green, one orange, one red, um, one black, one brown, and a light green.
69.	1:12:27	T/R 1:	Ok, so what rod did you give the number name one quarter?
70.	1:12:36	Erin:	Um blue.
71.	1:12:37	T/R 1:	The dark blue? And what rod did you give the number name one ninth?
72.	1:12:40	Girls:	Purple
73.	1:12:41	T/R 1:	Did you do the same thing?
74.	1:12:41	James:	Yeah.
75.	1:12:45	T/R 1:	Did anybody else do that? You did that and you did that and you did that and you did that? Ok, and so what number name did you give the white one?
76.	1:12:52	Girls:	Thirty-sixths, one thirty sixth.
77.	1:12:54	T/R 1:	One thirty-sixth? And what did you find the difference was between the ninth and the quarter?
78.	1:12:59	Jackie:	Five thirty-sixths.
79.	1:13:02	T/R 1:	How many of you got five thirty-sixths? I see. I see. Ok, what do you think? So, so you can actually see, what makes this problem so hard? What makes it so hard?

80.	1:13:21	Kimberly:	The odd number and the even number.
81.	1:13:25	T/R 1:	Pardon?
82.	1:13:25	Kimberly:	The odd number and the even number.
83.	1:13:28	T/R 1:	The odd and the even number? What about that makes it hard? You have a four and a nine.
84.	1:13:32	Kimberly:	Because it's harder to make a model when you have an even number for one and an odd for the other.
85.	1:13:39	T/R 1:	Ok, now have you learned anything on the models that you've seen today that might help you get some ideas for how to pick that number? If you remember that Erik and Michael when they compared a half and a third, what was your difference?
86.	1:13:57	Michael:	A half and a third?
87.	1:13:58	Erik:	A half and a third was
88.	1:13:59	Michael:	Was one sixth.
89.	1:14:00	T/R 1:	When you compared a half and a third it was one sixth. And when you compared a third and a quarter?
90.	1:14:06	Erik:	It was, it was, one one twelfth.
91.	1:14:07	T/R 1:	It was one twelfth. And when you compared a quarter and a ninth?
92.	1:14:17	Michael:	A quarter and a ninth?
93.	1:14:18	T/R 1:	One fourth and one ninth?
94.	1:14:19	Michael:	Oh.
95.	1:14:21	T/R 1:	It became, who did it here? You did it here, Erin and Beth you got five thirty-sixths.
96.	1:14:33	Michael:	Oh, it sort of went up by six I guess.
97.	1:14:37	T/R 1:	It's something to think about, isn't it? It's something to think about, right? Well we have here, thank you very much, and Kelly and Graham and all of those wonderful models, I'm going to keep this, that's lovely, thank you. How many of you believe the difference is five thirty-sixths, raise your hands. If you don't believe it, if you need to walk over to these models before we put them aside and see what they've done. When, we compared one half and a third, we got one sixth. When we compared a third and a quarter, right? We got one twelfth. When we compared a quarter and a ninth we got five thirty-sixths. [Writes on transparency: 1/2- 1/3 = 1/6, 1/3 - 1/4 = 1/12, 1/4 - 1/9 = 5/36, Figure 10-29-22.] Is there anything in these numbers that relate to the model you built? That's my question. We'll let you think about that. If you haven't built the model, I really think we have enough people here, we have Kelly and Graham, we have the table in the back, what do you think? Ok, so we can think about them. I'm wondering if there's anything that might give you a clue to building your models in the future. Maybe

			you ought to try to build some more and study these a little bit. It's something to think about. Ok, I'm going to see you on Monday, good! We get to talk some more. Thank you very much and thank you for staying longer, I appreciate, Mrs. Phillips, the extra time. A really good job.
98.	1:16:40		Clean up