Description: Clip 4 of 7: Michael and Brian find four models to compare one half and three fourth **Parent Tape: Continuing to Explore Fraction Comparisons** **Date: 1993-10-06** **Location: Colts Neck Elementary School** **Researcher: Carolyn Maher**	**Transcriber(s): Yankelewitz, Dina** **Verifier(s): Yedman, Madeline** **Date Transcribed: Spring 2009** **Page: 1 of 8**

8.3.29	Michael:	See? Now three of
8.3.30	Brian:	I have ano- I have a new way. Look! Mike, I have a new way! This, instead of that! It's the same [places a brown and purple train and shows that it is the same length as the orange and red train.] Ok.
8.3.31	Michael:	It's bigger by, it's bigger by three fourths, one fourth, it's bigger by a quarter, because here's the half
8.3.32	Brian:	There's a half, now what are the fourths on this? What are the fourths?
8.3.33	Michael:	Fourths are the green, dark, light green
8.3.34	Brian:	They are? One, two, Um, oh yeah, yeah, yeah, they are. I was going to try that, but I didn't, I didn't.
8.3.35	Michael:	Now just take three of them. It's bigger than one half by one fourth. See? This is one fourth and this is three of them, yeah, see? It's bigger by one fourth. No, wait, maybe its one, one two, three
8.3.36	Brian:	How 'bout… why don't we just use this, why don't we just use this one that we did last time [uses dark green rod, two light green rods]
8.3.37	Michael:	See, this, see? Its fourths, its one fourth
8.3.38	Brian:	No we can't make, but we can't make
8.3.39	Michael:	It's bigger by one fourth, but by, and so, by how - the two fourths is bigger, the three fourths is bigger, but it's bigger by one fourth.
8.3.40	Brian:	Let me make my model first, ok? Let me just make my model [Brian has completed the model using the orange and red train] Ok, now. It's bigger by, um
8.3.41	Michael:	One fourth. You see.. because it takes four of these to equal one of these
8.3.42	Brian:	Wait, wait, oh yeah, it's bigger by one fourth
8.3.43	Michael:	Yeah
8.3.44	Brian:	But that isn't what we got last time
8.3.45	Michael:	I know
8.3.46	Brian:	That's weird
8.3.47	Michael:	That's because it's a different problem. It's three fourths, not two thirds.
8.3.48	Brian:	Oh. Well, at least I got it right in the paper though... the paper
8.3.49	T/R 2:	What do you think over here. Have you come up with one model yet?
8.3.50	Brian	Yeah we came up with this and um and last time what we did what we got it wasn't a fourth bigger and when-
8.3.51	T/R 2:	What were we comparing the last time?
8.3.52	Michael:	We were comparing two thirds

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8.3.53	T/R 2:	And what
8.3.54	Brian:	And a half, and we did, we did this. I did this last time to help me. I made this model, a small model
8.3.55	Michael:	Yeah we found out that this is always going to half of a third, like one sixth, like no matter what size you had it
8.3.56	Brian:	Oh I maybe that these are even
8.3.57	Michael:	You're saying you can call three fourths two thirds?
8.3.58	Brian:	No, no I mean like the one whole maybe the one whole is an even number that's probably why cause it's an even number
8.3.59	T/R 2:	Can you tell me about this model that you built
8.3.60	Michael:	Yeah it is because it's twelve, it's twelve-
8.3.61	Brian:	Yeah and this is four, and this is four and it's one fourth bigger so I guess when it's an even number it's one fourth bigger.
8.3.62	T/R 2:	Hmm, can you tell me about the model you've done here for three, for comparing three fourths and one half
8.3.63	Brian:	Yeah, well the model here
8.3.64	Michael:	Well this is half, the dark green, the fourths are the light green, and this is the one, this is the one and
8.3.65	T/R 2:	ok so the orange and red is your one
8.3.66	Michael:	Yeah so and then we took this away we took three of them and then we said ok it's bigger, it's bigger by two,
8.3.67	Brian:	It's bigger by one
8.3.68	Michael:	-three fourths is bigger than one half by one fourth cause, yeah right there
8.3.69	T/R 2:	That's the same length as one of your fourths then
8.3.70	Michael:	And to prove that it takes four of these to equal the- that [begins to line light green rods above orange and red train]
8.3.71	T/R 2:	You agree with that, Brian?
8.3.72	Brian:	Yeah
8.3.73	T/R 2:	You agree completely with that argument? [yeah] Ok. Alright so you're telling me then that the difference between three fourths and one half is… how much?
8.3.74	Michael:	One fourth
8.3.75	T/R 2:	One fourth, ok. And which one is bigger?
8.3.76	Michael:	The dark, the light greens, the fourths.
8.3.77	T/R 2:	Which was the three fourths? Ok, alright, so that's a model you could build to show me that and that does justify it can you build me another model for that same problem?
8.3.78	Brian:	Ok let's try… I did one right here

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8.3.79	Michael:	No, but that's the same thing, that's the same thing as here because that's the same length.
8.3.80	Brian:	Oh. Oh, ok.
8.3.81	T/R 2:	Is this the same model or a different model [indicating Brian's small model using the purple rod as one] here?
8.3.82	Michael:	That, that's part of this model, see this is gonna, that's, that's the whole, but it's the same size as that [referring to the brown and purple train on Brian's desk]
8.3.83	Brian:	Yeah, right here [Brian shows that the lengths of the two trains are equivalent]
8.3.84	T/R 2:	Ok
8.3.85	Michael:	So I'm going to try to find a half of this, let's see.
8.3.86	T/R 2:	Alright, well, why don't you see if you can come up with another model now. That's, that's really wonderful. It's very good.
8.3.87	Brian:	ummm….
8.3.88	Michael:	I think I found one
8.3.89	Brian:	What about this one? Wait..
8.3.90	Michael:	Nope, that's not it, it needs to be one bigger than this.
8.3.91	Brian:	You're taking all my pieces! Oh, wait, this is the same as this too. [makes a train of blue and light green]
8.3.92	Michael:	I wonder if this is the same. Nope this one isn't.
8.3.93	Brian:	Let me try this, this is a nine and five
8.3.94	Michael:	That's not the same
8.3.95	Brian:	Fourteen, it's fourteen, it's still even. You want to try it?
8.3.96	Michael:	Sure, ok, now we just have to find, I found a half, that's the black, I just can't
8.3.97	Brian:	The half is a black?
8.3.98	Michael:	Yeah
8.3.99	Brian:	It is?
8.3.100	Michael:	mmm hmmm
8.3.101	Brian:	Oh. Man, you took the blacks
8.3.102	Michael:	Um, you can get an extra bag up there from back of the class
8.3.103	Brian:	Ok [gets up and returns with more rods]
8.3.104	Michael:	One less than this is gonna be [tries to use light green rods to make fourths] This can't be. Oh boy, this can't be done. Because there's not thirds to this, see, this doesn't work, this doesn't work. See this doesn't work, but the next size, Brian, you can't use this model
8.3.105	Brian:	What?

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8.3.106	Michael:	You can't use this model, because if that doesn't work [purple rod] then this should [light green], but it doesn't, because this is the size of this [shows that the light green rods were used for the model using the orange and red train].
8.3.107	Brian:	Ok, um, why don't we use this model that I did last time [using purple as one] That's a nice little model. And how about this, how about this? Let me try this. This, ok, I got this [two orange rods and four yellow rods], I remember I thought of this one. A long one.
8.3.108	Michael:	Yeah, it's a long one.
8.3.109	Brian:	Very long.
8.3.110	Michael:	But I'm working on a different one, that doesn't work
8.3.111	Brian:	Ok. So far I have got, uh, three! How about this one [one orange and two yellows], oh yeah
8.3.112	Michael:	That doesn't work I just tried that
8.3.113	Brian:	You can't make fourths.
8.3.114	Michael:	[pointing to 20cm model] But what's fourths?
8.3.115	Brian:	There
8.3.116	Michael:	The fourths?
8.3.117	Brian:	For this?
8.3.118	Michael:	Yeah, I'll make one too and see if I can
8.3.119	Brian:	[pointing to yellows] Those, right there! One two, three, four
8.3.120	Michael:	So you're calling this [orange rods] one? What's the whole? What's the half
8.3.121	Brian:	These [orange] are the half and I can't make the wholes yet.
8.3.122	Michael:	The whole
8.3.123	Brian:	And these are the whole. This is the whole, the one [two blue rods]
8.3.124	Michael:	No it's not [points to empty space]
8.3.125	Brian:	I know, I know, I need some extra, look!
8.3.126	Michael:	[laughs]
8.3.127	Brian:	One whole, two halves, and, look, it's bigger by one fourth
8.3.128	Michael:	Yay!
8.3.129	Brian:	So that's eighteen, though, that's eighteen, this is twenty!
8.3.130	Michael:	[laughs]
8.3.131	Brian:	This is twenty, wow!
8.3.132	Michael:	[laughing] You can definitely get long. Let's see how long we can go.
8.3.133	Brian:	um, uh, what about this one, you want to try this one
8.3.134	Michael:	I'm trying this one
8.3.135	Brian:	K, what's a half of the brown? What's a half of the- Oh, wait,

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8.3.136	Michael:	Half the brown
8.3.137	Brian:	Think of a half… no
8.3.138	Michael:	It has to be one bigger than that - orange - nope
8.3.139	Brian:	No
8.3.140	Michael:	[laughs]
8.3.141	Brian:	phooey
8.3.142	Michael:	[laughs] - Too big
8.3.143	Brian:	Man, that was such a good model. Oh! Twelfths, is this.. are these twelfths? Does this equal twelve? Yeah, yeah it is. Uh, ok,
8.3.144	Michael:	Let's try blacks
8.3.145	Brian:	I need a uh, I need a uh… purple
8.3.146	Michael:	[black black black etc.]
8.3.147	Brian:	Ok.
8.3.148	David:	Can we borrow a red?
8.3.149	Brian	Sure, we got a million of them.
8.3.150	Michael:	Uh, oh, this one doesn't work, yes it does!
8.3.151	Brian:	I think we have to draw ours down now. We have to draw it down now
8.3.152	Michael:	I made one
8.3.153	Brian:	We have to draw it down now. I just wanted to find.. Uh, oh, this is not going to fit, Oh, no this is not going to fit. Hmm, it doesn't fit. This doesn't fit! Wait, does it? [trying to fit models on paper] Yeah it does. yes it fits! This one won't go, this one won't
8.3.153	Brian:	Do it sideways! Uh... I guess so..
8.3.154	Michael:	What's half of this, what's half of it. (mumbling)
8.3.155	Brian:	Okay, I'm gonna, I'm gonna do this one now.
8.3.156	Michael:	You do this one, and this one, we've only go two models!
8.3.157	Brian:	What?
8.3.158	Michael:	We each have to draw the same model.
8.3.159	Brian:	I have three models.
8.3.160	Michael:	Which ones, where?
8.3.161	Brian:	Oh no, no, no, no, no, I have two
8.3.162	Michael:	Which ones, where's your two?
8.3.163	Brian:	That and that, and that's yours, and this one, oh no no no, why don't you find that one with the brown, I remember finding one with that before, I do. [Michael finds another model]
8.3.164	Michael:	One, two, three, three, four. Okay, now I did that and now I guess I just have to find half of it. I'll try the blacks.
8.3.165	Brian:	Does this fit? Ahhh, man.

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8.3.166	Michael:	Hey, that could be the half. What could be the whole? How about... Okay, I did one! Okay, I did one.
8.3.167	Brian:	You did?
8.3.168	Michael:	Yes!
8.3.169	Brian:	Yes, we're okay. Okay, see this one...
8.3.170	Michael:	Are you putting down just the models?
8.3.171	Brian:	I think that... yea... I think that (mumbling). Now this one is going to be very very very very hard. Do you agree?
8.3.172	Michael:	Yes.
8.3.173	Brian:	Very Very Very Very Very hard.
8.3.174	Michael:	This... see this is the one that I made. This is the whole.
		[Michael and Brian are writing up their solutions.]
8.3.175	Michael:	Okay, Im done.
8.3.176	Brian:	I did my two models. Should I write about them?
8.3.177	T/R 2:	Ummm if you want. Actually, if you want to explain them what would, what would you write, would you write about?
8.3.178	Brian:	Uh about this one... hmmm... I don't know.
8.3.179	T/R 2:	You know what would help me? If you can write what the problem was up at the top here, what we're comparing, and then maybe what the difference was between the three fourths and the one half. Those two pieces of information would be very helpful. Okay, then I want to give you, when Michael's done reporting, I want to give you two a second problem to think about. Okay?
8.3.180	Brian:	Okay.
8.3.181	Michael:	Alright. I'm done.
8.3.182	Brian:	Mmmmm... Uhhhhh. Mike, I need help.
8.3.183	Michael:	What?
8.3.184	Brian:	I need help with this.
8.3.185	Michael:	Okay.
8.3.186	Brian:	I need help thinking about it.
8.3.187	Michael:	(Mumbling about problem)
8.3.188	Brian:	I can't think about this. Well, I know one.
8.3.189	Michael:	Okay.
8.3.190	Brian:	I can think of it now. Uhh three fourths is larger than one half by one fourth because... Well it takes two of them to get. Look, huh okay what. Okay, well because it takes two of 'em to equal one half. Well, the question is..
8.3.191	Michael:	(simultaneously with Brian) The question is.. No
8.3.192	Brian:	That there are three of them.

8.3.193	Michael:	No, we shouldn't... no, no. Um if this is, this is a half and this is three. So it would be bigger by one fourth because it takes, it takes, it takes...
8.3.194	Brian:	How many fourths does it take?
8.3.195	Michael:	It takes three fourths to equal, umm, three, oh jeez. This is confusing... I bet it takes three fourths..
8.3.196	Brian:	Why don't I just do what I said? It takes two fourths to equal one half, but the, but, but there's, but but, but it needs, but, but it takes, but the question is three fourths and so there is one fourth bigger. How 'bout that?
8.3.197	Michael:	I guess.. Okay.
8.3.198	Brian:	I guess it makes sense. Bigger than the one half because...
8.3.199	Brian:	Two fourths to... two fourths to equal half
8.3.200	Michael:	I was, I was gonna say cuz it takes two, two fourths to equal a half but it takes, um, but then I um, but then I got three fourths equal three fourths? [Michael laughs]
8.3.201	T/R 2:	You got an extra fourth now left over, yea right?
8.3.202	Brian:	I was gonna write, I'm just gonna write that...
8.3.203	T/R 2:	Which I think is what Brian's writing right now
8.3.204	Brian:	What the question is...
8.3.205	Michael:	What are you writing?
8.3.206	Brian:	Three fourths, and so...
8.3.207	T/R 2:	He's writing it, He's writing out his explanation in words, but just about what you were just saying. About how a half and two fourths are the same length.
8.3.208	Brian:	(mumbling over his paper) Because it takes two fourths to equal one half so there and... fourth... left. I got it! [Finishes his write up]
8.3.209	Michael:	(mumbles over his paper) What'd you put for the question, but the question...
8.3.210	Brian:	But the question is three fourths and so there is one fourth left. It's pretty confusing.
8.3.211	Michael:	But the question is...
8.3.212	Brian:	(reciting from his paper) three fourths is larger than one half by one fourth because it takes two fourths to equal one half but the question is three fourths and so there is one fourth left. Very confusing.
8.3.213	Michael:	(mumbles) And the question is three fourths and so...
8.3.214	Brian:	When I say it, it seems very very confusing. So three fourths is larger than one half because one fourths, by one fourth because it

		takes two fourths to equal one half but the question is three fourths and so there is one fourth left. (sighs)
8.3.215	T/R 2:	I understand that.
8.3.216	Michael:	Well, that ‘s because you’re a Math... a Doc, Doctor in Math.
8.3.217	Brian:	(mumbles) for like um, for like my mom, my mom, my dad, she wouldn’t even...