

Description: Stephanie and Dana tower problem 02-06-92 Location: Kenilworth, NJ Researcher: Carolyn Maher	Transcriber(s): Denish Akuom & Miriam Verifier(s): Victoria Krupnik Date:04/29/2018
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Line #	Speaker	Time Stamp	Utterance	Code Repr	Code Kid Actio	Code Researchr	Note
1	Dr M	00:06:38	You think you can use them to do math problems? Any other ideas? What do you think?				
	J		Build with them				
3	Dr M		You're gonna build with them				
	?		You can do problems up on that				
	Dr M	00:07:03	Ah, you found a problem that's up here except we're gonna be building towers. Have you ever built towers before? Can someone build a tower for me?				
	D & S		(Raise hands)				
7	Dr M		Can you build one of your cubes. Show me a tower. Hold up a tower				
	D		Oh, I'll do it.				
	Dr M	00:07:41	Ok. I see a tower back there. That tower looks different to me from the tower that Michael is holding. Is there a different one here? Matthew built a tower it looks different. What's different about these two towers? Can someone tell me? I also see, Michael over here has a different tower. Are these towers alike? Is Dana's tower the same? Are they all the same?				
10	D		Bad girl				
	Dr M		What's different about them? Can someone tell me?				

	?(unko wn student		Uh, these in different colors. Some of them are higher, some of them are lower. Some of them are fatter, some of them are skinnies.				
	Dr M		Fatter and skinnies? What do you mean?				
	?		If like one of them is thin another one may be fat				
	Dr M		Like Paul, Paul has a fat tower. Paul hold yours up so people can see. Ok we're gonna try to build towers that have certain characteristics. Together now let's, let's talk about what they should be. First of all, how, how tall are they going to be? The rules here say they're going to be...				
	?		Five				
	Dr M	00:08:26	Five cubes high and they also say what else about them...they're going to be...				
	D	00:08:36	As many different towers				
	Dr M		As many different towers, and what colors are you allowed to use to build your towers? What do you think, Sebastian				
20	S		Red and yellow				
	Dr M		Red and yellow ok. Can somebody make a tower that satisfies those conditions and hold it up? Ok if you think you have one, raise your hand.				
	S		No, that's five cubes				
	?					
	Dr M		Is this it Alexandra. Alexandra says this tower satisfies those conditions. What do you think? How many of you agree? Oh, you want to change it, Alexandra? What, how do you want to change it? To five cubes? Ok. So, this is, this is too tall. What do you think Matthew?				
	M		Like this?				
	Dr M		Ok. What about this? Does this satisfy the condition? This is the tower that Matthew built. Do you all see this? Ok. (S holds up a tower) Look at the tower Stephanie built, are they different? Are they different? Now suppose I had a tower like this. You see these				

			two? Are we gonna call these the same or different, Mathew? Jeff?				
	J(Jeff)		The same.				
30	Dr M		We're gonna call these the same. Even though I'm holding different blocks, I really I am holding different blocks, for our purpose we're gonna call these the same, now also, suppose I did this? Is this allowed? If I turned it around?				
	D		No				
	Dr M		We didn't say that, Jeff? What do you think is gonna be another condition about our towers?				
	J		That you can't turn it around				
	Dr M		You can't turn it around. It has like chimney on top. Do you see that? How many do you think you can build, under those conditions? We have many good estimates of how many we can build. Dana, what do you think?				
	D		Um.....Thirteen.				
	Dr M		Dana thinks thirteen. Ok. Do we have any other guesses? Jeff?				
	J		Twenty-five				
	D		Jeff thinks twenty-five. Anybody think something else? Steve?				
40	Steve		Ten				
	Dr. M		Steve thinks ten. What do you think, Jamie				
	Samie		Ten				
	D		Samie thinks ten				
	?		Fifteen				
	?		Twelve				
	?		Twenty-six				
	Dr.M		Twenty-six. Sebastian?				
	S		Twelve				
50	Dr M		Well, we're not agreeing on this. Jennifer?				
	Jennife r		Fifteen				
	Dr M		Matthew? Well, what I think you're going to have to do is work on it and see how many, but remember, you have to be sure that you have no duplicates, you can't have two the				

			same and you have to be able to convince us that you have found all possibilities that there are no more, or no less. Got the problem? Have fun!				
	S		Ok. We'll start out with the easiest one. One,two,three,four,five...five reds and 5 yellows				
	D		One,two,three,four,five (counts yellows)				
	S		I only have four.				
	D		Ok				
	S		OK. We'll stand them up straight, so we know what we have.				
	D		Start it over here				
	S		Wait, it has too many. I can't get one				

60	D		Alright then let's do these.				
	S		I know, yeah, I, what we can do is we can just put one on the top, see? Ta da				
	D		Ta da and then let's get...				
	S		Ok. Now we'll put one on the middle. I'll do, I'll do the yellow with one red in the middle. You do this red with one yellow in the middle				
	D		Oops				
	S		Oops				
	D		And then I got another idea				
	S		So, tell me it so I can do the opposites				
	D		I'm gonna do the red...this, that...				
	S		Huh? Show me, oh ok and I'll do the red for it				
70	D		And you do the red for it				
	S		And I'll do it with the red at the top				
	D		It's this. okay?				
	S		Fine. Two on the two, two yellow on the top, three red on the bottom and I'll do the different				
	D		These. I did...				
	S		Dana, what happened to...				
	D		No, there should be...				
	S		What happened to dum, dum, dum, dum				
	D		I did mine				
	S		Where?				
80	D		Oh, I must a, I took it apart oh, there it is.				
	S		Alright				
	D		I thought I took it apart,				

	S		Yeah, okay, let's do it that way too. Let's do the, what is that? Show mw. What did you have before, Dana? You're driving me crazy.				
	D		I did that and then I changed it. 'Cause I....so you put three yellows and two reds.				
	S		Oh, ok.				
	D		I put two yellows and three reds.				
	S		Stop confusing me. Let me catch up. Don't think of another idea, alright, I know. Two, you do two yellows on top, I'll do two reds on top and then we'll do the opposite.				
	D		What do you mean?				
	S		Then we'll do, then you'll do three yellows on bottom and two reds on top, got it? First, do two yellows on top, three reds on bottom.				
	D		Is this right? Yeah				
	S		Then you do the opposite. You go two red...no, you can't do the opposite, I did the opposite				
90	D		No, you didn't, it had three reds, you only have...oh yeah you did it				
	S		Alright. I know now we could put three reds, two, two yellows on the bottom				
	D		Three reds on top				
	S		Two yellows on the bottom				
	D		You're gonna do that?				
	S		Yeah. Now you do two reds on the bottom. Wait, now you do two yellows on the bottom, three reds on top. I'll do three reds on the bottom, two yellows on top. Wait, we can't do that. We have to do three reds on top, two yellows on the bottom. I did...I did three reds on top. Oh, well. You are driving me crazy you know that. You won't listen, you don't listen				
	D	me. (giggles)				
	S		Alright. Okay, umm, now we could do two, two in the middle. Did we do two in the middle, already? Check				
	D		We'll what we could do				
	S		No Dana, Dana, Dana				
100	D		Two of these				
	S		You'll do two yellows in the middle, I'll do two reds in the middle				
	D		Wait, just look at mine here, then you could do it				
	S		Wait, Dana, wait				
	D		Look				
	S		You're not listening				
	D		I know I am not, here				
	S		Well stop it.				
	D	do that				

	S		That's what I just said				
110	D		You have three. I only have two				
	S		Ok. Alright fine. You do the two, you do both the twos and I'll do the both ways for the three. No, we already did the three, so we can only do the two. Alright I'll do the the three and I'll do that one.				
	D		You're driving me nuts.				
	S		No, you're driving me nuts, you won't listen				
	D		One, two, three				
	S		Don't think of another idea until I'm done. You're driving me crazy.				
	D		Well, my thing's done.				
	S		That's because you're only ahead of me				
	D		Well, I estimated thirteen and there are sixteen				
	S		Ok. Let's see. We can put one on the, we can go one on the top, one in the middle but more on the bottom. You do the reds and I will do, look, Dana, you do the reds, you do one red on the top, one red in the middle. No red on the bottom, I'll do the opposite.				
	D		We already did that.				
	S		No, we didn't. Look				
	D		Oh, yeah...driving me nuts, alright.				
	S		I'm gonna pair them up while you're waiting, while I'm waiting, okay? So that we have the pairs. Ok, one pair, two pairs. Where is the other pair of this? We are missing the other pair of this. Oh, here it is. Two pairs				
	D		Why don't we lay them down?				
	S		Three pairs. Ok. Three pairs. You find the pairs. I'll find the pairs, too				
	D		Why don't we spread them out? Spread them out				
	S		No, Dana. We're not gonna have any room to put them all out... Uh... the middle, come on. Help me figure this out.				
	D		Then what's the match of this?				
130	S		I don't know. Find it. That's it. You have it				
	D		Hi, Mr. Rica				
	S		You have it				
	D		Ok				
	S		Wait, wait, wait				
	D		These two match and these two match				
	S		No, they don't. You have the wrong one, Dana. Jimin that. You knucklehead you put it on wrong. Look, wait. Jimin that. Here, Dana				
	D		This goes like that, these two.				
	S		But that's still wrong. Here, Dana				
	D		See, so there's two on the bottom				

140	S	No, but Dana, the yellows are supposed to be two on the top. Look these go together, two on the top, three on the bottom and these go together three on the top, two on the bottom				
	D	These also go together. Look, that and that. There's two				
	S	No but ok				
	D	I know				
	S	Dana, come on. Alright, let's...come on				
	?	What are you up to two together to accomplish?				
	S	We're trying to make pairs of...but there can only be five and they have to be different				
	Dno				
	?	You have quite a few of them right now				
	S	Yeah, umm...how about I know you do the red on the middle and the red on the bottom okay and I'll do yellow one in the middle and yellow on the bottom				
150	D	Red is in the middle, red on the bottom				
	S	No put it down, and then put it down separately so I can put mine down with it. I'll put mine down ok? umm				
	D	Is that good?				
	S	Yeah, um.... we did the one in the middle we did the....				
	D	That's a good...and just made one up! You put one and then up put two of the different color and then two of them				
	S	What did you say? (hold up a tower)				
	D	No...yes				
	S	I have one idea, listen, listen, listen ok, we did the two on the top and two on the bottom right? We did, we did the one in the middle we did the two on the top. Two...we did the two and two, right with the middle, right? But, did we even do this? Dana, one on the bottom and one next to the bottom				
	D	And				
	S	And just one here				
160	D	No, we didn't. I'll do the red				
	S	I'll do the yellow. Wait whoa what way are you gonna do the yellow? You'll do the red with one here, one here and one here ok? I'll do the yellow with one here, one here and one here. Dum dum! And then we'll just reverse the other way, so those two yellows will go on the top				
	D	Sure that?				
	S	Yeah, but now we'll do it the other way. We'll do it...do that right? No that's wrong				
	D	You said two of them and then that...				
	S	No, yeah, that's right. Ok				

	D		You did it wrong				
	S		No, I didn't. Look				
	D		You look				
	S		You wanted two yellows on...you want two reds on the bottom				
170	D		One...				
	S		Oh, I did it wrong, ok				
	D		I know what to do				
	S		Not all the time				
	D		Look they have a camera,, look at the tv over there				
	S		Ok, uh uh, now was I gonna say? Ok now reverse it, reverse it. Put these in...put these two on top and this on the bottom. Ok?				
	D		What?				
	S		Reverse it				
	D		Ok. I'll do				
	S		See how simple it is				
180	D	and one there and...like that?				
	S		Yes, ok. I can't think. Oh, I have a perfect idea, ready?				
	D		Ok. How about we have three of them and then two of the same...like three and then				
	S		Like this (holds a tower)				
	D		Yeah. Then this				
	S		Like...Dana?				
	D		yeah				
	S		You make sure there's more of them...there might be...uh				
	D		I wish we had different colors				
	S		Alright...no we don't. that's it				
190	D		Oh, that's it....				
	S		Smuck				
	D		Do we have that?				
	S		Yes, we do....				
	D		Where?				
	S		I think we do				
	D		Where?				
	S		I don't know? What's this for? (holds up a match)				
	D		You did that too?				
	S		No, Dana look. You smuck, we did two of them				
200	D		Take that one apart				
	S		No, you take that one apart. I am kidding I'll be glad to disconnect... No, I thought you were gonna take that apart and I got mad. Now I know. How about this and then you put this and then you put that. No. I'm only kidding. (Tower too tall)				
	D		That's a good idea.				

	S		No, I know I know just have it alone, or I'll hit you. NO. Dana, Dana, Dana. How about this. We have that check. Make sure we don't have that just make sure we don't have that. Oops.				
	D		Hey I have one. Do we have that?				
	S		Dana, I can't believe you wouldn't think we had that.				
	D		We don't				
	S		Yes, we do.				
	D		Where? Ok.				
	S		Let go. You just don't want me to find something to make it wrong. I have to have this. I know I have this. You're driving me nuts. You know that, Dana? You're driving me nuts.				
210	D		We don't have this.				
	S		Ok ok ok ok. I believe you. I believe you.				
	D		Alright put 2 reds, a yellow, and 2 reds.				
	S		You mean a yellow, a red, a yellow, and 2 reds.				
	D		Yes, did you do it already?				
	S		Yes. I know. Now I can do it on the bottom. Dana. Now I can do it on the bottom. Look, we could do...one,two and then.				
	D		You do it. I don't understand what you're talking about.				
	S		You don't understand anything that's why.				
	D		No, I don't. (s makes noise)				
	S		and we have this one.				
220	D		It's here.				
	S		You're...You're watching the camera. And this one.				
	D		Look at that big mic up over there.				
	S		I know. It'll fly down and hit you on the head.				
	D		It's exactly right. Look –				
	S		Ok. For Real. I don't even know what I was doing. Nuts. I did it wrong.				
	D		We have sixty five more minutes. An hour and five minutes.				
	S		Perfect. Just what I wanted.				
	D		We only have 30 more minutes in reading.				
	S		Oh. Shoot. I don't want any reading. I hate reading. No. It wouldn't work if it would be just what I did now. No it wouldn't. Oh yes it would. No it wouldn't. Yes it would. NO it wouldn't. I think I have something. Did you ever see Drop Dead Fred.				
230	D		No.				
	S		Oh that was good...I thought you said you liar.				
	D		I didn't say I saw Drop Dead Fred.				
	S		Yes you did. When Aaron asked you said you did. Same one. I know. I catch lies. I am right. I have two on the top two on the top in the one color.				

	D	Do you think we're done?				
	S	Turn this one upside down. No. Um, and then the one other.				
	D	Any?				
	S	Dana, I have one. I've just been crazy enough not to do it yet.				
	D	Any?				
	S	Here we are.[any.] Dana, Dana, Dana. See see.				
240	D	Could you ---?				
	Dr M	Any?				
	S	No one listens to me.				
	D	When I come after school is Stephanie coming, too?				
	Amy	We're gonna take to Stephanie tomorrow.				
	Dr M	Tell me what you have here. Tell me what you have.				
	S	Well we have...				
	D	We do it like two, and then				
	S	we have a bunch of ideas. No.				
	Dr M	Do you think you have them all?				
250	S	Well we've been driving ourselves crazy. I've been like...				
	Dr M	Are you topping? Are you not finished.?				
	D	Well we just did one. We just did this one.				
	S	And here's the duplicates.				
	Dr M	What do you mean by duplicate?				
	S	Well it's not the duplicate but it's the upside-down version.				
	D	Say if we turn this upside down it matches this one. Yeah				
	Dr M	Oh, that's...				
	S	It goes like this				
	Dr M	I don't quite understand				
260	S	What we do is.				
	Dr M	Will you go through that one more time for me Stephanie and Dana.				
	S	Yeah, instead of going [we take this one]. Ok, look. Ok we take the design and instead if like just making new designs we take one and we turn it upside down and we make the same design upside down.				
	Dr M	'cause how did you get this one?				
	D	This one goes to this one [and we just follow them around and...] and then we turn it back down and it does that				
	S	And it does that, see?				
	D&S	So, it's not actually the same.				
	S	But, it, when it's turned upside down it is the same.				

270	Dr M		Ah, hah. So, it that how you did all of these?				
	D		Yeah				
	S		Most of them, yeah.				
	Dr M		Most of them? Show me another.				
	D		[These two]The only one we couldn't do it with is one				
	S		Was this one				
	D		See?				
	S		See, 'cause this one was already solid.				
	D		And when we take this one. We turn this one upside down.				
	S		Dana, where did you put those other two? You mixed them up.				
280	Dr M		Actually, I am confused Dana, put these back as partners. How do you get the partner? I am not sure how you get the partner.				
	D		Well, what we did... what, like these two?				
	Dr M		Yeah.				
	D		Well, we take one of them and we turn it upside down and as we see and we take one of these, and we get it the same thing, but then we turn this back up right, it's different.				
	Dr M		In what way is it different?				
	D		Like...look how it's the same like that				
	Dr M		Yes				
	D		(And when I turn it upside down) see, that's down there and that's up there				
	Dr M		Oh, ok[so] By that you mean what?				
	D		It's like				
	Dr M		What's the "that," the red or the yellow?				
290	D		The red? See the red? It changes the it goes... This. See how the that...that was up there?				
	Dr M		What do you mean by "that" the 3 reds?				
	D		The three reds were down here but then we changed it to go up there. The two yellows were up there and we changed it to go down there.				
	Dr M		How can you be so sure you are getting... How many did you have?				
	S		I don't know.				
	D		Here, two, four...				
	S		Oops.				
	D		Six				
	S		Here's some more				
	D		Eight, ten, twelve,..., fourteen, sixteen, eighteen, twenty, twenty two, twenty four, twenty six, twenty eight...twenty eight.				
300	Dr M		Do you think, do you think you have all of them?				

	S		I don't know. Another thing that we can do is we could go back and check and see how many duplicates are made and if we didn't , make the duplicates.				
	Dr M		Why don't you do that and I'll be right back.				
	S		Ok.				
	D		Ok.				
	Dr M		I want to hear who thinks they're done.				
310	Jeff		Done.				
	Dr M		So how many did you find?				
	Jeff		We found thirty. <i>(CM repeats and D & S heard it)</i>				
	D		Thirty, that means we are ...				
	S		Two away.				
	D		Only two away.				
316	S		Alright, maybe we didn't duplicate one. Let's check. Ok make all the groups but then bind them up in a straight line, Dana. Don't put them placed out but just line them up in a straight line. I am gonna take care of all the extras so that we don't get them mixed up with what we don't have. But find the groups, Dana. The groups. Make sure there's a group of two of them. The only one that shouldn't have a group is this one, see it? This one.				
	D		Okay				
	S		I will put it at the way end ok. There's a group. Where's its duplicate?				
320	D		Its duplicate? Let me see, here.				
	S		Does it have the duplicate? Is that the duplicate? That's not the duplicate. Um... Turn it over it would be the same, but it's different.				
	D		Here you go. Here's the duplicate of this.				
323	S		Right. Here's the duplicate.				
	D		That goes like that and that. And this goes...wait. Let's count them again. 2, 4, 6,				
	S		I found the 2 new groups. I found 2 new groups.				
	D	00:30:14	2,4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28. We still have only 28.				
	S		I found another group. See Dana? What do you think, the numbers change each time you count them?				
	D		I thought I miscounted.				
	S		Oh you did. Come on. Instead of counting--- my partner is fixing her microphone [laughter from Dana]. No, this isn't a duplicate. My duplicate would have two on the top. Dana, you're sitting there fixing your microphone and I'm going crazy. Help me.				
330	D		No, here.				

	S	No, I have to find my duplicate of this. I put this. There's got to be a duplicate of this. See look. See, these aren't the duplicates 'cause it was the duplicate these two. There would be two red on top and three yellow on the bottom.				
	D	You just put, you just put...				
	S	I know. But that's not the duplicate I'm looking for the pair duplicate not the other pair duplicate. I know it's very confusing, isn't it? I found it. I found the duplicate to this one but I didn't find the duplicate to the other one. Jimin. No.				
	D	Yep.				
	S	No.				
	D	Look. that...				
	S	yeah. Jimin.kidding. Taking it away from here. Here's the duplicate. So find the other groups. Where's the other group? There should be two others of those.				
	D	[Disgusted]				
	S	Don't get mad at me. I'm gonna shoot you. Um... Ok there's that one and that one. This one....				
	D	Turn it around. Turn it around – it's that one.				
	S	So, this one goes with this one. Yokes. Yikes! Too many duplicates.				
340	D	Too many of these.				
	S	Are you sure? I don't know.				
	D	Here look.				
	S	Aw				
	D	This one. Look. That's a pair. Yes.				
	S	We made a pair				
	D	NO look. Look. That's fine. That goes with this one.				
	S	You knucklehead.				
	D	And then turn it around.				
	S	No, it doesn't because if you turn it around it is the same. So that one doesn't go with that one.				
350	D	Then that one goes with that one.				
	S	Wait, let me check. Let me make sure. Yep. No that doesn't because of this one---(giggles) if this one went to this one---if this one went to this one, this would be on top and then it would be a duplicate.				
	D	It would be a duplicate (mimics)				
	S	See? These two go together.				
	D	Ok, they go together.				
	S	And these two don't go together.				
	D	No, they don't go together.				
	S	We made a duplicate. Take it apart, so we don't find it. Wake up. I need your help. Come on get on.				
	D	Here. Here.				

	S		Oh, I found it, I found the duplicate, see?				
360	D		Look, look I found the duplicate				
	S		Ok, well let's go. Yes {inaudible}. See how good friends can act. Oh, and here another one. Here's another one. See see see? See see see? See see see?				
	D		I see there's another one. Ok? Ok?				
	S		Here's another one				
	D		That's one				
	S		And another one. Oh, that's why. One of these are duplicates.				
	D		Here, that one.				
	S		No, it's not. This one is the...these are these are correct, unless they're matches. I'm not sure if there are matches. Check, make sure there are not matches, you can't just look there then and say, 'they're not matches,' Dana, you always, when you make up a design, check if there's...that is two, that is two, that is one, that's...wait				
	D		Two, four, six,...				
	S		Just wait, I'm not doing it like that. Two and that's two and that's two and that's two. That's one and that's one and that's one and that's one.... Duplicates! (breaks apart towers).				
	D		[laughs]				
	D		What did you do that for?				
	S		I'm having fun with this. Ok, well, let's count up how many we have so far two, four, six....eight,ten, twelve, fourteen, sixteen, eighteen, twenty, twenty two, twenty four. We minus four duplicates				
	D		Sorry, Jeff we only have twenty-four, they have thirty-two				
	S		Oh, well				
	D		That's it				
	S		It doesn't matter. come on.				
	D		Look, do we have that one, the two and then the three?				
	S		Well I don't know Dana, check. [interruption]This thing is coming off (Mike). I was almost gonna say don't help me.I don't think we can find any more.				
	D		I hope not				
380	S		I don't think we can find any more, Dana. Dana, I think we're finished				
	D		They have thirty-two. We've not finished				
	S		So, go play with them. You know if you want to, if you're so busy looking over at them you know how I have to go up to thirty-two because you've been looking at them. You're...				

	D		I got...				
	S		Ask me to pass it to you, ok? Come on, tell me what you got				
	D		And two of these thirty-two, thirty-two				
	S		We have one				
	D		We do?				
	S		Yes, we do. I know we have that, you can go through all you want but I know you have that				
	Amy		How are you doing?				
390	S		Pretty good. We have twenty-four				
	D		Two reds				
	S		I would get it but I'm....				
	D		There's two reds				
	S		No, I'll get it myself				
	D		There's two reds				
	S		What, I'm gonna do it the easy way. See this? See this? Huh, huh Da Da!				
	D		Twenty-eight				
	S		Dana?				
	D		Two, four, six, eight				
400	S					
	D		Ten, Twelve, Fourteen, Sixteen....Twenty-eight				
	S		Look like a railroad track that was badly built				
	D		A railroad track that was badly built?				
	S		It does, it does. It looks like a railroad track that was badly built... how can we make sure we don't have any duplicates?				
	D		...don't know....				
	S		No, we don't, look here one, two, three, four, five, six,seven, eight. It goes all the way up across until here. Then look at this, look at this, look at this. two, two, two, two, two,..., two, two,two,two,two				
	D		two, two.....two				
	S		...ok. I think I have one. Let's make sure we don't have any duplicates				
	D		No, take this. One.... (fiddling around). We don't have any duplicates				
410	S		Do we have it? No, let's check. You have to always check. You have to always check, see you have to go...				
	D		You're going cross eyed[some Nonsense]				
	Dr M		How many, girls?				
	D		Twenty-eight				
	S		Uh, twenty-eight				
	Dr M		But they found more in other places, you're giving up?				
	S & D		No				
	Dr M		Here they found more than twenty-eight				

	D		Thirty-two				
	Dr M		So, what do you think? I mean				
420	D		They might have duplicates				
	S		She checked everyone				
	D		Who?				
	S		Her				
	Dr M		Well, if they have duplicates, why don't you go over and show them their duplicates?				
	D		I just made one up				
	Dr M		You have to show them their duplicates. If there are duplicates				
	S		Well, we can't figure out if we have duplicates or not. We keep checking it and checking it. But every time we check it we have a duplicate				
	Dr M		But they are saying they have new ones what do you think about that? That there are more.				
	S		I think they're making duplicates.				
430	Dr M		Well, why don't you go and see? I didn't see any duplicates. I didn't find any.				
	S		Well, I have the microphone on.				
	D		I'm moving				
	S		I can't move that far because I have the...				
	Teacher		Now we're going to give you and your partner to look at what you've built and kind of think about how you are going to go about...explaining				
	D		These two				
	S		I know what we'll do, I know what we'll do, I know what we'll do,				
	D		Oh no, no. 'cause they go with different people. They go with people...				
	S		Are you sure? Alright. Well, I know what we'll do. We'll just show them, right?				
	D		Just say, we'll just bring up the ones they know that we see...like this one?				
440	S		No. You know what we'll do Dana? We'll bring up one group and we'll bring up the, the duplicate group. You know, the other way around group?				
	D		Is that true? Are you sure that's it? Yeah, that's these two are it.				
	S		No, they're not				
	D		Yes, they do				
	S		Jimin this				
	D		Do it upside down				
	S		Yeah, that one means this one doesn't go with this one. This one goes with this one and this one...goes with this one. Wait this one goes with this one and its				

			opposite is this one. And this one and we'll show how we did the opposites, ok?				
	D		ok				
	S		Make the opposite groups. Come on. Help me here. Make the opposite groups.				
	D		Ok we'll just bring these two up				
450	S		No make the opposite groups				
	D		No				
	S		I want it for the opposite group				
	D		Look at jamie				
	S		Dana, just help me with ya?				
	D		No...just bring the two up				
	S		No, we're not bringing them up. You think I'm gonna carry these whole things up? I just need a little help here				
	D		Oh, ok				
	S		Even though I might not have one, yeah, this one matches				
	D		I don't know about these two				
460	S		These match. Come on Dana, help. (nonsense)				