Line	Time	Speaker	Transcript	
1		Gina	Ok, so this, if this is in fact the middle one, what does that... I don't know, I'm curious to know why you did this, why you, how you saw this as being helpful to the pizza problem.	
		Robert	I don't know.	
		Gina	Was this helpful to you when you were doing it or no?	
2		Robert	Um, well not this part but the towers were. But that's like because I remembered how we figured out the total combinations.	
		Gina	mmhm	
		Robert	That the same thing to figure this out. So I guess its helpful in that sense but this wasn't, it just...	
3		Gina	Is there a.. yeah I was interested when you grabbed that	
4	76:19	Shelly or Stephanie	It was useless	
5		Stephanie	We were just hoping there was an easier way	
6		Gina	Laughing: well you never know	
7		girls	We were hoping there was a really easy way	
8		Gina	Well I think that the way you did it, I mean you started to see some things that made it easier right?	
9		Stephanie	yeah	
11		Gina	I heard you say something about well there's an easier way and look we could get this right away and then you started fiddling with these numbers here. So maybe you did find an easier way. (pointing at Robert's work) I'm not quite sure, I think this is very interesting, and I think it is interesting that these numbers that you see them reflected over there(pointing to Stephanie's paper and Pascal's triangle) and I'm just wondering if there is anything, any other relationship between these two? Hmm (while looking at papers and turns to Robert) You said something before uh also that interested me uh you said there is supposed to be a two over there or something when you were talking about what you did in Mr. Pentozzi's class?	
13		Robert	Oh no I think she left like one thing out because like I have it 1 and then I have two 1s, because this is like zero toppings	
14		Shelly	Yeah I was thinking that	
15		Robert	And then with one topping	
16		Shelly and Stephanie	Yeah it's supposed to be like one one	
17		Gina	mhmm	
18		Stephanie and Shelly	And then actually, that's why our top wasn't working out	

		Gina	Ok, so...	
19		Stephanie	Because we were having trouble... yeah Bobby thanks for, uh, telling us before. (girls laugh)	
20		Shelly	As we're all here, lost "Got anything Bobby? 'noooo I'm just not doing anything'"	
21		Stephanie	Bobby's just drawing and we're like, "why isn't it working?"	
		Gina	Well he's drawing all kinds of stuff over here so he was really busy. So what wasn't working out before when you were missing that other one	
		Stephanie	Oh it was just uhh	
		Shelly	Lets say this was plain...	
		Stephanie	We would jump from like plain to like two toppings and we had no idea, we were like...	
22		Shelly	Yeah and that didn't even work for plain so we were like why isn't working for plain?	
23	77:18	Stephanie	Yeah so were like that's not working. Of course Bobby had the answer all along and didn't care to share with us (Shelly laughs)	
24		Shelly	"Got anything over there Bobby? 'No, I don't have anything.'"	
25		Stephanie	But hey we wont hold that against him.	
26		Gina	Well, he wanted to give you an opportunity to think about this.	
		Stephanie	...to look really stupid.	
27		Dr. Maher	Ok. That, that helped me a lot. Now my next question is: How many pizzas, how many towers? are these problems...	
28		Robert	The same	
29		Dr. Maher	The same or	
30		Shelly & Stephanie	Mhmm yeah	
31		Dr. Maher	Coincidentally the same answer. How can you convince me that these are the same problem?	
32		Shelly	Its easier to explain the two thing with this because there are only two colors.	
33		Dr. Maher	You like that huh?	
34		Students	Yeah.	
35	78:10	Dr. Maher	Ok, I agree. I think that's easier to see that with the two colors I think most people	
36		Stephanie	Its all the toppings it throws you off, you expect like 800 pizzas.	
37		Others students	Yeah mhmm	
38		Dr. Maher	Is there a way of thinking about the pizzas another way? So that the toppings don't…	
39		Robert	Yeah	
40		Dr. Maher	Robert	

41		Robert	Toppings is the height. Like 4 toppings would be a tower 4 high and then the two colors would be with or without toppings. I guess that would work.
		Stephanie	mmhm
42		Dr. Maher	Say, say more about that, now. So if I want to think of this as a pizza, right? Lets think of these, each of these, as a pizza, right? So you're saying four toppings is a tower 4 tall. That's what you just told me right?
43	78:44	Robert	Yeah
44		Dr. Maher	And what would the "b" mean, for instance? In the pizza, if you were thinking of pizzas.
45		Robert	Peppers or ..oh no no it would be...
46		Stephanie	It would either mean you had a topping there, or you didn't have a topping there.
47		Robert	Yeah
48		Dr. Maher	Oh So "b" means you either put whatever topping is.
49		Stephanie	Right? Is that what you are trying to say?
50		Robert	Yeah but like it wouldn't work because you'd have more than one a topping.
51		Stephanie	I think he's on the right track but...
52		Dr. Maher	Well, you're saying that the color means you have a topping or you don't. Lets follow that thinking, right?
53		Stephanie	So
54		Dr. Maher	So "b" will, would mean you choose the topping right? And red will be you don't choose it, right? Fair enough?
55		All students	mmhm
56		Dr. Maher	Ok, so you have four toppings so let's go through our toppings, right?
57		Stephanie	mmhm
58		Dr. Maher	We have, what are they?
59		Stephanie	Well for which?
60		Robert	Peppers
61	79:54	Stephanie	For four high?
62		Dr. Maher	For four high
63		Stephanie	We have
64		Dr. Maher	So this would mean you either choose peppers or you don't?
65		Stephanie	mmhm
67		Robert	You choose peppers or you don't.
68		Stephanie	No, you choose mushrooms or you don't, you choose sausage or you don't . and you choose, um, pepperoni or you don't, because your going to have four of them. And each one is gonna have, like if it was written like that (she grabs a marker and begins writing) like here would be mushrooms like going all the way across and each tower you had with an "r" there meant that you didn't have

			mushrooms	
69		Dr. Maher	Ok	
70		Stephanie	You know what I mean. So you're gonna have all the towers four high, like that. And for each one with an r there, you have mushrooms on it- Or, you *don't* have mushrooms on it. You know? And then here's the peppers, and if they're, you know... and just like that.	
		Dr. Maher	The rest of you follow what Stephanie is saying? That's pretty heavy stuff here, we're talking about. You're really into some very sophisticated thinking. Ok, I wonder, I know that you have to leave.	
71		Stephanie	mmhm	