

Description: Night Session – Pascal’s Identity, Clip 1 of 7: Thinking about the meaning of combinatorics notation Parent Tape: Night Session – Pascal’s Identity Date: 1999-05-12 Location: David Brearley High School Researcher: Professor Carolyn Maher	Authors: Uptegrove, Elizabeth B. Verified: Poprik, Brad Date Transcribed: 2003 Page: 1 of 5
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Line	Time	Name	Transcript	Coding and Explanation
1.	00:01	Romina:	We wanted to know what we did in class today.	
2.		Jeff:	Um, we were looking a lot at, at working at e and, and the equation for it.	
3.		Michael:	And how it, how it, how it connects with ln and-	
4.		Jeff:	Yeah, um-	
5.		Romina:	And we were also trying to find like, you know how we had when we had a plus b to the n ? We want to know what- And we had like numbers before it when we got to big numbers, we want to know, you figure out what the numbers were, like in front of the a , you know, cubed.	
6.		Jeff:	You know, that's, that's like, um-	
7.		R1:	You could use the board too.	
8.		Jeff:	Uh, we just- Like if you were looking, if we were looking for like a plus b -	
9.		Romina:	To the tenth.	
10.		Jeff:	To the tenth say, um, obviously it- Was the first one ten? Was it //one a to the tenth and //then ten-	
11.		Michael:	//No it's one, yeah.	
12.		Romina:	// b . Oh no, you're right. Sorry.	
13.		Jeff:	Ten a to the ninth b to the first, right?	
14.		Romina:	Mm hm.	
15.		Jeff:	And then how to find out //this number.	
16.		Romina:	//What the next one was.	
17.		Michael:	It's forty-five.	
18.		Jeff:	And it was forty-five but we were working on how to figure it out when we were doing it. We knew it was the choose thing, whatever that means. The- You do a forty- What was it? Ten choose two?	
19.		Michael:	Yeah.	
20.		Romina:	Uh-huh.	
21.		Jeff:	You know what I'm talking about? Like, uh, was it N-C-R- actually that's supposed to be lower case. Two- is that how you do it? Right?	

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22.		Michael:	Yeah, it's one of these things like that.	
23.		Jeff:	And that equals forty-five and that's the answer. You know. I'm not, we're not really sure how all this works but it's like, what is that, if-	
24.		Romina:	We, we learned that, we learned that with her.	
25.		Jeff:	Yeah. Yeah the- Yeah, we, we went, we went over that, remember that? With the total-	
26.		Romina:	We tried to go over that. [Romina laughs.]	
27.		Jeff:	If you have ten different, what was it? Ten different things.	
28.		Michael:	You have-	
29.		Romina:	//Ten high. //Ten high.	
30.		Jeff:	//Ten high. How many-	
31.		Romina:	//How many would have two reds, only two reds.	
32.		Jeff:	//How many would have two, two reds.	
33.		R1:	One more time.	
34.	01:30	Jeff:	If you had towers// of ten high.	
35.		Michael:	//If you had like towers.	
36.		R1:	Towers.	
37.		Jeff:	If you have towers with ten high //and two colors.	
38.		Michael:	//How many different places can you put two reds in there?	
39.		Jeff:	Yeah.	
40.		Romina:	Yeah.	
41.		Jeff:	And like a would be one color and b would be blue, um, b would be the other color. Then how many would you have, a being two in the whole thing? And that would be forty-five and that's, that's what this number would be.	
42.		R1:	And these towers are how tall?	
43.		Jeff:	Ten tall.	
44.		Romina:	Ten.	
45.		Jeff:	That'd be the ten there.	
46.		Romina:	Mm hm.	

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47.		Jeff:	The two would be the two colors and then, right?	
48.		Michael:	No.	
49.		Romina:	No, two of one color.	
50.		Jeff:	No, ten would be the two of the one color and the two is implied that there's two, only two colors? Or-	
51.		Michael:	The two is the-	
52.		Romina:	It's only <i>a</i> plus <i>b</i> .	
53.		Jeff:	Yeah but in the, when you write this, I mean is it implied that there's only two colors?	
54.		Romina:	I believe it is but-	
55.		Jeff:	Is that, is it implied?	
56.		Romina:	I, I'll go with the yeah. I don't know. [Romina laughs.]	
57.		Michael:	Uh, You talking about this?	
58.		Jeff:	Yeah.	
59.		Michael:	//No, It, it,	
60.		Romina:	//Is that like-	
61.		Jeff:	Is that one, the only one works for-	
62.		Michael:	It's just like you have ten things where, how many different places can you put these two? That's all.	
63.		Jeff:	Yeah, I know but-	
64.		Michael:	You know what I'm saying?	
65.		Jeff:	But if there's, oh, yeah, two. All right, I see what you're saying.	
66.		Michael:	That's all.	
67.		Jeff:	There could be a hundred colors but it would still-	
68.		Michael:	Yeah you pick two things out of those ten.	
69.		Jeff:	Yeah.	
70.		Michael:	How many different places can you put them?	
71.		Jeff:	Put them. All right. All right.	
72.		Michael:	Forty-five, I think,	

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73.		R1:	So, so you're saying that's forty-five and what if I wanted eight red? Eight red ones or eight <i>a</i> 's?	
74.		Jeff:	Then it would be ten-	
75.		Michael:	Um.	
76.		Romina:	Ten choose eight.	
77.		Jeff:	Choose eight, yeah.	
78.		Michael:	A smaller number.	
79.		Jeff:	Because //that would be how many different spots can you move those eight of one color in the tower of ten.	
80.		Romina:	//Now how do you-	
81.		Michael:	It's forty-five also.	
82.		R1:	Why?	
83.	02:49	Romina:	Like how do //you, how do you, how do you do that on a calculator?	
84.		R1:	//How'd you do that so fast Michael?	
85.		Jeff:	Um.	
86.		Michael:	No, I just like did it all in my head, that's all.	
87.		Jeff:	You go to, uh, math.	
88.		R1:	Tell us how you did it.	
89.		Michael:	Um.	
90.		Jeff:	Probability.	
91.		Michael:	There's a button that-	
92.		Jeff:	N-C-R.	
93.		Michael:	Take ten, that button then eight.	
94.		Romina:	Then math.	
95.		Michael:	And it comes out forty-five.	
96.		Jeff:	Why is that the case?	
97.		Romina:	Hm.	
98.		Michael:	Well if you take like on the-	
99.		Romina:	Well because-	

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100.		Michael:	You know how on Pascal's Triangle.	
101.		Romina:	That's like the two.//You have eight left over.	
102.		Jeff:	//Oh, cause you could switch them all around. Is that, is that, I guess you're counting. //You got, you got, yeah	
103.		R1:	I don't know. Tell me.	
104.		Michael:	Cause then you would have-	
105.		Romina:	//Is that the same thing as that because, like, the eight left over to get to the ten, right?	
106.		Michael:	//It'll be- It would be the same thing.	
107.		Jeff:	Exactly.	
108.		Romina:	It's like almost switching colors.	
109.		Jeff:	Yeah.	
110.		Romina:	It'd be like two of the other color.	
111.		Jeff:	And then, and then, yeah, exactly.	
112.		R1:	Say that one more time, Romina.	
113.		Romina:	It'd be two of the other color instead of, like say you started with red for this two. That was for the reds and then when you//make red eight.	
114.		Michael:	//That would be the other eight.	
115.		Romina:	The, like, say the blues have two.	
116.		Jeff:	And it's seven. And then obviously three should be the same as that.	
117.	03:36	Romina:	Yeah. Yeah.	