

Description: Clip 1: Approaching the Problem Parent Tape: Pizza Problems with Four and Five Toppings Date: 1999-03-01 Location: David Brearley High School Researcher(s): Professor Carolyn Maher	Transcriber(s): Marcelle Farhat, Elijah Brookes, Gary Wenger, Anat Even-Zahav Verifier(s): William McGowan Date Transcribed: Fall 2010 Page: 1 of 5
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Line	Time	Speaker	Transcript	Code
1	22:01	Shelly	Hold on, OK, there's plain, and then so you just have two toppings. Then you have four choices there, then you have peppers, and then you have three choices there, right? (sighs) Sausage, and then you have two, right, or am I wrong? Plain, one, two, three, four...	
2		Stephanie	And then the mushrooms, you'd have one choice. And then...	
3		Shelly	Pepperoni none.	
4		Stephanie	Yeah.	
5		Shelly	Is that right? Mushrooms, one.	
6		Stephanie	Yeah, that's right cause that's the...	
7		Shelly	Pepperoni, none. And then from here you branch off and have three, and then two, and then one. (whispers) There's some way to do this, I hate this. OK. I'm trying, I'm trying. Haha.	
8		Stephanie	Calm down. It's going to be OK.	
9	22:29	Shelly	Five, one, two, three, four... (whispers) Six, seven, eight, nine, ten.	
11	22:37	Stephanie	Um...	
13		Shelly	Wait a minute. I'm gettin' five, and then ten, and then ten, and then five.	
14		Stephanie	(moans) So then...	
15		Shelly	And then one.	
16		Stephanie	Then, well the next row is just going to go like that?	
17		Shelly	Yeah. So then five and then ten (Stephanie says these two simultaneously), and then ten, and then five and then one.	
18	22:55	Stephanie	Ahuh.	
19		Shelly	And that's it. Cause, well there's no one in the, in, in the front right? Cause... (sighs)	
20	23:05	Stephanie	(simultaneously) Wait, what are you talking about?	
21		Shelly	(simultaneously) Wait, there's got to be something because you, you...	
22		Stephanie	Wait, say it out loud cause I...	
23		Shelly	You can't have... you can't have just a pepperoni, oh...	
24		Stephanie	Just a pep...	
25		Shelly	Cause a pepperoni is a plain with a pepperoni.	
26	23:32	Stephanie	Yeah. So...	
27		Shelly	So that's why there's no one there, right, right? Is that what you're getting? For numbers?	
28		Stephanie	I'm doing, I don't know. I'm getting that there's one with four, and then there's, ah, three with three, and then the next one there's none with four, and there's two with three, and the next one there's none with four, and one with three, and the next one'll have...	
29		Shelly	See, I'm lost with that. But... (laughs)	

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30		Stephanie	Yeah, it's just like, it's just like what you were doing before. Like here.	
31		Shelly	Yeah.	
32		Stephanie	Um... there's, oh, see you're working like, it'd be like doing it backwards. Like there's, we can have one pizza with all four toppings.	
33		Shelly	Mhmm.	
34		Stephanie	And that's it.	
35		Shelly	Mhmm.	
36		Stephanie	And then...	
37		Shelly	Oh, see that's where I'm doing it wrong. See, I have it plain, then I have them going there. (simultaneously) And then I have that. No because... OK, one, four...	
38		Stephanie	(simultaneously) No, you're not, you're just going the opposite way that I'm do it. Like, I'm starting from the...	
39		Shelly	See, these, all of these don't count. Cause that's with plain. That's like plain up here.	
40		Stephanie	Yeah, ahuh.	
41		Shelly	So all these don't count. So it's one, and then one, two, three, four, and one, two, three, four, five, six, and then four and then one.	
42		Stephanie	Yeah, you see, that's like, look, that's what it is...	
43		Shelly	So it's one, four, six, four, one.	
44		Stephanie	Like, see, there's four, and then there's three of those...	
45		Shelly	Yeah.	
46		Stephanie	Well actually yours is really (unintelligible word). I don't know. There's one with that, and then if you take it, like, from the peppers there's three with peppers and two other toppings.	
47		Shelly	Yeah.	
48		Stephanie	And then there's...	
49		Shelly	(mumbles something unintelligible) Yeah, I think that's it. Five, five, ten, sixteen. It seems kind of small though. Well obviously that wasn't it.(crosses out the answer leading to 153) ... Does that number look familiar to you, sixteen?	
50		Robert	It's what I got.	
51		Shelly	'Kay. (whispers) I'm done, that's it.	
52		Stephanie	Why did I find seventeen?	
53		Stephanie	Alright, hold on.	
54		Stephanie	Oh. That makes more sense.	
55		Stephanie	Are you convinced?	
56		Shelly	Each other?(points around) (laughs at Stephanie)	
57		Stephanie	Yes, I think that means each other. I'm not sure though.	
58		Shelly	Alright, sixteen, we're done. (reading from hand-out) Suppose a fifth topping, anchovies, were available...	
59		Stephanie	You know, there's got to be an easier way to figure out, you know, than just	

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			adding, anchovies.	
60		Shelly	Did we, we didn't repeat ourselves anywhere, right?	
61		Stephanie	What, with that?	
62		Shelly	Yeah.	
63		Stephanie	No. We're good.	
64		Shelly	No, wait. (looks over paper)	
65		Stephanie	Um.	
66		Shelly	There's got to be some easier way to do this.	
67		Stephanie	That's something. (unintelligible word)	
68		Shelly	I just can't go about it. Cause if you do f--, OK, so if you do five plus four plus three plus two plus one, just fi--you get fifteen and that's one off.	
69		Stephanie	That's wrong. So...	
70		Shelly	So... oh...	
71		Stephanie	Ah, um... Alright, you know what, let's just add the anchovies, and maybe that will... see like a pattern.	
72		Shelly	OK.	
73		Stephanie	Yeah. Bobby, do you know anything, that you're not like...(Shelly laughs)	
74		Robert	No.	
75		Stephanie	Willing to share, 'cause you're like off in your own little world.	
77		Shelly	(mumbling to self) Pepperonis, anchovies, (unintelligible word), anchovies, (unintelligible word), anchovies.	
78		Stephanie	Are you done?	
79		Robert	No.	
80		Stephanie	Adding anchovies?	
81		Shelly	Oh, I was going to say, wow that was quick.	
82		Stephanie	I was like, alright, someone's super genius. Or I'm just retarded.	
83		Shelly	One, four, wait a minute, one, four, six, four, one. So the next one would be one, this is the... triangle.	
84		Stephanie	The triangle. Yeah, so the next one is one, five, ten, ten, five, one.	
85		Shelly	We're done. Ahah.	
86		Stephanie	But what does that mean to (mouths me, everyone starts laughing). What does that mean to me.	
87		Shelly	I don't know. I don't know, but that's the answer. Um...	
88		Stephanie	But like, what is one, four, six, four, what... that means nothing to me.	
89		Shelly	It means nothing to me either. But, it's the pattern we saw.	
90		Stephanie	Oh, dear Lord. Uh, so we have a pattern, but how to we apply it to getting sixteen pizzas.	
91		Stephanie	Are we even sure... (interrupted) that that's...	
92		Shelly	That, that, that would be the problem.	
93		Stephanie	... the pattern. Like, are we positive that this is the pattern that's happening.	

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94	Shelly	Well, if our answers are right, then that's a pattern.
95	Stephanie	OK.
96	Shelly	If our answer is wrong, then it's not.
97	Stephanie	So, well, OK. Let's figure it. This is saying that we have one plain pizza, and then we have 4 pizzas with two toppings?
98	Shelly	With one. Because it's the plain and then with the one toppings.
99	Stephanie	O.K. So, we have 4 pizzas with one topping and we have 4 pizzas with two toppings, oh no-we have six pizzas with two toppings, 3 pizzas with 4 toppings...
100	Shelly	And one pizza with 4 toppings.
101	Stephanie	O.K. So, three of one pizza. And then how many piz..? See, but it doesn't add up...to sixteen.
102	Shelly	This? Doesn't it? Am I just...
103	Stephanie	Oh, yes it does (Stephanie and Shelly laughing). So the answer... give me a second I'll add it...32?
104	Shelly	Oh, this or this? (pointing on the paper)
105	Stephanie	Oh this (pause) well, I'm hoping I got this right the second time, but I'm saying this is 16 and this ...32. (raising hands, happily).
106	Shelly	Well if you add this, its 30(Stephanie joins) ...two. So you messed up on the first and I messed up on the second. Trying to figure out these problems and can't even add... Its ok So, it will be 32, let's just write that tentatively.
107	Stephanie	Let's just, yeah
108	Shelly	Tentative answer
109	Stephanie	O.K...(pause, they think)
110	Shelly	There's got to be an easier way to do it.
111	Stephanie	No, that was pretty easy, because look, look, now we know what all the pizzas are. What's this the three ones? Is that what it is/
112	Shelly	Two ones, right? No oh, that could be wrong.
113	Stephanie	Is it 1, 2, 1 and then 1, 3, 3, [1] (writing Pascal's Triangle on paper) 1, 4, 6, 4, 1 and then 1, 5, 10, 10, 5, 1.
114	Shelly	Yeah, that's it.

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115		Stephanie	That works right? (both watching the paper where Stephanie is drawing Pascal's Triangle) If you have one pizza, you one pizza.	
116		Shelly	Yeah	
117		Stephanie	If you have one pizza with two toppings. you have plane pizza and pizza with both toppings. Yeah, all right...	
118		Shelly	Sounds good to me (Shelly is reading the written problem on the page)	
119		Stephanie	Alright, yeah	