Description: Clip 7 of 10: Continuing Investigation of Pascal's Triangle: Generating Rows 5 and 6 and calculating the totals for each row **Parent Tape: Early Algebra Ideas About Binomial Expansion, Stephanie's Interview Five of Seven** **Date: 1996-03-13** **Location: Harding Elementary School** **Researcher: Professor Carolyn Maher**	**Transcriber(s): Aboelnaga, Eman** **Verifier(s): Yedman, Madeline** **Date Transcribed: Fall 2010** **Page: 1 of 4**

Time	Line	Speaker	Transcript
0:00	1	R1	Can you guess five high, what these numbers would be?
	2	Stephanie	All right. It would be 1. Um, and then it would be 1 + 3, oh, 5. And then it would be 10, 10, 5, 1.
	3	R1	I put the one there. So this would be towers- this is no high.
	4	R1/ Stephanie	One high. Two high. Three high. Four high. Five high.
	5	R1	So now, I'm going to tell you what those numbers mean. Let's go backwards again. We know this is for *n* = five high.
	6	Stephanie	Mm-hmm.
	7	R1	So, see if you can tell me what that one is? We're selecting . . .
	8	Stephanie	One from five.
	9	R1	Ok and you're telling me that this is the case that should be one.
	10	Stephanie	Mm-hmm.
	11	R1	And what's the five?
	12	Stephanie	Oh, no, that . . .
	13	R1	Is this one from five?
	14	Stephanie	Yeah, I thought, wasn't the five one from five. That would be zero.
	15	R1	Okay, so you're going to make this, oh ok. So the five would be one from five, you're saying?
	16	Stephanie	Yeah.
	17	R1	And you believe that? You can see that in your mind?
	18	Stephanie	Yes.
	19	R1	What are you seeing? I'm curious.
	20	Stephanie	It would be like this, only longer.
	21	R1	How long?
	22	Stephanie	Well, five.
	23	R1	Okay, just checking. Just checking. Ok, so the next one is going to be…

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	24	Stephanie	Um, two from five. And that equals two.
	25	R1	And that's ten cases. You wouldn't want to write those out. You kinda wish this is gonna be true, don't you?
	26	Stephanie	Yeah.
	27	R1	Actually, you did write that out when you were in the fourth grade.
	28	Stephanie	Oh yeah.
	29	R1	Right, you really did. We have a video to show it. Ok, and this ten, would that surprise you that it would be-if this is two, this would be three?
	30	Stephanie	No. I mean-
	31	R1	You would expect that wouldn't you?
	32	Stephanie	Yeah.
	33	R1	Because if you've done one, you've done half your work.
	34	Stephanie	Mm-hmm.
	35	R1	See this nice symmetry here. And the next one will be . . .
	36	Stephanie	Four.
	37	R1	And that doesn't surprise you, does it? That that's like this?
	38	Stephanie	Nope and the last one will be five. One.
	39	R1	So if I asked you, I'm now building these six, could you tell me how many that are exactly no red-
	40	Stephanie	Yeah. Yes.
	41	R1	-exactly one, exactly two, exactly three, exactly four? Now, you expect this should all add up to what if it's five high? If you total them, you should get a total of?
	42	Stephanie	Um, 32?
	43	R1	And does it? 6? 11? 21? Wait a minute, something's wrong here. Oh, I shouldn't be adding the 5- 6, 16, 26, 31, 32. So if this thing works, what should it add- what should this next row add up to?
	44	Stephanie	Um, 64?
	45	R1	Let's try it. Let's predict what this is going to be.

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	46	Stephanie	It's going to be 1, 6, 15, 20, 15, 6, 1.
	47	R1	And does that add up to 64?
	48	Stephanie	Um, 30, 50, um, 12, Yeah.
	49	R1	You like that?
	50	Stephanie	Yes.
	51	R1	So not only do you know how many towers you're going to get by adding, what else do you know?
	52	Stephanie	I know the next row.
	53	R1	You know the next row.
	54	Stephanie	And, I don't know, I know how many combinations I get for each row.
	55	R1	Mh-hmm.
	56	Stephanie	Um.
	57	R1	Wasn't it clever, the person who found this out? Do you know who that was, would you like to know?
	58	Stephanie	Yes.
	59	R1	I don't know the guy's first name, but the last name is Pascal. Does anybody know his first name?
	60	R3	Blaise. B-l-a-i-s-e.
	61	R1	B-l-a-i-s-e. How do you say that? "Blaze" Pascal?
	62	R3	(inaudible) I'm not French.
	63	R1	And this thing is called Pascal's Triangle. And so, I don't think you realize, when you read this paper now, and see how hard you worked, you were really working pieces of Pascal's Triangle.
	64	Stephanie	Hmm. It makes it easier.
	65	R1	It makes it easier?
	66	Stephanie	A lot easier.
	67	R1	You know something, Stephanie? I hate to get preachy, 'cause my son will tell me "Ma, you're getting preachy", but if you hadn't done all that hard work all those years
	68	Stephanie	Yeah.

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	69	R1	this would make no sense to you now, I don't think. Because I taught college and Mrs. Muter teaches college and Mrs. Steencken teaches college and the students work with this and they don't see it. You know what I mean by see it?
	70	Stephanie	Yeah.
	71	R1	You see those cubes. You worked so hard at those.
	72	Stephanie	Yeah.
	73	R1	You know what I'm saying?
	74	Stephanie	Mh-hmm.
	75	R1	I mean, I don't know. But it's hard to visualize and see 'cause they only deal with the numbers. They just learned this rule that you add these numbers you get this and you add these numbers, you get this.
	76	Stephanie	Mm-hmm.
	77	R1	And if someone asks me what is the combinations of selecting exactly one of a color from five. You know, they'll give you the answer to that, but they have no picture of what they are giving you the answer to. They just are picking it out as a formula.
	78	Stephanie	Yeah.
	79	R1	You see that difference?
4:30	80	Stephanie	Yeah.