Session Seven
Conceptualizing and Representing Linear Relationships

Transcript: Logos Lesson Class 1
Amelia's and Mark's Methods from Schemel's Logo

[8 minutes]

35:11	**Amelia:**	We came up with an equation, and it was quadratic and the equation was y equals x squared plus two x plus two.
35:26	**Jennifer:**	How do you know [*inaudible*]?
35:28	**Amelia:**	Um, well, we were looking at the things, at the, um, Schemel's logos . . .
35:34	**Amelia:**	We noticed that the value of x was squared and that equaled the middle part of the logo.
35:42	**Amelia:**	And then on each side, there was the value of x and then there was plus one, and that was doubled.
35:50	**Amelia:**	So we put together to have x, two x plus two.
35:55	**Jennifer:**	Did you guys make a table, make a table.
35:57	**Gisele:**	Let her just explain a little more before you go to the table. Amelia, it's . . .
36:03	**Gisele:**	It's kind of hard to understand what you're saying without showing us. Can you . . .
36:09	**Gisele:**	Just show us what you're doing?
36:23	**Amelia:**	We used a similar way to, how Maria did it, except when it was one here, it was one square equal to the part here . . .

36:36	**Amelia:**	Which is one, and then it was two squared, it goes to here, which is four . . .
36:41	**Amelia:**	And it went three squared, which is nine, and then four squared, which was sixteen.
36:47	**Amelia:**	And then when you look at the side parts, it's equal to x plus one, and if you look at each one . . .
36:59	**Amelia:**	It's x plus one, and it goes on for each. And because there were, there's, it's on both sides, you have to, it's two.
37:08	**Amelia:**	So it be two x plus two, because you'd have, it would be, it's x squared, then you have . . .
37:15	**Amelia:**	You have plus x plus one, and then plus x plus one. So you'd combine it together so it'd be y equals x squared plus two x plus two.
37:33	**Amelia:**	Everyone understand?
37:37	**Gisele:**	Questions?
37:42	**Gisele:**	Anybody have a question?
37:44	**Gisele:**	Yeah. I think you do. No?
37:47	**Gisele:**	Question?
37:55	**Gisele:**	I have a question. I don't understand where the x squared came from.
37:59	**Amelia:**	You don't understand?
38:00	**Gisele:**	Yeah.
38:00	**Amelia:**	Because . . .
38:01	**Gisele:**	Can someone else maybe? Call on someone else to explain it?
38:06	**Amelia:**	Kate.
38:07	**Kate:**	[*inaudible*].
38:10	**Gisele:**	Whatever you want.
38:12	**Kate:**	Well, I saw that the middle part, I looked at it, the middle part like we did it with Regina's logo . . .

38:17	**Kate:**	And I saw that for every size, the middle part was squared, so that was a square of that size.
38:23	**Kate:**	Like if it was size two, the middle part would be four, which is two squared, and for size three, the middle part equaled nine.
38:31	**Kate:**	And that's how you got x squared.
38:34	**Gisele:**	OK.
38:37	**Jennifer:**	Did you guys make a table for this equation?
38:42	**Jennifer:**	Jason?
38:47	**Jason:**	We got a table with x and y.
38:49	**Jennifer:**	Yes.
38:51	**Jason:**	I labeled x, one to four.
38:58	**Jason:**	One is five, two is ten, three is seventeen, four is twenty-six, and zero is two.
39:18	**Jennifer:**	Did you guys . . .
39:20	**Gisele:**	Could I just ask how, why is that table helpful?
39:28	**Gisele:**	Amber?
39:29	**Amber:**	OK. The table is helpful for one reason . . .
39:31	**Gisele:**	A little louder.
39:32	**Amber:**	You can determine that it's not linear, because you see that there's not a constant rate of change.
39:38	**Amber:**	So you know, yeah, that . . . OK, that's three, and then it's five, and then seven.
39:48	**Amber:**	So you can automatic, and then nine. And you can automatically limit out that it's not linear, so you're putting . . .
39:55	**Student:**	Y-intercept.
39:59	**Amber:**	OK, so you know you're only left with two options. It's either exponential or quadratic . . .
40:06	**Amber:**	And if you do that, what Amelia did, you'll notice that it's quadratic.

40:14	**Gisele:**	OK. Good. How else is the table helpful?
40:21	**Gisele:**	Mark?
40:22	**Mark:**	Well, you really can't see it from this table, but if you maybe extended the table to negative one, you could also see the vertex.
40:31	**Student:**	Y-intercept.
40:32	**Gisele:**	Um-hm.
40:33	**Student:**	Y-intercept.
40:34	**Mark:**	Oh, and you could solve the Y-intercept also.
40:37	**Gisele:**	Um-hm.
40:39	**Mark:**	And my group came up with a vertex form of the equation.
40:44	**Gisele:**	Do you want to show us?
40:45	**Mark:**	Um . . .
46:29	**Gisele:**	How did you use the table, Mark, to get the equation? How did you use the table to get the equation?
40:52	**Mark:**	To get the equation? Well, we used Maria's way. Maria used the table. We just . . .
41:05	**Student:**	Regression.
41:05	**Mark:**	Yeah, and we also did regression on the calculator.
41:09	**Gisele:**	What does that mean?
41:10	**Mark:**	Well, besides trying to find the best, the best parabola and the best equations, that fit a set of data.
41:19	**Gisele:**	Um-hm. OK. And did you want to show us the other form that you said?
41:24	**Mark:**	The vertex.
41:25	**Gisele:**	Do you want to show us how you got that on the board maybe?
42:01	**Mark:**	So the vertex equals negative one and one.

42:03	**Gisele:**	Wait, how do you know that?
42:05	**Mark:**	Because if you graph it, then that's a minimum point, so that's all the way at the bottom of the graph . . .
42:11	**Mark:**	Since and that's minimum. So you can tell from the graph that that's the vertex. So it'll be . . .
42:54	**Mark:**	So then the vertex will look like . . .
42:57	**Mark:**	So then you could get that form, and another form we got was like this.