

18: 8th Math Graphing PreInterview

Speaker 1: First of all, it's a requirement in the standards for Common Core; it's 8F3 which is about functions. The kids have been learning about functions this unit, and we're taking it a step further by looking at linear and nonlinear, but they don't know it yet.

Another reason why I chose this one is because I like the kids to discover how their learning the lessons, rather than me just feeding them the answers. They're going to be doing a group work activity where they're going to look and compare linear and nonlinear functions. Then come up with the idea of why are they different. I'm hoping that they then pull out the things about the graph, and one being curved and not curved, and the idea that the equations are also different. One has an x value, one has an x^2 value; we're mostly going to look at quadratics because we're going to lead into quadratics later in the school year.

The goals for me is that the kids will pick up on those similarities and differences between linear and nonlinear functions. We've been, like I said, talking about functions; they have a real clear idea what a function is. We've looked at things that were curved and described them as functions or not functions, but now we're going to take it a step further and do that comparison. Where are they coming from? How are they getting it? Why is the equation different than the ones we've been looking at? They know a lot about linear functions and they're really good. You're going to hear it in class today where, they're going to say " $y=mx+b$." They're going to know what m and b are. Then we're going to switch it up. What happens to the m ? What happens to the b ? Where does all that go? For them to come up with a comparison in figuring it out that there are other functions out there and that we can actually come up with equations for them.

How it meets the [00:02:00] outcomes for the kids is that, I really want them to have a strong understanding of linear versus nonlinear, so that when we do quadratics, and we solve them, and graph them, I can have a base to talk to them about it from the linear point of view because they're really strong at that.

For this lesson, we did the first part yesterday, a little bit, had them do some tables of values for the different equations I gave them. I gave them a set of four equations; one that's different than the other. They got three linear and one nonlinear, or vice versa. Today we're going to be in groups and they're going to graph them. Part of the assessment is on their worksheet they got yesterday. There's two little questions about comparing them. Why is one different than the other? Then hopefully they can pull out some information about that.

Another assessment is that we're going to then share out, so they're working in two separate groups. One with each set of four different equations. Then they're going to share out "What did you find? Well what did you find? Why is yours different? Why is that different?" Hopefully by having them do a full class discussion, and half the class sharing out, I'm going to get a little bit more information from that.

Lastly, we're going to do kind of a [culminating 00:03:19] activity by doing a graphic organizer. They're going to put it all in a Venn diagram; we're going to compare linear to quadratic. Then, them all sharing everything that we've been talking about for the last two days coming together. That would be my last assessment for this one.

All of my kids know that I expect a lot out of them. I have high expectations from the beginning of class all the way through the end. We have set routines. They know that when they come in, they are to fill in their planners, take out their homework, whatever task I'm asking them to do in the beginning. Then throughout the whole time, that they are to stay on task.

This one's a little different [00:04:00] because we're going to be in groups. By being in groups, they have to kind of manage themselves a little bit. They know they need to be on task, but then I'll be stopping by each group and talking to them and make sure they're doing what they're supposed to be doing and staying on task. Then we come together as a whole class, just respectful interaction with each other when they're sharing out their answers, or sharing a thought or having a whole group discussion.

I guess I hope that they see what's similar and what's different with those linear and nonlinear equations. I hope they see there's a difference in the equations; that's the first thing. We haven't really looked at quadratic equations too much, but if they spot that exponent, that change, and then we can kind of bring it to more generalization about nonlinears; they all have an exponent that's greater than one. If I can get them to see that, that would be great. I also want them to tell me, of course, the graph is straight and not. It has a curve to it and that's what makes it nonlinear.

Then if we can get to it, the idea that, what does their table of values look like? They have a set, so how are they comparing the table values? That one's going to be a little trickier to pull from them. I'm hoping I can get that they see that linear is constant, and nonlinear is not constant in that way.

I think for this group of kids, the age that they are, in eighth grade, they really do like doing cooperative learning. They really enjoy working together and sharing their ideas with each other. Being in a group setting is going to be something that they're going to gravitate towards. I'm also doing a really large poster graph, rather than just a single piece of paper. I think they'll enjoy the idea that...Some get frustrated because it's a big scale, and "How do I work with that big scale?" [00:06:00] I think they'll really like the idea that they get to use markers, and a big ruler, and all that fun hands-on kind of stuff that they like.

I think that the other half of the engagement is that when we do do notes, it's them giving me the notes. Rather than me saying "Okay, well this is what we're doing on," as I write it on the board. They're actually going to tell me everything that they want to put in the Venn diagram as I lead them through that discussion.

Now linear and nonlinear, how does that really relate? I don't think there's a direct connection, but I'm hoping that they see. We've been doing linear situations, so they

know when I tell them a scenario or story, when something is linear. Like the car driving certain miles after going twenty miles per; that type of thing. The nonlinear ones, I hope they see there's a tie to that too. I'm expecting some of the kids to tell me about throwing a ball or hitting a ball, and then we can talk about how it does make that quadratic curve. It's just a little bit harder to tie in this particular math topic to their everyday life without talking sports, or things like that. I hope that they lead that. If not, I will kind of give them some ideas about that. Rockets are also common.