

READING WRITING IN THE DISCIPLINES

Talking Like a Mathematician Video Transcript

Kim Dinh:

You have five problems for warmup. Go ahead and get started. If you need some sentence starters for number five, you may do that.

For a lot of other subjects, reading and writing might be reading a book, reading a problem, and then writing an essay of some sort. But in math, can they read a graph? Can they write by drawing a function? Can they graph the linear inequality today?

At least try numbers three and four, and if you get to five, great, because that's something that I do want to talk to you about.

Student:

For number five, which inequality do you use to...

Dinh:

Just in general, yes. So Alexis just asked me on number five which inequality you would use. I just want some sort of algorithm, something that would help you be able to explain the process to someone – not necessarily any specific inequality. What would you do, how would you decide to explain it to someone? Let's say I did not know how to do the problems at all. What would you say to explain it to me so I could be able to do the problem?

In algebra specifically we solve problems with an equation. We might represent it verbally or we might even use an equation or an inequality, or I might have them do it on their own first, and then I might have them pair up and talk about the problem.

Student:

I think... because last time you had two equations. So we can use elimination to find both C and D.

Student:

So you can use zero.

Student:

But you don't have two equations.

Student:

I know, but I... I don't know how to do the other equations.

Student:

You just keep going. 28 times 14.

Student:

Is it even supposed to be an equation?

Student:

Well, it's kind of... it's similar to the other problems -- both even.

Student:

So you can do seven times four divided by 392. So you can do seven times four, which is 28, and then divide that by 392.

Dinh:

They wanted to be able to explain the problems to each other, so there was a sense of understanding of the problem and being able to talk about that. So there's another extended piece of the reading and writing as well.

Student:

Oh, so one tuna for every person.

Student:

Yeah.

Dinh:

And then we might go back and forth between the graph and the equation and the expression.

May I have a volunteer? Catch.

I know which teams did these problems. May I have a volunteer go ahead and explain number one for us?

Student:

One is a solid line. You have to graph first by the Y intercept.

Dinh:

Okay, so the Y intercept is...

Student:

Three.

Dinh:

Three.

Student:

And then you go down two, and then right one.

Dinh:

Okay. For number two?

Student:

It's a dash sign, because it's only greater than. And the y intercept is negative one and the slope is two-fifths.

Dinh:

Antonia, number three -- how did they get to Y?

Antonia:

Oh, they divided by negative.

Dinh:

So why did they switch the inequality, then?

Antonia:

To make it in the right form.

Dinh:

And then what did they do after that?

Antonia:

They graphed it.

Dinh:

Okay. And so you plug in your negative three, go up four, right one, and then how did you know which side to shade?

Antonia:

They plotted a point. Well, I plotted a point.

Dinh:

Which point did you pick?

Antonia:

I put zero-zero.

Dinh:

You put zero-zero. Oh, so some of you are catching on to the zero-zero point. It's quite helpful, and it's a simpler number to plug in, see if it satisfies my inequality. Yoledi, do you generally pick a point to decide the shade, or do you just know when... which side to shade based off of the inequality?

Yoledi:

Based off the inequality.

Dinh:

So you look at the inequality. So how would I know to shade below a line or above a line?

Yoledi:

If it is less than, you shade below the line.

Dinh:

Okay.

Yoledi:

And if it's greater than, you shade above the line.

Dinh:

So if it's greater than, you show above. And you see how when I ask you guys to write a process, it shows a better level of understanding? So that's the writing and reading portion, when we were able to explain it. More importantly, I actually wanted to get to number five. Do I have any students that might be able to explain to us how or maybe what they wrote? How would you explain to someone to graph linear inequalities?

On the fifth problem in the warmup today they wrote the process, and now they can actually explain how to graph that. So, one, they can write that, and two, can they verbalize it? So that's reading and writing.

Mohamed:

If I were to explain to someone how to graph linear inequalities, first I would say graph the points, like in slope intercept form.

We learn more ways to do one problem, instead of learning one exact way. Some people did so many other things that this makes you think, "Oh, how many ways can I do this... how many ways can I do this problem, or how many ways can I do this problem?"

Second, look at the sign. If the sign were to be a less than or greater than, it would have a dashed line.

Dinh:

Okay.

Mohamed:

And if it were to have a less than or equal to, or greater than or equal to, it would have a solid line. And then you graph the line. And then you can choose any point you please. For example, zero-zero. And you plug it into the X and Y. And if it were to be false, you would put it either on the right side or left side, depending on your line.

Dinh:

If a student can relate and use that skill with those multiple representations, that's one of my goals – can you solve a problem in different ways for me? Because there's value in that. You can't... there isn't always just one way to solve a problem. Can you do it different ways, and do you understand the relationship between all that? Can you go back and forth and translate this skill, not just in math? Can you use it in physics or science, et cetera?

Mohamed:

And if it were to be correct, you would shade it the right or the left, depending on the line.

Dinh:

This relates to a lot of what we've been doing with the systems. So we'll keep on doing that.