MELISSA NIX: I'm gonna show you two figures right now, and I want you to think about what mathematical questions can we ask about these figures. So, you're thinking by yourself for a second, and then I wanna have you turn to your neighbor and chat it through. So, let's take 10 seconds of think time.

All right, go ahead and turn to your other partner, and discuss what mathematical questions can we ask about these figures.

STUDENT: Or the, the perimeter.

STUDENT: Yeah.

STUDENT: The other perimeter.

STUDENT: What is the perimeter of the figure?

STUDENT: I would also ask why the sides are the 2*z* [inaudible]. They're just kind of different.

STUDENT: We just, we need to see, to figure out what one is, is one, one variable of 8. We just need the extras of 2*z* to find out that one. But, we have nothing for that one, so.

MELISSA NIX: What'd you and your partner talk about?

STUDENT: We talked about, um one mathematical question we could ask is what's the, what amount is *z* ...

MELISSA NIX: What's the--

STUDENT: On the first figure.

MELISSA NIX: What, it's, the value of *z*?

STUDENT: Yeah, that.

MELISSA NIX: Thank you. *Z*, the value of *z* might not always be the same value, it might actually vary. What do you call *z*?

STUDENTS: A variable.

MELISSA NIX: Go ahead, you can say it to me. What is it called?

STUDENTS: A variable.

MELISSA NIX: All right, so what's the value of *z*, on the first figure. And then, Miranda, did you come up with, did you or your partner come up with another mathematical question?

STUDENT: What's the area of the second figure?

MELISSA NIX: What's the area of the second figure. Thank you. Ah! Qwentin, did you come up with something?

STUDENT: Um, no, we had the same idea of what is the value of *z*.

MELISSA NIX: That's the same some--, that's the same something, the same idea's a good idea. Thank you. Ellie, did you come up with something?

STUDENT: What are the perimeters of the figures?

MELISSA NIX: What are the perimeters of the figure. I appreciate that, when you look at a problem, you start thinking about, all right, what might the potential questions be of this particular problem? Whenever you're tackling into a problem, that's a good thing to ask yourself. Before you even read what are they asking me, start asking yourself, "What might I be asked?"

I'm gonna ask you now, if I showed you these answers, what do you think the question was? Sorry for those of you in the back who can't see. It says, "Blue: $2z(x)=2x$ squared," and it says, "Orange: $2z(8)=16z$."

Go ahead and chat with your partner, and then be prepared to convince me that you think that's really what I asked.

STUDENT: Like, what is the area of the -- of the rectangles?

STUDENT: Yeah, because they multiplied the two variables that they had, which is why, I would say, like, area.

STUDENT: Yeah.

STUDENT: By each other, which ...

STUDENT: 16*z*.

STUDENT: Yeah, exactly.

STUDENT: [inaudible] be area.

STUDENT: It's *z* times *z*, so you have 2*z* squared.

STUDENT 8: Mm-hmm. [affirmative]

MELISSA NIX: Rolando, what do you think I asked when I show these answers, when I get these answers -- what do you think the question was?

STUDENT: What is the area of the rectangles?

MELISSA NIX: What is the, what is the area of the rectangles?

STUDENT: Mm-hmm. [affirmative]

MELISSA NIX: And can you convince me that the area of the blue rectangle really is 2*z* squared? Or what would you tell me if you were to convince me?

STUDENT: Well, *z* times *z* is *z* squared.

MELISSA NIX: Mm-hmm.

STUDENT: And then there's a 2, so ...

MELISSA NIX: And then there's a 2?

STUDENT: Yeah, so, like, two sets of them.

MELISSA NIX: Oh, two sets of them? Is that something you could draw to help me see that? Does anyone think they can draw on my little diagram up here to help see the two sets of *z*'s?

How many *z* squares would I end up with over here? Two. What shape would my *z* squares be?

STUDENTS: Squares.

MELISSA NIX: Why?

STUDENT: Cause it's ...

MELISSA NIX: Cause it's why?

STUDENT: Well ...

MELISSA NIX: Who thinks -- what do you think?

STUDENT: Because, um, you're multiplying *z* by *z*, so it's the same length.

MELISSA NIX: Okay, we'll find the same length, by the same width, so it's the same value, same value, so you're gonna get a what shape?

STUDENTS: Square.

MELISSA NIX: A square. So, what if I do that? Now what do you see in that picture?

STUDENTS: Two squares.

MELISSA NIX: I have two squares, and what are the names of those two squares?

STUDENTS: *Z* square.

MELISSA NIX: So, Rolando, what would you label this dimension?

STUDENT: *Z*.

MELISSA NIX: Why?

STUDENT: Because *z* times, *z* times *z* is *z* square.

MELISSA NIX: So, *z* here, and *z* here, and *z* times *z* is *z* -- is *z* squared. And *z* times *z* is *z* squared. Turn to your partner and decide, do you agree that this *z* and this *z* are the same thing as two *z*'s?

STUDENTS: Yes.

STUDENT: Two *z*'s.

STUDENT: That's all we're missing.

STUDENT: Multiplying 2 by *z*, so there's *z* at the end, there's *z* down there, and we know that, because it's *z* squared. And the square has four equal sides. So they all have to be *z*.