ANTOINETTE VILLARIN: So in front of your desk you guys have a green piece of paper. I'm gonna give you a problem, and you're first gonna do it, first, by yourself, before you share with a partner. Okay? So once they color these, I want you—thank you, Brandon, and thank you, Erica – Use this as a way to help you solve this next problem. Yes, Cassie?
STUDENT: Do we do it on our head or on our paper?
ANTOINETTE VILLARIN: You can do it in your head, or on your paper, but I want you to have something recorded. Okay? Because I'm gonna have you do some proving. So the problem goes like this: Robbie says, thank you, you guys helped him distinguish between area and perimeter, and he says that in this square, which is 3 inches and 3 inches of length and 3 inches of the height, he says the area of the square is 9 square inches. His friend, though, says, nope! It's 12 inches. Can you tell me who you agree with? Robbie? Or his friend? and on your paper tell me why. I want you to prove it. So is Robbie correct or his friend? And you don't have to copy the question, you can just show your thinking.
STUDENT: He said that he multiplied it, so the area is right but, 7 times 4…
PATTY FERRANT: The top one, we're doing the top one first.
STUDENT: Yeah. Mmm.
PATTY FERRANT: Robbie thinks the area is 9 inches squared…
ANTOINETTE VILLARIN: You can also draw a picture to tell me how you know. Or to show me why.
STUDENT: I feel like this one, cause like, I agree with Robbie, because
PATTY FERRANT: Can you prove it? Can you show it in a picture?
STUDENT: Yeah.
PATTY FERRANT: Good.
ANTOINETTE VILLARIN: And when you're ready, you can go ahead and share with your partner, which one you think is correct.
PATTY FERRANT: Sure. And who do you think? Who do you agree with? You think the friend? And why do you think with the friend?
STUDENT: Because it's 12, which is 3 inches, 3 inches.
PATTY FERRANT: And what is he trying to find out? It says Robbie says the area…
STUDENT: Oh. Area.
PATTY FERRANT: Oh, you were thinking perimeter?
STUDENT: Yeah.
PATTY FERRANT: Okay, so who do you agree with?
STUDENT: Robbie.
PATTY FERRANT: And can you prove it?
STUDENT: I think
PATTY FERRANT: You think? How can you—show me in the picture. How could you prove it in the picture?
STUDENT: Um… I don't know.
PATTY FERRANT: Jason, do you have any idea? How could you prove it in a picture? Do you know who you agree with? So you agree with Robbie? Okay. Could you show me in the picture? If you think his area is 9 inches squared, can you prove it in your picture? So why don't you guys talk about that. Can you prove it in the picture?
STUDENT: Is it width times length?
PATTY FERRANT: I don't know. Ask Jason.
STUDENT: Is it?
PATTY FERRANT: So why don't you explain what you did?
STUDENT: Um, to the …
PATTY FERRANT: Gave you the area, but can you prove it in the picture? Which part of the picture is the area?
STUDENT: The length times width?
PATTY FERRANT: Oh, so the … which part of the picture?
STUDENT: inside.
PATTY FERRANT: Right there? The inside. So can you show me the 9 inches squared? Can you actually show me that in the picture? Is there any way to show that in the picture? Ah! It looks like… go! Yep! Can you explain to Carl what you just did? So what does that mean?What does that mean?

STUDENT: There's 9 squares.
PATTY FERRANT: There's 9 squares inside. Make sure you share that. That's wonderful! Be sure to share that. So now who do you agree with?
STUDENT: Robbie.
PATTY FERRANT: You… Why?
STUDENT: Because there's 9 squares in the box.
PATTY FERRANT: Sure. And then, what is his friend thinking?
STUDENT: There's 12.
PATTY FERRANT: So what … his friend, is his friend confused?
STUDENT: Yeah.
PATTY FERRANT: What's his friend thinking?
STUDENT: The perimeter.
ANTOINETTE VILLARIN: As you work, think about what… what area is. And the question I forgot to ask you in the very first poster that we did, is: How do we measure area? So earlier, somebody said, "Oh, it's length times width." How do we measure it? Like if somebody wants to calculate the area of a shape, how do you… how do you measure it? Cassie?
STUDENT: Um, you could take a ruler, some sort of ruler, and measure the length and then the width, and then you could multiply them. ANTOINETTE VILLARIN: Okay, so we can multiply it. But how would you measure it? Like if I took this room and I wanted to… or this desk, and I wanted to measure the area? What would I be doing? Other than just multiplying the length and the width? Yes. Mm hm! Brandon?STUDENT: Finding out what is the length and what is the width?
ANTOINETTE VILLARIN: Okay, so you would find out what the length and what the width is? And then what would you do? Alex?
STUDENT: After you found it out, you would multiply them.
ANTOINETTE VILLARIN: Okay, you multiply it? Okay, really quickly, with your partner, we asked a couple students to come up, … or a student to come up. Can you talk with your partner and see what this student did? Okay? Talk to your partner.
PATTY FERRANT: What did that student do?
STUDENT: It's the area. And the total of it is 9 sided. Which is the area. 'Cause 3, which is the length, and 3, which is the width. You multiply those two, and it's 9.
PATTY FERRANT: Do you agree?
STUDENT: Yes.
PATTY FERRANT: Yeah? So what's inside? What's actually inside that square? What do you see?
STUDENT: The area?
PATTY FERRANT: And what is the area?
STUDENT: 9.
PATTY FERRANT: 9. So what do you actually see? 9 what? What are you actually seeing?
STUDENT: 9 boxes.
PATTY FERRANT: 9… boxes?
ANTOINETTE VILLARIN: Can anyone tell me…
STUDENT: Squares?
PATTY FERRANT: Squares, yeah.
ANTOINETTE VILLARIN: Is it Brendan? I think it was Brendan
PATTY FERRANT: Julian.
ANTOINETTE VILLARIN: Julian. What did you do?
STUDENT: I drew 3, 'cause I made 3 columns and 3 rows.
ANTOINETTE VILLARIN: Ah. 3 columns and 3 rows. Why?
STUDENT: Because there are 3 inches on the width and 3 inches on the length.
ANTOINETTE VILLARIN: Okay, so we have 3 inches on the width and 3 inches on the length. Okay. And then, earlier, you guys said that area's the space inside. But with Julian's picture, what did he use to measure it? Earlier, you guys colored it in. What did he use to measure the area, the space inside. Okay? Alex?
STUDENT: Inches?

ANTOINETTE VILLARIN: In inches? Okay, what kind of inches, though? What kind of inches? Um, Jessica? Stacey.
STUDENT: Square inches.
ANTOINETTE VILLARIN: Square inches. So what does that mean when somebody says square inches? What does that mean? Dale?D'Andre?
STUDENT: It's, 1 inch squared.
ANTOINETTE VILLARIN: It's, what was that?
STUDENT: It's 1 inch squared.
ANTOINETTE VILLARIN: It's 1 inch square! Okay, so here, how many square inches do I have? Shira?
STUDENT: 9
ANTOINETTE VILLARIN: 9! Okay? So what I'd like you to do if you didn't do it, is, can you draw this picture in there? 'Cause what some of you did, is you just proved that the area of this square is what? What's the area of this square? Cassie?
STUDENT: 9 inches… squared.
ANTOINETTE VILLARIN: 9 square inches. Okay? So we measure area with squares. Okay? That's a really important concept that we want you to think about. So what I'd like you to do then… so. Do you guys agree with Robbie or his friend?
STUDENTS: Robbie.
ANTOINETTE VILLARIN: Robbie. Okay. Let's go on to the next problem, okay? Same place.