**Second-Grade—Valerie Transcription**

Beginning Info: This video features Wendy Bray interviewing a second grader, Valerie, in order to assess her mathematical thinking related to place-value concepts. A document containing the interview tasks and materials is available at the Teaching Is Problem Solving website with the concept videos on place value.

**Interviewer:** You don't have to solve all of the problems if you don't want to, you can choose. You can ask me questions. You can change your mind about doing this interview at any time. If you don't want to do it, you just have let me know. Okay? Okay. You ready to start? Great. So, here's our first thing. I'm going to pour these cubes out on the table. Some of them stuck together in my bag so I'm going to take them apart. And the first thing I want you to do is I'd like you to tell me how many blue cubes.

**Valerie:** (softly counting, makes groups of 5). So 5, 10, 15, 20, 25, 30, 31, 32, 33, 34.

**Interviewer:** Okay, can you write down that number 34 on this piece of paper?

**Valerie:** Oops

**Interviewer:** You can just scratch it out and write it over here. That's fine. Okay, so, does this part of the number 34 (indicating the 4) have anything to do with the number of cubes?

**Valerie:** Yes .

**Interviewer:** Okay, tell me more about that.

**Valerie:** So I counted by 5's with the cubes and since I didn't have one where—there was four in a group, and I didn't have one more to add to it, so I just added those to 30.

**Interviewer:** Okay, can you show me the part that would be that four part?

**Valerie:** This would be the 4. And this would be the 30.

**Interviewer:** Oh! So that is my next question. If that 3 has anything to do with it. So, tell me your thinking about that.

**Valerie:** So from there, after I counted all of these into 5's, after I put all of them into 5's, I double checked that I had 5 in each group and that I was counting by 5's correctly. So then, after I had these four left, I just added these, all this together, and then I added this.

**Interviewer:** And what does that have to do with the 3? Tell me about what… what does this 3 have to do with the cubes? Could you maybe explain it to me maybe again? Or tell me a little more about it?

**Valerie:** I'm not sure.

**Interviewer:** Okay, that's okay. I think you said something in the beginning where I kind of understood what you were saying-,how this was all the 30 and maybe that had something to do with that? That's kind of what you said. Okay, I'm going to scoot these over and turn the page over. We're going to keep the marker handy but we're going to do kind of a similar thing. You can just set it down right there. Alright, so now we're going to do the orange cubes task; it's similar but a little different. What I'd like you to do first is put 10 cubes in that cup, 10 orange cubes in that cup… okay, and put 10 cubes in that cup. Let's check them. I maybe lost some cubes; let's do a quick check.

**Valerie:** (inaudible counting)

**Interviewer:** Okay, let's put 10 in this cup.

**Valerie:** (dumps out cubes from the other cup and counts 1–10)

**Interviewer:** Okay, so that one is definitely 10. Okay, so put those cubes down here. Alright, so now my question for you is can you tell me how many orange cubes there are, including the ones in the cups and the ones out of the cups?

**Valerie:** There are exactly… 26 cubes.

**Interviewer:** How did you decide 26?

**Valerie:** Because if there's 10 cubes in this cup and 10 cubes in this cup, and I already know that 10+10 is 20, so then after I have that, I know that 20 plus these 6 ones is 26.

**Interviewer:** Got it. Okay can you write down that number up here, what you just said? Now I'm going to ask you the same questions as I asked you before. Can you tell me if this part has anything to do with the orange cubes?

**Valerie:** So, if we didn't have these regular 6 cubes this would just be regular 20.

**Interviewer:** Okay.

**Valerie:** And so, if you were trying to make the number 26, and you didn't have these 6 cubes, then you wouldn't be able to get the number 26.

**Interviewer:** So are these, is this part?

**Valerie:** Yes.

**Interviewer:** Okay, now tell me does this 2 have anything to do with your 26 cubes?

**Valerie:** This 26 cubes also has something to do with this because if you just took away these 10 cubes, there would only be 16 and then you would need 10 more cubes to get to 26. And you only have 16 then you would have to add 10 more but if you didn't have anymore, then you can't make 26.

**Interviewer:** So where is this 2 in your cubes?

**Valerie:** Right here.

**Intervie.wer:** Those two cups? Got it. All right, and you know what? You just said something that I already know what you're going to do for my next question, but I'm going to ask anyways. You just counted 26 cubes; can you change it to 16 cubes?

**Valerie:** Okay! (moves away one cup)

**Interviewer:** Okay, I see exactly what you did. Can you tell me how you knew that you could just take one cup away?

**Valerie:** Because if you have 26 then if you know that each cup has 10, then if you know that 20 plus 10 is only 10 and you're still going to have 6 more cubes and 10 plus 6. I already know that it's 16.

**Interviewer:** So, the 10 plus 6 is the 16. Got it. Alright. I'm going to move this one over here. Okay, so this is a pretending task. So now you have 16 orange cubes and I want you to pretend that I'm giving you 25 more cubes. How many cubes would you have then? So, you have your 16 and I want to know how many you think you'd have if I gave you 25.

**Valerie:** 16, okay so… 6 + 5…. okay so… it's going to be 11 so… put the one there… that's going to be… 41.

**Interviewer:** Okay, I see exactly what you did. That was really nice, thank you. Valerie, what we're going to do next before we do the next part, we're going to clean up these parts. Do you want to clean up the orange or the blue?

**Interviewer:** Okay so for this next part, I'm going to ask you to solve some story problems and if you want, you can solve them mentally with just your head—just your brain—or you can use fingers. If you use your fingers, it would be great if you could put them on the table so the

4

camera can see, or you can use any of the tools that I brought to help you. I brought all sorts of things… I brought base-10 blocks, you can use the paper and the markers if you want, we have snap cubes that are loose like the ones we've been using, and I also have some that are in sticks. Okay? So you can use any of this stuff or you can use none of it. It's up to you. Does that make sense?

**Valerie:** Yes.

**Interviewer:** Alright, so Valerie, I'm going to read each story problem out loud to you, and I have it on a card. I don't want you to write on the card, if you want to write on something, just grab a piece of paper. If you want me to read it again, I'll read it as many times as you want, you just ask me. Okay? And are you ready for the first one? Here's the first one.

Your teacher has 4 new boxes of markers. Have you ever bought markers in a box before?

**Valerie:** Yeah.

**Interviewer:** There are 10 markers in each box. And my question is how many new markers does she have?

**Valerie:** Oh! I know (says before taking out manipulatives). (Takes out 5 tens rods.) She has 40 boxes. 40 markers.

**Interviewer:** 40 markers? How did you figure out 40 markers?

**Valerie:** (Puts one tens rod away) Because since I know that 10 plus 10 is 20, and if I add another 2 to the 20, that's 20 and 20. And I automatically know that 20 plus 20 is 40. So, altogether she has 40 markers.

**Interviewer:** Valerie, that was a really nice explanation. Thank you. Okay, you ready for the next one? I'm going to ask you a problem that's really similar but it has a bigger number, okay?

So, here's our new problem: Your teacher has 13 new boxes of markers. There are 10 markers in each box. How many new markers does she have?

**Valerie:** (Takes out tens rods and counts them) 8, 9, 10, 11, 12, 13… 1, 2, 3, 4, 5, 60, 70, 80, 90, 100, 110, 120, 130… 130 markers.

**Interviewer:** I saw exactly how you did that. Okay, I'm going to push these to the side and now I have a different kind of problem. You can leave those there, just push these over. You can grab them if you want. So, here's the next problem. Have you ever gotten a bag of pretzels and then wanted to put a little bit in your lunch box? Or have a little bit as a snack? That's what this problem is about. Your teacher has 30 pretzels. She wants to put the pretzels in snack bags so there are 10 pretzels in each bag. How many snack bags can she make?

**Valerie:** So, if she has 30 of these, and she wants to make 10 in each one, then she's only going to have 3 bags since 10 plus 10 is 20, and 20 plus 10 is 30 so then you're just going to have to break it up into only 3 bags.

**Interviewer:** That was a really nice explanation, Valerie. Just like the last one, I'm going to do a similar problem but with a different number. So, what if your teacher, instead of having 30 she has 120 pretzels and she wants to put them in snack bags where there are 10 in each. How many snack bags can she make?

**Valerie:** (counting tens rods) Ten in each… 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11… 12.

**Interviewer:** Okay. That was really nice. I saw exactly what you did. Okay, I think what we're going to do now, is we're going to clean up this part and go on to one more part.

**Interviewer:** So, for this next part I'm going to show you some cards with some pictures of small squares, and let's look at the first one. So, some of the squares are touching and some of

the squares aren't. Can you touch 2 small squares that are touching? Yep. Can you touch 2 small squares that aren't touching? How many small squares are in this one?

**Valerie:** (counts each one as she points to it with her finger) 10.

**Interviewer:** Okay. So, a lot of them have them just like this so it's nice to know. Okay, so next I want you to tell me how many small squares are on that card.

**Valerie:** 13.

**Interviewer:** How did you know 13?

**Valerie:** Because I already know that I just counted them and it's 10. And then I already know that 10 plus 3 is 13. So, if there's one 10 and 3 subcards then there's 13.

**Interviewer:** You're a really good explainer, Valerie. Thank you for telling me about that. Okay, here's the next one. That was kind of a warm-up so that you understand what to do. How many small squares are on this card?

**Valerie:** 42.

**Interviewer:** And I think I know what you did. Can you tell me you figured it out? I saw you kind of touch like this… what did you say when you did that?

**Valerie:** So, I already know that this is 40 since there are four 10s blocks and I already know that 40 plus 2 ones is 42.

**Interviewer:** Thank you. Here's the next one. How many small squares are on this card?

**Valerie:** 54.

**Interviewer:** I saw exactly how you counted that. How about on this card?

**Valerie:** There's 22.

**Interviewer:** How did you figure out 22?

**Valerie:** Just because this ten is separated into little ones it doesn't mean that it's not a 10 anymore.

**Interviewer:** Okay, so you thought of this part right here (points to the two groups of 5) as a 10?

**Valerie:** All of this (points to two groups of 5) is a 10 plus this other 10 which is 20 and there's 2 leftovers

**Interviewer:** Great. That was a really nice explanation. What about this one?

**Valerie:** 33.

**Interviewer:** So, I think I saw how you were covering them up… can you just show me what you were doing with your counting when you were counting these ones and covering up?

**Valerie:** So, these are separated and since I didn't want to get mixed up, the ones that I counted, I covered them up and these—I already knew that these are straight 10s and so are these. So, then since there's two 10 sticks, and one 10 ones, that's 30 and then there's 3 leftovers.

**Interviewer:** Got it. Thank you, Valerie. Here's the next one. How many small squares are on this card?

**Valerie:** 124.

**Interviewer:** Tell me how you figured out 124.

**Valerie:** Because since there's 10 tens in this, then this is already 100. 100 plus 20, which is these two sticks, is 120. And 120 plus these 4 is 124. It's the same thing as 24 but you're adding 100.

**Interviewer:** Oh, thanks for explaining that to me. So, on this next card—I only have a few more cards—all the next cards have—I still want you to count the small squares, but the small squares are a lot smaller. Okay? How many small squares are on this card?

**Valerie:** 403.

**Interviewer:** Can you show me how? I saw you count it. Can you count it again a little louder?

**Valerie:** 100, 200, 300, 400, 401, 402, 403.

**Interviewer:** Thank you, okay. We just have 3 more. Tell me about this one. How many small squares are on this card?

**Valerie:** 500 and… 520, 526.

**Interviewer:** You said 500 really quickly. Can you tell me about what you were doing over there?

**Valerie:** So, in this one, there were 10. There was one 10 here: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. Again here. And then I covered these up and there's 6 more so that would be 500 and then 20 and I have 6 left.

**Interviewer:** Got it. Thank you. We just have 2 more. How many small squares are on this card?

**Valerie:** So, there's 324.

**Interviewer:** Can you tell me about what you were thinking about when you were counting this part?

**Valerie:** Okay first, I was thinking that these are part of this but then I really looked at it and saw that it was 1, 2, 3, 4, 5 in each group and I already know that 5 times 5 is 10, but since they're 10s I know that 10 groups of 10 is 100, so then since I already have 200 here, and five 10s here, that's going to be 100. So 300 and 20 and 4.

**Interviewer:** That was a really nice explanation, Valerie. Thank you for telling me about it. Last one. How many small squares are on this card?

**Valerie:** Well, this is 200 and 20… 234.

**Interviewer:** Can you tell me how you figured that one out?

**Valerie:** So, this one is the same as the last one: 5 in each group which is 100 and then I looked at these two which is 10, and then I saw that there was leftovers here, and it made a 10. And then there was leftovers that made a 4.

**Interviewer:** Valerie, you've done a great job with all of these tasks. I so appreciate your telling me about how you thought about all of them. We are all done.