Naming Multiplication Strategies

A Grade 5 class is working on multiplication at the beginning of the school year. Students are solving problems and focusing on the strategies they are using. As they share strategies for multiplying 35 × 28, they comment on similarities and differences in their methods. At this point in the discussion, there are several strategies on the board, each one labeled with a student's name. Students are organizing and naming their strategies. (See the sample board at the end of this **Dialogue Box.**)

Teacher: We have quite a few solutions on the board right now. I can see that in some ways they are the same and in some ways they are different. Let's look at Cecilia's strategy. She kept the 35 whole and broke the 28 into 20 and 8. Can anyone describe in general words what Cecilia did? I mean, don't use numbers, just words. What did she do to the numbers?

Stuart: She pulled apart one number and left the other one alone.

Teacher: Then what did she do?

Stuart: She multiplied the two parts.

Teacher: Wouldn't it be nice if we had a name for this strategy?

Cecilia: How about breaking numbers?

[General nods from the class]

Teacher: OK, so Breaking Numbers Apart is one group of strategies (writes this on the board). Are there any other strategies on the board that fit into the Breaking Numbers Apart strategy?

Zachary: I broke up all the pieces—I broke the 35 into 30 and 5 and the 28 into 20 and 8.

Teacher: OK, Let's add that one to Breaking Numbers Apart. Charles, does yours fit into this strategy? I see you started with 10 × 28.

Charles looks unsure and does not answer.

Teacher: Can anyone tell me why Charles might have started with 10 × 28? It certainly worked and he got the right answer!

Walter: I think he did it because 28 × 10 is easy. It's 280.

Teacher: But where did the 10 come from? I don't see any 10 in the problem.

Walter: He broke 35 into 10 + 10 + 10 + 5.

Teacher: That sure does look like Breaking Numbers Apart. It is interesting that there are several ways to break these numbers up into smaller problems that you can solve easily. The important part is keeping track of all the parts so that nothing is left out at the end!

Teacher: Do all these other strategies fit into Breaking Numbers Apart?

Cecilia: Nora's strategy is weird. Her numbers are 70 and 14.

Teacher: Hmmm. Did she break apart numbers or do something else?

Nora: I did what I remember doing last year. I like to multiply by 10s. So I changed the 35 to 70. I doubled it. And then I knew that I had to cut the other number in half. So 28 became 14. Then I first did 70 × 10, which is 700 and then 70 × 4, which is 280.

Cecilia: Wait! She broke the numbers apart also! She broke the 14 apart.

Teacher: Good observation, Cecilia. I wonder whether others of you noticed that as well. Let's make another category, though, because Cecilia really started in a different way. She broke the numbers apart to finish off her problem, but basically she changed her problem into a whole new one and it worked!

I am going to call this category Doubling and Halving. We are going to talk more about that strategy in the middle of the year when we do more multiplication work.

As the teacher asks students to decide what is the same and what is different about these strategies, the teacher is listening for an understanding of the general approach that is taken by each student. Does the student notice that in several of the posted methods, students broke the numbers apart and created subproblems, although the particular ways they broke up the numbers might be different? Students may have a difficult time identifying the mathematics of their strategy, so the teacher focuses them on how they started their work—their first step—as one way to classify their methods. Naming strategies and keeping them posted provide students with some language to describe their multiplication methods. They also raise students' awareness of approaches to consider when they are solving problems.