Solution: A Visit to the Classroom

16 - 9 = 7

As students work independently to solve the problem, the teacher selects student solution strategies that would be shared and discussed with the class to develop the targeted understandings: (1) Understand subtraction as an unknown-addend problem and (2) Use the relationship between addition and subtraction to solve problems. Student solution strategies can be recorded on chart paper prior to the discussion so all students have access to student thinking.

**Teacher:** Eduardo, I’d like you to share your strategy with the class. How did you solve the problem?

**Eduardo:** I know Peyton had 16 books so I drew 16 books. I also know he lost some but I don’t know how many. Since he has 7 at the end, I circled those 7. Then I counted the books that weren’t circled and I got 9. So I knew Peyton lost 9 books.

**Teacher:** Thank you Eduardo. Can anyone restate what Eduardo did? Why did he circle 7 books?

**Tessa:** He circled the 7 books to show the 7 books that Peyton didn’t lose, the books that he still had.

**Teacher:** Why didn’t he circle the other 9 books?

**Presley:** He didn’t circle those because he didn’t know how many books Peyton lost. That’s what he was trying to figure out.

**Teacher:** Does anyone else have a question or comment for Eduardo? No one comments. Ok, can anyone think of an equation that matches Eduardo’s thinking?

**Presley:** 16 - 7 = 9

**Nicholas:** I agree with that equation. I wrote the same equation but I had a different strategy.

**Teacher:** Nicholas, can you explain why you agree that the equation 16 - 7 = 9 matches Eduardo’s strategy and then explain your strategy?

**Nicholas:** Since Peyton had 16 books, we can start with 16. Then since we know he has 7 at the end, we can subtract 7 to find out how many he lost. So 16 - 7 = 9. (Teacher records equation on board.)

**Teacher:** Thank you, now can you tell us about your strategy?
Nicholas: I knew Peyton had 16 books and that I could take away 7 so I counted back. 16, 15, 14, 13, 12, 11, 10 (Counts back using fingers, once he has 7 fingers up, he stops counting)...9. So Peyton lost 9 books.

Teacher: So you used a counting strategy. You counted back to find out that Peyton lost 9 books. Any questions for Nicholas?

Chloe: Why did you count back instead of counting up?

Nicholas: I don't know...I didn't think of that.

Teacher: Hmmm, so maybe you can count back or count up to solve the problem? Mandy, can you share your strategy now?

Mandy: I used a counting strategy too but I thought about the problem differently. I knew Peyton had 7 books so I needed to figure out how many more books would get to 16. I counted up from 7 (counts up with fingers). 8, 9, 10, 11, 12, 13, 14, 15, 16. So 9, Peyton lost 9 books.

Teacher: Can anyone think of an equation to represent Mandy's thinking?

Peyton: Mandy added the numbers.

Kaitlyn: I think it’s 7+9=16. She started with 7, then counted up 9 to get 16. Yeah, 7+9=16. (Teacher records equation on board.)

Teacher: Let’s look at the two equations, the equation that matches Eduardo’s strategy and the equation that matches Kaitlyn’s strategy. What do you notice?

Presley: 9 is the answer in both equations.

Teacher: Interesting, so one equation is addition and one is subtraction, how can both equations have an answer of 9?

Kaitlyn: Because they are related?

Teacher: Can someone tell me more about “related?” What does Kaitlyn mean when she says the problems are related?

Cole: It’s like part-part-whole. The whole is 16 and the parts are 7 and 9. 7+9=16 and 16-7=9.

Teacher: So you can use addition or subtraction to solve the problem?

Cole: Yes, because addition and subtraction are related.
*This is an example of ideas that might surface in a discussion of the student solutions.