

A TEACHER REFLECTS



A Discussion of Equivalence

To begin Lesson 3, I wrote the equation $t + b + g = 800$ on the board.

This was one of the equations my students wrote in Lesson 1. I asked students to take a few minutes to write this equation in as many different ways as they could. I told them they could rearrange the equation, but they couldn't change its meaning.

Students quickly generated a list of equivalent equations, and I asked volunteers to share these with the class. I made a list of these equations on the board.

From the beginnings of this list, I was happy to see that most students were comfortable using the Commutative Property, even though many didn't know the name of this property. I was also glad to see that students had no problem switching expressions around on either side of the equals sign.

Things got interesting when Justin raised his hand and suggested the equation $t + b + g + 1 = 801$. This sparked a discussion in the class about whether or not this equation was equivalent. Some students felt that Justin had "gone too far" and changed the meaning of the equation. Maya thought this equation was indeed equivalent. She said, "If the number of teachers plus the number of boys plus the number of girls is 800,

then the number of teachers plus the number of boys plus the number of girls plus one more person has to be 801."

I told the class we'd come back to the discussion after we completed Lesson 3. We also revisited this discussion after we explored the balance method in Lesson 11. By that time, everyone agreed that Justin's equation was equivalent.

At the end of Lesson 3, we spent a little time talking about equivalent inequalities. I asked the class if they could think of an equivalent way to write the inequality $x > 4$. Megan suggested $4 < x$ and the class agreed that this inequality was equivalent. I asked Megan if she could state a general rule. Her explanation was, "When you have an inequality, you can say it a new way by reading it from right to left. You have to remember to switch the direction of the inequality sign."

This sparked a discussion about inequality signs. Su Ming shared a good way of remembering which way an inequality sign should point. "Think of the inequality sign as an alligator's mouth. It always opens toward the larger quantity!"

