

A TEACHER REFLECTS



Teaching the Balance Method

For Lesson 11, I decided to get a balance scale from the science lab. On the day we started this lesson, I brought in the scale, a bag of marbles, and some small paper cups. Before the class entered, I set up the scale on my desk in front of the room and arranged the equation $3x + 1 = 2x + 4$ on the scale. In this case, each cup held three marbles.



When students were seated I told them that each cup on the scale held the same number of marbles. I asked them how they could figure out how many marbles were in each cup without looking. I had students discuss this briefly with a partner, then asked them to share their ideas. **Juliana** said there had to be three marbles in each cup. I asked her to explain her thinking. As she did so, I carried out her instructions on the scale. “First,” she said, “you can take one marble from each side. Then, you can take two cups from each side since they all contain the same number of marbles. That leaves a cup on one side and three marbles on the other, so a cup must contain three marbles.”

I asked the class if anyone solved the problem a different way. **Tyler** said he started by removing two cups from each side, and then took away one

marble from each side. He got the same result as Juliana.

At this point, I asked the class to start the investigation. I made the balance scale available to students who wished to use it. Later, when students presented their results from the investigation, I had them demonstrate their step-by-step process using the scale.

After students had completed the second investigation in Lesson 11, **Carmen** asked what would have happened if one of the equations they’d been asked to solve had had a decimal in it. I asked the class how they would solve $3.5x + 17 = 5.5x + 1$. This turned out to be a useful question, because it helped students make the transition away from the physical model. Carmen suggested that we could still begin by taking the 1 away from each side. Then she suggested that we would have to take 3.5 imaginary cups away from each side. This left us with $16 = 2x$, and $x = 8$.