A TEACHER REFLECTS

Students' Misconceptions

In the first class, I began with a discussion of chance by asking the question, "What is chance?" Several students defined chance in terms of luck.

- Probability is the luck of getting something.
- Everything's luck; you don't know when you'll get a 3 or a 6 when you roll a number cube.
- Just because you are better, it doesn't necessarily mean you'll win. There's always luck. You never know.

As the discussion progressed, I became increasingly aware of several different misconceptions that students had about probability.

Sonia insisted that she could increase her chances of rolling a 3 by practicing. She thought that if she practiced rolling a number cube she would be able to make it land on the number she wanted. Many of her classmates challenged her to try it. Some students felt that everything has a 50-50 chance, no matter what.

When I introduced the rules of the Carnival Collection, several students predicted that they would score a large number of points because they thought they were "lucky."

Dan said that the probability of scoring points at the Pick a Number Booth was low, but he still thought he'd score a lot because he's lucky. In contrast, Miguel thought he would do badly because he always loses at games. Students' perceptions of themselves as "lucky" or "unlucky" seemed to influence their predictions of how they would do in the game.

I was amazed at the conviction with which students voiced their misconceptions, and I realized that I wouldn't be able to change their minds by just talking to them about it. I found that it was helpful for students to have the concrete experiences with the coin and number-cube experiments in Lesson 2. In the class discussion, I focused on the contrast between students' individual results and the results of the class as a whole. Students could see that making generalizations based on individual results could be unreliable. By the end of Lesson 2, I felt that the class was beginning to build that intuitive sense of probability, replacing their initial misconceptions with sound mathematical reasoning.