Identifying Factors and Multiples in *Multiple Turn Over*

Students have just finished playing one game of *Multiple Turn Over.* Before playing a second time, they discuss with the teacher their strategies for determining what factors to choose and which cards to turn over after a factor has been named. They have their recording sheets in front of them.

Ramona: I chose factors that I know would let me turn over a lot of cards. Like 5. I knew I could turn over a lot.

Teacher: So tell me something about 5 that helped you turn over a lot of cards.

Ramona: I had the Multiple Card 65.

Teacher: How did you know that 5 is a factor of 65?

Ramona: I know that 5 is a factor of 60 and if you count by 5 from it, you get 65. I know that if I count by 5, I land on all the multiples of 10 and when I get to 60, I just add 5.

Enrique: For one of my turns, I chose the factor 2, because I had numbers that end in 4, 2, 0, 6, and 8. I knew I would land on those numbers when I count by 2.

Teacher: What do you know about those numbers that you will land on when you count by 2?

Helena: Those are the even numbers.

Derek: I tried not to use 2 as a factor, because then I knew that my partner could turn over a lot of cards, too.

Teacher: So you thought about other factors for the even numbers on your Multiple Cards that you could use instead of 2?

Derek: Yeah. I had 12 and 36 and 60, so I used the factor 6 instead.

Lucy: I had 87 and I thought that 3 might be a factor.

Teacher: How did you decide whether you were right about that?

Lucy: Steve was my partner, and we decided to count by 3 on a number line. We landed on 87, so we knew it was a multiple of 3.

Teacher: Where did you start when you counted on the number line?

Lucy: We started at nine, because we know that 9 is a multiple of 3. We didn't want to start at the very beginning.

Teacher: Could you have started at a higher multiple of 3? How could knowing 10×3 help you?

Steve: Oh! We could have started at 30 because ten 3s would get us to 30.

The teacher writes $10 \times 3 = 30$ and $20 \times 3 =$ ____ on the board.

Teacher: So if you know that ten 3s will get you to 30, how far will twenty 3s get you? How far away from 87 would you be?

Lucy: We would get to 60. That's 27 away—nine more 3s.

The teacher in this classroom helped her students consider how to use known multiplication relationships to identify factors and multiples while playing *Multiple Turn Over.* Although Lucy and Steve's strategy of counting by 3s did result in correctly determining that 3 is a factor of 87, the teacher's questions encouraged them to use known multiplication combinations such as 10×3 and 20×3 to solve the problem more efficiently. Starting with a large "chunk" of the problem is a strategy that will serve students well as they begin multiplying and dividing with larger numbers.