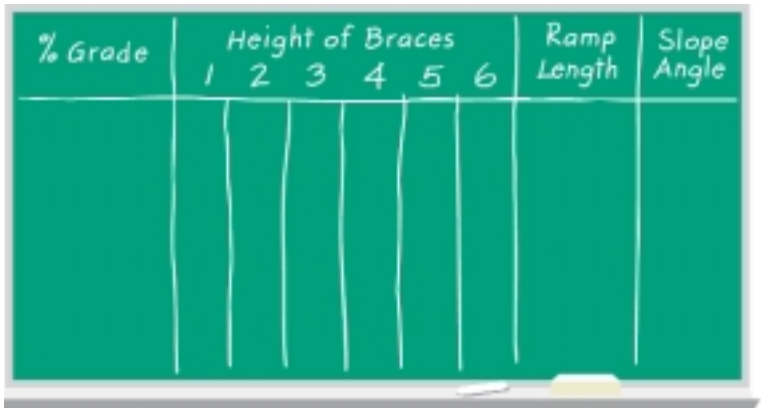
A TEACHER REFLECTS

For the Ramps-R-Us investigation in Lesson 9, I assigned each group a percent grade from 20% to 80% in increments of 5%. Some students had trouble finding the heights for the braces given the percent grade, so we first did a similar problem as a class. Once they calculated the ramp measurements, I had the groups make scale drawings of their assigned ramp. This provided a nice check of their work.

I also asked students to measure the slope angles of their ramps. I only had to check this angle to know if the scale drawing was accurate, since I'd already made an answer key for myself by using the percent grade, tangent ratio, and angle.

At the conclusion of the investigation, groups recorded their measurements in a class chart posted at the front of the room. I had groups record their results in order of percent grade. We came back to this chart when we studied the tangent ratio.

I was happy to see that this investigation sparked some insights into proportional reasoning. There was an especially interesting discussion in the group that was working with a percent grade of 25%. **Yoshie** pointed out that the tallest brace would have to be one-fourth as long as the 18-ft base, since 25% is $\frac{1}{4}$. This resulted in a height of 4.5 ft, or 4 ft 6 in. Then **Chenelle** asked if they could apply the same process to the shorter braces. In this way, the group found that the shortest brace was 0.75 ft, the next tallest was 1.5 ft, and so on. As the group progressed to taller and taller braces, **Matthew** noticed that the brace lengths increased by 0.75 ft, or 9 in., each time. This really drove home the idea of proportional growth.