The following lesson is from Len Sparrow and Paul Swan's Learning Math with Calculators *(Math Solutions Publications, 2001). The book is organized into two sections: the first addresses a broad range of teachers' questions and concerns about using calculators for teaching math; the second is a collection of classroom-tested activities using calculators, all chosen for the purpose of developing children's number sense and problem-solving ability.*

In this lesson, children reflect on the idea that when a number less than one is multiplied by a whole number, the answer will be smaller than the starting number. This fact conflicts with the belief of many students that multiplying a number always makes it larger.

Materials

• calculators, 1 for each pair of students

• pencil and paper for recording

Activity

Ask each pair of students to generate a list of numbers; for example:

65   72   187   23   5   689   1,234

One of the students then multiplies each of the numbers by a number slightly less than 1 (for example, 0.9), while the other student multiplies the same numbers by a number slightly more than 1 (for example, 1.1). These multipliers will produce answers slightly smaller and slightly larger than the original numbers. Both partners keep a written record of the number, the multiplier, and the answer, using a chart like the one shown below. Partners compare their answers and discuss the relationships that are revealed.

Number	Multiplier	Answer	Comment
65			
72			
187			
23			
5			
689			
1,234			

Extension

Students can check other multipliers that are close together and near to one to confirm their ideas.

Teaching Notes

This exercise can be effectively partnered with the activity *Closest to One Thousand.*