Linking Past and Future Learning

Which multiplication concepts did students learn last year? How can you prepare them for the skills and concepts they’ll encounter next year? Knowing the scope of the unit’s basic conceptual goals can help you focus your instruction.

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<td>Skip count by 2’s, 3’s, 5’s, and 10’s</td>
<td>Recalling basic multiplication facts for 0, 1, 2, 3, 4, and 5</td>
<td>Use multiplication facts</td>
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<td><strong>Commutative Property, Associative Property, and the Properties of 0 and 1</strong></td>
<td>Solve multiplication problems using repeated addition, arrays, and skip-counting</td>
<td>Identify and use the commutative property, associative property, and the properties of 0 and 1, in multiplication</td>
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<td><strong>Multiplying by 10</strong></td>
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A Positive Start
Understanding multiplication, and the relationships in fact families, are important first steps for students to commit facts to memory. As you teach this unit, begin with realistic situations and pictorial representations before you advance to symbolic representation. Then, by connecting the pictorial to the symbols used, you’ll give students a conceptual foundation that they would not have were they to merely memorize facts.
Methods and Management

Students will benefit from using a variety of visual materials to represent multiplication. Preview the lessons to see how the skills and concepts unfold and to plan ahead for the materials you’ll need. Posters, bulletin boards, flash cards, grid paper, stickers, rubber stamps may be materials that family members can help you make or collect.

Teaching Strategy: Recalling Multiplication Facts

Students will need to review and practice multiplication facts frequently, if the facts are to become automatic.

- When you begin this unit, practice skip counting by 2’s, 3’s, 4’s, and 5’s with students to review basic facts. The 2’s and 5’s should be most familiar.

- Arrays show related facts as well as demonstrate the commutative property. Point out that multiplication problems may have the same factors and products, yet the situations and pictures they represent may be different.

▶ Ask: How many boxes are in the first example? How many are in the second example?

Show that the first array is for $3 \times 2$ and the second array is for $2 \times 3$. Although $3 \times 2$ and $2 \times 3$ have the same product, they are not the same expression. The first array describes 3 rows with 2 squares in each row; the second array describes 2 rows with 3 squares in each row.

▶ Then Ask: How would you make an array for $2 \times 4$? For $4 \times 2$? How many boxes would be in each array?

▶ Vocabulary Development The term facts refers to problems whose answers are expected to be automatic.

▶ Common Misconceptions Students will often revert to addition when they are first introduced to multiplication. When you notice this happening, gently call their attention to it.

Teaching Strategy: Commutative Property, Associative Property, and the Properties of 0 and 1

In the classroom, post these properties and examples for each. Students need to comprehend what the properties mean and how they relate to multiplication.

- The commutative property states that when you multiply two numbers, the changing order does not change the product. Show that $2 \times 3$ has the same product as $3 \times 2$. 

Teacher Tips

Time Saver Copy a large number of review sheets for each of the multiplication facts you’ll be covering. Store the sheets in an easily accessible place. When a student is ready to move on to the next set of facts, you will already have the materials prepared.

Memory Triggers For the zero property, have students think of the zero as a hole that the other number falls into, leaving nothing behind.

- For the property of 1, 1 is like a full-length mirror that sends back a reflection of the other number.

- The commutative property can be linked to the word “commute.” If the students think about commuting as driving from one place to another, they can picture the numbers “driving” to different places in the equation.

- For the associative property have the students think about “associating” or being with their friends. The parentheses are like arms holding different groups together. Students can be with one friend or another; the grouping doesn’t matter because all of the friends are still there together.

Good Routine Rely on active learning, as shown in the dialogue. Plan a few examples of “trouble-shooting” or problem solving that can be worked out as a class or in groups. Students will feel more involved in the material and will take more responsibility for their learning.