It's A Match

Grade 4
Activity #413
Relevant Chapters in the *Digi-Block Program Comprehensive Teacher's Guide:*
Book III: 3-3, Combining Equal Groups of Larger Blocks, pp. 84-86

Overview

Students explore multiplication of large numbers by applying basic facts.

Objectives

Thinking Skills: Students relate knowledge of "basic facts" to multiplication with large numbers.

Mastery Skills: Students learn to multiply large numbers by using blocks of corresponding size to represent similar multiplication problems (i.e. 5 X 3, 5 X 30, 5 X 300).

Materials

- Overhead transparency of "The Shift"

Each group of 4-5 students needs:

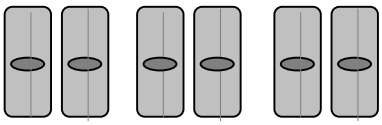
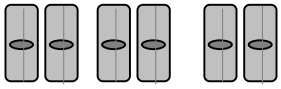
- 5 blocks-of-100
- 1 Place mat (optional)
- 1 "It's a Match!" activity sheet

Class Introduction (10 - 15 minutes)

As a whole class, ask students to model the following problems:

- 3 groups of 2 =
- 3 groups of 2 blocks-of-10 =
- 3 groups of 2 blocks-of-100 =

Encourage children to organize their place value mat so the "shift" of the blocks to the left is clearly seen. Discuss this shift so that children understand multiplying by 10 and 100 as shifting the digits one or two places to the left.

Hundreds	Tens	Ones
		
3 groups of 2 blocks-of-100	3 groups of 2 blocks-of-10	3 groups of 2 single blocks

Ask students to answer the following questions:

- **How many single blocks are there?** (6)
- **How many blocks-of-10 are there?** (6)
- **How many blocks-of-100 are there?** (6)

Have students discuss why the answers are the same and that the models for these problems are the same except for the size.

Ask students to determine how they would represent the models before them as a multiplication sentence.

3 groups of 2 may be written as 3 X 2 single blocks = 6 single blocks
3 groups of 2 blocks-of-10 may be written as 3 X 2 tens = 6 tens
3 groups of 2 blocks-of-100 may be written as 3 X 2 hundreds = 6 hundreds

and then….

3 X 2 = 6
3 X 20 = 60 (The digit shifts one place to the left.)
3 X 200 = 600 (The digit shifts two places to the left.)

Do not encourage children to think of the products of these kinds of problems as "adding zero(s)." Adding a zero does not generalize to decimals.
For example:

2.3 x 10 ≠ 2.30 2.3 x 10 = 23

3.791 x 100 ≠ 3.7910 3.791 x 100 = 379.1

Activity (20 - 25 minutes)

Students work in small groups to complete the activity sheet by:

- Modeling the multiplication problem that is given.
- Extending the multiplication problem to another that models the same problem with blocks-of-10 or blocks-of-100 as in the whole class introduction.

A challenge portion of the activity sheet is provided for students who are able to make a prediction about the answer to several multiplication problems and then test their prediction by modeling with the blocks.

Closure (10 - 15 minutes)

Students share their answers to the problems on the multiplication sheet in the following manner:

- One student from a group will put the product (multiplication answer) on the board.
- Other students in the class will try to determine which multiplication problem is related to this answer.
- Students write the multiplication problem they think created this product.

For example:

- One student puts the number 800 on the board.
- Other students in the class determine that this product is associated with the multiplication problem 4 X 2 = 8.
- Students write the related problem 4 X 200 = 800 (4 X 2 hundreds = 8 hundreds).

Assessment

- Do students choose the correct number of blocks-of-10 or blocks-of-100 when they make the product?
- Do students predict the answer or do they use the blocks?
- Do students answer the multiplication problems correctly?

Extension

- Give students an activity sheet that asks them to predict the answers to such multiplication problems as 4 X 70 and 3 X 500. Have the students predict the answers and then use blocks to check their predictions.
- This activity may be extended to division examples by asking students to answer such questions as how many groups of 5 in 30, in 300, in 3000, etc.