It's A Snap

Overview

Students use blocks to model story problems with single-digit multipliers. Through this modeling, students intuitively recognize the distributive property of multiplication. For example, they see that 3 X 23 is the same as (3 X 2 tens) + (3 X 3 single blocks).

Objectives

Thinking Skills: Students connect their understanding of basic multiplication facts to models of 2-digit X 1-digit multiplication.

Mastery Skills: Students learn to use blocks to model 2-digit X 1-digit multiplication.

Materials

Each group of students needs:
- 300-500 blocks (some packed into blocks-of-10)
- Small and medium holders
- 1 place value mat with digit cards
- 1 activity sheet
- Blank paper
- 5-6 pieces of string or yarn (each 1-1 ½ feet long)

Class Introduction   (10-15 minutes)

Present the following situation:
  Tom, Dick, and Harry each have 23 ginger snaps. How many ginger snaps do they have altogether?

- Have students model each person's ginger snaps with blocks.

Tom   Dick   Harry

Ask students to determine an efficient method for "seeing" how many blocks they have altogether. Have a student:
- Combine the blocks on one mat.
- Place a piece of string between the three sets of blocks. The string helps students see all of the blocks together while also visualizing the 3 separate groups.

Encourage students to think about and "see" how many blocks there are altogether:
- Ask, How many groups of 20 do you see? (3 groups of 20) Write 3x20 = ___.
- Ask, How many groups of 3 do you see? (3 groups of 3) Write 3x3 = ___.
- Ask, How many groups of 23 do you see? (3 groups of 23) Write 3 x 23 = ____.

Have a student set the digit cards for the number of blocks in each place:
- 3 x 2 blocks-of-10 = 6 blocks-of-10 (60)
- 3 x 3 single blocks = 9 single blocks (9)
- 3 x 23 = 60 + 9 = 69.

Hundreds	Tens	Ones
		← Tom
		← Dick
		← Harry
	6	9
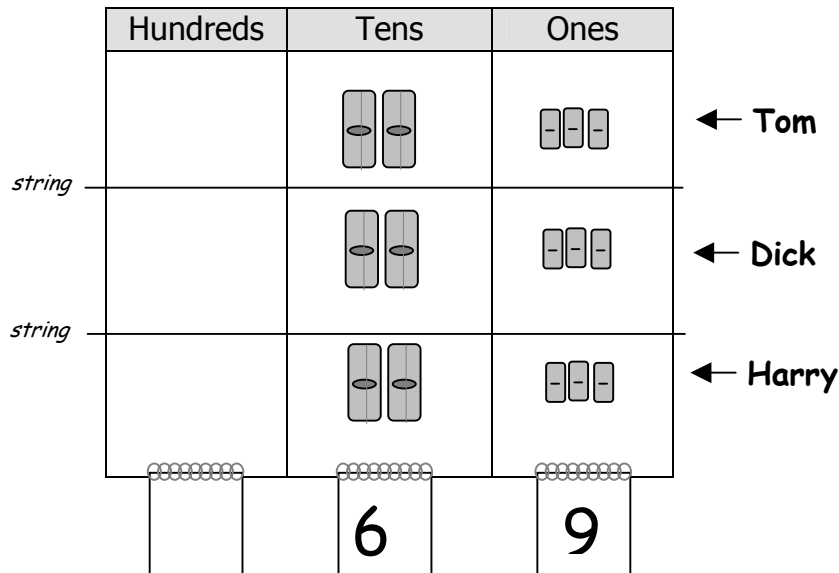
Use the catch phrase, "It's a Snap," so students can see that knowledge of basic multiplication facts is all that they need to solve this problem.

Present a second story problem, this one requiring regrouping:
> Three children each have 45 snaps on their coat. How many snaps are on their coats altogether?

Have students use blocks to model the problem situation. Divide the mat into three sections.

Encourage students to think about and "see" how many blocks there are altogether.
- Ask, How many groups of 40 do you see? Write 3 x 40 = ____.
- Ask, How many groups of 5 do you see? Write 3 x 5 = ____.
- Ask, How many groups of 45 do you see? Write 3 x 45 = ____.

Have a student pack the blocks as much as possible and set the digit cards.
- 3 x 4 blocks-of-10 = 12 blocks-of-10 (120)
- 3 x 5 single blocks = 15 single blocks (15)
- 3 x 45 = 120 + 15 = 135.

Hundreds	Tens	Ones

Hundreds		Ones
1	3	5
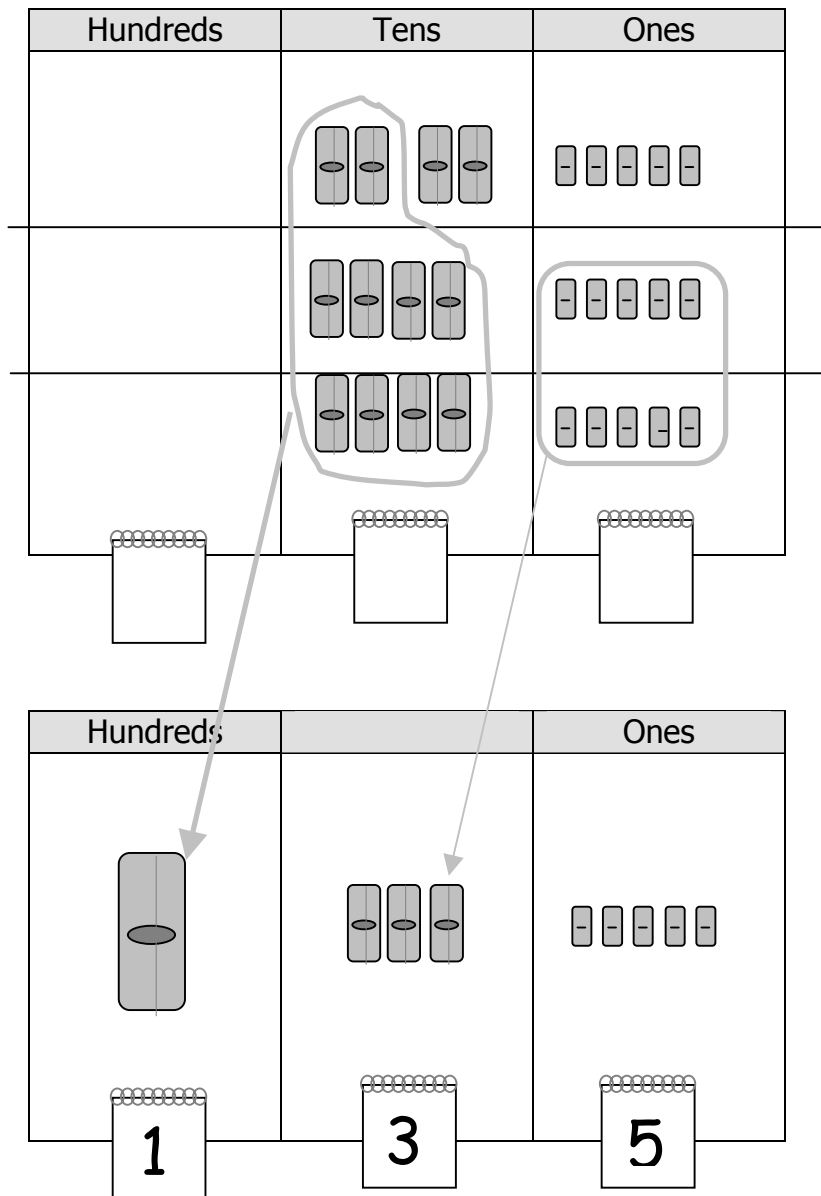
Small Group Activity   (25-30 minutes)

Pass out materials and activity sheets. Have students work in small groups of 2-4 students. Students will:
- Use the materials to solve each story problem.
- Use words, drawings, and numbers to show their solution on blank paper.

Closure   (10 minutes)

Have each group present their solution to one of the problems. Discuss how students separated the bigger problem into two known facts: i.e., 4 x 12 = (4 x 10) + (4 x 2) = 48

- Put 4 groups of 21 blocks on a place value mat. Ask students to use words, drawings, and/or numbers to show how to find the total number of blocks.

Assessment

- Are the students working collaboratively?
- Do students choose appropriate numbers to represent the situation?

- Do students model the problem with the blocks accurately on the place value mat?
- Do students use their knowledge of basic multiplication facts to determine the number of blocks in each column?
- Do students pack as much as possible to determine the total?
- Do students explain through words and pictures their method for solving the problem?

Extension

- Have students write their own story problems. Select appropriate problems for classmates to share.
- Have students solve multiplication problems without placing strings between the numbers as the blocks are set up.
- Have students model 1-digit X 3-digit multiplication problems on the place value mats.