Predict Before You Pack

Grade 4
Activity #417

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guide*
Book III, 3-5: Multiplying by One-Digit Numbers, pages 91-94

Overview

Students model 1-digit x 2-digit multiplication problems with blocks. They predict the product and then check their predictions by packing as much as possible.

Objectives

Thinking Skills:	Students use their base ten understanding to predict products.
Mastery Skills:	Students learn to set digit cards to predict products and then to check their predictions by packing the blocks.

Materials

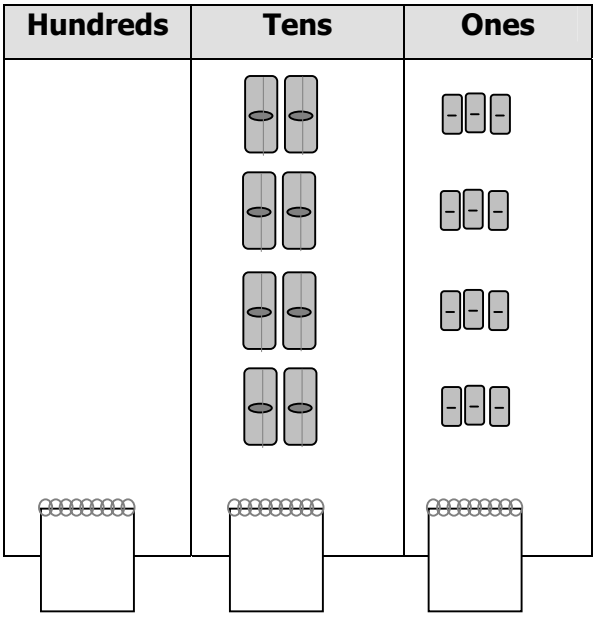
Each small group of students needs:

- 1 place value mat
- 3 blocks-of-100 (Students can unpack to get the blocks they need for particular problems.)
- 1-3activity sheets
- One-digit and two-digit number cards

Class Introduction (15 minutes)

Begin with a class demonstration. Put the number cards in two separate piles. The two-digit numbers determine the group size and the one-digit numbers determine the number of groups. Have several student volunteers demonstrate the following steps:

- Select the "4" card from the one-digit number cards.
- Select and show the "23" card.
  (Note: For the class introduction students are asked to select particular number cards. In the activity students will pick number cards at random.)
- Write a multiplication sentence with these two numbers: 4 x 23
- Model 4 groups of 23 on the place mat.



Ask the class to imagine packing the blocks as much as possible.

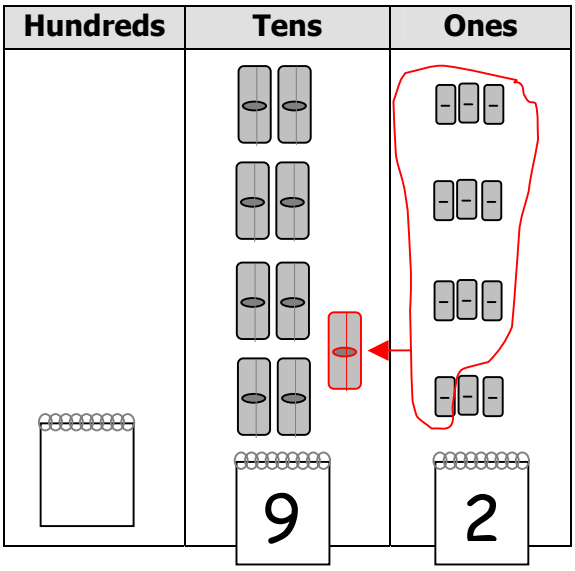
- Using this mental image of the blocks, have the class suggest how to set the digit cards to predict the product of 4 x 23.
- Encourage students to clearly articulate how they arrived at their predictions.
- Write several predictions on the board and set the digit cards to reflect the class consensus.

Have the student volunteers:

- Pack the blocks as much as possible in order to determine the actual answer, the product.
- Set the digit cards to show the product of 4 x 23. (92)

Ask students to compare their predictions with the actual answer. If there are discrepancies, this will provide the basis for an interesting discussion as to why.

Demonstrate how to fill in the activity sheet for this example. In particular, discuss ways to show how blocks were packed and moved:



Activity (20 minutes)

Pass out materials to small groups. Assign the following roles:

- Recorder (to write and draw the group's work)
- Modeler (to put the appropriate blocks on the mat)
- Predictor (to set the digit cards before packing)
- Packer (to pack as much as possible and show the actual answer)

Remind students to select one one-digit number card and one two-digit number card to begin the activity. Have students:

- Write a multiplication problem using both numbers.
- Model the multiplication problem with blocks on the place mat.
- Predict the product.
- Pack as much as possible.
- Record the actual answer.
- Compare their prediction to their actual answer.

Have students in each group rotate roles. Repeat with a new problem on a separate activity sheet.

Closure (10 minutes)

Have students come together as a whole class and share some of their multiplication sentences. Ask the class to determine the accuracy of each.

Assessment

As students work, observe and note the following. Do they:

- Follow directions for choosing numbers?
- Write accurate multiplication sentences?
- Place the appropriate number of blocks on the place mat?
- Make accurate predictions?
- Explain the thinking behind their predictions?
- Pack as much as possible to find the actual answer?
- Record their work including showing how the blocks packed?
- Compare their predictions to their actual answers?

Extensions

- Encourage students to write stories to accompany their multiplication sentences.
- Have students choose another method to determine the total number of blocks and compare their answers. For example, students may use the array model, a number line model, and/or reverse the group size with the number of groups (i.e., 6 groups of 14 versus 14 groups of 6).