

Modeling Word Problems

Grade 1

Activity #126

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guide*:

Book I, Unit 3-1: Joining and Separating, pages 65-68

Book I, Unit 3-3: Exploring Addition with the Larger Blocks, pages 72-76

Book I, Unit 3-3: Exploring Subtraction with the Larger Blocks, pages 80-84

Book II, Unit 3-1: Joining and Separating, pages 57-60

Book II, Unit 3-3: Exploring Addition with the Larger Blocks, pages 64-70

Book II, Unit 3-3: Exploring Subtraction with the Larger Blocks, pages 80-86

Overview

Students use blocks to act out and model word problems.

Objectives

Thinking Skills: Students make connections between the blocks and the objects they represent in the story situations.

Mastery Skills: Students learn to use the blocks to model situations presented in a variety of word problems. They connect the blocks to the numbers used in the problems.

Materials

Each group of students needs:

- 1 block-of-100 (Students can unpack to get the blocks they need for particular problems.)
- 1 activity sheet

Class Introduction

(20 minutes)

In this lesson, students use the blocks to represent objects presented in word problems. The objects themselves are grouped into tens to help students understand the transition from blocks to objects in the real world. To begin the lesson, have students act out the story problems as a class using the blocks as described.

Begin by reading the first problem to the class. (If possible, write the problem on the board or on an overhead projector so that students can read along silently.)

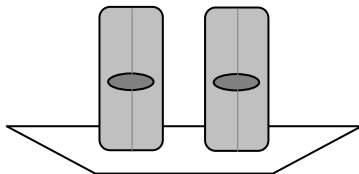
**There were two boxes of ten cookies on the shelf.
Nine children each had one cookie for lunch.
How many cookies are left?**

Have one or two students retell the story in their own words.

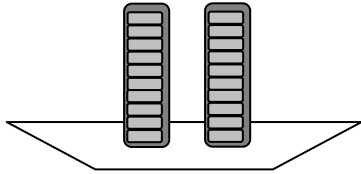
(Note: This step is very important in learning to solve word problems. Students need to be able to listen and read carefully in order to interpret the words and visualize the story situation. By retelling the problem in their own words, students are actively engaging in the listening and interpretation process.)

Ask the class what they found out first in the story. Suggest that the class use blocks to represent the cookies in the story. Have a student model the "two boxes of ten cookies."

- The student can use two blocks-of-10 and put them on an imaginary "shelf" (use a desk or table at the front of the classroom).



- If needed, the student can open the blocks-of-10 to show the ten cookies inside of each. Some students may still prefer to see the two groups of ten.



Ask the class what happened next in the story. Have nine students come up to the "shelf" and take one cookie each.

Ask the class to predict how many blocks are left.

- Some students may know right away. They can "see" that there is 1 block-of-10 and 2 single blocks and know that this makes 12.
- Other students need to count.

Count the blocks remaining as a class.

- First, count **ten** (pointing to the block-of-10) and then count on, **eleven, twelve** (pointing to the single blocks).
- Then count all the blocks to reassure students that there are indeed 12 single blocks left.

Continue reading story problems and having students retell and act out the situations for the class. Here are some problems to try:

There were 2 boxes of ten cookies of the shelf.

A bunch of students each took one cookie.

There were 8 cookies left.

How many students took a cookie? (12 students)

Emma had 3 boxes of ten cookies and 2 extra cookies.

Jordan had 2 boxes of ten cookies and 5 extras.

How many cookies did they have altogether? (57 cookies)

Marcos had 8 boxes of ten cookies.

He gave his friend Sam some cookies.

Marcos has 3 boxes of ten cookies left.

How many cookies did Marcos give Sam? (50 cookies)

When students are ready, have them work with a partner to read the problems on the activity sheet and model each problem with blocks.

Activity **(20 minutes)**

If possible, pair readers with non-readers so that each can read the problems on the activity sheet. If this is not possible, you may want to read the problems aloud one at a time allowing time between each reading for pairs of students to use blocks to model each problem.

Pass out the blocks and the activity sheets to pairs of students. Have the students:

- Use the blocks to model each problem.
- Record their answers in the spaces provided.
- Label their answers (i.e., 5 "cookies").

While students are working, walk around and make sure that they are modeling each problem with blocks. Encourage students to "act out" any problems they find confusing.

Closure **(15 minutes)**

Go over the results for the problems on the activity sheet. Have students retell and act out each story situation. Discuss any confusing language and any possible misconceptions.

Collect student written story problems for further explorations.

Assessment

- Do students accurately represent the word problem with blocks?
- Do they find any language confusing or misleading?
- Do students use blocks-of-10 to model the boxes of ten cookies? Do they prefer to use all single blocks?
- How do students count the blocks for the answer? Do they "see" the answer by looking at the tens and the ones? Do they count on? Do they count all the blocks one by one?

- Are particular problems more difficult than others? Which ones?

Extension

- Make a book of student written story problems. Have students model these problems with blocks.
- Look at the problems that students found confusing. Write similar problems and have students continue to practice reading, interpreting, and modeling these more difficult problem types.
- Incorporate other types of story problems. For ideas, try our Word Problem Generator. (ERIK - Please insert a link to the word problem generator.)