

Literature Connection:

Ten Times Better

Grade 3

Activity #325

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guide*:
Book III, 3-6: Multiplying by 2-digit Numbers, pages 95 - 99

Overview

The counting book, Ten Times Better, sets the scene for multiplying numbers 1 through 10 by 10 as animals poetically argue which number is the very best. Students model and solve problems involving multiplying by 10.

Objectives

Thinking Skills: Students model each animal's number and relate the block model to the book's illustration. Students predict each successive animal's number and its representation with blocks.

Mastery Skills: Students learn to multiply single-digit numbers by ten.

Materials

- A supply of blocks-of-10 and single blocks
- 2 place value mats with digit cards
- Ten Times Better, by Richard Michelson, Dave Saunders, and Leonard Baskin (illustrator)
ISBN: 076145070X
Publisher: Marshall Cavendish Inc
Pub. Date: October 2000

For the Activity, pairs need:

- 1 set of animal descriptions from pages 36-30 of the book
- 11" x 17" or larger poster paper
- Crayons or markers
- Ruler (as needed)
- A supply of blocks (as needed)
- Place value mats with digit cards (as needed)

NOTE: This lesson may be easily divided into a 2-day investigation. On Day 1, read through and discuss the book and the mathematical idea of ten times a number. Also, distribute the animal fact problems, as described in the Activity. Give students plenty of think time before they return to create their posters on Day 2.

Introduction

(20 minutes)

Read the title of the book to the class. Have them predict what they think it is about.

- Explain that the author uses poetry and patterns throughout his book.
- Say, **As I read the book, I want you to enjoy the poetry, and I also want you to *think about* the mathematical patterns you find in the book.**

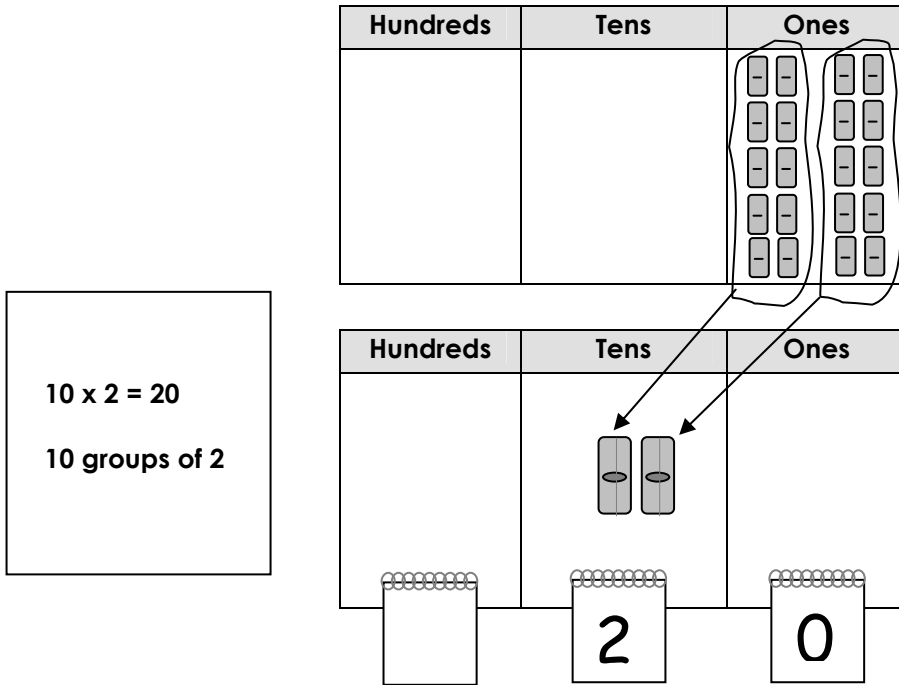
Organize the class so they can see the book illustrations as well as both place value mats displayed on the floor or table. Have single blocks, blocks-of-10, and digit cards available as you read the story and as students model each poem with blocks.

Read the elephant's and squid's argument and have student volunteers use blocks to model the numbers on the place value mats.

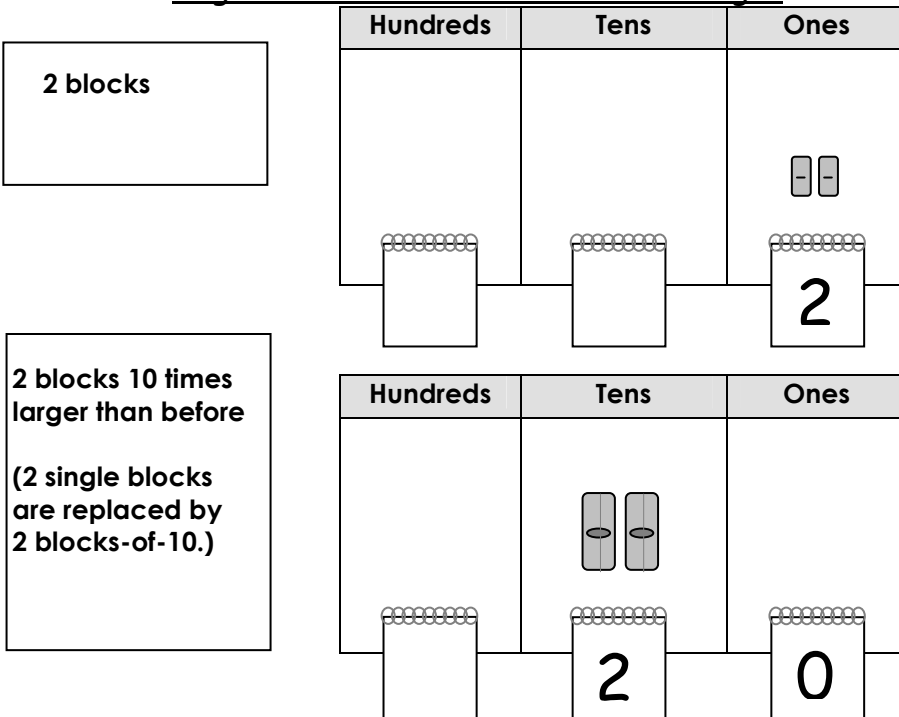
- Have students explain "what happens" to the one block as it is multiplied 10 times.
- As a class, record ten times one as: $10 \times 1 = 10$

Continue with the camel and sage grouse's dialogue and have student volunteers model the 2 and the 20 with blocks on the mats. Discuss two methods for finding ten times a number.

- Or, students may want to actually show and count out the 10 sets of 2 before packing them in order to be convinced that this equals 2 blocks-of-10.



- Some students may prefer to model the problem by replacing each single block with a block ten times larger.



Have students predict the next pair of numbers (3 and 30) and continue to model each with blocks and to record the number sentences.

Repeat through the rest of the book. Point out that, as delightful as the illustrations are, **it is much easier to "see" ten times a number with the blocks.** Ask students why this is so.

- Have students describe the pattern as they multiply a number by 10. (The digits shift one place to the left; the single blocks are replaced by blocks 10 times bigger.)
- Encourage students to use "shortcuts" such as counting by 2's or 5's or grouping parts of the picture as they count to larger numbers.

Activity

(25 - 30 minutes)

Provide students with descriptions of the animals and mathematical facts from pages 36 to 39 of the book

- Give one animal to each pair of students.
- Some problems are more difficult than others. Read them ahead of time to match problems with ability levels. (Note: The Peacock problem is particularly challenging and may not be appropriate.)

Have students glue the animal description/problem to a large piece of poster paper. Explain that they will design a poster to show the mathematical data about the animal, and also solve the related problem.

- Have pairs first read, model and solve the problem. Then have the pairs illustrate the problem and their solution on their poster paper.
- For example, if a giant squid can be ten times longer than a 7-foot basketball player, students might draw a very long squid with 10 basketball players lined up end to end alongside it. Students may indicate each player is 7' tall and then write $7 + 7 + 7 \dots = 70$ and $10 \times 7 = 70$.

Closure

(25 minutes)

Have students share their animal fact posters with classmates.

- Have students explain the meaning of the numbers and symbols in their number sentences and how they solved their problem.

Assessment

Observe students during the introduction and during the activity to assess their level of understanding. Do they:

- Model the quantity and 10 times that quantity correctly?
- Predict the next related pair of numbers?
- Understand the relationship between the single blocks and the "ten times larger" blocks? That is, for each single block in a collection, there is a block-of-10 in the related set.
- Prefer to replace each block with a block ten times larger? Or, do they prefer to build ten sets and then pack?
- Write corresponding multiplication sentences?

Extensions

- Have students create their own fictitious animal problems. Have them first imagine the animal life on another planet and then create a problem that compares facts about an imaginary animal and a real one. For example:
On the planet Animalia, there is a creature called a megarachnid. It has ten times more legs than spiders on Earth. How many legs does it have?
- Make a money connection: Ask, **What coin/bill is worth ten times a penny? A nickel? A dime? Half dollar?**
- Make a measurement connection: Ask, **What unit is ten times a millimeter? Centimeter? Decimeter? Meter?**