The Incredible Comparisons

Lesson Overview

Students write an appropriate question for mathematical facts presented in the book, The Incredible Comparisons. They use blocks to model and solve the problem. Finally, students make a poster by writing the mathematical facts they chose, the question they wrote, and their block solution.

Objectives

Thinking Skills:	Students use their conceptual understanding of addition, subtraction, multiplication, and division to pose questions and make comparisons presented in the book. They also make connections between mathematics and real-world situations.
Mastery Skills:	Students learn to pose, model, and solve comparison situations. They learn to illustrate their solution and to write appropriate mathematical equations.

Materials

- The Incredible Comparisons by Russell Ash with Richard Bonson
  ISBN: 0789410095
  Publisher: Dorling Kindersley Publishing, Incorporated
  Pub. Date: August 1996

Each group of students needs:
- Access to pages from the book (If possible, have multiple copies of the book on hand.)
- 11" x 17" or larger poster paper
- Markers, crayons, rulers, and other supplies as needed for creating their poster
- Blocks (up to 500 packed and unpacked)
- 2 number lines (0-100)
- 1 place value mat with digit cards

NOTE: This lesson may be easily divided into a 2-day investigation. On Day 1, discuss the mathematical comparisons presented in the book and model the activity of posing a question, solving the problem, and creating a poster. Also, have students select their mathematical facts and question for their poster. Give students plenty of think time before they return to create their posters on Day 2.

Introduction   (30 minutes)

Introduce students to the book, Incredible Comparisons, by showing them the visual representations of comparisons throughout the book.
- Turn the pages slowly allowing students to comment on what they see.
- Make comments at various intervals, asking students questions such as
  What do you notice about… or Have you ever seen… or What do you think about…
- Towards the end of the book (or during a second viewing of the book), ask students such questions as What can you tell me about the numbers in this situation? or What do you think about the comparison of...(using the numbers as references).

Engage students in choosing a set of facts from the book to consider as a mathematical situation. Then choose the corresponding mathematical facts to discuss.

- On page 37: "Over short distances, the pronghorn antelope of North America can run more than twice as fast as a charging African elephant."
- On page 36: "Despite its great bulk, a charging African elephant can hit 25 mph, easily outrunning a human athlete."
- Ask, What question can we ask that can be answered with this information?
- Help students articulate the question: How fast can a pronghorn antelope of North America run?

Demonstrate how to write the chosen facts from the book and the related question on the poster paper. Leave room to illustrate the mathematical facts and the solution.

As a class, discuss how to solve this problem with the blocks. Students may:
- Show 2 sets of 25 blocks using the place value mat and packed blocks.
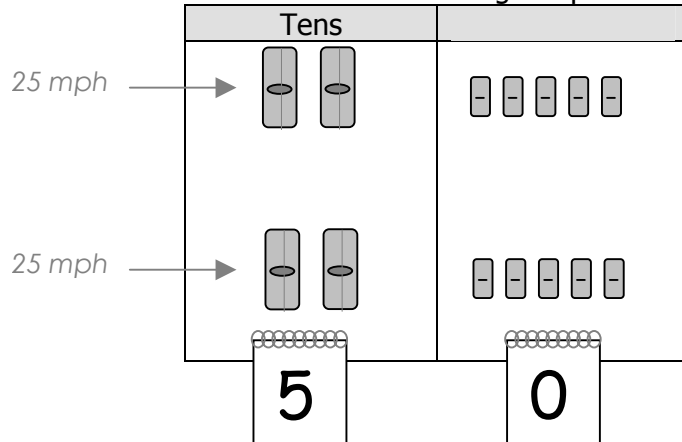
- Show 25 blocks on one number line and 2 sets of 25 blocks on a second number line to model how far each animal can run in one hour.
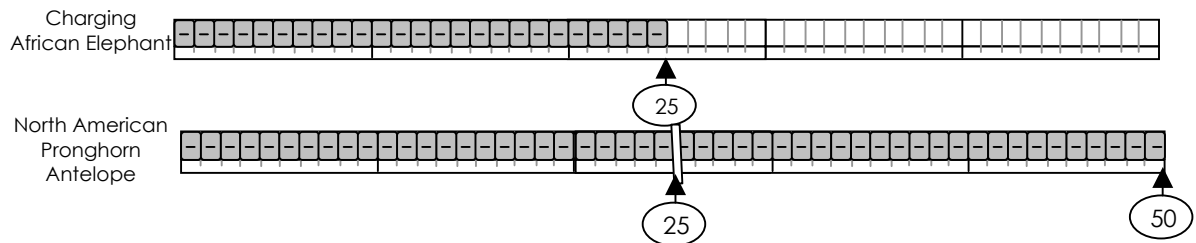
Ask the class to place the speed of the antelope (50 mph) in context. Ask,
- How fast is that?
- How long would it take the antelope to run to…? (a familiar distance)

Ask for a student to volunteer to draw a block solution on the poster.
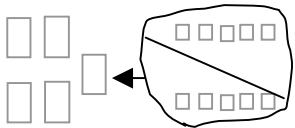
Discuss how to write equations in order to represent what they did with the blocks. Record the equations on the poster. Some possible equations are:
- 2 x 25 = 50
- 25 x 2 = 50
- 25 + 25 = 50
- 2 tens + 2 tens = 4 tens, 5 ones + 5 ones = 10 ones, and 40 + 10 = 50
- 5 + 5 = 10 and 10 + 20 + 20 = 50

Discuss what their solution tells them about the pronghorn antelope.
- The answer of 50 means that the pronghorn antelope can run <u>faster than</u> approximately 50 mph<u>.</u>
- Record the answer on the poster.

A finished poster may look something like this:

The pronghorn antelope of North America can run more than twice as fast as a charging African Antelope.

A charging African elephant can run 25 mph.

Question: How fast can the pronghorn antelope run?

2 x 25 mph = 50 mph

Answer: faster than approx. 50 mph

Activity   (30 minutes)

Pass out the poster paper. Have the groups work together to:
- Look through the book to choose a set of related mathematical facts.
- Record the related facts on the poster paper.
- Write a question for the facts on the poster paper.

Distribute the blocks, place value mats with digit cards, and number lines. Have the groups:
- Use the Digi-Block materials to solve their question.
- Record their block solution on the poster paper.

Also, have the groups include on the paper the following:
- Appropriate mathematical equation/s.
- The answer to their problem.

Closure   (20 minutes)

Allow each group to present its poster to the class.
- Ask one student in the group to read the mathematical facts presented in the book.
- Have another student read the problem they wrote about the facts.
- Ask another student to describe how they solved the problem.

Hang the posters in a prominent place. Have the class give positive feedback about the posters. Ask questions like,
- What do you like about each poster?
- Which posters are very clear and easy to understand?
- Which solution methods are presented well?

Assessment

- Do students choose appropriate facts from the book?
- Do students write an appropriate mathematical question with their selected facts?
- Do students find the correct answer to their question?
- Do students clearly write or illustrate the facts, their question, and their solution on their poster?

Extensions

- Rather than a group presentation of the problems and solutions, have students read each other's mathematical facts and see if they can come up with similar questions and solutions.
- Have students do research to find their own "incredible comparisons" and have them write the facts and the question.