

The Great Penny Push

Grade 3

Activity 306

Correlations to *The Digi-Block Program: Number Sense and Operations for the Elementary Grades Comprehensive Teacher's Guide*

Book III, Unit 1-5: Using the Number Line, pages 30 - 32

Overview

Students estimate and then "push" a penny along a number line. They show how far they pushed the penny by putting single blocks on the number line. They determine the number of single blocks they used and pack the blocks as much as possible.

Objectives

Thinking Skills: Students use estimation skills and spatial skills to conduct the penny push.

Mastery Skills: Students learn to represent numbers in two ways: as a long string of single blocks along a number line and also in the base ten view. They make connections between these two views of numbers.

Materials

Each group of 3 - 4 students needs at least:

- 1 block-of-100 unpacked (with holders)
- 0-100 Number line (paper version)
- 1 penny
- "The Great Penny Push" activity sheet

Class Introduction

(10 minutes)

Have each group of students place 23 single blocks on their number line. Ask students if there is another way to represent the number 23 with blocks.

- Take suggestions from students about other ways to represent 23 by recording possibilities on the board. (For example, 1 block-of-10 and 13 single blocks, etc.)
- Ask students to find, from the list, the representation which shows the amount 23 packed as much as possible. (Solution: 2 blocks-of-10 and 3 single blocks)

Tell students that they are going to do an activity with pennies and blocks and that they are going to pack the blocks as much as possible. With a paper number line taped to the floor, demonstrate how to carefully push a penny to make it slide in a straight line down the number line. Tell students that after they push a penny, they will:

- Place single blocks along the number line to show the route of the penny.
- Pack the blocks as much as possible to show the number in the base ten view.

Have one group demonstrate the penny "push" activity:

- First, the penny "pusher" must estimate where on the number line they think their penny will land and record their estimation.
- Then, one student in the group pushes the penny down the number line while another student waits at the end of the number line to record where the penny lands. (Suggestion: If the penny is "pushed" a distance away from the number line have students choose the number where the penny goes off the number line.)
- Finally, the group places single blocks along the number line to show the route of the penny and then packs the blocks as much as possible to show the number in the base ten view.

You may want to talk with the class about appropriate behavior during this activity and set up some rules. For example, one rule might be "No pushing pennies at each other."

Activity

(15 - 20 minutes)

Give each group of 3-4 students all materials needed. Have students set up their 0-100 number lines on the floor (taped to the floor if necessary).

Have each student conduct the penny "push" activity three times. Each time, have students:

- Estimate where they think their penny "push" will land.
- Push the penny.
- Place single blocks on the number line up to where the penny landed.
- Pack the blocks as much as possible.
- Record on the activity sheet.

Closure

(5 - 10 minutes)

Allow students to share their penny pushing results by asking them to share their numbers in the counting view and in the base ten view.

Further discussion may include such questions as:

- Do you think that you could push your penny to exactly 123?
- If we packed to 9 blocks-of-10 and 2 single blocks, where would the penny have landed?

Assessment

As the class works, walk around the room observing student behavior.

- Are students taking turns and working collaboratively?
- Are they following the directions correctly?
- Are students comfortable estimating?
- Do students lay the single blocks on the number line properly for each trial? Do they start at the zero on the number line and end right where the penny landed?
- Do students pack as much as possible in order to find the base ten view for each trial?
- Do students understand that that the blocks on the number line represent the same number as when they are packed as much as possible?

Extension

- Have students predict how their number will look when packed as much as possible before they conduct the packing.

- Have students take blocks that are packed as much as possible and predict where they will land when unpacked and placed on the number line.
- Have students lay out longer lengths of blocks on a 0-1000 number line and pack the blocks as much as possible.