

Measurement Scavenger Hunt

Grade 4

Lesson 406

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 the lengths of objects, measure lengths with blocks, count and pack blocks, and record the names of objects that match targeted lengths.

Objectives

Thinking Skills: Students use estimation skills to choose objects that they think will match a certain length. They see the consequences of using both standard units and non-standard units of measure.

Mastery Skills: Students learn how to measure with single blocks. They also learn to pack blocks in order to count single blocks more efficiently.

Materials

Each group of four students needs:

- Single blocks
- Holders, both small and medium sizes
- Access to number lines

- One "Measurement Scavenger Hunt" activity sheet

Class Introduction

(10 - 15 minutes)

Initiate a discussion with the question: **Why and when do we measuring things?** Have the students share some of their thoughts. Discuss why it is important to have a standard unit of measure.

Provide each group of students with all materials listed above. Tell students that they are going to go on a scavenger hunt where they look for objects of given lengths or between two given lengths. Explain that they will be measuring these objects with blocks.

Ask students how they would use single blocks to measure the length of an object. Be sure to show the following three ways to place the blocks to measure something:

- Side-by-side the long way
- Side-by-side the shorter way
- Stacked side-by-side using the shortest dimension

Discuss what to do when the blocks do not quite match the length of the object. Students must decide when and how to round up or round down to the nearest block.

Ask students what differences they think they will get if they measure an object three different ways with blocks.

- Bring out in the discussion that they will get the largest number of blocks if they stack the blocks side-by-side and the smallest number of blocks if they place the blocks side-by-side the long way.
- You may want to have the students actually measure the length of an object three different ways.

Discuss why it is important for each group to agree on a standard method by which they will measure things with blocks.

Present the situation:

- Each group of students decides which way they will measure objects throughout the scavenger hunt. Tell students that they must measure all of the objects in the same way.
- The students use estimation to find an object whose length is 45 blocks, the first target length measurement on the Scavenger Hunt activity sheet.
- They measure the length by placing single blocks along the item.
- Students then must determine the number of single blocks. Allow students to discover the best method to do this. There are three ways they can try:
 - 1) They can count all the single blocks one-by-one.
 - 2) They can get a number line and place it next to the line of single blocks to see where the blocks end.
 - 3) They can pack the blocks into holders first to determine the total number.
 - Have all students pack the blocks as much as possible to be sure that they counted correctly.
- If the length of the object is 45 blocks, the students record the name of the object and its Digi length on the Scavenger Hunt activity sheet. If the length of the object is not 45 blocks, students find another object that they think will measure 45 blocks and measure it. They may put two or more objects together to get a length that is 45 blocks.

Activity

(20 - 30 minutes)

Students continue to find objects that are the lengths given on the Scavenger Hunt activity sheet. Sometimes they will need to find an object whose length is between two different lengths.

Closure

(8 - 10 minutes)

Ask students to share what they found on the scavenger hunt. It may turn out that some students measured the length of the same object and got different measurements. Ask students why that might be.

- Students should discuss that the groups may have used different ways of measuring.

- Also, it is hard to line up blocks and be absolutely precise so some of the measurements may differ by just a little bit.

Discuss how this activity shows why it is important to have a standard unit of measure for everyone to use. Show different kinds of rulers (inches and centimeters) and then discuss different standard units for measuring length.

Assessment

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

- Are the students working collaboratively?
- Are they following the directions correctly?

Observe students as they go on the scavenger hunt.

- Are students able to use estimation to find an object of a given length?
- If students measure an object and its length does not match the target measurement, do they use this information when they look for another object?
- Are students lining up the blocks in a consistent manner when they measure the length of an object?
- Are students counting the blocks accurately?
- Do students pack the blocks as much as possible?
- How are students counting the blocks? Do they count single blocks before packing or do they pack first and then count?
- Do students immediately recognize the numeral represented by the packed blocks? Or, do they have to employ counting strategies such as counting by tens and ones (counting first 10, 20, 30, 40 and then 41, 42, 43...) or opening the holders and counting all the blocks one-by-one?

Extension

- Have groups create their own scavenger hunt sheets. Groups can trade sheets and go on the hunt searching for objects with the target lengths.
- Ask the class to think of something really big that they would like to measure with blocks. For example, they might choose the perimeter of the classroom. Discuss a way

that they could work together as a class to do the measurement. For example, if they are measuring the perimeter of the classroom, the class could be divided into four groups. Each group could measure the length of one of the sides. Then all four measurements can be combined to get the perimeter. Be sure to ask the class to estimate the perimeter before doing the measurement. Also, be sure that each group uses the same method of laying out the blocks to measure.