

Lesson Plan

Date of Lesson: April 29, 2013, 10:00-11:00

Grade Level: Grade 1

Subject: Mathematics

Topic or Unit of Study: Measurement

Pre-Requisite Knowledge/Skills: Students will need to be able to recognize visual differences in length.

Time Allotment: 1 Class period. 1 Hr per class

Objectives

1. Students will make and use estimates of measurement
2. Students will use a non-standard measure (paper-clips) to measure the length of several objects
3. Students will record and compare measurements
4. Students will demonstrate an understanding of adding and subtracting measurements using paper clips and pattern blocks

Anticipatory Set

To access prior knowledge students will draw three lines using three different colors. Then they will measure and label each line with their paper clip measuring tool. Ask students to answer two questions; which of your lines is the longest? And what are two ways you can tell which line is the longest? Discuss their answers.

Procedure

1. Have students measure various objects around the classroom with their paper clip measuring tool. Let them record their observations on their handout. Discuss what they discovered.
2. Explain directions to students as they are displayed on the smart board. Give them their

problem solving graphic organizers.

3. Display the problem on the smart board: *The blue ribbon is about 4 paper clips long. The red ribbon is about 1 paper clip long. The green ribbon is 2 paper clips longer than the red ribbon.* Measure and draw the ribbons from shortest to longest.

3. Read the Problem aloud to the class and work through the problem solving graphic organizer together. Students will need to find the order of ribbons from shortest to longest and the paper clip length of each ribbon on the graphic organizer.

4. Have students measure and cut a piece of blue ribbon that is 4 paper clips long, a red ribbon that is one paper clip long, then have them figure out how long the green ribbon is if it is 2 paper clips longer than the red ribbon. (The green ribbon is 3 paper clips long) Have them measure and cut a piece of green ribbon that is about 3 paper clips long once they have added two paper clips to the red ribbon to equal the length of the green ribbon.

5. Have children arrange the pieces of ribbon in their workspace. The shortest ribbon should be at the top and the longest at the bottom. Students will then use their paper clip measuring tool to measure and draw the ribbons in order on their graphic organizers.

6. Give students the next graphic organizer. Display the problem and graphic organizer on the smart board. This time questions involve more addition and subtraction. Read the problem aloud. The length of the yellow ribbon is given. Discuss how to find the lengths of the orange and blue ribbons by adding or subtracting paper clips using the paper clip measuring tool.

7. Once children have measured and cut three pieces of ribbon, have them draw each ribbon in order from the longest to shortest. Then write the measurement of each ribbon and explain.

8. Hand out the share and show worksheet and have students try to solve a few problems on their own that deal with measuring, paper clips, and drawing. Help them as needed.

9. Complete the lesson by letting students compare and contrast measurements from three objects of their choice around the room. Have children measure and draw the length of

the objects that must fit on the paper using the paper clip measuring tool. For example a toy dinosaur or eraser might be items used. Have students put the objects in order of shortest to longest on their paper and write one or two sentences explaining.

Closure

Allow students a chance to share and explain the items that they chose to measure for the final activity. Have students display the items in order from smallest to largest or visa versa.

Materials and Resources

Instructional Materials:

2 Graphic organizers

1 Problem solving handout (share and show)

Resources:

- Materials and resources: paper clip measuring tool, paper clips, construction paper, tape, colored ribbon, scissors
- Technology resources: Smart Board
- The number of computers required is 1.

Technology:

The smart board will be used to display graphic organizers as students work through problems.

Standards

NY- New York State Core Curriculum (updated)

Subject: Mathematics (Revised March 2005)

Grade: Grade 1

Strand: Measurement Strand

Standard: Students will determine what can be measured and how, using appropriate methods and formulas.

Indicator: 1.M.1 Recognize length as an attribute that can be measured

Indicator: 1.M.2 Use non-standard units (including finger lengths, paper clips, students' feet and paces) to measure both vertical and horizontal lengths

Indicator: 1.M.3 Informally explore the standard unit of measure, inch

Standard: Students will develop strategies for estimating measurements.

Indicator: 1.M.11 Select and use non-standard units to estimate measurements

UDL (Universal Design for Learning)

Principle I. Provide Multiple Means of Representation

Guideline 1: Provide Options for Perception

Checkpoint 1.1 Offer ways of customizing the display of information: Graphic organizers will be displayed on the smart board as students work through problems.

Checkpoint 1.3 Offer alternatives for visual information: The teacher will model problem solving skills and use a paper clip measuring tool as a visual to show students before they make their own.

Guideline 2: Provide Options for Language, Mathematical Expressions, and Symbols

Checkpoint 2.3 Support decoding text, mathematical notation, and symbols: To ensure that all students have equal access to knowledge there will be a visual list of symbols and key terms with meanings displayed in color hanging on the wall.

Principle II. Provide Multiple Means of Action and Expression

Guideline 5: Provide Options for Expression and Communication

Checkpoint 5.2 Use multiple tools for construction and composition: Students will have access to manipulatives including pattern blocks to help them if they are having trouble with measuring concepts. Students will also have paper clip measuring tools.

Conceptual Development

It is important for students in grade one to begin to understand the concepts of measurement and length. Rather than simply solving problems on a work sheet children need to learn and discover **why** it important to measure and the significance of it. When students begin to learn about the concept of measurement they need to recognize the visual differences of various lengths and also develop size perception. In first grade children need to physically make comparisons by being hands on and visually observing differences in length.

Students need to learn where to place the measuring tool so that it starts at one end of the object being measured. Many students may have trouble with this concept unless they are able to practice measuring. For example, a student may place a measuring tool so that both ends are not lined up evenly. This is of course as we know not an accurate measurement and unless students are able to see the difference they may not grasp the concept.

This lesson allows students to measure concrete objects with pattern blocks and a paper

clip measuring tool to engage them and give them a true understanding of measurement that is appropriate for their age level. Students will learn that items can be measured by using non-standard units that are approximate measurements. It is important for children to learn these concepts before they move on to learn about standard units of measurement in higher grade levels. Children will learn more effectively when they learn from their measuring mistakes.

Making Connections

The main connection that children will make in this lesson is developing an understanding for why it is important to measure. In grade one it is significant for students to gain spatial awareness when it comes to the size of an object. This lesson will help students to recognize if an object is perhaps too large to fit into a container or if a foot is too long to fit into a shoe. The concept of an object not fitting into a space because of its length is something that we as adults take for granted, however for first graders it is new and important to understand.

This lesson teaches students how to measure using non-standard units and also develops their comparing, contrasting, and analytical skills. Children will discover that addition, subtraction, and counting are all connected to measuring. In this lesson students learn that they are solving measurement problems by adding and subtracting paper clips for example. They may view their world a little bit differently after this lesson and it will build a solid foundation when they go on to learn about standard units of measurement and the metric system. Making these connections will be useful in the future when they learn new material.

Use of Technology

The lesson will incorporate smart board technology to give students a large visual of the graphic organizers that the class will be working through together. The lesson will involve the use of ribbons and paper clips that will also be drawn on the smart board. Each drawing of the manipulative used in the lesson will be displayed in a different color to keep students organized. As students fill out their graphic organizers they have in front

of them they will be able to look on the board while the teacher helps them to work through measurement problems involving addition and subtraction. Students will be asked to write or draw on the board to solve problems as well.

Students will be working with the paper clip measuring tools that they made for this lesson. They will also use pattern blocks to measure drawings and various items.

Reflective Inquiry

The most important objective that I want students to take away from this lesson is being able to develop an understanding for why it is important to measure. It seems like such a simple concept, however it is a difficult question for many students to answer. Children need to be able to relate the concept of measurement to their own lives and so it is valuable to let them explore their classroom environment and measure a variety of objects with different kinds of measuring tools whether they are standard units or not.

In this lesson it is key to ask students many questions regarding length including, what they need to find, what is the length of a ribbon, what is the order of the ribbons, and what do they know about the length of the blue ribbon vs. the orange ribbon, etc. Children may misread a problem and may need help navigating through it. By asking questions like those listed, it may help remind students about why they are measuring as well as the connection to addition and subtraction. These questions are methods of scaffolding and need to be incorporated in this lesson.

It is also important that students feel comfortable and not intimidated by measuring in their environment. Students should absolutely be given the opportunity to measure all kinds of items and ask questions. They need to know that it is ok to make a mistake if perhaps they didn't line up their measuring tool correctly with an object. In this lesson it is crucial for students to be engaged and discuss what they learned through measuring. By discussing the concept and asking questions students will have more of a chance to develop the knowledge and the teacher will be able to draw from students why they may not understand something.

This lesson will help to develop the concept of measurement for grade one students and allow them to work on important math skills including addition and subtraction. I think that the activities and problems in the lesson will let students have fun with measuring

while learning how to answer why it is important to measure.

Resources:

Greenes, Carole E. *Houghton Mifflin Math Grade 1*. Boston: Houghton Mifflin, 2007.
Print.