

# Benchmarks - Assistance in Measurement

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## VITAL INFORMATION

|                               |   |
|-------------------------------|---|
| <b>Subject(s)</b>             | Mathematics   |
| <b>Topic or Unit of Study</b> | Measurement - Measuring in centimeters, inches, and feet.   |
| <b>Grade/Level</b>            | Special Education, Grade 9, Grade 10, Grade 11, Grade 12  |
| <b>Objective</b>              | Students will learn how to use "benchmarks" or other objects as guides for measurements. An example of a benchmark could be one pencil. They can then measure a table, for example, as five pencils. Using this benchmarks will also lead up to measuring with standard units of measurement.   |
| <b>Summary</b>                | By using familiar items as nonstandard units of measurement, students will learn how to measure objects by comparing them with other items. These items are called their "benchmarks." Anything can be a benchmark including pencils, paper clips, erasers, crayons, etc. These benchmarks will the students' visual representations of how long or how wide objects are and they will then connect these visuals with standard units of measurement such as centimeters, inches, and feet. |

## IMPLEMENTATION

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|--|---|
| <b>Learning Context</b>                    |   |
| <b>Procedure</b>                           | <p>1. *Have you ever tried to measure something by comparing it with your pencil? Was there no ruler or measuring tape nearby? Even if we don't know the exact measurement of an object by using standard measurements such as inches, we can use <i>benchmarks</i>, or other kinds of visuals that assist us in measuring. An everyday item such as a pencil can be used as a benchmark.*</p> <p>Demonstrate this by measuring a desk, or anything else with a pencil(s). How many pencils long is the desk? How many pencils wide? If we measured the desk in paper clips, how many paper clips long would the desk be?</p> <p>Continue practicing with measuring different objects with benchmarks with the computer game <i>How Tall?</i> from PBSkids.org. Have the whole class participate in the game by loading the screen onto the projector or TV.<br/><b>Play for 2 to 5 minutes.</b></p> <p>2. For the next activity, students will then measure objects in the classroom with a benchmark of their choice. Some of these benchmarks can be pencils, pens, highlighters, etc. (As long as the selected benchmark will be suitable for measuring classroom objects.) Students will have to move around the classroom measuring all the objects they can. The teacher and teacher's aide will also circulate around the classroom along with the students to monitor what they are measuring and checking in to see what they have measured. <b>Allow 10 minutes in the classroom.</b></p> <p>3. After students have finished measuring objects in the classroom, students and teachers can then go outside nearby the classroom and start measuring objects outside. They can measure the leaves, fence, sidewalk, or anything else they find outside. They can still keep their benchmarks of choice or select another benchmark that would be more suitable for measuring smaller objects such as leaves. Have students bring in one leaf when they come back inside the classroom. <b>Allow another 10 minutes for the outdoors time.</b></p> <p>4. Students will now have rulers at their desks. They will now begin measuring with standard units of measurement. With their rulers, they will go back to one object they have measured in the classroom with their benchmarks and will determine the standard measurement of that object using centimeters or inches. How many pencils long was the computer monitor again? Now how many inches is it? They will also measure the leaf that they have brought in class from outside. How long and wide is the leaf? <b>Give students 5 to 7 minutes to obtain these measurements.</b></p> <p>5. Conclude the lesson with a discussion about the measurements. Were the students more comfortable with measuring the objects with benchmarks or standard units of measurement? What did they like about using benchmarks? What did they not like? Have the benchmarks helped as a visual guide for measuring?</p> <p>Also be sure to discuss how students have determined which benchmarks and units of measurements they had to use for measuring certain things. Could they measure a small leaf by inches? Would they quickly get a measurement of the parking lot with paper clips? How can you tell that paper clips would not be the best choice for measuring a parking lot? (...Or why would they be the best choice?) <b>Discuss for another 5 to 7 minutes.</b></p> |
| <b>Differentiated Instruction</b>          |   |
| <b>Sample Student Products</b>             |   |
| <b>Collaboration</b>                       |   |
| <b>Time Allotment</b>                      | 1 class periods. 40 Mins. per class.  |
| <b>Author's Comments &amp; Reflections</b> | This lesson can also be adapted for Upper Elementary general and special education.   |

## MATERIALS AND RESOURCES

| Instructional Materials |  |
|-------------------------|--|
| <b>Resources</b>        | <ul style="list-style-type: none"><li>• Materials and resources:<ul style="list-style-type: none"><li>Rulers</li><li>Miscellaneous classroom objects</li></ul></li><li>• The number of computers required is 1.</li><li>• One computer will be used. The screen will be displayed onto the TV that it is connected to.</li></ul> <p><b>Links:</b></p> <ol style="list-style-type: none"><li>1. <a href="#">How Tall?</a> PBSKids.org game on using different objects to measure.</li></ol> |

**STANDARDS & ASSESSMENT**

|                           |  |
|---------------------------|--|
| <b>Standards</b>          |  |
| <b>Assessment/Rubrics</b> |  |