



## Wizards of Wright

### Lesson: Measurement -

### Standard and Non-Standard Units

<p><b>Background Info for Wizards:</b></p>	<p>This is one of several measurement lessons for K-2 students. They do not have to be taught in any specific order, so you will want to check with the teacher to see what they may have covered before today's visit.</p> <p>This lesson covers standard units of measurement (such as inches, pounds, and pints) and non-standard units of measurement (steps, hand spans, cubes, and counters).</p>
<p><b>Materials:</b></p>	<p>for Wizard: 1 ruler</p> <p>1 bag for every 2 students:        - baggie with 15 small paperclips and an unsharpened pencil        - baggie with 10 large paperclips and an unsharpened pencil</p> <p>1 bag for every 2 students:        - baggie with 12 paper squares (1-inch)</p> <p>1 tray for every 2 students        1 bag of materials to go with the tray        - pencil        - crayon        - marker        - eraser        - straw        - string        - foot pattern</p> <p>We Can Measure Inches! Worksheet (1 for each student)</p>
<p><b>Lesson Time:</b>        40-45 minutes</p>	<p>Introduction: 5 minutes        Student Activity #1: 10 minutes        Student Activity #2: 20 minutes        Conclusion: 5-10 minutes</p>



<p><b>Learning Targets:</b></p>	<p>Students will be able to correctly measure an object using nonstandard units by laying the units end-to-end and by laying the units with no gaps.</p> <p>Students will be able to explain why a standard unit of measurement is needed.</p> <p>Students will be able to use a standard unit of measurement to measure objects.</p>
<p><b>Introduction for Students:</b> 5 minutes</p>	<p><b>Say to the students:</b> Today we are going to talk about measurement – measurement means finding the size of something. Sometimes we need to know how much something weighs. Sometimes we need to know how tall something is. When we have those kinds of questions to answer, we measure.</p> <p>There are times when I don't have to be very exact. I might say things like... "I need about 8 potatoes when I make mashed potatoes for dinner." Or I might ask my sister for a handful of pretzels.</p> <p>But, sometimes we need to be very exact. Like when the announcer says "The Bengals need 8 more yards in order to score." Or I might say, "I need 12 ounces of chocolate chips for the cookies."</p> <p>Today we will work on measuring and being as exact as we can be. Let's jump into our first activity.</p>
<p><b>Student Activity #1:</b> 10 minutes</p>	<p><b>(Students will be working in pairs of 2 for this activity. Ask the teacher if the pairs have already been created. If not, wait while he or she does this.)</b></p> <p>Give students on one side of the room the baggies with small paperclips and give the students on the other side of the room the baggies with large paperclips. Try to not let them know they are getting different sized paper clips.</p> <p>Make sure each pair also has an unsharpened pencil.</p> <p><b>Say to the students:</b> Your job is to work with your partner to measure the pencil with your paperclips by lining them up end to end.</p> <ul style="list-style-type: none"><li>- Make sure the paperclips are touching each other.</li><li>- Make sure the paperclips are not overlapping.</li><li>- When you have your total, please wait quietly.</li></ul>



	<p>You'll need to wander around and make sure the paperclips are touching each other.</p> <p>When all groups are finished, have a few groups share the number of paperclips it took to measure how long the pencil is.</p> <ul style="list-style-type: none"><li>- You will get different measurements because some measured with small paperclips and some measured with big paperclips.</li></ul> <p><b>Ask the students:</b> Why did we get different answers? We all measured with paperclips; how did we get different answers?</p> <ul style="list-style-type: none"><li>- Lead them to figure out that they all don't have the same sized paperclips.</li></ul> <p><b>Ask the students:</b> Does it matter if we have the same unit when we are measuring something?</p> <p>Discuss as a class the need for standard measurement.</p> <p>Make sure all materials are put back in the baggies, and collected, before moving on. (Ask students to count the paperclips as they put them in the bag. Let them know how many they should have.)</p>
<p><b>Student Activity #2:</b> 20 minutes</p>	<p><b>(Ask the teacher if he/she wants the students to work with the same partner as before, or if they should switch. If switching, ask the teacher if the pairs have already been created. If not, wait while he or she does this.)</b></p> <p>Tell students that they will need a pencil for this activity. Wait for everyone to be ready.</p> <p>Give each pair of students a tray of materials. Give each pair of students a baggie of one-inch squares. Give each student a worksheet. Ask the students to take the squares out of their bags and lay them out in front of them.</p> <p>Introduce this unit of measurement. <b>Say to the students:</b> Each square equals 1 inch.</p> <ul style="list-style-type: none"><li>- Show them 1 inch on a ruler.</li><li>- Give them an example for one inch - from the end of your thumb to your first knuckle is about an inch.</li></ul>



	<p><b>Say to the students:</b> Your job is to work with your partner to measure the items on your tray with your one-inch squares by lining them up end to end. After you have lined up the squares and counted them, write that answer on the paper.</p> <p><b>Say to the students:</b> Let's all do the first one together.</p> <ul style="list-style-type: none"><li>- Find the pencil on your tray, and move it close enough so that you can measure it.</li><li>- Now start lining up your inch-squares right against the pencil until you get to the end of the pencil.</li><li>- Make sure the squares are touching each other, but not on top of each other.</li><li>- Let me come around and check them all.</li><li>- Great! Now let's count those squares.</li><li>- Right! Now that we know the number of squares is X, you need to write that on your paper, next to the pencil.</li><li>- Let me come around and check them.</li></ul> <p><b>Say to the students:</b> Great job measuring the pencil. Now you can do the same thing with the other items on your sheet.</p> <p><b>Ask the students:</b> Who can tell me what is next on the list? Right! The crayon. Okay, you know what to do. Go ahead and start measuring!</p> <p><i>You'll need to wander around and make sure the squares are end-to-end, with no gaps or overlapping.</i></p> <p>When all groups are finished, have students share the number of squares it took to measure how long each object is. If a measurement is drastically different from everyone else's take a moment to show that group how they should've measured.</p> <p>Make sure all materials are put back on the trays, and make sure all the one-inch squares are back in the baggies. (Ask students to count the squares as they put them in the bag. Let them know how many they should have.)</p> <p>Collect everything before moving on.</p>
<p><b>Conclusion:</b> 5-10 minutes</p>	<p>Discuss what items are reasonable to measure with the inch squares.</p>



	<p>Would it be easy to measure the distance of the room with the inch squares? Why or why not?</p> <p>Ask student to look around the room and suggest something they think would be easy to measure with the 1-inch squares.</p> <p>Ask students to give examples of when exact measurements are important.</p>
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