

## Wizards of Wright

### Lesson: Measurement –

### Tools for Linear Measurement

<b>Background Info for Wizards:</b>	<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 measuring with inches, feet, and centimeters while using rulers, tape measures, and yardsticks.</p>
<b>Materials:</b>	<p>for the Wizard to use:</p> <ul style="list-style-type: none"> <li>- ruler</li> <li>- tape measure</li> <li>- yardstick</li> </ul> <p>for student groups:</p> <ul style="list-style-type: none"> <li>- trays</li> <li>- rulers</li> <li>- tape measures</li> <li>- yardsticks</li> </ul> <p>for students:</p> <ul style="list-style-type: none"> <li>- construction paper so they can create their Monster's bodies</li> <li>- construction paper so they can create their Monster's arms and legs</li> <li>- glue sticks</li> <li>- Monster eyes and mouths</li> <li>- My Monster worksheet (one for each student)</li> </ul>
<b>Lesson Time:</b> 65 minutes	<p>Introduction: 5 minutes          Guided Lesson #1: 10 minutes          Student Activity #1: 20 minutes          Student Activity #2: 25 minutes          Conclusion: 5 minutes</p>

<p><b><i>Learning Targets:</i></b></p>	<p>Students will be able to compare sizes of objects.</p> <p>Students will be able to distinguish among inches, feet, and centimeters.</p> <p>Students will understand the difference among a ruler, yardstick, and measuring tape.</p> <p>Students will be able to select the proper sized unit to measure an object.</p> <p>Students will be able to use different tools to measure objects.</p>
<p><b><i>Introduction for Students:</i></b> 5 minutes</p>	<p><b>Say to the students:</b> Today we are going to work with measurement and learn how to measure some objects. Before we get that far, let's compare the sizes of a few things.</p> <p><b>Ask students:</b> Which is bigger: a pencil or a book? How do you know?</p> <ul style="list-style-type: none"> <li>- The book is bigger.</li> <li>- The book takes up a lot more space.</li> </ul> <p>Which is smaller: a kitten or a giraffe?</p> <ul style="list-style-type: none"> <li>- The kitten is smaller.</li> <li>- Kittens are very small. Giraffes are very big and very tall.</li> </ul> <p>Who is taller: you or your teacher?</p> <ul style="list-style-type: none"> <li>- My teacher is taller.</li> </ul> <p><b>Say to the students:</b> Now, let's compare three things: Picture a marker, a train, and a bike.</p> <p><b>Ask:</b> Which is the biggest? Which is the smallest. How do you know which one goes in the middle?</p> <ul style="list-style-type: none"> <li>- The train is the biggest.</li> <li>- The marker is the smallest.</li> <li>- A bike is bigger than a marker but smaller than a train.</li> </ul> <p>Show the pictures of 3 slices of cake that are different sizes.</p> <p><b>Ask students:</b> Which piece of cake would you prefer?</p> <ul style="list-style-type: none"> <li>- Why?</li> <li>- Which is the biggest?</li> <li>- Which is the smallest?</li> </ul> <p><b>Ask students:</b> What is something that is heavier than a watermelon?</p> <ul style="list-style-type: none"> <li>- Answers will vary</li> </ul>

	<p>Which is taller: a car or a school?</p> <ul style="list-style-type: none"> <li>- A school.</li> </ul> <p>Which is heavier: a whale or a goldfish?</p> <ul style="list-style-type: none"> <li>- A whale.</li> </ul> <p>Which is lighter: a school bus or a toy car?</p> <ul style="list-style-type: none"> <li>- A toy car.</li> </ul> <p>What is something that is taller than a swing set?</p> <p>Answers will vary.</p>
<p><b>Guided Lesson:</b> 10 minutes</p>	<p><b>Say to the students:</b> Today when we talk about measurement, we must use the right words.</p> <p>An inch is a small unit of length. (Hold up a ruler and show the students where the inches are marked. “This is 1 inch. This is two inches. This is three inches.” And so on.) (They should be able to understand halfway between the inches.)</p> <p><b>Ask the students:</b> Does anyone know what we call 12 inches?</p> <ul style="list-style-type: none"> <li>- It’s called a foot.</li> </ul> <p><b>Say to the students:</b> Hundreds of years ago, when measurements had to be made there wasn’t always a measuring device around. Therefore, people used what they had available to them. In many cases people would pace out a distance by walking it and give the unit of measure in “feet”.</p> <ul style="list-style-type: none"> <li>- Show the students how to pace out the size of the classroom.</li> <li>- Have them count the “feet” as <u>you</u> walk it.</li> <li>- Have a <u>student</u> pace out the size of the classroom, and have the class count the “feet”.</li> <li>- Hopefully the numbers are very different.</li> <li>- Ask the students if they can explain why.</li> </ul> <p><b>Say to the students:</b> It is said that King Henry I of England, who began ruling in 1100, decided to standardize this unit of measurement using <u>his</u> foot as the new standard unit of length. It is possible that the width of his thumb was used as the standard for the inch.</p> <p>Show students the other side of the ruler and point out these lines measure much closer together.</p>

	<p><b>Say to the students:</b> These numbers are measuring centimeters. Hold up a ruler and show the students where the centimeters are marked. “This is 1 centimeter. This is two centimeters. This is three centimeters.” And so on.)</p> <ul style="list-style-type: none"> <li>- <b>Say to the students:</b> I use centimeters when I’m measuring something smaller than inches. If it’s even smaller than that, I measure in millimeters.</li> </ul>
<p><b>Student Activity #1:</b>          20 minutes</p>	<p>(Students will be working in small groups for this activity. <b>Groups should be 2-3 students.</b> Ask the teacher if the groups have already been created. If not, wait while he or she does this.)</p> <p><b>Say to the students:</b> I’m going to pass out some materials, but I need to set some ground rules before I give you these rulers to use. The rule is that rulers are for measuring, not sword play or spinning. The consequence is that if you do not use the ruler correctly, I will collect it.</p> <p>Give each group a tray of materials.</p> <ul style="list-style-type: none"> <li>- Each tray has several rulers and several tape measures.</li> <li>- Allow time (a few minutes) for exploration.</li> <li>- Invite students to look at the numbers on both sides of the ruler.</li> <li>- Suggest that they use the items on the tray to “measure” a few things around them. (In or on their desks – no one should be getting out of their seats yet.)</li> </ul> <p>After a minute of exploring, ask each student to hold <u>only</u> a ruler in their hands. (Remind students of the rules.)</p> <p><b>Say to the students:</b> When we use a ruler to measure, we start at the 0. If there isn’t a 0, we start measuring where the tick marks are on the ruler, not just the beginning of the plastic.</p> <p>Have students pick up a ruler and point to the beginning point on a ruler, while you go around and make sure they are on the right spot. (Ask the teacher to help with this so you can get to/correct everyone quickly.)</p> <p><b>Say to the students:</b> When we use a ruler to measure, we will measure how many inches something is. We can also measure in centimeters and in feet.</p> <ul style="list-style-type: none"> <li>- Show the students something in the room that you would use a ruler to measure.</li> <li>- Show the students something in the room that a ruler would not be good to measure with.</li> </ul>





- Ask the students for their own examples.

Ask the students to put the rulers down, and to only hold a tape measure in their hands.

**Say to the students:** When we use a tape measure to measure, we will measure how many inches something is. We can also measure in millimeters and centimeters, in feet, and in meters.

- Show the students something in the room that you would use a tape measure to measure.
- Show the students something in the room that a tape measure would not be good to measure with.
- Ask the students for their own examples.

**Ask the students:** Who can tell me a difference between rulers and tape measures?

- Tape measures are flexible.
- Briefly discuss why that might be important. Use some examples in the room.

Ask the students to put the tape measures down, and to have nothing in their hands.

Show the students the yardstick.

**Ask the students:** Does anyone know what this is called?

**Say to the students:** When we use a yard stick to measure, we will measure how many inches something is. We can also measure in millimeters and centimeters, in feet, and in meters or yards.

- Show the students how many inches we see on a yardstick.
- Explain that 36 inches is also called 3 feet and is also called a yard.
- Show the students something in the room that you would use a yard stick to measure.
- Show the students something in the room that a yard stick would not be good to measure.
- Ask the students for their own examples.

**Say to the students:** I'm going to give you time to work with your partners and go on a hunt around the classroom. Your mission is to find objects in the room that you could measure with each of the three tools, then measure that object. You can carry the ruler and tape measures with you. I'll keep the yardsticks until you are ready for one.

	<p><i>While partners work on their scavenger hunt (don't be surprised if they don't stay with their partners), rotate through each group to clear up confusion or to help them with using the measurement tools.</i></p> <ul style="list-style-type: none"> <li>- Keep an eye out for any students who are really struggling and may need extra help.</li> <li>- You may also find an opportunity to explain using half inch lines.</li> </ul> <p>After everyone has had time to measure several items have them all return to their seats. Ask a few students to share what they measured. (They probably won't remember the length, but the focus should be what they used <u>rulers</u> for, what they used <u>tape measures</u> for, and what they used the <u>yardstick</u> for.</p> <p>Collect all materials before moving on.</p> <p>Keep the rulers handy because students will need them again.</p>
<p><b><i>Student Activity #2:</i></b>  25 minutes</p>	<p><b>Say to the students:</b> You are going to need scissors and glue for this next activity.</p> <p>Wait for students to get their supplies and be ready.</p> <p><b>Say to the students:</b> Today you get to design you very own Measurement Monster, and after you create your monster, we will measure them!</p> <ul style="list-style-type: none"> <li>- show them what construction paper they can use</li> <li>- tell them their monster can be whatever shape, size, and color they want</li> <li>- tell them that once they have their monster's body cut out, they can add arms and legs, eyes, and mouths too</li> <li>- show them you have pictures they can use, if they want them</li> </ul> <p>As they are finishing their monsters, give each student a Measurement Monster worksheet and rulers. Have them use the rulers to measure the different parts of their monster.</p>
<p><b><i>Conclusion:</i></b>  5 minutes</p>	<p>If there's time, take a few minutes to review with the students the different measurement tools they used today, and have them give some examples of when you might use that different tool.</p>

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