

Bridges in Mathematics, Grade 2

Unit 4: Measurement

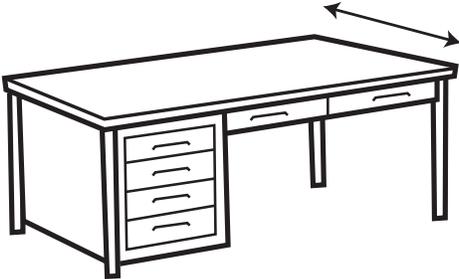
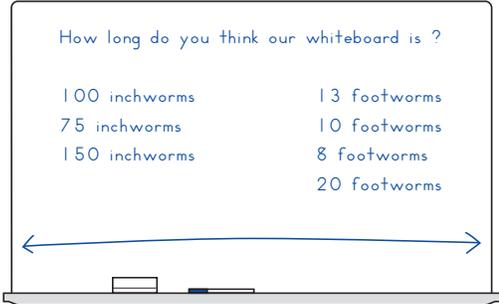
In this unit, your child will:

- Estimate, measure, and compare the lengths of objects in inches, feet, and yards
- Select and use the appropriate tool for measuring the length of an object
- Measure the length of an object twice, using two different units—such as inches the first time, then feet

Your child will practice these skills by solving problems like those shown below.



PROBLEM	COMMENTS												
<p>Measure the yellow paper strip with tiles and then with your inchworm ruler.</p> <p><i>"It was 4 both times. Four tiles, and then 4 of those worms on the ruler. The ruler is kind of like having tiles stuck together."</i></p> <p>Choose a card. Measure your object. Compare the length of your object to your partner's object.</p> <p><i>"The book is 12 inches and the board is 48 inches. The board is 36 inches longer than the book."</i></p>	<p>In this unit students return to the land of beanstalks and giants and explore measurement in a giant's world. The story <i>Jim and the Beanstalk</i> by Raymond Briggs (a spinoff off of the traditional Jack & the Beanstalk tale) is the inspiration for many measuring activities.</p> <p>Second graders build upon their early experiences to measure with standard units, like the inches shown on the inchworm ruler. The example shows students how the ruler can be used in place of lining up individual tiles to measure length.</p> <table border="1"> <thead> <tr> <th>Object</th> <th>Estimate</th> <th>Length (in tiles)</th> <th>Length (in inches)</th> </tr> </thead> <tbody> <tr> <td>a Pencil </td> <td>6</td> <td>7</td> <td>7</td> </tr> <tr> <td>b Crayon </td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table> <p>As the unit progresses, students use inches, feet, and yards to measure objects found in the classroom. They compare the difference in length between the two objects by using the same tool and unit to measure both objects.</p>	Object	Estimate	Length (in tiles)	Length (in inches)	a Pencil	6	7	7	b Crayon	3	3	3
Object	Estimate	Length (in tiles)	Length (in inches)										
a Pencil	6	7	7										
b Crayon	3	3	3										
<p>In the Giant Kingdom, the bigger worms give piggyback rides to the smaller worms. Use your inchworm ruler and your paper footworm and yardworm strips to help solve the problems below.</p> <ol style="list-style-type: none"> How many inchworms can ride piggyback on a footworm at one time? _____ How many footworms can ride piggyback on a yardworm at one time? _____ One day, 27 inchworms were waiting for a ride at the pickup spot. Along came 2 footworms. <ol style="list-style-type: none"> Can all 27 inchworms ride piggyback at the same time on 2 footworms? <p><i>"There are 12 inches in 1 foot, and 3 feet in 1 yard. Twenty-seven inchworms can't ride piggyback on 2 footworms because each footworm is only 12 inches: $12 + 12 = 24$. Three inchworms won't get a ride because 27 is 3 more than 24."</i></p> 	<p>In the giant's garden there are earthworms of various lengths: inchworms, footworms, and yardworms. Students discover that 12 inchworms can take a ride on the back of 1 footworm. Likewise, 3 footworms can ride on the back of a yardworm. These fantasy characters provide a fun context for measuring while helping students remember there are 12 inches in 1 foot and 3 feet in 1 yard.</p>												

PROBLEM	COMMENTS
<p>How wide is the desk? Use your inchworm ruler to find out. Then use your footworm ruler.</p> <p><i>"The desk measurement in inches is 24 inches wide, but when you measure it in feet, it's only 2 feet wide."</i></p>  <p>Are the measurements the same? Why or why not?</p> <p><i>"They end up meaning the same distance, but the inches number isn't the same as the feet number because inches are a lot smaller than feet."</i></p>	<p>Students measure an object using two units of different lengths such as inches, then feet.</p>  <p>Students compare standard units of measurement and explore how the size of the unit impacts the number of units necessary to measure the object. In this example, the students' estimates show an understanding that inches are much smaller than feet.</p>

FREQUENTLY ASKED QUESTIONS ABOUT UNIT 4

Q: Why is estimating an important part of learning to measure?

A: Estimating, prior to measuring, helps a student focus on the attribute being measured and the measuring process. For example, when students make an estimate, they need to think about the unit's length. If a student is going to estimate the length of something in inches, he needs to think about how long 1 inch is. This helps him become more familiar with a unit's size. Once he makes an estimate and the item is actually measured, he can think about the accuracy of the estimation. This reflection will help with future estimates, number sense, and measurement tasks.

Q: The examples from this unit were all customary units (inches, feet, and yards). Will students learn the metric system as well?

A: Length in metric units (centimeters and meters) is taught in Unit 7.

Q: How can my child continue to explore measurement at home?

A: Talk about different things that can be measured at home, and then get measuring!

- There are many ways to measure features other than length or width—such as a child's weight or cups needed to fill a gallon. Discuss why a ruler or tape measure would not be used for these measurements.
- Make a list of things that could be measured in inches, feet, or yards. Choose a few items to measure, and discuss which unit is most appropriate. Would you measure the length of a bedroom in inches or feet? Why?
- Gather several items to measure, such as a book, a cereal box, a sock, or an envelope. Ask your child to estimate the length of each. Measure the objects and compare the difference between the estimate and the actual measurement.
- Whether you're calculating distance on a roadmap, planning to buy a new tablecloth or curtains, or measuring garden rows, real-life applications make math meaningful.