InsightMath California

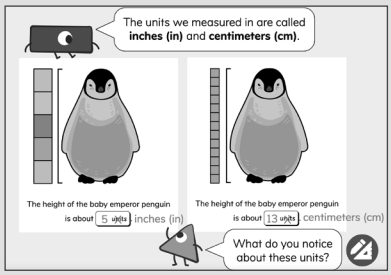
Estimating and Measuring Length

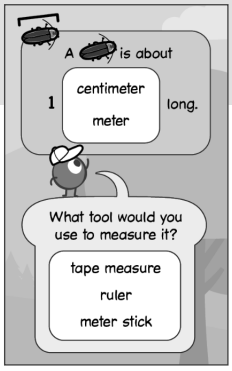
Family Guide | Grade 2 | Unit 1

Your student is exploring that measuring length with standardized units and tools helps to communicate precisely, compare lengths, and solve problems.

Key Math Ideas

Your student has had some experience with measurement previously by measuring the length of items with nonstandard units, such as blocks or sticky notes. In this unit, they will expand this work with measurement by learning to measure with standard units of measurement, such as centimeters, inches, or feet. They begin to understand why standard units of measurement are important for precision and communication while learning to use rulers and other measuring tools. Students discover that using standard units of measurement helps communicate length more precisely and that the length of an item does not change based on the unit of measurement, but that how we communicate the length does change. For example, one person could say the baby emperor penguin is has a height of 5 and another person could say the baby emperor penguin is has a height of 13. Without knowing the units of measurement, we cannot know that both people are correct.



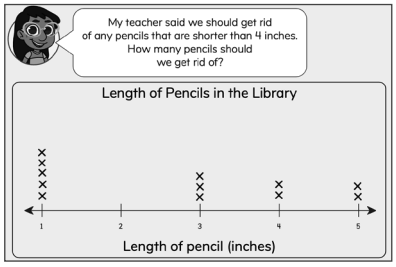


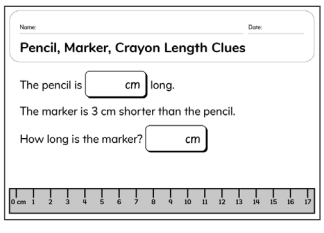
→ In the first half of the unit, your student will learn to

- determine the length of objects in inches and centimeters;
- describe that centimeters are shorter than inches so we need more centimeters than inches when measuring the length of an object;
- accurately measure length to the nearest whole unit using tools such as a ruler, meter stick or yardstick;
- describe the benefits of using standard tools to measure length;
- use a ruler to draw a line to a given length.

→ In the second half of the unit, your student will learn to

- measure the length of multiple objects, organize the data, and create a line plot to display the dataset;
- use information displayed in a line plot to answer questions about the data;
- use a ruler to measure the difference in length between two objects;
- use comparative language when comparing the lengths of two objects, such as shorter than, longer than or the difference between;
- create models and equations to represent the difference in length of two objects;
- solve word problems where they compare the lengths of objects.





Helpful Hint

Support your students using precise measuring techniques by helping them practice measuring objects around the house using a ruler. Help your student line up the object at zero, pointing out whether zero is at the end of the ruler or indented slightly (depending on the ruler they have). If you have multiple rulers, compare the two to see where the zero is and practice using both.

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ In the first half of the unit:

- How can you measure the length of an object with centimeters and inches?
- Do you think we will need more inches or centimeters to measure the length of this object? Why? (Then have your student measure to check!)
- Most doors are about 80 inches tall. Knowing that, how tall do you think this tree is? Why?
- Can you show me how to draw a line that has a length of 5 cm? 10 in?

→ In the second half of the unit:

- Why is it important to make sure the symbol (X) in a line plot is the same size each time?
- Do you need to measure both objects to find the difference in their lengths? Why or why not?
- What equation and model can you create to find the difference in length between two objects?

If...	Try...
your student finds it confusing that the length of something does not change when measured with different units of measurement (i.e. inches and feet) . . .	measuring one household object, such as a table or rug, using different units of measurement (centimeters, inches, feet, etc.). Record all the answers and look back at the object together to see if it changed size. Let your child see the different numbers and the unchanged object - wow!

Student Strengths Spotlight

We learn from our mistakes.	Students identify their mistakes while measuring or solving measurement problems. They recognize that a mistake is an opportunity to learn.
We use math tools and strategies to help us learn.	Students choose appropriate tools (such as rulers or yardsticks) and units (such as inches or yards) to measure length.

Try This Together!

- **Measuring objects together.** Get a 12-inch ruler and try measuring household objects with it. Start by aligning one end of the object with the 0 on the ruler and then measure the object. Then place the object at a random tick on the ruler and try measuring the object. Discuss how the process of measurement was different in both situations, but the length did not change.
- **Comparing object lengths.** Get a 12-inch ruler and a couple of household objects like a toy car, a spoon, or a pencil and then align the objects by the ruler to first visually compare their difference in lengths and then use actual numbers from the ruler to find the difference in their lengths.
- **Guess the Unit.** Identify several different items around the house and say a number corresponding to a unit that could be used to measure the item. For example, say, "This television set would measure about 3 units." Have your student guess which unit of measure it might be, such as centimeters, inches, or feet. Have them explain why 3 feet makes more sense than 3 centimeters or inches as the measurement for the length of the television.
- **Family Heights.** Measure and compare the height of each person (and pet!) in your house. Have your student represent the comparison between their height and a family member's height with a model.