

Measuring Length: The Metric System

L.O. To recognize and use standard units of measurement.

Direct Instruction:

Do you know how many laps you can run in the Daily Mile? Or how tall you are? If so, great news, you have measured length before!

Units of measurement are the **units ('things')** we use to measure how long or short something is and we can group them into two categories: standard and nonstandard units of measurement. When we are measuring length, we need to carefully measure how long something is from one end to the other.

What is a Standard Unit of Measurement?

Standard units of measurement are set units ('things') which people have agreed to use within that measurement system. The **metric system** is the most commonly used system for measuring around the world which uses units such as centimeters, meters and kilometers. As you can see, it's pretty easy to spot a unit of measurement in the **metric** system!

In a perfect world, we would always have measuring tools with standard units of measurement with us in case of a measurement emergency (such as a ruler with centimeters). However, what do we do if we need to take a measurement and we don't have a ruler or measuring tape? This would be the perfect time to use **nonstandard units of measurement**.

We can use just about anything as a nonstandard unit to measure: use our hand, paper clips, or a stick, just as we would a ruler – that is, figuring out how many of each it takes to get from one end to the other of whatever it is we are measuring. We could even use a cat! That's right, a cat!

We can take a cat, Mr. Fuzzy Paws, and measure how many lengths of him it takes to get from one end of a guitar to the other. If it takes 3 lengths of Mr. Fuzzy Paws to equal the length of the guitar, then we can say that the distance from one end to the other is 3 Mr. Fuzzy Paws.

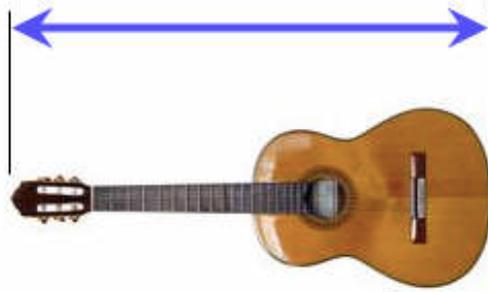
Hot Tip: How to use a ruler

To **use a ruler**, place the end of the ruler so the very first line, marked zero, is lined up with the end of your object. Look to the opposite end of the object you're measuring and find the last number on your ruler that is alongside the object.

<https://www.youtube.com/watch?v=jshiAs9HGOE>

https://www.youtube.com/watch?v=c4zZYGms_AQ

The length of this guitar is about **1 metre**:



← **3 Mr Fuzzy Paws**

less than 1 adult lion →



The problem with nonstandard units of measurement is that cats differ in size, just like sticks do. This means that my measurement of a guitar using cats (Mr. Fuzzy Paws) could be different to somebody else's measurement of the same guitar also using cats (but a lion instead of Mr. Fuzzy Paws) because we are using different sized units (cats) – the size of the units are different, resulting in different measurements, which is problematic.

Summary:

Standard units of measurement are units of measurement that are used within each measurement system, such millimeters (mm) and centimeters (cm). Most measuring tools, such as a rulers and scales, use standard units of measurement.

Nonstandard units of measurement are units of measurement that aren't typically used, such as a pencil, arm, toothpick or shoe. We can use just about anything as a nonstandard unit of measurement, as we saw with Mr. Fuzzy Paws.

It is important to use standard units of measurement so that we get accurate measurements which are clearly understood by others.

Guided Practice

Write the definition for the following terms:

standard units of measurement: _____

nonstandard units of measurement: _____

Direct Instruction

The Metric System

When you measure something using the metric system, you figure out two things. One is a **number** telling how big the thing is, and the other is a word that describes the **unit of measurement**, for example: **1 meter (m)**. It is important to always include the number and the unit of measurement for accurate information (there is a big different between 5 meters and 5 kilometers!).

Watch the video clip for more information on measurement:

<https://www.youtube.com/watch?v=ZNX-a-5jGeM>

Guided Practice

<https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/cc-2nd-measuring-length/a/measuring-lengths-with-different-units>

Independent Practice

Part 1 – Tick the correct answer for each question below:

1. What is a unit of measurement?

- A mathematical tool that we use to solve tricky equations
- A rule that states that all measurements of length must use cats as units
- The act of counting numbers
- The unit (thing) we use to measure length

2. Which of the following statements is true?

- A ruler uses nonstandard units of measurement.
- Cats are used to measure length around the world.
- If we use a paperclip to measure the length of a piece of paper, we are using a standard unit of measurement.
- A ruler uses standard units of measurement.

3. Which of the following is a standard unit of measurement?

- meter
- toe
- Mr. Fuzzy Paws
- hands

Part 2 – Why is it important to use standard units of measurement? Explain using full sentences in your home learning notebook.

It is important to use standard units of measurement because...

*Part 3 – If you have a ruler or a measuring tape at home, have a go measuring the length of some of the objects in your house in centimeters (cm), for example your notebook or your pencil. **Remember to always include the unit of measurement as well as the number.***

Or you can have a go using a ruler (using centimeters) online:

<https://www.khanacademy.org/math/early-math/cc-early-math-measure-data-topic/cc-early-math-compare-estimate-length/a/comparing-lengths>