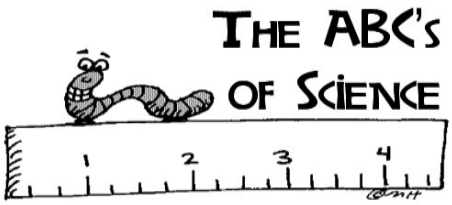
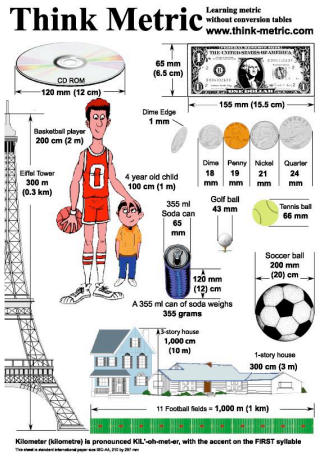


ABC's Lecture 1:

1pt extra credit printing

What are the ABC's Of Science? a. the metric system b. safety c. the scientific method

Let's Talk Metric: Here in America we use an English system: foot, yard, and mile. However, MOST people use another system called the **International System of Units or the ___** (which stands for *Système Internationale d'Unités*). This is the modern form of the _____.



It all depends on the foot! Numbers and units are used to make measurements. The distance from your desk to my desk could be 25 shoe lengths or 30 shoe lengths. It depends on how big the shoe is. Think of Shaq's foot versus Mini-Me. You can see that to use practical measurements, a measurement standard HAS to be used. In other words, everyone has to use the SAME system or units. Otherwise, it just gets confusing. A _____is a fixed quantity used by everyone when measuring.

Advantages to using the metric system.

1: It helps scientists **share** & _____ their results & observations. If I conducted an experiment here in America, even a scientist in Zimbabwe would be able to understand my measurements.

1: All units are based on the number _____. Changing from one unit to another is easy!

Length	meter (m)	
	kilometer (km)	1 km = 1,000 m
	decimeter (dm)	1 dm = 0.1 m
	centimeter (cm)	1 cm = 0.01 m
	millimeter (mm)	1 mm = 0.001 m
	micrometer (μm)	1 μm = 0.000001 m
	nanometer (nm)	1 nm = 0.000000001 m

Still Confused?

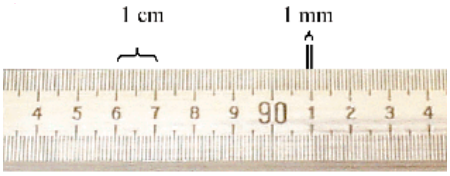
OK, let's get this as simple as we can. We are going to look at all of our metric measurement _____ as two-part words. The first part is the _____.
The second part is the type of _____

What are we measuring?	Unit	Symbol
Length		
Volume	**liter**	
Mass		
Temperature	**Kelvin**	

Try this: **1 kilometer is equal to _____ meters.**
kilo-meter: prefix=kilo or 1000 unit = meter, measuring distance

5 kilometers is equal to _____ meters
5 x 1000 meters = _____
10 kilometers is equal to _____ m 10 x 1000 m = _____

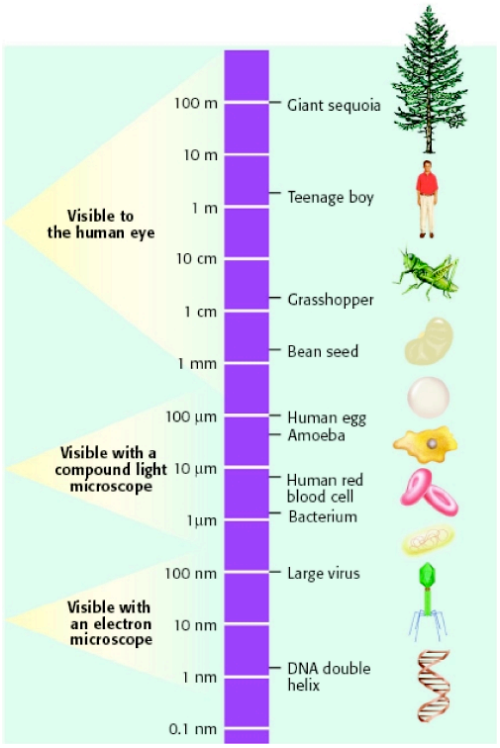
What unit would you use to measure each of the following?
Water in a bottle _____
The distance from my classroom to the bathroom _____
The amount of heat in the classroom? Kelvin or Celsius
How much matter is in a paperclip _____



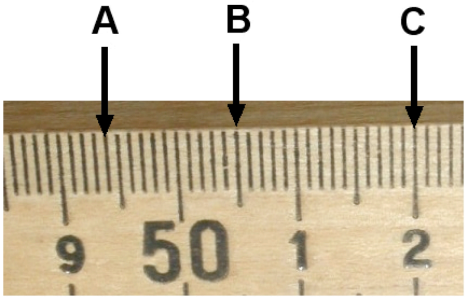
Metric System: Length The _____ is the SI unit of length. A meter is about the distance from a doorknob to the floor. A driver golf club is also about a meter in length. The meter is divided into 100 equal parts called _____. There are 100 centimeters in a meter: 100cm = 1 m. An even smaller unit is a **millimeter (mm).**

The prefix milli- means 1/1000, so… _____ _____
Long distances are measured in kilometers (km). Note: here is the US, we measure speed by miles per hour, (mph). In most other countries, they measure in kilometers per hour.

Name 3 things that are about one meter long.	**Name 3 things that are measured in centimeters**	**Name 3 things that are small enough to be measured in millimeters**
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____



You Try It! Arrows A, B, & C are all pointing to a particular place on a meter stick.



Name the value & *include units*.

Point A: _____cm
_____ mm
Point B: _____cm
_____ mm
Point C: _____cm
_____ mm

You try it! What is the most appropriate unit for a scientist to use :

1. Distance from San Diego to NYC ____
2. Length of your eyelash: ____
3. Distance from A306 to the office:____
4. Length of your arm _____
5. Height of this building ____
6. Length of a grain of salt ___

You try it! Practice Measuring

1.Measure the length of the line on your paper in cm & mm. _____ cm & _____ mm
2. Draw a square with sides measuring 11cm.
3. Measure the height of your desk from the floor to the top in meters & centimeters.
_____ cm & _____ mm
4. Measure the length of your desk in meters & cm. _____ cm &_____m

METRIC VS. CUSTOMARY

BrainPOP®

1 Which units measure the same basic quantities?
- A Miles and liters
- B Gallons and kilograms
- C Ounces and centimeters
- D Meters and feet

2 What is the system by which we can convert between metric and customary units?
- A None; it's different for every unit
- B A base-6 algorithm
- C A base-10 system
- D A mix between multiplication and division

3 How do metric measurements differ from customary measurements?
- A Metric measurements are larger than customary measurements
- B Metric measurements are based on powers of 10; customary measurements are not
- C Metric measurements are divided into fractions; customary measurements are divided into decimals
- D Metric measurements are measured in base-6; customary measurements are measured in base-8

4 A picoliter is three metric units larger than a femtoliter. How many femtoliters are in a picoliter?
- A 10
- B 100
- C 1,000
- D 10,000

5 For the most part, the United States uses the customary system. Under what circumstance might Americans use the metric system?
- A Measuring distances between cities and states
- B Surveying large areas of land
- C Following cooking recipes
- D Trading with other countries

6 Which of the following describes the length of a football field using the metric system?
- A 100 yards
- B Approximately 100 meters
- C 300 feet
- D Roughly 1/15 of a mile

7 If a recipe calls for 3 and 1/4 cups of flour, you can tell that it's using:
- A The customary system
- B The metric system
- C Both the customary system and the metric system
- D Neither the customary system nor the metric system

8 If it's 12 kilometers between your house and your school, how many meters is it between your house and your school?
- A 12 meters
- B 120 meters
- C 1,200 meters
- D 12,000 meters

9 Which of the following is a true statement?
- A In the customary system, measurements are often expressed as decimals
- B In the metric system, measurements are often expressed as fractions
- C In the customary system, measurements are often expressed as fractions
- D Fractions are equally common in both the metric and customary systems

10 If a granola bar has 5.7 grams of protein in it, how many centigrams of protein does it contain?
- A 57
- B 0.57
- C 570
- D 5,700

Video Notes:

Video 1: _____

_____

_____

Video 2: _____

_____

_____