

## The Metric System

Complete your Identify Variables Worksheet

We will be Grading after the bell rings!

## Grading Homework

- Remove all Writing Utensils from your Table
- You will be provided a red pen
- Correct any error you might have made
- Your papers will be collected after grading
- You are going to be looking for a stamp on your paper after it is turned back to you

## SI Units

- *Le Système International d'Unités*
- Or SI
  - Established by the French after the French Revolutionary War
  - The SI was established in 1960 by the 11th General Conference on Weights and Measures

## SI Base Units

<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT SYMBOL</u>
• LENGTH	METER	m
• MASS	KILOGRAM	kg
• TIME	SECOND	s
• VOLUME	LITER	L
• TEMPERATURE	CELCIUS	C

# Metric Mania



## Lesson 1: Length

T. Trimpe 2008 <http://sciencespot.net/>

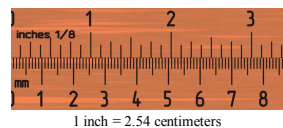
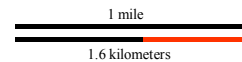
## English vs. Metric Units

Which is longer?

A. 1 mile or 1 kilometer

B. 1 yard or 1 meter

C. 1 inch or 1 centimeter



Left Image: <http://webbps.ha.umich.edu/physics/demolab/control/imagesdemoom.aspx?picid=1167>  
Right Image: <http://share.lunccoln.com/5809%20ruler.jpg>

**km m Metric Units cm mm**

The basic unit of length in the metric system is the **meter** and is represented by a lowercase **m**.

Standard: The **distance** traveled by **light** in absolute vacuum in 1/299,792,458 of a second.

**Metric Units**


1 Kilometer (km) = 1000 meters  
 1 Meter = 100 Centimeters (cm)  
 1 Meter = 1000 Millimeters (mm)

**Which is larger?**

A. 1 meter or 105 centimeters    C. 12 centimeters or 102 millimeters  
 B. 4 kilometers or 4400 meters    D. 1200 millimeters or 1 meter

A

# Metric Mania




## Lesson 2: Mass

T. Trimpe 2008 <http://sciencespot.net/>


**English vs. Metric Units**

Which is larger?


1. 1 Pound or 100 Grams  
 2. 1 Kilogram or 1 Pound  
 3. 1 Ounce or 1000 Milligrams



1 ounce of gold = 28,349.5 milligrams



1 pound = 453.6 grams




100 kilogram = 220 pounds

**kg g Metric Units cg mg**

**Mass** refers to the amount of matter in an object.

The base unit of mass in the metric system is the **kilogram** and is represented by **kg**.



Standard: 1 kilogram is equal to the mass of the **International Prototype Kilogram (IPK)**, a platinum-iridium cylinder kept by the BIPM at Sèvres, France.

**Metric Units**

1 Kilogram (kg) = 1000 Grams (g)  
 1 Gram (g) = 1000 Milligrams (mg)


**Which is larger?**

A. 1 kilogram or 1500 grams    C. 12 milligrams or 12 kilograms  
 B. 1200 milligrams or 1 gram    D. 4 kilograms or 4500 grams

B

Kilogram Prototype Image - <http://en.wikipedia.org/wiki/Kilogram>

# Metric Mania




## Lesson 3: Volume

T. Trimpe 2008 <http://sciencespot.net/>

**English vs. Metric Units**


Which is larger?

A. 1 liter or 1 gallon  
 B. 1 liter or 1 quart  
 C. 1 milliliter or 1 fluid ounce




1 fl oz = 29.573 ml  
 1 12-oz can of soda would equal approximately 355 ml.

1 gallon = 3.79 liters



1 quart = 0.946 liters



It would take approximately 3 3/4 1-liter bottles to equal a gallon.



## Most Common Prefixes

(M) Mega=1,000,000	So, 1 Megameter =1,000,000,000 meters
(k) Kilo= 1,000	So, 1 Kilogram (kg) = 1000 grams
(h) Hecta= 100	So, 1 Hectagram (hg) = 100 grams
(D) Deca= 10	So, 1 Decaliter (DL)= 10 liters
(d) Deci= 1/10 <sup>th</sup>	So, 1 Decigram (dg)= 0.1 gram
(c) Centi= 1/100 <sup>th</sup>	So, 1 Centimeter (cm)= 0.01m
(m) Milli= 1/1000 <sup>th</sup>	So, 1 Milliliter (mL)= 0.001L

G

## Using Conversion Ratios

- Convert 765 cm to m
- Convert 6258.65 m to km

H

## The Metric System is Easier

- A Decimal System
  - You can convert between metric units by simply moving the decimal the correct number of places

*Just move the decimal* ●

REMEMBER;  
“Left for Larger”

Larger Prefix: Move the Decimal Left

Notice how many times the decimal moves between each prefix.

- 1 megameter (Mm) =
- 1000.0 kilometer (km) =
- 1000000.0 meter (m) =
- 100000000.0 centimeters (cm) =
- 1000000000.0 millimeter (mm) =
- 100000000000.0micrometer (μm) =

I

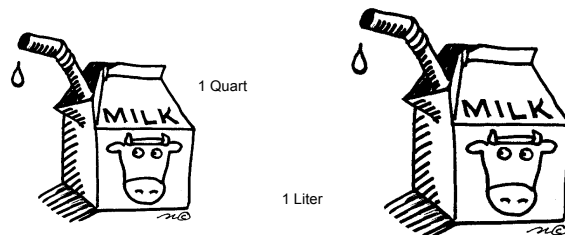
## How Big Are They?

- It's important to have a sense of these units so that we are not just talking numbers. A good scientist knows if a number makes sense.

## Volume

- 1 liter = just bigger than a quart
- 1mL= volume of a small marble

J



## Mass

- 1 kg = 2.2 pounds
- 1 gram = 1 dollar bill



1 gram

K

## Length

- 1 mm = width of a fingernail
- 1 cm = width of your pinky
- 1 meter = 3.3 ft (just bigger than a yard)
- 1 kilometer = 0.6 miles

L

## Musical Review

- [Metric Conversion Rap](#)

## Homework

- We will grade next period