

Name: _____

Combien de temps cela dure-t-il?

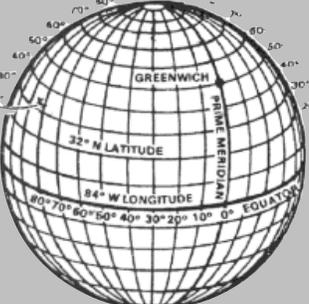
How **LONG** Has This Been Going On?
(Since the French Revolution of 1789-1799)

Shortly after they cut off the poor King's head - Louis XVI - in 1793, the French adopted an new system of weights and measures called the _____ system. In fairness to Louis XVI, it was under his direction that the Scientific committee that came up with the standards for the METRIC SYSTEM was created.



The word ΜΕΤΡΕΣ is derived from the Greek word, ΜΕΤΡΟΝ, meaning "measure"

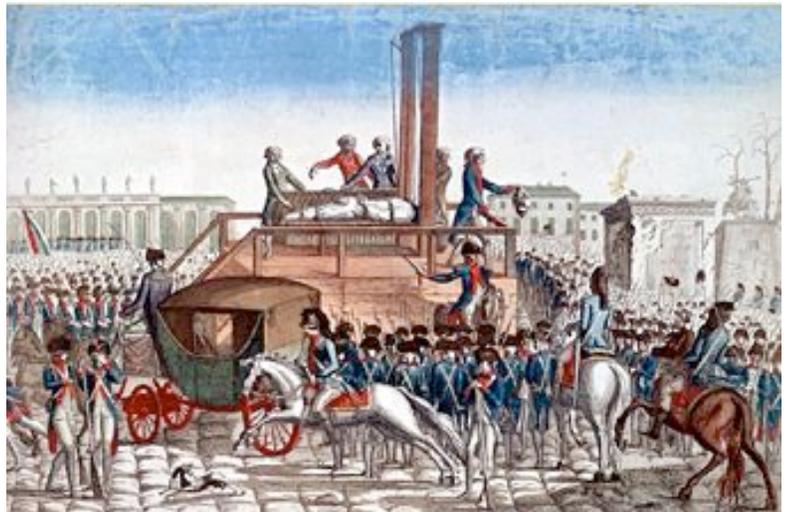
Did you know that the Metric System is based on a single measurement?



As part of an effort to make this new system of measurement 'UNIVERSALLY REPLICABLE', scientists used natural objects readily available to all people on Earth to create standards. The Earth itself was the source for the most fundamental of metric measurements, the **METRE**.

*The original **METRE** was defined as 1/40,000,000 of the polar circumference of the Earth.*

Prior to the adoption of this single system of measurement, commerce and industry in France (and in all countries) were hindered by the multitude of customary, local measurement systems that had developed over time. With the new system a kilogram of wheat in Marseilles was the same as a kilogram of wheat in Paris; a metre of cloth in Calais was the same as a metre of cloth in Lyon. One could be reasonably sure of the amount of an item they were purchasing or - and this is perhaps one of the main reasons Louis XVI met his fate at the guillotine - taxing.



Louis XVI at the guillotine - January 23, 1793

Science & Measurement



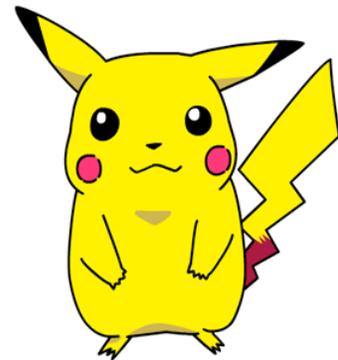
It is impossible to QUANTIFY the value to scientists and to scientific progress of a universal system of weights and measures. But, just like merchants who know what they are getting when they purchase stock, scientists also “know what they are getting” when they look at the QUANTITATIVE results of another scientists work. A nanometre in China is a nanometre in Canada.

In today’s exercise you will begin to use the METRIC SYSTEM and various scientific instruments to measure different quantities. As well, you will begin to look at relationships between different metric measures to more fully understand how the METRIC SYSTEM developed.

Station 1: Gotta Weigh Them All

Materials

-  Triple Beam Scale
-  Digital Electronic Scale
-  **Pokémon**
-  **Pokémon** Research Materials



1. Using both a triple beam balance and an electronic scale, measure the MASS (the amount of MATTER) in 5 different **Pokémon**. List your **Pokémon** below from most to least massive.

| | Pokémon | Mass: Triple Beam | Mass: Electronic |
|---|----------------|-------------------|------------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

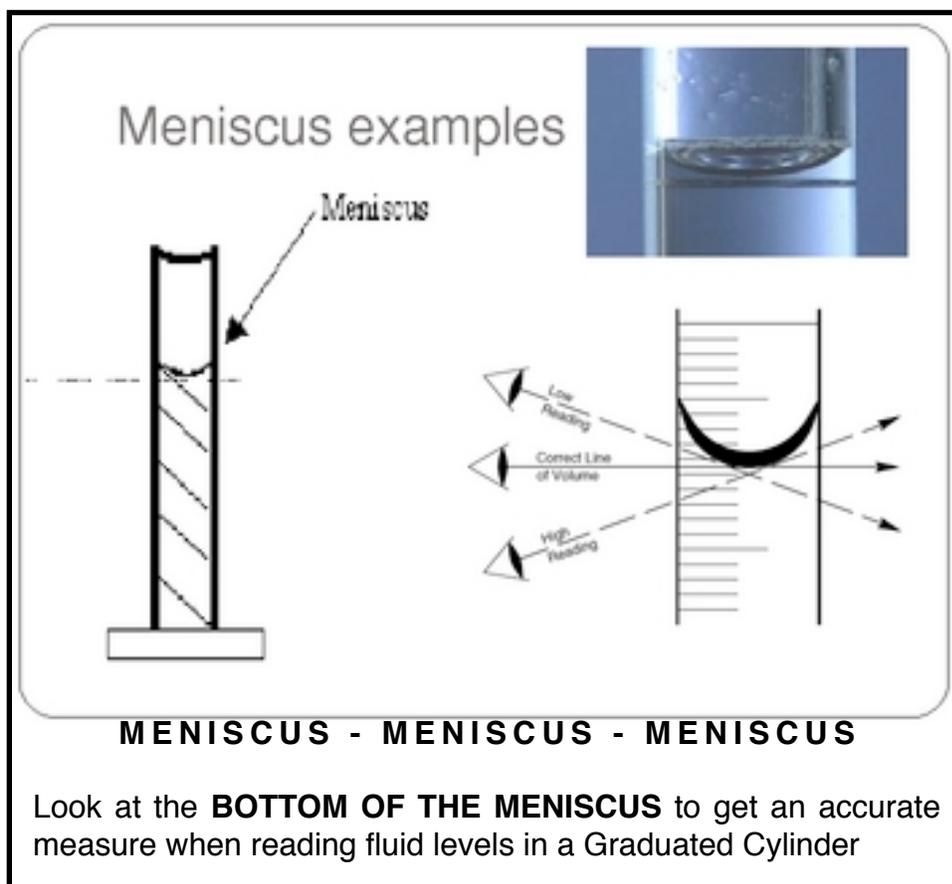
2. In what units did you measure the MASS of the **Pokémon**?

Station 2: Fill 'er Up

Materials

- 🍷 Graduated Cylinder
- 🍷 Water
- 🍷 Beaker

1. Fill a film canister to its maximum capacity with water.
2. Very carefully, pour the water from the film canister into a graduated cylinder and measure the maximum VOLUME of water that a film canister can hold.
3. Record the volume in **Trial 1** of the table below
4. In what units did you measure the volume of water? _____



5. Repeats steps 1-3 two more times and record your data in the table below.

| Trial | Volume |
|-------|--------|
| 1 | |
| 2 | |
| 3 | |

6. In the space below, calculate the AVERAGE for the maximum VOLUME water that a film canister can hold based on your 3 trials. Show your work!

Station 3: A Lotta Watta

Materials

🍷 Graduated Cylinder

🍷 Water

🍷 Beaker

🍷 Digital Electronic Scale

1. Use a 100 ml Graduated Cylinder to measure 100ml of water.
2. Measure the mass of that 100ml of water and record in the table below.
3. Repeat steps 1 & 2 using the 100ml Graduated Cylinder and a beaker to determine the mass of 200ml of water.
4. Repeat one more time to determine the mass of 500ml of water.

| Volume of Water | Mass |
|-----------------|------|
| 100 ml | |
| 200 ml | |
| 500 ml | |

5. Based on your measurements, calculate the average MASS of 1ml of water. Use the space below and show all of your calculations. *(I am expecting the mass of 1ml of water to be very close to a certain amount. Do you know what that amount is and why I expect it?)*

6. Why did I make you use a 100ml Graduated Cylinder rather than a beaker to measure the water in steps 1-4 above?

