

Science 8 Mrs. Caro Name \_\_\_\_\_ Period \_\_\_\_\_

## Scientific Method and Metric Review

Making observations is. When making scientific observations you must be sure you are **accurate** and **objective**. Observations may be **qualitative** or **quantitative**.

Accurate - an exact report of what your senses tell you

**Objective** – avoiding opinions and bias, based on a specific point of view

Qualitative - observations that do not use numbers

**Quantitative** - observations that use numbers, often made using some type of tool

While making observations, scientists may ask questions, or try to explain what they are observing.

**Inference** - an attempted explanation

## Scientific Method

Scientists use the scientific method to solve problems and to investigate scientific phenomena. You use it too, you just don't realize that you are. Really all the scientific method is just a systematic approach to problem solving.

The basic steps of the scientific method:

- State the problem
- Gather information on the problem
- Form a hypothesis
- Experiment
- Record and analyze the data
- State a conclusion

Hypothesis - suggested solution or educated guess

Variable - any factor that can be changed or varied during an experiment

**Control** - the part of an experiment that is used as a standard of comparison for experiments



## Measurement Study Sheet

Matter – anything that takes up space and has mass <u>Three forms of matter</u>

- Solid has a definite shape and mass
- Liquid no definite shape and has definite mass
- ◆ Gas no definite shape and no definite mass

Length - the distance from one point to another.

- Meter is the basic unit m
- ◆ A meter is slightly longer than a yard
- ◆ Large distances are measured in kilometers

Volume - the amount of space an object takes up.

- ◆ Liter is the basic unit L
- ◆ A liter is slightly larger than a quart
- Liquids and gases are measured mostly in liters and mL
- ♦ Formula for Volume

Volume = length x width x height Unit - 1 cm<sup>3</sup> = 1 mL

**Meniscus** - the curve the liquid makes in the glasswAlways measure volume from the bottom of the meniscus

Mass - the amount of matter in an object

- ◆ Gram is the basic unit g
- One kilogram is slightly more than two pounds
- Mass and weight are not the same. Weight is a measure of the force of attraction between objects due to gravity.

**Density** - the measurement of how much mass is contained in a given volume of an object. Mass per unit volume of a substance.

Density = <u>Mass</u>

Volume

Density is important in identification and comparison of substances. Each substance has its own density. **The density of water is 1 g/cm<sup>3</sup>** 

**Temperature** - Temperature is measured in degrees Celsius ( $^{\circ}C$ ) when using the metric system.

- The freezing point of water is 0°C
- The boiling point of water is 100°C
  Normal human body temperature is 37°C