Volume

Distance

Mass

Temperature

Time

Scientific Measures

The Metric System

The Metric System

President GEORGE WASHINGTON first proposed that the United States adopt the metric system as its system of measurement. He was voted down.

Today, in the United States, the metric system is mainly used only by scientists.

The metric system is easy to learn once you know the correct prefixes and suffixes. Then it becomes a matter of simply moving decimals to the right or left the correct number of places.

The Prefixes

A prefix is a part of a word that comes at the beginning of a word. Some metric prefixes include:

- MILLI- means one-thousandth
- CENTI- means one-hundredth
- KILO- means 1000 times

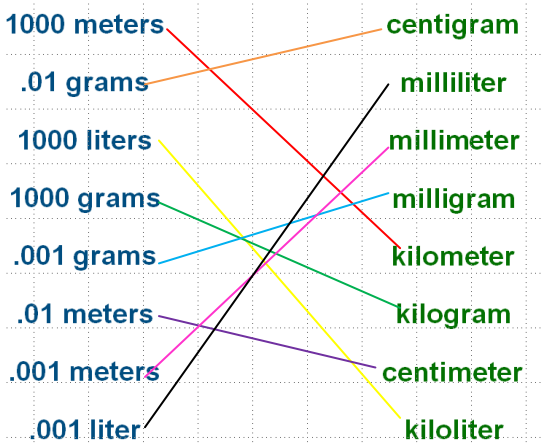
The Suffixes

A suffix is a part of a word that comes at the end of the word. Metric system suffixes include:

- -GRAM for mass
- -METER for distance
- -LITER for liquid volume

Putting It All Together

Match the units of measurement to appropriate value.



Helpful Comparisons

- A small paper clip measures about 1-centimeter across.
- The wire used to make the paper clip is about 1-millimeter in diameter.
- A paper clip has a mass of about 1-gram.
- A nickel has a mass of about 5-grams.
- A dime is approximately 1-millimeter thick.
- A quarter is 2.5-centimeters or 1 inch in diameter.
- A penny is exactly 2-centimeters in diameter.

- A liter has a little MORE volume than a quart. (Two quarts=half gallon)
- A cube of sugar is approximately one cubic centimeter. (cm^3).

The Instruments

You will be asked to make detailed and accurate measures. Most of your instruments use the metric system. You will use:

- RULER for distance
- BALANCE SCALE for mass
- GRADUATED CYLINDER for volume
- THERMOMETER for temperature
- STOPWATCH for time

Distance

Distance is a measurement of something's length, width, or height. The smallest distances are measured in millimeters. MILLIMETERS are so small they can be used for measuring the length of an ant egg or the diameter of an eraser on a pencil.

CENTIMETERS are used to measure things like the width of this paper or the height of a person.

METERS are used for measuring things like the length of the room or the height of a mountain.

KILOMETERS are used for measuring things like the distance between New York and Los Angeles.

We use many instruments to measure distance. They include:

- odometers in cars
- meter sticks
- rulers

Mass

A balance is an instrument commonly used to measure mass. Mass is different than weight. Weight is measured on a scale and measures the pull of gravity on an object. Mass measures the amount of matter an item contains.

MILLIGRAMS measure the mass of very small things like a dose of medicine or vitamins in food. GRAMS are used to measure larger things like the mass of the mustard in a bottle. KILOGRAMS measure large things like the mass of a student.

Volume

Graduated cylinders are used to measure the volume of liquids. Liquids change shape and assume the shape of the container.

MILLILITERS measure small amounts of liquids like a can of soda. LITERS are used for larger things like gas in a car's gas tank or water in a pool.

Temperature

Temperature is used to measure how hot or cold something is. Temperature is measured with a thermometer. In science fields, we measure temperature in DEGREES CELSIUS This is an easy unit to use because water freezes at 0 degrees Celsius and boils at 100 degrees Celsius. This year you will convert Fahrenheit temperatures to Celsius temperatures.

Time

Scientists use milliseconds, seconds, minutes, hours, days, months, and years to measure time. They use instruments like stopwatches, clocks, and calendars.

Symbols and Abbreviations

In the metric system, use of symbols and abbreviations is encouraged. The metric system has its own symbols plan. This plan gives symbols to prefixes and suffixes, and combines them when prefix/suffix combinations are used. A few common symbols are:

Prefix Abbreviation	Suffix Abbreviations
milli (m)	meter (m)
centi (c)	liter (L)
kilo (k)	gram (g)

Match the units of measurement to appropriate abbreviation.