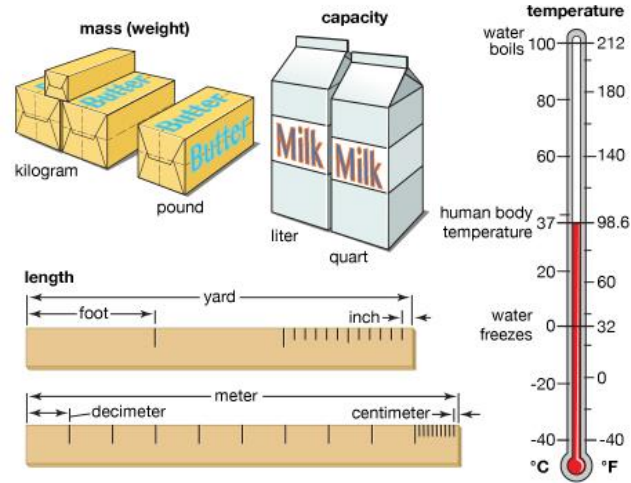


The Metric System



Customary and international system (SI) units



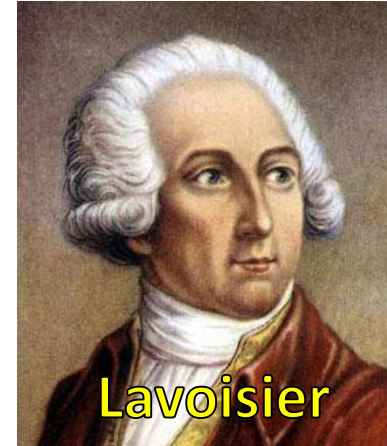
kilometer centimeter
micrometer
10⁺³ femto 10⁻³ nano centi
mega atto 10⁻⁶ nanometer
10⁺⁶ kilo meter



The International System of Units

The Metric System

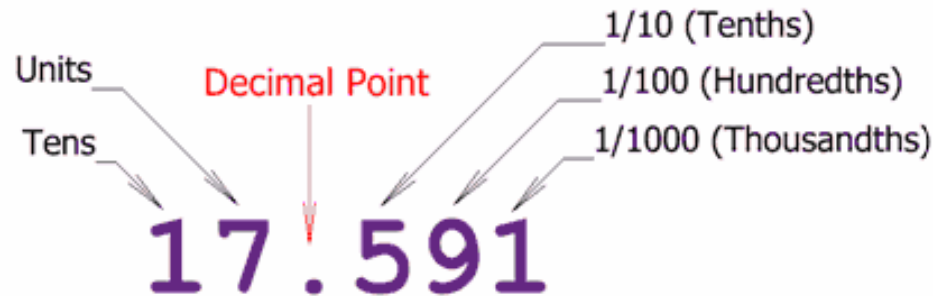
is an **internationally agreed decimal** (based on power of 10) system of measurement originally introduced by France in 1799 as a **unified, natural, universal system**.



Modern "**Metric system**" term is a synonym for "**SI**" or the "**International System of Units**" (1960)—the official system of measurement used in science.

Decimal System

- The decimal numeral system (also called “base ten”) has **ten as its base** and is **most widely used by modern civilizations**.
- **Decimal notation** is the **writing of numbers in a base-10 numeral system**:



- A forerunner of modern European decimal notation was introduced by Simon Stevin in the 16th century.

Example: 73.248 = 73①0②2③1④4⑤2⑥8⑦3

- In the **Metric System**, multiples and sub-multiples of all units follow a decimal pattern.

Metric System Basics

- The metric system was built around three base units that corresponded to a **certain kind of measurement**:
 - Length → **meter**
 - Volume → **liter**
 - Weight (Mass) → **gram**
- The base units were derived from the natural world: the *dimensions of the Earth* and *properties of water*.
- Decimal multiplicative prefixes were applied to base units to make up the **full range** of metric system:
 - **milli** x **meter** = **1/1000** x **meter** = millimeter
 - **kilo** x **gram** = **1000** x **gram** = kilogram
 - **micro** x **liter** = **1/1000,000** x **liter** = microliter
 - **kilo** x **meter** = **1000** x **meter** = kilometer



Prefixes in Metric System

Prefix	Symbol	Factor	
tera	T	1000000000000	10^{12}
giga	G	1000000000	10^9
mega	M	1000000	10^6
kilo	k	1000	10^3
hecto	h	100	10^2
deca	da	10	10^1
(none)	(base unit)	1	10^0
deci	d	0.1	10^{-1}
centi	c	0.01	10^{-2}
milli	m	0.001	10^{-3}
micro	μ	0.000001	10^{-6}
nano	n	0.000000001	10^{-9}
pico	p	0.000000000001	10^{-12}

What is the order of the metric system?

- King Henry Died by Drinking Chocolate Milk

larger

- King: **Kilo**
- Henry: **Hecto**
- Died: **Deca**
- By: **Base** (m, L, g)
- Drinking: **Deci**
- Chocolate: **Centi**
- Milk: **Milli**

smaller

