

## 1-5 Units, Standards and the SI Systems

Units: meter, kilogram, second etc.

Standard: defines those units exactly

Length:

Standard unit is meter (m): The meter is the length of path traveled by light in vacuum during a time interval of  $1/299,792,458$  of a second.

Time

Standard unit of time is second (s): One second is defined as the time required for 9,192,631,770 periods of this radiation.

Mass

Standard unit of mass is kg: The standard mass is a particular platinum-iridium cylinder, kept at the International Bureau of Weights and Measure near Paris, France, whose mass is defined as exactly 1 kg.

1 **u** (unified atomic mass unit) =  $1.6605 \times 10^{-27}$  kg.

Unit prefixes

T – G – M – k – 100 – m – m – n – p  
k – h – da – d – c

System of Units

**SI**: meter, kilogram, second

Other systems: cgs, british system

Base vs. Derived quantities

## 1-6: Converting units

Conversion factor – chain-link conversion

## 1-7 Order of Magnitude: Rapid Estimating