

Measurements

Measurements are comparisons of properties against accepted standards, called units.

ENGLISH / US SYSTEM OF UNITS:

$$1 \text{ foot} = \underline{12} \text{ inches}$$

$$1 \text{ yard} = \underline{3} \text{ feet}$$

$$1 \text{ mile} = \underline{1760} \text{ yards}$$

$$\underline{5280} \text{ feet} = 1 \text{ mile}$$

So what's the problem?

The English "system" of units is a mess. Units don't relate to each other in meaningful ways, making conversion difficult.

English units are nonstandard and difficult to use. Solution?

THE METRIC SYSTEM

Metric Base Units:

Length	meter	m
Mass	*kilogram	kg
Temperature	Kelvin	K
Time	second	s

All metric units are made up of COMBINATIONS of BASE UNITS!

*we usually treat the gram as if it's the base unit for mass!

- One meter is approximately 3.3 feet.
- One kilogram is approximately 2.2 pounds.

What about SIZE?

Metric units may be made larger or smaller by adding PREFIXES.

A few common metric prefixes:

mega-	10^6	M
kilo-	10^3	k
centi-	10^{-2}	c
milli-	10^{-3}	m
micro-	10^{-6}	μ

Bigger units

smaller units

MEMORIZE the common metric prefixes listed in the study guide

Applying prefixes

$$1 \text{ ___ m} = \text{ ___ m}$$

$$1 \text{ km} = 10^3 \text{ m} \quad (1000 \text{ m})$$

$$1 \text{ cm} = 10^{-2} \text{ m} \quad \left(\frac{1}{100} \text{ m}\right)$$