

Teacher Tune-up

Quick Content Refresher for Busy Professionals

Units of measurements: an overview

Most of the world uses an organized system of units called SI, or *Système international (d'unités)*, often called the metric system. The only countries that don't are Myanmar, Liberia, and the USA. The "U.S. Customary" units commonly used in the USA (inches, miles, ounces, pounds, etc.) are slightly different from "Imperial" or "English" units, but people sometimes use those names anyway.

Because the metric system lends itself to clear calculation and communication, it is used by scientists even in the United States. At very large scales like distances to other stars and galaxies, astrophysicists (and sci-fi authors!) measure distance in light years or parsecs, which are not considered a part of either system.

Use this chart as a reference as you discuss different kinds of measurements with your students. You may also want to use this [sortable chart in Google Sheets](#).

What's being measured	Metric System or SI	U.S. customary units <i>(plus some archaic British units)</i>	Miscellaneous
linear distance / length / width / height	kilometer/kilometre (km) meter/metre (m) centimeter/centimetre (cm) millimeter/millimetre (mm) micron (μ) nanometer/nanometre (nm) millimicron (m μ) angstrom (A)	inch (sq. in.) foot (sq. ft.) yard (sq. yd.) mile (sq. mi.) nautical mile mil, or thou (0.001 inch)	football fields long block parsec (pc) light-year astronomical unit (au) chain furlong rod cubit league
angle	radian (rad) gradian (grad) arcminute (arcmin) arcsecond (arcsec)	degree (°)	
area	hectare (ha) square kilometer/kilometre (km ²) square meter/metre (m ²) square centimeter/ centimetre (cm ²)	square inch (sq. in.) square foot (sq. ft.) square yard (sq. yd.) acre (ac) square mile (sq. mi.)	football field

capacity	liter (L) milliliter (mL)	gallon (gal) quart (qt) pint (pt) cup (c) tablespoon (Tb) teaspoon (tsp)	<i>NOTE: Volume and capacity are especially easy to confuse. Volume is the amount of three-dimensional space something occupies. The capacity, on the other hand, describes how much of another substance—a solid, a liquid or a gas—an object can hold. The volume of a canoe would be unchanged if it were flattened, but its capacity would be much diminished. In everyday use, “volume” is often used to mean capacity. To speak scientifically, however, it’s important to know the difference.</i>
volume	cubic meter/metre (m ³) cubic centimeter (cm ³)	cubic inch (cu. in.) cubic foot (cu. ft.) cubic yard (cu. yd.) acre-foot dry pint dry quart peck bushel	
mass / weight	gram (g) kilogram (kg) metric ton/tonne carat (ct)	grain ounce (oz) pound (lb) stone hundred-weight ton	
density	g/cm ³ kg/m ³	lb/ft ³	pixels per inch (ppi) dots per inch (dpi) lines per inch (lpi)
time	second minute hour day year	second minute hour day week month year decade century millennium	fortnight lunar month dog year season
speed	kilometers per hour (kph) meters per second	miles per hour (mph) miles per second knot	speed of light (c)
force	newton (N) dyne	pound weight (lbwt) ton ounce-force pound-force	

energy	erg newton-meter joule (J) watt-second watt-hour kilowatt-hour (kWh) electron volt (ev)	calorie (cal) kilocalorie (kcal or Cal) BTU (British thermal unit) therm foot-pound	barrels of oil tons of TNT
power	watt kilowatt (KW) joules per second ergs per second calories per second decibel	horsepower foot-pounds per second ft lbwt/sec ft lbwt /min BTUs per hour foot-pounds per second	
pressure	newtons per meter squared (N/m ²) dynes per cm ² centimeters mercury	bar pascal lbwt/ft ² lbwt/in ²	atmosphere
temperature	degrees celsius (°C) Kelvin (K) <i>[Note that the degree sign is not used with the Kelvin scale.]</i>	degrees Fahrenheit (°F)	
frequency	hertz (Hz)		beats per minute frames per second revolutions per minute baud words per minute pages per minute
electrical circuits	ampere or “amp” (A) — current coulomb (C) — charge volt (V) — potential ohm (Ω) — resistance tesla (T) — magnetic field		
luminosity	candela (cd)		lux lumen
concentration	Molarity (M)		parts per million (ppm) parts per billion (ppb) karat (K or kt) proof
type height			point (pt) pica (p)
data	Bit (B) byte word kilobyte (kB) megabyte (MB) gigabyte (GB) terabyte (TB)		