

Explanation of metric units

The kilogram (kg) is a unit of mass. Mass is the property of matter which determines its inertia. The mass of a body never varies and is independent of gravitational force.

The newton (N) is a unit of force. The first law of motion, force is equal to mass times acceleration, defines the newton in terms of base units. $1\text{ N} = 1\text{ kg} \cdot \text{m/s}^2$

The joule (J) is a unit of energy and is the work done when a force of one newton is displaced a distance of one meter in the direction of the force. $1\text{ J} = \text{N} \cdot \text{m}$

The watt (W) is a unit of power which produces energy at the rate of one joule per second. $1\text{ W} = \text{J/s}$

The pascal (Pa) is a unit for pressure or stress of one newton per square meter. $1\text{ Pa} = 1\text{ N/m}^2$

The kelvin (K) is the unit for Thermodynamic Temperature and is the preferred unit to express temperature and temperature intervals. However, it is permissible to use the Celsius scale where considered necessary. The temperature interval one degree Celsius equals one kelvin exactly.

Length

To convert US measure	multiply by	to obtain metric measure
Inches (in.)	25.4	millimeters (mm)
Inches (in.)	2.54	centimeters (cm)
Inches (in.)	0.0254	meters (m)
Feet (ft)	304.8	millimeters (mm)
Feet (ft)	30.48	centimeters (cm)
Feet (ft)	0.3048	meters (m)
Yards (yd)	0.9144	meters (m)

Area

Square inches (in ²)	645.16	square millimeters (mm ²)
Square inches (in ²)	6.4516	square centimeters (cm ²)
Square feet (ft ²)	929.03	square centimeters (cm ²)
Square yards (yd ²)	0.836	square meters (m ²)

Volume

Cubic inches (in ³)	16.39	cubic centimeters (cm ³)
Cubic feet (ft ³)	0.02832	cubic meters (m ³)
Cubic yards (yd ³)	0.7646	cubic meters (m ³)
Fluid ounces (fl oz)	29.57	milliliters (mL)
US quarts (qt)	0.946	liters (L)
US gallons (gal)	3.785	liters (L)
US gallons (gal)	0.003785	cubic meters (m ³)

Mass

Ounces (oz)	28.35	grams (g)
Pounds (lbs)	453.6	grams (g)
Pounds (lbs)	0.4536	kilograms (kg)
Pounds (lbs)	0.00045	metric tons (t)
US tons (T)	907.18	kilograms (kg)
US tons (T)	0.9072	metric tons (t)

Force

Pounds (lbs)	4.4448	Newtons (N)
Pounds (lbs)	0.0044	kilonewtons (kN)
Foot pounds (ft-lbs)	1.3557	Newton meters (Nm)

Flow rate

To convert US measure	multiply by	to obtain metric measure
Cubic feet per minute (cfm)	0.02832	cubic meters per minute (m ³ /min)
Cubic feet per minute (cfm)	1.699	cubic meters per hour (m ³ /h)
Cubic feet per hour (cfh)	0.02832	cubic meters per hour (m ³ /h)
Feet per minute (fpm)	0.3048	meters per minute (m/min)
Pounds per minute (lb/m)	0.4536	kilograms per minute (kg/min)

Pressure stress

Pounds per square inch (psi)	6.895	kilopascals (kPa)
Pounds per square inch (psi)	0.0007	kilograms per square millimeter (kg/mm ²)
Pounds per square inch (psi)	0.07	bar
Foot pounds per square inch (lbf/in ²)	0.006895	megapascals (mPa)
Bars	100	kilopascals (kPa)

Energy work

Foot pounds per foot	1.356	joules (J)
Calories	4.187	joules (J)
Btus	1.055	kilojoules (kJ)
Kilowatt hours	3.6	megajoules (MJ)

Power

Btus per hour (Btu/h)	0.2931	watts (W)
Btus per second (Btu/s)	1.055	kilowatts (kW)
Ft lbs per ft/min (ft lbf/min)	0.0226	watts (W)
Horsepower (hp)	0.7457	kilowatts (kW)

Temperature

Degrees Fahrenheit	$1.8 + 32$	degrees Celsius
Degrees Kelvin	degrees Celsius + 273.15	