**Chemistry Conversion Factors and Constants**

**METRIC CONVERSION FACTORS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Prefix** | **Abbreviation** | **Conversion Factor** | | **For Example** | **For Example** |
| Mega- | M | 1000000 | 106 | 1 Megabyte = 1 x 106 bytes | 1 byte = 10-6 Megabytes |
| kilo- | k | 1000 | 103 | 1 kilometer = 1000 meters | 1 meter = 0.001 kilometers |
| deci- | d | 0.1 | 10-1 | 1 deciliter = 0.1 liters | 1 liter = 10 deciliters |
| centi- | c | 0.01 | 10-2 | 1 centimeter = 0.01 meters | 1 meter = 100 centimeters |
| milli- | m | 0.001 | 10-3 | 1 milliliter = 0.001 liters | 1 liter = 1000 milliliters |
| micro- | m | 0.000001 | 10-6 | 1 microgram = 10-6 grams | 1 gram = 106 micrograms |
| nano | n | 0.000000001 | 10-9 | 1 nanometer = 10-9 meters | 1 meter = 109 nanometers |
| pico | p | 0.000000000001 | 10-12 | 1 picometer = 10-9 meters | 1 meter = 1012 picometers |

**OTHER CONVERSION FACTORS AND CONSTANTS**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Weight/Mass** | **Volume** | | | |  | **Length/Distance** | | |  |  |  |  | |
| 1 liter = 1.0567 quarts | | | |  |  |  |  |  | |
| 16 ounces = 1 pound |  | 1 inch = 2.54 centimeters | | |  |  |  |  | |
| 1 mL = 1 cm3 | | | |  |  |  |  |  | |
| 1 kilogram = 2.2 pounds | 1 gallon = 3.78 liters | | | |  | 1 mile = 5280 feet = 1.609 kilometers | | | | | |  | |
| 454 grams = 1 pound |  | 1 yard = 3 feet = 36 inches = 0.9144 meters | | | | | | | |
| 1 gallon = 4 quarts = 128 fluid ounces | | | | |
| 1 ton = 2000 pounds | 1 meter = 39.37 inches = 3.281 feet = 1.094 yards | | | | | | | |
| 1 quart = 2 pints = 32 fluid ounces | | | |  |
|  |  | 1 kilometer = 1094 yards = 0.6215 miles | | | | | | | |
|  | 1 pint = 2 cups = 16 fluid ounces | | | |  |
|  |  |  |  |  |  |  |  |  | |
| **Density of Water: 1.00 g/mL** |  |  |  |  |  | **Energy:** 1 cal = 4.184 J | | |  |  |  |  |
|  |  |  |  |  |  |  | | |  |  |  |  |
| **Time** |  |  |  |  |  | **Temperature** | | |  |  |  |  |
| 1 year = 365 days = 12 months = 52 weeks | | | | |  | º C = | 5 | (ºF - 32) and |  |  | 9 |  |
| 1 day = 24 hours |  |  |  |  |  |  | ºF = | º C × |  | + 32 |
|  |  |  |  |  | 9 | 5 |
| 1 hour = 60 minutes |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 1 minute = 60 seconds |  |  |  |  |  | Kelvins = ºC + 273.15 | | |  |  |  |  |
|  | |  |  |  | |  | | | | |  |  |
| **Pressure Units:** 1 atm = 760 mmHg = 101.325 kPa = 101325 Pa = 1.01325 bar = 14.7 psi = 29.92 inches Hg | | | | | | | | | | |  |  |
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| **Useful Constants:** |  |  |  |  |  |  |  |  |  |  |  |  |
| Avogadro’s Number (NA) = 6.02 x 1023 items / mole | | | |  | Speed of Light (c) = 3.00 x 108 m/s | | | |  |  |  |  |
| Ideal Gas Constant (R) = 0.0821 | | L × atm |  |  | Planck’s Constant (h) = 6.63 x 10-34 J ⦁ s | | | | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| mol × K | |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |