

Test 1 Equations that you need to memorize

Chapter 1

Prefix	Symbol	Factor
nano	n	10^{-9}
micro	μ	10^{-6}
milli	m	10^{-3}
centi	c	10^{-2}
kilo	k	10^3

Length

1 mile = 5280 feet

1 yard = 3 feet

1 foot = 12 inches

1 inch = 2.54 centimeters

Mass

1 kilogram = 2.2 pounds (approximately)

1 pound = 16 ounces

1 ton = 2000 pounds

Volume

1 mL = 1 cm³

1 liter = 1.06 quarts (approximately)

1 gallon = 4 quarts

1 quart = 2 pints

1 pint = 2 cups

1 cup = 8 (fluid) ounces

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

Chapter 2

Mass number – Atomic number = number of neutrons

Atomic charge = number of protons – number of electrons

$$\text{Average atomic mass} = \sum_i (\text{fractional abundance} \times \text{isotopic mass})$$

The indicated common charges elements and indicated names of elements

Name of Ion	Symbol
Ammonium	NH_4^+
Acetate	$\text{C}_2\text{H}_3\text{O}_2^-$ or CH_3COO^-
Cyanide	CN^-
Hydroxide	OH^-
Chlorate	ClO_3^-
Perchlorate	ClO_4^-
Nitrite	NO_2^-
Nitrate	NO_3^-
Sulfite	SO_3^{2-}
Sulfate	SO_4^{2-}
Carbonate	CO_3^{2-}
Phosphite	PO_3^{3-}
Phosphate	PO_4^{3-}

Chapter 3

$$\text{Molarity} = \frac{\text{moles of solute}}{\text{liter of solution}}$$

$$M_1V_1 = M_2V_2$$

$$\text{Mass percentage} = \frac{\text{g of component}}{100 \text{ g of solution}}$$

$$\text{Volume percentage} = \frac{\text{mL of component}}{100 \text{ mL of solution}}$$

$$\text{ppm} = \frac{\text{mg of solute}}{\text{L of solution}}$$

$$\text{ppb} = \frac{\mu\text{g of solute}}{\text{L of solution}}$$