### Nuclear Decay Reactions

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Symbol</th>
<th>Multiplier</th>
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<tbody>
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<td>t</td>
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</tr>
<tr>
<td>g</td>
<td>G</td>
<td>10^9</td>
</tr>
<tr>
<td>m</td>
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<td>10^6</td>
</tr>
<tr>
<td>k</td>
<td>k</td>
<td>10^3</td>
</tr>
<tr>
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<td>10^{-1}</td>
</tr>
<tr>
<td>c</td>
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<td>10^{-2}</td>
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<tr>
<td>m</td>
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<td>µ or mc</td>
<td>µ</td>
<td>10^{-6}</td>
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<tr>
<td>n</td>
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<td>10^{-9}</td>
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</tbody>
</table>

1 pound = 453.6 grams
1 pound = 16 ounces
1 inch = 2.54 cm
1 foot = 12 inches
1 mile = 5280 feet
1 mile = 1.609 km
1 mL = 1 cm³ = 1 cc
1 liter = 1.06 quarts
1 tablespoon = 3 teaspoons
1 teaspoon = 5 mL
1 calorie = 4.184 J
1 atm = 760 mmHg = 760 torr

### Intermolecular Forces

**Strong Acids**
HCl, HBr, HI, HNO3, HClO₄, H₂SO₄

**Strong Bases**
Group I & II metal hydroxides

### Concentration Unit Definition

- **Molarity (M)**: mol solute / L solution
- **Molality (m)**: mol solute / kg solvent
- **Mole Fraction (c)**: moles of solute / moles of solute + solvent
- **Percent by Mass (%)**: mass of solute / mass of solution × 100
- **Parts per Million (ppm)**: mass of solute / mass of solution × 10^6
- **Parts per Billion (ppb)**: mass of solute / mass of solution × 10^9

### Soluble Compounds Contain

- Except when paired with Group I metal cations or NH₄⁺:
  - CH₃COO⁻, NO₃⁻, ClO₄⁻ or ClO₃⁻
  - SO₄²⁻

### Insoluble Compounds Contain

- Except when paired with Group I cations or NH₄⁺, or Ba²⁺:
  - CO₃²⁻, CrO₄²⁻, PO₄³⁻, or SO₄²⁻
  - S²⁻ or OH⁻
  - Ag⁺, Hg₂²⁺, and Pb²⁺

Compounds listed as “slightly soluble” are treated as insoluble.