Notes: Properties of Matter (3.1);

- **OBJECTIVES**: Students will be able to (SWBAT)
  1. **Distinguish** between physical & chemical properties
  2. **List** some examples of physical and chemical changes

- 5 lecture/10 reading questions
- 5-sentence summary (combine with 3.2 notes)
Notes: Properties of Matter
(Chapter 3, Section 1)
Substance

• Substance: uniform and unchanging composition (what something is made of)

• Pure substances are not mixed with other substances (mixed composition)
  – Sea water (salt water)
Physical Properties

- Can be observed or measured without changing the composition
- Helps to identify substances
- Does not change for a substance
- Examples of physical properties:
  - Density
  - Color
  - Odor
  - Taste
  - Hardness/texture
  - Melting and boiling points
Extensive and Intensive Properties

• 2 types of *physical properties*:
  – **EXTENSIVE PROPERTIES**: depends on *amount*
    • Examples: MASS, LENGTH, VOLUME, SHAPE
  
  – **INTENSIVE PROPERTIES**: does *NOT* depend on amount
    • Examples: DENSITY, COLOR
Chemical Properties

• How a substance combines with and reacts with other substances
  – Rusting (iron)
  – Combustibility (burning in air)
  – Reacting with acid or base
  – Stability (reacting or not reacting)
States of Matter

- 3 states of matter: solid, liquid, gas
  * a 4th state (plasma) is ionized gas
# SHAPE & VOLUME

<table>
<thead>
<tr>
<th>STATES OF MATTER</th>
<th>DEFINITE SHAPE</th>
<th>DEFINITE VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLID</td>
<td>Yes (Y)</td>
<td>Y</td>
</tr>
<tr>
<td>LIQUID</td>
<td>No (N)</td>
<td>Y</td>
</tr>
<tr>
<td>GAS</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

Volume: changes size (expands or contracts)

Shape: change shape of container
Ask yourself

• Can I describe the property with one of my 5 senses (sight, smell, touch, feel, taste)?
  → PHYSICAL PROPERTY

• Is it hard to describe the property, but a change can be detected where the substance is not the same anymore? Or Did a completely new substance form in the process?
  → CHEMICAL PROPERTY