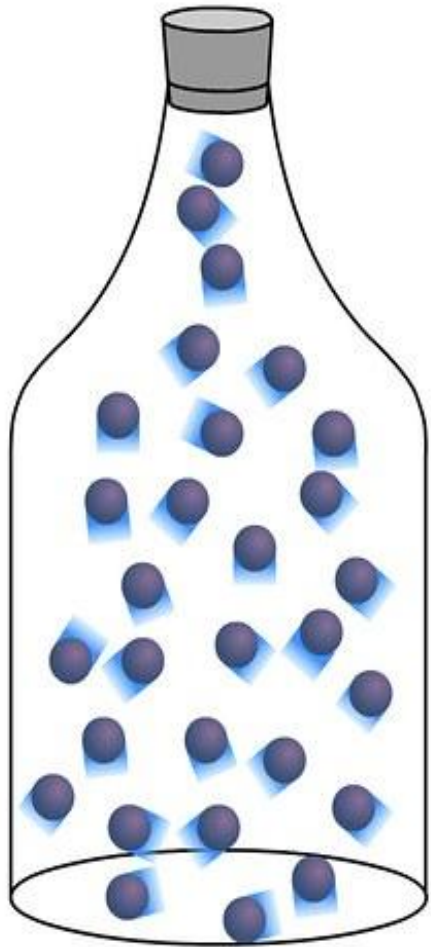


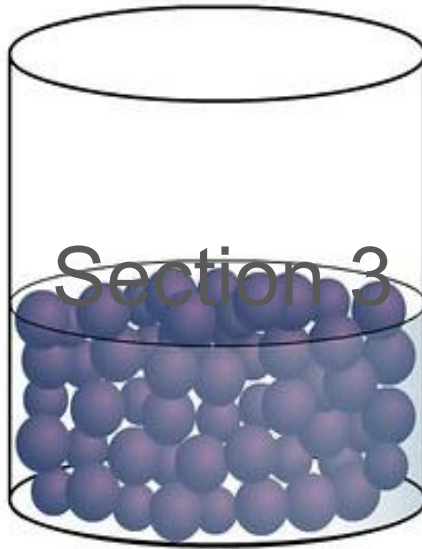
# Properties of Matter

## Section 3



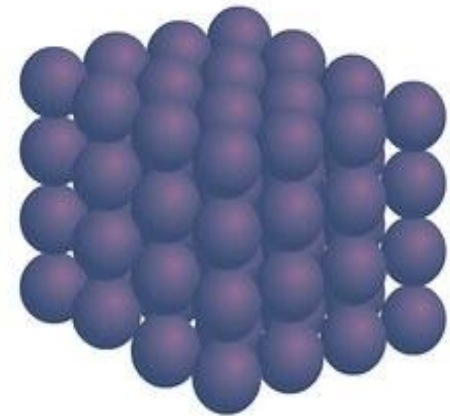
Gas

Evaporation  
←  
→  
Condensation



Liquid

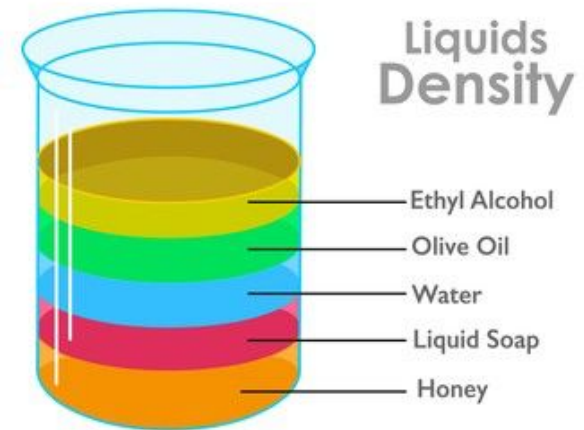
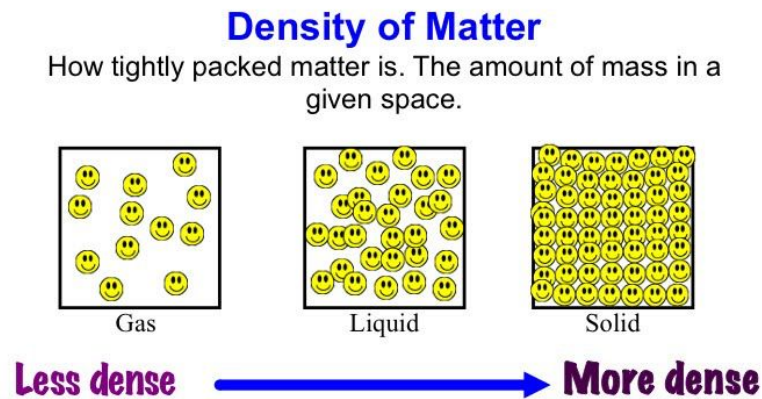
Melting  
←  
→  
Freezing



Solid

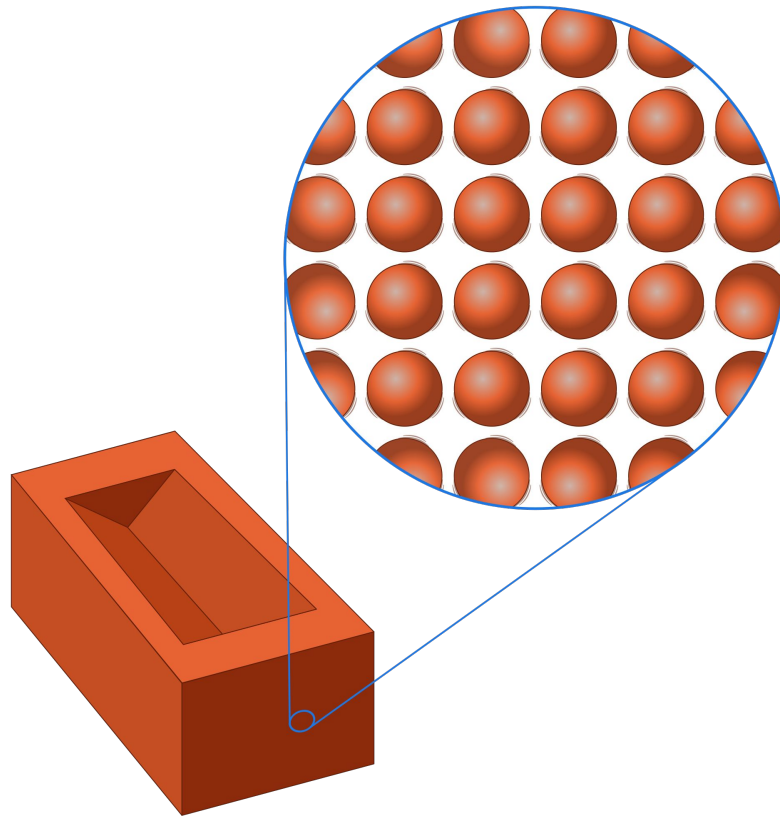
A. Physical properties —properties you can observe without changing a substance into a new substance

1. One physical property is **density**, which is an object's mass divided by its volume.
2. The measurement of density is usually given in grams per cubic centimeter ( $\text{g}/\text{cm}^3$ ).
3. An object less dense than water will float in water.



**B.** Four physical states of matter: solid, liquid, gas, and plasma

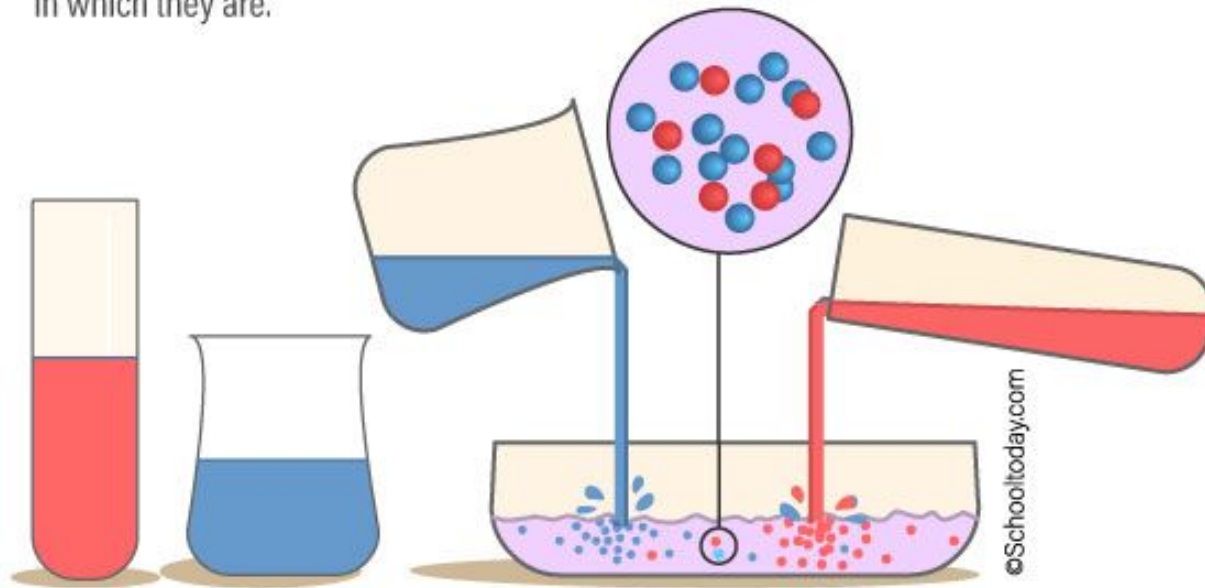
**1.** Solids—the matter's atoms are in a fixed position relative to each other.



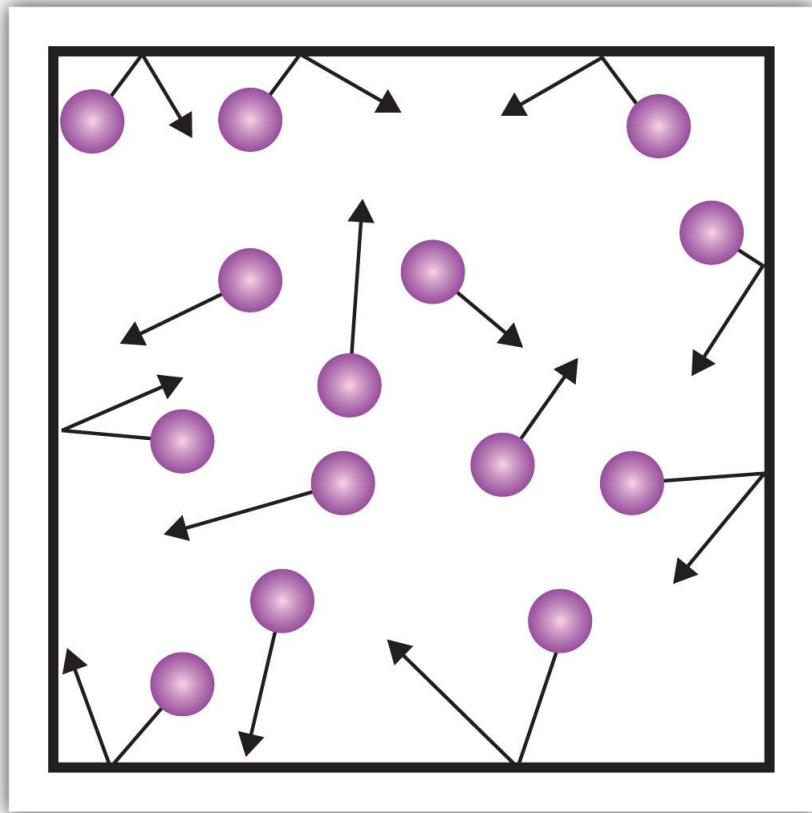
2. Liquids —atoms are attracted to each other, but can change positions with each other

Molecules in a liquid are randomly arranged and take the shape of the container in which they are.

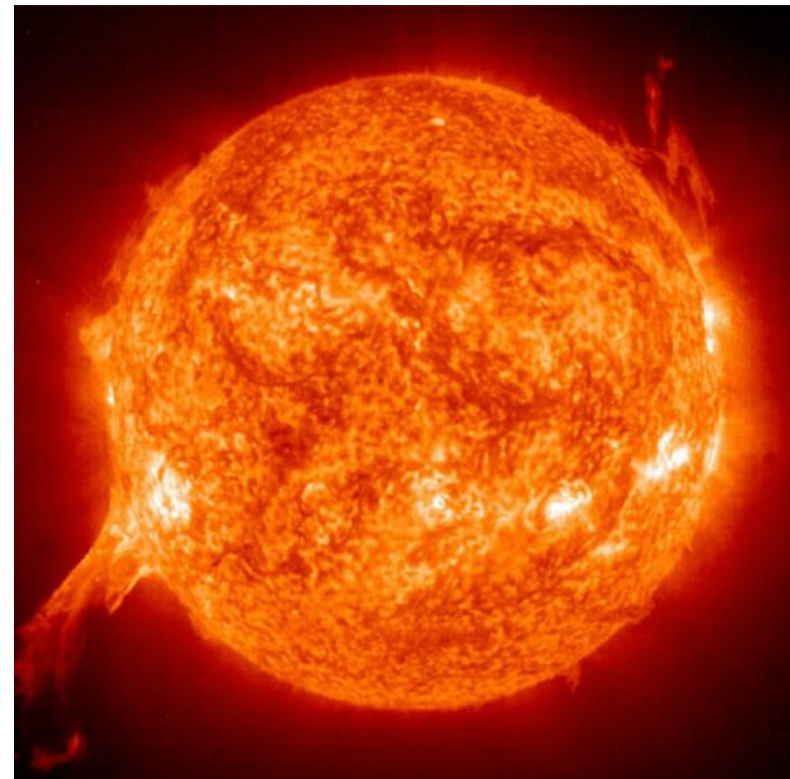
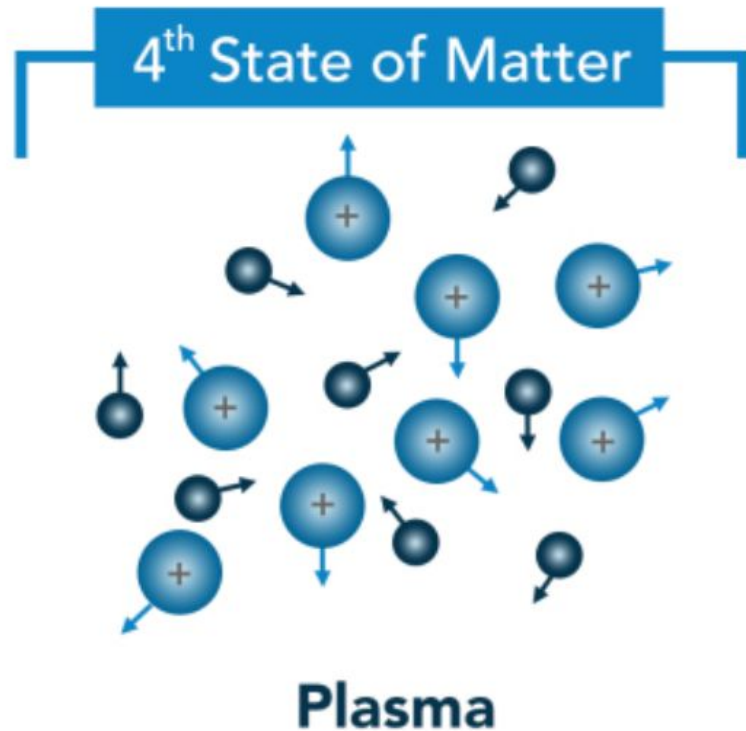
Molecules in different liquids may mix up easily because of the random and loose nature of its arrangement



3. Gases—atoms have almost no attractive force on each other, so atoms move freely and will fill the entire container they are placed in



4. Plasma —electrons can escape and move outside of the ion's electron cloud.
- a. The most common state of matter in the universe
  - b. Stars and lightning are composed of matter in the plasma state.



C. Matter can change from one state to another.

1. Changes in state can occur because of increases or decreases in temperature  
and Pressure.

a. Matter is changed from a liquid to a solid at its freezing point.

b. Matter is changed from a liquid to a gas at its boiling point.

2. When matter changes state, its chemical properties do not change, but  
Physical properties may change.

# States of Matter

