

## Chapter 3 Review Notes: Solids, Liquids, & Gases

1. **Kinetic Energy:** refers to motion.
  - a. It is the **ENERGY** of an object caused by its **MOTION**.
2. All particles (atoms & molecules) are always in motion.
  - a. This motion spread the particles apart
  - b. **Thermal Energy** (heat) speeds up motion when added, or slows down motion when cooled.
  - c. KE can never be 0 because even solids vibrate in place.
3. **Physical State of Matter: depends on:**
  - a. The **AMOUNT** of **KE** of its particles
  - b. The **STRENGTH** of its **chemical bonds**
  - c. The **STRENGTH** of **intermolecular attractions** of the pure substance
    - **i.e.** water molecules are attracted to one another, so much so that it forms an inward pull (surface tension).
4. **Changes in the State of Matter: depends on**
  - a. If **THERMAL ENERGY** is **added** or **removed**
  - b. Changes in states are a physical change because no new substance(s) are formed.
  - c. Substances look different because the arrangement of atoms and molecules are different.
    - Solids: atoms are closely packed and are fixed in position and can only vibrate
    - Liquids: atoms are closely packed but are loosely connected so they can slide past one another when they collide.
    - Gases: atoms are independent with one another (particles are not attracted to one another) and randomly collide to fill all available space.
5. Are all Freezing Points low temps?