

# Physical Science: Lecture

## Notes: Ch6 L2

Name \_\_\_\_\_  
Date \_\_\_\_\_

### Lesson 2: Changes in States of Matter

#### A. Temperature, Thermal Energy, and Heat

1. Particles in motion have \_\_\_\_\_ ; moving objects such as a ball have \_\_\_\_\_, too.
2. \_\_\_\_\_ is a measure of the average kinetic energy of all particles in an object.
3. Warmer objects have a \_\_\_\_\_ average kinetic energy and therefore have a higher temperature than cooler objects.
4. A \_\_\_\_\_ is used to measure temperature.
5. Particles in the thermometer's gauge increase their \_\_\_\_\_ when heated and start moving farther apart, causing the liquid in the thermometer to rise.
6. The total energy of the particles of a substance is its \_\_\_\_\_.
  - a. Thermal energy includes the kinetic energy and \_\_\_\_\_ of a substance's particles.
  - b. A substance's liquid state has more thermal energy than its \_\_\_\_\_ state.
  - c. A substance's \_\_\_\_\_ state has more thermal energy than its liquid or solid state.
7. Thermal energy can be \_\_\_\_\_ to or removed from a substance.
  - a. When the kinetic energy of a material's particles increases, the \_\_\_\_\_ of the material increases.
  - b. When the potential energy of a material changes, the material's \_\_\_\_\_ of matter changes.

#### B. Changes Between the Solid and Liquid States

1. The \_\_\_\_\_ of a material is the temperature at which it changes from a solid to a liquid.
2. The \_\_\_\_\_ of a material is the temperature at which material changes from a liquid to a solid.

3. Freezing and melting are \_\_\_\_\_ processes. Freezing involves removing thermal energy from a substance, while melting involves \_\_\_\_\_ thermal energy.

### C. Changes Between Liquids and Gases

1. The change from a liquid to a gas state is called \_\_\_\_\_.
2. Vaporization that occurs within a liquid is called \_\_\_\_\_.
3. The \_\_\_\_\_ is the temperature at which a liquid changes to a gas.
4. Vaporization at the surface of a liquid is \_\_\_\_\_.
5. Evaporation can occur at temperatures below the \_\_\_\_\_ point.
6. The boiling point of a liquid depends on the \_\_\_\_\_ exerted on the liquid. The higher the pressure on the liquid, the \_\_\_\_\_ the boiling point is.
7. The state change of a material from a gas to a liquid is called \_\_\_\_\_.
8. \_\_\_\_\_ and \_\_\_\_\_ are opposite processes, though they occur at the same temperature.

### D. Changing the States of Water

1. When ice is changed to liquid water, the temperature of the ice rises to the \_\_\_\_\_ of ice. At the melting point, the temperature remains the same as \_\_\_\_\_ is added until all the ice becomes liquid.
2. When liquid water is heated, its temperature increases until it reaches its \_\_\_\_\_. There, the water temperature remains the same until all of the \_\_\_\_\_ water changes state to become water vapor.
3. Changes in state can be \_\_\_\_\_.

### E. Changes Between Solids and Gases

1. \_\_\_\_\_ is the change of a solid to a gas without going through the liquid state.

2. \_\_\_\_\_ is the change in state of a gas to a solid without going through the liquid state.

#### F. Changes in Energy Among States of Matter

1. For a material to change from one state of matter to another, \_\_\_\_\_ must be added to or removed from the material.