Particle Theory of Matter

Date: _____

1. All matter is made up of tiny particles. (Atoms & Molecules)

2. Particles of Matter are in constant motion. All particles of one substance are identical and have specific properties that are constant and predictable.

3. Particles of Matter are held together by very strong electric forces called bonds.

4. There are empty spaces between the particles of matter that are very large compared to the particles themselves.

5. Each substance has unique particles that are different from the particles of other substances.

6. Temperature affects the speed of the particles. The higher the temperature, the faster the speed of the particles. In a gas, there are spaces between the particles; in liquids and solids, the particles are close together and have strong forces of attraction between them. The greater the heat, the greater the speed of the particles and the greater the space needed (the matter expands). Changes in state between solid, liquid and gas are a result of temperature.

The Difference Between HEAT and TEMPERATURE

Heat is the amount of thermal energy present in a substance or object. It is a measured in calories (cal) or Joules (J)and can be transferred or transformed since it is energy.

Temperature is a measure of the average heat energy or the level of activity of the particles in a particular substance or object. It is measured in degrees Celsius (°C), degrees Fahrenheit (°F) or Kelvin (K)

The two can be confused since they both are about thermal energy but, as a scientist, you must know the difference between them. If you are talking about the amount of energy, it is Heat and if you are talking about the level of energy, it is Temperature.

An extra hint about which is which it the units. Joules and calories is a measure of energy and is Heat and if you are given Celsius, Fahrenheit or kelvin, it is the level of thermal activity or Temperature. A thermometer measures Temperature and Heat is much more complicated to measure.