Name: _____ _____/ 23

Chapter 9.1 Homework
Conceptual Physics Parent Signature: _____

Reviewing Concepts

1. What is Brownian movement and what is its importance in the explanation of matter?

2. Describe the appearance of table salt at the macroscopic and atomic levels.
   Macroscopic:

   Atomic:

3. Explain the difference between an element and a compound, and give one example of each.

4. Explain how a mixture is different from a compound.

5. Explain the difference between the kinetic energy associated with temperature and the kinetic energy of an object moving in a certain direction.

6. Name two factors that determine the phase of matter for a substance.

7. Describe the four phases of matter.

8. Give an example for each of the following:

a. solid-solid mixture

b. liquid-solid mixture

c. liquid-liquid mixture

d. liquid-gas mixture

e. gas-gas mixture

9. Describe the processes of melting and freezing on the molecular level.

10. Describe the process of water boiling on the macroscopic and molecular level.

11. What is evaporation and how does it differ from boiling?

12. Compare the difference between the freezing points and boiling points of water on the Fahrenheit scale and the Celsius scale. Which degree represents a larger temperature change?

13. If any exist, what are the upper and lower limits of temperature?

14. What is the source of pressure in fluids?

15. What makes the Kelvin scale of temperature more useful to scientists than the Fahrenheit or Celsius scale?

16. A student in Italy flies to visit family in New York. He hears the pilot report the weather on arrival as “clear and sunny with temperatures in the low 20s.” He changes on the plane into shorts and a T-shirt. Explain his behavior.

Solving Problems

1. Identify the following substances as an element, a compound, or a mixture.

    a. vanilla pudding

    b. oxygen gas

    c. table salt (sodium chloride)

    d. fruit salad

2. Convert the average human body temperature (98.6°F) to the temperature on the Celsius scale.

3. Convert the Celsius temperature of the surface of the Sun (5,000°C) to degrees Fahrenheit.

4. If a recipe says to bake a pizza in a 250°C oven, at what temperature should you set your oven that uses the Fahrenheit scale?

5. Convert the Fahrenheit temperature at which paper burns (451°F) to degrees Celsius.

6. Earth is a watery planet. About 70% of Earth's surface is covered by water. There is water underground and in the atmosphere. State the temperature range for each of the following phases of water and give the common name for that phase.

a. solid

b. liquid

c. gas

7. You place 1 L of a substance into a 2-L bottle and tightly cover the bottle. The substance completely fills the bottle. What state is the substance in? Explain.