

Chapter 9B

Physical Science

Read page 205 - 210.

Show your work on all math problems.

1. What is the temperature of a substance directly related to?
2. What causes the liquid in a thermometer to expand?
3. What were the first two fiducial points for Gabriel Fahrenheit's thermometer?
4. How many Fahrenheit degrees are there between water's freezing point and boiling point?
5. How was Anders Celsius' temperature scale changed after his death?
6. How many Celsius degrees are there between water's freezing point and boiling point?
7. Which is bigger: a Fahrenheit degree or a Celsius degree?

Use these formulas or the ones on pages 207-208 to convert temperature scales.

$$C = \frac{5}{9}(F - 32)$$

$$F = \frac{9}{5}C + 32$$

$$K = C + 273$$

$$C = K - 273$$

8. Change:

- a. 70°F to $^{\circ}\text{C}$
- b. 70°C to $^{\circ}\text{F}$
- c. 20°C to K
- d. 300K to $^{\circ}\text{C}$
- e. 98°F to K



9. Why do most materials expand when they get hotter?
10. Which conducts electricity better: a hot wire or a cold wire?
11. What is viscosity?
12. List one material you want to have a low viscosity when you use it.
13. List one material you want to have a high viscosity when you use it.

Read page 210 - 216.

1. What is the difference between thermal energy and heat?
2. How does conduction transfer thermal energy?
3. What is thermal equilibrium?
4. Why does thermal energy move quickly through solids?
5. Which materials listed below would be good thermal conductors?
 - a. Plastic
 - b. Aluminum
 - c. Cardboard
 - d. Iron
6. How does convection transfer thermal energy?
7. Can convection occur in solid materials?
8. What is needed for natural convection to occur?
9. What does convection affect in the earth's atmosphere?
10. What would happen in the earth's atmosphere without convection?
11. How does electromagnetic energy move through space?
12. Which materials listed below would be good thermal insulators?
 - a. Copper
 - b. Oxygen gas
 - c. Wood
 - d. Gold
 - e. Argon gas
 - f. Styrofoam
13. How does a down-filled jacket keep you warm in the winter?