Name _____ Date _____ Class _____

CHAPTER 13 STUDY GUIDE

Gases

Section 13.1 The Gas Laws

In your textbook, read about the basic concepts of the three gas laws.

Use each of the terms below to complete the passage. Each term may be used more than once.

pressure	temperature	volume

Boyle's law relates **(1)**_____ and **(2)**_____ if **(3)**_____ and amount of gas are held constant. Charles's law relates **(4)**_____ and **(5)**_____ if **(6)**_____ and amount of gas are held constant. Gay-Lussac's law relates **(7)**_____ and **(8)**_____ if **(9)**_____ and amount of gas are held constant.

In your textbook, read about the effects of changing conditions on a sample of gas.

For each question below, write *increases*, *decreases*, or *stays the same*.

_____ **10.** The room temperature increases from 20°C to 24°C. What happens to the pressure inside a cylinder of oxygen contained in the room?

_____ **11.** What happens to the pressure of the gas in an inflated expandable balloon if the temperature is increased?

_____ **12.** An aerosol can of air freshener is sprayed into a room. What happens to the pressure of the gas if its temperature stays constant?

_____ **13.** The volume of air in human lungs increases before it is exhaled. What happens to the temperature of the air in the lungs to cause this change, assuming pressure stays constant?

_____ **14.** A leftover hamburger patty is sealed in a plastic bag and placed in the refrigerator. What happens to the volume of the air in the bag?

_____ **15.** What happens to the pressure of a gas in a lightbulb a few minutes after the light is turned on?

Section 13.2 The Combined Gas Law and Avogadro's Principle

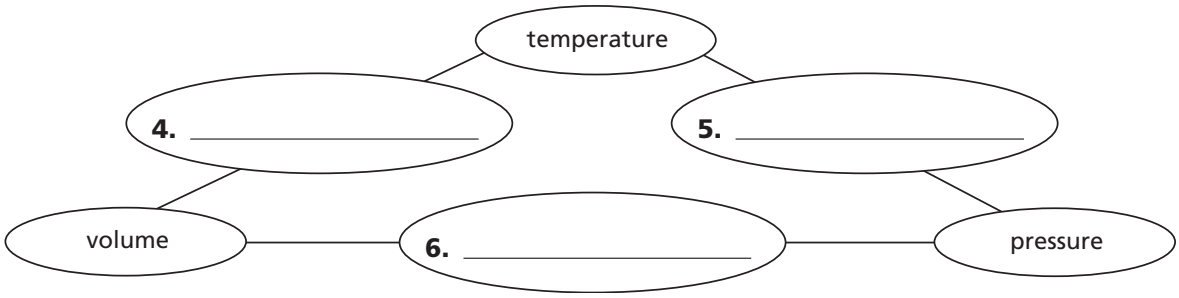
In your textbook, read about the combined gas law.

Fill in the following table. State what gas law is derived from the combined gas law when the variable listed in the first column stays constant and the variables in the second column change.

Derivations from the Combined Gas Law		
Stays constant	**Change**	**Becomes this law**
Volume	Temperature, pressure	**1.**
Temperature	Pressure, volume	**2.**
Pressure	Temperature, volume	**3.**

In your textbook, read about the relationships among temperature, pressure, and volume of a sample of gas.

Fill in the blanks between the variables in the following concept map to show whether the variables are directly or inversely proportional to each other. Write *direct* or *inverse* between the variables.



In your textbook, read about the combined gas law and Avogadro's principle.

Circle the letter of the choice that best completes the statement or answers the question.

7. The variable that stays constant when using the combined gas law is

a. amount of gas. **b.** pressure. **c.** temperature. **d.** volume.

8. The equation for the combined gas law can be used instead of which of the following equations?

a. Boyle's law **b.** Charles's law **c.** Gay-Lussac's law **d.** all of these

9. Which of the following expresses Avogadro's principle?

a. Equal volumes of gases at the same temperature and pressure contain equal numbers of particles.

b. One mole of any gas will occupy a certain volume at STP.

c. STP stands for standard temperature and pressure.

d. The molar volume of a gas is the volume that one mole occupies at STP.