Chapter 14 The Behavior of Gases

Section 14-1 Vocabulary

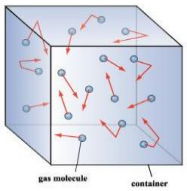
Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

Gases are easily ___1___, or squeezed into a smaller volume because of the ___2___ between particles in a gas. The four variables used to describe a gas are pressure, (P), ___3___ (V), ___4___ (T), and number of ___5___ (n).

You can use ___6___ theory to predict and explain how gases will respond to a change in conditions. Doubling the amount of gas in a rigid container ___7___ the pressure. You can raise the pressure exerted by a contained gas by ___8___ its volume. As the temperature of an enclosed gas decreases, the pressure ___9___.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

1. 4 variables used to describe a gas 1)_____,
2)_____3)_____4)_____



2. **Gas Pressure** results from

_____Collisions = _____ Pressure

3. Temperature is a measure of

_____ Energy = _____ Temperature

4. What can happen if too much gas is pumped into a sealed,rigid container?

_____

Units used to describe gas samples:

Volume	Temperature	Pressure
liter (L) milliliter (mL)	Kelvin **ONLY**	Atmosphere (atm) Kilopascale (kPa) Torr (torr)
1000 mL = 1L	K = ºC + 273	mm of mercury(mmHg) 1 atm = 101.3 kPa 1 atm = 760 mmHg 1 atm = 760 torr

5. Complete questions 1 and 2 on Pg. 387.

14.2 The Gas Laws

Vocabulary

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

The pressure and volume of a fixed mass of gas are __1__ related. If one decreases, the other __2__. This relationship is known as __3__ law. The volume of a fixed __4__ of a gas is directly proportional to its __5__ temperature. This relationship is known as __6__ law. __7__ law states that the pressure of a gas is __8__ proportional to the Kelvin temperature if the volume remains constant.

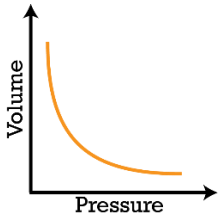
These three separate gas laws can be written as a single expression called the __9__ gas law. It can be used in situations in which only the __10__ of gas is constant.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

1.

BOYLE'S LAW -

How are pressure (P) and volume (V) related? (Circle one) directly inversely



BOYLE'S LAW PROBLEMS

1. A gas occupies 12.3 liters at a pressure of 40.0 mmHg. What is the volume when the pressure is increased to 60.0 mmHg?

2. If a gas at 25.0 °C occupies 3.60 liters at a pressure of 1.00 atm, what will be its volume at a pressure of 2.50 atm?

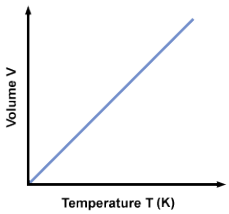
3. A gas occupies 1.56 L at 760.0 torr. What will be the volume of this gas if the pressure becomes 1520 torr?

4. A gas occupies 11.2 liters at 0.860 atm. What is the pressure if the volume becomes 15.0 L?

5. 500.0 mL of a gas is collected at 745.0 mmHg. What will the volume be at 760.0 mmHg?

2. CHARLES'S LAW –

How are temperature (T) and volume (V) related? (Circle one) directly inversely



CHARLES'S LAW PROBLEMS

1. Convert 33.0 °C to Kelvin _____
2. Calculate the final temperature when 2.00 L at 293K is compressed to 1.00 L.

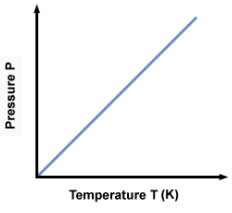
3. 600.0 mL of air is at 293K. What is the volume at 333K?

4. A gas occupies 900.0 mL at a temperature of 27.0 °C. What is the volume at 132.0 °C?

5. What change in volume results if 60.0 mL of gas is cooled from 33.0 °C to 5.00 °C?

3. GAY- LUSSAC'S LAW –

How are temperature (T) and pressure (P) related? (Circle one) directly inversely



Complete problems 11 and 12 from Pg. 423

4. COMBINED GAS LAW – Combination of Boyle's Law, Charles' Law, and Gay-Lussac's Law

COMBINED GAS LAWS PROBLEMS

1. A gas occupies 2.0 L at 2.5 atm and 25ºC. What is it's volume if the temperature is increased to 33ºC and the pressure is decreased to 1.5 atm?

2. A gas occupies 4.5 L at 1.3 atm and 35ºC. What is the final temperature if the final volume of the gas is 3.2 L with a pressure of 1.5 atm?

3.

Complete the following chart:

	P_1	V_1	T_1	P_2	V_2	T_2
1	1.50 atm	3.00 L	20.0 °C	2.50 atm		30.0 °C
2	720. torr	256 mL		760. torr	250.0 mL	50.0 °C
3	600. mmHg	2.50 L	22.0 °C	760. mmHg	1.80 L	
4		750. mL	273 K	2.00 atm	500. mL	298 K
5	850. mmHg	1.50 L	15.0 °C		2.50 L	30.0 °C