

Name: _____ Date: _____

Notes: The Ideal Gas Law

Kinetic-Molecular Theory

1. _____
2. _____
3. _____
4. _____

V and P scientist: _____ proportionality: _____

V and T scientist: _____ proportionality: _____

V and n scientist: _____ proportionality: _____

Which law describes how the pressures of gases in a container add together?

1. What is the pressure inside a container if it contains Ne gas at a pressure of 250 kPa, CO₂ gas at a pressure of 150 kPa and N₂ gas at a pressure of 320 kPa? _____

2. CO₂, N₂ and He gas are inside of a container. The total pressure exerted by the gases is 8.0 atmospheres. The CO₂ exerts a pressure of 1.2 atm and the N₂ exerts a pressure of 3.1 atm. How much pressure is exerted by the helium gas? _____

What are the 3 main units of pressure that we will be using in this class?

1. _____
2. _____
3. _____

Which units of temperature must be used any gas law? _____

What two things make something an ideal gas?

1. _____
2. _____

When do we find gases behaving very similar to ideal gases? _____

What is **R**? _____

What is Standard Temperature and Pressure? _____

What is the volume of 1 mole at STP? _____

How do you determine which value of R to use? _____

What is the ideal gas constant used for? _____

Solve the following ideal gas law problems.

1. What is the pressure in kilopascals of 3.0 moles of an ideal gas if its volume is 3.0 liters and its temperature is at 100.°C?

Equation:

Substitution:

Solution:

$$PV = nRT$$

2. There are 2.00 moles of an ideal gas in a container. What is the volume of this ideal gas if the pressure of the gas is 3.00 atm and the temperature is 313 K?

Equation:

Substitution:

Solution:

3. What is the volume of 3.0 moles of an ideal gas at standard temperature and pressure?

Equation:

Substitution:

Solution:

4. What is the pressure in mmHg of 2.00 moles of an ideal gas if its volume is 2.0 liters and its temperature is at 20.0°C?

Equation:

Substitution:

Solution:

5. What is the temperature of a gas if 5.00 moles of the gas occupy a 10.0 liter container at a pressure of 202.6 kPa?

Equation:

Substitution:

Solution:

6. How many moles of an ideal gas at 300. K are in a 2.00 liter container if it is at a pressure of 1000. mmHg?

Equation:

Substitution:

Solution:

7. An ideal gas is inside a container with a volume of 6.00 liters; 10.0 moles of this gas are at room temperature (20°C). What is the pressure of the gas in atmospheres?

Equation:

Substitution:

Solution:

8. What is the temperature of a gas if 3.0 moles of the gas occupy a 5.0 liter container at a pressure of 5.0 atm?

Equation:

Substitution:

Solution: