High School Science Virtual Learning

**Chemistry**
**Ideal Gas Law**

May 13, 2020

High School Chemistry
Lesson: May 13, 2020

**Objective/Learning Target:**

Students will be able to use the ideal gas law to calculate unknown properties of gases.

# Let's Get Started:

1. Which laws are used to calculate a property of gas when the conditions change?

2. Which law is used to calculate a property of gas when the conditions do NOT change?

Let's Get Started: Answer Key

1. Which laws are used to calculate a property of gas when the conditions change? Boyle's, Charles's, Avogadro's, Gay-Lussac's, and Combined Gas Laws

2. Which law is used to calculate a property of gas when the conditions do NOT change? Ideal Gas Law

# Lesson Activity:

**Directions:**

1. Watch this [video](#) from Teacher's Pet.
2. Take notes on the example problem.
3. Values of R
   a. 0.082057 L atm/mol K
   b. 0.083145 L bar/ mol K
   c. 63.264 L Torr/ mol K

# Practice

*Complete the following questions using the information you learned during the lesson activity.*

# Questions:

1. What is the temperature of a 3.98 mole sample of gas at a pressure of 0.847 atm and a volume 98.34 L?
2. A sample contains 6.25 moles of helium at a temperature of 125 K. If the pressure is 854 torr, what is the volume?
3. At 6.34 bar and 532 K, how many moles are in a 51.2 L sample of gas?

Once you have completed the practice questions check with the <span style="color:red">answer</span> key.

1. (0.847 atm)(98.34 L)=(3.98 mol)(0.082057 L atm/mol K)T

   T= 255 K

2. (854 torr)V=(6.25 mol)(63.264 L torr/mol K)(125 K)

   V=57.9 L

3. (6.34 bar)(51.2 L)=n(0.083145 L bar/mol K)(532 K)

   n=7.34 mol

# More Practice:

Follow the links below to do more practice.
1. Do questions 1-10 on this <u>worksheet</u>, unless you're feeling ambitious and want to do more.
2. This <u>quiz</u> will check your answers as you go. When given grams, divide by the molar mass to convert to moles.

Additional Practice:
Click on this link for additional practice. They added in a slightly different form of the ideal gas law, but it is still solved by plugging in variables and solving.