

Student handout:

Name:

Date:

Period:

*Gas Properties Virtual Lab***Purpose:**

During this laboratory, you will be exploring the Kinetic Molecular theory of gases using a virtual simulator. In the virtual simulator there are many variables that you can manipulate including, size of particle, number of particles, pressure, and temperature. Using these variables you will be able to describe a molecular model of gas pressure and the affects of varying these quantities.

Post-Lab you will be expected to solve real-life problems based upon what you have learned during the lab.

Pre-Lab Hypothesis:

For your hypothesis, you should examine the simulator and pick out the different variables you may manipulate.

Write the variables and their meanings here:

(Type in Gas properties phet into google, it will be the first link. The site is run through the University of Colorado)

From these variables you should develop 3 different hypothesis about their effects on the Kinetic Molecular Theory of Gases.

1.

2.

3.

Procedure:

1. Use the following Graphic organizer to design your procedure for EACH hypothesis:

What Do I want to know?	What variables can I change to help me find out what I want to know?	How can I find what I want to know?

On a separate sheet of paper:

2. Write the steps your procedures to test each hypothesis
3. Draw a picture to represent the prediction of each of your hypothesis.
4. Make a data table for each of your hypothesis.
5. Observe & record your observations in your data table.
6. Make a graph of your observations.
7. Explain your observations.

Post Lab Questions:

1. What were the three variables you explored? Why?
2. What did you find about each of these variables?

3. How does energy relate to the manipulation of these three variables?

Application Questions:

For 1-4, Read the scenario and use the simulation to help you understand what is happening. Record how you used the sim and your observations. Be exact about what you held constant and what you varied, and then write your physics explanations.

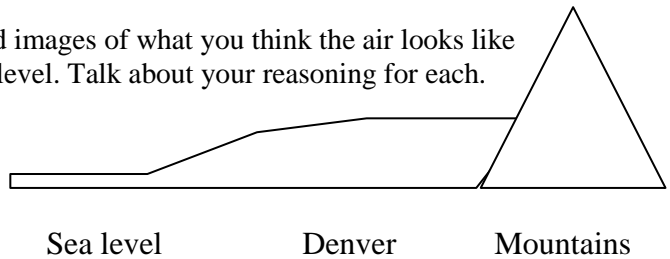
1. You add air to your car tire. *It is reasonable to assume that once tires have air, they are flexible but not stretchy, so they do not change volume if more gas is added.*

2. You jump down on your Nike air shoes (an elastic, closed air pocket is in the heel)

3. On a hot day, you find that it is harder than normal to open your gas tank.

4. It is well known that the higher you climb in the mountains that there is less oxygen.
 - a. Talk with your partner about what you see in your mind when someone says, “The air is thinner in the mountains”?

b. Draw a picture like this one, and then add images of what you think the air looks like at Sea level, Denver level and Mountain level. Talk about your reasoning for each.



c. Use the simulation to see if your drawing makes sense. Make corrections to your diagram if necessary. Explain how using the simulation either supported the idea you had or how it helped you change your ideas.