Name: ANSWERS Pd: 2 Ast: B20

GAS PRESSURE LAB

Before beginning, answer the following questions:

1) What is air made of?
2) What state of matter is the air around you?
3) Does air have mass? Weight? Volume?
    a. How can you tell?

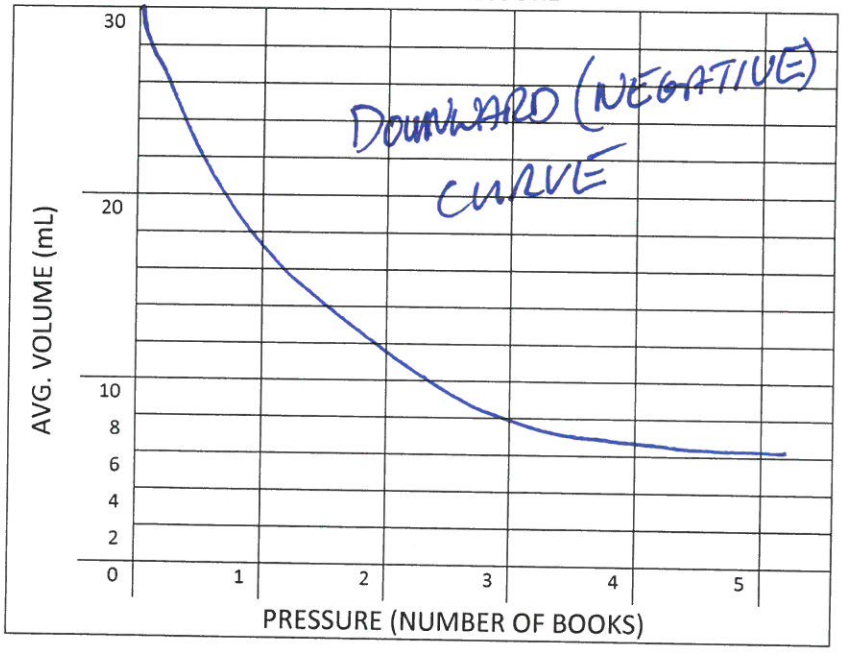
Follow these directions to set up your equipment and perform the investigation:

A. Place the larger wooden block on the table with the larger hole facing up.
B. Draw 30 mL of air into the syringe and place the rubber tip over the end to seal it off.
C. Place the syringe into the hole in the wooden block, tip first, so that the syringe is standing up in the block.
D. Gently place the smaller wooden block over the top of the syringe so that it balances on the gray part.
E. Check the volume of air inside the syringe, then gently place one book at a time on the top block recording the volume of air inside the syringe each time.
F. Once you have added 5 books, begin removing one book at a time from the top block while recording the volume of air inside the syringe each time.
G. Calculate an average volume of air per book added in your data table.
H. Use your data to construct a line graph of volume vs. pressure (number of books).

TRIAL 1 (ADDING BOOKS)		TRIAL 2 (REMOVING BOOKS)		AVERAGE
Number of Books	Syringe Volume	Number of Books	Syringe Volume	Volume = (T1 + T2) / 2
0		0		
1		1		
2		2		
3		3		
4		4		
5		5		

DECREASING VALUE

VOLUME vs. PRESSURE



4) Describe the relationship between PRESSURE and VOLUME in a gas based on your graph.

PRESSURE AND VOLUME HAVE AN INVERSE RELATIONSHIP, WHEN ONE GOES UP, THE OTHER GOES DOWN

5) Did the amount of gas inside the syringe change during your investigation (assume the set-up is air-tight).

NO, THEORETICALLY, THE SAME NUMBER OF PARTICLES WAS IN THE SYRINGE THE WHOLE TIME

BOYLE'S LAW states that the product of the volume and pressure of a gas is approximately constant at constant temperature. $P_1V_1 = P_2V_2$

6) According to Boyle's Law, what must happen to the volume of a gas if the pressure goes up?

IF THE PRESSURE INCREASES, THE VOLUME MUST DECREASE

7) What must happen to the pressure of a gas if the volume goes down?

IF THE VOLUME DECREASES, THE PRESSURE WILL INCREASE

8) How does Boyle's Law relate to DENSITY?

HIGHER PRESSURE WILL INCREASE THE DENSITY OF A GAS BY FORCING THE SAME AMOUNT OF MATTER INTO A SMALLER SPACE.