Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_ Ast: \_\_\_\_\_

**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?
	1. How can you tell?

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

1. Place the larger wooden block on the table with the larger hole facing up.
2. Draw 30 mL of air into the syringe and place the rubber tip over the end to seal it off.
3. Place the syringe into the hole in the wooden block, tip first, so that the syringe is standing up in the block.
4. Gently place the smaller wooden block over the top of the syringe so that it balances on the gray part.
5. 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.
	1. *NOTE: You may have to gently tap the assembly to reduce the effects of friction.*
6. 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.
	1. *NOTE: You may have to gently tap the assembly to reduce the effects of friction.*
7. Calculate an average volume of air per book added in your data table.
8. 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 Average 1&2 |
| 1 |  | 1 |  |  |
| 2 |  | 2 |  |  |
| 3 |  | 3 |  |  |
| 4 |  | 4 |  |  |
| 5 |  | 5 |  |  |

VOLUME vs. PRESSURE

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| AVG. VOLUME (mL) | 30 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 0 | 1 | 2 | 3 | 4 | 5 |  |
| PRESSURE (NUMBER OF BOOKS) |

1. Describe the relationship between PRESSURE and VOLUME in a gas based on your graph.
2. Did the amount of gas inside the syringe change during your investigation (assume the set-up is air-tight).

***BOYLE’S LAW states that the product of the volume and pressure of a gas is approximately constant at constant temperature.***

1. According to Boyle’s Law, what must happen to the volume of a gas if the pressure goes up?
2. What must happen to the pressure of a gas if the volume goes down?
3. How does Boyle’s Law relate to DENSITY?