Title of Lab Experiment

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Date Performed .... February 25, 2015
Partners .... None
Instructor .... Ari Raisa

1 Purpose

To find the relationship between pressure and volume at a constant temperature for a fixed amount of air.

2 Hypothesis

I predict that when volume increases pressure will decrease.

3 Materials

-Syringe -Gas Pressure Censor

4 Procedure

1. Set syringe at 5 mL 2. Attach syringe to pressure gauge (do not push, twist it, there are grooves) 3. Record pressure at 5 mL to 20 mL at 5, 7.5, 10, 12.5, 15, 17.5, and 20.
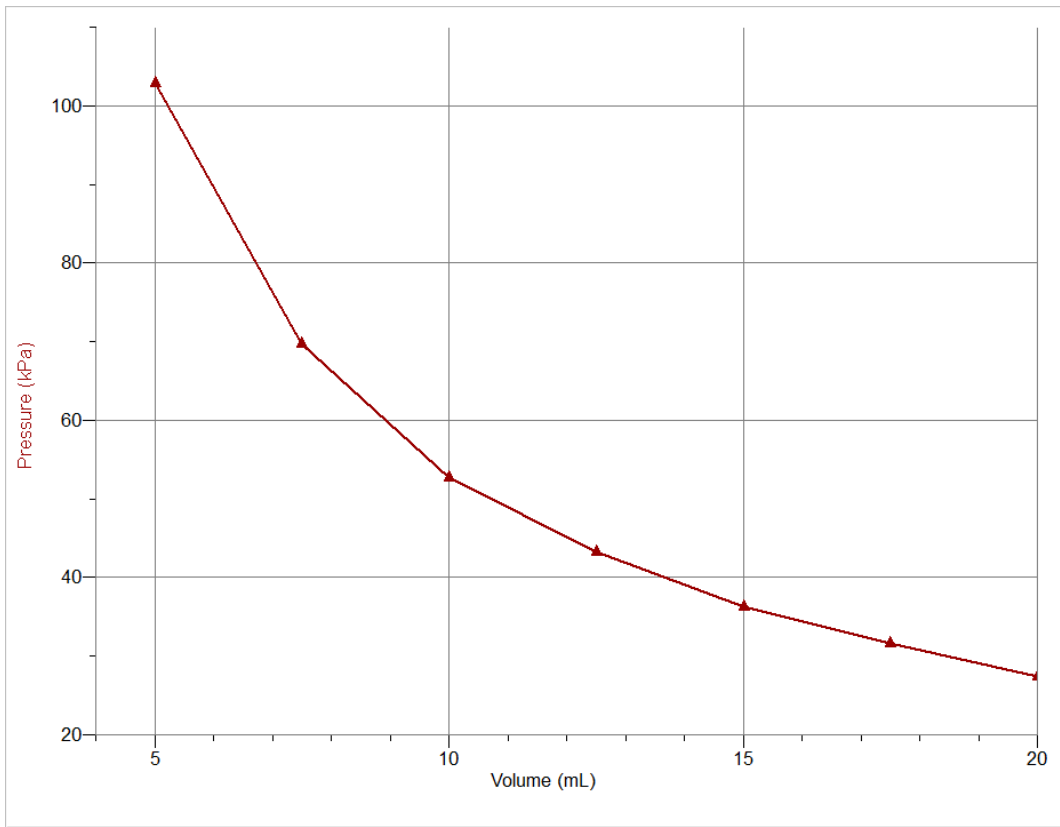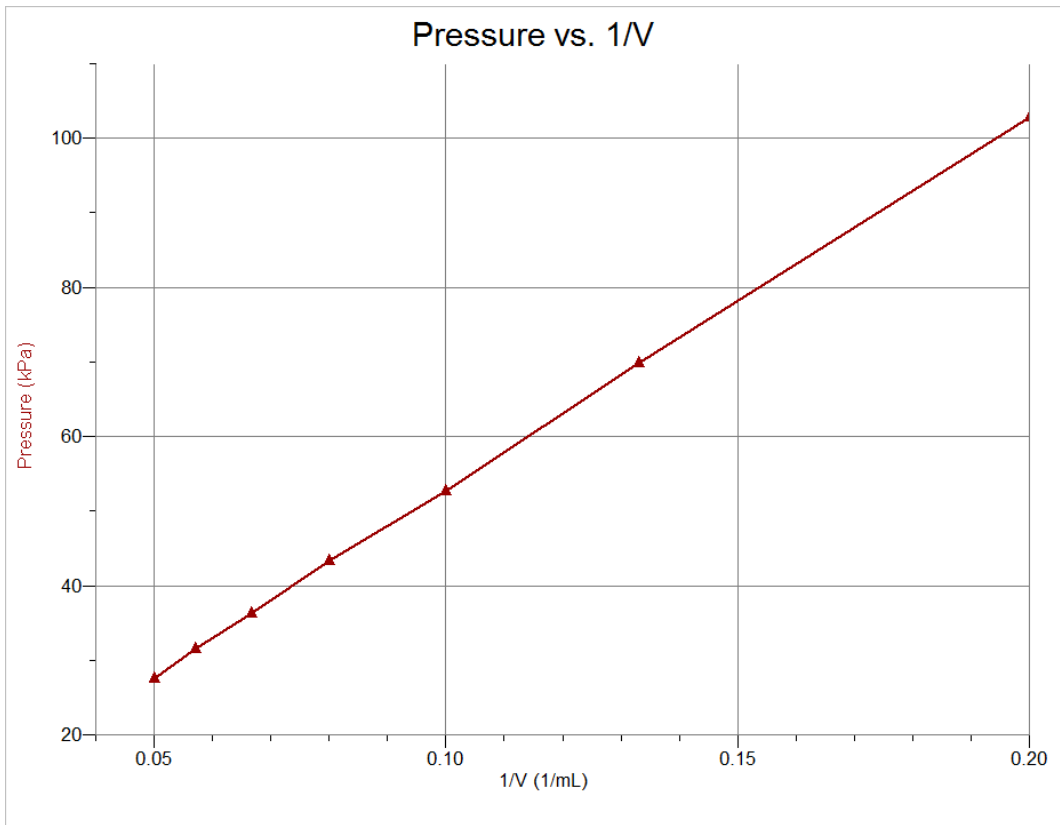
Figure 1: Graph 1

Figure 2: Graph 2

5   Data

6   Discussion

A) No terms to define given

B) In the results of the experiment as the volume increased, pressure seemed to decrease as well. When volume went from 5 to 10mL, pressure went down by approximately half its original value. The decrease was true throughout the experiment, when volume was increase, pressure would always decrease.

C) 1. Since pressure went from 102.84 to 52.70 when volume went from 5.0 to 10mL, pressure was halved

2. Since pressure went from 27.47 to 52.70 when volume went from 20 to 10mL, pressure was doubled

3. Since pressure went from 102.84 to 31.57 when pressure went from 5 to 15mL, pressure was decreased by two thirds.

4. I think the relationship between pressure and volume of a confined gas is inverse. My reasoning for this is that every time volume changes, pressure also changes by the reciprocal of the factor you multiplied it by. Pressure is halved when volume is doubled, doubled when volume is halved, cut by 1/3rd when volume is tripled, etc.

5. Based on the data, I'd expect the pressure to be approximately 13.753. The previous answers show pressure being multiplied by the reciprocal of the factor that volume is increased by. Volume was doubled from 20mL, so pressure is halved (27.47 to 13.753)

6. Since volume was halved, pressure will change from 102.84 to 51.42.

7. Air and temperature are assumed to be constant.

8. I multiplied P by V and got the following values: 574.2 at 5mL, 523.35 at 7.5mL, 527 at 10mL, 541 at 12.5mL, 543.3 at 15mL, 552.475 at 17.5mL, and 559.4 at 20mL.

9. The values I got were very constant and showed a steady increase.

10. An appropriate equation would be PV = k. Boyle's law states that the pressure exerted by a gas is inversely proportional to its volume if held at a constant temperature.

D) Critique: The method of changing the pressure could not have been completely accurate. Having someone pull until the syringe reaches the corresponding mL allows room for human error. Only a machine can set the pressure to an exact point.

7   Conclusion

A) My hypothesis, although it was a guess, was correct. Pressure always decreases when volume increases and vice versa. The relationship between pressure and volume was inverse, pressure is multiplied by the reciprocal of how much volume was changed by every time.

B) 1. I learned the relationship between pressure and volume 2. I learned a way of observing the relationship between pressure and volume 3. I learned what Boyle's law is.