

Ideal Gas Law Lab

Procedure

Make a chart with Quantity Measured/Symbol for Measurement/Instrument Used. Briefly, but completely, describe the procedure for this lab – and include a labeled sketch.

Data

Record the room temperature, syringe diameter, masses used and volumes measured. Make a column for the pressure of the gas in the syringe.

Graphs

Using appropriate scales, labels and units, graph Pressure (P) vs. Volume (V). Think of a suitable title and label your axes. Figure out how to linearize this data, create a new data table and graph your linearized data. Find the best fits line of this linear graph.

Questions

- 1) Draw a FBD of the forces acting on the plunger. Use your FBD to create an equation for the pressure of the gas. Show one example of the calculations used to find this pressure.
- 2) Determine the number of moles of air in the syringe using your initial volume and temperature. Show your work.
- 3) Find the equation of your best fits line. Show your work.
- 4) Use the ideal gas law formula, the temperature, number of moles and your slope, to find an experimental value for the universal gas constant, R . Show your work.
- 5) The universal gas constant is, of course, $8.31 \text{ J/mol}\cdot\text{K}$. Use this as the accepted value and find the percent error for your experimental result.

Error Analysis

Thoroughly explain what the main sources of error are for this lab, and how you would correct them.



Why science teachers are not asked to monitor recess.