

Gas Laws Lab

Using Atomsmith Classroom Online

Directions

Make a copy of this Google Slides presentation and save it to your own Google Drive.

Share it with your lab partner.

Work together through each of the four lab activities.

Be ready to present your data to the class for one of the activities.

Introduction

For this lab, you will use Atomsmith Classroom Online to explore the properties of gases - and specifically four relationships:

<u>IV</u>	<u>DV</u>	<u>CV</u>
Temperature	Pressure	n, V
Volume	Pressure	?, ?
Temperature	Volume	?, ?
Amount (moles)	Pressure	?, ?

Lab 1: Temperature and Pressure

Using the “Live Lab” feature of Atomsmith Classroom Online, design an experiment to collect data to test the following research question:

How does temperature affect the pressure of a fixed mass of gas?

Data for Lab 1

Use this slide to collect your raw (and processed) data. You can use Google Sheets or Excel to collect and process the data, then paste back here. The choice is yours. Since data collection within Atomsmith Classroom online is relatively easy, I recommend 8 levels of IV instead of 5.

Graph for Lab 1

Graph your data using Logger Pro (or a spreadsheet) and paste your graph here. Make sure to include labels with your axes.

Lab 1: Temperature and Pressure

Answer the research question - giving a full explanation of the relationship.

How does temperature affect the pressure of a fixed mass of gas?

Lab 2: Volume and Pressure

Using the “Live Lab” feature of Atomsmith Classroom Online, design an experiment to collect data to test the following research question:

How does volume affect the pressure of a fixed mass of gas?

Data for Lab 2

Use this slide to collect your raw (and processed) data.

Graph for Lab 2

Graph your data using Logger Pro (or a spreadsheet) and paste your graph here. Make sure to include labels with your axes.

Lab 2: Volume and Pressure

Answer the research question - giving a full explanation of the relationship.

How does volume affect the pressure of a fixed mass of gas?

Lab 3: Temperature and Volume

Using the “Live Lab” feature of Atomsmith Classroom Online, design an experiment to collect data to test the following research question:

How does temperature affect the volume of a fixed mass of gas?

Data for Lab 3

Use this slide to collect your raw (and processed) data.

Graph for Lab 3

Graph your data using Logger Pro (or a spreadsheet) and paste your graph here. Make sure to include labels with your axes.

Lab 3: Temperature and Volume

Answer the research question - giving a full explanation of the relationship.

How does temperature affect the volume of a fixed mass of gas?

Lab 4: Amount and Pressure

Using the “Live Lab” feature of Atomsmith Classroom Online, design an experiment to collect data to test the following research question:

How does the amount of gas (in moles) affect the pressure of the gas at a fixed volume and temperature?

Data for Lab 4

Use this slide to collect your raw (and processed) data.

Graph for Lab 4

Graph your data using Logger Pro (or a spreadsheet) and paste your graph here. Make sure to include labels with your axes.

Lab 4: Amount and Pressure

Answer the research question - giving a full explanation of the relationship.

How does the amount of gas (in moles) affect the pressure of the gas at a fixed volume and temperature?

Mathematical Relationships:

Write an equation for each relationship:

1. Temperature and Pressure
2. Volume and Pressure
3. Temperature and Volume
4. Amount and Pressure