

Name _____ Date _____ Block _____

Partner (s): _____

Mini Gas Law Rotation Experiments

Purpose: To understand gas laws based on their relationships to temperature, pressure, amount of gas and volume.

Safety

- 1) Don't eat or drink anything in the lab.
- 2) Always wear eye protection.
- 3) Don't play around – treat the lab with respect.
- 4) Hot plates are HOT! Be careful!
- 5) Do not perform any of these experiments outside of the chemistry class room

General Directions: Each group will rotate from station to station to complete each lab. Make sure your observations are detailed.

Lab Report Form

Gas Law Experiment #1: Egg in a Bottle

Observation of Egg/location	Observation:
1. Hard boiled egg placed on neck of bottle.	
2. After lit paper placed in bottle	
3. After bottle is tipped upside down	
4. After blowing into bottle	

Conclusion: Write a summary of explaining what happened in this teacher demonstration. Remember to use appropriate gas law terms.

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Gas Law Experiment #2: Invisible Giant

Observations (Attention to detail is important):

a. What happened to the can? _____

b. **Circle** the variables tested in this experiment:

temperature pressure volume gas amount

Gas Law Experiment #3: Marshmallow Surprise

Part I:

Observation when Syringed is pulled (Attention to detail is important):

Part II:

a. Observation when Syringed is pushed (Attention to detail is important):

b. **Circle** the variables tested in this experiment:

temperature pressure volume gas amount

c. Complete this: As _____ increases, _____ decreases.

d. The relationship between these variables is _____ (*direct, inverse*)

Gas Law Experiment #4: The Cartesian Diver

Observations (Attention to detail is important):

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a. An object floats in water when its' density is _____ than the water.

b. Why does the dropper initially float in the water?

c. What happens to the volume of the air trapped in the dropper when you squeeze the bottle?

d. If the air in the dropper contracts, what happens to its density?

e. **Explain** why the dropper sinks when you squeeze the bottle. Use terms like **pressure, volume, compressible, and density.**

Gas Law Experiment #5: Happy Birthday

Observations (Attention to detail is important):

a. What did you see around the mouth of the flask when you first put it into the water? How can you explain this? Use terms like **temperature** and **volume** in your explanation.

b. What effect did the water have on the gas inside the flask? How do you know?

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- c. Many people mistakenly believe that the water rises into the flask because the candle is removing oxygen from the air. This explanation is not correct because the candle replaces oxygen with carbon dioxide. What is the actual explanation for why the water rose up into the flask? Use terms like **cool**, **volume**, and **pressure** in your explanation.

Gas Law Experiment #6: Zinc Reaction

Elapsed time for zinc and 1M HCl: _____

Elapsed time for zinc and 3M HCl: _____

Observations (Attention to detail is important):

- a. Circle the variables tested in this experiment:
 temperature **pressure** **volume** **gas amount**
- b. Complete this: As _____ increases/decreases, _____
 increases/decreases.
- c. The relationship between these variables is _____ (*direct, inverse*)

Gas Law Experiment #7: Syringe Temperature

Temperature of Water	Volume of Syringe
90 °C	
80 °C	
70 °C	
60 °C	
50 °C	
40 °C	
30 °C	

- a. Circle the variables tested in this experiment:

Partner (s): _____

temperature pressure volume gas amount

b. Complete this: As _____ increases/decreases, _____ increases/decreases.

c. The relationship between these variables is _____ (*direct, inverse*)

Gas Law Experiment #8: Strange Balloon

a. Observe and record what you see (Attention to detail is important).

b. **Circle** the variables tested in this experiment:

temperature pressure volume gas amount

b. Complete this: As _____ increases, _____ increases.

c. The relationship between these variables is _____ (*direct, inverse*)

Gas Law Experiment #9: Syringe Pressure

# of objects	Syringe Reading	
	Trial 1	Trial 2
1		
2		
3		
4		

a. **Circle** the variables tested in this experiment:

temperature pressure volume gas amount

b. Complete this: As _____ increases/decreases, _____ increases/decreases.

c. The relationship between these variables is _____ (*direct, inverse*)