Name: _____ Group: _____ Date: _____

LAB 27
EXPERIMENT

GAS PRESSURE

STUDENT BOOK	Chapter 3, page 79
TOOLBOX	Page 21

Goal

Part I

Verify the relationship between pressure and volume of a gas.

1. What is the independent variable in this lab?

_____

2. What is the dependent variable in this lab?

_____

Hypothesis

I think that _____

because _____

Part II

Verify the relationship between pressure and volume of different gases.

1. What is the independent variable in this lab?

_____

2. What is the dependent variable in this lab?

_____

Hypothesis

I think that _____

because _____

Materials

- 30-mL syringe and stopper
- 3 cylinders each of a different gas: nitrogen (N_2), oxygen (O_2) and carbon dioxide (CO_2)
- flexible tubing
- aneroid gauge

Name: _____ Group: _____ Date: _____

Procedure

1. Fill the syringe with 20 mL of nitrogen.
- *a)* Push down the plunger fully into the syringe.
- *b)* Connect the tip of the syringe to the rubber tip of one gas cylinder.
- *c)* Carefully open the valve of the gas cylinder.
- *d)* Quickly close the valve when the plunger reaches 20 mL.
- *e)* Disconnect and quickly stopper the syringe.

2. Connect the syringe to the aneroid gauge with flexible tubing. Measure and record the pressure.

3. Decrease the volume of gas by 2 mL by pressing on the plunger. Measure and record the pressure.

4. Repeat step 3 until the volume of gas reaches 8 mL.

5. Disconnect and empty the syringe.

6. Repeat steps 1 to 5 for each other gas.

7. Clean up and put away materials.

Results

Record your results in the table below. Give the table a title.

Title:

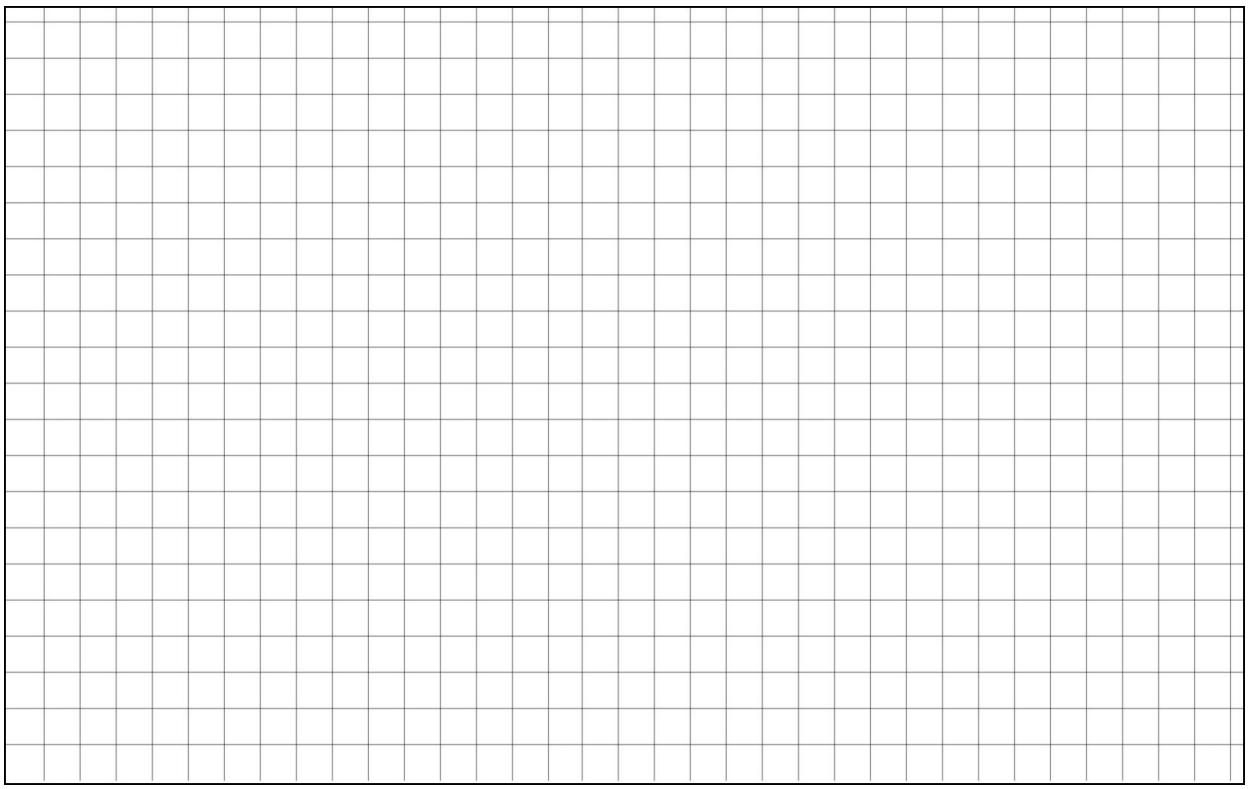
Volume (mL)	Pressure of nitrogen (kPa)	Pressure of oxygen (kPa)	Pressure of carbon dioxide (kPa)

Name: _____ Group: _____ Date: _____

Graph

Plot the pressure of each gas according to volume. Give the graph a title.

Title:



Analysis of the results

1. What happens to the volume of gas when the plunger is pressed down in the syringe?

_____

2. If the plunger is pulled up in the syringe, what happens to the volume of the gas?

_____

3. Describe the shape of the three curves in the diagram.

_____

_____

4. How does pressure vary according to the volume of gas?

_____

_____

Name: _____ Group: _____ Date: _____

5. What are the possible sources of error in this lab?

_____

_____

6. How could you improve the protocol for this lab?

_____

_____

Conclusion

1. Complete the following sentences:

a) When volume decreases, pressure of a gas _____

b) When volume increases, pressure of a gas _____

c) The nature of a gas _____ the relationship between pressure and volume.

2. Was your hypothesis confirmed or not? Explain your answer.

_____

_____

Application

Would the relationship between pressure and volume be the same if a mixture of several gases was used? Explain your answer.

_____

_____