

# PHYSICS LABORATORY: Pressure and Volume

## **BACKGROUND INFORMATION AND PURPOSE**

You know that for an ideal gas, Pressure  $P$ , Volume  $V$ , and Temperature  $T$  are related by the equation of state (ideal gas law):

$$PV = nRT$$

In this laboratory you will attempt to estimate the number of air molecules in a syringe.

## **DATA COLLECTION AND PROCESSING (DCP)**

Using a Vernier pressure sensor and a syringe, collect at least 6 data points for pressure and volume. As usual, at least 3 trials for each are required.

Remember, you must linearize appropriate data and analyze the gradient of that line to obtain your experimental value for  $k$ .

## **CONCLUSION AND EVALUATION (CE)**

Do some research to determine the theoretical number of molecules in your given volume and calculate your percent error in your experimental value.

As always, fully consider errors and uncertainties in your conclusion as well as significant sources of error and how to address them.

### **Remember:**

1. Refer to the 'Physics Lab Report Guide' before submitting your report.
2. Attach the 'Physics Lab Report Rubric' as a cover page to your paper copy.

***You will be marked on Data Collection and Processing (DCP) and Conclusion and Evaluation (CE) for this lab.***