Lab: Boyle's Law—Datasheet **Name_____**

Data:

- Pressure is defined as *force per unit area:* P = Force/Area
- When a book rests on top of the plunger, the **pressure** it exerts equals the ***weight of the book divided by the area of the bottom of the plunger***.

Diameter of syringe =_____cm = _____m
Weight (force) of 1 book =_____N

Calculate the area of the circle in m^2 using the formula πr^2:

Using the fact that pressure is defined as force ÷ area, what is the pressure exerted by 1 book in N/m^2?

If 1 N/m^2 = 1 Pascal (Pa), what is the pressure exerted by 1 book in Pa? _____
Using conversion facts, convert Pa to kPa:

Exerting Pressure	Pressure (kPa)	Volume of Gas (cm^3)	P/V (kPa/cm^3)	P•V ($kPa \cdot cm^3$)
atmosphere				
atmosphere + 1 book				
atmosphere + 2 books				
atmosphere + 3 books				
atmosphere + 4 books				
atmosphere + 5 books				

Use the graph paper below to make a graph of "pressure vs. volume". *Use proper technique for scientific graphing and be sure to draw a best-fit line.*

Conclusions:

As the pressure exerted on the air inside the syringe increased, the volume (increased, decreased). Volume and pressure are (directly, inversely) proportional.

Look at the last two columns of your data table. Within bounds of experimental error, the relationship between pressure and volume of a gas is ($P/V = k$, $P \cdot V = k$). This relationship is known as _____ _____. (Look at the title of this lab!)
