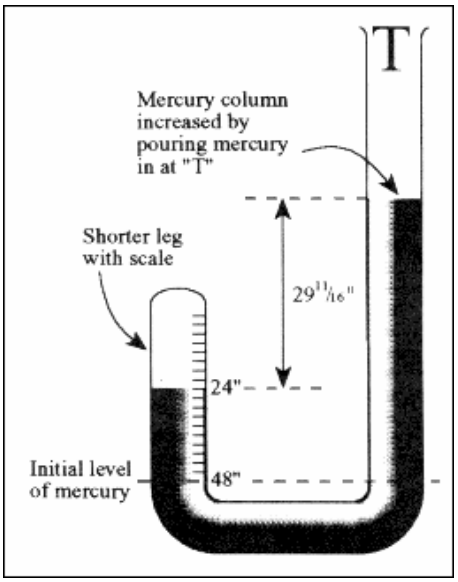
Boyle's Experiment

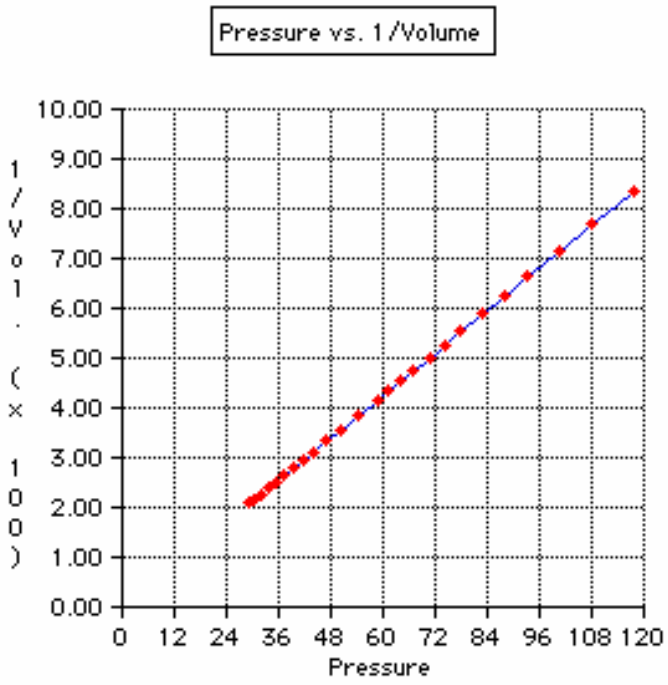
The information below was published in "A Defence of the Doctrine Touching the Spring And Weight of the Air . . . .," published in 1662.
Boyle: For the better understanding of this experiment, it may not be amiss to take notice of the following particulars:



1. That the tube being so tall, that we could not conveniently make use of it in a chamber, we were fain to use it on a pair of stairs, which yet were very lightsome, the tube being for preservation's sake by strings so suspended, that it did scarce touch the box presently to be mentioned.
2. The lower and crooked part of the pipe was placed in a square wooden box, of a good largeness and depth, to prevent the loss of the quicksilver, that might fall aside in the transfusion from the vessel into the pipe, and to receive the whole quicksilver in case the tube should break.
3. That we were two to make the observation together, the one to take notice at the bottom, how the quicksilver rose in the shorter cylinder, and the other to pour in at the top of the longer; it being very hard and troublesome for one man alone to do both accurately.

4. That the quicksilver was poured in but by little and little, according to the direction of him that observed below; it being far easier to pour in more, than to take out any, in case too much at once had been poured in.

(The above figure is from an article in the May 1992 issue of the *Journal of College Science Teaching.* Pages 363-365 is an excellent article by Frank Fazio titled "Using Robert Boyle's Original Data in the Physics and Chemistry Classrooms.")



The graph is of Robert Boyle's data.
Source: The ChemTeam. "Robert Boyle and his Data." http://dbhs.wvusd.k12.ca.us/webdocs/GasLaw/Gas-Boyle-Data.html (accessed March 22, 2005).

Friendly Reminders:

Experimental variable: the treatment; the variable that is purposely changed by the experimenter
Dependent variable: the variable that responds to the treatment
Control: experimental trial *without* the treatment; used as basis for comparison
Problem statement: a question that seeks a relationship between variables; both the experimental and dependent variables should be included

Possible problem statement formats:

How does _____ affect _____?
What is the relationship between _____ and _____?
What is the effect of _____ on _____?
How is _____ related to _____?

Hypothesis: a tentative relationship is stated/predicted

Possible format: If the dependent variable is **related** to the independent variable, then I predict.....will happen, because .....

"Then" is followed by a prediction of what will happen if you *test the relationship*.

Boyle's Experiment	
Experimental variable	
Dependent variable	
Problem Statement	
Conclusion	