

Station 2:

The Quantity of Air in our Laboratory

A rich donor, who is also an alumnus of Brooklyn Technical High School, has provided funds for the air conditioning of our physics laboratories. Too large an air conditioner makes a room cold and clammy while an underpowered unit will not cool adequately. In order to determine the appropriate cooling capacity of the air conditioners, join a group of no more than four students to measure the volume of air in the physics laboratory room.

Your group will be provided with two meter sticks. Some of the problems you will encounter is that the ceiling is too high to measure directly; furniture in the room takes up volume; the furniture is of irregular shape making the calculation of its volume difficult. The above is not an exhaustive list—there are other problems. You will have to make some assumptions and approximations, so that collaboration is advised both within and between groups.

When you have completed your task compare your determination of the room's available volume with that of the other groups and include the comparison in your report. Each group will be responsible for collectively submitting a single report consisting of the following elements:

- Aim
- Description of methods used and assumptions made
- Tabulation of data
- Calculations
- Statement of results
- Numerical estimate of uncertainty, and the source of this uncertainty.

Please be sure to list each group member's name at the beginning of the report. A class discussion of this laboratory exercise will be held after the reports are graded and returned.