

Name_____

Date_____

Physics 216: Homework for Lab 10:
Ideal Gases and the First Law of Thermodynamics
(Due at the beginning of Lab 11)

Read through the Experimental Uncertainty handout and do the following exercise.

1. In Activity 1-3, I measured the inner diameter of the tube as 3.5 ± 0.1 mm and the length as 37.5 ± 0.5 cm.

a) From these data, calculate the volume of the tube and its absolute uncertainty. Show your work. Report the volume and the uncertainty properly rounded and with units.

b) Which of the two measurements contributes more to the overall uncertainty in the volume? How can you tell?

c) From the first part of Activity 1-3, I determined from the graph that the volume of the tube was 3.1 ± 0.2 cm³. Does this measurement agree with the volume obtained from the direct measurement (what you calculated in a)? Explain your reasoning.