

Lab2: Manometer

Group Number: _____ Section Number: _____

Name _____

Other team members _____

(Circle the name of the person who acted as leader/coordinator this week--make sure you get a turn every 4th lab)

SAFETY SECTION:

The manometer apparatus contains water as well as a relatively safe hydrocarbon (glycerin). If you apply too much pressure the fluids could be expelled from the manometer, so use caution when applying pressure. If liquids are spilled they must be cleaned up promptly. Please alert the instructor or TA if you have a safety incident. As always, long pants, closed toed shoes and safety glasses must be worn at all times.

Begin your lab by holding a team planning session (3 minutes):

1. Review the lab and read the safety section if you haven't already.
2. One person should serve as leader/coordinator. All team members should strive to take make the team function better through various roles: observer, recorder, devil's advocate, etc. Ask for each other's input and opinions, help each other, and try to come to consensus after an appropriate amount of brainstorming and analysis.
3. Make a plan for how you will complete the lab activities. Each person should fill out their own lab report as activities are completed. At the end of the hour, after cleaning up, get the TA to initial the end of your report.

Background: Pressure is a fundamental quantity used in chemical engineering. This lab helps you to get experience measuring pressure with a manometer and other instruments.

Project: Go to the manometer station, perform the indicated activities, and answer the questions in the spaces below. The stations and questions do not need to be done in any particular order.

1. What are the formulas that convert between absolute and gauge pressure and between pressure difference and height of fluid?

- c. Prove that your independent measurements are measuring essentially the same pressure, for one case.

- 4. Use your manometer results above to deduce the density of glycerin relative to water. How good is your measurement?

- 5.
 - a. A practical range for a water manometer might be about a meter high. How much pressure change can this measure?

 - b. Consider that pressure range as a dynamic pressure, what is the corresponding velocity range of air? Of water?

c. Redo parts a and b for mercury.

d. Some manometers are inclined. What advantage would that have?

Grading Rubric (to be completed by TAs)

	Points	Max
Completed Activities and write-up		6
Accurate calculations and reasonable estimates		3
Safety and cleanup: TA initial: _____		1
Total		10