

Pre-Lab on Measurements Instructions:

Print out these pages. Feel free to refer to the lab instructions and other materials, your physics textbook, other students, etc. to help you to ponder, understand, and work out answers to the following question(s). Attach additional pages to show your work and reference item numbers on your attached pages.

Pre-Lab Questions:

- 1) What do we mean by least count? Doubtful figure? Can they be the same? Why? Can they be different? Why?
- 2) Does a smaller least count indicate greater precision or greater accuracy?
- 3) Discuss the difference between a mass balance and spring scale. Will they read the same on the Moon as on Earth? Explain.
- 4) Discuss the Vernier scale and how it works. Will it improve accuracy or precision? Explain.
- 5) Explain thoroughly what to do if an instrument not zeroed. If an instrument is incapable of being zeroed, explain thoroughly what you need to do to accommodate this.
- 6) Why do we need a ratchet on the micrometer? Explain its function thoroughly.
- 7) Explain how a micrometer works. If the thimble's maximum reading is only 0.5 mm, how is it possible to measure greater than 0.5 mm? Explain thoroughly.
- 8) When calculating the mean and standard deviation of volume, why must you calculate volume first and then calculate the mean and standard deviation of the calculated volumes? Explain.
- 9) What is the mass of 1 cm³ of gold? What is the mass of 1 cm³ of silver? Which is denser? Explain thoroughly what density is and what it means.
- 10) How do you measure the volume of an irregularly shaped object and why does this work? Explain thoroughly.