Principles of Physics: Problem Set #1

Quantifying the World ... units, order of magnitude, math basics

Problem sets are an essential part of this class ... a lot of learning will happen as you wrestle with these problems and discuss them with me and your class-mates. Your task is to write out neat and organized solutions to these problems. I am much more interested in your solution than in the final answer (in fact, in many cases I will give you the final answer)! Pictures and explanations are often helpful. If you work these out on your ipad you need to print out a hard-copy to submit.

Due: Friday Aug. 31 in class

Notes: 1) Our first physics study session is this Thursday (8/30) 6:30-9:30 in Gerstacker 123.
2) Our first quiz is this Friday (8/31).
3) Lab starts on 9/4. You need to purchase a quadrille-ruled lab notebook before your first lab.

Reading assignment:

for Wed, Ch 1 (pp 1-12) [quantifying size and energy]
Ch 2 (pp 16-21) [math skills ... numbers and units]
for Fri, Ch 2 (pp 21-25) [math skills ... proportions and graphs]

Problem assignment:

(WARNING - The problem naming/numbering scheme in the text is confusing, so ALWAYS double check whether a problem is guided review (**GR**), skill building (**SB**), **Synthesis**, etc.)

CHAPTER 1

GR 1 (designing a scale model of a hydrogen atom)

SB 1 (designing a scale model of the solar system)
SB 4 (human chain from earth to sun?)
SB 6 (fundamental forces)

Synthesis 1 (fraction of volume of solar system occupied by the sun)

CHAPTER 2

GR 5 (proton and electron mass ... using scientific notation)
GR 7 (unit conversion ... show all steps)