Che 111: Chapter 1 Practice Problems KEY

1. Fill in the blanks in the table below

Unit	Type of Measurement	Abbreviation
second	Time	s
gram	mass	g
liter	volume	L
kelvin	temperature	K
meter	length	m

2. Convert the following ordinary numbers to scientific notation.
   a. 10,000 1×10^4
   b. 0.0001 1×10^{-4}
   c. 100 1×10^2
   d. 0.01 1×10^{-2}

3. Convert the following numbers expressed in scientific notation to ordinary numbers
   a. 1×10^5 100,000
   b. 1×10^{-6} 0.000001

4. Complete the following calculations and report answers with the correct number of significant figures.
   a. 3432.32 + 321.1 - 67.123 = 3686.3
   b. 3432.32 x 321.1 / 67.123 = 16420

5. You find an old bathroom scale at a garage sale on your way home from getting a physical exam from your doctor. You step on the scale, and it reads 135 lb. You step off and step back on, and it reads 134 lb. You do this three more times and get readings of 135 lb, 136 lb, and 135 lb.
   a. What is the precision of this old bathroom scale? Would you consider this adequate precision for the type of measurement you are making?
      The precision of the old bathroom scale is good; the measurements are all close to one another. This is adequate for monitoring weight at home.
   b. The much more carefully constructed and better‑maintained scale at the doctor's office reads 126 lb. Assuming that you are wearing the same clothes that you wore when the doctor weighed you, do you think the accuracy of the old bathroom scale is high or low?

The accuracy of the old bathroom scale is low. It is measuring a weight that is 10 lbs higher than the more trust-worthy scale at the doctor's office.