01/21/14
Workshop 1
Chem. 103, Spring 2014

Completed reports to be submitted by 01/30/2014, 2.00 PM (no late submission)

Chapter 1: Chemistry - the Science of Change

1. a) Read the 'Scientific Method' section (page 3-4) and discuss in groups how Observation → Hypothesis → Experiment → Theoretical model → Further Experiment worked for eradication of small pox. (10 minutes)
   b) Draw the flowchart given in Figure 1.2. (10 minutes)
   c) Provide a concise definition of 'scientific method'.

2. Home assignments
   Provide short definitions of the following giving two examples in each case (pages 5-7).
   a) substance, b) mixture, c) homogeneous mixture, d) heterogeneous mixture, e) quantitative properties, f) qualitative properties, g) physical changes, h) chemical changes, i) extensive properties, j) intensive properties.

3. a) Read section 1.5 and discuss in groups how significant figures and uncertainty in measurement are linked.
   b) Provide an example of two measurements of same flash disk and show how the uncertainties are different (Figure 1.9). (10 minutes)

4. Home reading assignment: Pages 14 and 15 dealing with identifying the number of significant figures and calculations with measured numbers.

5. a) Discuss in groups and provide short definitions of accuracy and precision with concrete examples. (5 minutes)
   b) In-class exercise. Do review on page 18 (1.5.1 -1.5.6) (10 minutes).

6. Short lecture on *conversion factor* and *dimensional analysis*. Provide definitions (page 20) of these two terms with examples (*remember to use conversion factors and explicitly shown cancellation of units in all calculations throughout the course*) (15 minutes)

7. Home-assigned problems: 1.49, 1.67, 1.75, 1.87, 1.91, 1.93, 1.99, 1.105, 1.107, 1.113 (answers are given at the back of the book).

<u>General guidelines of problem solving and showing your work</u>: please use clean notebook pages to show complete work, clearly providing reasons, concise mathematical formulae (i.e. conversion factor), and explicitly showing cancellation of units (i.e. dimension analysis). In all calculations of numbers, provide the correct significant figures (please remember to follow page 15). If help needed, please indicate that in the class.