Chem 108, Fall 2005

SDS Assignment List #1
(Today is the first of several lists. You don’t have to do everything on the list but the more you do early in
the course, the more likely you can earn bonus points to help your grade. There will be more
assignments in the beginning of the course than the end.)

Note: Some of the following exercises require use of a computer with Internet access. If you do not
have such a computer at home or would rather use DVC’s computers, there are many computers
available on campus for drop-in use. Chemistry students most commonly use the PC’s in the open area
of the Computer Lab (first floor of the Library Building - assistance available), or the PCs in PS 110.

Activity #1. Assess your learning style and begin formulating a personal learning plan for the
semester. Take the automatically-scored Learning Styles Assessment on the web at
http://www.metamath.com/lsweb/dvclearn.htm Read the Learning Chemistry section in Chapter 1 and
look through the Study Tips web resources on our class website. To get credit for this activity, turn in to
me: the results from your Learning Style Assessment survey and a list of a few things you plan to do in
this class to make your style work best for you.

2 points. Final day is Thursday 9/1/05

Activity #2. Send me an email.
E-mail me from the email address you plan to use this semester and tell me something about
yourself that you didn’t say on the student info form. If you do not currently have an e-mail account,
you may sign up for one at one of the free email sites on the Internet. You can then access your email
through the DVC computers. Some popular free email sites are: Yahoo (go to www.yahoo.com) and
Hotmail (go to www.hotmail.msn.com)
1 point. Final due day for points is Friday 9/9/05

Activity #3. - Play “Element Games” (Element Matching, Element Hangman, and Element Math)
– go to http://www.jlab.org/services/pced/indexpages/elementgames.html (linked from our Web
Resources page) - do the Element Math part after reading Chapter 3.
To get credit for Element Matching Game, do the game at “medium” level until you get a score of 9
or more right out of 10. Then print the page with your results and score to turn in.
To get credit for Element Hangman, print the page that says “You won...” for three different games
and turn it in.
To get credit for Element Math, keep asking for questions until you get at least 10. Do this until you
get 9 or more out of 10 correct. Then print your results from the “How am I doing” section to turn in. If
you can’t get the “How am I doing” section to give a proper response, turn in a print copy of all your
answers or some other method of verifying your results.
It is expected that no two people will have the same set of questions on their results pages.
1 point each for Element Matching or Element Hangman or Element Math. Maximum credit = 2 pts.
Final due day for points is Wednesday 9/14/05

Activity #4. Solve a “Challenge Word Problem”. (Note: this is intended to follow the
material in chapter 2.) For full credit the problem below must be completely set up by the
dimensional analysis method in one continuous set-up, not in separate steps. After working the
problem out ahead of time, you will need to write the solution for me without notes either
during my office hour or during your lab time. You will be given a sheet containing the
question.
The problem: It is said that an average person shows obvious signs of intoxication at a blood level
concentration of 0.0030 g ethyl alcohol/mL of blood. How many fluid ounces of wine would a person
have to drink to reach this blood level concentration of ethyl alcohol? You will have to assume that all the alcohol from a drink is taken directly into the blood and none is metabolized or degraded by the body (neither of these is actually true). Also assume that the blood volume of an average human is 7.0 liters and that wine is 12% ethyl alcohol by volume with a density of 0.934 g/mL. The density of ethyl alcohol is 0.789 g/mL. (You will have to get an exact definition of % by volume to get this set up correctly. If you can’t find it, you can ask me.) You may work on the problem in pairs, if you wish, but each person may only have one partner. You must identify your partner, if any, and each person must write out the solution for me independently.

2 points max. Due by Wednesday 9/14/05

Activity #5. Write your own “Challenge Word Problem”. In order to be classified as a “Challenge Problem”, the problem must have some sort of story, include at least one relationship (stated in the problem) which is not a unit conversion or density, and need at least 6 factors other than the “given” number you start with to do it in the shortest way when you use no measurement conversions other than the ones on the handout or defined by metric prefixes. The problem may not be from our book or assignments. Turn in your problem and the solution worked out as completely as possible in dimensional analysis format. You may work on the problem in pairs, if you wish, but each person may have only one partner. Put both partners names on the paper. Be creative! Make the problem as “hairy” as possible. If you have an idea and need some assistance putting it together, come talk with me.

Here is an example of a problem written by a former 108 student. The relationship stated in the problem was 2.66 mg per second: “Meteorite maven, Robert Haag, thought that he got the bargain of his life when he purchased, for $400,000, what he thought was a 37 ton intergalactic meteor. But when he arrived in Argentina to pick up his weight in treasure he came upon the surprise of his life instead! The meteor, which was actually an unusual ice-like frozen formation, was made up of a strange substance unknown to man. Mr. Haag was astonished to find that his 37 ton meteor was no longer 37 tons. What he did learn, however, was that his meteor had been melting at the rate of 2.66 mg per second since it arrived on earth 4.0 centuries ago. How many pounds did his meteor weigh when he arrived in Argentina?”

Here is another one, this one was based on a true event. “The Valentine’s Day Near-Massacre!” “Although chocolate is a delicious tasty treat for humans to enjoy (especially on Valentine’s Day) it causes the opposite effect on animals. Chocolate contains a compound called theobromine (C7H8N4O2) that is poisonous and toxic when ingested by animals, especially dogs. It can cause gastrointestinal problems such as vomiting, diarrhea, and restlessness and hyperactivity if the dose is greater than 50 mg theobromine/kg weight of dog. Larger doses (100 mg theobromine/kg) can be fatal to dogs. The following is a list of doses of theobromine as they occur in three different types of chocolate.

- Milk chocolate: contains 65 mg theobromine per oz of chocolate
- Semi-sweet (dark) chocolate: contains 160 mg theobromine per oz of chocolate
- Bakers chocolate: contains 450 mg theobromine per oz of chocolate

On Valentine’s Day a 6 month old Golden Retriever puppy accidentally eats four Dove Chocolate Dark Chocolate Hearts. Dove Chocolate Dark Chocolate Hearts come in one pound bags. There are approximately 40 to 45 chocolate hearts per bag (consider average 43). The Golden Retriever puppy weighs 35 pounds. Is the dose that the dog ate toxic? Show evidence.”

3 points, Due by Thursday 9/22/05