This is a review worksheet. You can get up to 3 extra credit percentage points by completing this worksheet. Please write in answers to each question. By doing this, you will help yourself review the material in these chapters and will be well prepared for the test. **YOU MUST HAND IN THIS SHEET AT THE BEGINNING OF THE TEST PERIOD TO GET ANY CREDIT.** Place the sheet on the front desk when you enter the room, as I will not ask for them. You will get 3 points if the answer sheet is completely filled out, 2 points if it is mostly filled out, 1 point for more than half filled out, and zero for any less than half or not turning it in.

**ITEMS WHICH WILL BE PROVIDED**
- Periodic Table and list of elements from the inside front and back covers of your textbook.
- Any necessary constants from Table 1.9 or the inside back cover of the textbook or for unit conversions.
- Equations for density, temperature, and heat.
- Dilution equation, definition of $K_c$.
- Short list of solubility rules.
- You will need to bring your calculator.

**WHEN YOU ARRIVE AT THE TEST:**
- The instructor will arrive immediately after the preceding class.
- Turn in this review sheet when you arrive.
- Get out your pencil(s) and calculator. Put all else away.
- Pick up a MC sheet, test, and periodic table.
- Sit in any seat you wish, keeping at least one empty seat between you and your neighbor.
- You may begin immediately. Read instructions on test.

**ABOUT THE FORMAT OF THE TEST:**
- The test will have 35-40 multiple choice questions. There will be 4 answers per question, and only one will be correct. There will be no penalty for wrong answers.
- **You will need a #2 pencil** for the test because it is machine graded.
- You will need to bring your calculator
- If for some reason you miss the test (not something I condone except in extreme circumstances) **IT IS YOUR RESPONSIBILITY** to contact me to arrange for a make up test. Contact Donna de Vries (email or x6293).

**HOW TO PREPARE:**
1. Fill out this review sheet. The act of writing and/or rewriting the answers to problems and the definitions will improve your understanding and memory.
2. Do the practice problems.
3. To practice multiple-choice, review previous year's tests and the MC examples from class.
4. Copies of the tests from two years ago are available on the course web page.

**ABOUT THE HOMEWORK:**
- Any and all questions from homework are fair game. In general, I will not give exact reproductions of homework questions, but questions similar in form, style, or concept.

- Answer keys for the assigned homework will be available on course web page by Thursday. It is your responsibility to check your assignment against the answer key to ensure you understand what you have done.

**TO MEMORIZE**
- Table 8.12--Solutions, Colloids, Suspension
- Table 9.7--Chaning Equilibrium

At the end of each chapter is a glossary. You need to know these terms.

**QUESTIONS**

**Chapter 8: Solutions**
What is a solution? What are solvent and solute?

What does "like dissolves like" mean?

What is an electrolyte?

Compare and contrast non-, weak, and strong electrolytes. Give an example of each.

What is solubility?

What is the range of values for the solubility of different solutes in a solvent?

What are the solubility rules used for?

How do you determine if a precipitate will form if two solutions are mixed?

Define saturated and unsaturated.

What is a molecular equation?

What is an ionic equation?
What is a net ionic equation?  -At equilibrium, the concentration of reactants is \(\text{(zero/increasing/decreasing/no longer changing)}\).

What is concentration?  -What is the equilibrium constant?

What are two common concentration units?  -What general mathematical relationship is used to define the equilibrium constant expression?

What is dilution? What quantity(s) remains the same during the process of dilution?  -Do solids and pure liquids appear in the equilibrium constant expression?

Describe osmosis.

What is osmotic pressure?

Compare and contrast isotonic, hypertonic, and hypotonic solutions.

What is reverse osmosis and what is it used for?

**Chapter 9: Chemical Equilibrium**

-What is required for a reaction to occur?

-What is the activation energy?

-What effect does a catalyst have on the rate of a reaction? Why?

-What is LeChatelier's principle?

-Which of the following changes will shift an exothermic reaction towards the products?
  - Removing product
  - Increasing temperature
  - Adding a catalyst
  - Adding reactant

-At equilibrium, the concentration of reactants is \(\text{(zero/increasing/decreasing/no longer changing)}\).

-What does the value of \(K\) tell us about the relative amounts of reactants and products?
PRACTICE PROBLEMS

Note that these are all problems for which you have answers in your solutions manual. These problems, in class examples, and problems from your homework may show up in similar form on the test.
I find the following method to be useful for doing problems. Without referencing the solutions manual, start doing a problem. When you get stuck, look up the step you can't figure out, then close the solutions manual and continue working the problem. Do this until you have completed the solution. Throw away that sheet of paper and start working the problem again. Repeat this process until you can complete the problem without using the solutions manual and without having memorized the solution—that is, when you UNDERSTAND how to do that kind of problem.
The spaces below do not necessarily reflect the length of the problem. They usually are shorter.

8.29

8.43

8.59

9.31

9.43

9.53