STARS: S T A R S CHEMISTRY

CHEMISTRY

SOME HELPFUL HINTS:

↳ Make sure you read the chapter BEFORE you go to class. The lectures will make a lot more sense if the material is familiar to you.

↳ Go to class! And while you're there, take notes. Write down the examples to problems (even if you understand them) so you can refer back to them later.

↳ Do the problems in the middle of the chapter. Do the problems at the ends of the chapter. And do them now. It's a lot healthier on your stress level to get ahead in the readings or the problems as opposed to behind.

↳ Use the answer book as a reference to help you out after you've tried to do a problem. Most of the answers show you step by step how do work them out.

↳ Ask questions. Either in class, or during your prof's office hours. Find out if anyone in your hall is in your class and study with them. A lot of halls will help you set up weekly study groups as well.

↳ Read through the examples. Look at the charts. Check out the graphs. A lot of chemistry is visual, and it's a lot harder to read without seeing the setup of the problems.

↳ When you're studying for a test, go back over the notes and highlight all important formulas, theorys, names, concepts, and vocabulary. Find out from your professor if there are examples of test questions in the review problems at the end of each chapter. Find out what format the test will be; it helps to know if you need to bring a calculator to complete equations or if the questions will be true/false or short answer/essay.

↳ Most professors place tests on reserve in the library, or on the Whitman homepage, from previous years. These tests show you what to expect and work well as study guides.

↳ Familiarize yourself with the periodic table. You don't need to memorize it completely, but know what the letters stand for, and have a general idea of which row and column they're found in.

IMPORTANT THINGS TO REMEMBER WHEN WORKING OUT PROBLEMS/CALCULATIONS

1. Read the problem thoroughly first, and make sure to notice what information they give you, and exactly what they're asking you to figure out. Write down the information they give to you.
2. Think about what equations you could use to solve the problem. Remember to include units in every step of the problem. First, check and make sure you're dealing with the *correct* units. For example, if the data is given in centimeters and the unit for the answer is in meters, you'll have to convert the data to the correct units at the beginning of the problem
3. In working through the problem, make sure the units cancel. This is a good check that you've set up the problem correctly and your answer will be in the correct for at the end.
4. In writing the answer, make sure you include the correct number of significant figures, and don't forget to label the units.

DR. SKIP WADE OFFERS HIS ADVICE ON SUCCEEDING IN (OR PASSING) CHEMISTRY:

Nearly every student who has failed to complete chemistry successfuly has broken one of the two "golden rules."

1. DON'T GET BEHIND! We're moving too fast, and you'll never catch up.
2. WORK LOTS OF PROBLEMS. You need the practice, and it will show where you need more work.

SOME EQUATIONS TO LEARN AND REMEMBER:

Avagadro's Number: 6.02×10^{23}
Molarity= moles solute/volume of soln. in liters
w= f X d (work=force X distance)
DE= q + w (internal energy=heat + work)
$DE=E_{final} - E_{initial}$
$DH=H_{final} - H_{initial}$

EXAMPLE PROBLEM

All of the silver in a 45.0 ml portion of silver nitrate solution is precipitated as silver iodide by 26.0 ml of a 0.250 M calcium iodide solution:

$$2AgNO_3 + CaI_2 \rightarrow 2AgI + Ca(NO_3)_2$$

Calculate the molarity if the silver nitrate solution

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1. Read the problem and determine what answer they want you to find.
   Find the molarity of silver nitrate

2. Think of an equation you can use.
   You know that molarity is the number of moles of $AgNO_3$ and the volume of $AgNO_3$.

3. Write down the information you are given.
   Equation: $2AgNO_3 + CaI_2 \rightarrow 2AgI + Ca(NO_3)_2$

   CaI_2: 0.250 mol/L, 26.0 ml

   $AgNO_3$: 45.0 ml

4. Think through the steps of the problem

   volume CaI_2 --> moles CaI_2 (using molarity) --> moles $AgNO_3$ (using balanced equation) = molarity of $AgNO_3$ in problem (using given volume)

   26.0 ml X 1L/1000ml X 0.250 mol CaI_2/L X 2 mol $AgNO_3$/1 mol CaI_2 = 0.013 mol $AgNO_3$

   Molarity of $AgNO_3$ = 0.013 mol $AgNO_3$/0.045L $AgNO_3$ = 0.289m $AgNO_3$