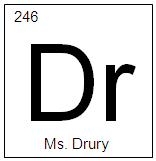
**AP Chemistry Exam Tips**

1. Sleep well the night before.
2. Eat breakfast.
3. Dress appropriately. Take socks and a sweatshirt in case the testing room is cold.
4. Take your favorite pens, pencils, and a calculator you are familiar with.
5. As soon as you break the seal on the MC booklet, number your periodic table with the 1-8 or so down the side that corresponds to the principle quantum energy level, *n*, for the *s* and *p* block elements AND number 1-8 across the top of the representative elements to remind you how many valence electrons are present. While you’re at it, label the *s1* through *p*6 to also speed you along. And label the most probable ion charges (+1,+2,+3,+4,-3,-2,-1,0). It’s a 30 second investment that translates into quick points!
6. You have 90 minutes for these 60 questions. That is 1.5 minutes per question. Don’t use more than 1.5 minutes on any one question. If you feel a question will take too long, circle it and go back later. But be mindful of the scantron. You will not have time after the 90 minutes to fill it in. So fill it in as you go, making sure you’re checking the question number.
7. At the break take deep long breathes to clear your mind. Go to the bathroom (it is timed and bathroom breaks count in your time).
8. Repeat the periodic table labeling process as soon as you break the seal on your FR booklet (unless you were charming enough to get to keep your already pristinely labeled periodic table from the MC section).
9. Make your fast pass…survey the main topic each of the 7 free response questions deals with and start with your favorite (hopefully that’s equilibrium since you KNEW that was coming). Keep an eye on the time…don’t spend more than 20 minutes on that first question. The first 3 should be 20 minutes and the last 4 should be 7 minutes each.
10. Expect some easy parts—it really isn’t a trick. Sometimes the easiest part is at the bottom. Always read to the end.
11. Generally, each part 2 question is connected. Especially the i, ii, and iii questions where you use your previous answer. In that case, even if your previous answer is wrong, you can still get pints for carrying through the math. In fact, if you don’t know the answer to (i) just put anything reasonable and carry on to (ii). When there is a break in the question with new information, most of the time the question has started over. It’s like a fresh new question.
12. When answer questions about lab errors normally they are referring to a calculation that you have just completed. Find the value the student accidentally messed up first and carry through your math to determine the final answers change. Remember it is not enough to just state the amount changed. Be specific: did it increase, decrease, or remain the same AND why?
13. Double check your units and sig. figs. No calculator vomit allowed!
14. Always remember, when in doubt, calculate the moles of something! Masses, volumes, and many other units are not comparable.

**Lab Question Tips**

1. Calorimetry: The specific heat of liquid water is 4.184 J/g K. The density of water is 1.00g/ml , therefore, if a question mentions 100 mL of water was used it is also 100g. Most likely you will be asked to calculate the heat released by a substance in which the heat was absorbed by the water. In this case use q=mcΔT with m= mass of water or solution. Be mindful of units. They may give units in kJ/mol in which case you will need to make the units match. And be aware that some heat can be lost to the surroundings, making your calculated value lower than accepted.

2. Titrations: To set up a titration you will need to rinse the burette with water AND the titrant and then fill the tip of the burette to ensure there are no air bubbles. If a solid acid is used, the amount of water added is irrelevant and only used to dissolve the acid. Then you will be asked to calculate the molar mass. In that case, find the equivalence point, multiple MxV of the base to find moles of the base. These are equal to the moles of acid. Finally divide the mass of the solid acid by moles. For liquid acids, other questions arise… There are two major points on a titration curve.

a. Equivalence Point: At this point only moles of acid = moles of base, therefore, MaVa=MbVb. You can use this point to find the unknown molarity or volume and to judge the type of acid and base you used. SA+SA= neutral solution. WA+SB = Basic Salt which re-reacts with water to form more OH-. SA+WB + Acidic Salt which re-reacts with water to form H+.

b. Half Equivalence Point: The pH=pKa of the weak acid or pOH=pKb of the weak base. And, the weak acid or base moles = its conjugates moles (salt). Used to find the equilibrium constant.

3. Mole Questions: One method for determining the amount of a given substance in solution is to form a precipitant that includes the substance. The precipitant is then filtered, and dried to constant mass. This process is called gravimetric analysis. For example if we wanted to determine the amount of chloride ions present in a given solid, we would weigh the solid sample, dissolve the sample in water, add an excess of silver nitrate solution to form the precipitant silver chloride. This precipitant would be filtered, and dried to constant mass. From the mass of silver chloride formed we can determine the moles of silver chloride and the moles of chloride ion in the original sample. The steps of a Typical Gravimetric Analysis:

SAMPLE WEIGHED 🡪 SAMPLE DISSOLVED 🡪 PRECIPITATE FORMED 🡪 PRECIPITATE FILTERED 🡪 PRECIPITATE DRIED 🡪 PRECIPITATE WEIGHED

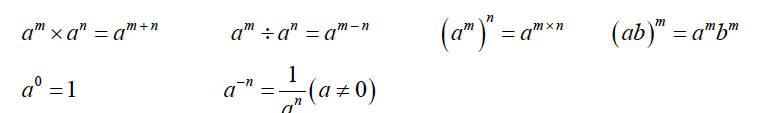
**Math Tips**

Memorize decimals and percents:

1/8 = 0.125 = 12.5% 3/8 = 0.375= 37.5% 5/8 = 0.62 = 62.5% 7/8 = 0.875 = 87.5%

1/3 = 0.33 = 33% 2/3 = 0.67 = 67% 1/4 = 0.25 = 25% 3/4 = 0.75 = 75%

Follow exponent laws:

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Scientific Notation Rules:

* + When working with scientific notation treat the base number separately from the exponent.
  + Multiply, divide, or take the square root of the base number and then tag on the “x10 to the” part.
  + If your base number is no longer between 1 and 10 you must move the decimal point over.
  + If you are dividing two numbers in scientific notation, divide the bases and subtract exponents.
  + If you are multiplying two numbers in scientific notation, multiply the bases and add exponents.
  + If you are squaring number in scientific notation, square the base and double the exponent.
  + If you are taking the square root of a number in scientific notation, square root the base and half the exponent.
  + When moving the decimal to the right to make the base larger, you must decrease the exponent.
  + When moving the decimal to the left to make the base smaller, you must increase the exponent.
    - Worst case scenario, take it out of scientific notation and put it back in ☹

Tricks: Ka = [H+]2/[HA] Kb= [OH-]2/[Base] Kw = KaxKb = 1.0x10-14

[H+] = √(Kax[HA]) [OH-] = √(Kbx[Base]) pH or PH is the power of that [value]!