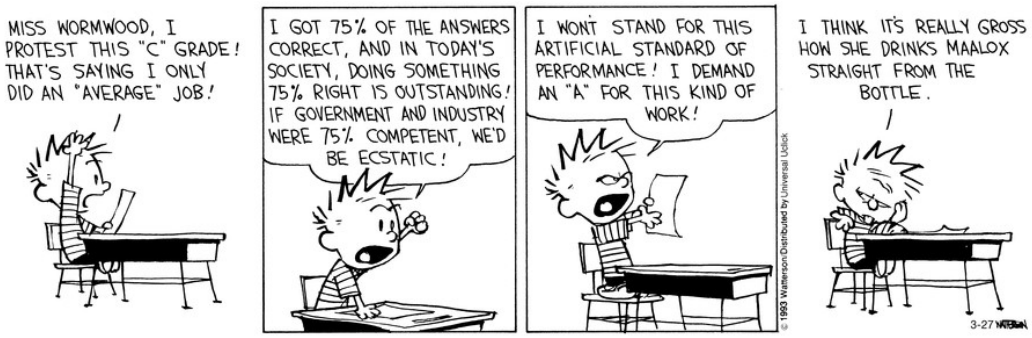
Know the Scoring System and Expectations



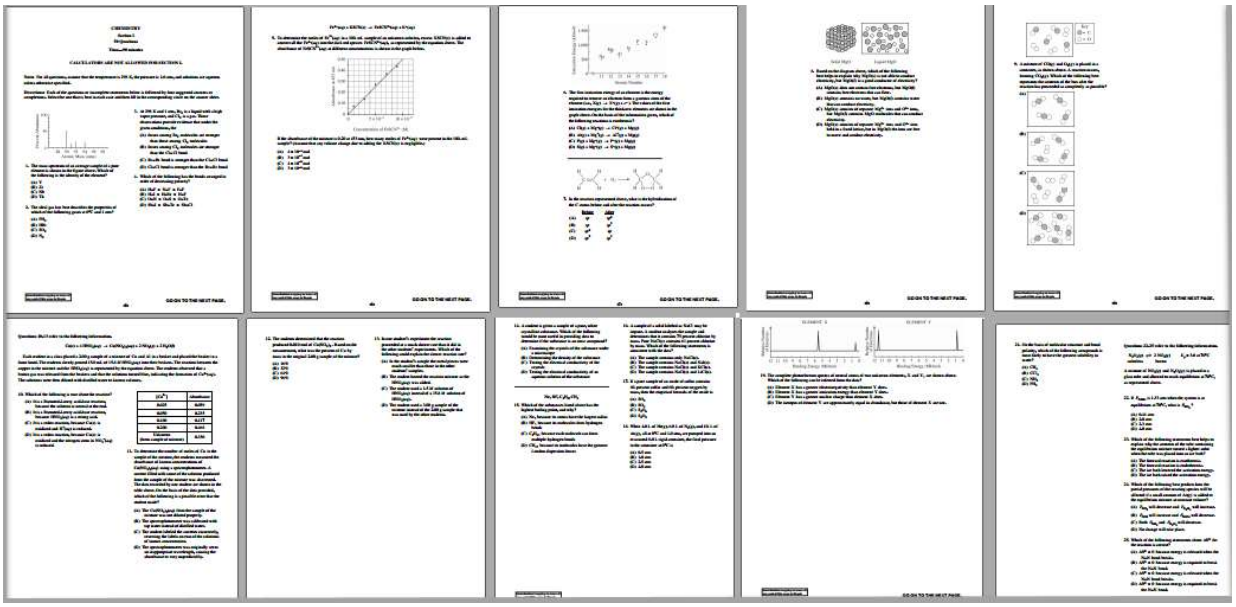
Calvin would be happy with the AP Chemistry Exam grading curve. 85% for the MC section has always been a 5 on the exam and 75% is a solid 4. So don't be thrown off balance by a few questions that you are unsure of. You can miss every 5th question and still get a 5.

Develop Your Own Timing and Strategy for Taking the Test.

If you have followed the time limits on the tests so far, you know the timing and can naturally allot the correct time for each question without having to skip and come back. Some MC advice suggests that when running into a question that is difficult to answer to question, you should move on and then return to it once you've answered all the questions you know. I personally think that skipping questions is dangerous because you may lose track of the numbering on the scorecard. If you can't answer a question, I would make a best guess on the answer card, circling the question in the test booklet, and then go back if you have time at the end of the test. Since you have a good eraser, you can always change it later.

Beware numbering fails!

I've followed the AP Chemistry content, vocabulary, fonts, and writing style for the paper tests. However, to save paper, I have used 10-point font size and have arranged the questions in one colmn. The actual exam uses 12-point font which will make reading easier and has a page layout with significant amounts of empty space for working on problems.



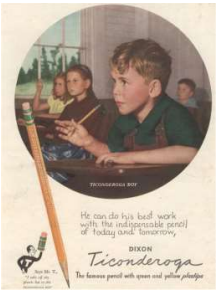
Note however that the AP the layout has many staggered questions. As a result, you must look carefully to make sure that you do not skip a question that may be to the right of the last question you answered rather than under it. Be sure to follow the numbered sequence which is sometimes right to left so that you don't orphan a question and get your scorecard numbering out of sync.

Check your scorecard numbering at the beginning of each new page on the exam!
Don't turn a page without checking your numbering.

Do not speed read - Think as you read.

It is estimated that 30% of the mistakes that good students make are not chemistry mistakes, but rather reading errors. There is a time limit, but when you read too quickly, you make incorrect assumptions or answer a question that is your own version of the problem, not the actual problem. This is a common error. When I take the exam the questions I get wrong are the ones that I read too quickly. When you speed read, you see what you expect to see. But some problems have unusual twists that can snare superficial readers.
Spending 30 seconds on a problem and getting it wrong is not saving time.
It is better to read carefully than to blunder through in a speedy rush. When I take the test, I force myself to read the problems slowly by dragging a pencil along the question as I read so that I read the question, not what I think the question should be.

Use your pencil for more than filling in multiple choice bubbles.



Graphite is your friend and assistant! Write in the test booklet!

The AP Chem exam does not allow for the use of mechanical pencils. So, you will need at least five sharpened pencils for the MC section of the test lest you end up having a worn stub of a pencil halfway through the test.

Make sure that these are "fresh" pencils that have **soft, effective erasers**. There's nothing worse than trying to correct an error on the scorecard with a petrified eraser that smears the pencil marks.

The AP Chemistry exam has plenty of space for writing, much more space than my practice exams. **If you don't go through at least four sharpened pencils while taking the MC exam, you are not writing enough!** Annotate as you read. It may seem that writing slows you down, but instead it will clarify your thought and prevent errors.

Eliminate wrong choices.

You can make some problems easier by crossing out answers that must be wrong. If you see an obviously wrong statement cross it out to make the remaining choices easier to view.

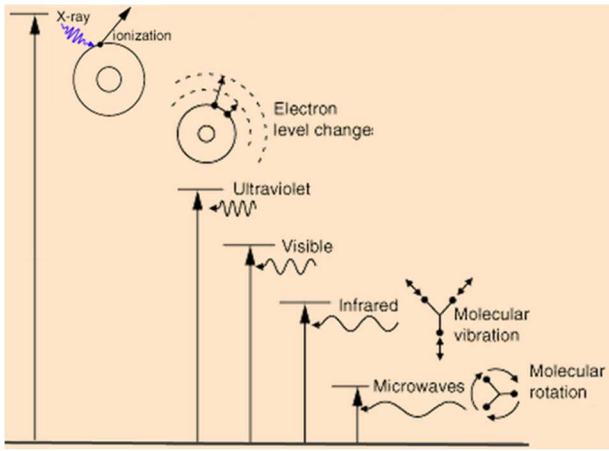
Sometimes elimination of wrong answers is the only way to find the correct answer. I've had to revert to this method to answer some multiple-choice questions.

For problems involving stoichiometry, make an ICE table!

Write the equation and under it, Initial conditions, Change (always follows stoichiometry), and End rows. Fill in data from the problem and the rest will become obvious. The table will help you see the problem more clearly, will identify any traps in the question, and ultimately will give you a better chance of getting the problem right.

Clarify questions by connecting the important numbers with the chemicals they are associated with. Underline both the number and what the number is referring to.

51.	AP07	Photons and Wavelengths and Energy	The equations: **ATOMIC STRUCTURE** $E = h\nu$ $c = \lambda\nu$ E = energy ν = frequency λ = wavelength Planck's constant, $h = 6.626 \times 10^{-34}$ J s Speed of light, $c = 2.998 \times 10^{8}$ m s^{-1} Shorter wavelengths have higher frequencies and greater photon energies
52.	AP07	Unit for frequency	hertz, Hz, 1/second, 1/s, or s^{-1}
53.	AP07	Energy of photon from wavelength calculations	To calculate the energy of a photon from its wavelength in nanometers. (Because c is in m/s you must change nm into $\times 10^{-9}$ m) 2 steps using equations on equation sheet. a. Find the frequency of the photon b. Use Planck's constant to find the energy $\nu = \frac{c}{\lambda \times 10^{-9}}$ $E_{photon} = h\nu$ 1 step memorize equation not on Equation sheet $E_{photon} = \frac{hc}{\lambda \times 10^{-9}}$ Mnemonic: E = hic divided by nine negative lambs. Usually per mol of photons $E_{\text{mol of photons}} = E_{photon} \times 6.02 \times 10^{23}$
54.	AP07	Nanometer wavelengths: UV-X-ray Visible light IR	When photons are absorbed: X-rays < 10 nm …. ionize even inner electrons of atoms UV 10 nm ↔ 400 nm UV… excite and ionize outer electrons Visible 400 nm (violet) ↔ 700 nm (red)… excite outer electrons IR 700 nm ↔1 mm… molecular movement and movement of atoms in molecules (vibrations).

55.		Generalization of how the different photon energies affect substances?	 X rays ionize atoms Ultraviolet and visible excite electrons to different energy levels Infra-red and microwave cause molecular vibrations and rotations.
56.	AP07	Electron order of orbital filling	$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^6\ 5s^2$ You won't have to write configurations beyond $5s^2$. You should know how this works with the periodic table.
57.		Order of electron energy and ionization	$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ \mathbf{3d^{10}\ 4s^2}\ 4p^6\ 5s^2$ The actual energy levels should always be grouped together. This is because electrons ionize from the top energy level down. Note especially $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ \mathbf{3d^{10}\ 4s^2}$ ionizes $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ \mathbf{3d^{10}\ 4s^1}$ The order ionization (loss of electrons) is different than the order of filling (filling $4s^2\ 3d^{10}$ vs. ionization $3d^{10}\ 4s^2$)
58.	AP07	Complete Electron configuration vs. Abbreviated Electron configuration	Subshells are placed in their energy level order (as you would see them in PES data) Complete: Zn $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^2$ Abbreviated Zn [Ar] $3d^{10}\ 4s^2$ Symbol of Noble gas preceding element is placed in [ ] Atomic number of noble gas + superscripts = atomic number of neutral atom: Zn [Ar] $3d^{10}\ 4s^2$ [Ar 18] + $3d^{10}$ $+4s^2$ = 30 atomic number of Zn
59.	AP07	Hund's rule (Empty bus seat rule)	Electrons will half fill orbitals in a subshell before doubling up. p_x: ↑ p_y: ↑ p_z: ↑