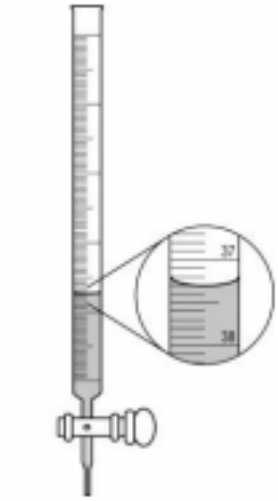
AP Chemistry

Thou Shalt Not Forget

Credit: Dan Reid

Unit 1

1. Compounds can be separated into elements by chemical changes, and mixtures can be separated by physical changes.
2. Filtering separates mixtures based on differences in particle size...the large particles are trapped on the filter paper while the soluble component goes through the filter paper and stays in the "filtrate".
3. Distillation separates mixtures based on differences in boiling point.
4. Chromatography separates mixtures based on differences in polarity.
5. In paper chromatography, the component that is most similar in polarity to the "mobile phase" moves up the farthest.
6. Mass is conserved during chemical and physical changes.
7. When reading a volume of a liquid in a container, you can estimate by reading in between the graduated markings. That can give you one more sig. fig. in your volume.



You would read the volume on this buret as 37.30 mL.... NOT 38.70 mL.

8. Ranking measuring devices from least precise to most precise→ beaker, graduated cylinder, volumetric flasks, burette

   (The volumetric flask only has ONE line on it to measure one specific volume.)
9. Density = mass/volume
10. The % composition by mass for a pure compound does not change.

Unit 2

1. When an electron is in a higher the energy level, it is farther away from the nucleus and therefore has less Coulombic attraction to the nucleus and is therefore easier to remove (...it has a lower 1st ionization energy.)
2. Moving across a row on the periodic table, the Z_{eff} increases, therefore the valence electrons are more attracted to the nucleus, therefore the atomic radius decreases and the ionization energy increases.
3. When reading a PES graph, the higher the peak, the more electrons there are in that sublevel, and a larger binding energy means that the electrons are closer to the nucleus.
4. $1s^2\ 2s^2\ 2p^6 3s^2\ 3p^6 4s^2\ 3d^{10}\ 4p^6$
5. When writing the electron configuration for a cation, remove the valence electrons first...the ones in the p-orbital and s-orbital...then you can remove d-orbital electrons if necessary.
6. Isotopes of an element have the same number of protons, but different numbers of neutrons.
7. Mass spectroscopy graphs measure atomic masses of isotopes.
8. Elements in the same group (vertical columns) have similar chemical and physical properties.
9. Metals are on the left side of the zig-zag line and nonmetals are on the right side of this line on the periodic table.
10. Cations (+) are smaller than their atoms since you are removing valence electrons that are farther from the nucleus and anions (−) are larger than their atoms since adding extra electrons increases electron-electron repulsions.

Unit 3

1. Covalent bonds are formed between two nonmetals sharing electrons.
2. Ionic bonds are formed when a metal transfers electron to a nonmetal and the opposite charges attract.
3. The greater the electronegativity difference between 2 atoms, the more polar the bond becomes.
4. Combustion reactions make CO_2 and H_2O.
5. $H_2\ O_2\ N_2\ Cl_2\ Br_2\ I_2\ F_2$ -- the diatomic elements. When they are in a compound, their # of atoms can vary.
6. Empirical formula rhyme→ % to mass, mass to mole, divide by small, times until whole...Get the simplest whole # ratio of the moles (or atoms) in the compound.
7. The molecular formula for a compound is a whole # multiple of the empirical formula ratio.
8. % yield = (experimental/theoretical)
9. % error = (experimental - theoretical)/theoretical
10. The amount of product for a reaction is determined by the limiting reactant.