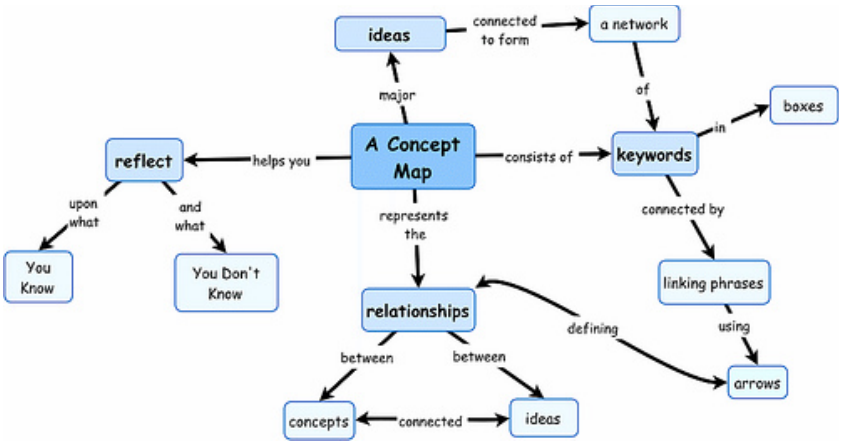
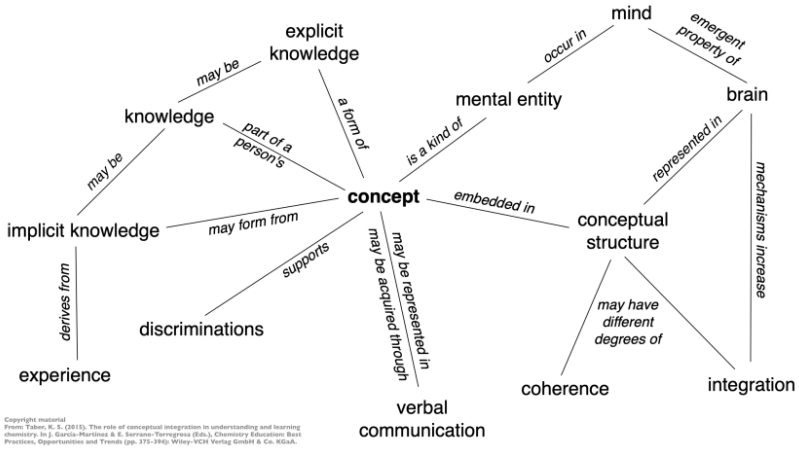
AP Chemistry Review Project

You will create a study sheet for your AP Chemistry topic. Topics include:

1. U1a/4: Moles, Molecules, atoms, molar mass, and dimensional analysis
2. U1a: Empirical and molecular formulas, and combustion reactions
3. U1b: Atomic structure, history of the atom, isotopes, ions, atomic mass, and mass spectra
4. U1b: Electron configurations. the electromagnetic spectrum, and PES diagrams
5. U1b: Periodic Table, atomic radius, ionization energy, and electronegativity trends
6. U2: Ionic and Metallic bonds, lewis structures, lattice energy, sea of electrons
7. U2: Covalent bonds, bond length, and bond energy calculations
8. U2: VSEPR, hybridization, resonance, formal charge, bond order, sigma and pi bonds
9. U3: Intermolecular forces: LDF, dipole dipole, ion dipole, dipole induced dipole, hydrogen bonding, and network solids
10. U3: Ideal and real gases, kinetic molecular theory, ideal gas law, diffusions, partial pressures, Avogadro's law
11. U3: Phase change diagrams, solubility rules, solutes solvents and solutions, saturation, and molarity
12. U4: Net ionic equations (for precipitates, acids and bases, and redox reactions)
13. U5: Rate expressions, rate laws, and rate constants
14. U5: Rate equations, rate graphs, and rate mechanisms
15. U6: Calorimetry, heat of vaporization, heat of fusion, and specific heat
16. U6: Heat of formation and Hess' Law
17. U7: Equilibrium, mass action expressions (Kc and Kp), manipulating K, and ice box
18. U7: Lechatelier and Q calculations
19. U7: Ksp, solubility, molar solubility, Qsp, saturation, and common ions
20. U8: pH calculations of strong and weak acids and bases, and polyprotic acids
21. U8: Titration calculations and curves
22. U8: Buffers, pKa, salts, and hydrolysis
23. U9: Thermodynamics: entropy, gibbs calculations, and relationship to K
24. U9: Electrochemistry: redox reactions, Galvanic cells and voltage, relationship to K
25. U9: Electrolytic cells, relationship to K, Faraday's calculations

Required	Points	Self-Check
Provide a minimum of 10 facts about your topic (5 points each). Ideas include: ● Define vocabulary words ● Identify any math equations and explain how you know which equations are needed to solve mathematical problems ● Explain how you know which numbers to plug in for each variable in a mathematical example ● Explain any unit conversions and why/how you needed to convert them ● Other tips, memorization tools, and troubleshooting ideas	50	
No major missing facts about your topic	10	
Create an infographic about your topic. Ideas include: ● A concept map showing how subtopics are intertwined ● A word web showing connections between subtopics ● A mini poster of images and vocabulary from your topic ● A cartoon strip explaining your topic	30	
Writing/typing is clear	10	

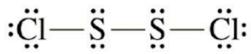




Top 5 Ways to Chemistry Wrong

1. **ΔH^o = (sum of all the bond energies of the products) – (sum of all the bond energies of the reactants)**

2. **Iodine is a polar molecule. It has a high boiling point because it takes a lot of energy to break its bonds.**



3. **The Cl–S–S bond angle in the molecule shown above is equal to 180° because it is a linear molecule.**

4. **The reason why potassium (K) has a larger atomic radius than sodium (Na) because it has more electrons and it's farther down on the periodic table and because of Coolumb's law and it has more shielding.**

5. **How many moles of HCl are present in 5 L of 1 M HCl?**

$$5\ \text{L} \times \frac{1\ \text{mole}}{22.4\ \text{L}} = 0.223214$$