Atom

Light, know the distribution of visible light and gamma ray , x Ray has large energy. Energy per photon is H[6.626* 10^-34] *speed of light divide by wavelength

- C=wavelength *frequency

1mole=6.022x10^23

- 22.4liters gas
  - Ideal gas law/ pv=nrt, r is 0.0821
    - P1v1=p2v2
    - P1+P2+P3=P total, nrt1+nrt2+nrt3. Sum of Partial pressure =total pressure
- Equilibrium between acid and base, left get less , shift to left, right get less, shift to right. The way USSR worked.Kw=Ka*Kb
  - Molarity=moles of solvent/liters of solution
    - Acid:release H+/proton donor, Base: release OH-, /H+ acceptor
      - Dilutions, m1v1=m2v2
        - Know solubility rule
- Delta H, specific heat, heat equation Q=mass*Specific heat*change in temperature

Know how to calculate [H+] concentration ， concentration of hydride ion multiply concentration of OH-is 10^-14,pOH+pH =14, pH 7 is neutral, above is basic, below is acidic. Concentration change doesn't happen in solid or liquid state, Aqueous and gas only.

Bond

- Covalent/ionic/metallic, polar covalent bond is greater than 0.4 in differences in electronegativity. Greater than 2.0 is ionic bond
- Intermolecular force
  - Dispersion force, everywhere
  - Dipole dipole , 2nd weakest
  - H-bonding, H-F,H-O,H-N, special type of dipole dipole
  - Ion-dipole, how ion react with molecules.
  - Everything increase as IMF increase, except vapor pressure
- Valence electrons# is equal to the number of column
  - Know the Lewis structure
  - Know Vasper theory shapes. Linear, triginoal planner, tetrahedral shaped molecules are most likely non polar
  - Know electrons domains to determine the electron geometry
- Know activity series, so you know the reaction types, single or double or oxidation