Acids and bases

1. Know various acid/base definitions (Arrhenius, Bronsted/Lowry and Lewis)
2. Complete acid/base reactions in water (predict products and reaction arrow)
3. Identify 6 strong acids and their water ionization reaction.
4. Identify weak acids (inorganic and organic) and their water reactions.
5. Identify weak bases (ammonia and ammonia-like types) and their water reactions.
6. Perform equilibrium calculations with any weak acids (including diprotic and triprotic acids)
7. Perform equilib$_r$ium calculations with a weak base.
8. Review structural differences between ammonia-like weak bases and write their acid-base reactions with water and strong acids.
9. Utilize pH, pOH formulas (and K_w expression) in calculations. Memorize Kw as $1.0x10^{-14}$
10. Perform pH calculations involving mixture of acids (strong+strong and strong+weak)
11. Perform % ionization (dissociation) calculations.
12. Relate percent dissociation of a weak acid in terms of its initial concentration to Le Chatelier's principle.
13. Perform qualitative (acidic, basic or neutral) and quantitative salt hydrolysis as well as equilibrium and pH calculations.
14. Determine the K_a or K_b (whichever missing) based on conjugate acid-base relationships.
15. Write the reactions for metal cation complex ion formation (with water) and acid base reactions in water and perform equilibrium pH calculations.
16. Review the effect of structure and bond strength on acid strength.
17. Review acid-base applications such as use of antacids and their chemical reactions.
18. Review acid-base reactions involved in making of acid-rain pollution.