Unit 6 – *Ions in Aqueous Solution*

Next Generation Science Standards:

> **HS-PS1-1. Use the periodic table as a model to predict the relative properties of elements.**
> **HS-PS1-7. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.**

> *LHS Core Values*
> ~Students will be thoughtful communicators who read, write, listen and speak effectively in preparation for careers and/or post-secondary education
> ~Students will be creative and practical problem solvers
> ~Students will be responsible users of technology and media
> ~Students will demonstrate continuous effort towards proficiency in all requirements for graduation

Objectives:

Upon completion of this unit the student will be able to:

1. Identify substances as acids, bases, or salts.

2. Distinguish between dissolving and dissociation of compounds.

3. Predict whether a substance is a nonelectrolyte, strong electrolyte, or weak electrolyte from its chemical formula.

4. Given the formula of an acid or base, classify acids and bases as strong or weak.

5. Identify the spectator ions and write the net-ionic equations for solution reactions starting with their molecular equations.

6. Predict the products of metathesis reactions (including both neutralization and precipitation reactions), and write balanced equations for them.

7. Identify the driving force in any metathesis reaction.

8. Use solubility rules to predict whether a precipitate will form when electrolyte solutions are mixed.

9. Given the formula of a simple compound or ion, obtain the oxidation numbers of the atoms by using the rules for assigning oxidation numbers

10. Balancing simple oxidation-reduction reactions by the half reaction method.

11. Classify the different types of redox-reactions

12. Determine the amount of a species by gravimetric analysis.

13. Calculate the molarity, solution volume, or number of moles of solute given any two quantities. (Using molarity as a conversion factor)

14. Calculate the volume of a more concentrated solution that must be diluted to obtain a given quantity of a more dilute solution.

15. Calculate the volume of a solution of known molarity needed to react completely with a given volume of solution of another substance.

16. Calculate the quantity of substance in a titrated solution.

17. Define and apply the vocabulary at the end of the chapter. (Page 127)