**When I reach the end of Standard 2 in 9th Grade Biology, these are the things I should be able to do:**

**Standard 2**

* I can identify the 6 major chemical elements found in cells [CHNOPS] (carbon, hydrogen, nitrogen, oxygen, phosphorous, sulfur, trace elements).
* I can explain the function of the 4 major groups of macromolecules in living organisms (proteins, carbohydrates, lipids, nucleic acids).
* I can explain how the properties of water contribute to the maintenance of cells and living organisms (cohesion, adhesion, heat capacity, solvent properties).
* I can explain the role of enzymes within cells.
* I can describe the differences in structures and functions between autotrophic and heterotrophic organisms.
* I can diagram the cycling of matter and flow of energy through photosynthesis (using light energy to combine CO2 and H2O to produce oxygen and sugars) and respiration (releasing energy from sugar and O2 to produce CO2 and H2O).
* I can explain the relationship between the processes of photosynthesis and respiration.
* I can explain the differences between aerobic and anaerobic respiration and describe the advantages of aerobic respiration.
* I can perform an experiment to measure the products of photosynthesis or respiration and explain the results.
* I can identify and label the phases of mitosis from a diagram, and describe the cellular events that occur during each phase.
* I can describe Cell Theory and explain that it was developed over time through advances in technology and by building on previous knowledge.
* I can compare and contrast diffusion, facilitated diffusion, osmosis, and active transport of materials in and out of cells, and explain how transport helps maintain homeostasis.
* I can describe the relationship between the function of organelles and the functions of the cell.
* I can perform an experiment to investigate growth and reproduction of microorganisms or plants.