# Honors Biology
# Unit 1 Objectives: The Chemistry of Life

1. Vocabulary: organism, molecule, element, atom, electron, proton, neutron, isotope, chemical bond, chemical reaction, law of conservation of matter, activation energy, ion, ionic bond, covalent bond, hydrogen bond, pH, acid, base, organic, macromolecule, monomer, polymer, carbohydrate, monosaccharide, disaccharide, polysaccharide, starch, cellulose, lipid, fatty acid, glycerol, saturated f. a., unsaturated f. a., triglyceride, protein, amino acid, polypeptide, peptide bond, primary through quaternary protein structure, polar, nonpolar, nucleic acid, nucleotide, RNA, DNA, gene, double helix.

2. Explain the relationship(s) among atoms, molecules, elements, and compounds.

3. Describe the three types of chemical bonds and their relative strengths.

4. Explain what causes a solution to have an acidic or basic pH and/or calculate how many times more acidic/basic one solution is than another. (ex: pH 3 vs. pH 6) Given a starting pH and a target pH, compose a procedure to produce a solution of target pH.

5. Identify and/or describe the characteristics (use functional groups and other clues) and functions of the four classes of macromolecules (this includes 3D models).

6. Describe how the processes of dehydration synthesis and hydrolysis are related to the formation of monomers and polymers. (Which functional groups are used during the formation/breaking of proteins and triglycerides in particular?)

7. Describe the relationship between genes, nucleic acids, amino acids, and proteins.

8. Explain the importance of hydrogen bonding for nitrogenous base pairing in DNA.

9. Given a series of nucleotides, create a matching set to complete a model of DNA.