**9 Week Test Study Guide**

**STUDY THE FOLLOWING (hint hint):**

1. Know the difference between a theory(Theories EXPLAIN why a phenomena happens) and law(describes describes the phenomena)  
2. Know the 3 parts of the cell theory and the what each of the 5 guys contributed to the theory.  
3. Why did it take 174 years for the cell theory to be widely accepted? Many organisms had to be examined to state that ALL living things are made of cells!!  
4. Know also that the cell theory has been tested and revised over 100's of years to verify the cell theory.  
5. What would cause the cell theory to change? (Hint: think about the 3 parts of the cell theory). If something is alive and does NOT contain one of the 3 parts then the theory would need to be changed!

6. Cohesion + Adhesion = makes Surface Tension due to Hydrogen Bonds, Polarity where opposite charges of two different water molecules attract. This is why plants can survive due to capillary action of water sticking to themselves (cohesion) and sticking to the roots or stems (adhesion).

7. Ability to moderate temperature.... Water has a High Specific Heat or High Heat Capacity where water takes a really long time to heat up and cool down. This quality is good for organisms that live in the water b/c this way they have time to adapt to "slower" temp. change, otherwise they would die.

8. Versatility as a Solvent- Water is the Universal Solvent so, it can pretty much dissolve everything that is polar!!

9. Expands upon Freezing- Water is less dense and floats to act as an insulator to the organisms underneath.

10. Carbohydrates- short term energy storage and remember the ratio of 1:2:1 made up of Carbon, Hydrogen and Oxygen This is the primary source of energy out of all the macromolecules.

11. Lipids- Long term energy storage made up of Carbon, Hydrogen and Oxygen called a glycerol molecule and 3 fatty acids.

12. Proteins- polymers made of 20 different combinations of amino acids. They catalyze enzymes, defend the immune system and provide structural support.

13. Nucleic Acids- DNA and RNA are made from monomers called nucleotides, which consists of a sugar, phosphate and a base.

14. Enzymes are catalysts that speed up a chemical reaction by lowering the activation energy.

15. Enzymes fit into a substrate as long as there are optimum temperature and pH.