AP Biology Cells and Transport HW Sheet **Test Date: _____**
Resources:
Campbell Textbook Chapters: 6 & 7
OpenStax Chapters 4 & 5

Lesson 1: Cell Structure
Work through the following websites to review (learn) the organelles found in cells. Read the information, take the quizzes and play the games for extra information and practice.
http://www.sheppardsoftware.com/health/anatomy/cell/index.htm
http://www.cellsalive.com/cells/3dcell.htm

1. Compare and contrast eukaryotes and prokaryotes.

2. *Read OpenStax Chapter 4, Section 4*
https://cnx.org/contents/bDIuMp-w@18.4:O_bI1S3L@14/4-4-The-Endomembrane-System-and-Proteins

The endomembrane system regulates protein traffic and performs metabolic reactions (building and breaking down) in the cell. Highlight the organelles on your chart that are considered part of this system.

3. How do the cell wall and central vacuole of plant cells work together to maintain the rigidity of the cell?

Lesson 2: Plasma (Cell) Membrane and Surfaces
Read OpenStax Chapter 5, Section 1
https://cnx.org/contents/bDIuMp-w@18.4:fs7Yq87n@14/5-1-Components-and-Structure

While on a trip to the desert, a friend of yours was bitten by a rattlesnake. He nearly died from hemolysis, or breakage of many of his red blood cells. You have analyzed the snake venom and found three enzymes: phospholipase, which degrades phospholipids; neuraminidase, which removes cell surface carbohydrates; and protease which degrades proteins. Which of these enzymes do you think was responsible for his near fatal red blood cell hemolysis? Why?

Lesson 3: Transport Across a Membrane
Visit: http://www.biology.arizona.edu/cell_bio/problem_sets/membranes/index.html
Read the information in the OVERVIEW. Use the 16 quiz questions and tutorials to review transport across the membrane.

1. Compare and Contrast: Osmosis and Diffusion. You must use the following terms in your answer- concentration gradient, semi-permeable, dynamic equilibrium

2. Compare and Contrast: Diffusion and Facilitated Diffusion.

3. Complete the following chart.

Water Solution	**High concentration of solute? (inside or outside the cell)**	**High concentration of water? (inside or outside the cell)**	**Effect on the cell**

Visit: http://www.phschool.com/science/biology_place/labbench/lab1/concepts.html
Work through the Key Concepts 1-7. View the animations and answer the practice questions to review transport. Focus on Key Concepts 6-8 as these cover new information!

4. Will there be a net movement of water between two isotonic solutions? Explain.

5. Why do red blood cells not burst in the bloodstream?

6. How would a plant cell and animal cell react differently if placed into distilled water (a hypotonic environment)? Explain the results.

7. What is water potential? Explain what a negative water potential would mean in a cell.

8. What is the formula to calculate water potential? Based on the formula, what happens to the water potential as more solute is added to the solution?

9. What is the solute potential of PURE WATER? Explain this answer. Based on your answers to #7 and #8, will a solution ever have a water potential above zero?

10. Use this site to complete the chart.
http://www.diffen.com/difference/Active_Transport_vs_Passive_Transport

	Active Transport	Passive Transport
With or Against the concentration gradient?		
Requires cellular energy?		
Types of molecules transported?		
Examples?		

Lesson 4: Origin Of The Cell

Read The Evolution of the Cell: http://learn.genetics.utah.edu/content/cells/organelles/

1. Describe the conditions of early Earth? What role do present day Archeabacteria play in the study of early Earth?

2. Where did the oxygen of early Earth come from?

3. Describe the Endosymbiotic Theory in your own words (pictures are welcome).

   What evidence supports this theory?

4. Define 'compartmentalization'. Use this term to describe the difference Between eukaryotic and prokaryotic cells.

5. How is the compartmentalization of the chloroplasts and mitochondria evidence to support the Endosymbiotic Theory?

4. Scientific theories are different from theories that are simply speculation or opinion. Explain the difference. What are other scientific theories?

Lesson 5: AP Progress Check - Part of your homework grade so this needs to be completed by class time the day before the test.

Log in to your AP Classroom account and complete the Unit 2 Progres Check: MCQ (Note: This assignment will not open for you until 2 class days before the Unit test)