AP Biology Summer Assignment 2024 - 2025

Summer Reading Link through OpenStax
https://openstax.org/books/biology-ap-courses/pages/preface

Welcome to AP Biology!!!
We will have an amazing and busy year. Throughout the year we will study topics in biochemistry, cellular exchanges (energy, messages, organic molecules), genetics, DNA, evolution, and ecology. Until I can issue your new textbook, we will use Openstax for general reading purposes. Before school resumes in August you will need to complete the following items.

Item #1 = Reading Assignments through the animal structure and function unit.
1 - Read Chapter 24, The Animal Body
2 - Read Chapter 30, The Respiratory System
3 - Read Chapter 31, The Circulatory System
We will explore the other systems through cellular processes and communication.

Item #2 = Activities will be due by the third day of class.
Activity List - Create a Google Slideshow and share

A - Create a biological meme to demonstrate your meaning of homeostasis supported by chapter 24.
Your meme can be drawn on paper or digitally embedded into the Google Slideshow.

B - Activities for the Animal Body

B1 - Using your favorite animals to demonstrate the difference between asymmetry, radial, and bilateral symmetry. Label each image accordingly.

B2 - Next slide, post an image of a bizarre organism with an exoskeleton. You will also need to Include a molecular image of the substance composing exoskeletons, chitin.

B3 - Copy & paste the following images, listed below. Include a brief explanation of how the organisms size defies cellular limitations of surface area and volume ratio.
Intestinal Microvilli, Stentor coeruleus (single celled), Valonia ventricosa (sailors eyeballs), and Acetabularia (type green algae).

B4 - Paste 2 images of exothermic organisms and 2 images of endothermic organisms with an Explanation of how they each regulate their body temperatures. Also explain why small Endothermic mammals lose more body heat than larger endothermic mammals.

C - How would you describe the different functions of cell tissues to a student in middle school?

Use animal body chapter 24 section 2 for support.

The tissues are: epithelial, connective, muscle, and nervous.

Also include images to help illustrate the differences.

D - We will discuss in great detail during the school year positive and negative feedback loops in class. The focus of this activity is homeostasis from chapter 24 section 3. Review your meme from item A. What items would you add to it to demonstrate thermoregulation? Explain your response.

From the cellular interactions listed below, which two processes do you feel are the most important allowing organisms the consistent ability to maintain homeostasis? Explain your answer.

Processes = pH levels, Water, Glucose, Blood Pressure, Toxins, vitamins, and minerals.

E - Review the respiratory system from chapter 30 section 1. We will review diffusion throughout the year. Diffusion is the movement of molecules, such as gases, from areas of high to low concentrations through various barriers. We will also discuss the important components of diffusion when we review the concepts from natural selection and ancestral traits. From the reading, focus on understanding the differences between respiratory systems with direct diffusion, gills, tracheal system, and mammalian systems.

The task for item E, is to draw a comparison diagram of two respiratory systems. You will use the mammalian system as one of the systems and you can select either the direct diffusion, gills, or tracheal as the other system. For both systems you will need to use arrows demonstrating the movement of oxygen and carbon dioxide into and out of the system. You will also need to label and color the main structures where gas exchanges occur per system.

F - Review the circulatory system from chapter 31 section 1 and 2.
From section 1 draw, label, and color a closed circulatory system and an open circulatory system.
We will discuss hemoglobin several times throughout the year and the blood pressure section will be covered during osmosis. So you may just read through the sections for the time being.

From section 2, create a cartoon to distinguish the components of blood. You will need to also include the function of each component. Blood is a mixture of red blood cells, white blood cells, platelets, and plasm. The cartoon should have pop out bubbles distinguishing the structural differences. You are more than welcome to make the cartoon appropriately funny.