**Pre-AP Energy Test Review**

*Refer to the following questions and vocabulary to help you to review for the test.*

* Required vocabulary: reactant, product, phosphorylation, producer, autotrophs, phototrophs, Cyanobacteria, heterotrophs, guard cells, stoma/stomata, cuticle, mesophyll, epidermis, aerobic, anaerobic, glycolysis, pyruvic acid/ pyruvate, monosaccharide, polysaccharide, starch, facultative anaerobe, wavelength of light, thylakoid membrane, stroma, thylakoids, grana/granum, photosystems, photolysis, electron transport, Calvin cycle, ATP synthase, rubisco, hydrogen pump, pyruvate, pyruvic acid/pyruvate, NAD+/ NADH, NADPH/NADP+, phosphorylation, proton pumps, and acetyl Co-A
* What is adenosine triphosphate (ATP)?
  + Draw and label the ATP molecule
  + What are the 3 parts that make-up ATP?
  + How is energy released from the molecule?
  + What is the function of ATP?
  + What is the relationship between ADP and ATP?
* What is an autotroph?
  + Give an example
  + How does an autotroph obtain its energy?
* What is a heterotroph?
  + Give an example
  + How does a heterotroph obtain its energy?
* What is the function of photosynthesis?
  + Where does photosynthesis occur in the cell (organelle)?
  + What type of organism engages in photosynthesis?
  + What are some characteristics of photosynthetic organisms?
  + What is the chemical equation for photosynthesis?
    - What are the reactants?
    - What are the products?
  + Draw the chloroplast.
    - label the thylakoid, grana, stroma, and photosystem
  + What are the electron carriers in photosynthesis?
  + What is the first step in photosynthesis?
* What are pigments?
  + What is the function of a pigment?
  + Give 2 examples of a pigment
  + How is a pigment an adaptation of a plant for photosynthesis?
  + What is the difference between chlorophyll a and b?
  + Why do plants appear green?
    - What part of the light spectrum/wavelength of light is absorbed?
    - What part of the light spectrum/wavelength of light is reflected?
* Draw a cross-section of a leaf
  + Label the guard cells, stomata, mesophyll, epidermis, cuticle, and epidermis
  + What is the function of each structure?
* What are the stages of photosynthesis?
  + Where does each stage occur in the chloroplast?
  + What are the electron carriers involved?
  + What is produced at each stage?
  + What is required or not required at each stage?
  + What is unique at each stage?
  + What enzyme is involved during the light-dependent stage?
  + What is photolysis?
* What are the factors that affect photosynthesis?
  + How do they affect photosynthesis?
* What is the function of cellular respiration?
  + Where does cellular respiration occur in the cell (organelle)?
  + What must be present for cellular respiration to occur?
    - What is meant by the term, aerobic?
    - What is meant by the term, anaerobic?
  + What type of organism engages in cellular respiration?
  + Is this organelle present in animal and plant cells?
    - What does this imply about the organisms that rely on this organelle?
  + What is the chemical equation for cellular respiration?
    - What are the reactants?
    - What are the products?
  + Draw the mitochondrion.
    - label the matrix, mitochondrial membrane, and intermembrane space.
  + What are the electron carriers in cellular respiration?
  + What is the total number of ATP molecules produced during cellular respiration?
  + What is the net gain of ATP molecules produced during cellular respiration?
  + What happens to most of the energy stored in glucose?
* What are the stages of cellular respiration?
  + Where does each stage occur in the mitochondrion?
  + What are the electron carriers involved?
  + What is produced at each stage?
  + What is required or not required at each stage?
  + What is unique at each stage?
  + What is a hydrogen pump?
    - What is its function?
* What is fermentation?
  + What is the function?
  + Why does the body engage in fermentation instead of cellular respiration?
  + Is fermentation aerobic or anaerobic?
  + What is the total number of ATP molecules produced during fermentation?
  + Where does fermentation occur in the cell?
  + What is the first stage in fermentation?
  + What is a facultative anaerobe?
    - Give an example of an organism that is a facultative anaerobe
  + What are the types of fermentation?
    - Give an example of a product of each
    - What are the products of each?
    - What type of organisms that engage in each?
* Does the body rely on cellular respiration or fermentation for short bursts of energy?
* Does the body rely on cellular respiration or fermentation for long-term energy?
* How does cellular respiration and photosynthesis differ?
* How is cellular respiration and photosynthesis similar?