

## Final Exam Study Guide- Unit 5: Bioenergetics

1. The original source of energy is the \_\_\_\_\_, but the useable form of energy for all organisms is \_\_\_\_\_.
2. Energy is released from ATP when a \_\_\_\_\_ is broken off forming \_\_\_\_\_.
3. Photosynthesis converts solar energy into stored chemical energy called \_\_\_\_\_. Cellular respiration breaks down \_\_\_\_\_ to get useable energy called \_\_\_\_\_.
4. Label each picture with the process that occurs there: photosynthesis or cellular respiration



5. Fill in the chemical reactions below:
  - a. Photosynthesis: sunlight + \_\_\_\_\_ + \_\_\_\_\_  $\rightarrow$  \_\_\_\_\_ + \_\_\_\_\_
  - b. Cellular Respiration: \_\_\_\_\_ + \_\_\_\_\_  $\rightarrow$  \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_
6. The organisms that carry out photosynthesis are \_\_\_\_\_, while \_\_\_\_\_ and \_\_\_\_\_ carry out cellular respiration.
7. There are 2 reactions that make up photosynthesis:
  - a. \_\_\_\_\_ - occurs on thylakoid membrane, absorbs energy from sun to produce ATP and NADPH and oxygen as waste product
  - b. \_\_\_\_\_ - occurs in stroma, takes ATP, NADPH and carbon dioxide to make glucose.
  - c. \_\_\_\_\_
8. There are 2 types of respiration: \_\_\_\_\_, which uses oxygen and \_\_\_\_\_, which does not use oxygen.
9. \_\_\_\_\_ respiration makes more ATP, therefore, more complex functions and organisms are possible.
10. The 3 reactions that make up cellular respiration are:
  - a. \_\_\_\_\_ - occurs in cytosol, breaks glucose into 2 pyruvates and produces 2 ATP
  - b. \_\_\_\_\_ - occurs in mitochondrial matrix, forms electron carriers and produces 2 ATP
  - c. \_\_\_\_\_ - occurs on mitochondrial cristae, uses electrons from electron carriers to produce 36 ATP