

NAME \_\_\_\_\_

### Photosynthesis and Cellular Respiration Review Sheet

#### Part A. Write the correct term from the list below in the space next to the definition.

Aerobic	Cellular Respiration	Anaerobic	Chlorophyll	Pigment
Krebs cycle	Photosynthesis	Electron transport chain	Glycolysis	Calvin cycle
Metabolism	Stroma	Thylakoid		

- \_\_\_\_\_ the process by which light energy is converted to chemical energy
- \_\_\_\_\_ the process by which cells get energy from food
- \_\_\_\_\_ a substance that absorbs light
- \_\_\_\_\_ the primary pigment involved in photosynthesis
- \_\_\_\_\_ the series of proteins that carry electrons through the membrane of the mitochondria
- \_\_\_\_\_ the making of carbon dioxide into organic carbon compounds
- \_\_\_\_\_ making 2 pyruvate from one glucose
- \_\_\_\_\_ cluster of proteins and pigments that capture the sun's energy
- \_\_\_\_\_ a process that requires oxygen
- \_\_\_\_\_ a process that does not require oxygen
- \_\_\_\_\_ the cycle that pyruvate enters after glycolysis
- \_\_\_\_\_ the process of getting energy from food
- \_\_\_\_\_ space on the interior of a chloroplast; the light-independent reactions take place here

#### Part B. Place the following steps in order and write the number of each step in the space provided.

- \_\_\_\_\_ animals eat plants to get energy
- \_\_\_\_\_ plant absorbs sunlight
- \_\_\_\_\_ plant uses chemical energy to make organic compound (glucose)
- \_\_\_\_\_ light from the sun reaches Earth
- \_\_\_\_\_ plant converts sunlight to chemical energy

#### Part C. Photosynthesis: Complete each statement by writing the correct term or phrase in the space provided.

- \_\_\_\_\_ are light absorbing substances.
- In the step 2 of photosynthesis, ATP and \_\_\_\_\_ are produced.
- The series of molecules that electrons move through is called the \_\_\_\_\_ chain.
- NADPH from stage 2 is then used in the \_\_\_\_\_ cycle to convert carbon dioxide into glucose.

#### Part D. Cellular Respiration: Complete each statement by writing the correct term or phrase in the space provided.

- \_\_\_\_\_ is the process where glucose is used to make ATP.
- First, glucose is broken down into 2 pyruvate in a process called \_\_\_\_\_.
- The pyruvate then enters the \_\_\_\_\_ cycle where NADPH is made.
- Finally, NADPH enters the electron transport chain where \_\_\_\_\_, our cells' energy source, is made.
- Aerobic respiration occurs in the \_\_\_\_\_ of eukaryotic cells.

#### Part E. Circle the letter of the term or phrase that best answers each question.

- Photosynthetic organisms get their energy from:  
a. inorganic substances    b. autotrophs    c. heterotrophs    d. light

2. Carbon dioxide fixation in the Calvin Cycle requires
  - a. ATP and NADPH
  - b. ADP and NADPH
  - c. ATP and NADP<sup>+</sup>
  - d. ATP and O<sub>2</sub>
3. Aerobic respiration follows glycolysis when \_\_\_\_\_ is available
  - a. carbon dioxide
  - b. hydrogen
  - c. water
  - d. oxygen
4. During cellular respiration,
  - a. the complete breakdown of glucose yields only carbon dioxide and water
  - b. the complete breakdown of glucose yields only ATP
  - c. NADPH is produced
  - d. carbon dioxide is required
5. The total amount of ATP produced during glycolysis is:
  - a. 45
  - b. 36
  - c. 2
  - d. 10
6. The grand total of ATP produce during glycolysis and cellular respiration is
  - a. 45
  - b. 36
  - c. 2
  - d. 10
7. When water is broken up in the light reactions, what is the waste product produced?
  - a. carbon dioxide
  - b. oxygen
  - c. glucose
  - d. NADPH

**Part F. Determine whether the following statements are true or false. If the statement is false, correct the underlined portion.**

1. The Calvin Cycle produces ATP while breaking down glucose in cellular respiration
2. In the third stage of photosynthesis, oxygen is used to make organic molecules (glucose).
3. Glycolysis is the process where glucose is made from pyruvate.
4. Metabolic process that requires oxygen are called anaerobic.
5. Photosynthesis occurs in the stroma and thylakoid found in the mitochondrion.
6. NADPH is an electron transport carrier for cellular respiration.
7. During cellular respiration, glycolysis can be followed either by fermentation or respiration depending on whether oxygen is present.
8. The number of ATP produced by Fermentation is more than that produced by Cellular Respiration.

**Part G. Formulas and equations!!**

1. What is the chemical equation for photosynthesis? Identify the reactants and the products.
2. What is the chemical equation for cellular respiration? Identify the reactants and the products.
3. How are equations above the similar? How are they different?

**Part H. Read the clues for the jumbled words that appear below. Unscramble the words and place them on the blanks provided.**

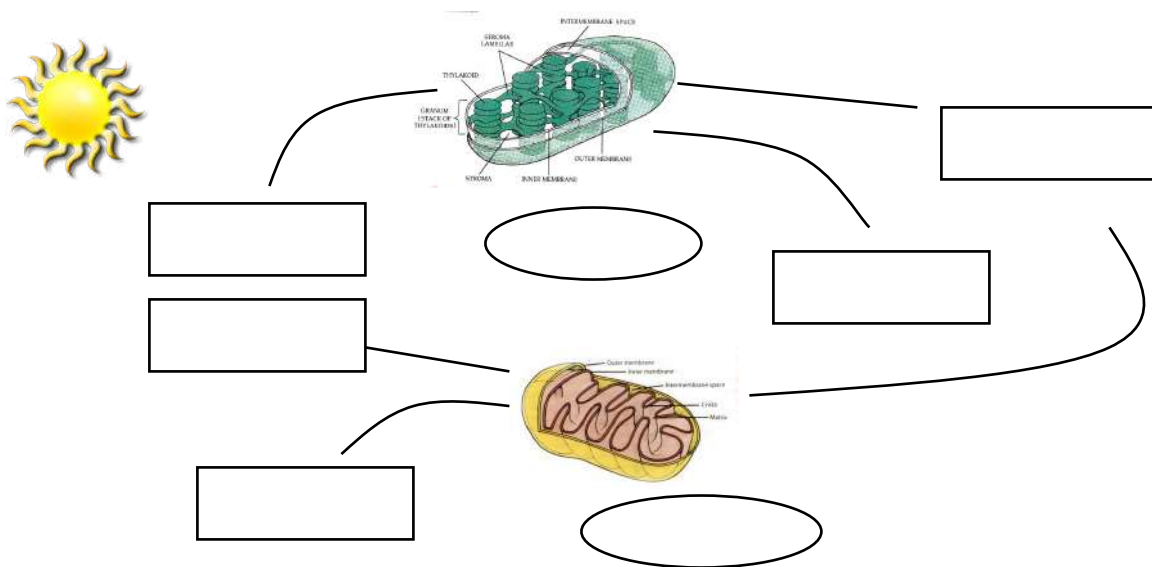
1. Organelle containing chlorophyll

SHORLAPLOCT

\_\_\_\_\_

2. Fuel used by cells	COGULES	_____
3. Atmospheric gas used by most cells	NEGOXY	_____
4. End product of glycolysis	PRYVUCI CAID	_____
5. Organelle with two membranes	TRIDIMONCHON	_____
6. Waste product from cell energy production	BOCARN DIDIXOE and TEWAR	_____
7. Energy storage molecule	DINNEOASE SOPHTRIPATHE	_____
8. Needs energy to bond with a phosphate group	EDOISANNE OSPITAPHEDH	_____

**Part I. Use the words that were unscrambled from Part I and put them in the correct blank in the diagram below.**



**Part J. Using the diagram above, answer the following questions.**

1. Which cell process does the top half of the diagram represent?
2. In what types of organisms does this process occur?
3. Which cell process does the bottom half of the diagram represent?
4. In what types of organisms does this process occur?
5. What happens when the chemical bonds of ATP are broken?
6. How are photosynthesis and cellular respiration both similar?
7. How are photosynthesis and cellular respiration both different?

**Part K. Answer the following questions below. Make sure to be specific and descriptive.**

1. Describe the light (light-dependent) reactions and the dark (light-independent) reactions. Make sure to include where they are located, what products each process uses, what products each process produces, and the electron carriers involved.
2. Describe how an electron transport chain works. How are the electron transport chains similar/different in photosynthesis and cellular respiration? Drawing a picture may help.
3. Briefly compare glycolysis and the Krebs Cycle (Respiration). Make sure to include how much energy is produced in each reaction, where do these reactions occur, the main products of each, and if oxygen is present or not.
4. What are the factors that affect the rate of photosynthesis? How do those factors affect photosynthesis?