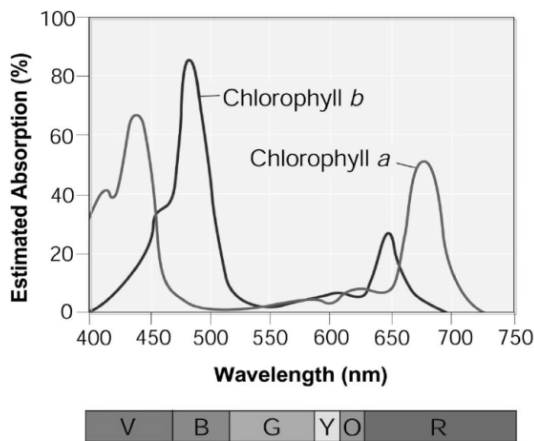


# Cell Energy Study Guide

## Photosynthesis & Cellular Respiration

**Target 1:** Explain the interaction between pigments, absorption of light, the reflection of light and the chemical compound responsible for storing & releasing energy.

1. Organisms such as plants that **make their own** food are called? \_\_\_\_\_
2. Organisms that **cannot** use the sun's energy directly are known as? \_\_\_\_\_
3. What are pigments?



4. List below the 4 most common pigments found in plants?

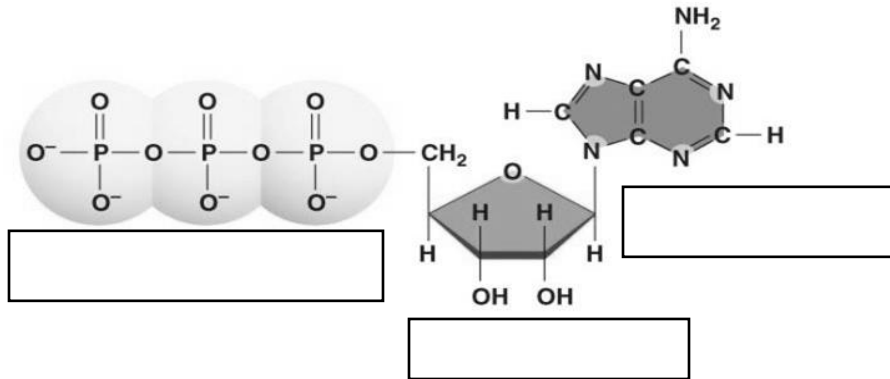
**According to the absorption spectrum below, answer the following questions:**

5. What is the **most visible** color of pigment? \_\_\_\_\_
6. What is the **least visible** color of pigment? \_\_\_\_\_
7. What **percentage** of **blue** pigment is being **absorbed**? \_\_\_\_\_
8. What **percentage** of **blue** is being **reflected**? \_\_\_\_\_
9. If plants were only exposed to **green light**, what would be the most likely result?
10. Why are leaves **flat** on a plant or tree?
11. What are the tiny pores on the surface of a plant called? \_\_\_\_\_ **Why are they so important to plants?** \_\_\_\_\_
12. What is the main chemical compound that cells use to **store** and **release** energy called? \_\_\_\_\_ or \_\_\_\_\_
13. Which **macromolecule** does ATP most resemble? \_\_\_\_\_ or \_\_\_\_\_
14. When a cell has energy available, it can store small amounts of it by adding a what?

# Cell Energy Study Guide

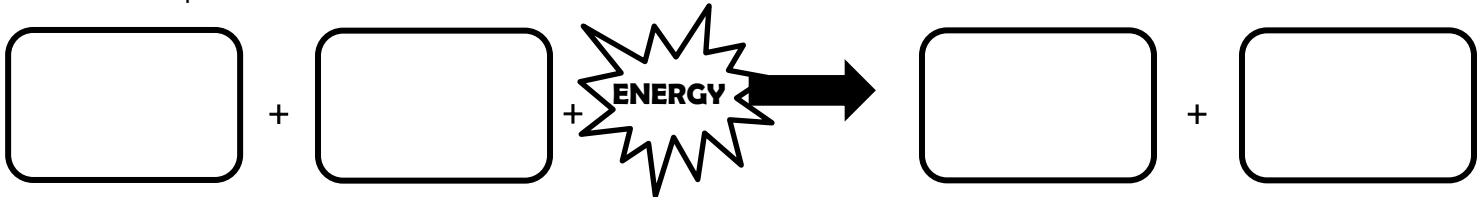
## Photosynthesis & Cellular Respiration

15. Label the **ATP** (adenosine triphosphate) molecule below:

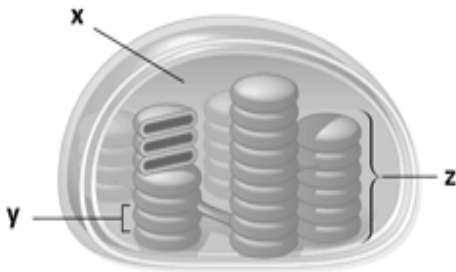


**Target 2:** Describe the light-dependent and light-independent reaction on photosynthesis. Relate the products of the light-independent reactions to the products of the light-independent reactions.

16. Write the equation for photosynthesis below. Indicate which side is the reactants and which side are the products.



17. In what organelle does **photosynthesis** take place? \_\_\_\_\_



18. In which structure (indicate the letter) do **light-dependent reactions** occur. \_\_\_\_ What is this structure called? \_\_\_\_\_

19. In what structure does the **Calvin Cycle** occur? \_\_\_\_ What is the gel-like substance called? \_\_\_\_\_

20. What is the purpose of **water** in photosynthesis? [Remember: it was a great break-up]

21. Photosynthesis is the ability to convert energy from the sun into chemical energy used by plants. Much of this chemical energy is stored as? \_\_\_\_\_

# Cell Energy Study Guide

## Photosynthesis & Cellular Respiration

22. **Light-independent** reactions make what for the cell? \_\_\_\_\_
23. List and describe the basic sequence of events of photosynthesis.
- a. **Light absorption:**
  - b. **Light-Dependent reactions:**
  - c. **Electron Transport Chain:**
  - d. **The Calvin Cycle:**
24. **Label the Photosynthetic Processes on the last two pages:**
25. What are **3-4 factors**, and how they influence the rate of photosynthesis? **What kind of graph do they make?** (We learned these as limiting factors.)
- a. **Water:**
  - b. **Carbon Dioxide:**
  - c. **Light intensity:**
  - d. **Temperature:**

**Target 3:** Identify the cellular sites of and follow the major pathway of anaerobic and aerobic respiration, compare reactants and products for each process, and account for how aerobic respiration produces more ATP per monosaccharide. Explain how photosynthetic organisms use the processes of photosynthesis and respiration.

26. What is Cellular Respiration?

REMEMBER:

**PLANTS** perform cellular respiration too!

# Cell Energy Study Guide

## Photosynthesis & Cellular Respiration

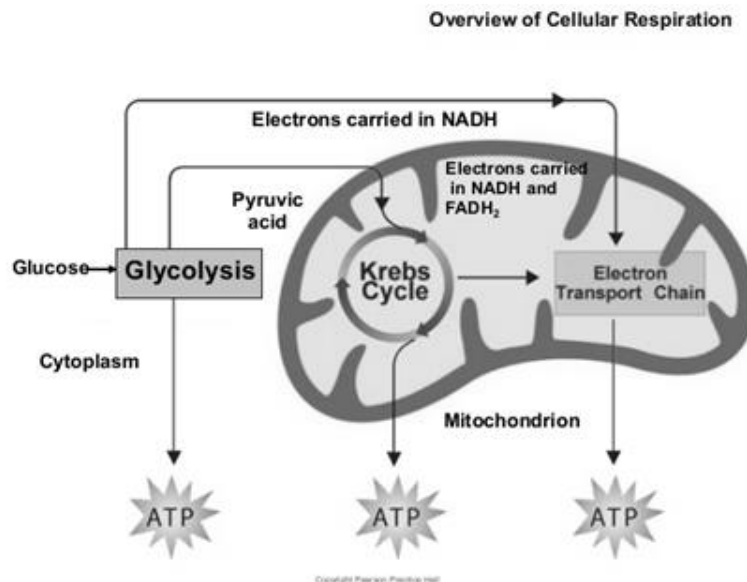
27. What **organelle** is responsible for cellular respiration? \_\_\_\_\_

28. What are the **three steps** in order of cellular respiration in the **presence of oxygen**, and which step makes the most ATP?

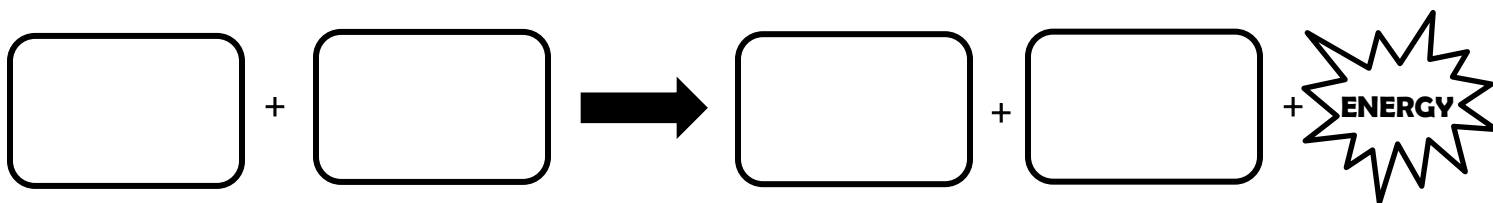
a. **Glycolysis:** (ATP made: \_\_\_\_\_)

b. **Krebs Cycle:** (what is released? \_\_\_\_\_)

c. **Electron Transport Chain:** (total ATP made: \_\_\_\_\_)



29. Write the equation for Cellular Respiration below. Indicate which side is the reactants and which side are the products.



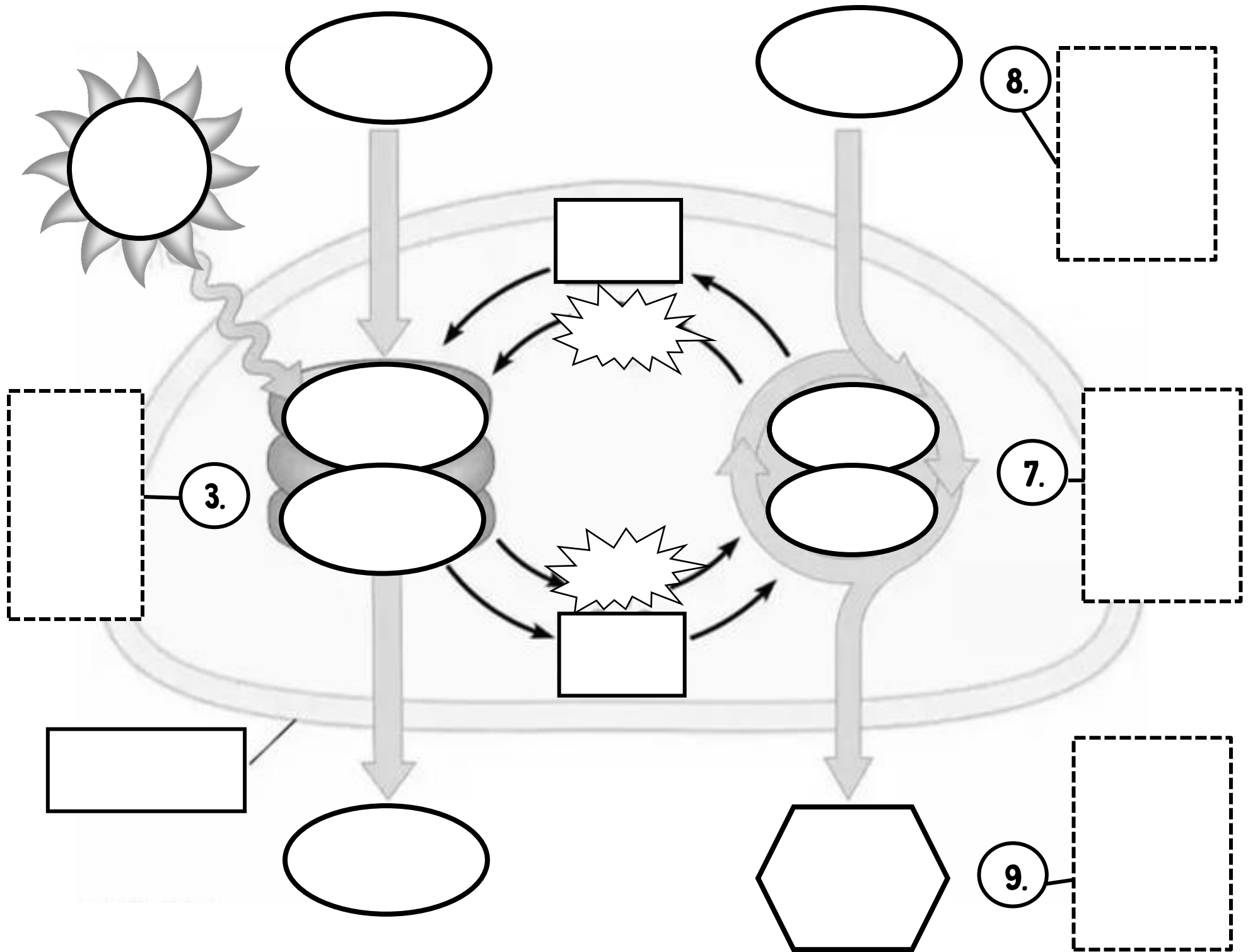
30. If oxygen is NOT present, glycolysis then goes into what? \_\_\_\_\_

31. What are the two types of fermentation? \_\_\_\_\_ and \_\_\_\_\_

**EXPLAIN THE TWO:**

a. **Alcoholic fermentation:**

b. **Lactic Acid fermentation:**



Label or **explain** what is happening in each photosynthetic process:

