

Photosynthesis Practice Worksheet

Name: _____ Date: _____ Period: _____

Instructions: Read each question carefully. For multiple choice questions, circle the letter of the best answer. For short answer questions, write your response in the space provided. For the labeling question, write the correct term in each blank.

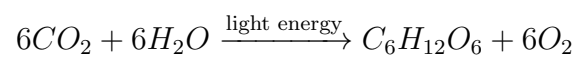
1. Photosynthesis primarily takes place in which organelle of a plant cell?
 - A) Nucleus
 - B) Mitochondrion
 - C) Chloroplast
 - D) Ribosome

2. Which of the following is a reactant (input) of photosynthesis?

- A) Oxygen
- B) Glucose
- C) Water
- D) Carbon dioxide

3. What is the main pigment found in chloroplasts that absorbs light energy?
- A) Carotene
 - B) Chlorophyll
 - C) Xanthophyll
 - D) Melanin

4. The overall chemical equation for photosynthesis is:



In this equation, what is the chemical formula for glucose?

5. Name the two main stages of photosynthesis.

6. In which part of the chloroplast do the light-dependent reactions occur?

7. What gas is released as a byproduct of photosynthesis?

8. Label the parts of the chloroplast in the diagram below. Write the correct term on each line.

Blank 1: _____
Blank 2: _____
Blank 3: _____

Terms to use: Stroma, Thylakoid, Granum

9. What is the primary purpose of photosynthesis for the plant?

10. Which of the following best describes the role of light in photosynthesis?
- A) It is a product of the reaction.
 - B) It provides the energy needed to convert carbon dioxide and water into glucose.
 - C) It is used to break down glucose into smaller molecules.
 - D) It has no role in photosynthesis.

Answer Key

1. **C) Chloroplast**
Chloroplasts contain chlorophyll and are the site where photosynthesis occurs.
2. **C) Water and D) Carbon dioxide**
Both water (H_2O) and carbon dioxide (CO_2) are reactants in photosynthesis. If only one answer is expected, the most commonly cited reactant is **carbon dioxide**.
3. **B) Chlorophyll**
Chlorophyll is the green pigment that absorbs light energy, primarily in the blue and red wavelengths.
4. **$\text{C}_6\text{H}_{12}\text{O}_6$**
Glucose is a six-carbon sugar with the formula $\text{C}_6\text{H}_{12}\text{O}_6$.
5. **The light-dependent reactions and the Calvin cycle (light-independent reactions).**
The light-dependent reactions require light and occur in the thylakoid membranes, producing ATP and NADPH. The Calvin cycle does not require light directly and uses ATP and NADPH to fix carbon dioxide into glucose.
6. **The thylakoid membranes (thylakoids)**
The light-dependent reactions take place in and across the thylakoid membranes inside the chloroplast.
7. **Oxygen (O_2)**
Oxygen is released as a byproduct when water molecules are split during the light-dependent reactions.
8. **Blank 1: Thylakoid**
Blank 2: Granum
Blank 3: Stroma
The thylakoid is the flattened sac where light reactions occur. A stack of thylakoids is called a granum. The stroma is the fluid-filled space surrounding the thylakoids where the Calvin cycle takes place.
9. **To produce glucose (food/energy) for the plant.**
Photosynthesis converts light energy into chemical energy stored in glucose, which the plant uses for cellular respiration and growth.
10. **B) It provides the energy needed to convert carbon dioxide and water into glucose.**
Light energy is absorbed by chlorophyll and converted into chemical energy (ATP and NADPH), which powers the synthesis of glucose.