



Teaching Guide

ASSESSMENT #1: COMPARING AND CONTRASTING

TITLE: Comparing Photosynthesis and Cellular Respiration

Target learning objective:

- ✓ differentiate photosynthesis and cellular respiration

PISA Level: TWO. At Level 2, students have adequate scientific knowledge to provide possible explanations in familiar contexts or draw conclusions based on simple investigations. They are capable of direct reasoning and making literal interpretations of the results of scientific inquiry or technological problem solving.



Materials needed:

- Android phone/tablet/laptop/personal computer
- stable internet connection
- If face-to-face: worksheet

Instructions to the teachers:

- If done online, the teacher will give the activity to the students through their online classes platforms and have them answer the activity.
- If done face-to-face, the teacher will print the activity sheet and will give it to the students for them to answer.
- Let them raise their questions regarding the activity.



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Direction: Compare photosynthesis and cellular respiration by completing the table below.

ANSWER KEY

BASIS OF COMPARISON	PHOTOSYNTHESIS	CELLULAR RESPIRATION
Function	capture energy	release energy
Location	chloroplasts	mitochondria
Starting Materials	carbon dioxide & water	sugar & oxygen
Products	sugar & oxygen	carbon dioxide & water

ASSESSMENT #2: INTERPRETING GRAPHICS

TITLE: i-FLOW mo!

Target learning objective:

- ✓ analyze and explain the flow of energy in photosynthesis and cellular respiration

PISA Level: TWO. At Level 2, students have adequate scientific knowledge to provide possible explanations in familiar contexts or draw conclusions based on simple investigations. They are capable of direct reasoning and making literal interpretations of the results of scientific inquiry or technological problem solving.



Materials needed:

- Android phone/tablet/laptop/personal computer



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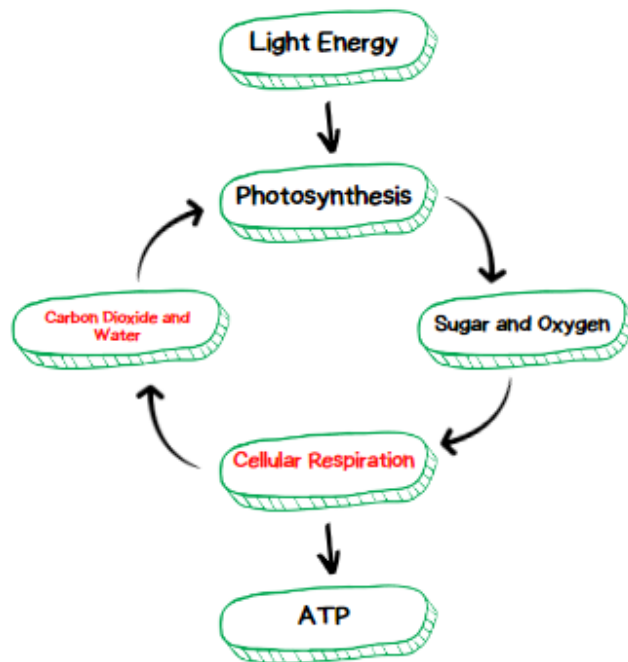
- stable internet connection
- If face-to-face: worksheet

Instructions to the teachers:

- If done online, the teacher will give the activity to the students through their online classes platforms and have them answer the activity.
- If done face-to-face, the teacher will print the activity sheet and will give it to the students for them to answer.
- Let them raise their questions regarding the activity.

Direction: Complete the following concept map illustrating the flow of energy in photosynthesis and cellular respiration. After completing the concept map, in ONE PARAGRAPH, please interpret and explain the concept map on the flow of energy in photosynthesis and cellular respiration.

ANSWER KEY



Organisms which can perform photosynthesis require light energy in order to produce their own food. The product of this process is sugar and oxygen. The sugar will be used by heterotrophs as their food and energy source. This food is needed in cellular respiration to produce energy in the form of ATP which is needed by cells in the body to perform their tasks. In the process of cellular respiration, carbon dioxide and water are products which are also needed in the process of photosynthesis. Overall, from the sunlight, energy will be passed from autotrophs to heterotrophs in a cycle.



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ASSESSMENT #3: IDENTIFYING STRUCTURES

TITLE: Plant's Interior

Target learning objective:

- ✓ identify the plant's major and basic internal structure involved in photosynthesis

PISA Level: ONE. At Level 1, students have such a limited scientific knowledge that it can only be applied to a few, familiar situations. They can present scientific explanations that are obvious and follow explicitly from given evidence.



Materials needed:

- Android phone/tablet/laptop/personal computer
- stable internet connection
- If face-to-face: worksheet

Instructions to the teachers:

- If done online, the teacher will give the activity to the students through their online classes platforms and have them answer the activity.
- If done face-to-face, the teacher will print the activity sheet and will give it to the students for them to answer.
- Let them raise their questions regarding the activity.

Direction: Identify the internal structure of a leaf with the image below. Use the box below as your guide. Describe the function of each structure in the process of photosynthesis in the provided table at the lowest part of this paper.



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ANSWER KEY

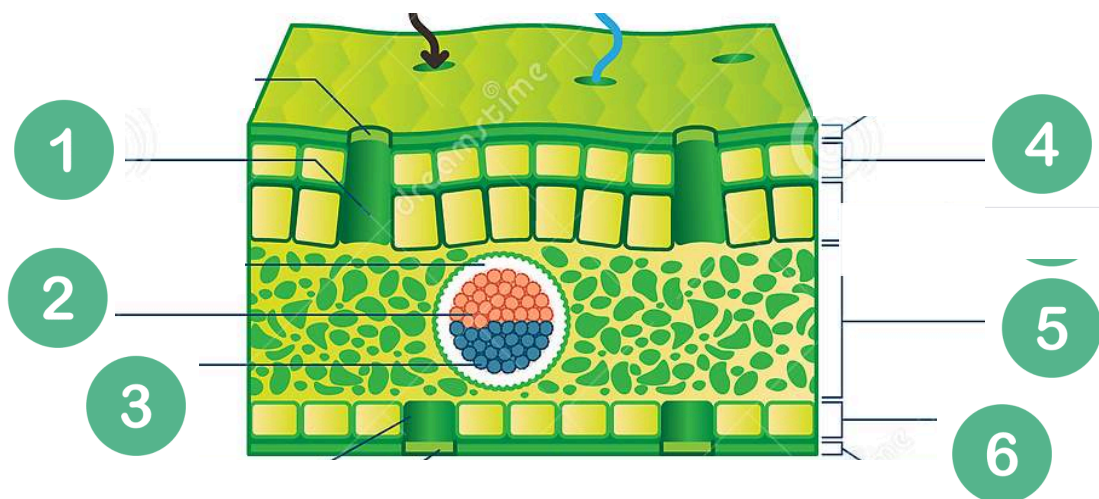


Image Source:

<https://www.dreamstime.com/leaf-anatomy-worksheet-vector-illustration-labeled-blank-biology-closeup-microscopic-structure-test-material-school-lesson-image157649149>

stoma	upper epidermis	xylem	lower epidermis
chloroplast	phloem	mitochondria	spongy mesophyll cells

PART	FUNCTION
1. Stoma	• oxygen and carbon dioxide enters and exits here
2. Xylem	• transport water
3. Phloem	• transport food
4. Upper Epidermis	• serves to protect the leaves
5. Spongy Mesophyll Cells	• contains great number of chloroplast which contains chlorophyll which is responsible for light absorption
6. Lower Epidermis	• serves to protect the leaves



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ASSESSMENT #4: FORMULATING HYPOTHESES

TITLE: Fall for Autumn

Target learning objective:

- ✓ explain why color changes in leaves, especially during autumn, is happening

PISA Level: TWO. At Level 2, students have adequate scientific knowledge to provide possible explanations in familiar contexts or draw conclusions based on simple investigations. They are capable of direct reasoning and making literal interpretations of the results of scientific inquiry or technological problem solving.



Materials needed:

- Android phone/tablet/laptop/personal computer
- stable internet connection
- If face-to-face: worksheet

Instructions to the teachers:

- If done online, the teacher will give the activity to the students through their online classes platforms and have them answer the activity.
- If done face-to-face, the teacher will print the activity sheet and will give it to the students for them to answer.
- Let them raise their questions regarding the activity.

Direction: Formulate hypotheses. Give an explanation with the situation provided below.



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Aside from the green chlorophyll pigment, some plant leaves contain yellow, orange, and red pigments. In the fall or autumn, specifically in temperate regions, the green leaves of plants may become yellow, orange, or red. In your own understanding, why do you think this color change is happening?

Temperature is a factor in photosynthesis. Cold winters are considered a threat to the leaves of some trees. Hence, when summer ends and fall/autumn enters, and the days start getting shorter and there is less sunlight, it is time for the plants to signal their leaves to prepare for winter and to stop making the green pigment chlorophyll. Consequently, the other colors of leaves with different photosynthetic pigments such as the reds (from anthocyanin), oranges (from carotenoid), and yellows (from xanthophylls) become visible.