

Name:
Science Class:
Teacher:
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Y8 Science

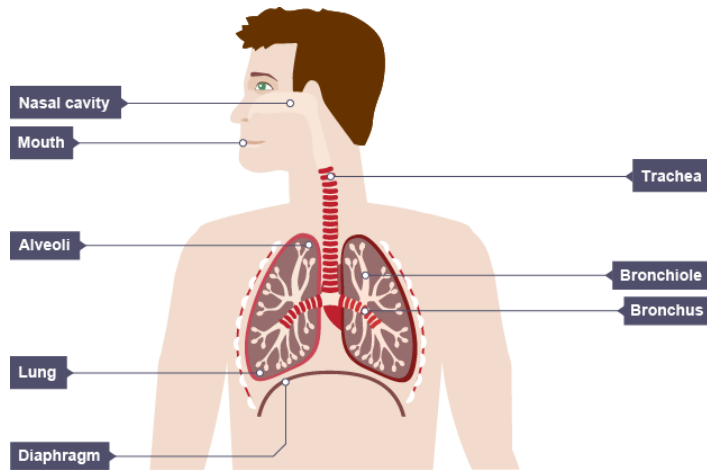
Term 2: Homework Booklet

Biology

	Hand in Date	Parents Signature
Respiration and Photosynthesis		
Homework 1		
Homework 2		
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Homework 4		

Respiration and Photosynthesis: Homework 1

Comprehension Task



Energy is needed for life processes such as growth and movement.

Respiration is a chemical reaction that happens in all living cells, including plant cells and animal cells. It is the way that energy is released from glucose so that all the other chemical processes needed for life can happen. Energy is released when glucose and oxygen react together in cells to produce carbon dioxide and water. The reaction is called aerobic respiration because oxygen from the air is needed for it to work. Aerobic means “with air”. Respiration takes place in the mitochondria in the cells.

The respiratory system transports oxygen from the air we breathe, through a system of tubes, into our lungs and then diffuses it into the bloodstream, whilst carbon dioxide makes the opposite journey.

Each time a person **inhales**, air enters through the nose and mouth.

The inhaled air travels through the windpipe, which is called the **trachea**.

The end of the trachea is located between the two lungs. The lungs are pink, mushy, and like a sponge. The lungs are protected by the rib cage. The lung on the left side of the body is smaller than the right lung, which allows room for the heart. Beneath the lungs is a sheet of muscle called the **diaphragm**. It works with the lungs to allow a person to inhale and exhale.

The trachea splits into two large tubes called bronchi. The **bronchi** lead into the lungs. One tube sends air into the left lung, and the other tube sends air into the right lung.

The bronchi branch off into smaller tubes called bronchioles. The **bronchioles** are about the thickness of a hair, and there are about 30,000 in each lung. From the bronchioles the air then continues its journey to tiny air sacs located throughout the lungs. The tiny air sacs are called alveoli.

The 600 million **alveoli** are covered with very tiny blood vessels called **capillaries**. It is in this area of the lungs between the alveoli and capillaries that gas exchange takes place. Oxygen passes from the alveoli to the blood stream, and carbon dioxide passes from the blood stream into the alveoli.

Questions

1. What substances react together to produce carbon dioxide and water?
2. What is also released as part of this chemical reaction.
3. Why is this type of respiration called aerobic respiration?
4. Through what process does oxygen move into the bloodstream?
5. Where does the inhaled air pass through after the mouth/nose?
6. One lung is bigger than the other. Which one is it and why?
7. The lungs work together with a muscle that is located below them. What is it called?
8. How many bronchi are there?
9. What are the alveoli covered with?
10. What enters the bloodstream from the alveoli and what leaves the bloodstream into the alveoli?

Respiration and Photosynthesis: Homework 2

1. Add the key terms below to the table next to the correct definition:

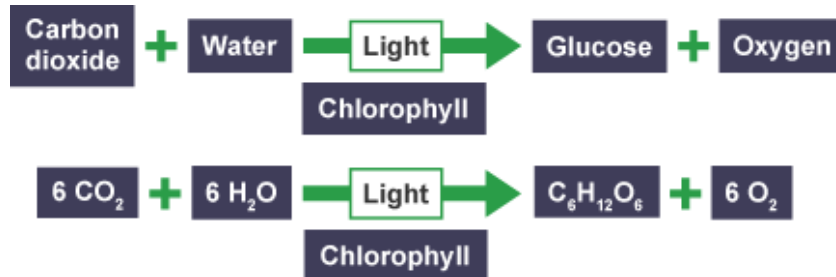
Ventilation Bronchioles Bronchus Aerobic Trachea Lungs
 Diaphragm Alveoli Respiration

Key Term	Definition
	Connects the trachea to the lung. There is a left and a right one.
	The major airway in the respiratory system. Runs from the back of the mouth to the bronchi.
	The organs where gas exchange takes place.
	A type of respiration that requires oxygen
	A large sheet of muscle that separates the lungs from the abdominal cavity
	Tiny air sacs in the lungs
	Breathing in and out
	The many small branching tubules into which the bronchi subdivide.
	A chemical process that takes place in cells and releases the energy needed for survival.

Respiration and Photosynthesis: Homework 3

Comprehension Task

Read the following information and answer the questions.



Energy is needed for life processes such as growth and movement.

Respiration is a chemical reaction that happens in all living cells. Energy is released when **glucose and oxygen** react together in cells to produce **carbon dioxide and water**.

Animals need to eat food to provide them with glucose. Plants, unlike animals, can make their own glucose. They do this using a process called **photosynthesis**.

During photosynthesis, plants produce **glucose and oxygen** by breaking down **carbon dioxide and water**.

Photosynthesis requires energy in the form of light to drive the chemical reaction.

The light energy required is absorbed by a green pigment called **chlorophyll** in the leaves. Chlorophyll is located in **chloroplasts** in plant cells.

Plant leaves are the main photosynthetic organ.

The carbon dioxide required for photosynthesis comes from the air. It enters leaves through pores in the leaf called **stomata**. Water enters the plant through the **roots** and is transported to the leaves in vessels called **xylem**.

A leaf usually has a large surface area, so that it can absorb a lot of light. Its top surface is protected from water loss, disease, and weather damage by a waxy layer.

The upper part of the leaf is where the light falls, and it contains a type of cell called a **palisade cell**. These cells are adapted to absorb a lot of light. They have lots of chloroplasts and are shaped like a tall box so lots of cells can fit into a small space.

Oxygen is formed as the waste product. Some is used by the plant for **respiration**, with the rest diffusing outside of the leaf so that it can be used for respiration by other organisms.

Answer the following questions.

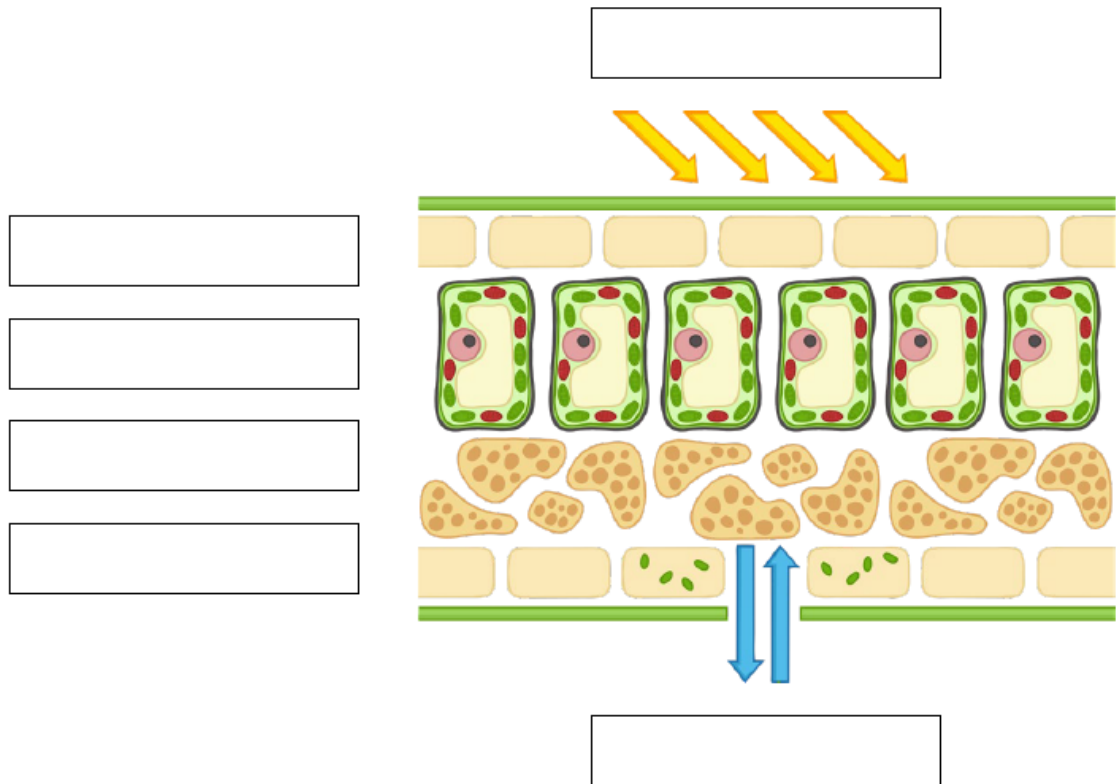
1. Why do living cells respire?
2. Why do plants need to make their own glucose and animals don't?
3. What is reacted with carbon dioxide in photosynthesis.
4. What type of energy is needed to drive photosynthesis.
5. The energy is absorbed by a green pigment. What is it called and where is it found?
6. What are stomata?
7. Leaves often have a large surface area. How does benefit the plant?
8. What type of cells have lots of chloroplasts?
9. What happens to the oxygen produced by the plants?
10. Complete the word equation (don't forget to add in what needs to be absorbed!)

Carbon dioxide + _____ → glucose + _____

Respiration and Photosynthesis: Homework 4

1. Use the keywords below to label the cross section of the leaf:

Stomata Light energy Upper layer and waxy cuticle
Spongy cells Palisade cells Lower layer



2. Below are a list of functions. Write them in the table next to the correct adaptation/structure:

- Positioned at the top of the leaf. Large number of chloroplasts. The primary site of photosynthesis.
- Transports water from the roots.
- Green pigment that absorbs light energy. Found in chloroplasts.
- Changes shape to open and close the stomata.
- Provides a large surface area to absorb the maximum amount of energy.
- Pores on the underside of the leaf that allow the exchange of gases.

Adaptation/ Structure	Function
Chlorophyll	
Stomata	
Thin, flat leaf	
Xylem	
Guard cells	
Palisade cells	