

Name:

Science Class:

Teacher:

Hand in day:

Y8 Science

Term 2 Homework Booklet

Biology

	Hand in Date	Parents Signature
Respiration		
Homework 1		
Homework 2		
Homework 3		
Homework 4		
Photosynthesis		
Homework 1		
Homework 2		
Homework 3		
Homework 4		

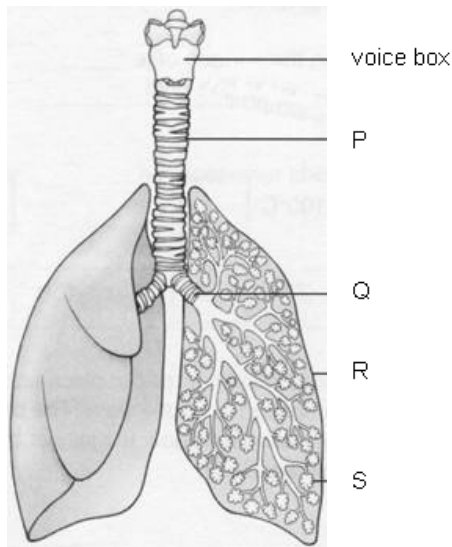
Respiration Homework 1:

Answer the questions below.

- 1. List the 7 life processes.**
- 2. What is the purpose of respiration?**
- 3. What is the word equation for aerobic respiration?**
- 4. What are the reactants in aerobic respiration?**
- 5. What are the products of aerobic respiration?**
- 6. In which part of the cell does aerobic respiration take place?**
- 7. Describe the chemical test used to test for the presence of carbon dioxide?**
- 8. Define the term diffusion...**
- 9. Why is diffusion needed for respiration?**
- 10. How do the gases we breathe in differ to the gasses we breathe out?**

Respiration Homework 2:

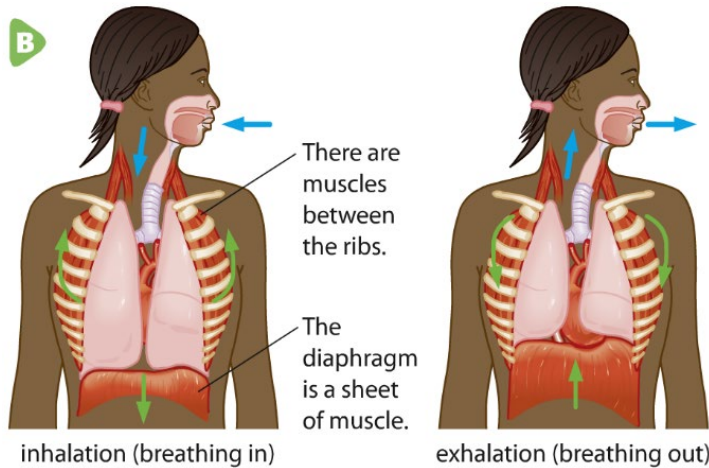
The diagram below shows part of the respiratory system.



- (a) From the diagram, give the letters which label:
- (i) the trachea; 1 mark
 - (ii) alveoli. 1 mark
- (b) (i) Which gas passes into the blood from the alveoli?
..... 1 mark
- (ii) Which gas passes out of the blood into the alveoli?
..... 1 mark
- (c) The walls of the capillaries and the alveoli are very thin.
Why do they need to be thin?
.....
..... 1 mark
- (d) There are millions of alveoli in the lungs. They provide a very large surface area. Why is a large surface area necessary?
.....
..... 1 mark
- Maximum 6 marks

Respiration Homework 3:

Use the diagram to describe what happens to the diaphragm, ribs and intercostal muscles when we inhale and exhale.



Inhalation (breathing in)

- The diaphragm _____.
- The intercostal muscles _____.
- This causes the ribs to move _____.
- This i _____ the size of the chest and d _____ the air p _____ inside it which sucks air i _____ the lungs.

Exhalation (breathing out)

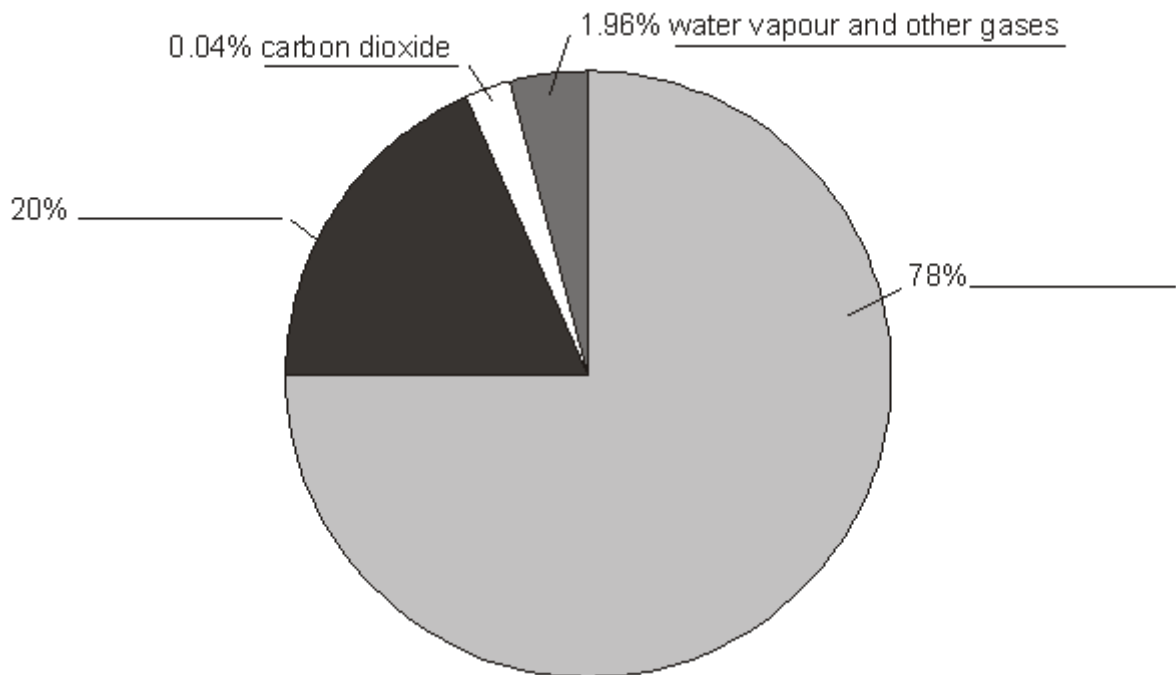
Respiration Homework 4:

1.

- (a) Air is a mixture of gases. The pie chart represents the percentages of different gases in air.

On the line by each section of the pie chart, write the name of the correct gas.

Two have been done for you.



not to scale

2 marks

- (b) The word equation below represents a process taking place in the cells of the human body.



- (i) What process does this word equation represent?

.....

1 mark

- (ii) As a result of this process, the proportions of oxygen and carbon dioxide in air breathed in and air breathed out change.

Which **one** of the statements below is true?
Tick the correct box.

Air breathed out has less carbon dioxide and more oxygen than air breathed in.

Air breathed out has less carbon dioxide and less oxygen than air breathed in.

Air breathed out has more carbon dioxide and less oxygen than air breathed in.

Air breathed out has more carbon dioxide and more oxygen than air breathed in.

1 mark
maximum 4 marks

2.

- (a) When tobacco is burned in cigarettes, carbon monoxide is formed. A device called a 'Smokerlyzer' measures the percentage of carbon monoxide in a person's breath. This indicates the percentage of carbon monoxide in the person's blood.

Four people tested their breath using a 'Smokerlyzer' as shown below. They repeated the test every two hours during one day at work.



Smokerlyzer™ Bedford Scientific Ltd

The results are shown in the table.

name	percentage of carbon monoxide in the blood			
	9 am	11 am	1 pm	3 pm
Amy	3.6	2.9	3.4	2.8
Don	1.8	1.3	1.2	1.2
Kisham	6.3	5.0	4.3	3.8
Pat	0.5	0.3	0.3	0.3

- (i) Look at the table above.
Which **two** people are most likely to have smoked tobacco before 9 am?

..... and

1 mark

- (ii) Don says he is a **non**-smoker. Suggest **one** other way carbon monoxide could have got into Don's blood before he came to work that day.

.....
.....

1 mark

- (b) Red blood cells transport oxygen from the lungs to the muscles.
If the air we breathe in contains carbon monoxide, the red blood cells will take up carbon monoxide instead of oxygen.

Use this information to explain why, when they are running, many smokers become out of breath sooner than **non**-smokers do.

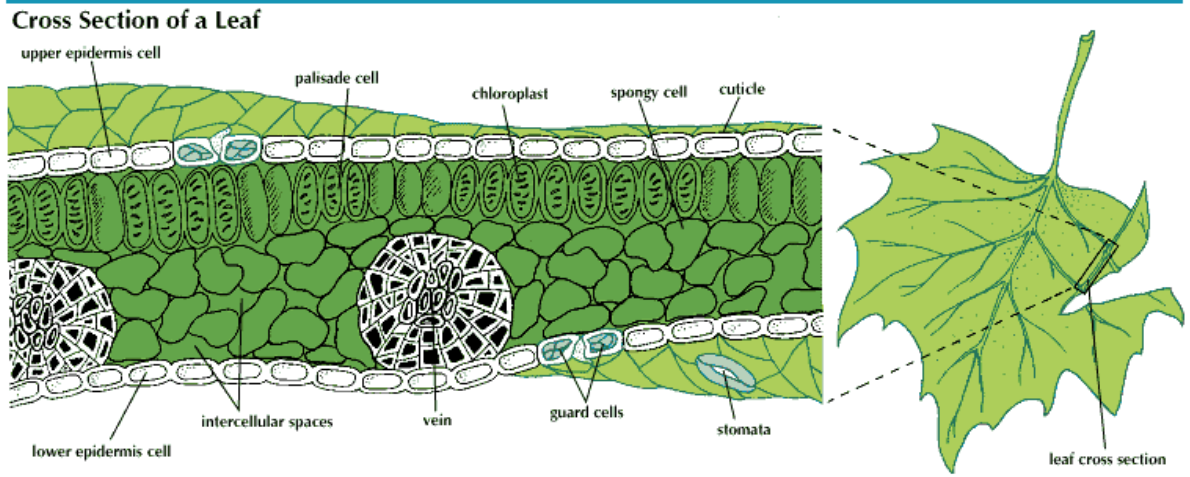
.....
.....
.....
.....

2 marks
Maximum 4 marks

Photosynthesis Homework 1:

How are leaves adapted to carry out photosynthesis?

Complete the table below.



Structure	How it helps photosynthesis
Larger surface area	
Leaves contain chlorophyll	Leaves can trap a lot of light.
Stomata	



Photosynthesis Homework 2:

Learn the spelling and the definition of the keywords, you will be tested next lesson.

Keyword	Definition
Carbohydrates	one of the main groups of nutrients e.g. glucose, starch
Chlorophyll	Pigment found in plants which is used in photosynthesis
Chloroplast	A cell structure found in green plants that contains chlorophyll
Guard cells	Cells surrounding the stomata that open and close to control the exchange of gases and water loss
Osmosis	The diffusion of water molecules through a partially permeable membrane from a dilute solution to a concentrated solution
Palisade cell	Tightly packed together cells found on the upper side of a leaf that carry out photosynthesis
Phloem	Specialised transporting cells which form tubules in plants to carry sugars from leaves to other parts of the plant
Photosynthesis	Process carried out by green plants where sunlight, carbon dioxide and water are used to produce glucose and oxygen
Rate of photosynthesis	This is affected by temperature, light intensity, carbon dioxide concentration and amount of chlorophyll
Respiration	The process used by all organisms to release the energy they need from food
Root hair cell	Specialised cells in plant roots that are adapted for efficient uptake of water by osmosis and mineral ions.
Spongy mesophyll	Layer of cells found in the middle of a leaf with an irregular shape and large air spaces between them for diffusion of gases
Starch	A storage carbohydrate
Stomata (singular stoma)	Small holes in the surface of leaves which allow gases in and out of leaves
Xylem	Cells specialised for transporting water through a plant, xylem cells have thick walls, no cytoplasm and are dead, their end walls break down and they form a continuous tube



Use the words to complete the sentences below.

Leaves help to make _____ for a plant. They contain a green substance called chlorophyll. The leaves take in a gas called _____.

The roots take in _____ and other substances from the ground.

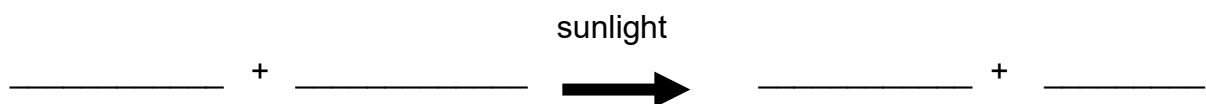
The _____ changes the water and carbon dioxide into the food that the plant needs. This food is a kind of sugar called _____. This whole process of making food is called _____

While this is happening, the leaves give off a gas called _____

Words to choose from: oxygen, carbon dioxide, photosynthesis, water, food, chlorophyll, glucose



Complete the word equation for photosynthesis



Test

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Photosynthesis Homework 3:

Complete the exam question on photosynthesis.

1 (a) Plants make their own food by photosynthesis.

Use the following words to fill in the gaps. You can use each word once or not at all.

carbon chlorophyll cytoplasm light nitrogen

oxygen sound starch water

During photosynthesis dioxide and
are converted into glucose and The energy needed to do
this is energy which is trapped by a green pigment called
..... .

The plant can change the glucose into which is insoluble so
it can be stored.

(6)

(b) Which part of a plant is adapted for photosynthesis?

.....

(1)

2 (a) Photosynthesis is a process that takes place in green plants.

(i) What type of energy is needed for this process?

.....

(1)

(ii) What substance in the plant absorbs this energy?

.....

(1)

(iii) In which part of the plant cell does photosynthesis take place?

.....

(1)

Photosynthesis Homework 4:

Use the data to draw a graph then answer the questions.

An experiment was carried out to find the rate of photosynthesis of a group of plants at different concentrations of carbon dioxide. This was repeated at 2 different light intensities. The results are given in the table below:

CO ₂ concentration / % of air	Rate of photosynthesis / arbitrary units	
	Low light intensity	High light intensity
0.00	0	0
0.02	20	20
0.04	29	35
0.06	35	47
0.08	39	68
0.10	42	84
0.12	45	89
0.14	46	90
0.16	46	90
0.18	46	90

Read pages 152 to 153 of your textbook, then answer the following questions in your red exercise book; where appropriate use full sentences.

1. Plot the results on a graph with two labelled lines (X-axis - CO₂ concentration; Y-axis - Rate of photosynthesis)
2. Describe the patterns shown by the two graphs. Refer to numbers on the graph for this answer.
3. Label your graph to show the region where carbon dioxide is the limiting factor.
4. Explain how you identified this.
5. Label your graph to show where light intensity becomes the limiting factor.

6. Explain how you identified this.
7. What other factors may limit the rate of photosynthesis?
8. In agriculture, farmers may sometimes add carbon dioxide to the air inside their greenhouses.
 - a. What is the advantage of doing this?
 - b. How else can market gardeners use information about limiting factors to produce vegetable such as lettuces throughout the year? This answer should be written as a long paragraph.