

Lockerbie Academy



S1 Science Healthy Planet Homework Booklet



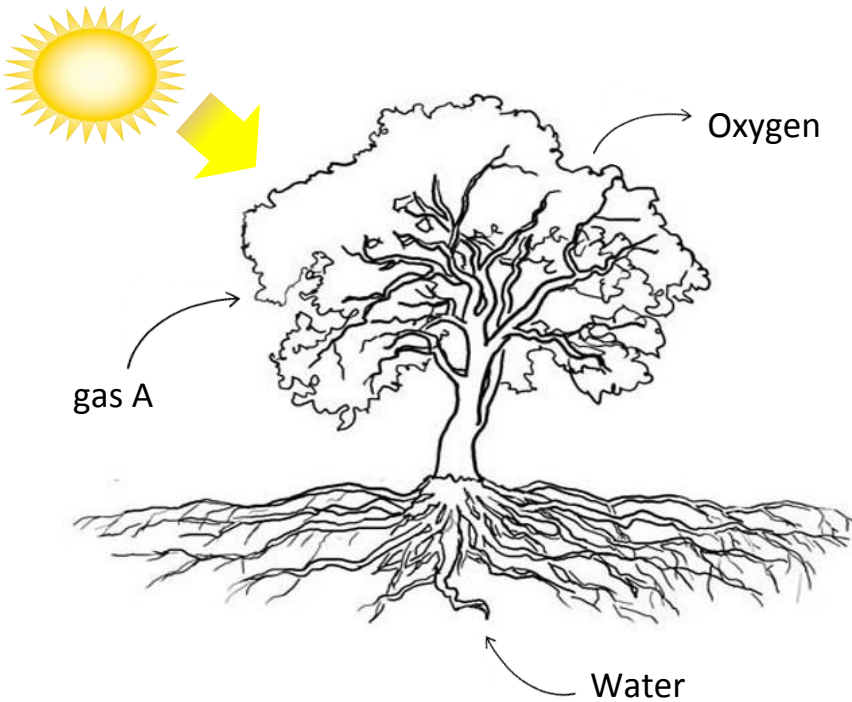
Homework 1: Photosynthesis and the Use of Plants /12

1. Copy and complete the table:

Area of Use	Name of plant	Use of Plant
		Used to produce bread
Medicine	Poppy	
Raw Materials	Rubber plant	

4

2. The picture below shows a tree photosynthesising.



During photosynthesis, gas A is taken into the leaf from the atmosphere. Water is taken up through the roots and small green structures in the plant cell carry out photosynthesis, converting light energy into chemical energy. At the end of the reaction, the cell has made an important carbohydrate, and releases oxygen back into the atmosphere.

- Name the structure in the plant cell which carries out photosynthesis.
- Name gas A.
- What is the important carbohydrate produced during photosynthesis?
- Using the information above, create a word equation for photosynthesis. Use the layout below to help you.

1
1
1



3. Correctly **match and arrange** the procedure to check a leaf for starch.

3

Procedure	Reason
Boil in water for two minutes	Removes alcohol from the leaf
Stain with iodine	Kills the cells making them soft and permeable
Rinse with water	Turns blue/black in the presence of starch
Boil in alcohol	Removes chlorophyll from the leaf

2

Homework 2: Ecosystems and Adaptations /11

1. Look at the picture below, can you identify:
 - (i) 3 populations
 - (ii) Their habitat
 - (iii) A predator and its prey.



4

2. Each of the following mammals has an adaptation to help it survive in its specific environment. Match the animal to its correct adaptation.

- | | |
|----------|---|
| 1 Camel | A) Good eyesight used for hunting prey |
| 2 Rabbit | B) Thin membrane between fingers to form a wing |
| 3 Lion | C) Large ears for better hearing |
| 4 Bat | D) Long eyelashes to protect the organism's eyes. |

2

3. (a) Where an organism lives can be determined by many factors. Identify the equipment below and state what factor it would be used to measure.

Equipment: _____

Factor used to measure: _____

Way to reduce error: _____



3

- (b) Name a different factor from the one above that you have learnt about, state how you would measure this factor and describe how it affects the population of a species.

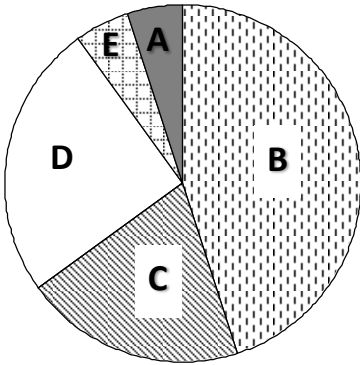
Factor: _____

How to measure this factor: _____

2

Homework 3: Sampling and Data Processing /14

1. An S1 class used pitfall traps to sample invertebrate biodiversity around the grounds of Lockerbie Academy. The table and pie chart show the total number of invertebrates found in all the pitfall traps.



Invertebrates	%
spiders	45
greenfly	20
springtails	25
beetles	5
caterpillars	5

- (i) Which letter in the pie chart represents the total number of spiders found in the traps? 1
- (ii) If the total number of invertebrates caught was 80, calculate the number of springtails. 1
- (iii) A pupil drew a diagram of how to set up a pitfall trap. The drawing is below.



suggest one improvement the pupil could make to this trap and explain your reason.

Improvement: _____

Reason: _____

2. A grass area of the school was sampled for buttercups. The number of plants found up to five metres from a wall is shown in the table below:

Distance from wall (m)	Number of Buttercups
0	0
1	7
2	16
3	23
4	30
5	35

- (a) (i) What piece of equipment would the scientists have used to sample these plants? 1
- (ii) Describe how this equipment would have been used including safety and reducing error. 2
- (b) (i) Calculate the average number of buttercups. 1
- (ii) Draw a graph to show how the distance from the wall affects the number of buttercups. 4
- (iii) Using information from the table or graph, finish the conclusion below:

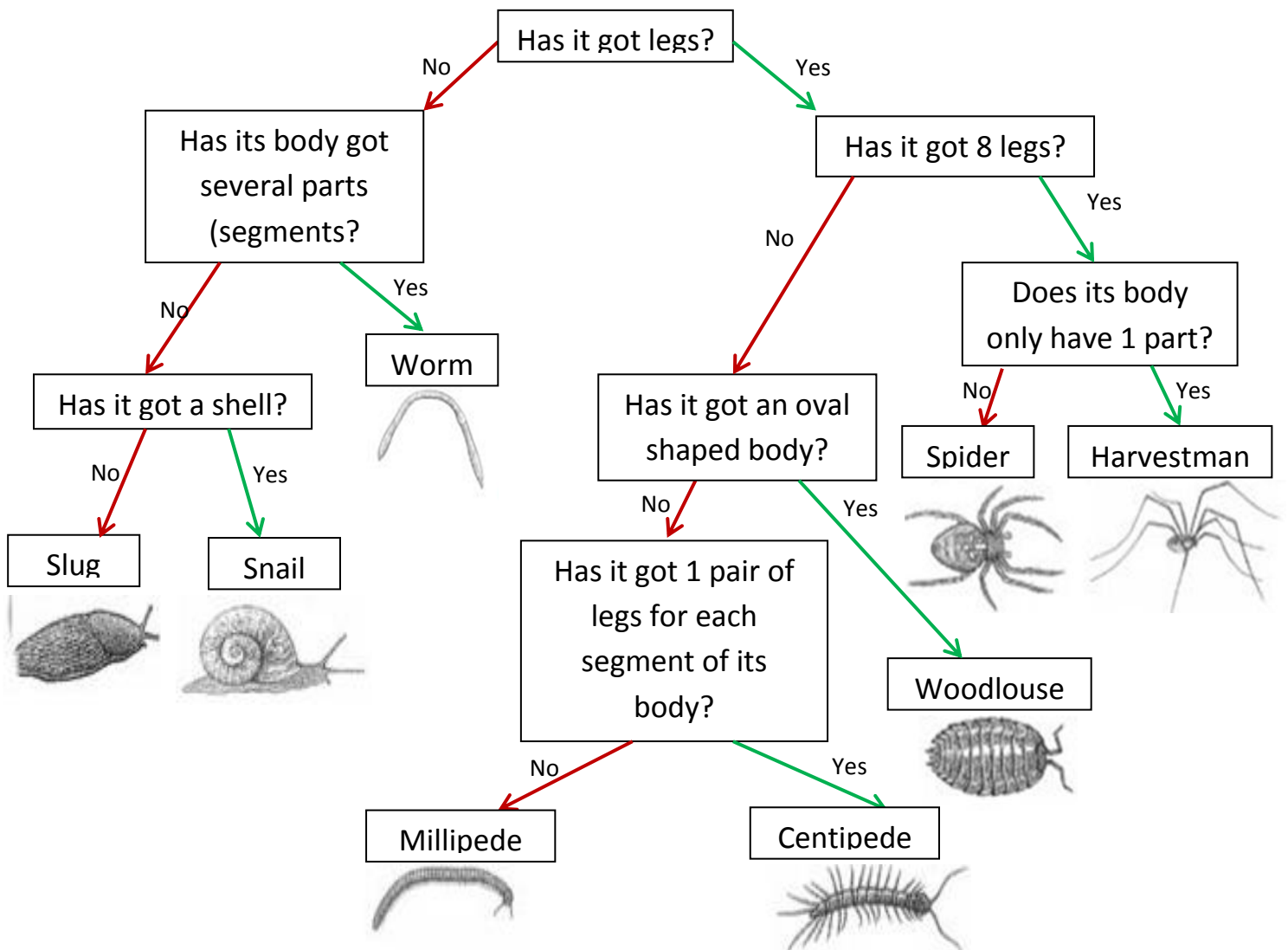
As the distance from the wall increases, the number of buttercups _____

-
- (iv) Suggest a reason for this relationship? 1



Homework 4: Identifying Organisms and Respiration /10

1. A key for identifying invertebrates is below; use it to answer the following questions.



- (i) Which of the invertebrates has not got legs, has only one body segment and a shell? 1
- (ii) Which characteristic could be used to distinguish a centipede from a millipede? 1
- (iii) What features do the spider and the harvestman have in common? 1
- (iv) Using the key, describe the characteristics of a woodlouse. 1

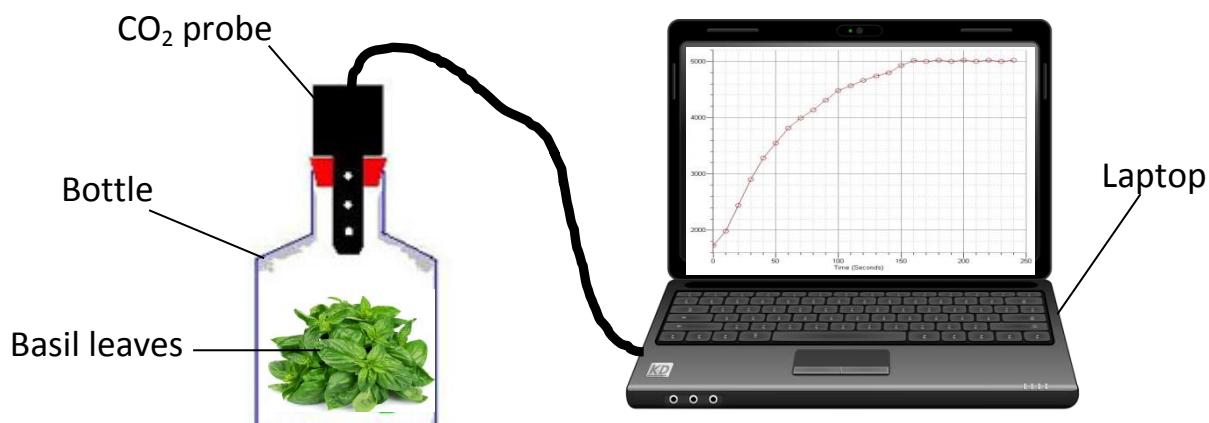
2. All living cells require energy in order to carry out every day chemical reactions and functions.

- (i) Name the process by which energy is released in cells. 1
- (ii) What gas is required for this process? 1
- (iii) What gas is released at the end of this process? 1

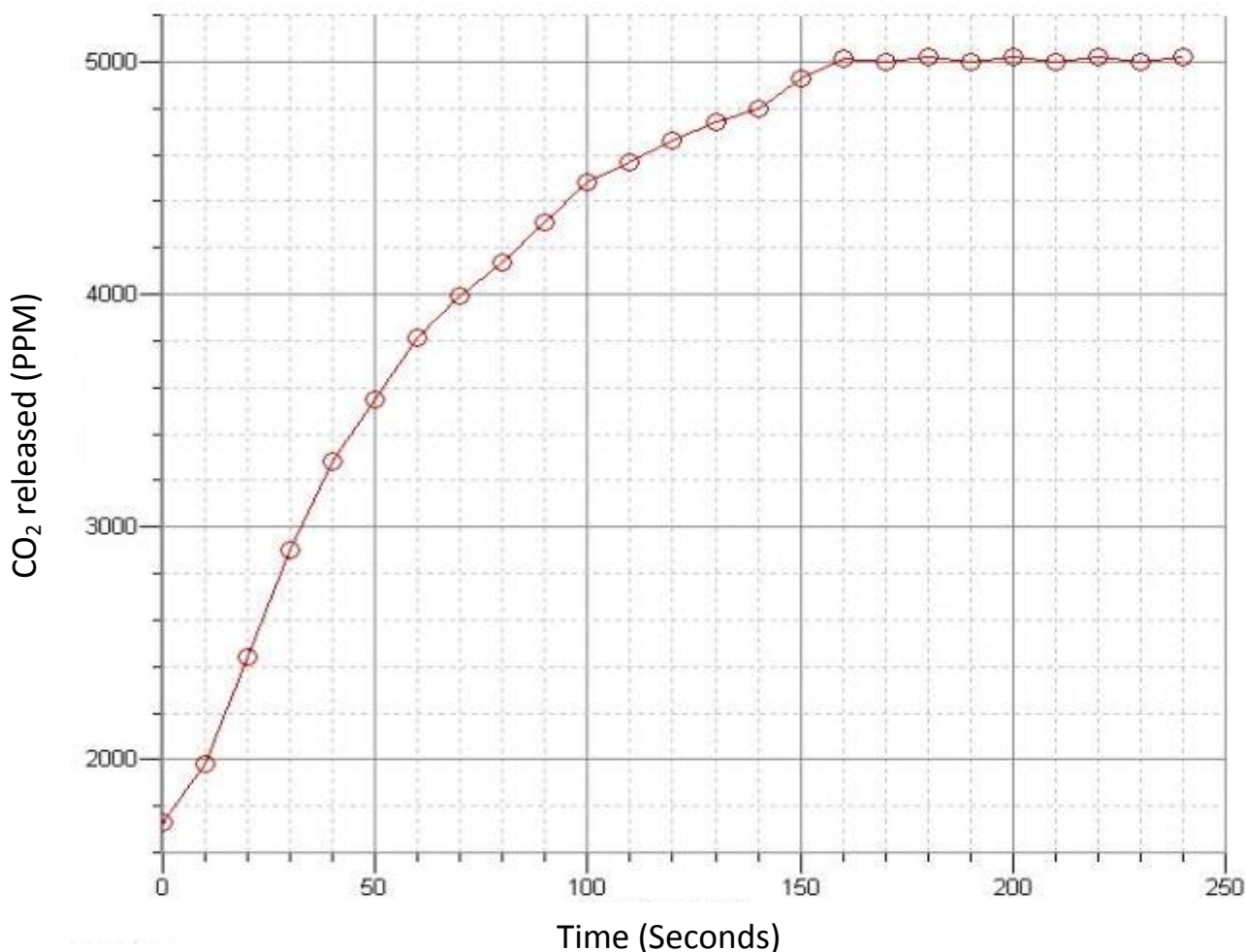


Problem
Solving

3. A group of first year students carried out an experiment to monitor the volume of carbon dioxide produced by a plant at night. They used a CO₂ probe and charted the results using a laptop.



The results recorded are shown in the graph below.



- (i) Describe what happens to the volume of carbon dioxide during the night.
- (ii) What will the effect on the volume of oxygen be?
- (iii) The graph is missing its last plot. What will the volume of CO₂ be at 250 seconds?

1
1
1

Homework 5: Carbon Cycle

Choose one of the following topics to research and present to the class. You can present this in the form of a leaflet, poster or power point presentation.

1. Find out about all the gases in the air – Use a pie chart to show how the air is made up of gases and in what percentage. What happens if any of these are altered?
2. What is meant by your ‘carbon footprint?’ How can you change your lifestyle to reduce it?
3. What is meant by ‘carbon footprint’ and ‘carbon offsetting’? – Give examples to illustrate your definitions.
4. What is the Greenhouse Effect and Enhanced Greenhouse Effect?
5. Include in your explanation the gases involved and ways we can reduce the effect.
6. What is ‘climate change’ - what evidence is there that it is induced by human activity? - include evidence and examples
7. Global warming – What is this and what are the factors that contribute to it?

