

Autumn 2

Year 8 Extended Science Homework Assignment



Name: _____

Teacher: _____

Instructions

A printed copy should be handed into your teacher.

The knowledge required to complete this assignment will be supported in class.

Respiration and photosynthesis

Task 1

Aerobic respiration

1 Use these key words to fill in the grey boxes and complete the word equation for aerobic respiration.

carbon dioxide	water	oxygen	glucose	(energy)
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reactants				products				
	+		→		+		+	
Clue: you get this from food		Clue: you inhale this gas		Clue: you exhale this waste gas				

2 Use the information in the word equation, together with the clues, to write a description of what happens during aerobic respiration.

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3 State where, in the cell, respiration takes place.

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Task 2

Anaerobic respiration

1 Write a word equation for anaerobic respiration in animals.

Hints: Anaerobic respiration happens when there is no oxygen available. Lactic acid is a waste product of anaerobic respiration.

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2 Describe one situation when animals would use anaerobic respiration.

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3 State two reasons why animals normally respire aerobically.

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4 Complete the word equation to describe what happens when plants and microorganisms respire anaerobically. This is known as fermentation.

glucose → + (+ energy)

5 Describe a situation where a plant may have to switch to respiring anaerobically.

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Task 3

Photosynthesis

1 Use these key words to fill in the grey boxes and complete the word equation for photosynthesis.

oxygen	water	carbon dioxide	glucose	light
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reactants				products		
	+		→		+	
Clue: enters leaf through stomata		Clue: liquid absorbed through the root		Clue: molecule the plant needs for energy		Clue: gas released into the atmosphere

2 Use the information in the word equation, together with the clues, to write a description of what happens during aerobic photosynthesis.

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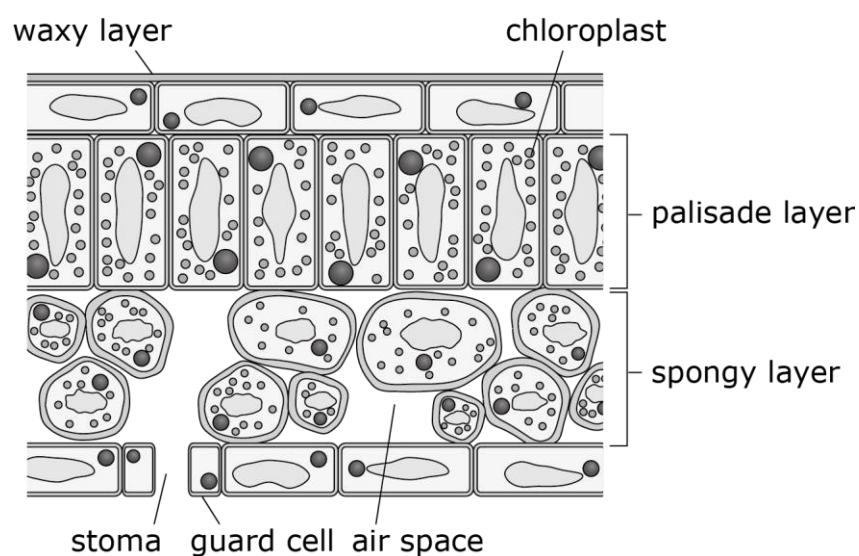
3 State where, in the cell, photosynthesis takes place.

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- 4 Plants and algae are producers. They make their own food by photosynthesis.
Explain why all organisms are dependent on photosynthesis to survive.
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Task 4

Leaves

- 1 Look at this diagram of a plant leaf.



The structure of each part can give you a clue about its function. Complete the structure column of this table, by choosing the correct label from the diagram.

Function	Structure
contains cells packed with chloroplasts; where most photosynthesis occurs	
contains air spaces, allowing carbon dioxide to diffuse throughout the leaf; oxygen diffuses out of the leaf	
carbon dioxide diffuses in; oxygen and water vapour diffuse out	
open the stomata through the day and close the stomata at night	

- 2** Draw lines to match the resource needed for photosynthesis with how it enters the plant.

Resource
light energy
carbon dioxide
water

How it enters plant
enters through stomata
absorbed from soil by roots
absorbed by chlorophyll in chloroplasts

- 3** State and explain how roots are adapted to their function.

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- 4** State and explain two ways leaves are adapted to their function.

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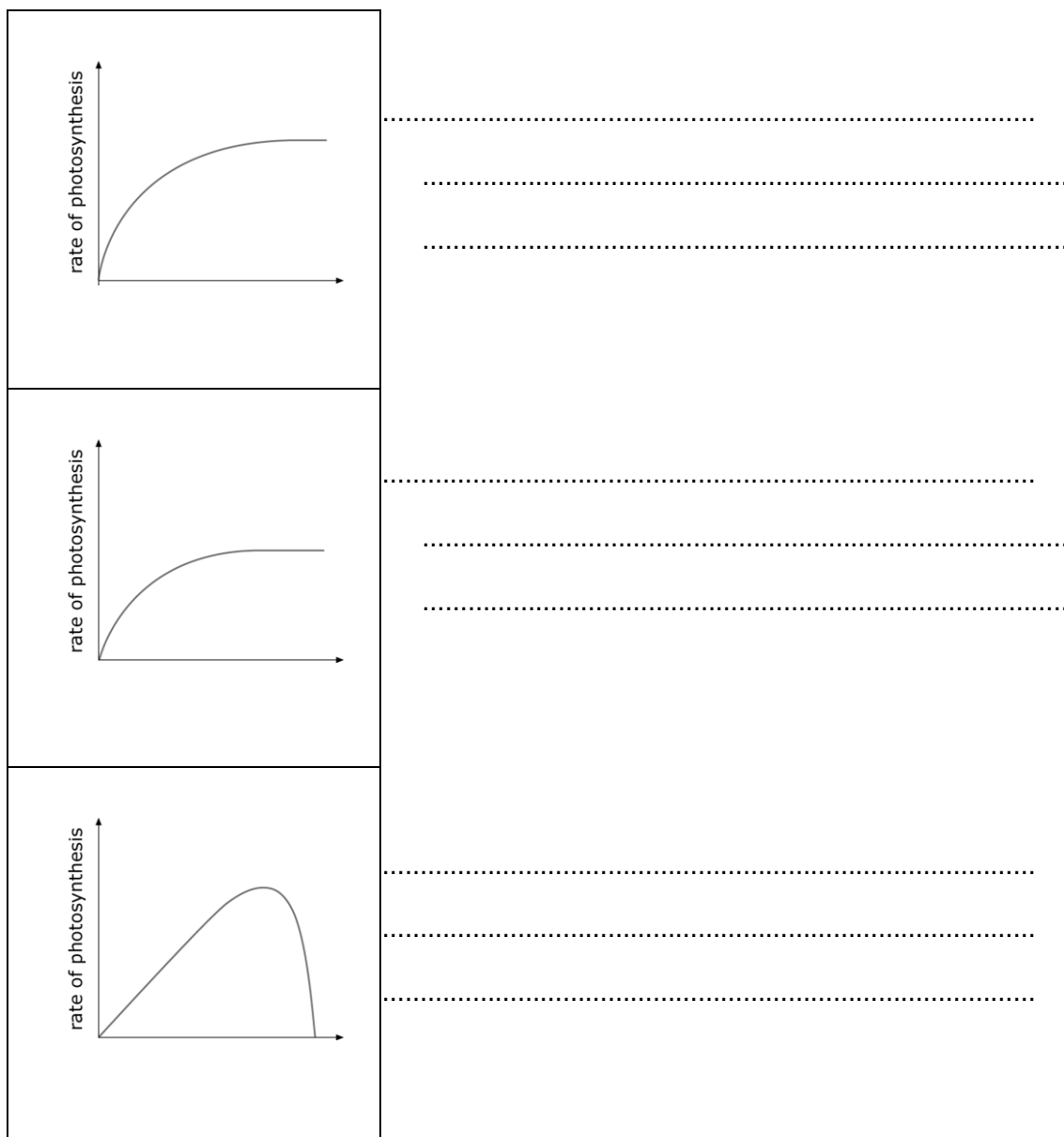
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Task 5

Factors that affect the rate of photosynthesis

- 1** These three graphs each show how a different factor affects the rate of photosynthesis.
- a** Label each x-axis, depending on which effect is shown in the graph. Choose from *carbon dioxide concentration (%)*, *temperature (°C)*, and *light intensity*. **b** Describe the trend shown in each graph.



- 2** Explain why, if the temperature gets too high, photosynthesis stops.

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Electromagnets

Task 1

Magnets

- 1 Draw the magnetic field lines around the bar magnet. Add the direction of the field lines. Label your diagram with these four labels:

north-seeking pole	south-seeking pole
strongest magnetic field	weakest magnetic field



- 2 State which of these statements about magnetism are true and which are false.

All materials are magnetic. T / F

Magnetic force is a non-contact force. T / F

Iron filings can be used to show the shape of a magnetic field. T / F

The closer the magnetic field lines, the weaker the magnetic field. T / F

Permanent magnets have their own magnetic field. T / F

A north-seeking pole attracts a north-seeking pole. T / F

The Earth has a magnetic field. T / F

- 3 A student wants to know whether an object is a magnet or an iron bar. Describe how they could use a simple bar magnet to decide.

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Task 2

Earth’s magnetic field

A compass needle is a small magnet that is able to turn.
Imagine all the floors in your school were covered in compasses.
Explain why they would all point in the same direction.
Use these key words in your explanation:

magnetic field lines	magnetic force
north-seeking pole	magnetic field

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Task 3

Electromagnets

- 1 a** List the equipment you would need to make an electromagnet.
b Describe how you would make it. **c** Explain how you could change its strength. **d** Describe how the magnetic field varies with distance from the electromagnet. **e** Draw a diagram below to help with your explanations.

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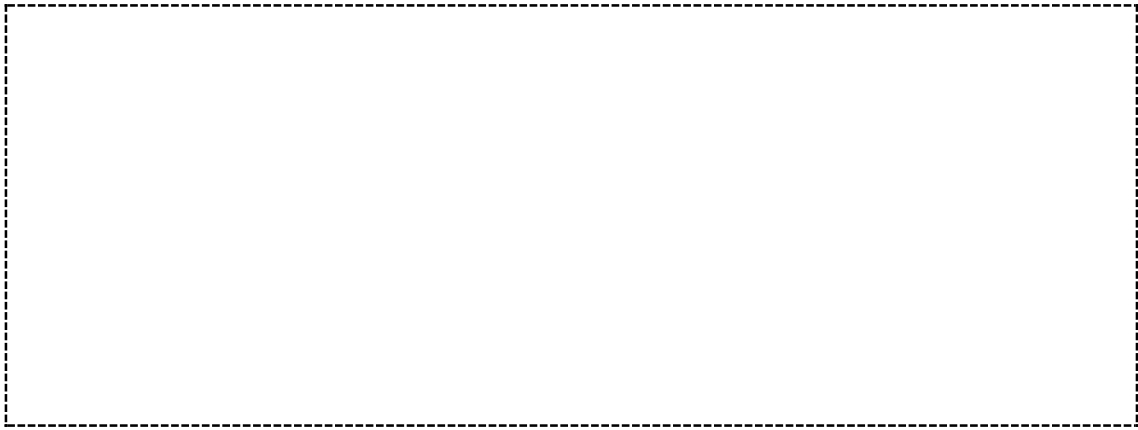
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- 2 Oscar decides to build an electromagnet and see how the number of coils affects the strength of the electromagnet. Here is a list of the variables for his experiment.

current	number of paperclips	size of paperclip	number of coils	core
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The independent variable is

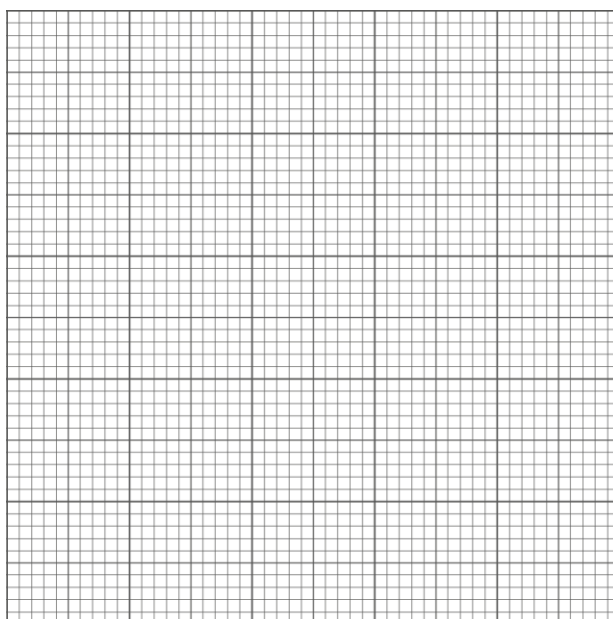
The dependent variable is

The control variables are

Here are Oscar's results.

Number of coils	Number of paperclips
5	4
10	9
15	13
20	18
25	25
30	40
35	35

3 Plot the data on a graph.



4 Describe and explain the pattern shown by Oscar's results.

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5 One of the results does not fit in with the others. Which one?

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6 What could Oscar do to improve his experiment?

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7 If Oscar decided to see whether current changed the strength of a magnet, what would the control variables be?

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Task 4

Permanent magnet or electromagnet?

- 1 Magnets are used in hospitals.

A door in a hospital has this warning sign:

<p>STRONG MAGNETIC FIELD</p> <p>No pacemakers</p> <p>No loose metal objects</p> <p>No hearing aids</p>
<p>No mobile phones</p>

Explain why you are safe outside the door.

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- 2 This question is about permanent magnets and electromagnets.

a State two similarities between a permanent magnet and an electromagnet.

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b State two differences between a permanent magnet and an electromagnet.

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c How would you move a car safely in a scrapyard from one place to another?

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