

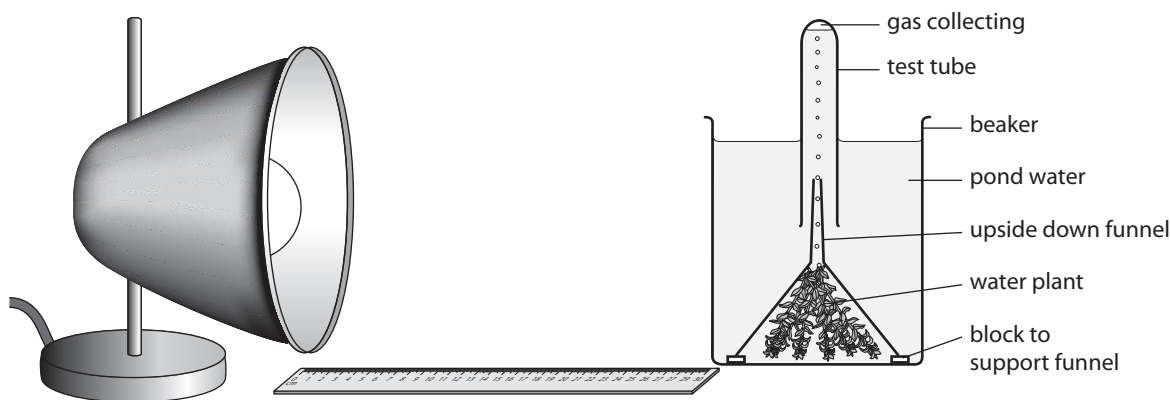
1 Photosynthesis and the carbon cycle

> 1.1 Photosynthesis

Exercise 1

This exercise checks that you can respond correctly to the words 'state', 'describe' and 'explain'. Look at the information about command words in the English Skills and Support section to help you to answer these questions.

The diagram shows some apparatus that Zara used to investigate the production of bubbles of gas by a water plant.



a State the name of the process happening in the plant that produces the bubbles of gas.

.....

b Describe what happens during the process you have named in **a**.

.....

1.1 Photosynthesis

c **State** the name of the green substance contained in plant cells that helps them to carry out this process.

.....

d **Explain** why this green substance is needed.

.....

.....

.....

e Zara used the apparatus to investigate the effect of changing the light intensity on the rate at which bubbles were produced.

Describe how she can vary the light intensity.

.....

.....

Exercise 2

This exercise is about using connecting words to link two ideas together.

Complete each sentence, using these connecting words or phrases. Sometimes, more than one word or phrase will fit – just choose the one you think is best.

- and as a result of because because of**
but in order to so

a Plants produce oxygen photosynthesis.

b Plants are green they contain chlorophyll.

c Plants need carbon dioxide water
 make oxygen and glucose.

d The light intensity received by this plant is high, it is
 photosynthesising rapidly.

e Plants do not photosynthesise at night it is dark.

1 Photosynthesis and the carbon cycle

> 1.2 More about photosynthesis

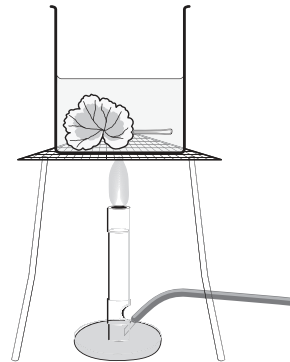


Exercise 1

In this exercise, you will practise using some words associated with scientific experiments. Look at the information about vocabulary for scientific experiments in the English Skills and Support section, to help you to answer these questions.

Marcus tests a leaf for starch.

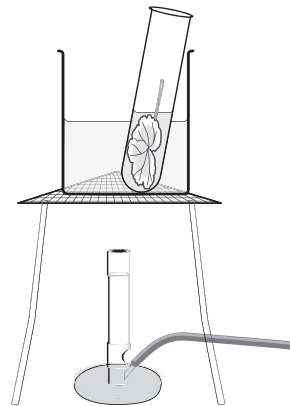
a This is one of the steps in his experiment.



What **hazard** does Marcus need to think about as he does this experiment?

.....

b Marcus takes the leaf out of the hot water and puts it into a tube containing ethanol. He stands the tube of ethanol in the beaker of hot water.

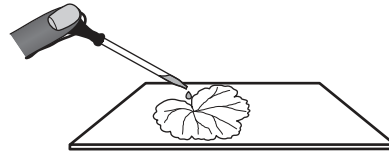


Describe the **observation** that Marcus will make when the leaf is in the hot ethanol.

.....

1.2 More about photosynthesis

- c Marcus takes the leaf out of the ethanol, rinses it in water and places it on a white tile. He adds iodine solution to it. The leaf goes blue-black.



- i What is Marcus's **observation**?

.....

- ii What **conclusion** can Marcus make?

.....

Exercise 2

This exercise is about some of the vocabulary you have learnt in this topic.

Complete these sentences. Use some of these words.

cells chlorophyll chloroplasts fertiliser photosynthesis
nitrate root hairs stomata water yield

Plants make their own food by They absorb carbon dioxide from the air through the in their leaves. The carbon dioxide reacts with water inside the in the palisade cells in the leaf, forming glucose.

Plants can use the glucose that they make to produce other substances. For example, plants use from the soil to convert the glucose to proteins. They can also make, using magnesium from the soil.

Farmers often add to the soil, to give crop plants more of the minerals that they need. This can increase the that the farmers get from the crops.

1 Photosynthesis and the carbon cycle

> 1.3 The carbon cycle

Exercise 1

In this exercise, you will practise turning statements into questions.

Change each statement into at least one question. Write more than one question if you can, but try not to ask anything that cannot be answered by reading the statement.

The first one has been done for you.

Statement: Plants take carbon dioxide from the air to use in photosynthesis.

Questions:

- Do plants take carbon dioxide from the air to use in photosynthesis?
- Which gas do plants take from the air to use in photosynthesis?
- Where do plants take carbon dioxide from, to use in photosynthesis?
- Why do plants need to take carbon dioxide from the air?

a *Statement:* Decomposers are important in the carbon cycle because they break down carbon compounds in other living things.

Questions:

.....

.....

.....

b *Statement:* All organisms release carbon dioxide when they respire.

Questions:

.....

.....

.....

1.3 The carbon cycle

c *Statement:* The combustion of fossil fuels adds carbon dioxide to the air.

Questions:

d *Statement:* Fossil fuels formed from organisms that died millions of years ago.

Questions:

Exercise 2

This exercise is about modal verbs. Look at the information about modal verbs in the English Skills and Support section to help you to answer these questions.

Complete each sentence, using the words that you think fit best.

Choose from the list.

- can cannot must must not**
should should not

- a Fossil fuels are non-renewable resources, so we try not to use too many of them.
- b When we do experiments with animals, we treat them with respect.
- c If we destroyed all of the plants on Earth, there be anything to remove carbon dioxide from the air.
- d Decomposers get carbon from every kind of living organism.
- e Living organisms use carbon in the form of an element.

1 Photosynthesis and the carbon cycle

f Now write a sentence using one of the words in the list that you have **not** used in your answers to **a**, **b**, **c** or **d**. Your sentence should include some information about the carbon cycle.

.....

> 1.4 Climate change

Exercise 1

This exercise is about comparative adjectives and adverbs. Look at the information on comparative adjectives and adverbs in the English Skills and Support section to help you to answer these questions.

Choose the best comparative adjective or adverb to complete each sentence.

faster greater higher larger lower
more frequently more slowly smaller

- a Snow turns to slush as the temperature gets
- b Meteoroids are than asteroids.
- c When a meteor enters the Earth’s atmosphere, friction with the air makes it travel
- d As the Earth’s mean temperature increases, the volume of water in the oceans becomes
- e Scientists think that extreme weather events will happen as global warming continues.

Exercise 2

In this exercise, you will use phrases to complete sentences about the causes and effects of climate change.

Here are some phrases about climate change.

- **increase in the Earth’s mean temperature**
- **mass extinction**
- **rise in sea level**
- **asteroid collision**

Use these phrases, and your own words, to complete the sentences.

Try to use all four phrases at least once.

- a** Global warming
-
-
- b** 67 million years ago
-
-
- c** Cities on coastlines, such as Los Angeles and Shanghai,
-
-
-



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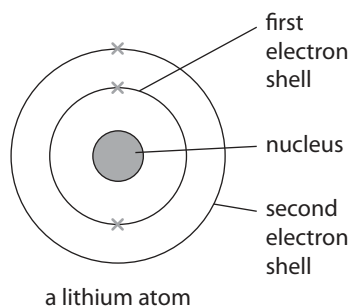
Properties of materials

> 2.1 Atomic structure and the Periodic Table

Exercise 1

This exercise asks you to think about the words **model** and **analogy**. You can find information about the meanings of these two words in the English Skills and Support section. You will also practise using some of the vocabulary that you have learnt in this topic.

The diagram shows a model of a lithium atom.



- a Explain why we say that this diagram shows a **model** of an atom.

.....

.....

.....

.....

2.1 Atomic structure and the Periodic Table

b Arun says that we can use the structure of the Solar System as an **analogy** to help us to think about the structure of an atom.

Describe **one** similarity and one difference between the structure of the Solar System and the structure of an atom.

Similarity:

.....

Difference:

.....

c In which electron shell of this atom do the electrons have a higher energy level?

.....

d The electron shells are concentric. Explain what ‘concentric’ means.

.....

.....

e What do we call the forces that hold the electrons in place in their shells?

Circle the correct words.

- electoral forces electrical forces electrostatic forces

Exercise 2

This exercise is about the Periodic Table of the elements, and some of the vocabulary that we use to describe it.

The diagram shows part of the Periodic Table.

		1 H hydrogen 1							2 He helium 4				
3 Li lithium 7	4 Be beryllium 9							5 B boron 11	6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20
11 Na sodium 23	12 Mg magnesium 24							13 Al aluminium 27	14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35	18 Ar argon 40
19 K potassium 39	20 Ca calcium 40												