1 Living things

What are living things?

Did you know that a sunflower can slowly turn so that it always faces the Sun? A sunflower is a **living thing** and like all living things, it **interacts** with its surroundings. All living things share some basic characteristics. How many of these characteristics can you identify?

> Photo **d** shows movement. I think all living things can move.

> > 6





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unit 1 SCIENCE INVESTIGATION NOTES **Characteristics of living things** All living things share these characteristics: • Nutrition: Living things need food to obtain energy. Most plants use sunlight to make their own food. Animals eat plants and other animals. • Respiration: Living things exchange gases with the environment. Animals take CONNO oxygen from the air, and give out carbon dioxide. • Excretion: Living things produce waste. Humans get rid of their waste when they go to the toilet, perspire (sweat) and when they breathe out. • Reproduction: Living things produce young. These new living things continue to live after their parents die. • Growth: Living things use energy from food to grow. When living things grow, they get bigger and they change. Movement: Living things can move. Plants can only move some parts very slowly. but many animals can run, jump, walk, swim or fly. Interaction: Living things interact with the world around them. Most living things react to touch, light, temperature and sound. Sample marketing text © Macmillan Publishers LTD Listen and read the Science investigation notes. Identify the characteristics of living things in the photos a-g on page 6. Say the Living things chant. Are these living things? Listen and write living or non-living. -3 From Susan Hello Science Investigators, Is a seed a living thing? Choose the correct words and write the sentences. a A stone is a living / non-living thing because it doesn't breathe, it doesn't interact and it doesn't reproduce.

- **b** A plant is a **living / non-living** thing because it grows, it reproduces, it produces waste, it reacts to its environment and it uses carbon dioxide to make food.
- SI Answer the question for the Science Investigators.

5

(2) (2)

The life processes of living things

Although living things have many differences, they all perform these life processes: nutrition, interaction and reproduction. However, different living things carry out these processes in different ways.



Nutrition: All living things take nutrients from their environment and change them into energy. Living things need energy in order to grow and develop. Different organisms use different methods to get the energy they need.

Plants are **producers**. They taking in organic substances from their environment and transforming them into a plant food called glucose. This process is called photosynthesis.

Animals are **consumers**. They can't manufacture their own food, so in order to obtain the energy they need, they must feed on other living things.

Decomposers are living things which feed on the remains of dead plants and animals. Fungi and bacteria are examples of decomposers. Why are decomposers important?





Interaction: All living things interact with their environment. A change in the environment can cause a reaction. We call this change a stimulus, and we call this reaction a response. When we touch something very hot, our response is to move our hand away.

Animals use their sense organs to detect stimuli. Although some plants, such as the Venus Fly trap, have basic sense organs, most plants have no sense organs. Plants do, however, grow towards light and plants' roots grow towards water.

make their own food by Sample marketing text @ Macmillan Publisherst allows living things to create new living things that will grow to be similar to themselves. Reproduction is essential for the continuation of the species. Different living things reproduce in different ways. Lions have young, called cubs, that grow to be adult lions, butterflies lay eggs that hatch as caterpillars and develop into adults, and some bacteria divide to make copies of themselves.

- Identify the life processes in photos a-c. 1
- 2 What are the three groups of consumers?
- **3** Identify the response and the stimulus.
 - a We move our hands away.
 - **b** We touch something very hot.
- Which sense organ is used in activity 3? 4
- 5 Do you remember the different ways some living things reproduce?

Let's investigate! Respiration

We already know that all **living** things have the characteristic of respiration in which they exchange gases with their environment. How can we investigate if yeast has this characteristic?



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The aim of our investigation is to find out if yeast has the characteristic of respiration.

Aim:

Materials:

- a jug of warm water a teaspoon of yeast
- a bottle sugar a balloon a warm place
- an elastic band

Hypothesis:

Method:

- 1 Dissolve the sugar in the warm water and stir in a teaspoon of yeast.
- 2 Pour the mixture into the bottle.
- 3 Place the balloon over the neck of the bottle and secure it with the elastic band.
- 4 Leave the bottle in a warm place for 15–20 minutes.

IVIA Record: ILLAI

- Observe the mixture carefully. Did the mixture change in any way? How did it change?
- Sample marketing text@hatahapplened to the balloon? Can you explain why?
 - Draw a picture showing the result of the investigation.

Conclusion:

- Can we see that yeast performs the process of respiration? How?
- What's the name of the gas produced in this investigation?

1 Yeast is used in bread-making. What part does it play in the process? Choose the correct answer.

- a Yeast makes bread taste sweet.
- **b** Yeast makes bread rise because it produces a gas.
- c Yeast makes bread solid.

Let's investigate more! Do the investigation again using cold water in a cold place. Use the investigation sheet and record the results.

unit 1





All **living things** are made up of very small units called **cells**. Cells are the building blocks of life.

A cell is the smallest living unit which makes up a living thing. We need a **microscope** to see cells because they're very small. A microscope is an instrument which makes objects look many times bigger.

Some living things, or organisms, have only one cell. These are **unicellular** organisms. Other organisms are made up of many cells and are called **multicellular** organisms. Humans are multicellular. There are more than ten billion cells in the human body.

Because cells are living things, they perform the life processes of nutrition, reproduction and interaction. They take in **nutrients** and they reproduce by **dividing** into two again and again.

Cells can be different shapes and sizes. Different cells carry out different functions. Muscle cells look very different from nerve cells. Sample marketing text ©









DID YOU KNOW?

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The first microscope was invented in the Netherlands more than four hundred years ago. Zacharias Janssen made lenses for eye glasses. He discovered that when he put two glass lenses together things looked bigger. The first microscopes made objects look twenty to thirty times bigger. Today, electron microscopes can magnify things up to three hundred thousand times their actual size.



Answer the question for the Science Investigators.

What are cells?

- **1** Copy and complete the questions and answers.
 - a What are cells? Cells are
 - b What life processes do cells perform? Cells perform
- **2** Copy and complete the sentences.

Multicellular Unicellular

- organisms have only one cell.
- organisms are made up of many cells.
- 3 How do cells reproduce?

• Dictionary definition on Wiki Dictionary definitions page 174.

• Answer to the Science Investigators' question on Wiki Discovery page 150.

How are living things organised?

unit 1



• Answer to the Science Investigators' question on Wiki Discovery page 151.

How are living things classified?

The Monera KingdomThe Protist KingdomThe Fungus KingdomImage: Descent and the protocol of the protocol of

Living things can be classified into five groups called kingdoms. Living things, or organisms, in one kingdom share similarities and are different from organisms in other kingdoms.

All the living things in the **Monera Kingdom** are unicellular, so they all consist of a single cell. Unicellular organisms can be found on land, in the air, in water and inside other living things. **Bacteria** belong to the Monera Kingdom. Bacteria can be helpful or the Monera Kingdom. Bacteria can be helpf

Living things in the **Protist Kingdom** are usually unicellular, but some protists are multicellular. Like bacteria, protists can be helpful or harmful. Most protists are found in water. The **amoeba** is a unicellular protist, which takes in its food by absorbing it. Algae is a protist that can be unicellular or multicellular.

Members of the **Fungus Kingdom** can also be either unicellular or multicellular. **Yeast** is an example of a unicellular organism, and mushrooms are examples of multicellular organisms. Fungi can't make their own food. They take the nutrients they need from the remains of dead plants and animals.

Viruses are much smaller than cells. They can get inside our body and make us ill. The unusual thing about viruses is that in order to reproduce, they must be inside a living thing. A virus doesn't make or use food. It doesn't change or interact with the environment. The

DID YOU KNOW?

only life process it performs is reproduction. The virus first attaches itself to a living cell. The living cell then makes copies of the virus. Once the cell is full of copies of the virus, the cell bursts. The new viruses then infect other cells. Do you think a virus is a living thing?



The Animal Kingdom



All plants in the **Plant Kingdom** are multicellular organisms. They make their own food by taking energy from the Sun. This process is called photosynthesis. During photosynthesis, plants produce oxygen, which is released into the air. Plants can't move around, but they can move certain parts, and they can react to stimuli, such as light and water. Some algae can be classified as plants because they perform photosynthesis. We can classify plants into two smaller groups: flowering and non-flowering plants.

All animals in the Animal Kisempte are multicellular They can't make their own food, so they get the energy they need to survive by feeding on other living things. Animals release carbon dioxide into the air through the process of **respiration**. Most animals can move around, and they use their sense organs to interact with their surroundings. We can classify animals into two smaller groups: vertebrates and invertebrates.



Answer the question for the Science Investigators.

R How do we classify living things?

Identify and classify these living things into kingdoms. Are they unicellular or multicellular?













a. bacteria - Monera Kingdom - unicellular.

What do the organisms in this unit have in common?



Sing the Five kingdoms song.

unit 1

The Science Investigators

A bad smell!



Listen and read the comic.

Bacteria are unicellular organisms and they belong to the Monera Kingdom.

Bacteria can live at extreme high and low 2 temperatures, but they prefer warm places.

Most bacteria are useful. Some bacteria help us digest our food, some help clean water and some help clean up oil pollution.

Some bacteria are harmful. Salmonella bacteria grow on fresh food, such as milk, fish and chicken. They can make us very ill.

When the bacteria in milk reproduce, they make the milk smell bad. The taste of milk also changes and the milk becomes sour.



Listen and read the text. Choose the correct words and write the sentences.

What do you think happened to the milk?

- a Bacteria are / aren't living things.
- **b** Bacteria like / don't like warm environments.
- c Most bacteria are / aren't useful.
- d Bacteria can / can't change the smell and taste of food.
- Read the text again. Is salmonella a 3 harmful bacteria? Which types of food can contain salmonella?
- 4 What happened to the milk? Copy and complete the explanation.

warm bad reproduced sour

Alex's bedroom was		,	so the bacteria
in his milk		quickly. This made the	
milk taste		and smell	

unit **1**

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SCIENCE INVESTIGATORS' REPORT

5 Read the report and copy and match the headings to the paragraphs.

Kingdom Interaction Nutrition Appearance Reproduction

The Mexican Red-Kneed Tarantula

1

The Mexican Red-Kneed Tarantula belongs to the Animal Kingdom.

2

It's usually black with red knees. Its body is covered with hairs and it has eight legs. It uses the two front legs to hold its prey and the other six legs to walk.

3

It's a carnivore and eats frogs, small birds, insects and mice. It uses its fangs to bite prey and inject venom. This venom kills the prey.

4

When a female is two years old, she can reproduce. Each year she will lay between four hundred and one thousand eggs. The eggs hatch a few weeks later. The baby spiders stay with the mother until they are about three weeks old.

5

The Mexican Red-Kneed Tarantula uses palps on the ends of its legs to smell, taste and feel. It doesn't have ears, so it can't hear. However, it does have eight eyes which surround its head. This means it can see things that are in front of it and behind it.



6 🔎 🔘 Choose a living thing. Investigate it and write a description.

Remember! Organise your notes.	USEFUL LANGUAGE 🛛 🖳 🖾			
Nutrition Appearance My living thing Kingdom Interaction	It belongs to the Kingdom. It has wings / claws / feathers / scales. It's a carnivore / herbivore / omnivore. It reproduces / lays eggs / gives birth. It can see / smell / taste / feel / hear.			
Why don't you find some pictures of your living thing and make a poster?				

Let's revise!



Learning to learn

What are the most important words in this text?

6 Read and identify the key words.

Nutrition is the taking in of nutrients and changing them into energy. Different organisms get energy they need in different ways. Plants are producers because they make their own food. This process is called photosynthesis. Animals can't produce their own food. They're called consumers because they feed on other living things. Organisms, such as bacteria and fungi, are decomposers because they feed on dead plants and animals.

7 Copy and complete the concept map.

Nutrition tissue decomposer Reproduction Monera Kingdom system response cell



I need to study this a little more. ★

I can do this well. ★ ★

I can do this very well. $\star \star \star$

unit 1