

+ Explore your book!

Richmond Solution BE Primary Science 4 includes ten units in four different areas of science: **Biology**, **Chemistry**, **Physics** and **Earth and Space**.

Each unit teaches a different topic.

Engage!

Start your adventure here! Think about what you already know about the topic. How does it relate to your life?

Explore!

Carry out an experiment or observation! This is a chance to explore the topic and your ideas. Make observations and draw conclusions.

Unit 3

Ecosystems and food chains

Engage!

What eats what?

Look at these living things. There is a snake, a mouse, grass, an owl and a grasshopper. For each one, think: What eats it? Draw an arrow from each living thing to what eats it. Decide on the correct order to make a chain.

- Which living thing does not eat anything? Why?
- Which living thing is not food for anything else?

Explore!

Observe your surroundings!

Objective: Go outside to observe the local area and the living things in it.

Method

- Go outside with your teacher and choose an area to observe.
- In your notebook, describe and draw what you see—for example, trees, rocks, ants.
- Look at some living things. Do not touch them! Note what they look like and what they are doing.
- Take photos of the area and the living things you find.

You will need

- a notebook
- a pencil
- a camera
- coloured pencils

Observations

- Complete the table with living things you observed and their features.

Living thing	Features

Conclusions

- Does the area have what the living things need, like food, water and shelter?
- What were the animals doing? How does this help them survive?

Explain!

Read explanations of new ideas.

Lesson 3.4

How are plants suited to their habitats?

How do plants survive in the desert where there is not much water? (Or how do plants survive cold winters when there is not much sunlight? All plants have a favorite habitat, and they are suited to the conditions there. This means they have special features that help them survive.)

Some desert plants have roots that reach deep into the ground for water. Others have wide, shallow roots. When it rains, these plants quickly absorb it.

Practice

- Match the animals with the features that help them survive.

☐ porcupine	☐ giraffe	☐ arctic hare	☐ camel

 - It has a long neck to reach food.
 - It has long eyelashes to keep sand out of its eyes.
 - It has long spines to keep predators away.
 - Its coat becomes white in winter to hide from predators.
- Think about what a camel needs to survive. Can it survive outside a desert habitat, such as in a zoo? Explain your answer.

Lesson 3.5

How are animals suited to their habitats?

Like plants, animals are suited to their habitats. Special features help them survive in their habitats. Examples include features for hunting, escaping predators or finding a mate for reproduction.

Do you know why male frogs have different calls? Lots of frogs compete for resources in their habitat. One call is to defend their territory from other male frogs. Another is to attract females.

Have you ever wondered why some birds fly in a V shape? When a bird flies, it leaves an area of calm air behind it. Inside this calm air, it is easier for another bird to fly, which saves energy. Birds take turns flying at the front of the V where it is more difficult to fly. This cooperation helps them fly long distances.

Wolves and hyenas hunt in groups. This teamwork helps them catch their prey. They also mark their territory with urine because they want all the natural resources—like food, water and shelter—for themselves. This keeps competition away.

These are just some examples of how animals are suited to their habitats. When you observe any animal, ask yourself: What is it doing? How does this behavior help it survive?

Practice

- Choose the true sentences.

☐ All birds fly in a V shape.	☐ Hyenas hunt in groups.
☐ Frogs have different calls.	☐ Wolves mark their territories.
- Investigate. Use the internet to research why some animals, such as bears, hibernate.

Extend!

Check your understanding and find out more!

Evaluate!

Check your progress!
At the end of each unit,
there are plenty of
activities to see how
much you have learned.

Check my progress

1 Complete the definitions with the terms.
community ecosystem habitat individual population

a. One living thing of a species is called an _____.

b. A _____ is a group of living things of the same species in an ecosystem.

c. All the living and nonliving things in an area make up an _____.

d. The home of a living thing is its _____.

e. A _____ consists of all the populations of different species in an ecosystem.

2 Choose the true sentences.

a. ☐ Plants make their own food by photosynthesis.

b. ☐ The energy in food chains comes from plants.

c. ☐ No animal eats final consumers.

d. ☐ Humans are omnivores.

e. ☐ Air, water and sunlight are living things.

f. ☐ All ecosystems are very big.

3 Complete the sentences.

a. A living thing that makes its own food is called a _____.

b. A living thing that eats other living things is called a _____.

c. An _____ only eats plants.

d. An _____ eats both plants and animals.

e. A _____ only eats animals.

f. A _____ breaks down dead animals and plants.

Unit 3 Ecosystems and food chains

1 Draw arrows to show the movement of energy in a food chain.

2 Complete the table with the living things in the food chain.

Producers	Consumers	Decomposers

3 Match the features of the living things with the ways they help survival.

a. Hyenas hunt in groups.	They can reach water deep in the ground.
b. Some trees lose their leaves in fall.	They use less energy to fly.
c. Geese fly in a V shape.	They do not need as much food in winter.
d. Cacti have wide, shallow roots.	They can find prey at night.
e. Many desert plants have deep roots.	They quickly absorb water from rain.
f. Owls have good vision and hearing.	They help each other catch prey.

Glossary

A **absorb** Take in (e.g., energy or liquid)

antibiotic A drug that kills harmful bacteria

appliance A machine that uses electricity

asteroid A large rock that orbits the Sun

B **battery** An object that supplies electricity to appliances like cell phones and flashlights

bone A hard tissue that is part of the skeleton of a vertebrate's body

C **carnivore** An animal that only eats other animals

cell The component in a circuit that supplies energy, such as a battery

chemical change A change to a substance that results in a new substance

chemical energy A type of stored energy, as in food and batteries

circuit The path electricity takes

closed circuit A complete circuit around which electricity can flow

cold-blooded Having a body temperature that changes with the surroundings

comet An object in space made of dust and ice that orbits the Sun

common cold A common infectious disease that causes coughing, sneezing and a runny nose

community All the populations of different species in an ecosystem

component A part of an electrical circuit, such as a wire, an appliance or a cell

condensation The change from a gas to a liquid

conductor A material through which electricity can flow easily

consumer A living thing that gets energy and nutrients by eating other living things

contaminated Containing a germ or harmful substance

contract (Of a muscle) get shorter and tighter to make the body move

core The central part of Earth, consisting of the inner core (solid metal) and the outer core (liquid metal)

COVID-19 An infectious disease that caused a pandemic in the early 2020s

crater A cavity at the top of a volcano or on the surface of a planet

crust The outer, rocky layer of Earth

decomposer A living thing that gets energy and nutrients by breaking down dead matter

diet The food that a living thing usually eats

drug A substance that affects the body

E **ecosystem** All the living and nonliving things in an area

elastic Able to return to its original shape after being stretched

electrical energy The energy of electricity that makes appliances work

energy The capacity of something to do work or be active

energy transfer The movement of energy from one object to another

epicenter The starting point of an earthquake on the surface of Earth

evaporation The change from a liquid to a gas

exercise Physical activity to maintain or improve health

F **fault** A crack in a tectonic plate or between tectonic plates

feather Any one of the light parts covering a bird's body

flexible Capable of bending

flu An infectious disease that causes fever and body aches; influenza

focus The starting point of an earthquake below the surface of Earth

food chain A series of living things each dependent on the previous one for food

force Something that pushes or pulls an object and affects its movement

freezing The change from a liquid to a solid

G **gas** A physical state of matter in which the particles are not in contact with each other and move around freely

germ A very small living thing that causes infection and illness

gill An organ in fish that absorbs oxygen from water

Glossary

Skeleton The hard outer covering of some invertebrates

Glossary

At the back of the book, there is a Glossary with definitions of all the important scientific words you will need to understand.

This science course helps you develop these global skills, too.
Look out for these symbols next to activities:



Collaborative learning

Work with others to improve your knowledge and develop your interpersonal and social skills.



Critical thinking

Apply what you have learned, analyze information, form new ideas and communicate them to others.



Research

Find out new things about the topic in books or online, select important information and present your findings.



Social and emotional development

Respond to topics as an individual or as a member of society, and discuss your thoughts and feelings about them.

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