●●○○○ **Level 2 · Science** S2.2

Food chains and habitats

Where each living thing finds a home, and what it eats.

Sort living and non living things, group animals, explore habitats near home, see how bodies fit their homes, follow food chains, and find ways to protect a habitat.

YOU ARE READY FOR THIS BOOK IF

You can say what a goat, a lion and a hen eat.

One step up	S3.1 Cells
This book	**S2.2 Food chains and habitats**
One step down	S1.2 Animals and where they live

Contents

S2.2.1 Living and non-living

S2.2.2 Grouping animals

S2.2.3 Habitats

S2.2.4 Exploring a small habitat

S2.2.5 Fit for the habitat

S2.2.6 Plant eaters, meat eaters and both

S2.2.7 Food chains

S2.2.8 Changes to habitats

Key words, A to Z

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S2.2.1 CHAPTER 1

Living and non-living

How can I tell if something is alive?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** If it moves, it is alive.
- ☐ **B** If it feeds, grows and has young, it is alive.
- ☐ **C** Only animals are alive.

BY THE END YOU CAN

- Sort things into living, once living and never living
- List signs of life, such as growing, feeding and breathing

A goat is alive. A stone is not. A wooden spoon is not alive now. It came from a tree. How do we sort these things?

A **living** thing is alive now. A goat, a tree, a seed and you are living.

A thing is **once living** if it was alive once. It may have come from something alive. Wood, paper, cotton, a dead leaf and a bone are once living. So is a book, which is made of paper.

A thing is **never living** if it was never alive. A stone, metal, glass, water and air are never living.

DRAW IT FIRST

Draw the three groups

living


tree


you

1 Draw a tree and a person. Write living.

living


tree


you

once living

stick


book

2 Draw a stick and a book. Write once living.

living


tree


you

once living

stick


book

never living

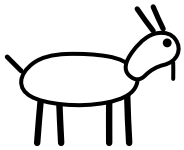

stone


moon

3 Draw a stone and the Moon. Write never living.

How do we know a thing is alive? We look for the **signs of life**. A living thing moves, breathes, feels and grows. It has young, gets rid of waste and feeds.

goat



✓ feeds
✓ grows
✓ breathes
✓ has young

stone



✗ feeds
✗ grows
✗ breathes
✗ has young

A goat shows every sign of life. A stone shows none.

One sign is not enough. A living thing shows all the signs at some time.

SEE IT THREE WAYS

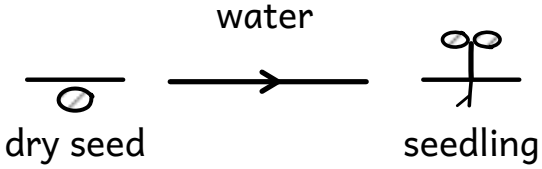
As a picture

Sign	Goat	Tree	Car
moves	yes	a bit	yes
grows	yes	yes	no
feeds	yes	yes	no
breathes	yes	yes	no
has young	yes	yes	no

In words

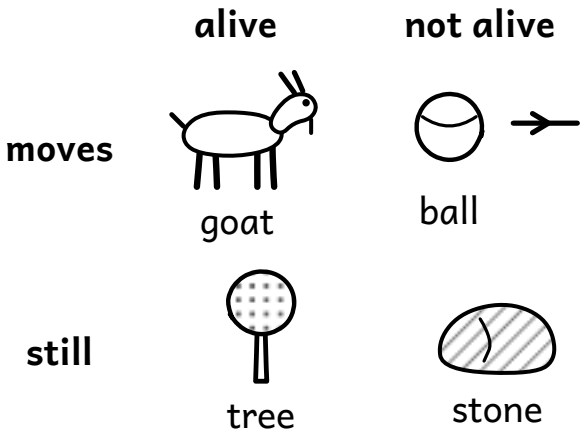
A goat and a tree show every sign of life. A car moves, but it does not grow or have young. So a car is not alive.

A seed is alive. It does not seem to do anything. It is resting. It wakes up when it gets water.



A dry seed looks still. Water wakes it, and it grows.

Fire seems to grow and to feed on wood. It even needs air. But fire cannot feel. A living thing comes from a parent. A fire can start from a spark. Fire is not alive.



Moving does not make a thing alive. Being still does not make it not alive.

TRY IT

Sort things into three circles

You need: paper and a pencil, or a stick and bare ground, a dry bean, a green leaf and a dead leaf, a small stick, a stone, a metal spoon, a key or a coin, a piece of cotton cloth or paper.

Be safe: Do not pick up sharp, broken or mouldy things, or dead animals. Wash your hands after you touch soil or plants.

1. Draw three big circles. Write living, once living and never living.
2. Find these seven small things in your home and yard.
3. Put each thing in the circle where it belongs.
4. Ask about each one: is it alive now? Was it ever alive?
5. Put the things back where you found them. Wash your hands.

What you will see: The bean and the green leaf go in living. The dead leaf, stick and cloth go in once living. The stone and the metal spoon go in never living. The bean was the hard one. It is a seed, so it is alive.

If you cannot try it, this is what happens.

living: bean, green leaf

once living: dead leaf, stick, cloth

never living: stone, metal spoon

A WRONG IDEA MANY PEOPLE HAVE

~~If it moves, it is alive.~~

Why it feels right: Animals move, and a running goat is clearly alive.

The test that breaks it: Watch a car roll down a hill. It moves, but it never grows or has young. Now put a dry bean and a small stone on damp cloth. Leave them five days and keep the cloth damp. The bean grows a root. The stone does not change.

What is true: Moving is only one sign. A cloud, a river and a car move. They cannot feel, and they never have young. A tree hardly moves, and it is alive.

KEY WORDS

living
alive now.

once living
was alive, or came from something alive.

never living
was never alive.

signs of life
moving, breathing, feeling, growing, having young, getting rid of waste and feeding.

BACK TO YOUR GUESS

The answer is B: If it feeds, grows and has young, it is alive.

A living thing shows the signs of life. It feeds, grows and has young. Moving alone is not enough.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Which of these is living?

    A A stone

    B A wooden spoon

    C A candle flame

    D A bean seed

    Answer at the back of the book.

2. Paper is made from wood. Which group is paper in?

    A Living

    B Never living

    C Once living

    Answer at the back of the book.

3. A car moves. Is it alive?

    A Yes, because it moves.

    B No, it does not grow or have young.

    C Yes, because it takes in fuel, like food.

    Answer at the back of the book.

4. Fire seems to grow and to feed on wood. Why is fire not alive?

    A It cannot feel, and it does not come from a parent.

    B It is too hot to be alive.

    C It does not move.

    Answer at the back of the book.

5. Sort a goat, a wooden stick, a stone and a dead leaf. Which are living, once living or never living?

    Answer at the back of the book.

6. Amina says a tree is not alive, because it does not walk. Which fact shows she is wrong?

   A A tree is taller than a person.

   B A tree is green.

   C A tree grows, feeds and has young.

   Answer at the back of the book.

7. Which three things were never living?

   A A stone, glass and metal

   B A stone, wood and glass

   C Water, a stone and a dry leaf

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Living things move, breathe, feel, grow, feed and have young. Once living things came from something alive. Never living things were never alive. Moving alone does not make a thing alive.

Draw: Draw three circles: living, once living and never living. Put two things in each.

S2.2.2 CHAPTER 2

Grouping animals

Is a whale a fish?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** Yes, because it lives in the sea.
- ☐ **B** No, a whale is a mammal.
- ☐ **C** Yes, because it swims.

BY THE END YOU CAN

- Group animals into mammals, birds, fish, reptiles and amphibians
- Tell an insect from a spider by counting legs and body parts

There are millions of kinds of animals. We sort them into groups. Animals in one group share signs. Here are five groups.

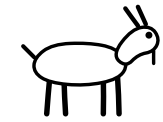
A **mammal** has hair or fur. Mothers feed their young on milk. Most mammals give birth to live young. A goat, a bat and a whale are mammals. So are you.

A bird has feathers and a beak. It lays eggs with hard shells. A hen, an owl and a penguin are birds.

A fish lives in water and breathes with gills. It has fins. Most fish have scales.

A **reptile** has dry skin with scales. Most reptiles lay eggs on land. Snakes, lizards, crocodiles and tortoises are reptiles.

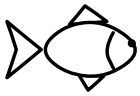
An **amphibian** has damp skin with no scales. Its young live in water and breathe with gills. Frogs and toads are amphibians. A young frog is a tadpole. Adults often live on land.



mammal
hair or fur



bird
feathers



fish
wet scales



reptile
dry scales



amphibian
damp skin

One animal from each group, and what covers its body.

SEE IT THREE WAYS

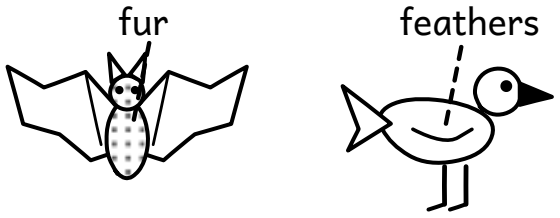
As a picture

Group	Covering
mammal	hair or fur
bird	feathers
fish	wet scales
reptile	dry scales
amphibian	damp skin

In words

Each group has its own kind of covering. Look at the covering first. Then ask how it breathes and how it has young.

Some animals fool us. A bat flies, but it has fur and feeds its young milk. So a bat is a mammal. A penguin cannot fly, but it has feathers and lays eggs. So a penguin is a bird.



bat: mammal **sparrow: bird**

Both fly. The bat has fur. The bird has feathers.

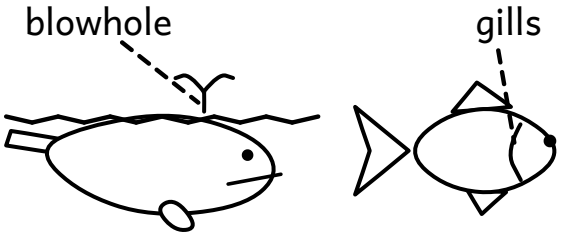
A WRONG IDEA MANY PEOPLE HAVE

~~**A whale lives in the sea, so it is a fish.**~~

Why it feels right: A whale swims, lives in water and looks like a fish.

The test that breaks it: Ask two questions about any animal. Does it breathe air? Does it feed its young milk? A whale does both. It comes up to breathe, and its calf drinks milk. A fish breathes with gills, and no fish makes milk.

What is true: A whale is a mammal. So is a dolphin. Living in the sea does not make an animal a fish.



whale
breathes air
feeds milk

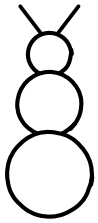
fish
no milk

A whale breathes air and feeds its calf milk. A fish has gills.

Small animals have groups too. An **insect** has six legs. Its body has three parts. They are the head, middle and back. Most insects have feelers on the head. Many have wings. Ants, flies and beetles are insects.

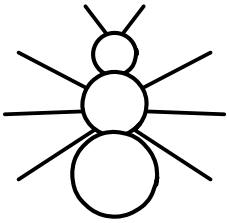
DRAW IT FIRST

Draw an insect and a spider



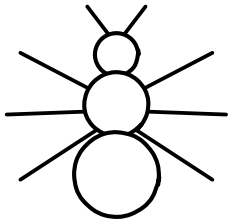
insect
3 parts

1 Draw three round parts in a line and two feelers. Write insect and 3 parts.

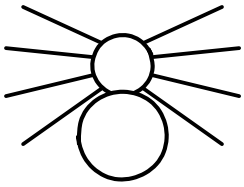


insect
3 parts
6 legs

2 Draw six legs on the middle part. Write 6 legs.



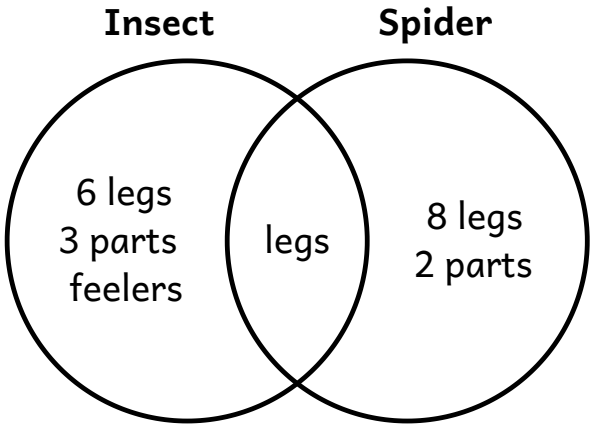
insect
3 parts
6 legs



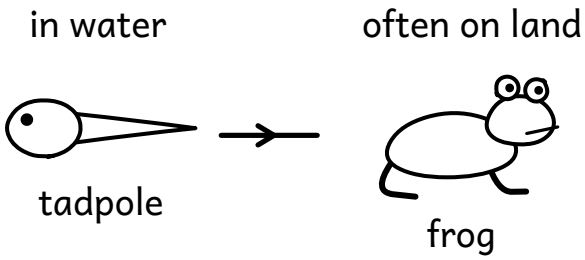
spider
2 parts
8 legs

3 Draw a spider with two parts and eight legs. Write spider, 2 parts and 8 legs.

A spider is not an insect. It has eight legs and two body parts. It has no feelers and no wings.



Insects and spiders both have legs. Count them.



A young frog is a tadpole. It grows into a frog.

TRY IT

Sort animals into five boxes

You need: paper and a pencil, or a stick and bare ground, pictures of animals in a book, or animals you know.

Be safe: Look at wild animals from far away. Never touch them. Wash your hands after you touch any animal.

1. Draw five boxes. Write mammal, bird, fish, reptile and amphibian.
2. Choose ten animals. Pick ones you know, or ones in a book.
3. For each one, ask: what covers its body? How does it breathe?
4. Write its name in the right box.
5. Which animals were hard to place? Ask the two questions again.

What you will see: Each animal goes in one box. A bat goes with the mammals. A penguin goes with the birds. A whale goes with the mammals.

If you cannot try it, this is what happens.

Group	Animals
mammal	goat, bat, whale
bird	hen, penguin
fish	carp, trout
reptile	snake, tortoise
amphibian	frog, toad

KEY WORDS

mammal
an animal with hair or fur that feeds its young on milk.

reptile
an animal with dry, scaly skin that mostly lays eggs on land.

amphibian
an animal with damp skin whose young live in water.

insect

an animal with six legs and three body parts.

BACK TO YOUR GUESS

The answer is B: No, a whale is a mammal.

A whale is a mammal. It breathes air and feeds its young on milk. A fish breathes with gills, and no fish makes milk.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Which of these animals is a mammal?

   A An owl

   B A frog

   C A bat

   Answer at the back of the book.

2. A dolphin lives in the sea. Which group is it in?

   A Fish

   B Amphibian

   C Reptile

   D Mammal

   Answer at the back of the book.

3. How many legs and body parts does an insect have?

   A 6 legs and 3 parts

   B 8 legs and 2 parts

   C 6 legs and 2 parts

   Answer at the back of the book.

4. Kofi finds 3 ants and 1 spider on a wall. How many legs are there in all?

   Answer at the back of the book.

5. **From an earlier chapter**

   A dead leaf is on the ground. Which group is it in?

   A Living

   B Once living

   C Never living

   Answer at the back of the book.

6. Sort these animals: crocodile, hen, trout, frog, goat. Write the group of each.

   Answer at the back of the book.

7. A tortoise has dry skin and a hard shell. It lays eggs on land. Which group is it in?

   A Amphibian

   B Reptile

   C Bird

   Answer at the back of the book.

8. A penguin cannot fly. Which group is it in?

   A Bird

   B Fish

   C Mammal

   Answer at the back of the book.

9. Hana thinks a spider is an insect, because it is small. What should she check?

   A Its size. All small animals are insects.

   B Whether it spins a web.

   C Its legs and body parts.

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Mammals have fur and feed milk to young. Birds have feathers. Fish have gills and fins. Reptiles have dry scales. Amphibians have damp skin. An insect has 6 legs and 3 parts. A spider has 8 legs and 2 parts.

Draw: Draw an insect with three parts and six legs. Draw a spider with two parts and eight legs. Label each.

S2.2.3 CHAPTER 3

Habitats

What is a habitat?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** A kind of food that animals eat.
- ☐ **B** A wild place far from people.
- ☐ **C** The place where a living thing finds food, water and shelter.

BY THE END YOU CAN

- Name habitats such as ponds, forests, grasslands, deserts and seas
- Describe how a habitat gives food, water and shelter

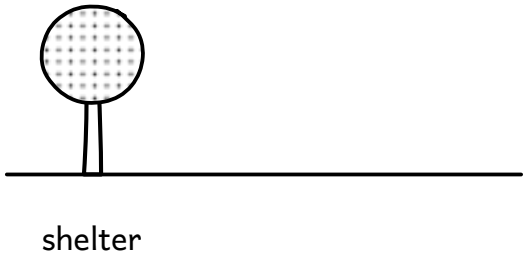
A frog lives in a pond. A monkey lives in a forest. A fish lives in the sea. Each lives in its own kind of place.

A **habitat** is the place where a living thing lives. Plants have habitats too. A living thing finds what it needs there.

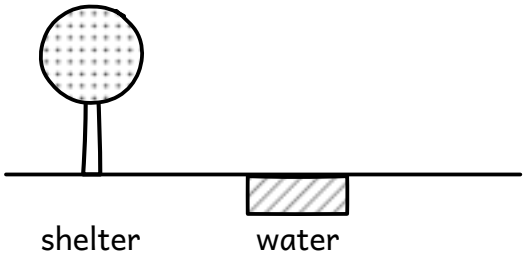
A habitat gives food. It gives water. It gives **shelter**. Shelter is a safe place to hide, sleep and raise young.

DRAW IT FIRST

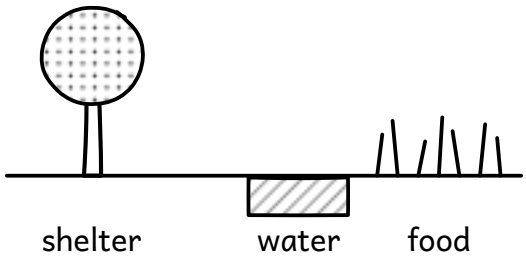
Draw what a habitat gives



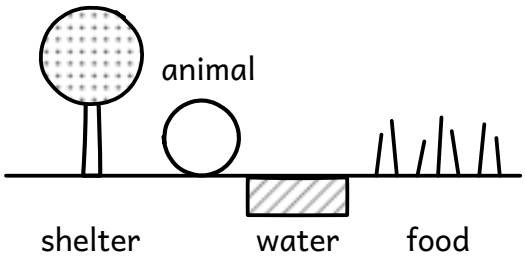
1 Draw a tree on a ground line. Write shelter.



2 Draw a pond. Write water.



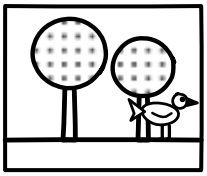
3 Draw grass. Write food.



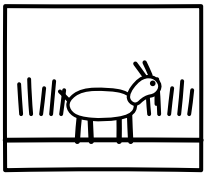
4 Draw an animal in the middle. Write animal.

Take away any one of these, and the animal must move away. Or it dies.

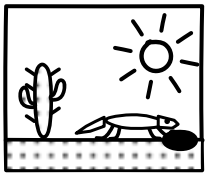
There are many kinds of habitat. A pond has still water. A forest has many trees. A **grassland** is a wide place with grass and few trees. The sea is salt water. A **desert** is very dry.



forest
food: leaves
water: rain
shelter: trees

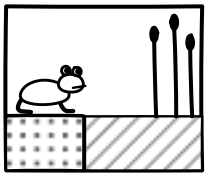


grassland
food: grass
water: rain
shelter: grass

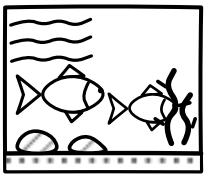


desert
food: seeds
water: rare rain
shelter: a hole

Each land habitat gives food, water and shelter.



pond
food: insects
water: the pond
shelter: reeds



sea
food: seaweed
water: salt water
shelter: rocks

A pond and the sea give food, water and shelter too.

SEE IT THREE WAYS

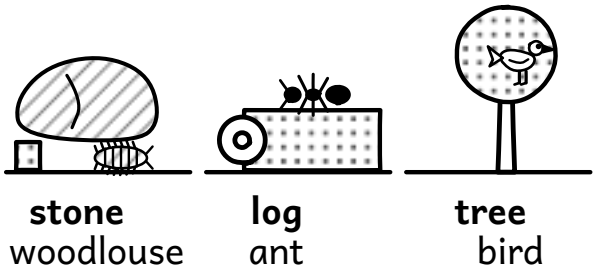
As a picture

Habitat	Lives there
pond	frog, fish
forest	birds, trees
grassland	grass, mice
desert	cactus, lizard
sea	fish, seaweed

In words

Each habitat has its own living things.
Each gives them food, water and shelter.

A habitat can be big, like a forest or a sea. It can be small. Under a stone is a habitat. A rotting log is a habitat. One tree is a habitat too.



A stone, a log and a tree are small habitats.

A small habitat can hold many animals. Ants, worms and beetles can all live in one log.

TRY IT

Find a habitat near your home

You need: paper and a pencil, a tree, a patch of grass or a corner of a wall.

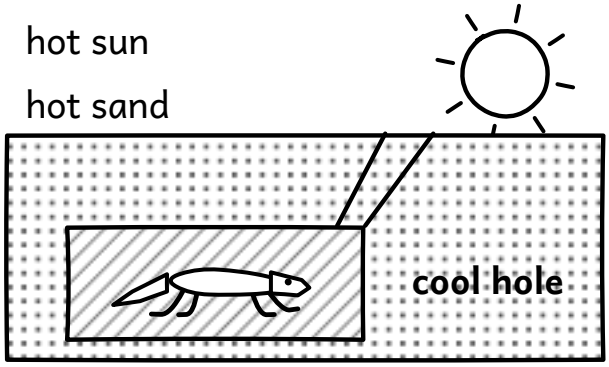
Be safe: Keep away from deep water, nests and anything that bites or stings. Look, do not touch. Wash your hands after.

1. Pick a small place outside, such as one tree or some grass.
2. Sit still a little way away. Look for five minutes. Do not touch.
3. Write down every living thing you see.
4. Draw a table with food, water and shelter. Write what you can find for each.
5. Ask: which animal could live here? What would it eat?

What you will see: Even a small place has living things. You may see insects, birds, plants or snails. The place gives them food, water or shelter.

If you cannot try it, this is what happens.

Need	What I saw
food	leaves
water	a puddle
shelter	a bush



Many desert animals hide in a cool hole by day.

A WRONG IDEA MANY PEOPLE HAVE

~~A desert has no life.~~

Why it feels right: A desert is very dry and very hot by day. It seems nothing could live there.

The test that breaks it: Look in a book, or ask someone who knows. Name what lives in a desert. Some deserts have cactus. Some have camels. Many have lizards and beetles. Or sit by dry dusty ground near you for ten minutes. Look for ants and beetles.

What is true: A desert is full of life. Cactus and other plants store water. Many animals hide from the heat in holes by day.

KEY WORDS

habitat
the place where a living thing lives and finds what it needs.

shelter
a safe place to hide, sleep and raise young.

grassland
a wide habitat with grass and few trees.

desert
a very dry habitat with little water.

BACK TO YOUR GUESS

The answer is C: The place where a living thing finds food, water and shelter.

A habitat is the place where a living thing lives. It finds food, water and shelter there.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. What does a habitat give a living thing?

   A Only food

   B Food, water and shelter

   C Only a place to sleep

   Answer at the back of the book.

2. Which of these is a small habitat?

   A The whole sea

   B A forest

   C An empty plastic box

   D A rotting log

   Answer at the back of the book.

3. Mei says a desert has no life. Which fact shows she is wrong?

   A Lizards and beetles live in deserts.

   B A desert is hot by day.

   C A desert has little water.

   Answer at the back of the book.

4. **From an earlier chapter**

   Joseph finds an animal under a log. It has 8 legs and 2 body parts. What is it?

   A An insect

   B A reptile

   C A spider

   Answer at the back of the book.

5. Draw a pond habitat. Show what a frog finds there for food, water and shelter.

   Answer at the back of the book.

6. A habitat is a wide place with grass and few trees. What is it?

   A A desert

   B A grassland

   C A forest

   Answer at the back of the book.

7. A pond dries up in a long hot spell. What happens to the frogs?

   A They must move away, or they die, because the water is gone.

   B Nothing. The food and shelter are still there.

   C They stay, because frogs live on land.

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

A habitat is where a living thing finds food, water and shelter. Ponds, forests, grasslands, deserts and seas are habitats. A habitat can be big or small, like a log.

Draw: Draw a tree, a pond and grass. Label shelter, water and food.

S2.2.4 CHAPTER 4

Exploring a small habitat

What lives under a stone?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** Nothing lives under a stone.
- ☐ **B** Only snakes live under stones.
- ☐ **C** Many small animals can live there.

BY THE END YOU CAN

- Record the living things under a stone or log, using a stick
- Draw a map of a small habitat near your home

A stone sits on the ground. Under it the ground is dark and damp. Small animals like that. They hide from the heat, the wind and hungry birds.

You may find woodlice, ants, worms, beetles, centipedes and snails. Let us look and count them.

Be safe. Never put your hand under a stone or a log. Snakes, scorpions and biting animals may hide there. Look, do not touch. Do not lift a heavy stone. Use a stick.

TRY IT

Look under *a* stone or *a* log

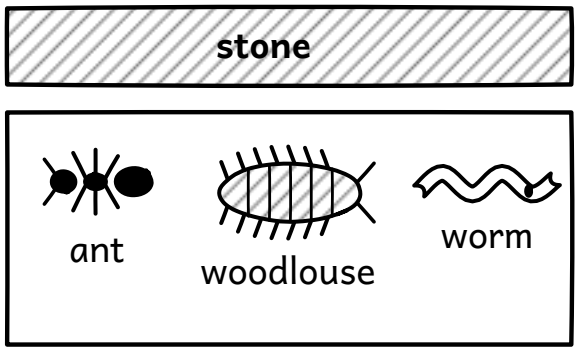
You need: *a* long stick, paper *and a* pencil, *a* small stone or *a* rotting log, water *and* soap, to wash your hands *after*.

Be safe: Never put your hand under *a* stone or *a* log. Do not lift *a* heavy stone. Wash your hands *after*.

1. Choose *a* stone or log you can move with *a* stick. If it is heavy, leave it.
2. Write the names of animals on your paper. Leave *a* space *after* each.
3. Stand back. Slide the stick under the far side. Lift that side up.
4. Look for one minute. Make one tally mark for each animal. Do not touch.
5. Put the stone back gently, just *as* it was. Wash your hands.

What you will see: You see small animals that like dark, damp places. You may see ants, woodlice, worms, beetles, snails *and* centipedes. Some run *away* fast. Some may bite, so never touch them.

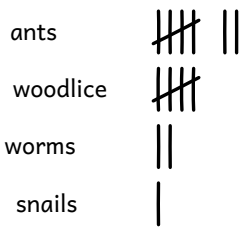
If you cannot try it, this is what happens.



Now you must keep count. A **tally** is *a* mark you make each time you see something. Make four marks down. Cross them with the fifth. Then you can count in fives.

SEE IT THREE WAYS

As a picture

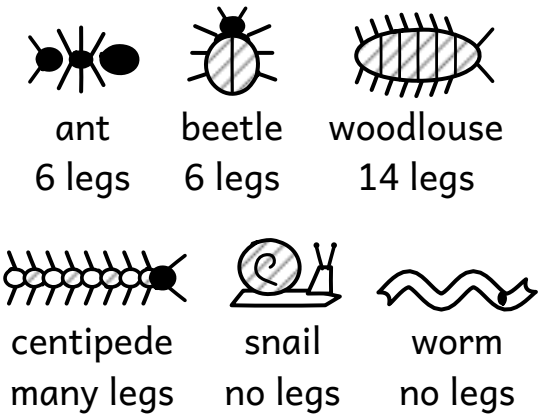


In words

Make one mark for each animal. Cross every fifth mark over the four. Then count the groups of five.

In symbols

7 ants, 5 woodlice, 2 worms and 1 snail. In all that is 15 animals.



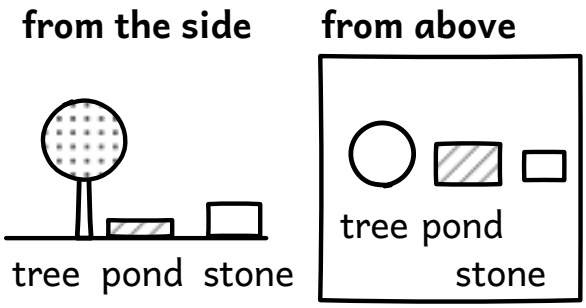
Count legs to tell small animals apart.

Animal	Total
ants	7
woodlice	5
worms	2
snails	1

After you count, write the totals in a table.

A table is quick to read later. You can see which animal is most common. Do it again on another day. Do the counts match?

A **map** is a drawing from above. It shows where things are. Imagine you are a bird looking down on your habitat.

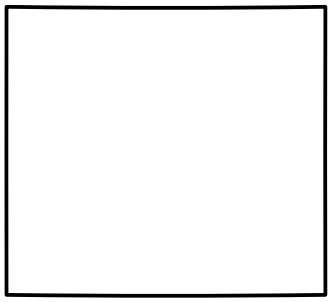


A map is a drawing from above.

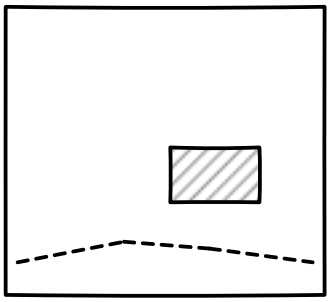
A map uses signs. A circle can be a tree. A small box can be a stone. A **key** says what each sign means.

DRAW IT FIRST

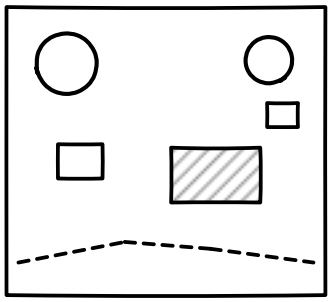
Draw a map of a small habitat



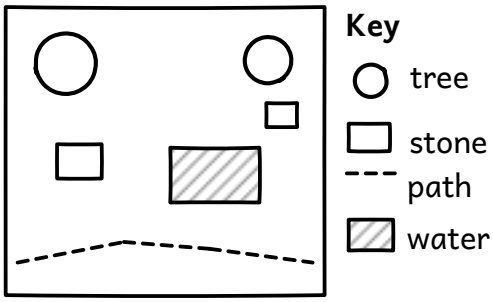
1 Draw a box for the edge of your habitat.



2 Draw the path as a dashed line. Draw a pond and shade it with lines.



3 Draw circles for trees. Draw small boxes for stones.



4 Make a key. Draw each sign and write its word beside it.

A WRONG IDEA MANY PEOPLE HAVE

~~**A habitat has to be big, like a forest.**~~

Why it feels right: We hear about forests and seas. They are the habitats we see in pictures.

The test that breaks it: Look under a stone or a log. Count the animals in one minute. They find food, damp and shelter there. A habitat gives all that.

What is true: A habitat can be as small as a stone. A woodlouse finds food, damp and shelter under it. That is its habitat.

KEY WORDS

tally
a mark you make each time you see something.

map
a drawing from above that shows where things are.

key
the part of a map that says what each sign means.

BACK TO YOUR GUESS

The answer is C: Many small animals can live there.

Many small animals live under stones and logs. It is dark and damp. It is safe from wind and sun.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. How should you lift a stone to look under it?

    A With your hand, quickly

    B With your foot

    C With a stick, lifting the side nearest you

    D With a stick, lifting the side away from you

    Answer at the back of the book.

2. Look at the tally marks. How many ants did Tariq count?

    ants 

    Answer at the back of the book.

3. Ana counts 6 ants, 4 woodlice and 2 worms. How many animals is that in all?

    Answer at the back of the book.

4. What does the key on a map tell you?

    A What each sign on the map means

    B How big the habitat is

    C Who drew the map

    Answer at the back of the book.

5. **From an earlier chapter**

    Kofi sees a small animal under a log. It has 8 legs and 2 body parts. What is it?

    A An insect

    B A spider

    C A mammal

    Answer at the back of the book.

6. Draw a map of a small habitat near your home. Add a key.

    Answer at the back of the book.

7. Look at the table. How many more ants than snails are in it?

Animal	Total
ants	7
woodlice	5
worms	2
snails	1

A 8

B 7

C 6

Answer at the back of the book.

8. From where do you look when you draw a map?

A From the side, as you see a tree.

B From above, like a bird looking down.

C From inside the ground.

Answer at the back of the book.

9. Why do woodlice live under stones?

A It is dark and damp, and safe from hungry birds.

B It is bright and warm there.

C It is dry and windy there.

Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Lift a stone with a stick. Never use your hand. Make a tally mark for each animal you see. Then write the totals in a table. Put the stone back as it was. Wash your hands.

Draw: Draw a map from above. Show a tree, a stone, a path and water. Add a key.

S2.2.5 CHAPTER 5

Fit for the habitat

How can a camel live in a hot desert?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** Its body has features that suit the desert.
- ☐ **B** Its hump is a tank of water.
- ☐ **C** It changes its body when it is thirsty.

BY THE END YOU CAN

- Explain how a camel, a fish and a cactus suit their habitats
- Match body features to habitats, such as webbed feet to water

A camel lives in a hot desert. A fish lives in a river. A cactus grows where rain is rare.

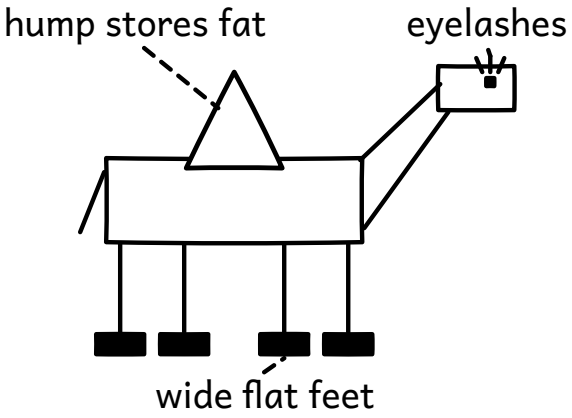
Each one has a body that suits its home. A **feature** is a body part that helps a living thing. It helps the living thing live in its home.

Look at a camel. Its feet are wide and flat. They do not sink in sand.

Its eyelashes are long. They keep sand out of its eyes. It can close its nostrils against blowing sand.

A desert has very little water. A camel can go many days without a drink. Then it drinks a lot at once.

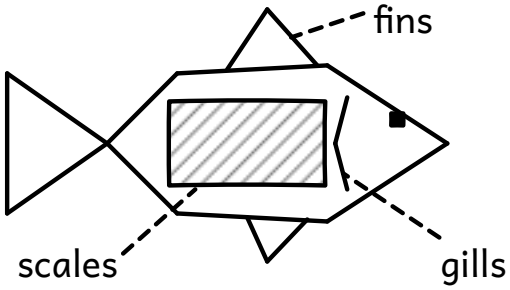
Its hump stores fat. Fat is stored food. It is not water.



A camel has features for the desert.

A fish lives in water. It breathes with **gills**. Gills let a fish breathe in water.

Fins help a fish swim and steer. Its shape is smooth and pointed. It slides through water. Scales cover its skin.



A fish has features for water.

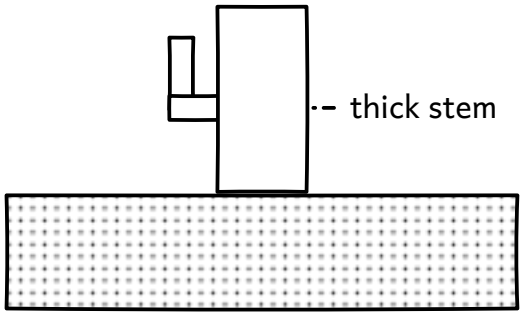
A cactus lives where rain is rare. Its stem is thick. The stem stores water.

It has **spines**, not wide leaves. Spines lose less water than wide leaves. They also keep animals off.

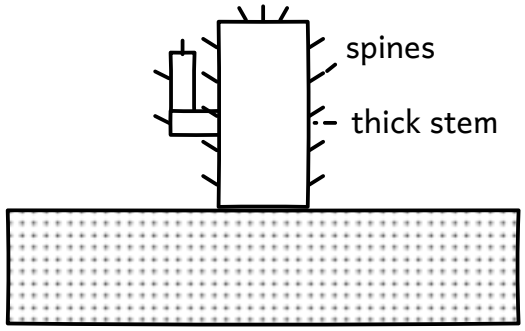
Its skin is waxy. Its roots spread wide near the top of the soil. They catch rain fast.

DRAW IT FIRST

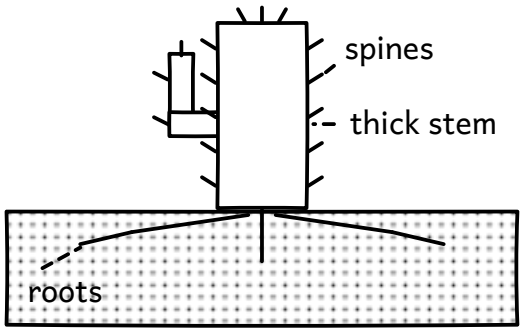
Draw a cactus



1 Draw the ground and a thick stem. Write thick stem.



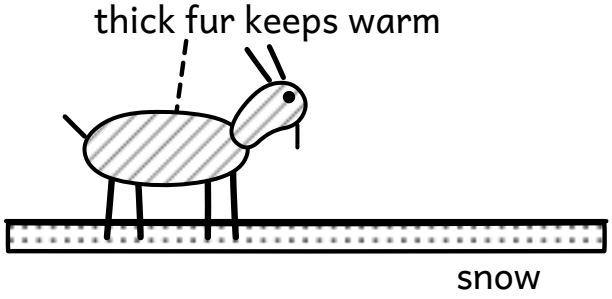
2 Draw short spines all round the stem. Write spines.



3 Draw roots that spread wide near the top of the soil. Write roots.

Ducks and frogs have **webbed feet**. Skin joins their toes. Each foot is like a paddle.

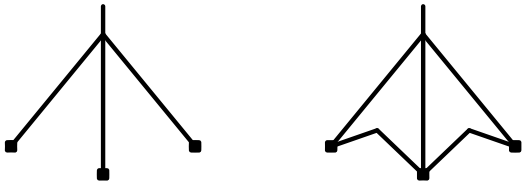
A webbed foot pushes more water. Animals in cold places have thick fur. It keeps them warm.



Thick fur keeps an animal warm in the cold.

SEE IT THREE WAYS

As a picture



In words

A webbed foot has skin between the toes. It works like a paddle. It pushes more water than bare toes.

Feature	Habitat
Webbed feet	water
Thick fur	cold place
Gills	water
Wide flat feet	sand
Spines	desert

Each feature suits a habitat.

Feature	Job
gills	breathe
fins	swim and steer
hump	store fat
wide feet	do not sink
eyelashes	keep out sand
spines	save water
webbed feet	paddle
thick fur	keep warm

Each feature has a job.

How did living things get such features? Not in one life. A duck cannot grow webbed feet by wanting them.

It took very many generations of parents and young. Those that suited the habitat best lived and had young. The young had the same features.

TRY IT

Does a web make a paddle?

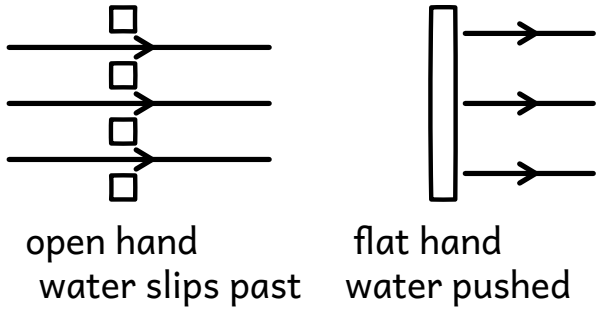
You need: a bowl or bucket of clean water, your hand.

Be safe: Never drink the water in this activity. Wash your hands after.

1. Half fill the bowl with clean water. Do not drink it.
2. Spread your fingers wide. Push your hand through the water.
3. Feel the water slip between your fingers.
4. Now press your fingers together, flat like a paddle. Push again.
5. Which way pushes more water?

What you will see: With your fingers apart, water slips past. With your fingers together, your hand pushes more water. The skin on a duck's foot works like your flat hand.

If you cannot try it, this is what happens.



A WRONG IDEA MANY PEOPLE HAVE

~~A camel's hump is full of water.~~

Why it feels right: A camel can go many days without a drink. So the water must be stored somewhere.

The test that breaks it: Look at what changes. A camel with no food for days has a small hump. The hump flops to one side. When it eats well, the hump is firm again. Look at pictures of thin and well fed camels.

What is true: The hump stores fat, not water. The camel lives on the fat when food is short.

KEY WORDS

feature
a body part that helps a living thing live in its home.

gills
parts that let a fish breathe in water.

spines
sharp points on a cactus, used instead of wide leaves.

webbed feet
feet with skin between the toes, for pushing water.

BACK TO YOUR GUESS

The answer is A: Its body has features that suit the desert.

A camel has features that suit the desert. Its hump stores fat, not water. No animal changes its body just by wanting to.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. What does a camel store in its hump?

   A Water

   B Fat

   C Sand

   Answer at the back of the book.

2. Which feature helps a fish breathe in water?

   A Fins

   B Scales

   C A nose

   D Gills

   Answer at the back of the book.

3. A cactus has spines, not wide leaves. How does that help it?

   A It catches more rain.

   B It stores more water.

   C It loses less water.

   Answer at the back of the book.

4. Ana sees a frog with webbed feet. Which habitat suits it best?

   A In or near water

   B A dry desert

   C A snowy hill

   Answer at the back of the book.

5. Can a duck grow bigger webbed feet just by wanting them?

   A Yes, if it wants them enough.

   B Yes, if it swims a lot.

   C No. Features come over very many generations.

   Answer at the back of the book.

6. **From an earlier chapter**

   A rabbit sleeps in a burrow. What does the burrow give it?

   A Food

   B Shelter

   C Water

   Answer at the back of the book.

7. Which feature suits an animal in a very cold place?

   A Webbed feet

   B Spines

   C Gills

   D Thick fur

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Living things have features that suit their habitat. A camel has wide feet and a fat store in its hump. A fish has gills. A cactus has a thick stem and spines. These came over many generations.

Draw: A cactus with a thick stem, spines and wide roots. Label each one.

S2.2.6 CHAPTER 6

Plant eaters, meat eaters and both

How can I tell what an animal eats?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** Look at how big it is.
- ☐ **B** Look at its colour.
- ☐ **C** Look at where it lives.
- ☐ **D** Look at its teeth or its beak.

BY THE END YOU CAN

- Sort animals into herbivores, carnivores and omnivores
- Tell from teeth or beaks what an animal eats

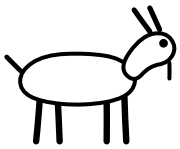
Every animal needs food. Some eat plants. Some eat other animals. Some eat both.

A **herbivore** eats only plants. A goat, a cow, a rabbit and an elephant are herbivores.

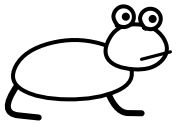
A **carnivore** eats other animals. A lion, an eagle and a shark are carnivores.

An **omnivore** eats plants and animals. People, pigs, bears and crows are omnivores.

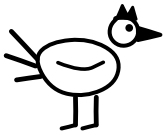
A hen eats seeds. It also eats worms and insects. So a hen is an omnivore.



herbivore
eats grass



carnivore
eats insects

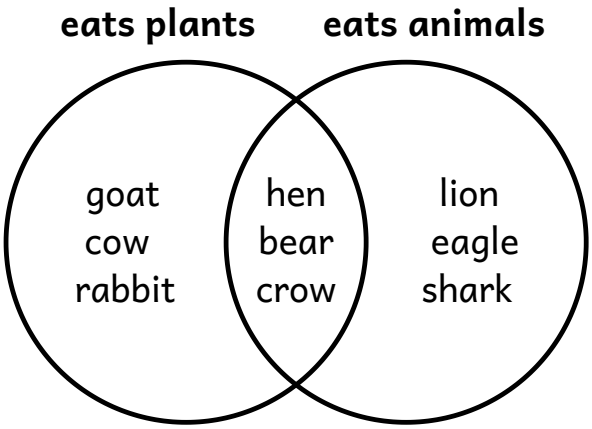


omnivore
eats seeds, worms

A goat eats plants. A frog eats animals. A hen eats both.

SEE IT THREE WAYS

As a picture



In words

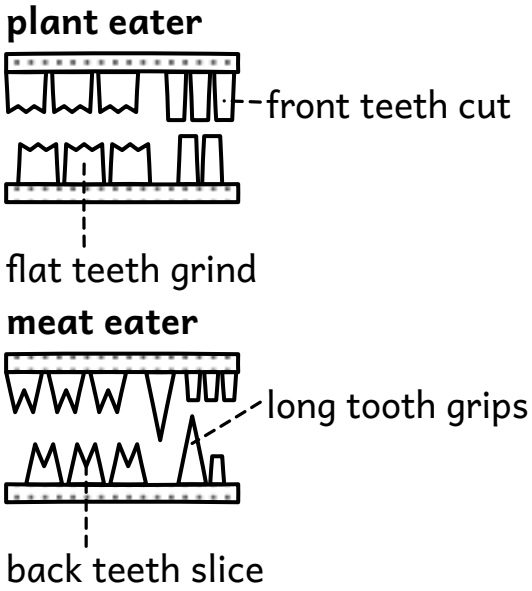
A herbivore eats only plants. A carnivore eats only animals. An omnivore eats both, so it sits in the middle.

Teeth tell you what an animal eats. A plant eater has wide, flat back teeth. They grind plants.

Its front teeth cut or tear grass. A cow has no top front teeth. It has a hard pad.

A meat eater has long, pointed teeth to grip. Its sharp back teeth slice meat.

An omnivore has some teeth of each kind.



Flat teeth grind plants. Pointed and sharp teeth grip and slice meat.

DRAW IT FIRST

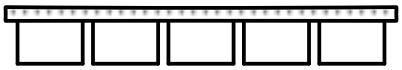
Draw three rows of teeth

herbivore flat, grinds

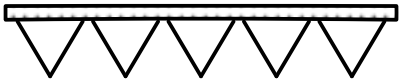


1 Draw a gum and flat teeth. Write herbivore and flat, grinds.

herbivore flat, grinds



carnivore pointed, grips

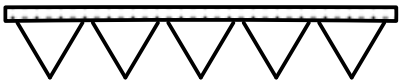


2 Draw a gum and pointed teeth. Write carnivore and pointed, grips.

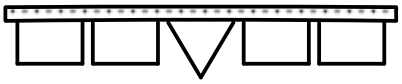
herbivore flat, grinds



carnivore pointed, grips



omnivore some of each

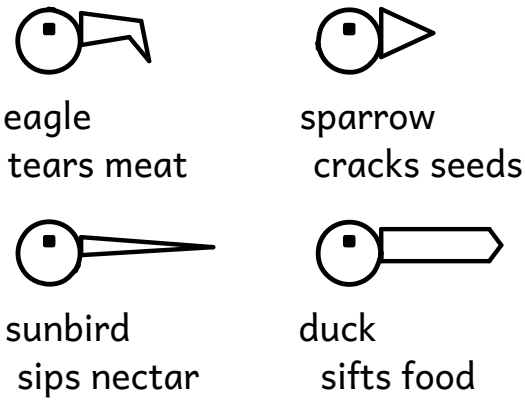


3 Draw a gum with flat and pointed teeth. Write omnivore and some of each.

Birds have beaks, not teeth. A beak fits the food too.

An eagle has a hooked beak. It tears meat. A sparrow has a short, strong beak. It cracks seeds.

A sunbird or a hummingbird has a long, thin beak. It reaches nectar in flowers. A duck has a flat, wide beak. It sifts food from water.



A beak fits the food a bird eats.

TRY IT

Feel your teeth

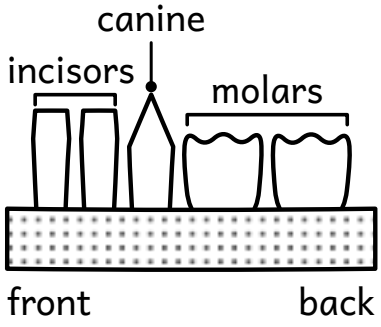
You need: your tongue, clean hands, paper and a pencil.

Be safe: Never put your fingers in an animal's mouth. Wash your hands after.

1. Wash your hands first.
2. Run your tongue along your front teeth. Are they flat or pointed?
3. Move back along one side. Find the pointed tooth.
4. Feel your back teeth. Are they wide and bumpy?
5. Draw one side of your mouth. Show flat, pointed and wide teeth.

What you will see: Your front teeth are flat. They cut. Next to them is a pointed tooth that grips. Your back teeth are wide. They grind. You have some of each, because people eat plants and meat. People are omnivores.

If you cannot try it, this is what happens.



The flat front teeth are incisors. The pointed tooth is the canine. The wide back teeth are molars.

Some people think big, strong animals must eat meat. Elephants, gorillas and rhinos are huge. They eat only plants.

Animal	Size	Eats
elephant	huge	plants
rabbit	small	plants
lion	big	animals
owl	small	animals

Big animals and small animals can eat plants. Some eat animals.

A WRONG IDEA MANY PEOPLE HAVE

~~**Big, strong animals must eat meat.**~~

Why it feels right: A lion is strong and eats meat. So strength must come from meat.

The test that breaks it: Think of an ox that pulls a plough. It is very strong. It eats only grass and hay. Elephants, gorillas and rhinos eat only plants too. Find out what the biggest animal near you eats.

What is true: Size and strength do not tell you what an animal eats. Look at its teeth or its beak.

KEY WORDS

herbivore
an animal that eats only plants.

carnivore
an animal that eats other animals.

omnivore
an animal that eats both plants and animals.

BACK TO YOUR GUESS

The answer is D: Look at its teeth or its beak.

Teeth and beaks fit the food. Size, colour and home do not tell you.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Which animal eats only plants?

   A Lion

   B Elephant

   C Bear

   Answer at the back of the book.

2. A hen eats seeds, worms and insects. What is a hen?

   A A herbivore

   B A carnivore

   C An omnivore

   Answer at the back of the book.

3. An animal has long pointed teeth and sharp back teeth. What does it eat?

   A Other animals

   B Only plants

   C Only seeds

   Answer at the back of the book.

4. A bird has a short, strong beak. What does it eat?

   A Meat torn from bones

   B Nectar from flowers

   C Small food sifted from water

   D Seeds

   Answer at the back of the book.

5. Sort these into herbivore, carnivore and omnivore: cow, eagle, bear, rabbit.

   Answer at the back of the book.

6. **From an earlier chapter**

   Mei sees a hen. It has feathers and lays eggs. Which group is it in?

   A Mammals

   B Birds

   C Reptiles

   Answer at the back of the book.

7. A rhino is huge and strong. What does it eat?

   A Other animals, because it is so strong.

   B Plants and animals, because it is big.

   C Only plants.

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

A herbivore eats plants. A carnivore eats animals. An omnivore eats both. Flat back teeth grind plants. Pointed teeth grip meat. Beaks fit food too. Size does not tell you what an animal eats.

Draw: A row of flat teeth and a row of pointed teeth. Label them plants and meat.

S2.2.7 CHAPTER 7

Food chains

Who eats what in the grass?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** An arrow points to the one that is eaten.
- ☐ **B** An arrow points to the bigger one.
- ☐ **C** An arrow points to the one that eats.

BY THE END YOU CAN

- Draw a food chain that starts with a green plant
- Name the producer, prey and predator in a food chain

Living things need food. A **food chain** is a line of living things. It shows who eats what.

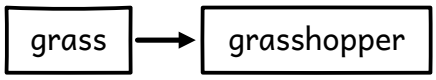
On land, a food chain starts with a green plant. A green plant makes its own food from sunlight. It is the **producer**.

Animals cannot make food. They must eat. A grasshopper eats grass. A frog eats the grasshopper.

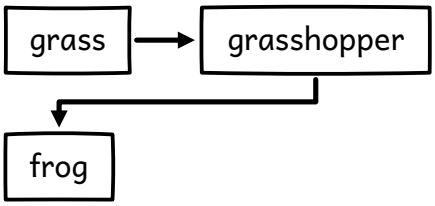
A snake eats the frog. An eagle eats the snake.

DRAW IT FIRST

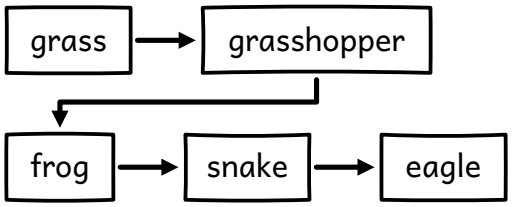
Draw a food chain



1 Draw a box for grass. Draw an arrow to a box for grasshopper.

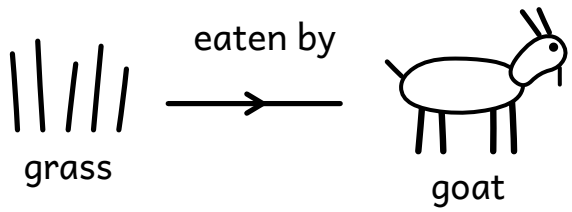


2 Draw an arrow from grasshopper to a box for frog.



3 Add boxes for snake and eagle. Draw an arrow to each.

Look at the arrows. An arrow means "is eaten by". It points to the eater.

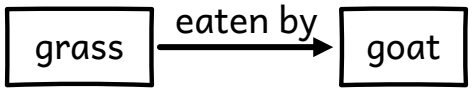


Grass is eaten by the goat. The arrow points to the goat.

It shows where the food goes. Follow the food. It goes from the grass into the grasshopper.

SEE IT THREE WAYS

As a picture



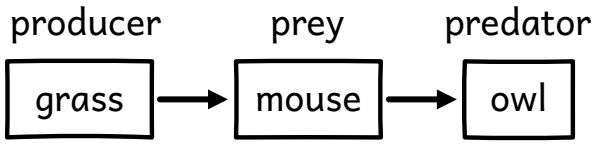
In words

Grass is eaten by the goat. The arrow points to the goat. The food goes from the grass to the goat.

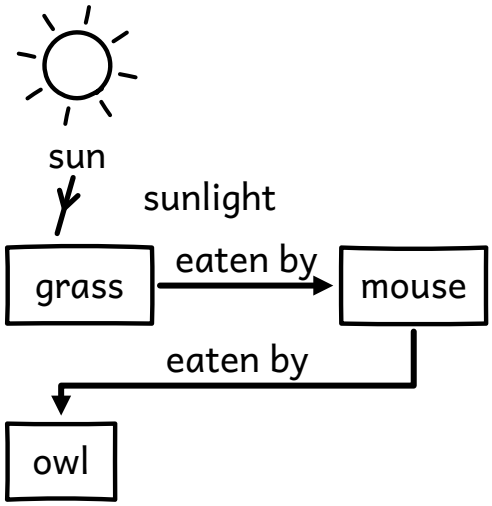
A **predator** is an animal that hunts and eats other animals. Its **prey** is the animal it eats.

The frog is the predator of the grasshopper. The grasshopper is its prey.

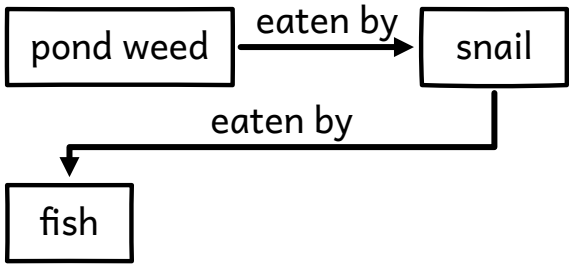
The frog is also the prey of the snake. One animal can be both.



The owl hunts the mouse. The mouse is its prey.



The plant uses sunlight to make food. The chain starts with the plant.



A food chain in water starts with a water plant.

On land, almost every food chain starts with a green plant. Even an eagle's food chain starts with a green plant. In ponds, rivers and the sea, food chains start in the water. They start with water plants or seaweed. Or they start with tiny living things, too small to see. They make food from sunlight too.

TRY IT

Find a food chain

You need: paper, a pencil, a bush, a tree or a patch of grass.

Be safe: Do not touch insects, snakes or lizards. Some bite or sting. Wash your hands after touching plants or soil.

1. Find a plant with holes in its leaves.
2. Stand still and watch for a few minutes. Keep your hands off animals.
3. Look for an insect on the plant.
4. Watch for a bird or a lizard that hunts insects.
5. Draw the plant, the insect and the hunter in boxes.
6. Draw arrows. Point each arrow to the one that eats.

What you will see: The plant is the producer. The insect eats the plant. A bird or a lizard may eat the insect. Each arrow points to the eater. If you see no hunter, write what might eat the insect.

If you cannot try it, this is what happens.



A WRONG IDEA MANY PEOPLE HAVE

~~The arrow in a food chain points to the animal eaten.~~

Why it feels right: An arrow often points at what you aim for. So frog → grasshopper looks like a frog going after a grasshopper.

The test that breaks it: Read each arrow as "is eaten by". Does a frog get eaten by a grasshopper? No. Now try your own meal. Draw beans → you. The beans go into you. The food ends up in the eater. The arrow ends there too.

What is true: The arrow points to the eater. It shows where the food goes: grass → grasshopper.

KEY WORDS

food chain
a line of living things that shows who eats what.

producer
a living thing that makes its own food from sunlight. A green plant is one.

predator
an animal that hunts and eats other animals.

prey
an animal that a predator hunts and eats.

BACK TO YOUR GUESS

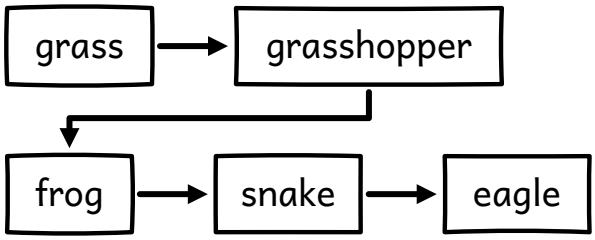
The answer is C: An arrow points to the one that eats.

An arrow in a food chain shows where the food goes. It points to the eater.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Look at the picture. Which one is the producer?



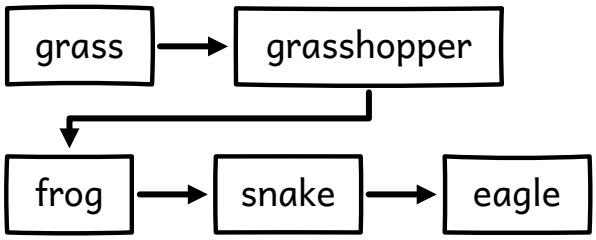
A Grasshopper

B Grass

C Eagle

Answer at the back of the book.

2. In the same picture, which one is the predator of the frog?



A Grasshopper

B Grass

C Eagle

D Snake

Answer at the back of the book.

3. Which food chain is drawn the right way?

A grass → goat → lion

B lion → goat → grass

C goat → grass → lion

Answer at the back of the book.

4. Tariq sees an eagle catch a snake. What is the snake?

   A Predator

   B Producer

   C Prey

   Answer at the back of the book.

5. **From an earlier chapter**

   A food chain has only living things. Which of these cannot be in it?

   A A frog

   B Grass

   C A stone

   Answer at the back of the book.

6. Draw a food chain with grass, a mouse and an owl. Put the arrows the right way.

   Answer at the back of the book.

7. Where does a green plant get its food?

   A It takes food from the soil.

   B It makes its own food, using sunlight.

   C It drinks food in the rain.

   Answer at the back of the book.

8. In grass → mouse → owl, what does the arrow after the mouse mean?

   A The mouse eats the owl.

   B The owl is bigger than the mouse.

   C The mouse is chasing the owl.

   D The mouse is eaten by the owl.

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

On land, a food chain starts with a green plant, the producer. Arrows point to the eater, the way the food goes. A predator hunts. Its prey is hunted.

Draw: Grass, grasshopper and frog in boxes. Arrows point to the eater.

S2.2.8 CHAPTER 8

Changes to habitats

What happens to animals when people cut down a forest?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** They lose their homes and food. Many move away or die.
- ☐ **B** They build new homes at once and are fine.
- ☐ **C** Nothing changes for them.

BY THE END YOU CAN

- Describe how cutting forests or dirty water harms living things
- Suggest ways people can protect a habitat near them

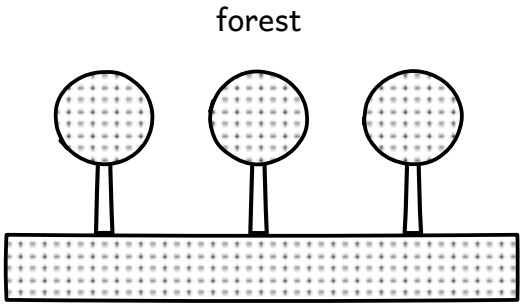
Habitats change. People change them a lot. Some changes harm the living things there.

People cut forests for wood, for farms and for roads. Cutting a forest takes away homes and food.

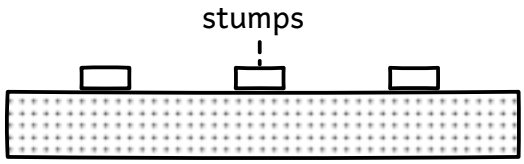
Animals move away or die. Tree roots hold the soil. With no trees, rain washes the soil away.

DRAW IT FIRST

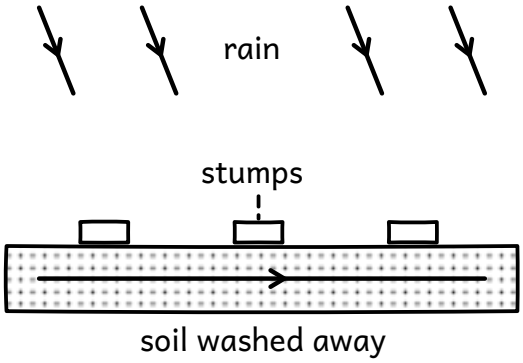
Draw what cutting *a* forest does



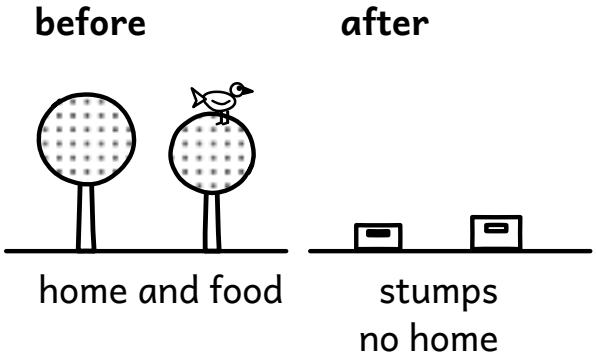
1 Draw three trees on the ground. Write forest.



2 Cut them down. Draw stumps. Write stumps.

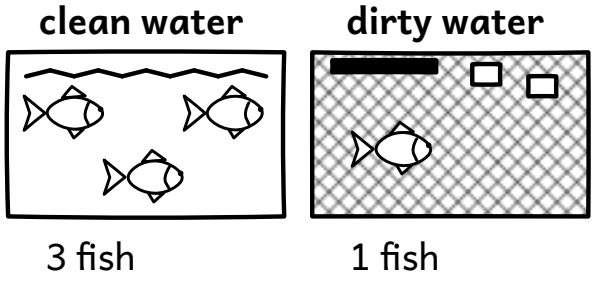


3 Draw rain and an arrow in the soil. Write rain and soil washed away.



Cut the trees and the animals lose their home and food.

Dirty water harms living things too. Rubbish, oil and soap make water dirty. So do waste from toilets and sprays from farms.



Oil and litter make water dirty. Fewer fish can live in it.

Fish and frogs get sick or die. The animals that eat them lose food. This harm is **pollution**.

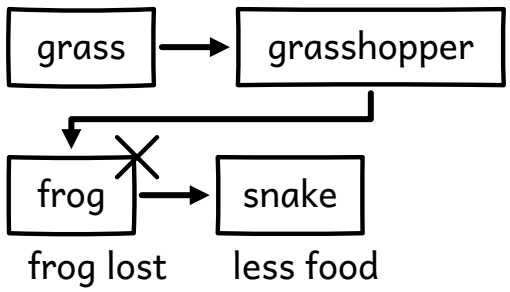
Plastic is a problem too. It does not **rot** for a very long time. To rot is to break down and go back into the soil.

Animals can choke on plastic. **Litter** is rubbish dropped where it does not belong.

A food chain has links. When one living thing is lost, the others are harmed too.

SEE IT THREE WAYS

As a picture



In words

The frogs are lost. The snakes lose their food. The grasshoppers are eaten less, so there are more of them.

We can protect a habitat near us. Do not throw rubbish in water or on the ground.

Pick up litter with a stick or a bag on your hand. Wash your hands after.



Plant a tree. Pick up litter. Leave a patch wild.

Plant trees. Leave a patch of ground wild. Plants and small animals can live there.

Never pour oil or paint on the ground or into water.

Be safe. Never pick up glass, needles or sharp things. Leave them for a grown up. Never touch litter with bare hands.

TRY IT

Does plastic rot?

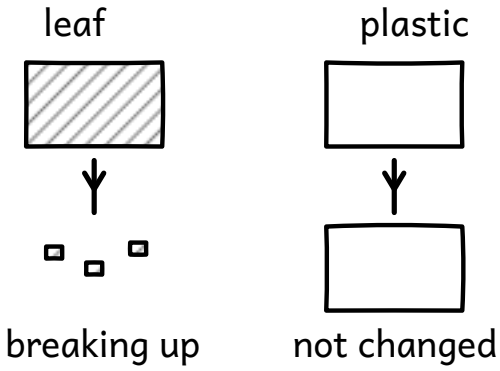
You need: a soft green leaf, a small piece of plastic bag, damp soil outside, three sticks.

Be safe: Wash your hands after you touch soil. Do not leave plastic in the ground.

1. Dig two small holes in damp soil with a stick.
2. Put the leaf in one hole. Put the plastic in the other.
3. Cover both holes with soil. Push a stick in to mark each place.
4. Keep the soil damp. Wait three or four weeks.
5. Dig them up with a stick. Look at each one.
6. Take out the plastic. Put it in the rubbish.

What you will see: The leaf is soft, dark and breaking up. It is starting to rot. The plastic has not changed. Plastic does not rot. It stays as litter for a very long time.

If you cannot try it, this is what happens.



A WRONG IDEA MANY PEOPLE HAVE

~~Rubbish in a river just goes away.~~

Why it feels right: The river carries it out of sight. Out of sight seems like gone.

The test that breaks it: Do the burying test. After weeks, the leaf is breaking up. The plastic has not changed. Plastic does not rot away. A river only carries it to another place, where other animals live.

What is true: Rubbish does not go away. The river moves it. Plastic stays for a very long time.

KEY WORDS

pollution
harm to water, air or soil from things that do not belong.

rot
to break down and go back into the soil.

litter
rubbish dropped where it does not belong.

BACK TO YOUR GUESS

The answer is A: They lose their homes and food. Many move away or die.

A forest is home and food for many animals. When it goes, they lose both. Many must move away, and some die.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Why do many animals leave when a forest is cut down?

   A They like open ground better.

   B Cutting trees makes more food for them.

   C The stumps give them new homes.

   D They lose their homes and food.

   Answer at the back of the book.

2. Which of these can make river water dirty and harm fish?

   A Oil poured into the water

   B A leaf that falls in

   C Clean rain falling on the river

   Answer at the back of the book.

3. Kofi buries a leaf and plastic in damp soil. Four weeks later, what does he find?

   A Both have rotted.

   B Neither has changed.

   C The leaf is breaking up. The plastic has not changed.

   Answer at the back of the book.

4. In grass → grasshopper → frog → snake, dirty water kills the frogs. What happens to the snakes?

   A Nothing changes.

   B They have less to eat.

   C They eat more grass.

   Answer at the back of the book.

5. **From an earlier chapter**

   Ravi lifts a stone to see what lives under it. What should he do after?

   A Leave the stone upside down.

   B Put the stone back as it was.

   C Take the animals home.

   Answer at the back of the book.

6. Name two ways you could protect a habitat near you.

   Answer at the back of the book.

7. Which action helps to protect a habitat?

   A Throw rubbish in the river. It carries it away.

   B Bury plastic. The soil will rot it.

   C Drop litter. The rain will wash it away.

   D Put litter in a bin, or take it home.

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Cutting forests and dirty water take away homes and food. Plastic does not rot. When one living thing is lost, the others suffer. We can protect habitats. Keep rubbish out, plant trees, leave a wild patch.

Draw: A tree and a stream. Add one thing you can do to help.

Key words, A to Z

Every key word in this book, what it means, and the chapter that teaches it.

amphibian
an animal with damp skin whose young live in water. S2.2.2

carnivore
an animal that eats other animals. S2.2.6

desert
a very dry habitat with little water. S2.2.3

feature
a body part that helps a living thing live in its home. S2.2.5

food chain
a line of living things that shows who eats what. S2.2.7

gills
parts that let a fish breathe in water. S2.2.5

grassland
a wide habitat with grass and few trees. S2.2.3

habitat
the place where a living thing lives and finds what it needs. S2.2.3

herbivore
an animal that eats only plants. S2.2.6

insect
an animal with six legs and three body parts. S2.2.2

key
the part of a map that says what each sign means. S2.2.4

litter
rubbish dropped where it does not belong. S2.2.8

living
alive now. S2.2.1

mammal
an animal with hair or fur that feeds its young on milk. S2.2.2

map
a drawing from above that shows where things are. S2.2.4

never living
was never alive. S2.2.1

omnivore
an animal that eats both plants and animals. S2.2.6

once living
was alive, or came from something alive. S2.2.1

pollution
harm to water, air or soil from things that do not belong. S2.2.8

predator
an animal that hunts and eats other animals. S2.2.7

prey
an animal that a predator hunts and eats. S2.2.7

producer
a living thing that makes its own food from sunlight. A green plant is one. S2.2.7

reptile
an animal with dry, scaly skin that mostly lays eggs on land. S2.2.2

rot
to break down and go back into the soil. S2.2.8

shelter
a safe place to hide, sleep and raise young. S2.2.3

signs of life
moving, breathing, feeling, growing, having young, getting rid of waste and feeding. S2.2.1

spines
sharp points on a cactus, used instead of wide leaves. S2.2.5

tally
a mark you make each time you see something. S2.2.4

webbed feet
feet with skin between the toes, for pushing water. S2.2.5

Answers

S2.2.1. Living and non-living

1. **A bean seed**

   A seed is alive. It is resting until it gets water.

   - **If you chose A:** A stone was never alive. It is never living.
   - **If you chose B:** A spoon is made of wood from a tree. The tree was alive once. The spoon is once living.
   - **If you chose C:** A flame seems to grow and feed. But it cannot feel, and it has no parent. A flame is not alive.

2. **Once living**

   Paper is not alive now, but it came from a tree.

   - **If you chose A:** Paper is not alive now. It came from a tree that was alive.
   - **If you chose B:** Paper came from a tree, and a tree is alive. So paper was not never alive.

3. **No, it does not grow or have young.**

   A living thing shows all the signs of life. A car moves, but it never grows or has young.

   - **If you chose A:** Moving is only one sign of life. A car does not grow or have young.
   - **If you chose C:** A car burns fuel, a bit like eating. But it does not grow or have young. One sign is not enough.

4. **It cannot feel, and it does not come from a parent.**

   A living thing feels, and it comes from a parent. Fire does neither. A spark can start it. So it is not alive.

   - **If you chose B:** Heat is not the reason. A living thing shows all the signs of life. Fire does not.
   - **If you chose C:** Fire moves a lot. But moving is only one sign of life.

5. **Living: goat. Once living: wooden stick and dead leaf. Never living: stone.**

   The goat is alive now. The stick and the dead leaf came from living plants. The stone was never alive.

6. **A tree grows, feeds and has young.**

   A tree shows the signs of life. It grows, makes its own food and makes seeds. It does not need to walk.

   - **If you chose A:** Size is not a sign of life. A big rock is taller than you, but it is not alive.
   - **If you chose B:** Colour is not a sign of life. A green plastic toy is not alive. A brown bean seed is.

7. **A stone, glass and metal**

   A stone, glass and metal were never alive. Wood and a dry leaf came from plants.

   - **If you chose B:** Wood came from a tree. It is once living, not never living.
   - **If you chose C:** A dry leaf came from a plant that was alive. It is once living.

S2.2.2. Grouping animals

1. **A bat**

   A bat has fur and feeds its young on milk. It is a mammal, not a bird.

   - **If you chose A:** An owl has feathers and lays eggs. It is a bird. A bat also flies, but it has fur and milk.
   - **If you chose B:** A frog has smooth, damp skin. Its young live in water. It is an amphibian.

2. **Mammal**

   A dolphin breathes air and feeds its young milk. So it is a mammal.

   - **If you chose A:** A dolphin breathes air and feeds its young milk. A fish breathes with gills and makes no milk.
   - **If you chose B:** An amphibian has damp skin and its young breathe with gills. A dolphin does not.
   - **If you chose C:** A reptile has dry scales. A dolphin has smooth skin and feeds its young milk.

3. **6 legs and 3 parts**

   An insect has six legs and a body in three parts.

   - **If you chose B:** That is a spider. A spider is not an insect.
   - **If you chose C:** An insect has 3 body parts. Count the head, the middle and the back part.

4. **26**

   Each ant has 6 legs, so 3 ants have 18 legs. The spider has 8 legs. 18 and 8 make 26.

5. **Once living**

   A dead leaf is not alive now. It came from a living plant.

   - **If you chose A:** A dead leaf is not alive now. It came from a plant that was alive. Go to S2.2.1.
   - **If you chose C:** A leaf came from a plant that was alive. So it was not never alive. Go to S2.2.1.

6. **Crocodile: reptile. Hen: bird. Trout: fish. Frog: amphibian. Goat: mammal.**

   A crocodile has dry scales. A hen has feathers. A trout has gills and fins. A frog has damp skin. A goat has hair.

7. **Reptile**

   A reptile has dry, scaly skin. It mostly lays eggs on land. A tortoise does both.

   - **If you chose A:** An amphibian has damp skin, and its young live in water. A tortoise has dry skin.
   - **If you chose C:** Birds lay eggs too. But a bird has feathers. A tortoise has none. It has dry, scaly skin.

8. **Bird**

   A penguin has feathers and lays eggs. Some birds cannot fly, and it is one of them.

   - **If you chose B:** A penguin swims, but it has feathers and breathes air. A fish has gills and fins.
   - **If you chose C:** Not flying does not make a mammal. A mammal has fur and milk. A penguin has feathers.

9. **Its legs and body parts.**

   A spider has 8 legs and 2 body parts. An insect has 6 legs and 3 body parts.

   - **If you chose A:** Small animals can be spiders, snails or woodlice. Size does not make an insect.
   - **If you chose B:** Many spiders hunt without a web. Count its legs and body parts instead.

S2.2.3. Habitats

1. **Food, water and shelter**

   A habitat gives food, water and shelter.

   - **If you chose A:** Food is not enough. A living thing needs water and shelter too.
   - **If you chose C:** Shelter is one of three things. A habitat also gives food and water.

2. **A rotting log**

   A habitat can be small. Ants, worms and beetles can live in one log.

   - **If you chose A:** The sea is a very big habitat.
   - **If you chose B:** A forest is a big habitat.
   - **If you chose C:** A habitat gives food, water and shelter. An empty box gives none.

3. **Lizards and beetles live in deserts.**

   A habitat that holds lizards and beetles is not empty. A desert is full of life.

   - **If you chose B:** Heat does not mean no life. Living things in a desert have ways to cope with it.
   - **If you chose C:** Little water makes life hard, but not impossible. Cactus store water.

4. **A spider**

   A spider has eight legs and two body parts. It is not an insect.

   - **If you chose A:** An insect has 6 legs and 3 body parts. Go to S2.2.2.
   - **If you chose B:** A reptile has dry skin with scales and four legs or none. Count the legs again. Go to S2.2.2.

5. **A pond with water. Insects, slugs and worms for food. Reeds or stones for shelter.**

   The pond gives water. Insects give food. Reeds and stones give shelter.

6. **A grassland**

   A grassland is a wide place with grass and few trees.

   - **If you chose A:** A desert is very dry. It has little grass.
   - **If you chose C:** A forest has many trees. A grassland has few.

7. **They must move away, or they die, because the water is gone.**

   A living thing needs food, water and shelter. Take away water, and the frogs must go.

   - **If you chose B:** A habitat must give all three things. Without water, the frogs cannot stay.
   - **If you chose C:** The young of a frog live in water. Its skin must stay damp. It needs water.

S2.2.4. Exploring a small habitat

1. **With a stick, lifting the side away from you**

   A stick keeps your hand out of the way. Lift the far side. The stone stays between you and any animal.

   - **If you chose A:** Snakes, scorpions and biting animals may hide there. Never put your hand under a stone.
   - **If you chose B:** A stick is safer. Your foot can squash animals or slip. Tip the stone with a stick.
   - **If you chose C:** That opens the gap toward you. An animal could run at you. Lift the far side.

2. **8**

   One group of five makes 5. Three more marks make 8.

3. **12**

   Add 6 and 4 to make 10. Add 2 more to make 12.

4. **What each sign on the map means**

   A key says what each sign means. A circle may mean a tree.

   - **If you chose B:** The key explains the signs. It does not give the size.
   - **If you chose C:** The key explains the signs, not who drew the map.

5. **A spider**

   A spider has 8 legs and 2 body parts.

   - **If you chose A:** An insect has 6 legs and 3 body parts. Count again. Go to S2.2.2.
   - **If you chose C:** A mammal has hair or fur and feeds its young milk. A tiny animal with 8 legs is not one. Go to S2.2.2.

6. **A box with signs inside. Circles are trees and boxes are stones. A key beside it names each sign.**

   A map is drawn from above. The key tells the reader what each sign means.

7. **6**

   There are 7 ants and 1 snail. Take 1 from 7. That leaves 6.

   - **If you chose A:** 8 is ants and snails added together. To find how many more, take the snails away.
   - **If you chose B:** 7 is the number of ants. Take away the 1 snail to find how many more.

8. **From above, like a bird looking down.**

   A map is a drawing from above. It shows where things are.

   - **If you chose A:** A drawing from the side shows heights. A map shows where things are, so it is drawn from above.
   - **If you chose C:** A cut through the ground shows what lives under a stone. A map is drawn from above.

9. **It is dark and damp, and safe from hungry birds.**

   A stone keeps out the sun and the wind. The ground under it stays damp.

   - **If you chose B:** Under a stone it is dark. Woodlice hide from the sun and the heat.
   - **If you chose C:** Under a stone it is damp and still. Wind is kept out.

S2.2.5. Fit for the habitat

1. **Fat**

   The hump stores fat. The camel lives on it when food is short.

   - **If you chose A:** A hungry camel's hump shrinks and flops. Fat is stored food, so the hump holds fat.
   - **If you chose C:** Sand stays out. Long eyelashes and closing nostrils keep it away.

2. **Gills**

   Gills let a fish breathe in water.

   - **If you chose A:** Fins help a fish swim and steer. They do not help it breathe.
   - **If you chose B:** Scales cover the skin of a fish. Gills help it breathe.
   - **If you chose C:** A fish has no nose for breathing. Its gills let it breathe in water.

3. **It loses less water.**

   Wide leaves lose water fast. Spines lose less, and they keep animals off.

   - **If you chose A:** Wide roots near the top of the soil catch the rain. Spines do not.
   - **If you chose B:** The thick stem stores the water. Spines help it lose less.

4. **In or near water**

   Webbed feet are paddles. They suit a frog that swims.

   - **If you chose B:** Webbed feet push water. A desert has very little.
   - **If you chose C:** Thick fur suits cold places. Webbed feet suit water.

5. **No. Features come over very many generations.**

   Those that suited the habitat best had young. The young had the same features.

   - **If you chose A:** One animal cannot change its body by wanting to. Features take very many generations.
   - **If you chose B:** Swimming does not change the feet a duck has. Features come over very many generations.

6. **Shelter**

   A habitat gives food, water and shelter. A burrow is shelter.

   - **If you chose A:** A rabbit eats plants. The burrow is a home that shelters it. Go to S2.2.3.
   - **If you chose C:** A rabbit drinks from outside. The burrow is a home that shelters it. Go to S2.2.3.

7. **Thick fur**

   Thick fur keeps an animal warm in a cold place.

   - **If you chose A:** Webbed feet push water. They suit a pond or a river.
   - **If you chose B:** Spines help a cactus lose less water in a desert.
   - **If you chose C:** Gills let a fish breathe in water.

S2.2.6. Plant eaters, meat eaters and both

1. **Elephant**

   An elephant is a herbivore. It is huge, but it eats only plants.

   - **If you chose A:** A lion eats other animals. It is a carnivore.
   - **If you chose C:** A bear eats plants and animals. It is an omnivore.

2. **An omnivore**

   A hen eats plants and animals. That makes it an omnivore.

   - **If you chose A:** A hen eats worms and insects too. A herbivore eats only plants.
   - **If you chose B:** A hen eats seeds too. A carnivore eats only animals.

3. **Other animals**

   Pointed teeth grip and sharp back teeth slice. They suit a meat eater.

   - **If you chose B:** Plant eaters have wide, flat back teeth for grinding.
   - **If you chose C:** A bird with a short, strong beak cracks seeds. Pointed teeth grip meat.

4. **Seeds**

   A short, strong beak cracks seeds. A sparrow has one.

   - **If you chose A:** A hooked beak tears meat. A short, strong beak cracks seeds.
   - **If you chose B:** A long, thin beak reaches nectar.
   - **If you chose C:** A flat, wide beak sifts food from water. A short, strong beak cracks seeds.

5. **Herbivores: cow and rabbit. Carnivore: eagle. Omnivore: bear.**

   A cow and a rabbit eat only plants. An eagle eats other animals. A bear eats both.

6. **Birds**

   Birds have feathers and lay eggs. A hen is a bird.

   - **If you chose A:** Mammals have fur or hair and feed milk to their young. A hen has feathers. Go to S2.2.2.
   - **If you chose C:** Reptiles have dry scales. A hen has feathers. Go to S2.2.2.

7. **Only plants.**

   A rhino is a herbivore. It is huge, but its flat teeth grind plants.

   - **If you chose A:** Strength does not tell you what an animal eats. A rhino has flat grinding teeth.
   - **If you chose B:** Size does not tell you either. A rhino eats only plants.

S2.2.7. Food chains

1. **Grass**

   Grass is a green plant. It makes its own food from sunlight.

   - **If you chose A:** The grasshopper eats grass. It cannot make its own food.
   - **If you chose C:** The eagle eats other animals. A producer makes its own food from sunlight.

2. **Snake**

   The arrow from frog points to snake. The snake eats the frog.

   - **If you chose A:** The frog eats the grasshopper. The grasshopper is the frog's prey.
   - **If you chose B:** Grass is a plant. It does not hunt.
   - **If you chose C:** The eagle eats the snake, not the frog. Look at the arrow after the frog.

3. **grass → goat → lion**

   Grass starts the chain. The goat eats it. The lion eats the goat.

   - **If you chose B:** Arrows point to the eater. Here they point to the food.
   - **If you chose C:** A chain starts with a green plant. A goat eats grass, not the other way round.

4. **Prey**

   The snake is the animal that is hunted. That makes it prey.

   - **If you chose A:** The eagle hunts the snake. The eagle is the predator.
   - **If you chose B:** A producer makes its own food from sunlight. A snake eats other animals.

5. **A stone**

   A stone was never alive. It does not eat or grow.

   - **If you chose A:** A frog eats, grows and moves. It is living. Go to S2.2.1.
   - **If you chose B:** Grass grows. It is living. Go to S2.2.1.

6. **grass → mouse → owl. Each arrow points to the eater.**

   The mouse eats the grass. The owl eats the mouse. Arrows go from the food to the eater.

7. **It makes its own food, using sunlight.**

   A green plant makes its own food from sunlight. That is why a food chain on land starts with a plant.

   - **If you chose A:** The soil gives water. A plant makes its own food in its leaves, using sunlight.
   - **If you chose C:** Rain gives water, not food. The plant makes its food from sunlight.

8. **The mouse is eaten by the owl.**

   An arrow in a food chain means "is eaten by". It points to the eater.

   - **If you chose A:** An arrow means "is eaten by". It points to the one that eats, the owl.
   - **If you chose B:** The arrow shows where the food goes. It does not show size.
   - **If you chose C:** The arrow does not show who chases whom. It shows where the food goes.

S2.2.8. Changes to habitats

1. **They lose their homes and food.**

   The forest was home and food for them. Without it, they move away or die.

   - **If you chose A:** A forest gives food and shelter. With no trees, they have neither.
   - **If you chose B:** Cutting trees takes away plants and the animals on them.
   - **If you chose C:** A stump gives little shelter and little food. The trees that gave both are gone.

2. **Oil poured into the water**

   Oil, rubbish, soap and farm sprays make water dirty. Fish and frogs get sick or die.

   - **If you chose B:** A leaf rots and goes back into the soil. Oil and plastic do not.
   - **If you chose C:** Clean rain does not harm fish.

3. **The leaf is breaking up. The plastic has not changed.**

   A leaf starts to rot in damp soil. In time it goes back into the soil. Plastic does not.

   - **If you chose A:** Plastic does not rot for a very long time.
   - **If you chose B:** A leaf starts to rot in damp soil. It goes soft and breaks up.

4. **They have less to eat.**

   The frogs are food for the snakes. When the frogs are lost, the snakes are harmed too.

   - **If you chose A:** Each link needs the one before it. A snake eats frogs. Go to S2.2.7.
   - **If you chose C:** A snake eats animals, not grass. Go to S2.2.6.

5. **Put the stone back as it was.**

   The stone is a home for small animals. Putting it back keeps their habitat safe.

   - **If you chose A:** Small animals need the dark, damp place under a stone. Put it back as it was. Go to S2.2.4.
   - **If you chose C:** Animals need their own habitat to live. Leave them there. Go to S2.2.4.

6. **Any two. Pick up litter safely. Plant a tree. Leave a patch wild. Keep rubbish out of water.**

   Each one keeps homes and food safe for living things.

7. **Put litter in a bin, or take it home.**

   Litter in a bin cannot harm animals or water. Never touch sharp litter. Leave it for a grown up.

   - **If you chose A:** A river only moves rubbish to another place, where other animals live.
   - **If you chose B:** Plastic does not rot. It stays in the ground for a very long time.
   - **If you chose C:** Rain washes litter into rivers and drains. Pick it up.

About this book

For learners who can read short sentences and say what a few animals eat. In many schools this fits children of about 8 to 10, and older learners can use it too. Activities use a stick, paper and the ground outside. When a learner lifts a stone or a log, they use a stick, keep hands away from what hides under it, and put it back as it was. A learner can work alone: every exercise has its answer and the reason for it.

Written and drawn by attnom. Edition 1.0, 2026-11-09.

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