

SCIENCE

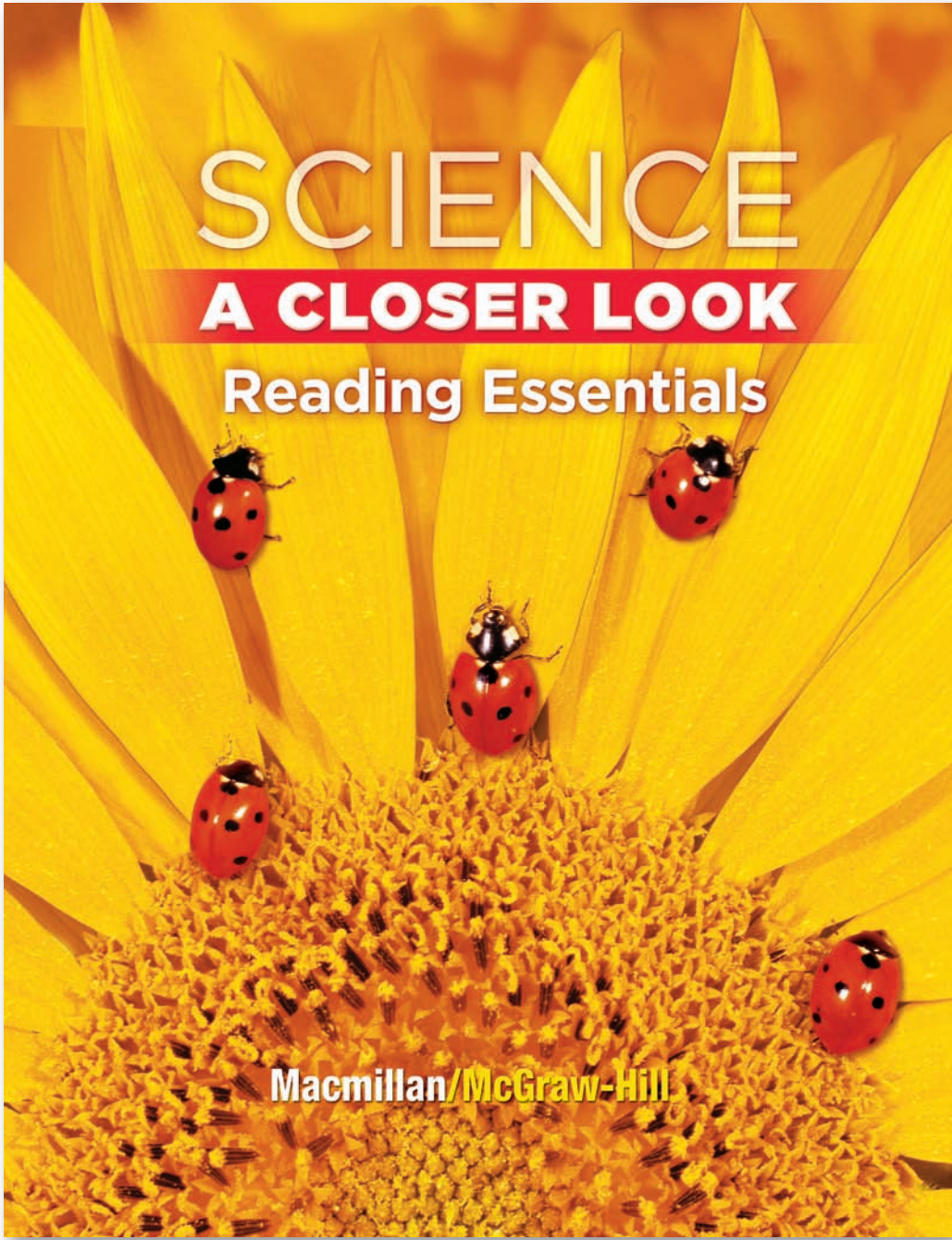
A CLOSER LOOK

Reading Essentials



Macmillan/McGraw-Hill

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Plants Are Living Things



What do you know about plants?

Vocabulary

living a thing that needs food, air, and water to live



nonliving a thing that does not need food, water, and air to live



leaves plant parts that make food



stem part of a plant that holds it up



roots plant parts that hold a plant in the ground



What are living and nonliving things?

Plants and animals are living things.

Living things need food, water, and air.

They grow and change.

Nonliving things do not need food, water, and air.

They do not grow and change.

Living and Nonliving Things



 **Quick Check**

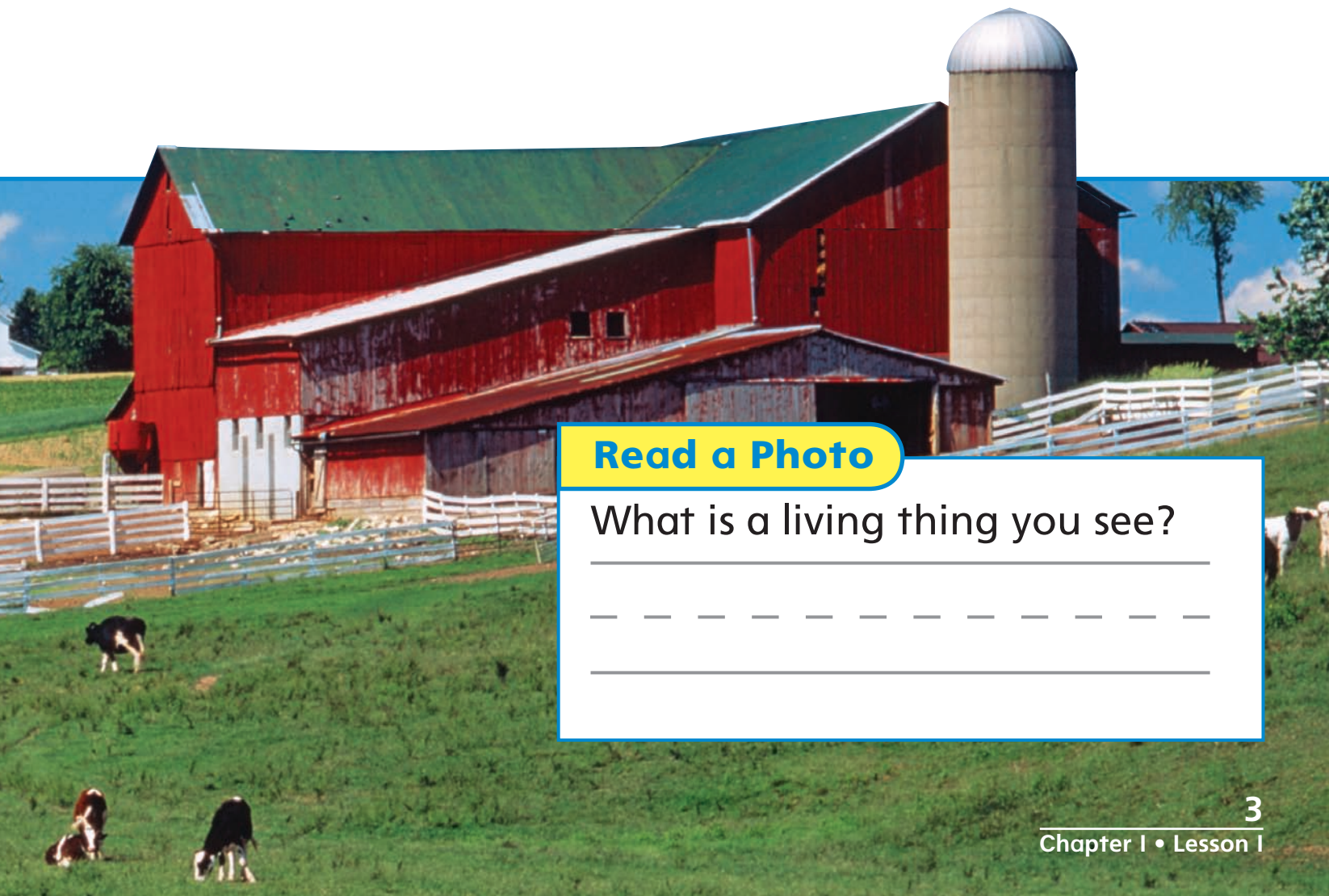
Circle all correct answers.

1. Which of these are living things?

tree dog rock

2. Which of these are nonliving things?

grass desk book



Read a Photo

What is a living thing you see?

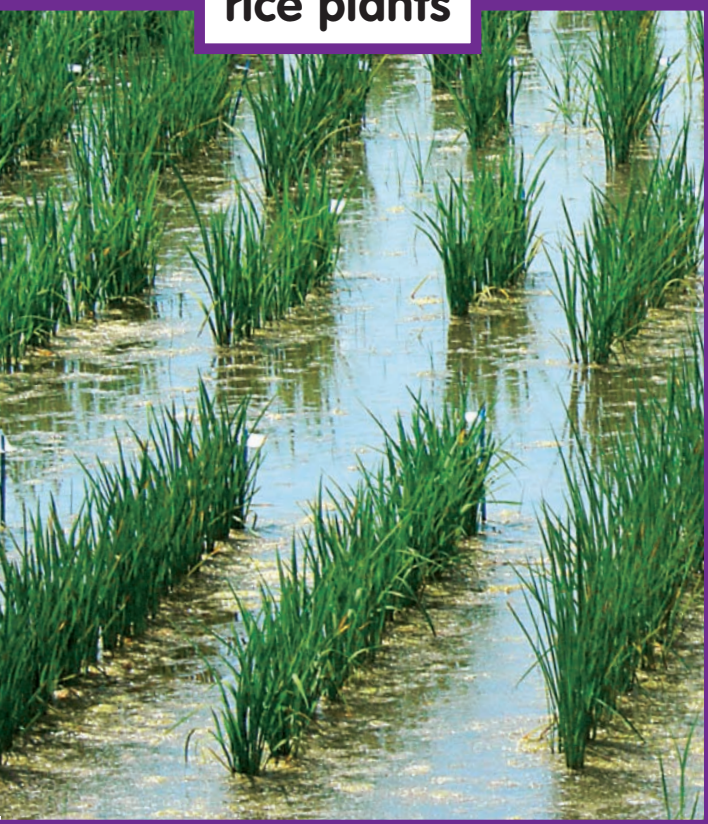
Why are plants living things?

Plants grow and change.

They make new plants.

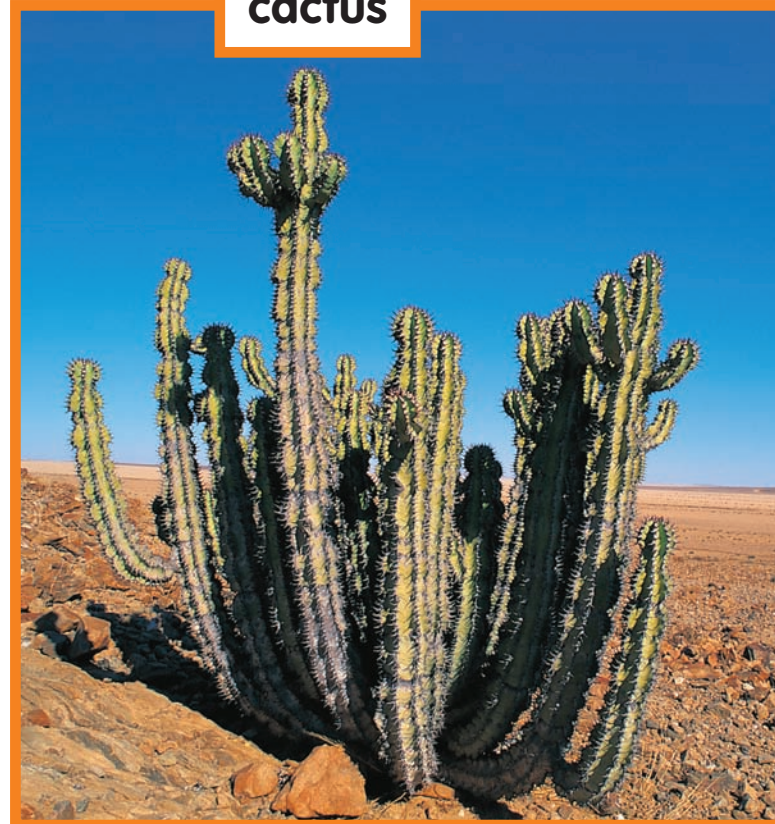
Plants need food, water, and air to live.

rice plants



▲ Plants need water.

cactus



▲ Plants need air.

Plants use water, air, and sunlight to make food.

Plants need sunlight. ▶



sunflower

 **Quick Check**

Write two things a plant needs to live.

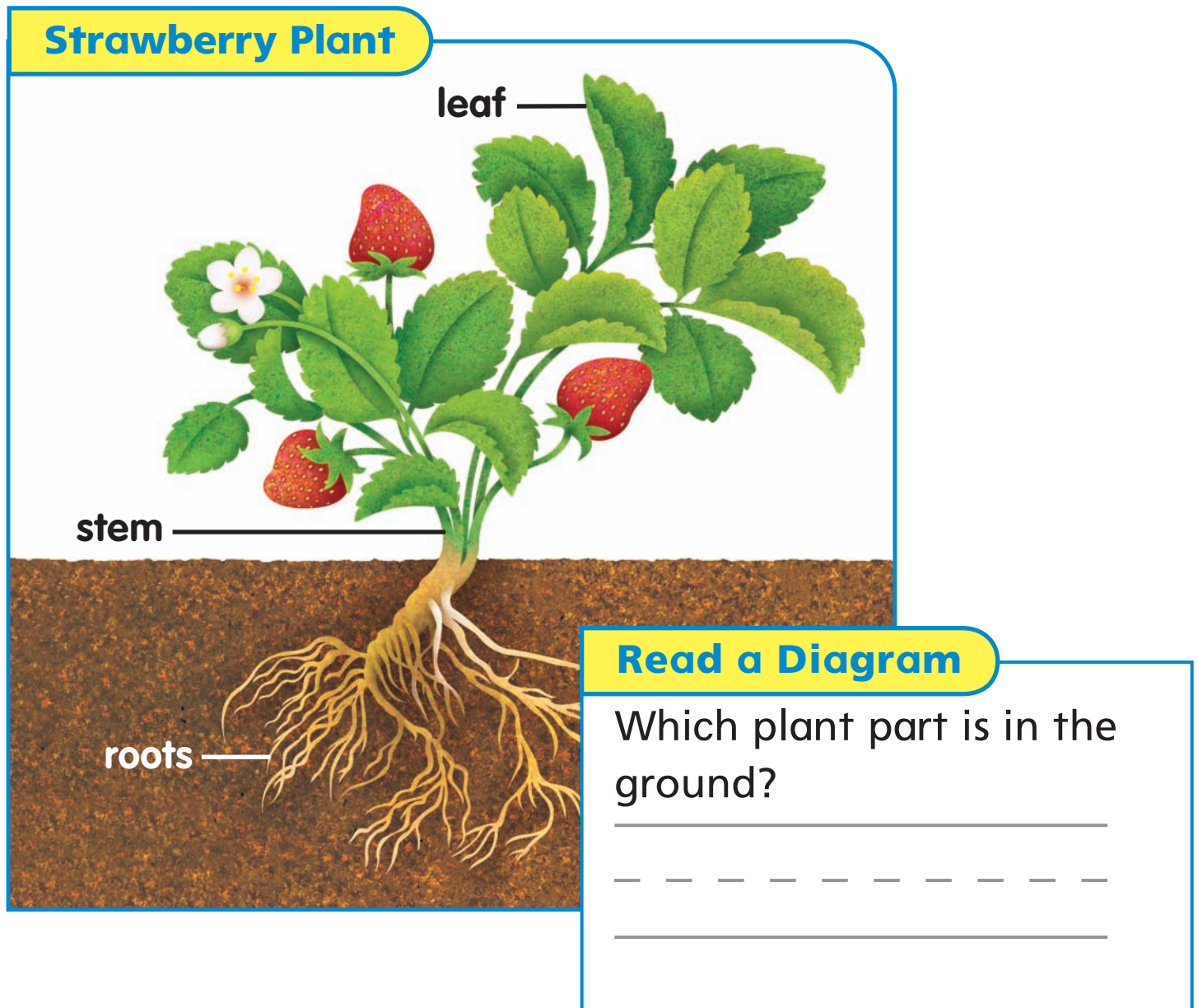
3. _____

4. _____

What are the parts of plants?

Plants have parts that help them live.

Strawberry Plant



leaf

stem

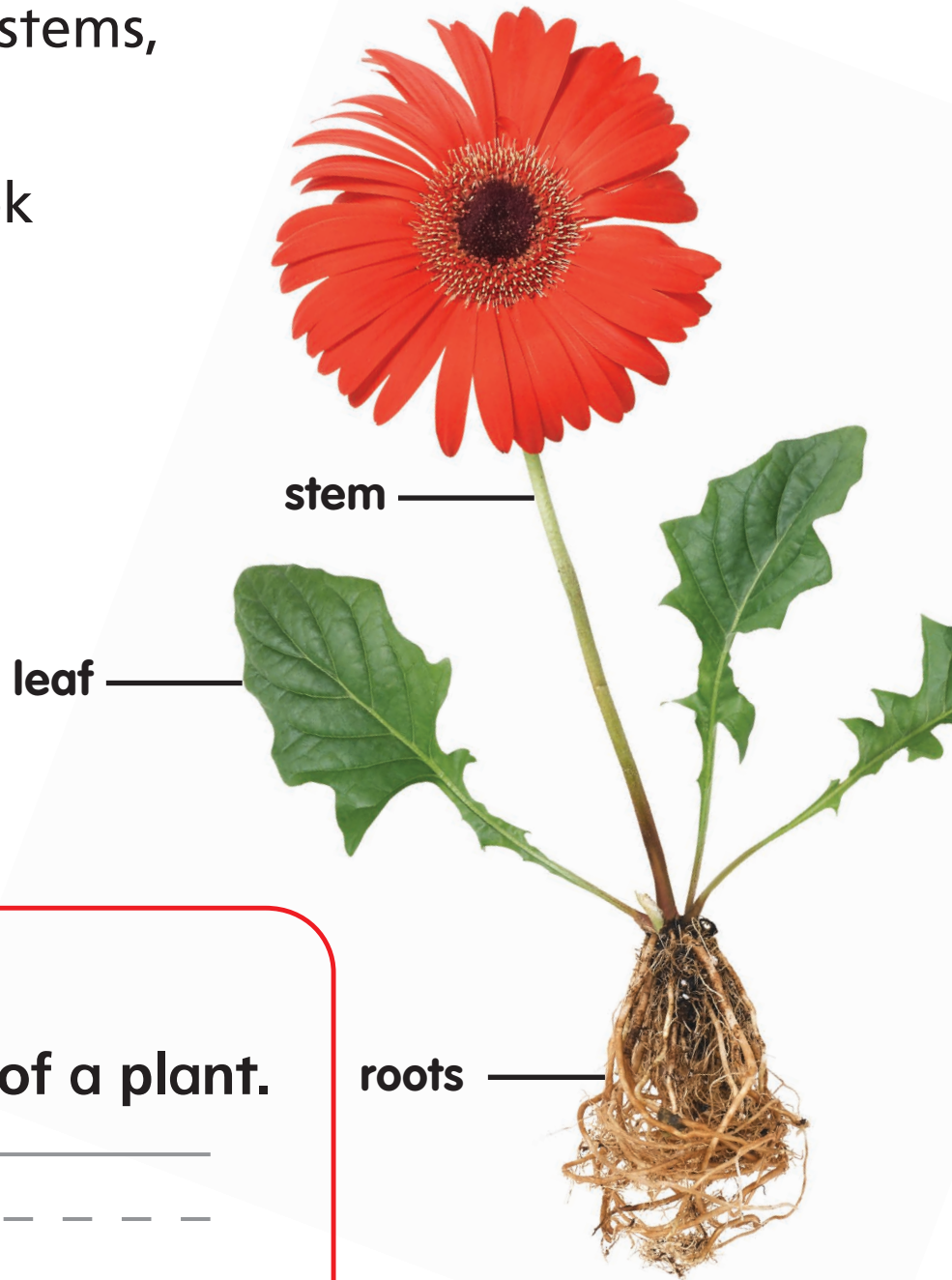
roots

Read a Diagram

Which plant part is in the ground?

Plants have leaves, stems, and roots.

These parts can look different.



Quick Check

Write three parts of a plant.

5. _____

6. _____

7. _____

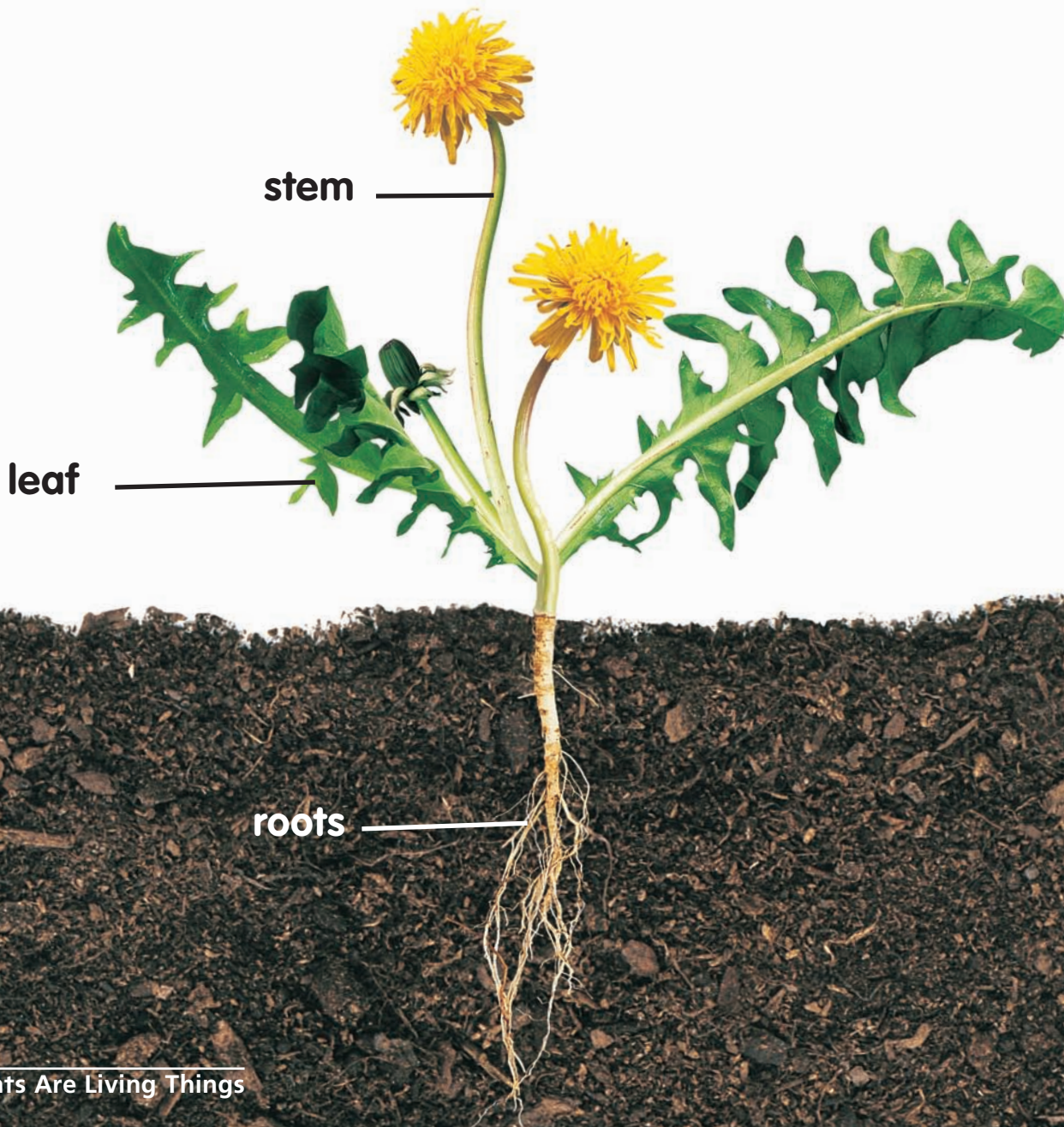
What do plant parts do?

Leaves make food.

They use sunlight, water, and air.

Stems hold up the plant.

They move water and food to other plant parts.



Roots hold the plant in the ground.

Roots take in water.

Plant parts help a plant live. ▶



 **Quick Check**

Circle all correct answers.

8. Leaves use _____ to make food.

ground

sunlight

air

water

How are plants different?

All plants are not the same color.

All plants are not the same size.



morning glory



gerbera daisy



lily of the valley

▲ Plants have different flowers, leaves, and stems.

Some plants have thin stems.

Trees have thick stems.

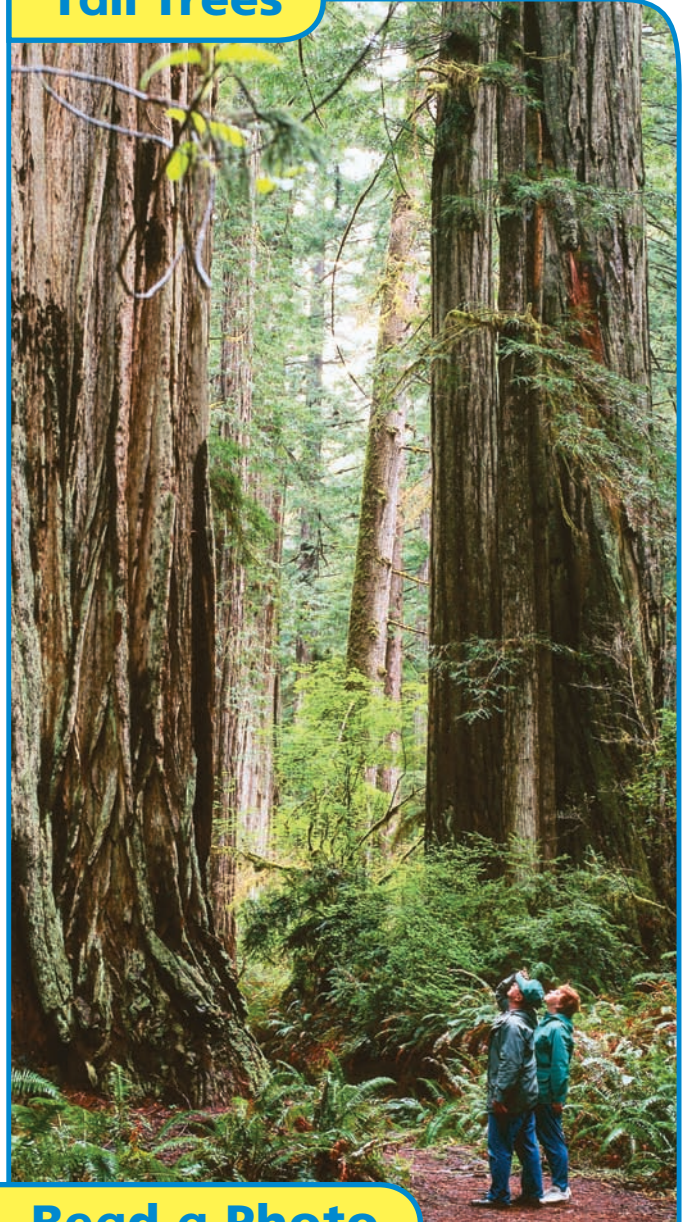
Some plants are tall.



Quick Check

9. Draw two leaves that are different.

Tall Trees



Read a Photo

What parts of these trees do you see?

Which plant parts can you eat?

You may eat some plant parts today.

Be careful!

Some plant parts can make you sick.



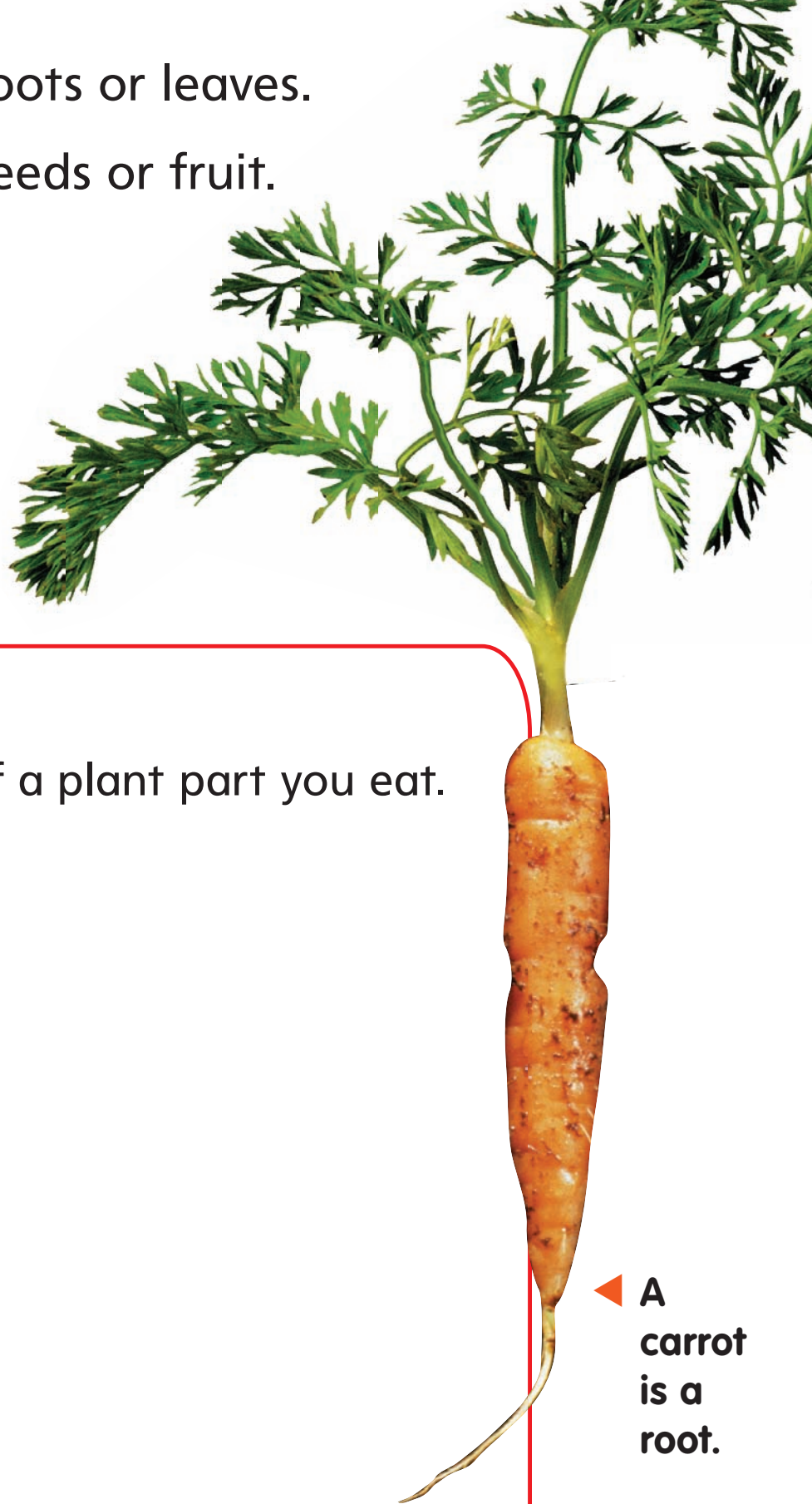
▲ Lettuce is a leaf.



▲ A coconut is a seed.

You can eat some roots or leaves.

You can eat some seeds or fruit.



 **Quick Check**

10. Draw a picture of a plant part you eat.

◀ **A
carrot
is a
root.**

**Vocabulary
Review**

leaves

roots

stem

**Draw a picture of a plant.
Use the words in the box to label the parts.**

Tell what you know.

Plants Grow and Change



How do plants change?

Vocabulary

flower a plant part that makes seeds



seed a plant part that grows into a new plant



desert a dry place



rain forest a hot and wet place



Arctic a cold and icy place near the North Pole



Why are flowers important?

Some plant parts help make new plants.

A **flower** is a plant part that makes seeds.

A **seed** can grow into a new plant.



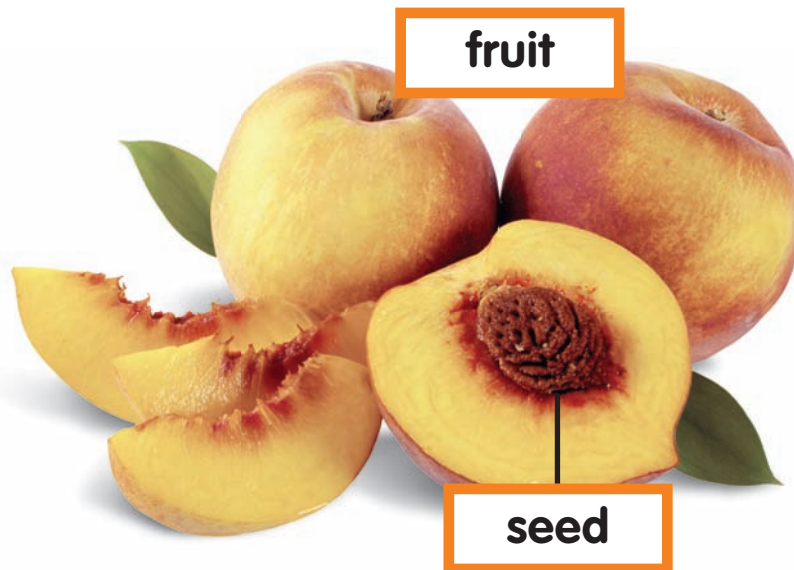
flowers

peach trees

Some plants have fruit.

A fruit grows around a seed.

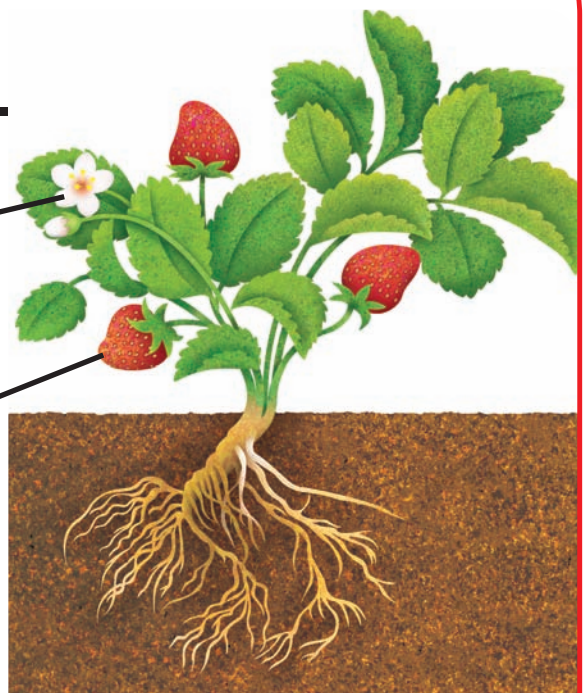
A fruit keeps the seed safe.



 **Quick Check**

Label the flower and the fruit.

- _____
-
1. _____
- _____
-
2. _____
- _____



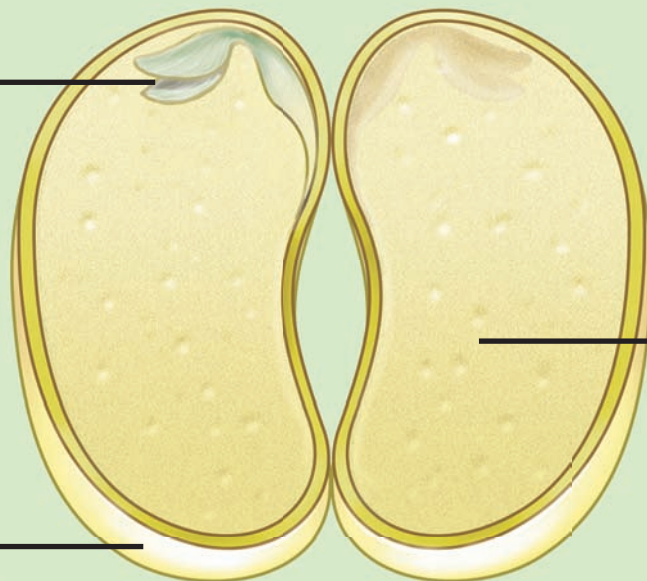
What are the parts of a seed?

Seeds need water, light, and a place to grow.

Seeds have parts.

Look Inside a Seed

This will grow to be a plant.



This is food for the new plant.

The outside of the seed keeps it safe.

Read a Diagram

Which part of a seed keeps it safe?

Animals and wind can move seeds.
The seeds will grow in new places.

Animals move seeds. ►



 **Quick Check**

Circle the answer.

3. Seeds need _____ to grow.

milk

water

How do plants grow from seeds?

A plant can start as a seed.

The seed gets water from the soil.

It grows into a new plant.

The new plant looks like the plant it came from.

The new plant will make more seeds.

Life Cycle of a Bean Plant

seed

seed with roots

sprouting seed



 **Quick Check**

Circle the answer.

4. A plant can begin as a _____.

seed

fruit

5. A seed can grow into a _____.

new seed

new plant

 **Science in Motion** Watch the life cycle of a bean plant at www.macmillanmh.com

new plant

Read a Diagram

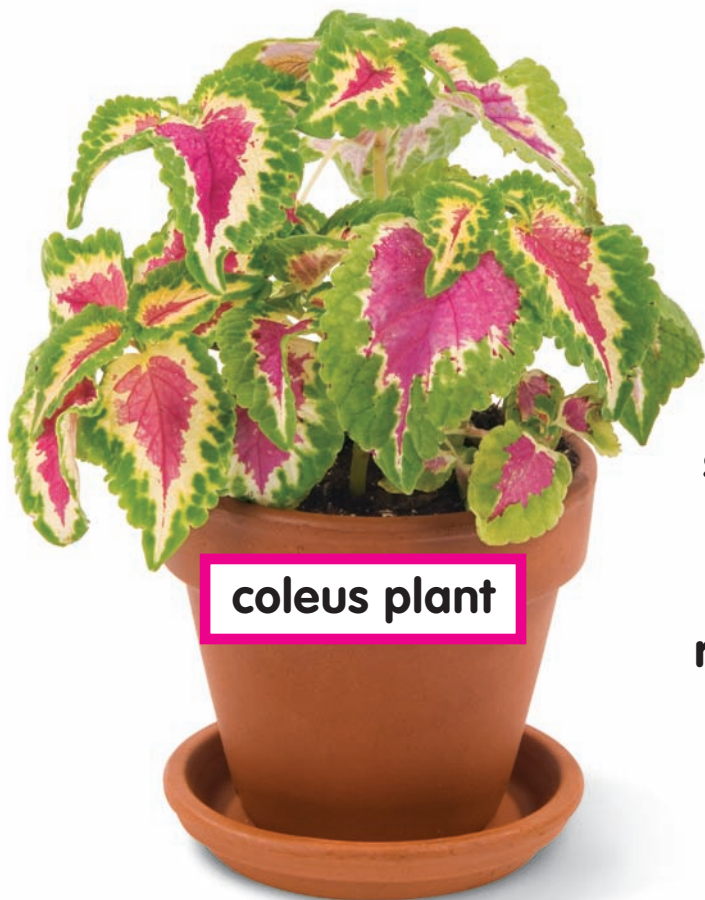
What does this plant start as?

How else do plants grow?

Some plants do not grow from seeds.

Some plants grow from plant parts.

Water helps some parts grow into new plants.



coleus plant

stem

roots



▲ Roots can grow from a plant part.

new plant



▲ New potato plants can grow from a potato.

Quick Check

6. Draw a picture to show how a stem can grow a new plant.

Where do plants live?

Plants live in many places.

Some plants live in the desert.

A **desert** is a dry place.

▼ These plants have parts that hold water.



A **rain forest** is hot and wet.

The plants can get a lot of water.

Big, pointy leaves let extra water fall off the plants.



Rain Forest Plants



Read a Photo

How do these leaves look?

Quick Check

Fill in the blanks.

- _____
-
7. A desert is _____.
- _____
-
8. A rain forest is hot and _____.
- _____

How can plants survive in the cold?

The **Arctic** is icy and cold.

The Arctic is near the North Pole.

Arctic plants live in groups.

They keep each other safe from the wind.



Arctic



Arctic plants are short.

This helps them live in the cold.

 **Quick Check**

9. Draw a picture of some arctic plants.



Draw a line from each word to the picture that matches.

1. desert



2. rain forest



3. Arctic



Tell what you know.

All About Animals



What do you know about animals?

Vocabulary

mammal an animal with hair or fur



bird an animal that has two legs, two wings, and feathers



reptile an animal with dry skin and scales



amphibian an animal that lives on land and in water



fish an animal that has gills and fins



insect an animal with six legs



What are some types of animals?

Mammals have hair or fur.

They can hop, walk, swim, or fly.



giraffes



porcupine

▲ Fur can keep mammals warm and dry.

◀ The parent takes care of the baby.

Birds have feathers.

They have two legs and two wings.

Most birds can fly.



▲ Many birds lay eggs in a nest.

◀ A beak helps a bird eat.

 **Quick Check**

1. What kind of animal has hair or fur?

2. What kind of animal has feathers?

What are reptiles and amphibians?

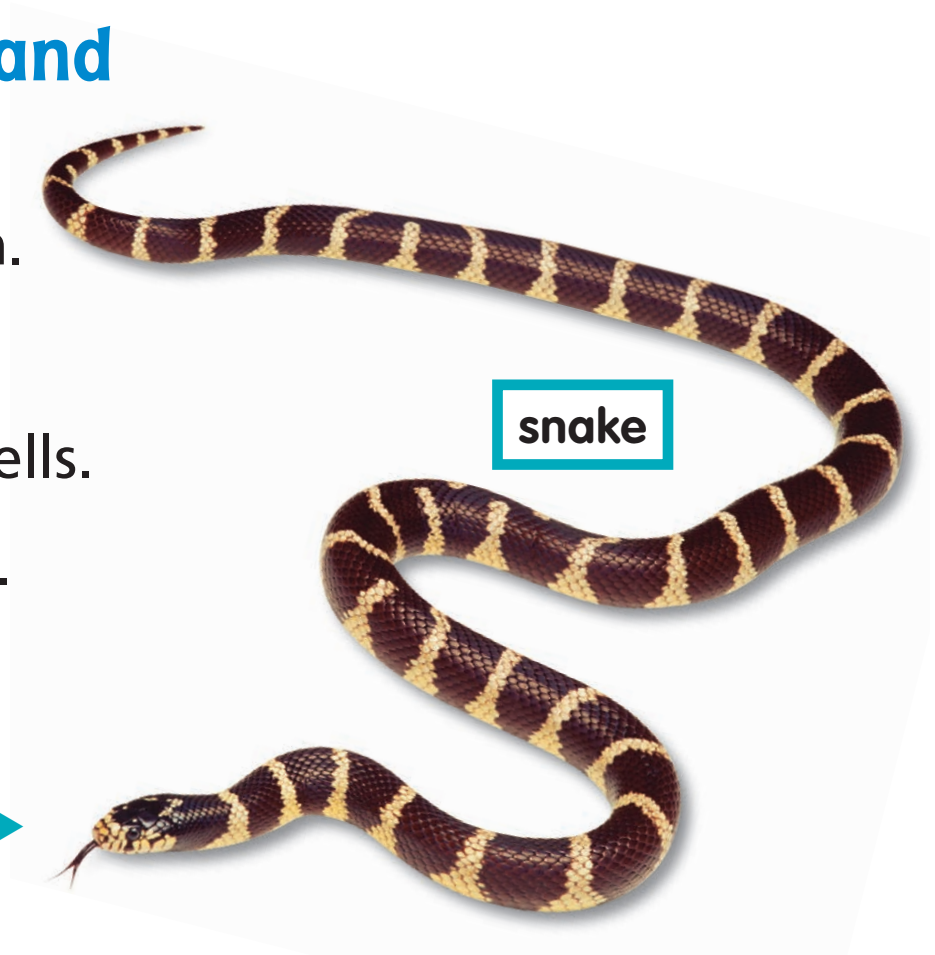
Reptiles have dry skin.

Their skin has scales.

Some reptiles have shells.

Most reptiles lay eggs.

Snakes
have scales. ▶



snake



turtle

▲ Turtles have shells.

Amphibians live in water and on land.

Their skin is soft and wet.

Some hatch from eggs in water.

Frogs have wet skin. ▶



 **Quick Check**

3. Draw a reptile.

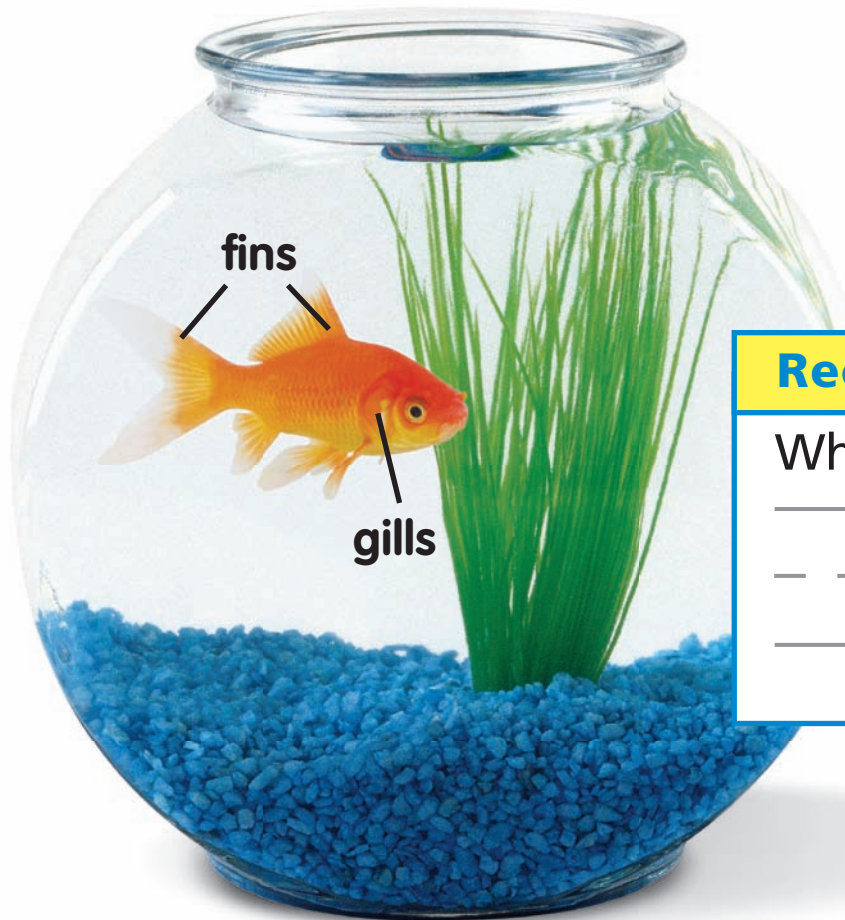
What are some other types of animals?

Fish live under water.
Most fish have scales.
Gills help them breathe.
Fins help them swim.



▲ Fish swim in schools.

Parts of a Fish



Read a Diagram

What helps a fish swim?

Insects are animals with six legs.

They have bodies divided into three parts.

Most insects lay eggs.

butterfly



ants



 **Quick Check**

Circle the answer.

4. A fish has _____.

6 legs gills fur

5. An insect has _____.

6 legs gills fur

What do animals need to live?

Animals are living things.

They need food, water, and air.

bear



▲ This bear eats plants.

Zebras' Needs



watering hole

Read a photo

What are the zebras doing in this picture?

Animals live in different places.

All animals need a safe place to live.

These raccoons live in a log. ►



raccoons

 **Quick Check**

6. Draw an animal.

Show what the animal needs to live.

How do animals meet their needs?

Animals use wings, legs, or fins to move.

Animals use eyes or noses to find food.

parrot



▲ Wings help this bird fly.

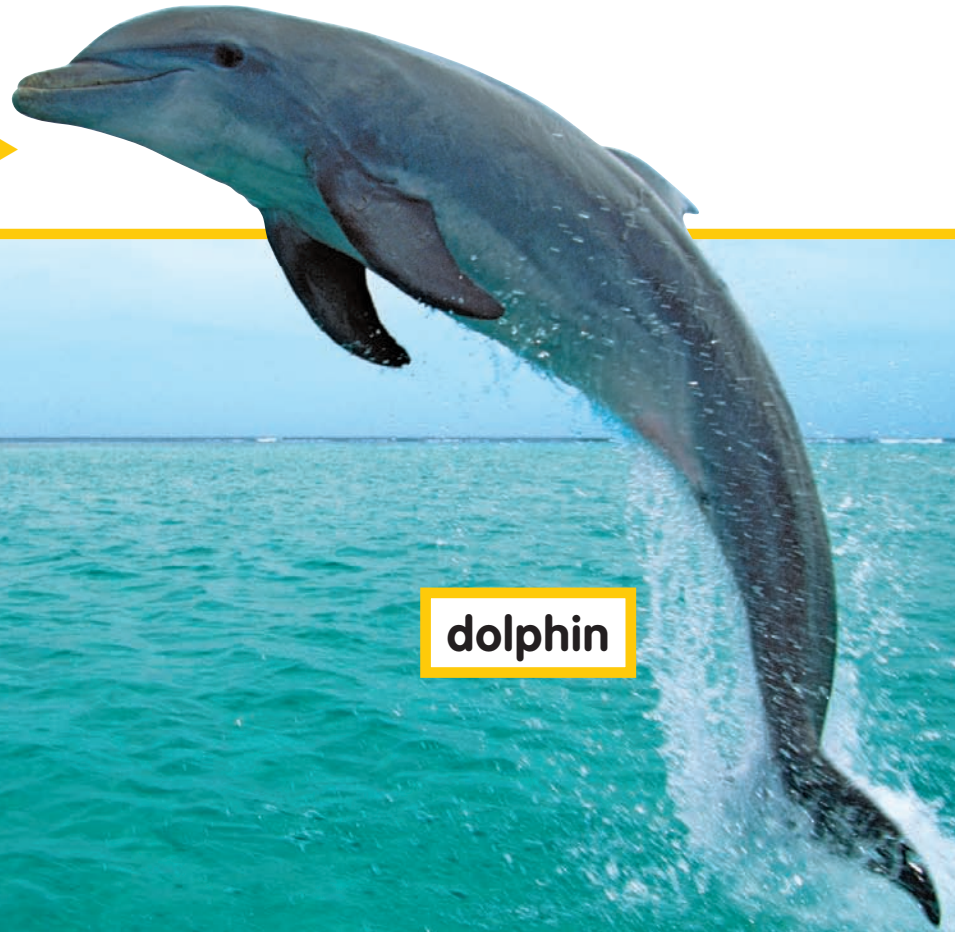
mountain lion



◀ Legs help this lion run.

Gills or lungs help animals get air.

Dolphins have lungs. ▶



dolphin

 **Quick Check**

7. Circle the body parts that help animals move.

lungs eyes legs noses
wings gills ears fins

What animals eat plants?

Animals need food to live.

Some animals eat only plants.

A horse eats plants. ▼



horse

These animals have flat teeth.
Flat teeth help them eat plants.

A rabbit eats plants. ▶



rabbit

 **Quick Check**

Name an animal that eats plants.

8. _____

What animals eat meat?

Some animals eat other animals.

These animals have sharp teeth.

▼ **Tigers eat meat.**

Teeth



Read a Photo

What do you see that helps an animal eat meat?

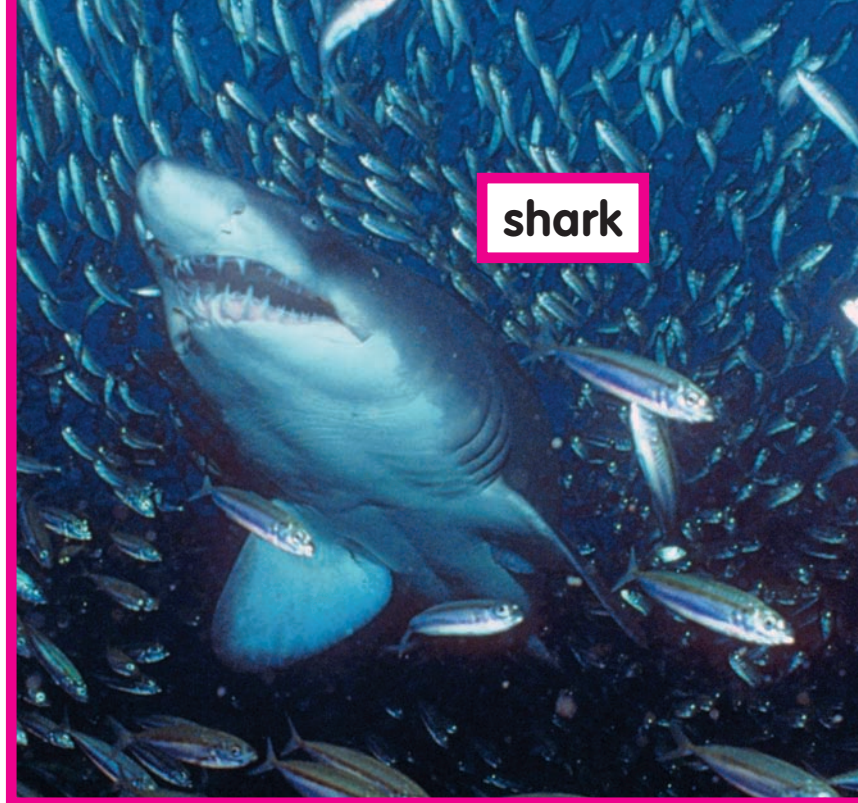


tiger

Sharp teeth help animals eat meat.

Tigers and sharks both eat meat.

Sharks have sharp teeth. ▶

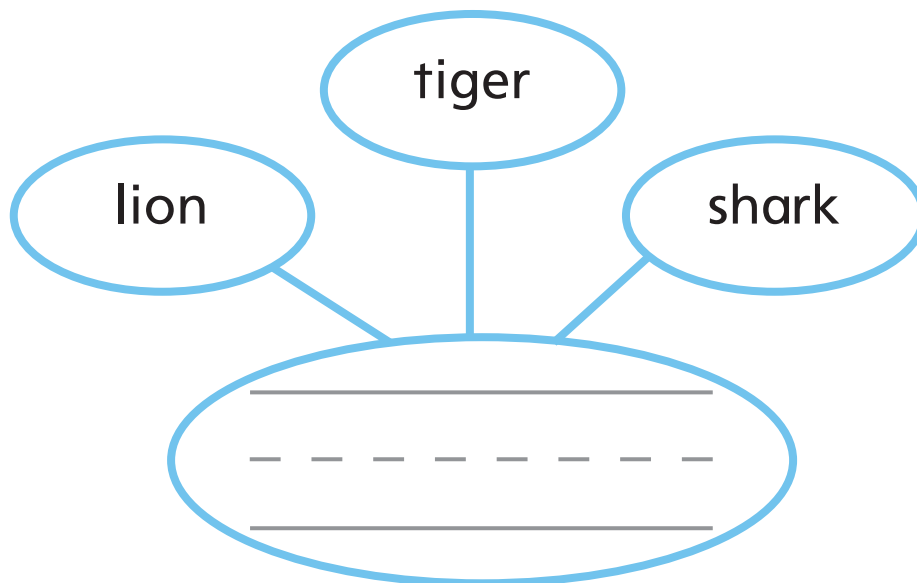


shark

 **Quick Check**

Write what these animals eat.

9.



How do mammals grow and change?

Animals are born and grow older.

They make other animals and then die.

This is their life cycle.

Mammals give birth to live young.

Many baby mammals can not see or walk when they are born.

▼ This is the life cycle of a fox.



newborn fox



baby fox

Their mothers take care of them.

Baby mammals grow up.

They look like their parents.

 **Quick Check**

Write the answers.

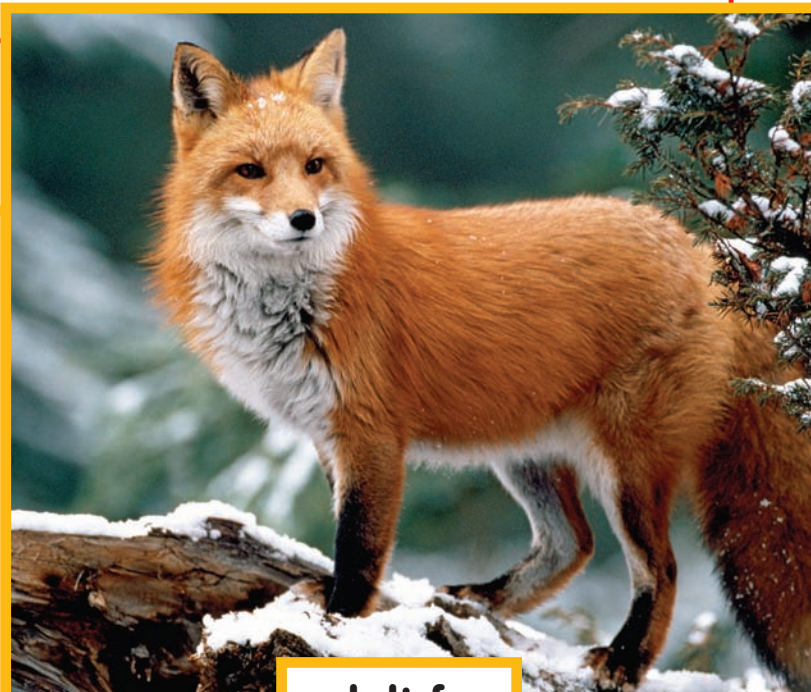
10. What will a baby fox look like

when it grows up?

11. Who takes care of a newborn fox?



young fox



adult fox

How do birds grow and change?

Baby birds hatch from eggs.

They do not have feathers.

They can not fly.

Their parents take care of them.

Their feathers will grow in.

Then the birds can fly.

Life Cycle of a Bird

▼ A bird hatches from an egg.



▼ This bird is 3 weeks old.



✓ Quick Check

Circle the answer.

12. Birds grow _____.

feathers fur scales

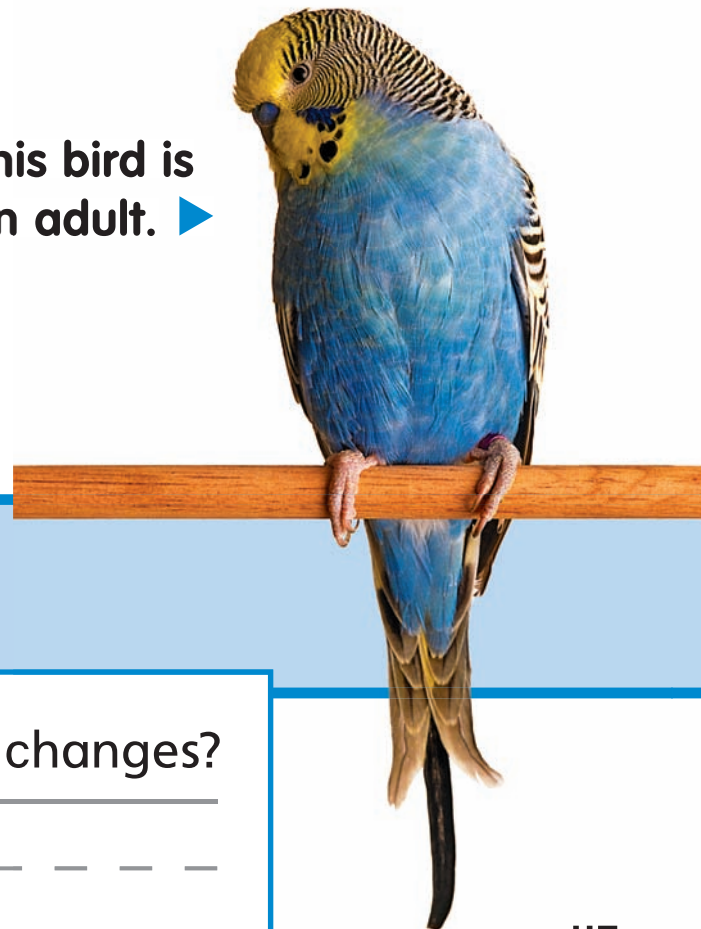
13. Birds _____ as they grow.

change stay the same

▼ This bird is 5 weeks old.



This bird is an adult. ►



Read a Diagram

What part of this bird changes?

How do frogs grow and change?

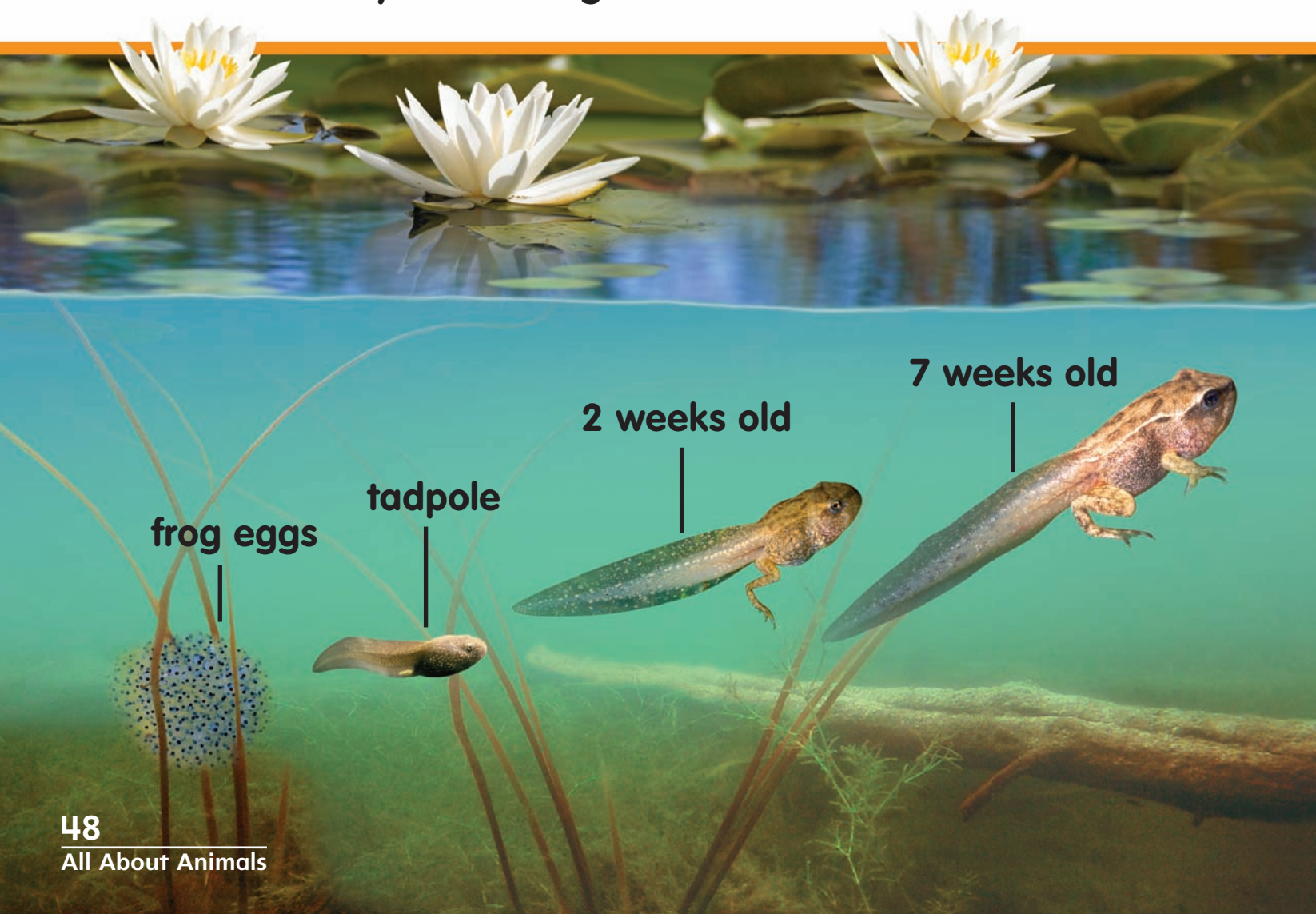
Frogs lay eggs in water.

Baby frogs are called tadpoles.

They hatch from eggs.

Tadpoles have a tail and gills.

▼ This is the life cycle of a frog.



Older tadpoles grow legs and lungs.

They grow up to be frogs.

Frogs can live on land.

 **Quick Check**

Put these stages of a frog's life cycle in order.

1. tadpole frog egg

First

Blank writing area with three horizontal lines (top, dashed middle, bottom) for the first stage.

Next



Blank writing area with three horizontal lines (top, dashed middle, bottom) for the second stage.

Last



Blank writing area with three horizontal lines (top, dashed middle, bottom) for the third stage.

adult frog



1. Circle the animal that has feathers and can fly.

frog

tiger

bird

2. Circle the animal that has hair or fur.

mammal

insect

fish

3. Circle the animal that has fins.

bird

fish

reptile

4. Circle the animal that has six legs.

bird

mammal

insect

Tell what you know.

Places to Live



Where do animals live?

Vocabulary

habitat a place where animals and plants live



grassland a dry place with a lot of grass



forest a place with many trees



lake water with land around it



ocean salty water that can be very deep



food chain the order of how living things get food



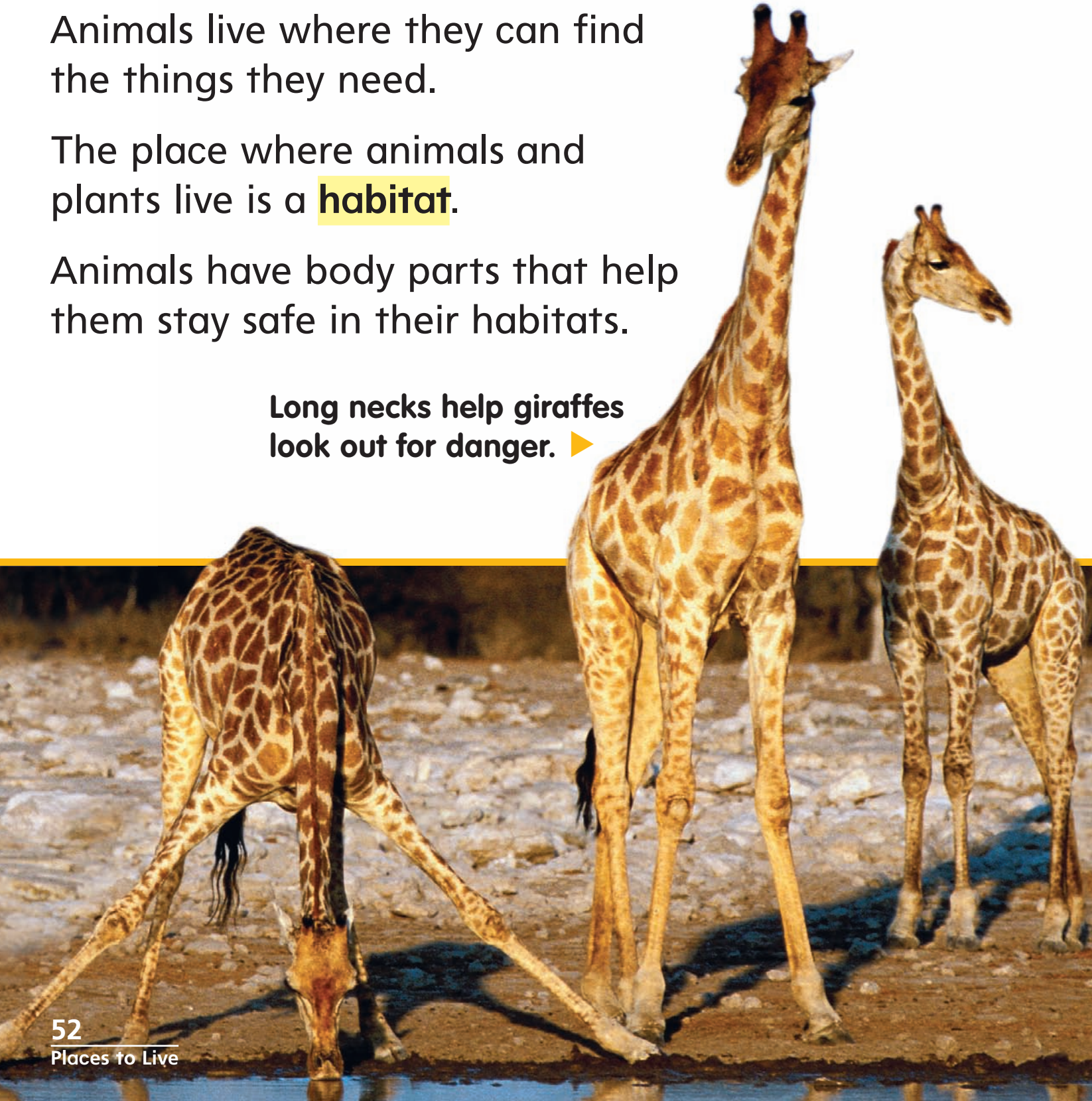
What is a grassland habitat?

Animals live where they can find the things they need.

The place where animals and plants live is a **habitat**.

Animals have body parts that help them stay safe in their habitats.

Long necks help giraffes look out for danger. ►



A **grassland** is a dry place.

It has lots of grass.

Many grassland animals eat grass.

Grass also helps some animals hide.



◀ Prairie dogs can dig holes and hide to stay safe.

Quick Check

- I. Draw a grassland habitat and an animal that lives there.

What is a forest habitat?

A **forest** is a place with many trees.

Trees grow tall in a forest.

Smaller plants grow under the trees.



▲ Deer live in a forest.



▲ A tree is a good home for a raccoon.

Some animals get food from the trees.

Some animals make a home in the trees.

A forest is their habitat.

Woodpecker



Read a Photo

What could a woodpecker find in this tree?

Quick Check

List two animals that live in a forest.

2.

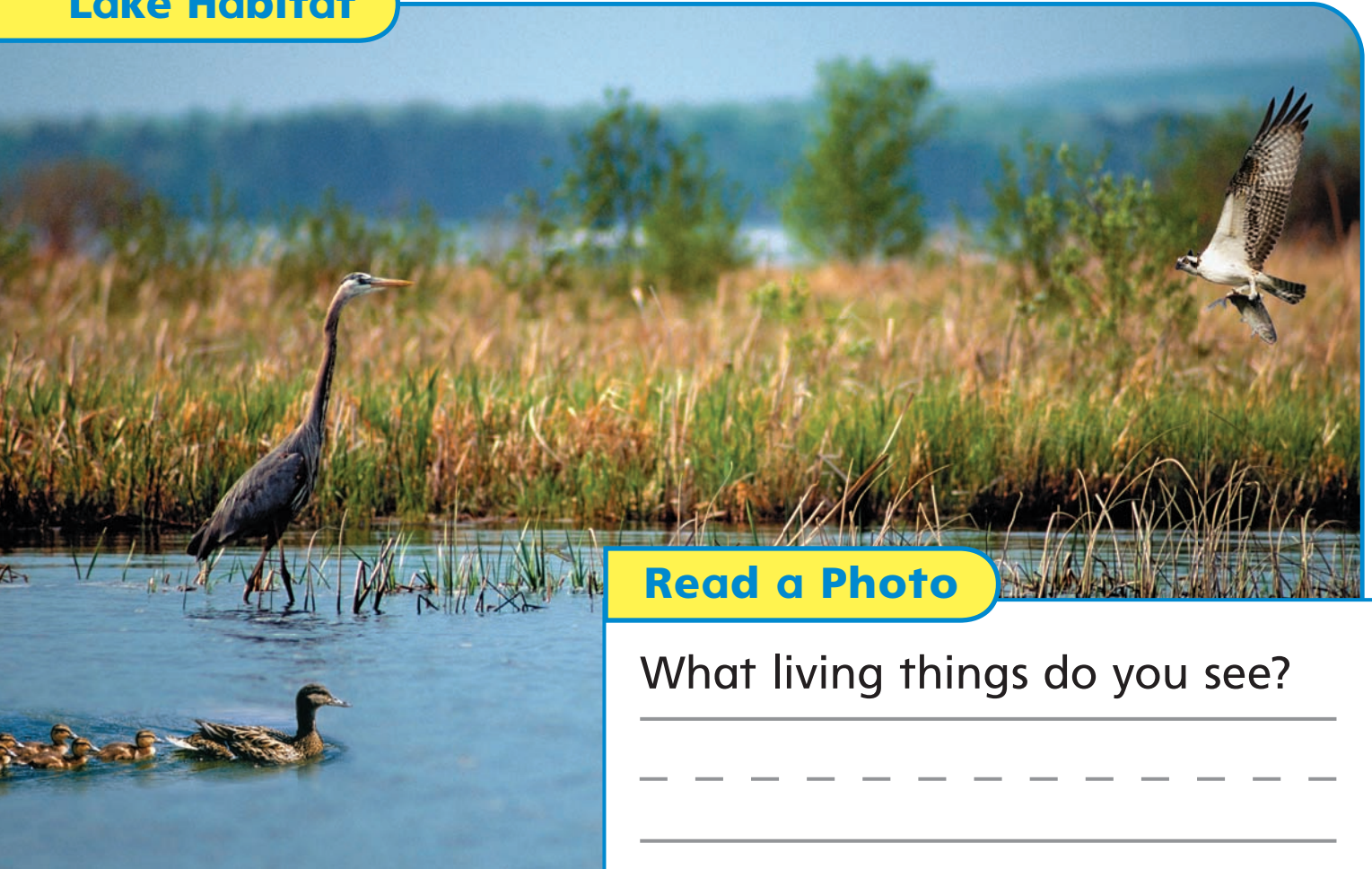
3.

What is a lake habitat?

A **lake** is water with land around it.

Some plants grow in and around the water.

Lake Habitat



Read a Photo

What living things do you see?

Animals can find food
in and around a lake.

Their homes may be in
or near the lake.

A lake is their habitat.



▲ Beavers build dams to
make homes.

 **Quick Check**

List two ways animals use a lake habitat.

4.

5.

What is an ocean habitat?

An **ocean** has salty water.

This habitat is very big and deep.

Many plants, mammals, and fish live in the ocean.



tropical fish

▲ Fish live in the ocean.

This mammal lives in the ocean and eats other animals. ▼

orca whale

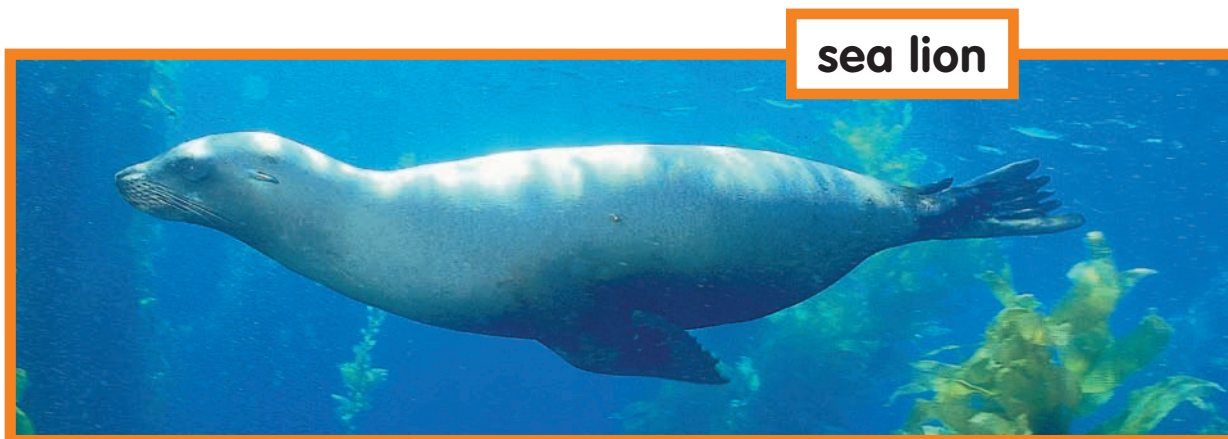


seaweed

Some ocean animals eat fish.

Other ocean animals eat plants.

An ocean is their habitat.

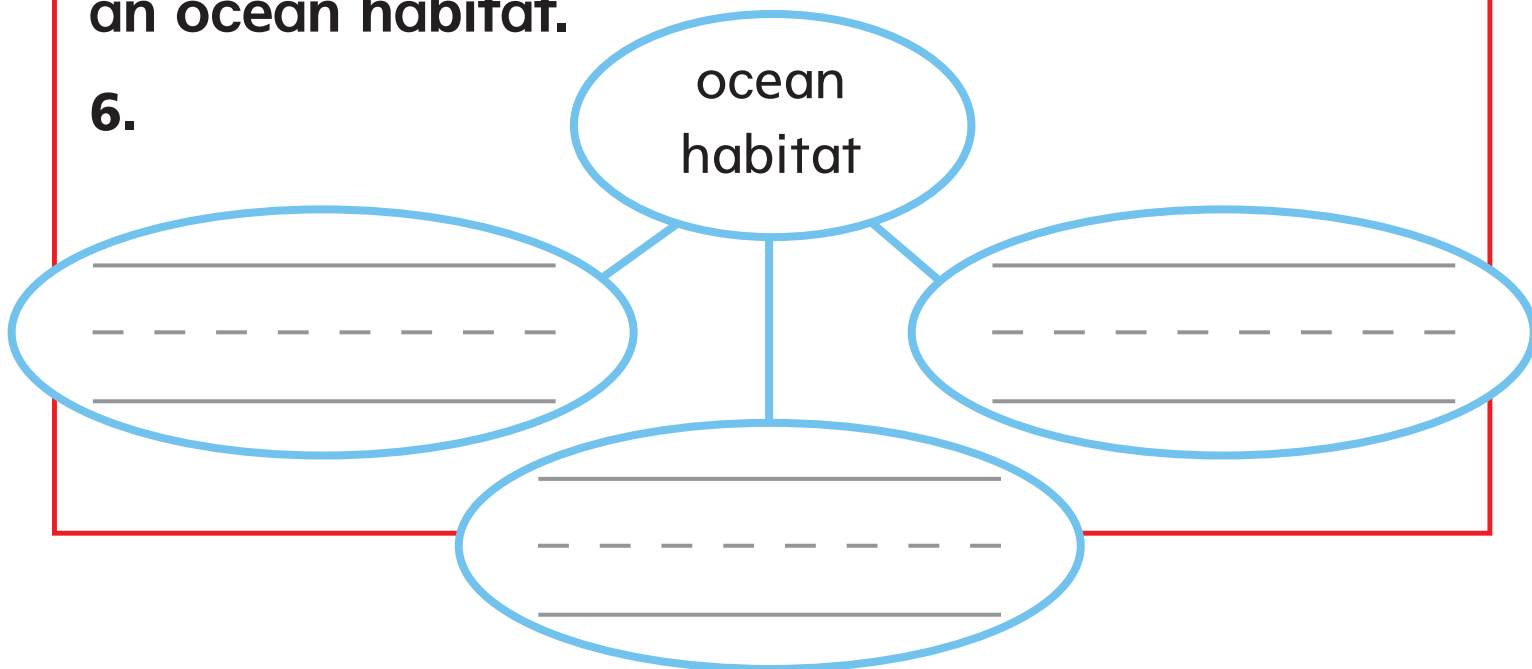


sea lion

 **Quick Check**

Fill in the chart. Write the names of what lives in an ocean habitat.

6.



Why do plants and animals live together?

Plants help animals.

Animals need plants for food.

Animals use plants for homes.

They need plants to help them hide.

Animals can use plants to make a home. ▼

mouse



▲ **Animals can use plants for food.**

skunks



Animals help plants too.

Bees help plants make new plants.

They carry pollen from flower to flower.

The pollen helps make seeds.

bee



Pollen sticks to a bee's legs. ▶

 **Quick Check**

Circle all correct answers.

7. Animals use plants for _____.

homes food friends hiding

8. Animals can help plants make _____.

friends new plants seeds

What is a food chain?

A **food chain** shows the order of how living things get food.

The Sun starts every food chain.

Plants need the Sun to grow.

Plants are next in most food chains.

Animals eat plants or other animals.

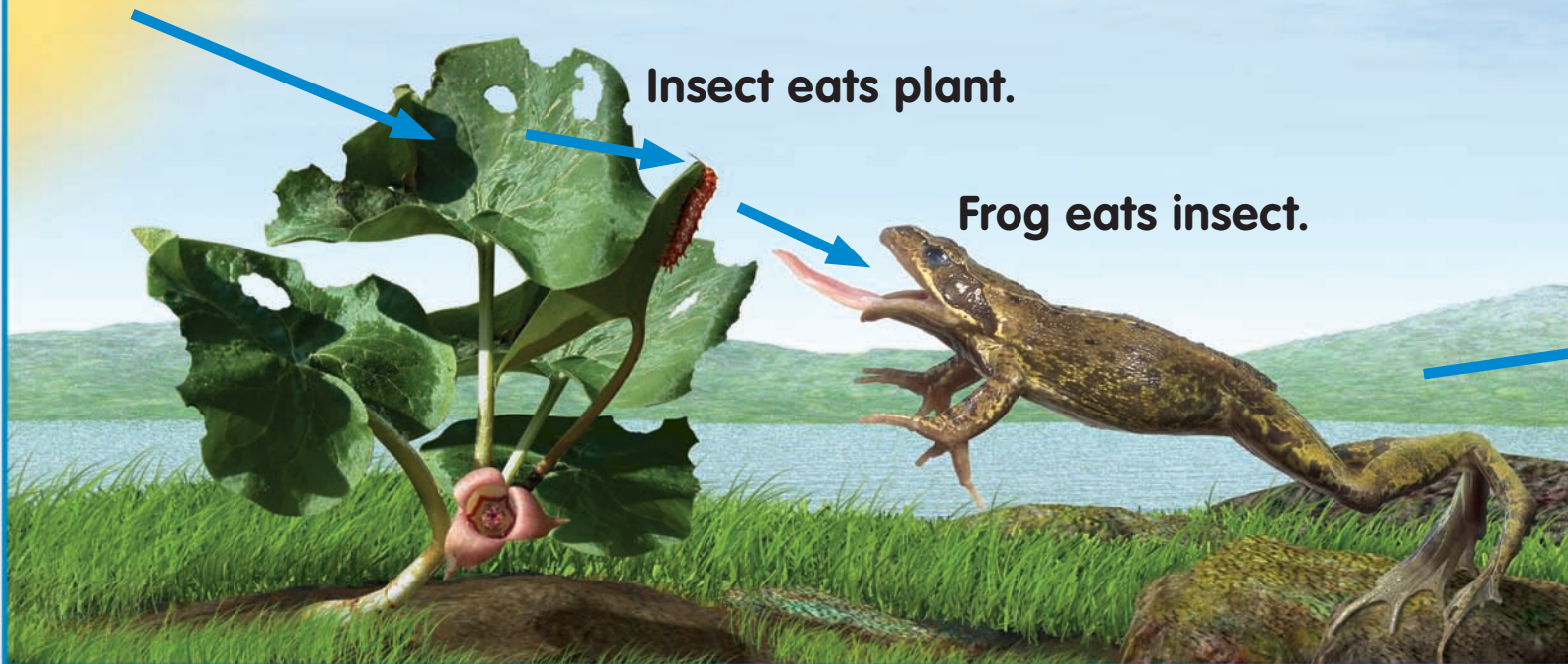
Some animals eat both!

Food Chain

Sun gives plant energy.

Insect eats plant.

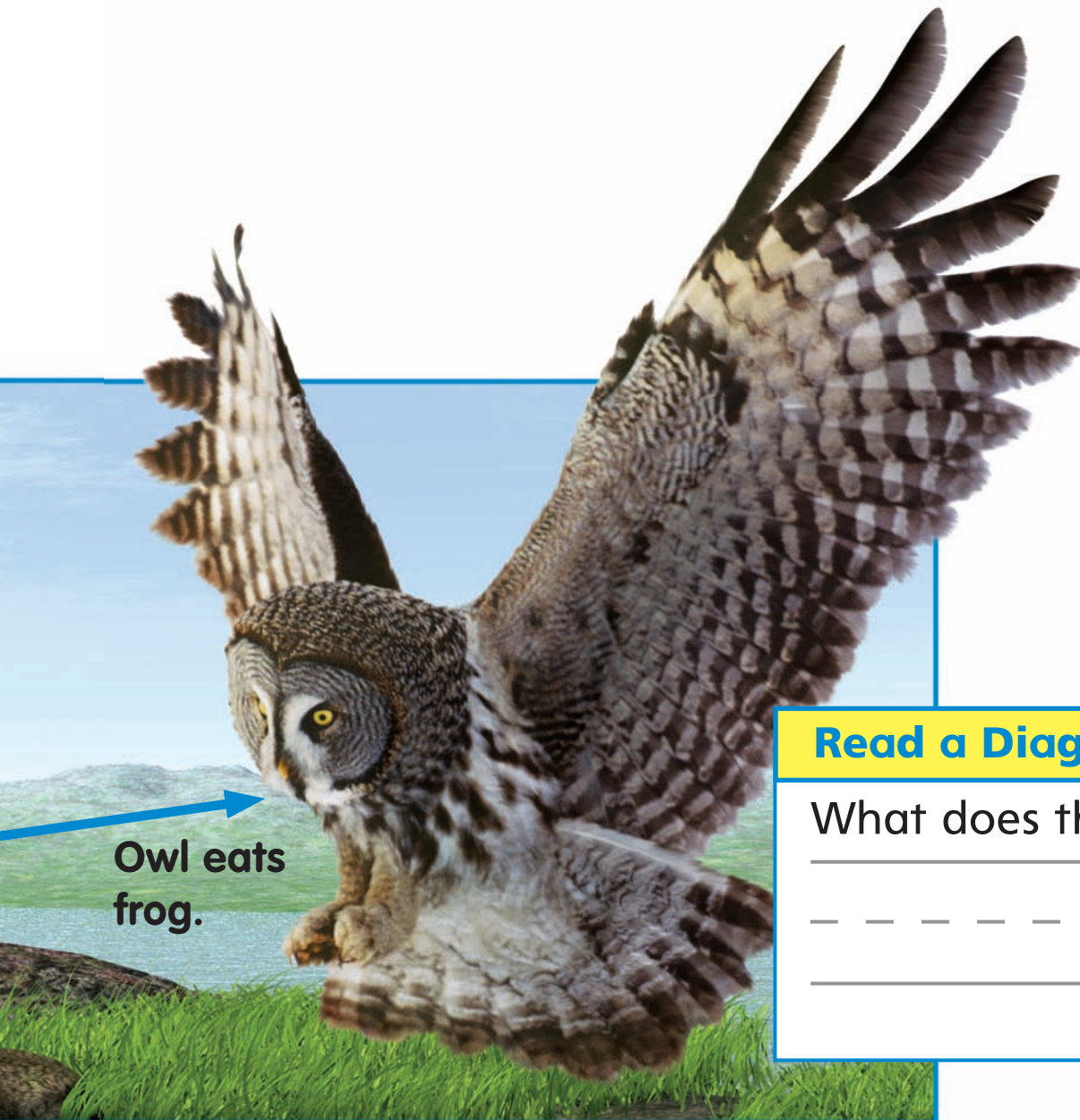
Frog eats insect.





Quick Check

9. What is at the start of every food chain?



Owl eats
frog.

Read a Diagram

What does the owl eat?

What happens to living things when a habitat changes?

Some things can harm a habitat.

Then the habitat may change.

Living things may not get what they need.



▲ Fire can harm a forest habitat.



▲ This forest habitat has changed.

Some animals may move to a new habitat.

Some plants or animals die.



The woolly mammoth is not alive today. Its habitat changed long ago. ▶

 **Quick Check**

10. Draw a picture of how a habitat can change.

Write a word from the box that matches each picture.

forest

grassland

lake

ocean



1. salty water that can be very deep



2. a dry place with a lot of grass



3. a place with many trees



4. water with land around it

Tell what you know.

Looking at Earth



What does Earth look like?

Vocabulary

river fresh water that flows into lakes and oceans



mountain land that is very high



valley low land between mountains



plain flat land that is very wide



soil the top layer of Earth



What is on the surface of Earth?

Earth is made up of land and water.

Water covers most of Earth.

Earth

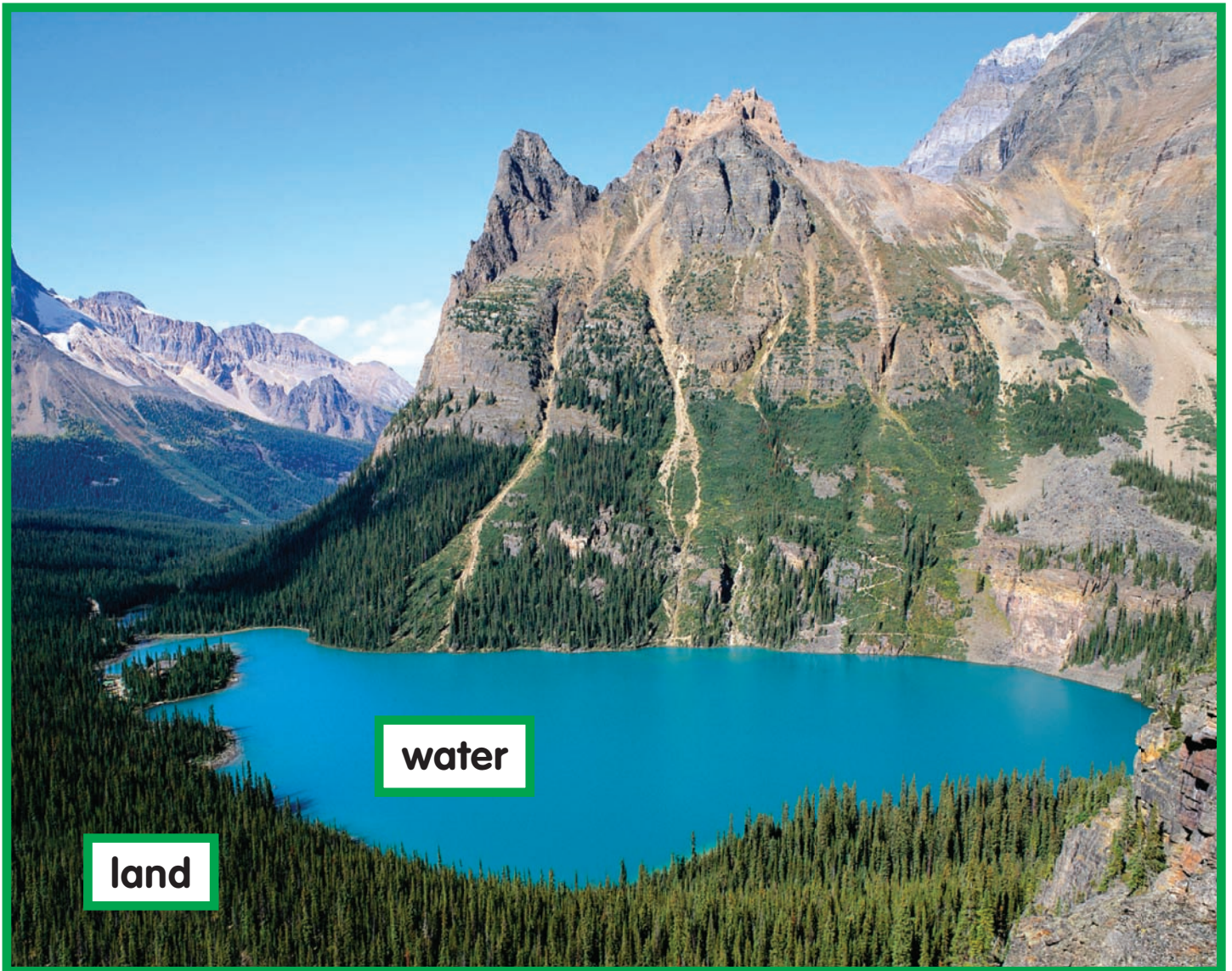


Read a Photo

What is the green part in this photo of Earth?

Land is the solid part of Earth.

Water is all around the land.



 **Quick Check**

Fill in the blank.

I. Most of Earth is covered by _____ .

What is Earth's water like?

Most of Earth's water is found in oceans.

Ocean water is salty.

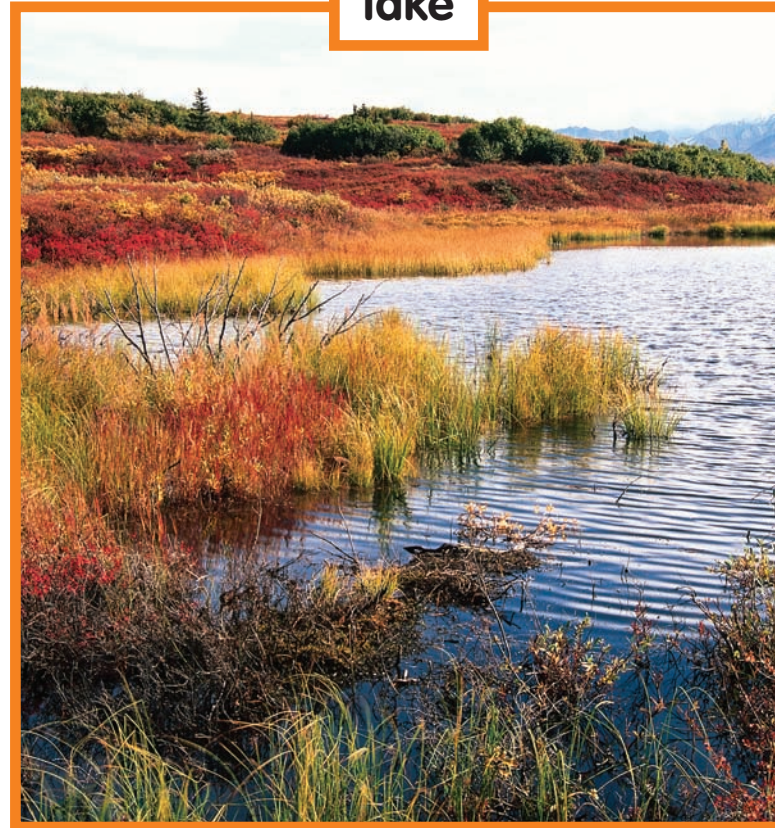
Fresh water is not salty.

ocean



▲ An ocean is very large.

lake



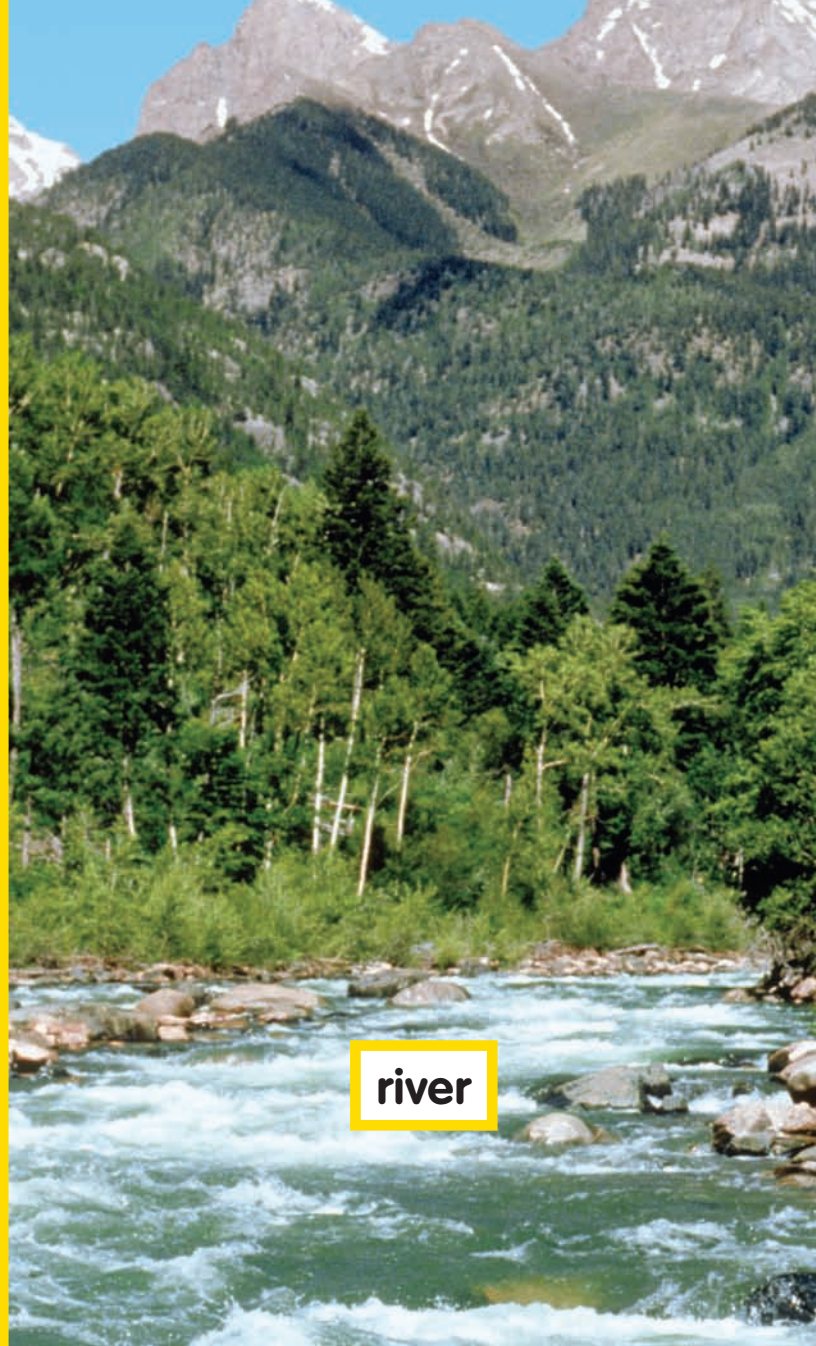
▲ A lake is smaller than an ocean.

Streams, rivers, and lakes can have fresh water.

Streams flow into rivers.

Rivers flow into lakes and oceans.

A river can move fast. ▶



river

 **Quick Check**

Circle all correct answers.

2. Earth's water is found in _____.

lakes

rocks

rivers

oceans

What is Earth's land like?

The land on Earth is not all the same.

A **mountain** is very high land.

Low land between mountains is a **valley**.



Some land on Earth is flat.

A **plain** is flat land.

A plain is very wide.



 **Quick Check**

3. Draw a picture with two kinds of land.

What are rocks?

Rocks are different shapes, sizes, and colors.

Rocks can be smooth or rough.

Rocks can be shiny or dull.

All rocks are nonliving.

Rocks



basalt



granite



sandstone



marble



Quick Check

Look at the rocks on these pages.

4. Which rock is smooth?

5. Which rock is rough?



chalk



pumice



limestone



obsidian

Read a Photo

How are these rocks different?

What is soil?

Soil is the top layer of Earth.

It has small bits of rocks.

It has bits of dead plants and animals.

Air and water are in soil too.



◀ **Topsoil holds some water.**



◀ **Clay soil holds a lot of water.**



◀ **Sandy soil holds a little water.**

Many soils are brown.

Some are red, gray, or yellow.



▲ This dead tree will be part of the soil.

 **Quick Check**

Name two things that are in soil.

6. _____

7. _____

How can rocks change?

Water can change the shape of rocks.

Water gets into the cracks of a rock.

The water can turn into ice.

This makes the cracks bigger and the rock break.

Changing Rock



Read a Photo

What is changing this rock?

Plants can change rocks too.

Roots grow into a crack.

The roots get bigger and break the rock.



Quick Check

Name two things that can change rocks.

8.

9.



▼ The roots are cracking the rock.

How can land change?

Wind can move rocks and soil.

Water can move rocks and soil too.

Wind and water can change the land.

Water washes away rocks and soil. This makes a canyon. ▼



canyon



Plants can stop soil and rocks from moving.

Roots help keep the soil in place.

These plants keep sand from moving. ▼



Quick Check

Write one way soil and rocks are moved.

10.

Draw a line from each word to its meaning.

- | | |
|--------------------|--|
| 1. valley | fresh water that flows into lakes and oceans |
| 2. river | flat land that is very wide |
| 3. mountain | low land between mountains |
| 4. plain | very high land |

Tell what you know.

Caring for Earth



Why do we need to care for Earth?

Vocabulary

natural resources things from Earth that people use



pollution things that hurt the air, land, or water



reuse to use something again



reduce to use less of something



recycle to make a new thing from an old thing



What is a natural resource?

People use things that come from Earth.

These things are called **natural resources.**



▲ People use wood from trees.



▲ People use wool from animals.

People use rocks to build things. ►



Animals, plants, rocks, and soil are natural resources.

Air and water are natural resources too.

People use dyes from plants. ►



 **Quick Check**

What are two natural resources?

1.

2.



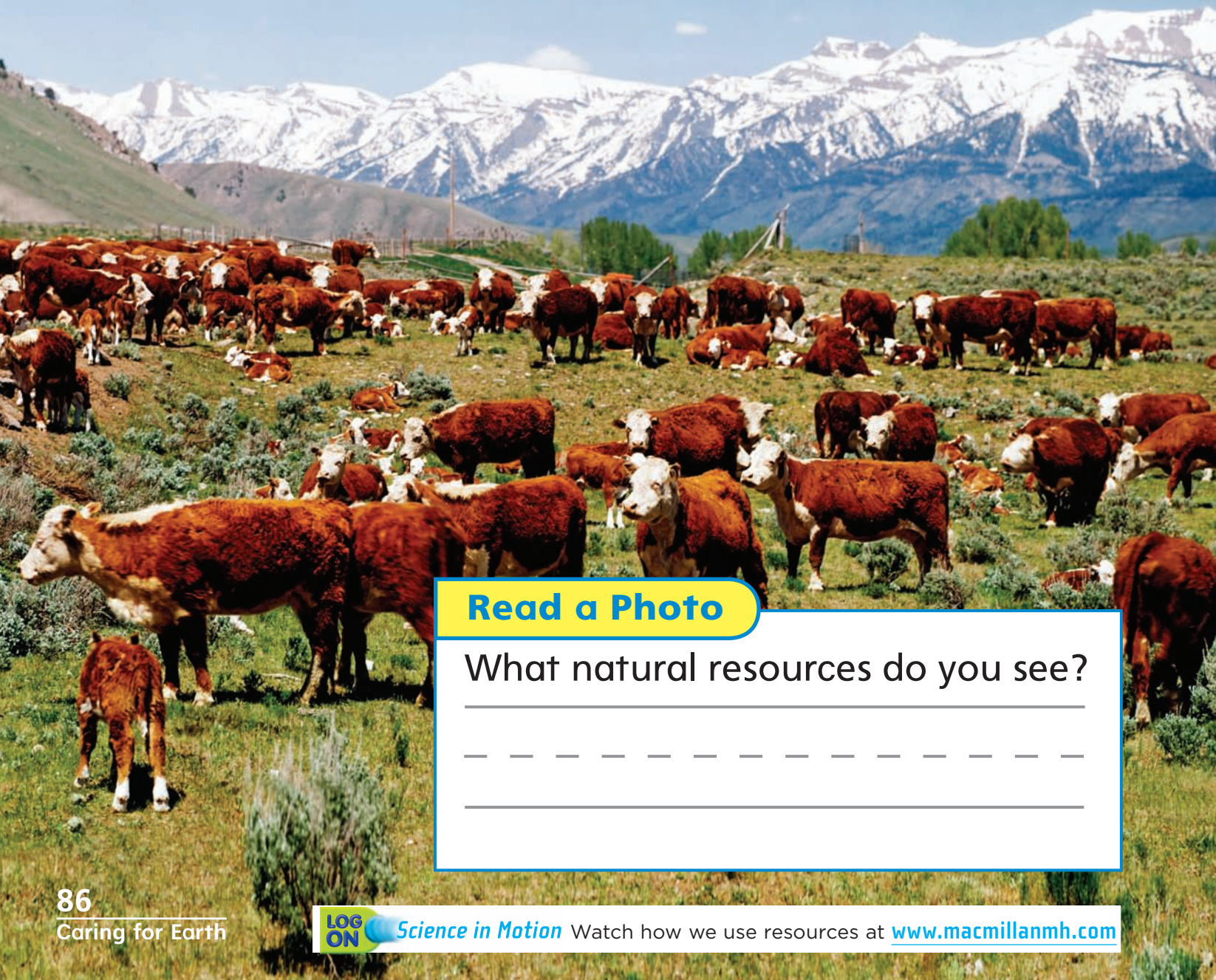
Why is soil important?

Soil is a natural resource.

Plants grow in soil.

People and animals use plants for food.

Earth's Resources



Read a Photo

What natural resources do you see?

We use soil to make things.

Clay is a kind of soil.

People use clay to make cups and other things.



clay cup

 **Quick Check**

Circle the answer.

3. Soil is a natural _____.

resource river

4. Clay is a kind of _____.

water soil

Why are water and air important?

All living things need air and water.

Plants need water to grow.

Animals and people drink water.

We use water to wash, cook, and play.

Using Water



Dirty air and water hurt living things.

People need to keep air and water clean.

 **Quick Check**

5. Draw a picture to show how people use water.
Label your picture.



Read a Photo

How do people use water?

What is pollution?

Pollution hurts the land, water, and air.

Trash or dirt in the ground, water, or air can cause pollution.

Pollution can make living things sick.

▼ **Pollution can hurt animals.**



We can stop pollution.

We can do things to keep Earth clean.



air pollution



Quick Check

Name two things that are hurt by pollution.

6.

7.

How can we reuse resources?

Natural resources can be used up.

To save resources we can reuse things.

Reuse means to use things again.

Cans and bottles can be used again. ▼



Reuse It



Read a Photo

What was reused to make this castle?



Quick Check

8. Why is it important to reuse things?

How can we save resources?

People can save natural resources.

We can reduce how much we use.

You can **reduce** what you use by using less of it.



▲ You can turn off a light.
This saves electricity.



▲ Turn off the water when
you brush your teeth.
This saves water.

People can recycle some things.

To **recycle** means to make new things from old things.

We do not use resources to make new things when we recycle.

Many towns recycle paper, plastic, and glass. ▶



 **Quick Check**

Circle the answer.

9. When we use less of something, we _____.

redo reduce reuse

10. When we make new things from old things,

we _____.

reduce redo recycle

Use the words to answer the questions.

natural resources

pollution

reuse

1. What is it called when you use something again?

2. What can hurt the air, water, or land?

3. What are things from Earth that we use?

Tell what you know.

Weather and Seasons



What do you know about weather?

Vocabulary

temperature how cold or warm the air is



water vapor water that goes up into the air



spring the season after winter



summer the season after spring



fall the season after summer



winter the season after fall



What is weather?

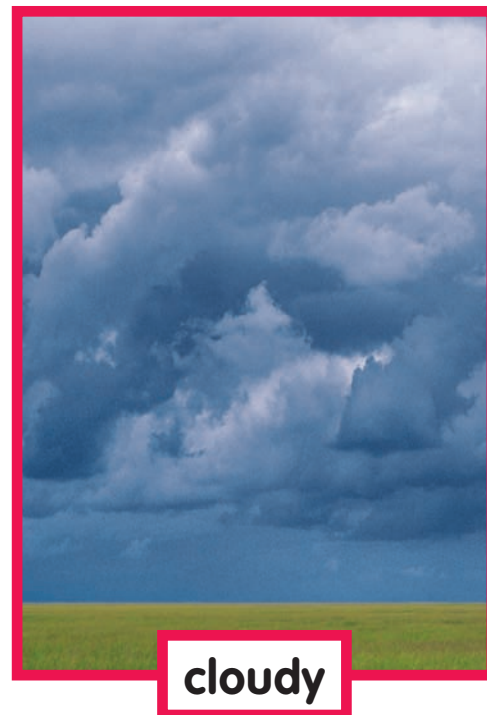
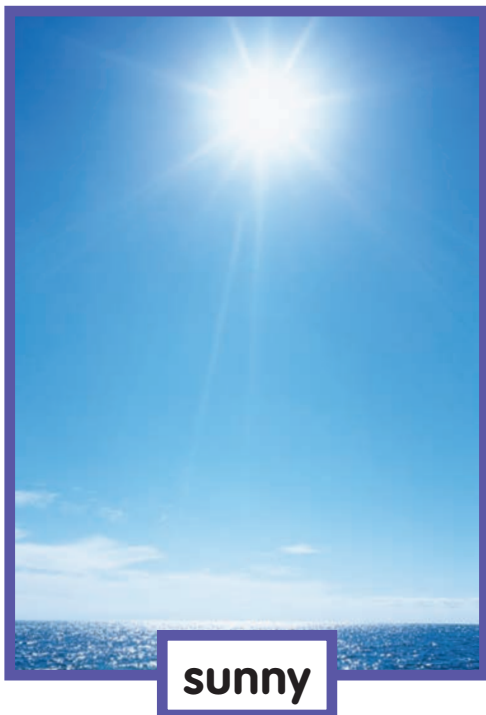
Weather is what the sky and air are like each day.

The sky can be sunny or cloudy.

The air can be rainy, snowy, or dry.

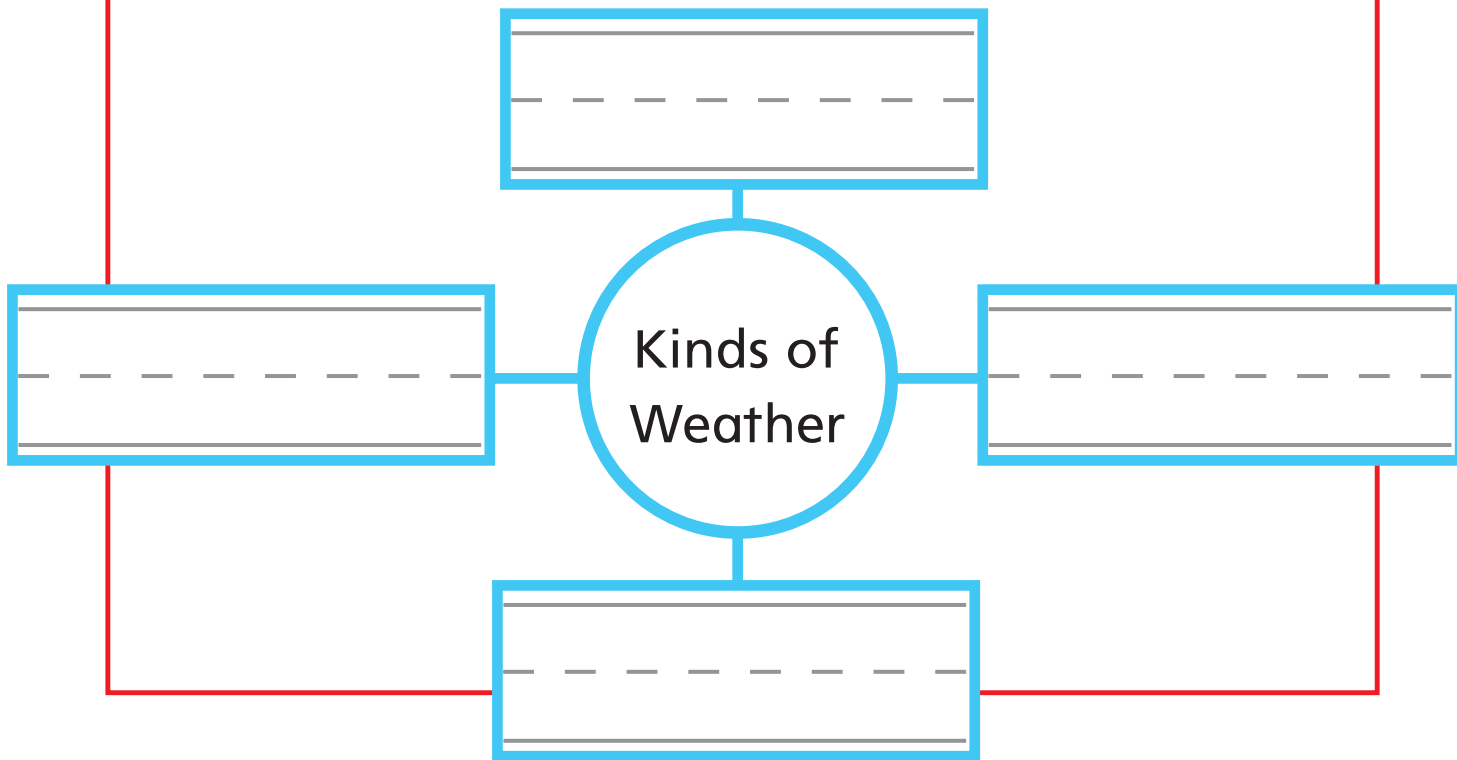
Temperature is how warm or cold the air is.

Moving air is called wind.



 **Quick Check**

I. Write words that tell about the weather.



rainy



snowy

How can you measure weather?

You can use tools to measure weather.

Weather Tools



◀ A **thermometer** tells how hot or cold the air is.

A **rain gauge** tells how much rain falls. ▶



◀ A **wind vane** shows which way the wind blows.



Read a Photo

Which tool tells how hot or cold it is?



rain gauge

 **Quick Check**

Write the name of the tool next to what it measures.

2. wind

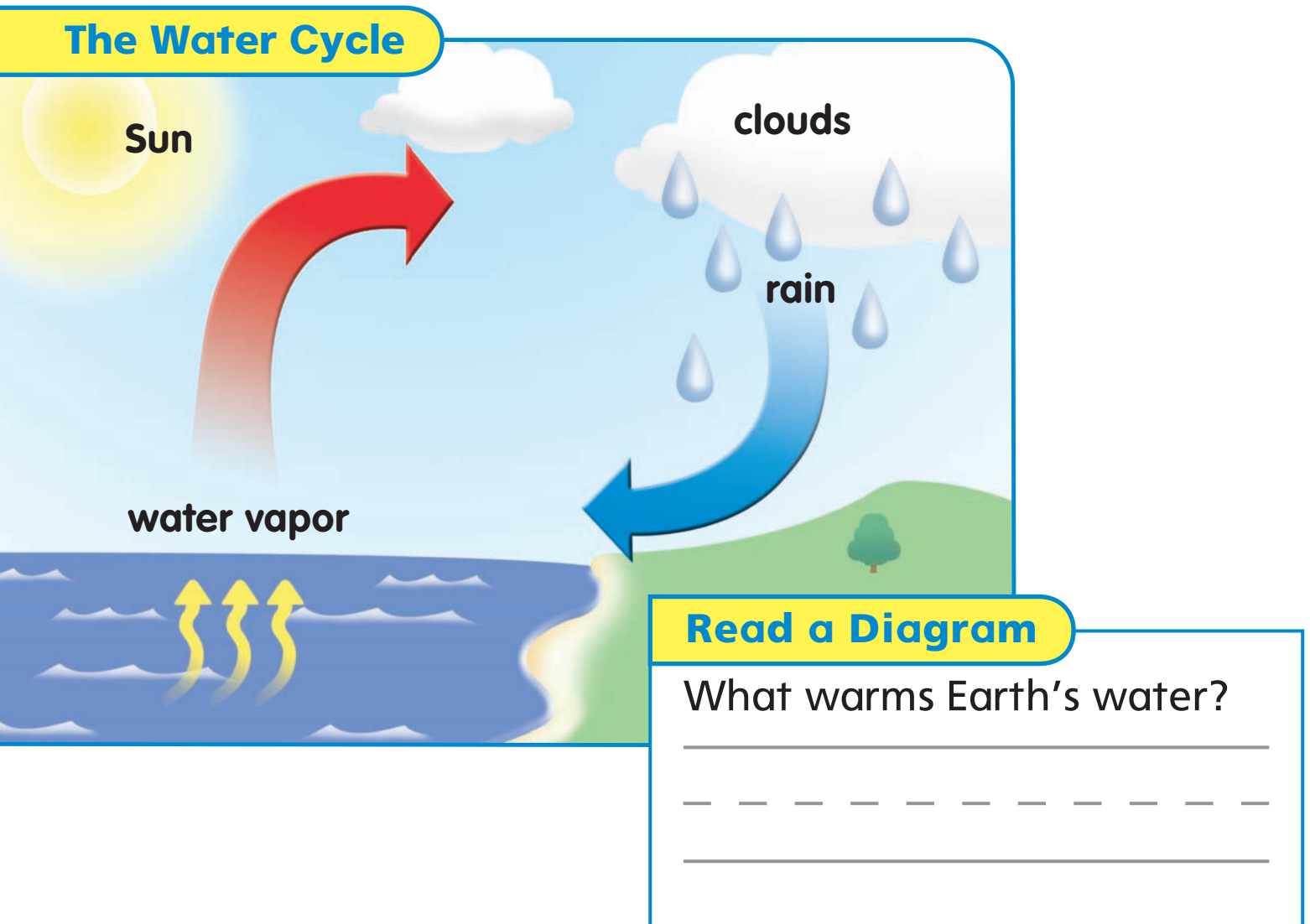
3. rain

What makes it rain or snow?

The Sun warms Earth's water.

Some water turns into water vapor.

Water vapor is water that goes up into the air.



Water vapor cools in the sky.

It turns into drops of water or ice.

Clouds are made of both.

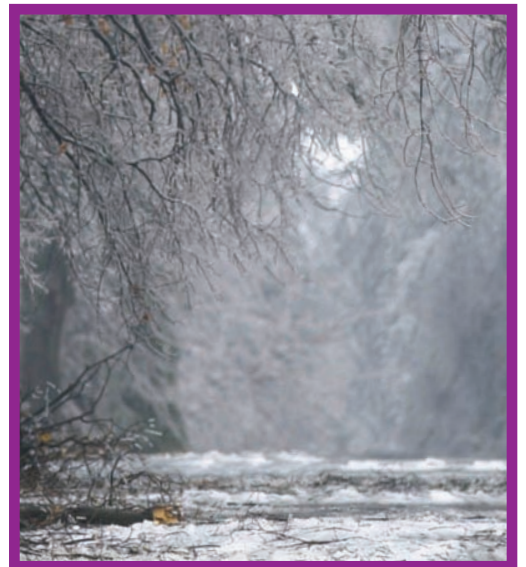
The drops can get bigger and colder.

Then they can fall back to Earth as rain or snow.



Sleet is frozen rain. ►

◀ Rain is drops of water.



Quick Check

Circle all correct answers.

4. What are clouds made of?

water

the Sun

ice

What are some different kinds of clouds?

Clouds do not look the same.

Some clouds are big and fluffy.

Some clouds are very thin.



▲ These clouds are made of water drops.



▲ These clouds are made of bits of ice.



▲ These thunder clouds bring rain and storms.

 **Quick Check**

Draw two kinds of clouds.

5.

An empty rectangular box with a red border, intended for drawing a cloud.An empty rectangular box with a red border, intended for drawing a cloud.

What happens in spring?

A **season** is a time of year.

There are four seasons.

The weather can change each season.

Sunlight in Spring

Date	Sunrise	Sunset	Hours of Sunlight
March 21	6:10 A.M.	6:21 P.M.	12 hours, 11 minutes



Read a Chart

What time does the Sun set on March 21?

In **spring** the Sun shines a long time.

It can rain a lot in spring.

Spring weather is often the same each year.

 **Quick Check**

6. What happens in spring?

▼ In spring plants grow and many animals are born.



What happens in summer?

Summer is the season after spring.

The weather can be warm and dry.

Lots of sunlight helps plants grow.

Sunlight in Summer

Date	Sunrise	Sunset	Hours of Sunlight
June 21	5:43 A.M.	8:37 P.M.	14 hours, 54 minutes



Many plants grow fruit.

Animals grow bigger and stronger.



▲ In summer there are many plants to eat.

 **Quick Check**

Circle the answer.

7. Summer is the season after _____.

fall winter spring

8. The weather in summer can be _____.

cold and wet warm and dry

What happens in fall?

Fall is the season after summer.

There are less hours of sunlight.

The air gets cooler.

Some leaves change color and drop.

Sunlight in Fall

Date	Sunrise	Sunset	Hours of Sunlight
September 21	6:55 A.M.	7:07 P.M.	12 hours, 12 minutes



In fall animals get ready for winter.

Some grow thick fur.

Some move to warmer places.



▲ Some animals store food.



▲ Some birds fly south.

 **Quick Check**

Name two things that animals do in the fall.

9. _____

10. _____

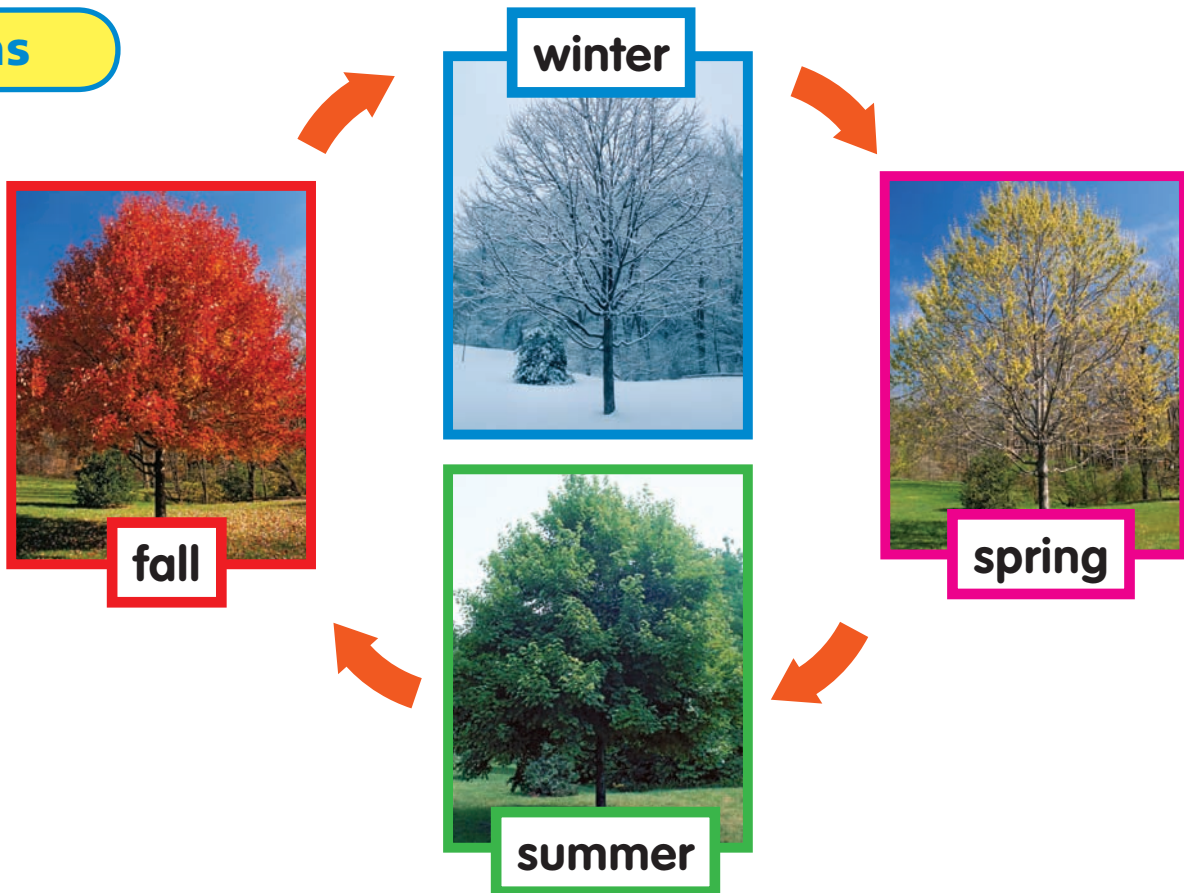
What happens in winter?

Winter is the season after fall.

Winter is the coldest season.

There are fewer hours of sunlight.

Seasons



Read a Diagram

When does the tree have no leaves?

Some plants die in winter.

There is not a lot of food for animals.

Some animals sleep until spring.



dormouse

▲ Some animals sleep all winter.

Sunlight in Winter

Date	Sunrise	Sunset	Hours of Sunlight
December 21	7:23 A.M.	4:49 P.M.	9 hours, 26 minutes

✓ Quick Check

Circle the answer.

11. The coldest season is _____.

summer

winter

fall

12. Some animals _____ all winter.

eat

sleep

run

Use each word once to complete the sentences.

fall

season

temperature

winter

1. The _____ is how warm or cold the air is.

2. The coldest season is _____.

3. Some leaves change colors in _____.

4. A _____ is a time of year.

Tell what you know.

The Sky



What can you see in the sky?

Vocabulary

star an object in the sky that makes its own light



Sun the star closest to Earth



Moon a ball of rock that moves around Earth



planet a large object that moves around the Sun



What is in the sky?

At night you can see lights in the sky.

Stars are the little spots of light.

They are very far away.

They make their own light.



Why can we see the Moon from Earth?

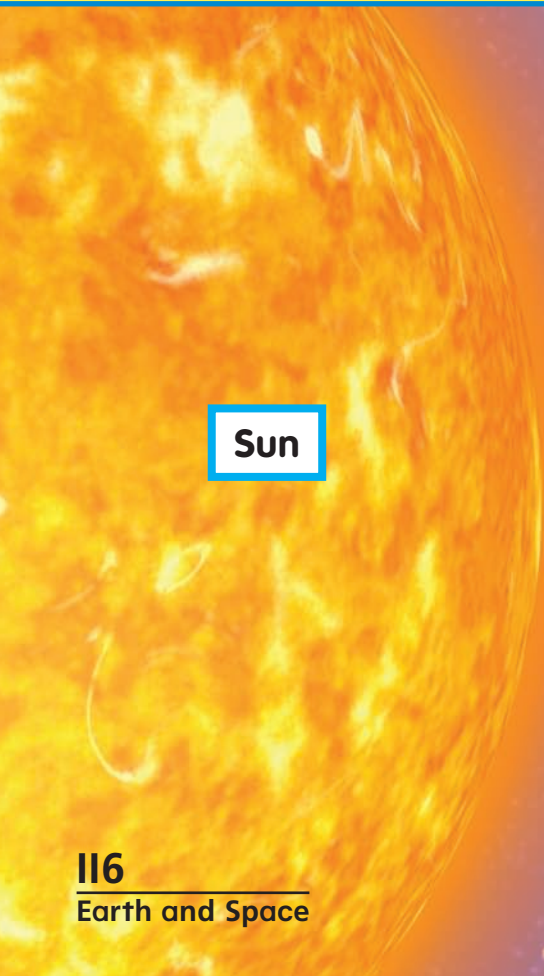
The Moon is made of rock. It does not shine like the Sun. We see the Moon because the Sun's light shines on it.

We see the Moon best at night. During the day the Sun is too bright.

Read a Diagram

What shines light on the Moon?

How the Moon Moves



Sun



Moon

The Sun's light shines on the Moon.

The **Sun** is a star.

It is the star closest to Earth.

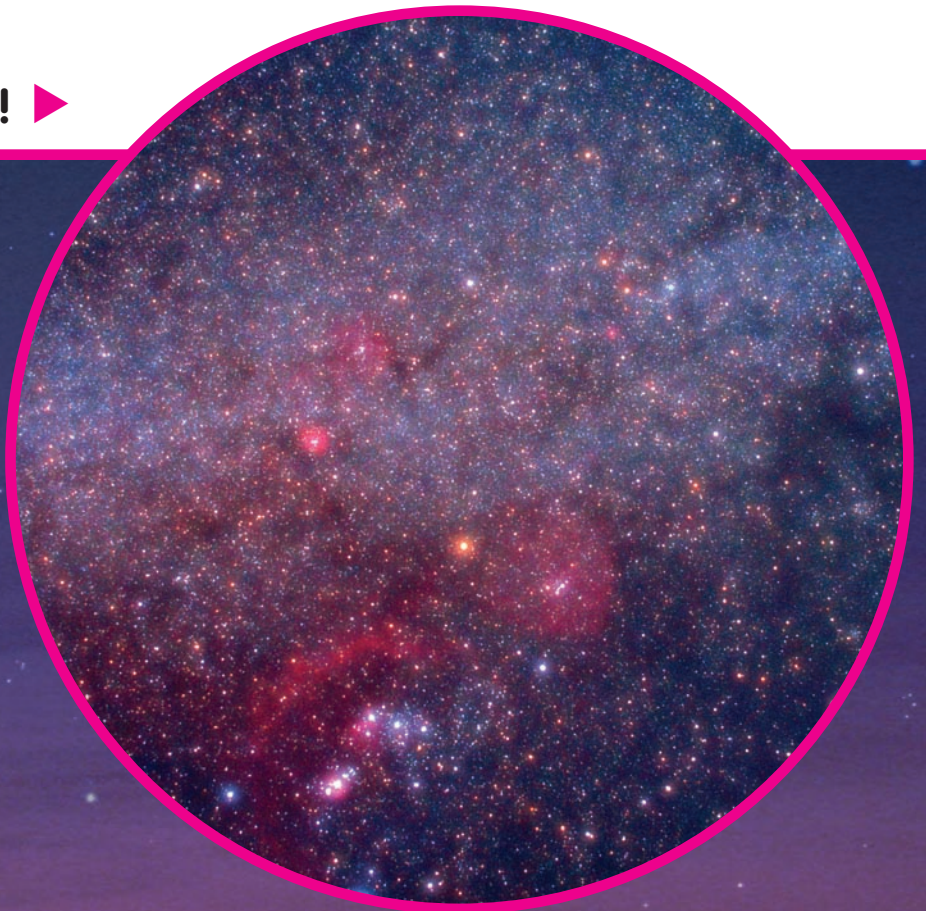
The Sun lights Earth during the day.



Quick Check

I. Why do stars look so small?

There are many stars! ▶

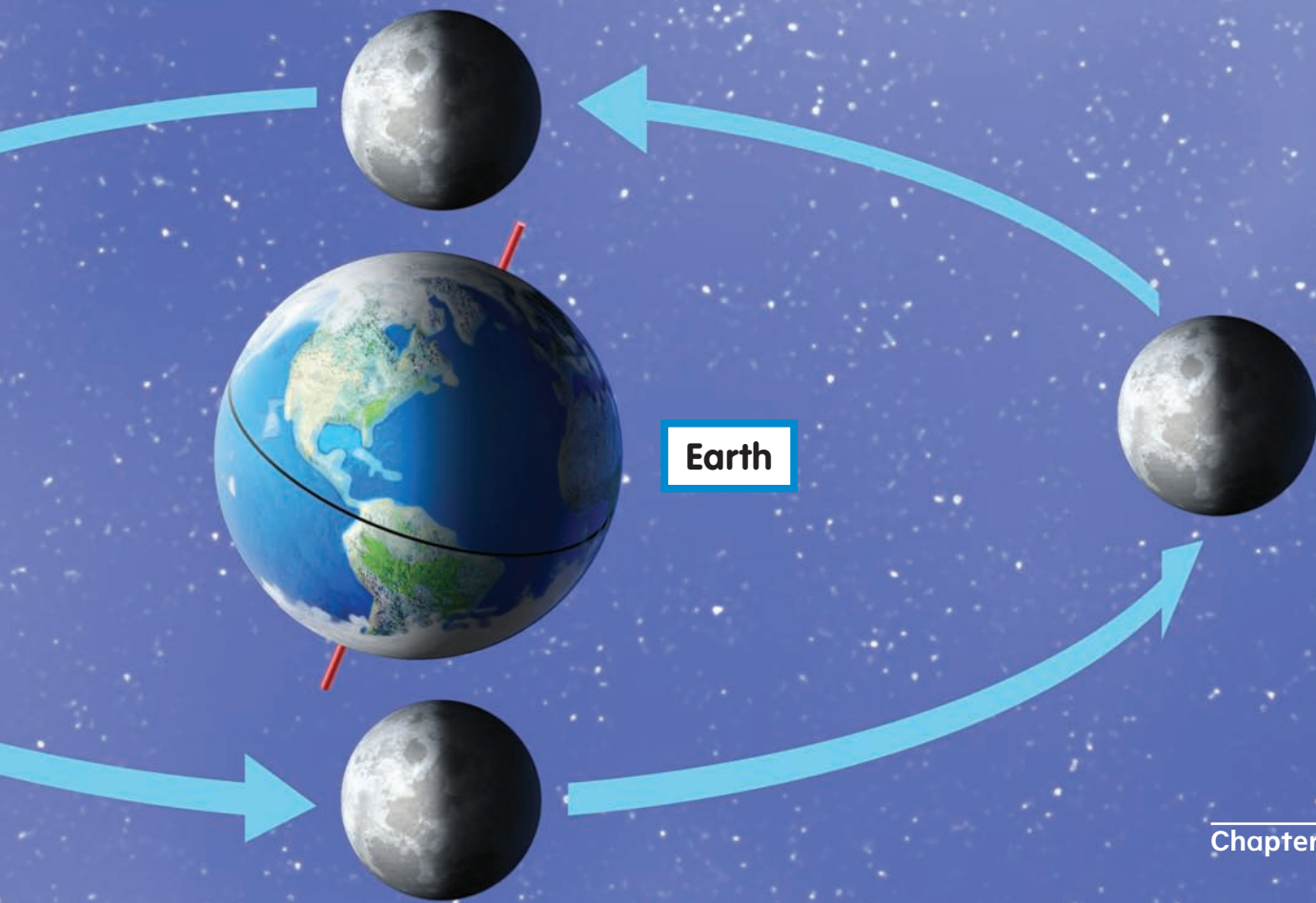


The Moon moves in an orbit around Earth. It takes about one month for the Moon to make one orbit. The Moon repeats this path again and again.

 **Quick Check**

8. Why do we see the Moon in the sky?

9. Why do we see the Moon best at night?



Why is the Sun important?

The Sun makes heat and light.

It warms the air, land, and water.

Sun's Warmth



Read a Photo

Who looks warmer?

Why does the Moon seem to change shape?

Over time the Moon seems to change shape. One night it looks round. A few nights later it is thin.

The Moon's shape does not change. The amount of light shining on the Moon changes.

Each moon shape we see is called a **phase**. The phases of the Moon repeat in the same order each month.

Moon Phases

new moon



- 1 We can not see the Sun's light shining on the Moon.

first quarter moon



- 2 After a week the Moon is one quarter of the way through its orbit.

Earth would be dark
without the Sun.

It would be too cold
for us to live.

The Sun helps living
things stay alive. ►



 **Quick Check**

Circle all correct answers.

2. The Sun makes _____ and _____.

heat

water

light



Quick Check

10. Draw what the Moon looks like about one week after a new moon.

full moon



3 The next week the Moon has moved. We can see all of the Moon's lit side.

last quarter moon



4 The Moon is three quarters of the way through its orbit by the third week.

What causes day and night?

The Sun looks like it moves in the sky.

It does not move.

Earth moves and spins.

When Earth spins, it makes day and night.



▲ The Sun looks high in the sky. Shadows are short.



▲ The Sun looks low in the sky. Shadows are long.

What are stars?

A **star** is an object in space made of hot gases. The gases give off heat and light.

Some stars are bright. Stars can be different colors. Together some stars make patterns in the sky.

These lines show a pattern of stars called Orion the Hunter. ▼



The sky is light on the part of Earth facing the Sun.

It is day.

Then Earth turns away from the Sun.

The sky is now dark and it is night.



Quick Check

Complete the sentence.

3. When Earth spins it makes

From Earth, stars look like tiny points of light. They are very, very far away. There is one star close to Earth. It is the Sun. It looks large because it is close to Earth.

The Sun lights up the sky during the day. We can not see other stars until night. ►



Quick Check

Circle the answer.

11. The _____ is a star that is close to Earth.

Sun Moon Orion

12. Stars look tiny because they are _____.

shining far away near

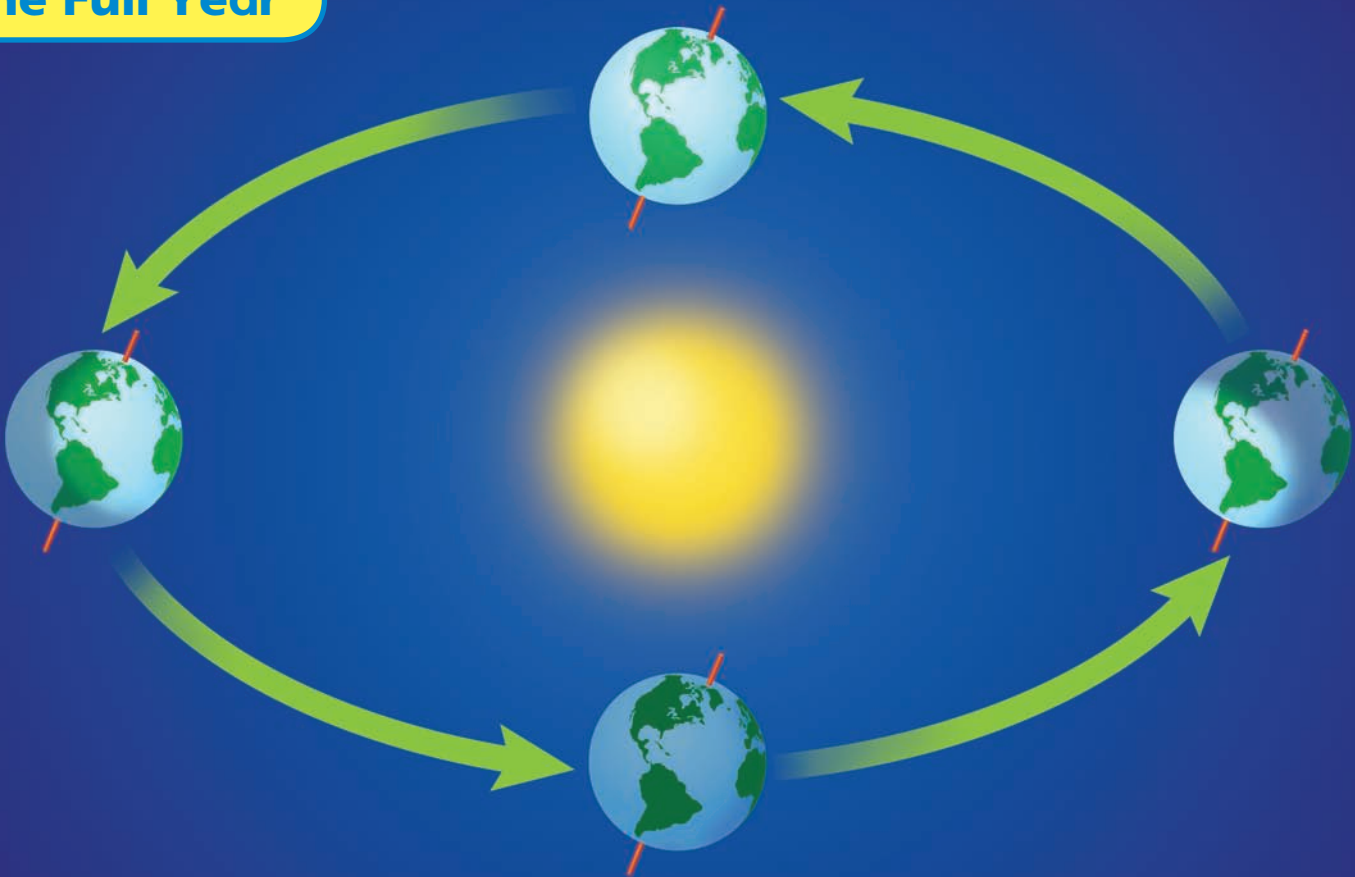
What causes a year?

Earth spins each day.

It also moves around the Sun.

Earth takes one year to move all the way around the Sun.

One Full Year



Read a Diagram

What does Earth move around?

Part of Earth leans toward the Sun.

The other part leans away.

This makes the four seasons.



 **Quick Check**

4. How long does it take Earth to move around the Sun?

How does the Moon look?

We see the Moon in the night sky.

The **Moon** is a ball of rock.

It moves around Earth.

It does not make its own light.

The Sun's light shines on it.

the Moon



The lit part of the Moon changes.

Moon Phases

new

last quarter

full

first quarter

Read a Diagram

When does the Moon look small?

 **Quick Check**

5. What makes the Moon's light?

What are planets?

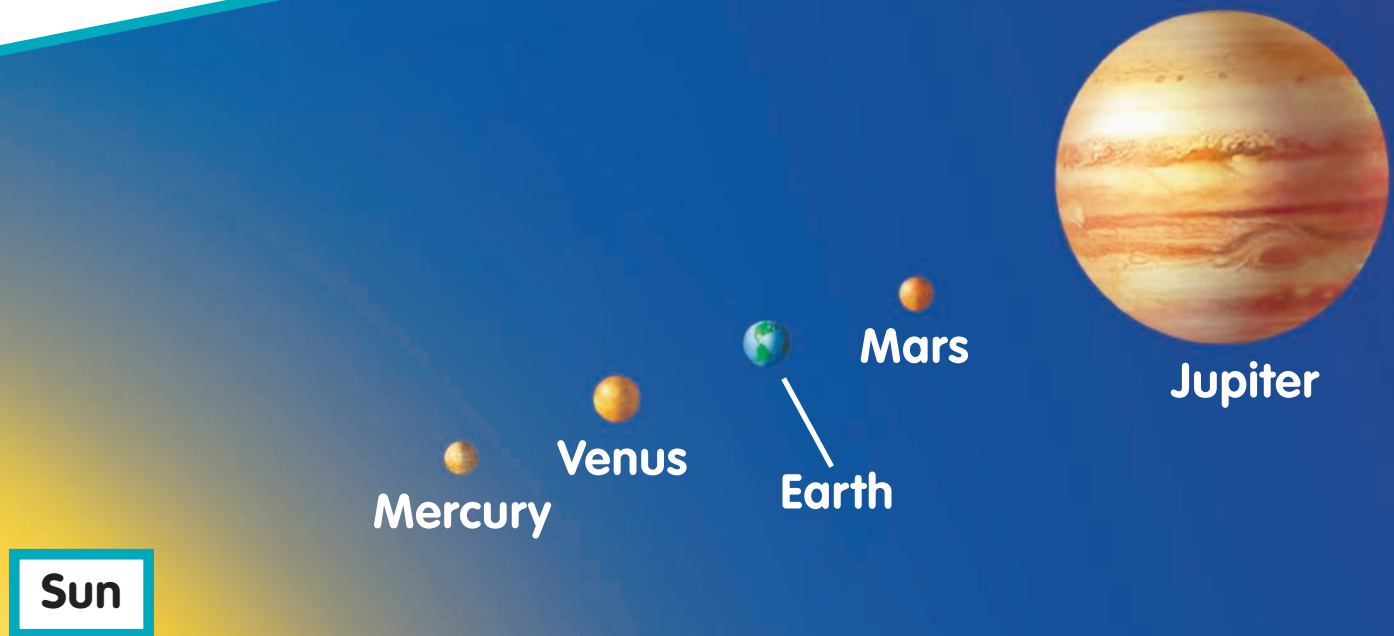
A **planet** is a large object in the sky.

Planets move around the Sun.

Earth is a planet.

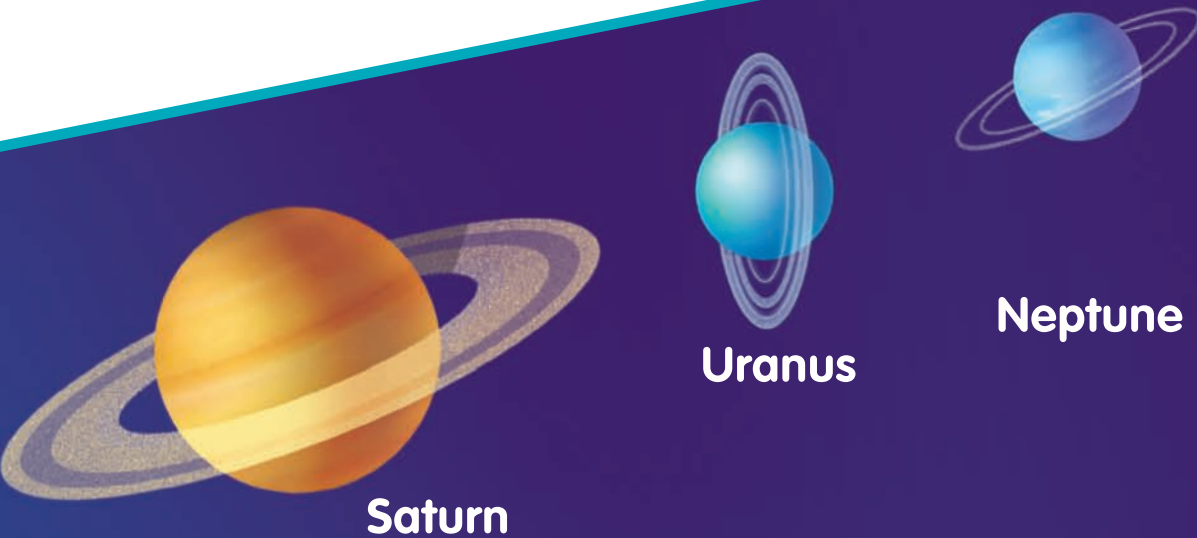
All planets are not the same.

▼ Eight planets move around the Sun.



The planets close to the Sun are warm.

The planets far from the Sun are cold.



 **Quick Check**

Write each answer.

6. Which planet is closest to the Sun?

7. Is Venus colder or warmer than Earth?

Vocabulary Review

Find the word in the box that matches the clue.
Write the word in the puzzle.

Moon

planet

Sun

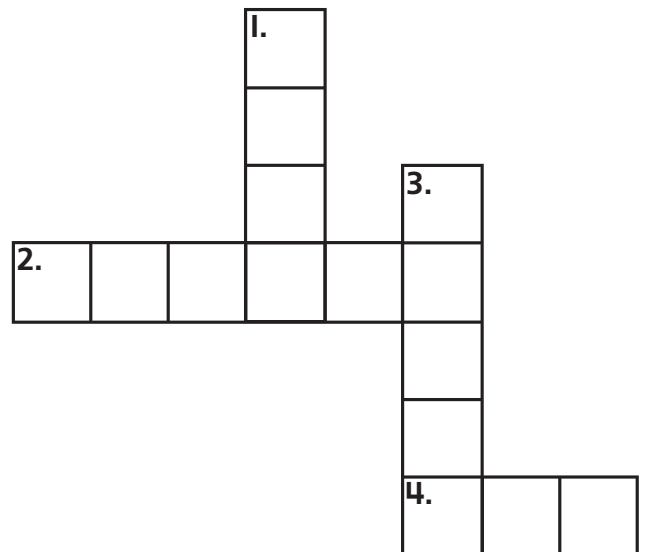
stars

Across

2. a large object that moves around the Sun
4. the star closest to Earth

Down

1. a ball of rock that moves around Earth
3. they make their own light



Tell what you know.

Matter Everywhere



What are things made of?

Vocabulary

matter what all things are made of



mass how much matter is in something



balance a tool used to measure mass



solid a kind of matter that has a shape of its own



liquid a kind of matter that flows and takes the shape of its container



gas a kind of matter that does not have its own shape



What is matter?

All things are made of **matter**.

We can describe how matter looks.

We can talk about color, shape, and size.

We can tell how matter smells, tastes, sounds, and feels.



▲ This toy bear is brown and soft.



▲ The kite has points and four colors.

There are three kinds of matter.

Matter can be a liquid, a solid,
or a gas.

 **Quick Check**

What are two colors on the kite?

1.

2.

▼ The water, the raft, the girl, and the air are matter.



What is mass?

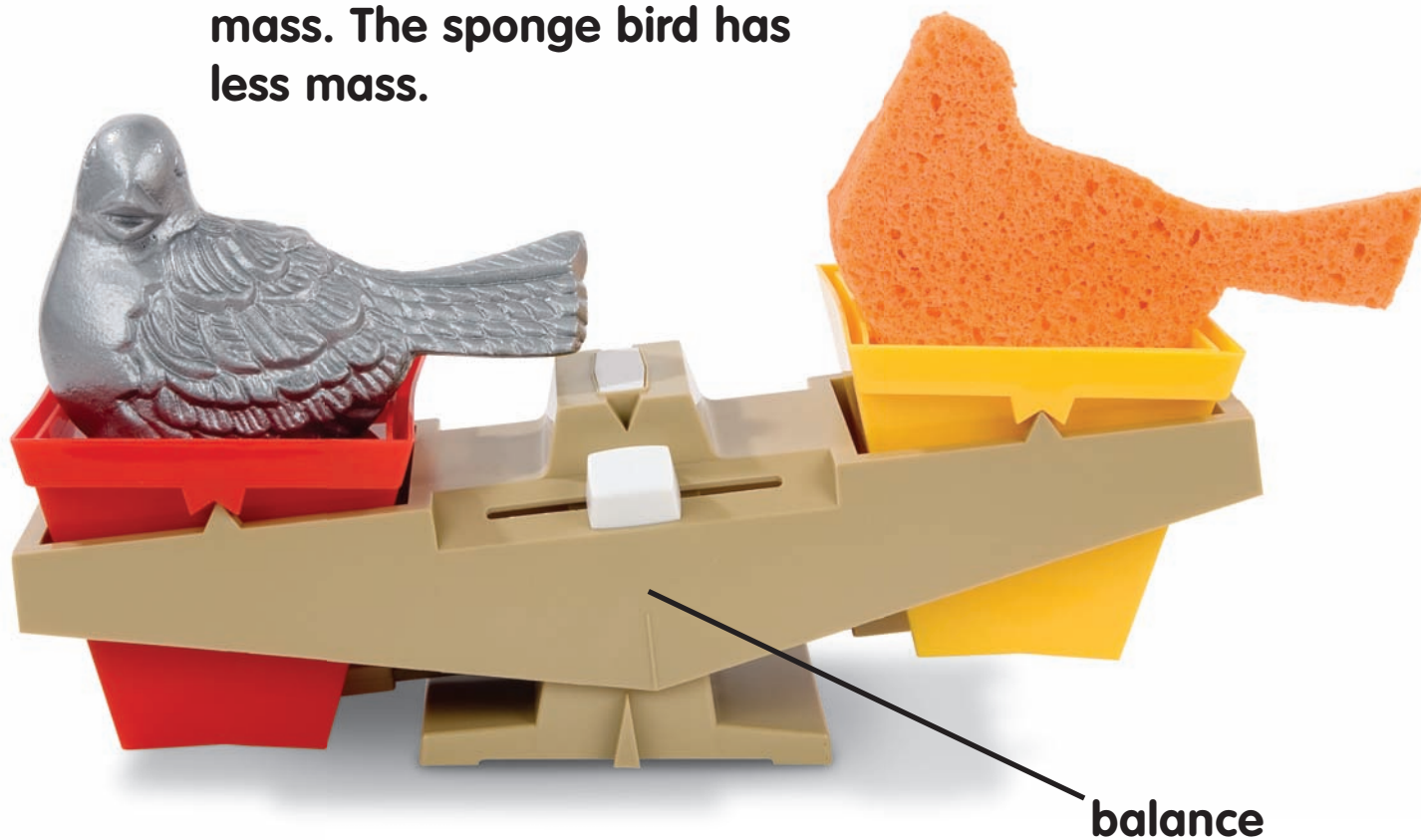
Mass is how much matter something has.

Heavy things have more mass.

Light things have less mass.

A **balance** is a tool that measures mass.

- ▼ The metal bird has more mass. The sponge bird has less mass.



Comparing Mass



Read a Photo

Which toy truck has more mass?
How could you find out?

Quick Check

Circle the answer.

3. Heavy things have _____ mass.

balance more less

4. Lighter things have _____ mass.

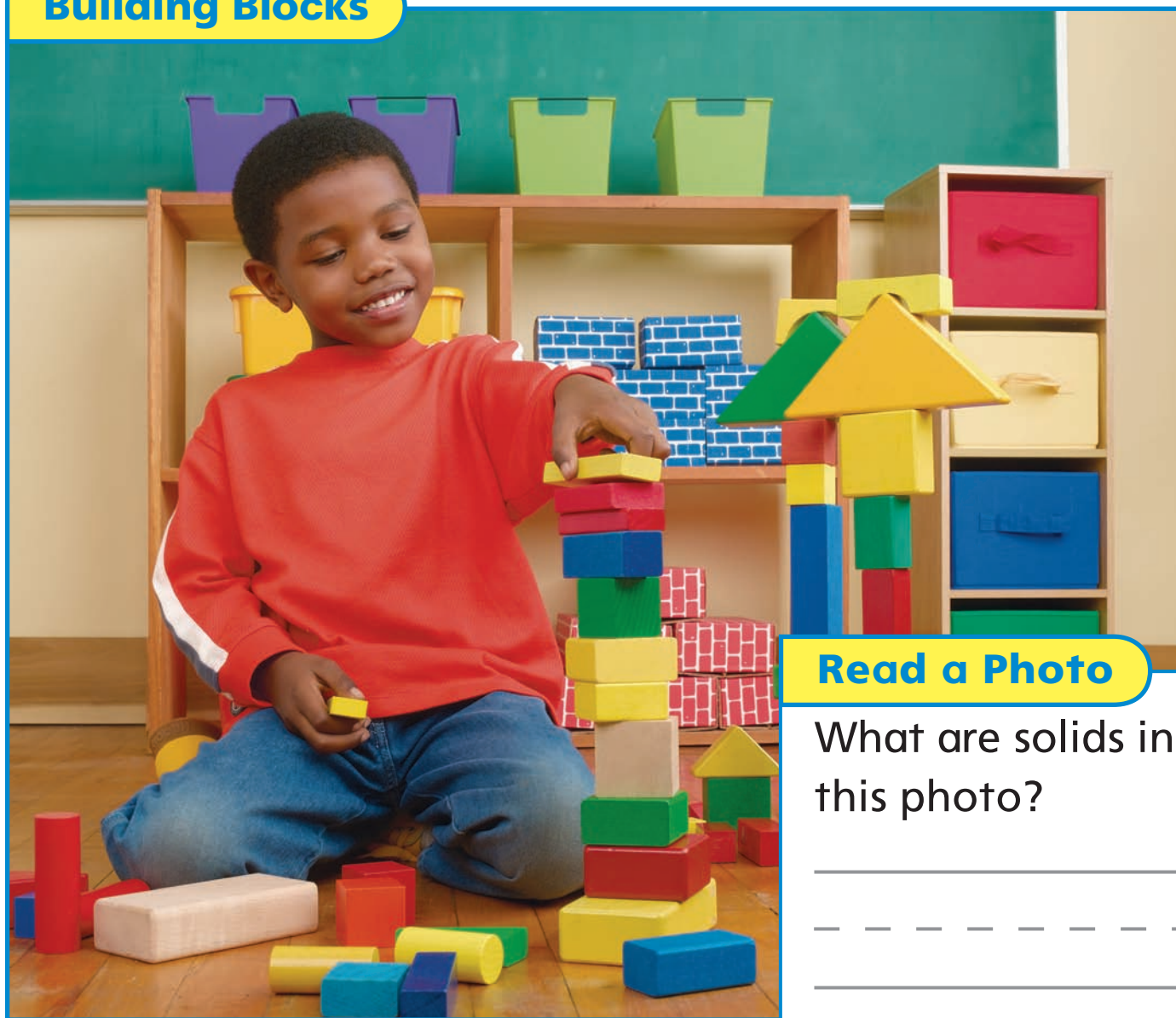
balance more less

What is a solid?

A **solid** is a kind of matter.

A solid has a shape of its own.

Building Blocks



Read a Photo

What are solids in
this photo?

The amount of matter in a solid stays the same.

Look at the puzzle pieces and the finished puzzle. They have the same amount of matter. ▼



 **Quick Check**

List two things that are solids.

5. _____

6. _____

What are some properties of solids?

Solids can be big or small.

Solids can be different shapes and colors.

Some solids can bend or fold.

▼ You can fold some solids.



Solids can feel hard or soft.

Solids can feel rough or smooth.



▲ Feathers are soft.



▲ Scissors are hard and smooth.

Quick Check

7. Draw a solid.

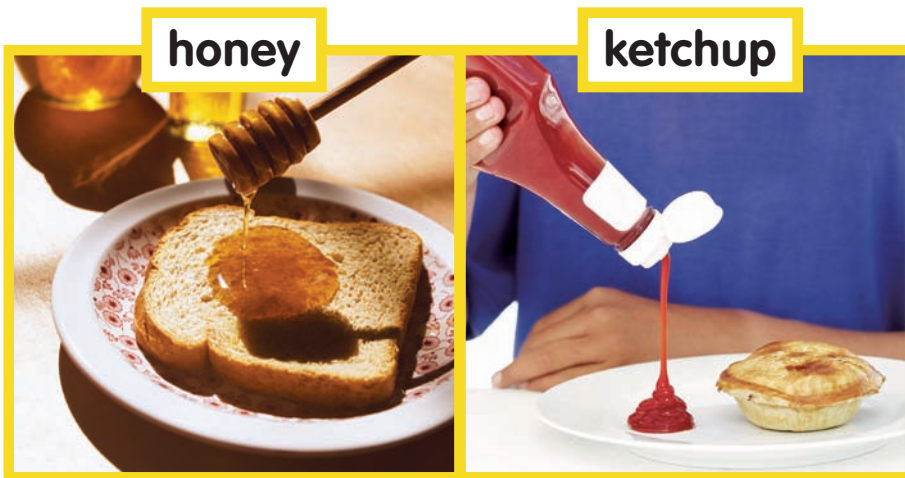
8. Describe the solid you drew.

What are some properties of liquids?

A liquid is a kind of matter.

A **liquid** does not have its own shape.

It takes the shape of what it is in.



◀ Some liquids flow slowly.



◀ Some liquids flow quickly.

A liquid's shape can change.

You can put a liquid in a big cup.

Then put the liquid in a small cup.

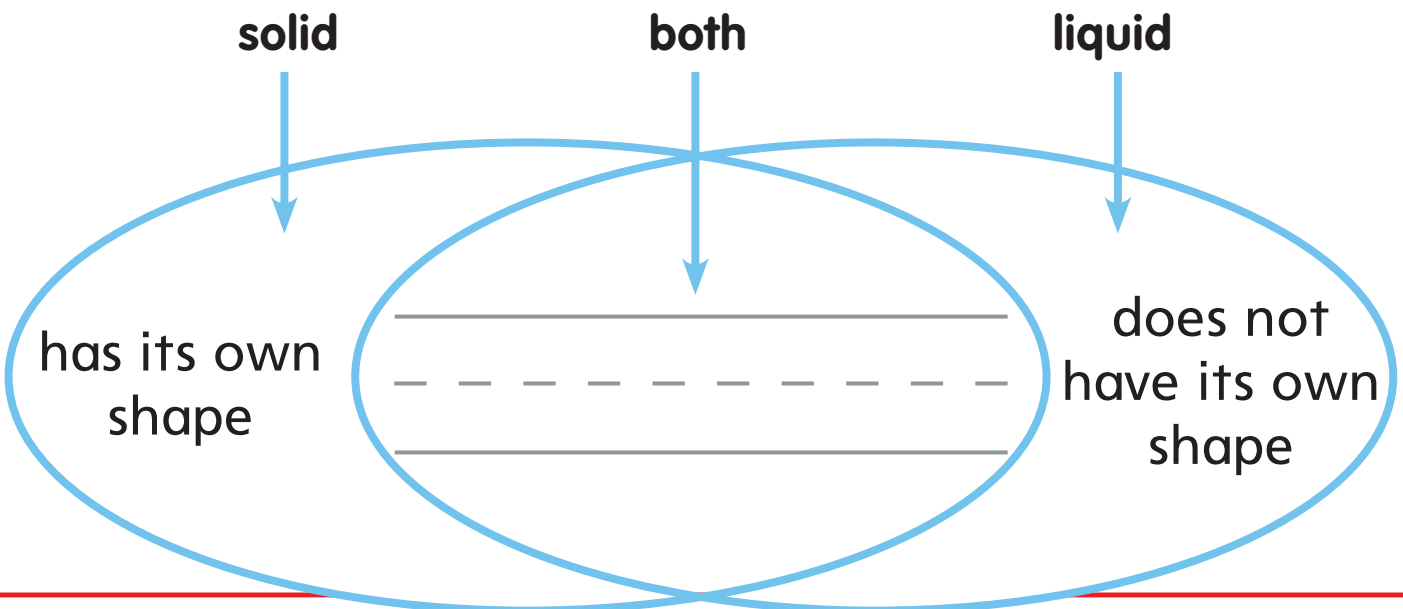
The amount of liquid stays the same.



 **Quick Check**

9. How are liquids and solids the same?

Write a fact that is true about both.



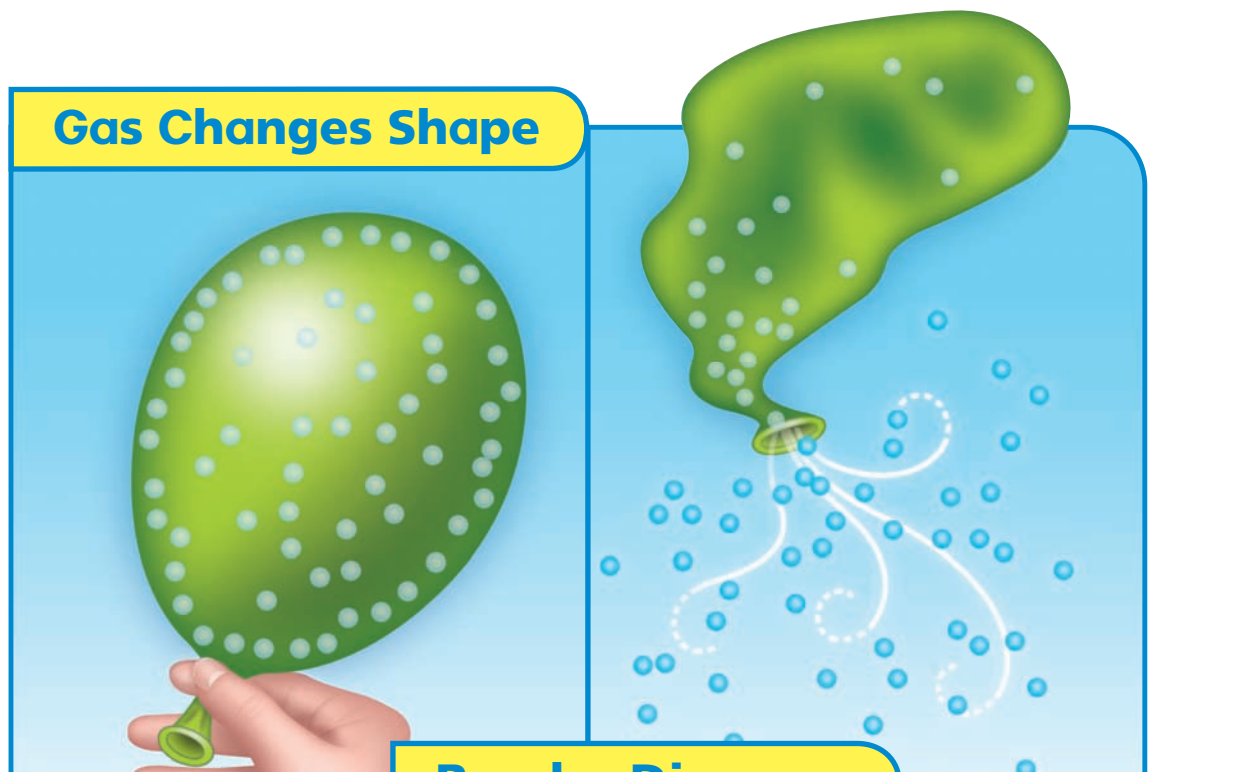
What are some properties of gases?

A gas is a kind of matter.

A **gas** does not have its own shape.

A gas spreads out to fill the space it is in.

Gas Changes Shape



Read a Diagram

Did the gas stay in the balloon?

The air is made of many gases.

You can not see these gases.

You can feel air when it moves.

It can feel hot or cold.

Air helps the ribbon
stay up. ▶



 **Quick Check**

Circle the correct answer.

10. A gas _____ have its own shape.

does does not

11. Gases _____ fill up the space they are in.

will will not

Circle the correct answer.

1. Things are made of _____.
mass matter balance

2. Something's _____ tells how much matter is in it.
mass matter balance

3. A _____ has its own shape.
gas solid liquid

4. The air is made of many _____.
gases solids liquids

5. Some _____ flow quickly.
gases solids liquids

Tell what you know.

Changes in Matter



How can matter change?

Vocabulary

mixture different things put together



dissolve to mix well into a liquid



freeze to change from a liquid to a solid



melt to change from a solid to a liquid



How can matter change?

You can bend, fold, or tear some solids.

The solid does not look the same.

It is still made of the same thing.

Shaping Clay



Read a Photo

What kind of matter is clay?

Sometimes matter changes.

It can change into something new.

Heat and air can change matter.



▲ This paper has been cut. It is still paper.



▲ Heat changed the paper. Now it is ash.

Quick Check

Circle all correct answers.

1. Paper does not change when it is _____.

cut burned folded

What is a mixture?

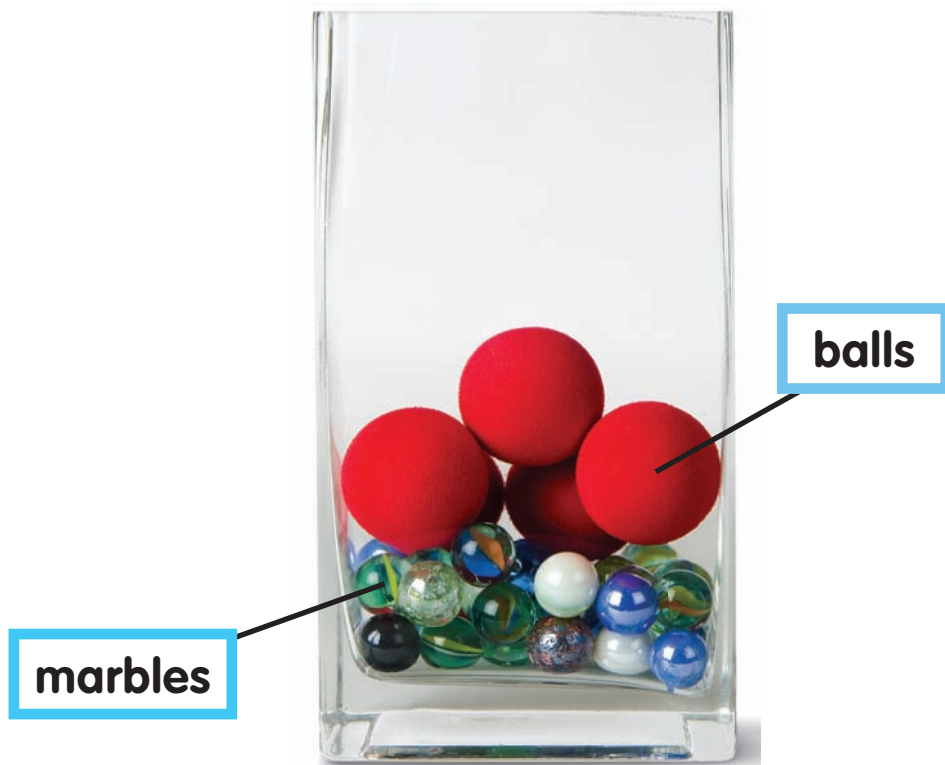
A **mixture** is different things put together.

We can mix some solids.

They may not change.

We can see the solids in the mixture.

We can take the mixture apart.



▲ You can take apart this mixture.

You can mix solids with water.

Some solids float in water.

Some solids sink in water.

 **Quick Check**

2. What is a mixture of something you like to eat?

Sink and Float



Read a Photo

What do the red balls do in water?

What are some other mixtures?

Some mixtures are hard to take apart.

The parts may **dissolve** or mix totally.

Solids may dissolve in a liquid.

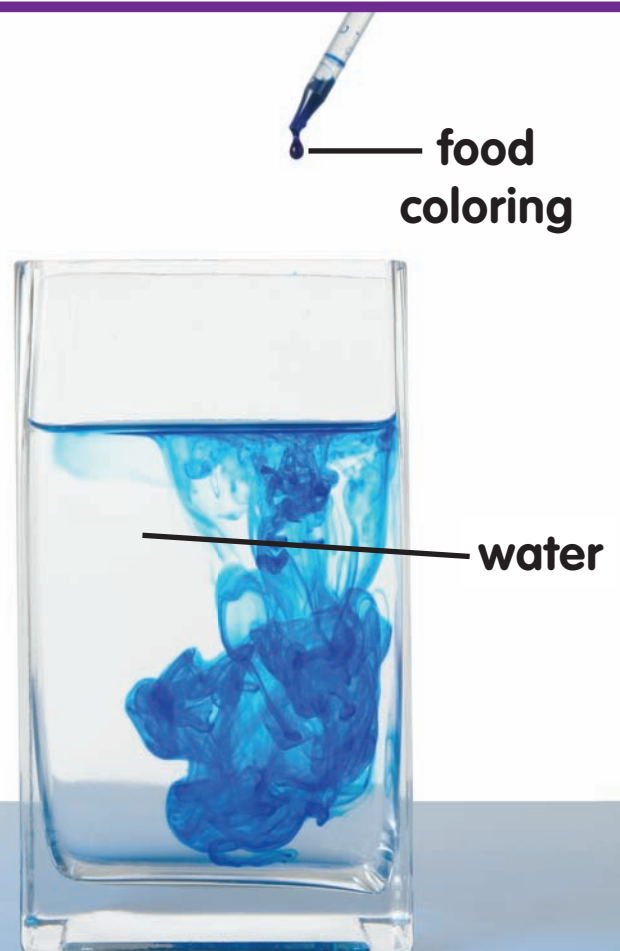
Some liquids dissolve in a liquid too.

The different parts are hard to see.

▼ This solid dissolves
in water.

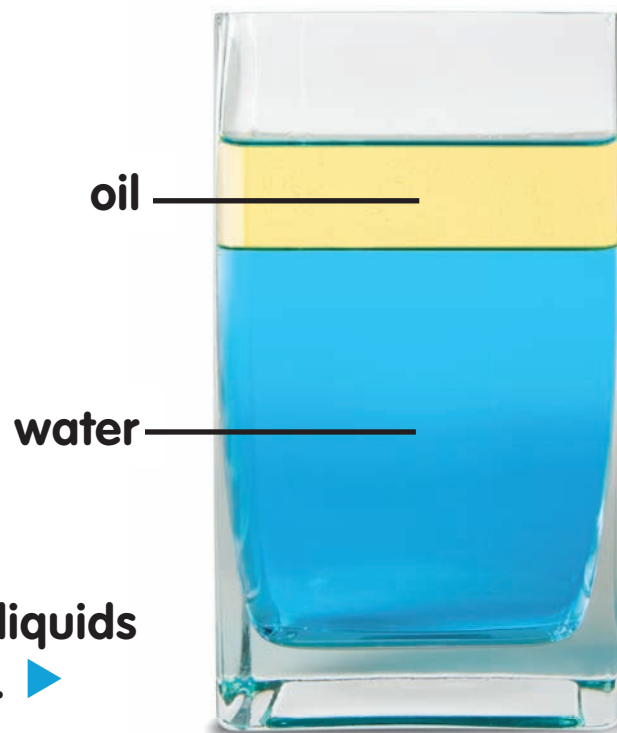


▼ This liquid dissolves
in water.



Some liquids do not mix.

They stay apart.



These two liquids do not mix. ▶

 **Quick Check**

Circle the answer.

3. Drink mix can _____ in water.

grow

dissolve

break

4. Water and _____ do not mix.

food coloring

oil

drink mix

How can solids and liquids change?

A liquid can change.

It can change into a solid or **freeze**.

A liquid can freeze if it gets very cold.

Water will freeze into ice.

Forms of Water

water



ice



A solid can change.

It can change into a liquid or **melt**.

A solid will melt when it is heated.

Ice will melt when it gets warm.

 **Quick Check**

Fill in the blanks.

5. When a liquid _____, it becomes a solid.

6. When a solid _____, it becomes a liquid.



Read a Photo

What did the liquid change into?

How can liquids and gases change?

Heat changes water.

Heat makes water change into a gas.

This gas is water vapor.

Water vapor goes up into the air.



▲ This pond was full of water.



▲ Some water changed into gas. The pond has less water.

Water vapor cools.

The gas changes into a liquid.

It changes back into water.

Water vapor cools into drops on this pitcher. ►



 **Quick Check**

Fill in the blanks.

7. Heat can change a liquid into a

_____.

8. Water vapor cools and becomes

_____.

Use the clues below to help you find the words in the puzzle.

1. different things put together
2. to mix well into a liquid
3. to change from a liquid to a solid
4. to change from a solid to a liquid

a	m	l	o	t	s	i	m
d	i	s	s	o	l	v	e
e	x	t	o	c	w	h	l
a	t	n	q	n	s	b	t
v	u	k	w	n	p	b	o
f	r	e	e	z	e	c	t
z	e	g	s	u	g	j	n

Tell what you know.

On the Move



How can you make things move?

Vocabulary

motion a change in an object's position



push a force that moves something away from you



pull a force that moves something closer to you



simple machine a tool that can make it easier to move things



magnet a thing that can pull objects with iron in them



How can you tell where something is?

A **position** is the place where something is found.

It can tell you if an object is over or under.

Find Things at a Fair



Position can tell you if an object is close or far.

It can tell you if an object is to the right or left.

 **Quick Check**

I. Circle all words that tell about an object's position.

over thing under left near

Read a Photo

Describe the position of something at the fair.

How do things move?

Things that move are in motion.

Motion is a change in an object's position.

All things do not move the same.

Some things move forward or backward.



▲ This car moves in a curvy line.



▲ This plane moves in a straight line.

Some things move side to side.

Objects can move fast or slow.

This rocket ship moves very fast. ►



 **Quick Check**

Fill in the blanks.

2. Things that move are in _____.

3. Things can move _____ or slow.

What makes things move?

A **force** is a push or a pull that moves something.

A **push** moves something away from you.

A **pull** moves something toward you.



◀ The girl pushes the ball to the basket.



▲ The boy pulls the bag.

Gravity is the force that pulls things toward Earth.

When you jump up, gravity pulls you back down.

If you let go of something, it falls down.

Jumping Rope



Read a Photo

What will pull the girl back down?

Quick Check

Circle the answer.

4. A push moves something _____.

toward you away from you

5. A pull moves something _____.

toward you away from you

How are forces different?

A small push can move a small object.

A big push can move a big object.

A big push can move an object faster.

It can also move it farther.



▲ A big force pushes the ball far away.



▲ A small force pushes the ball a short way.

Friction is two things rubbing together.

This force slows things down.



rubber stopper

◀ Friction makes you stop.

 **Quick Check**

Fill in the blanks.

6. A _____ force can move an object faster.

7. A _____ force moves an object a short way.

What are simple machines?

A **simple machine** is a tool.

They make it easier to move things.

Simple machines help people do work.

Using Simple Machines



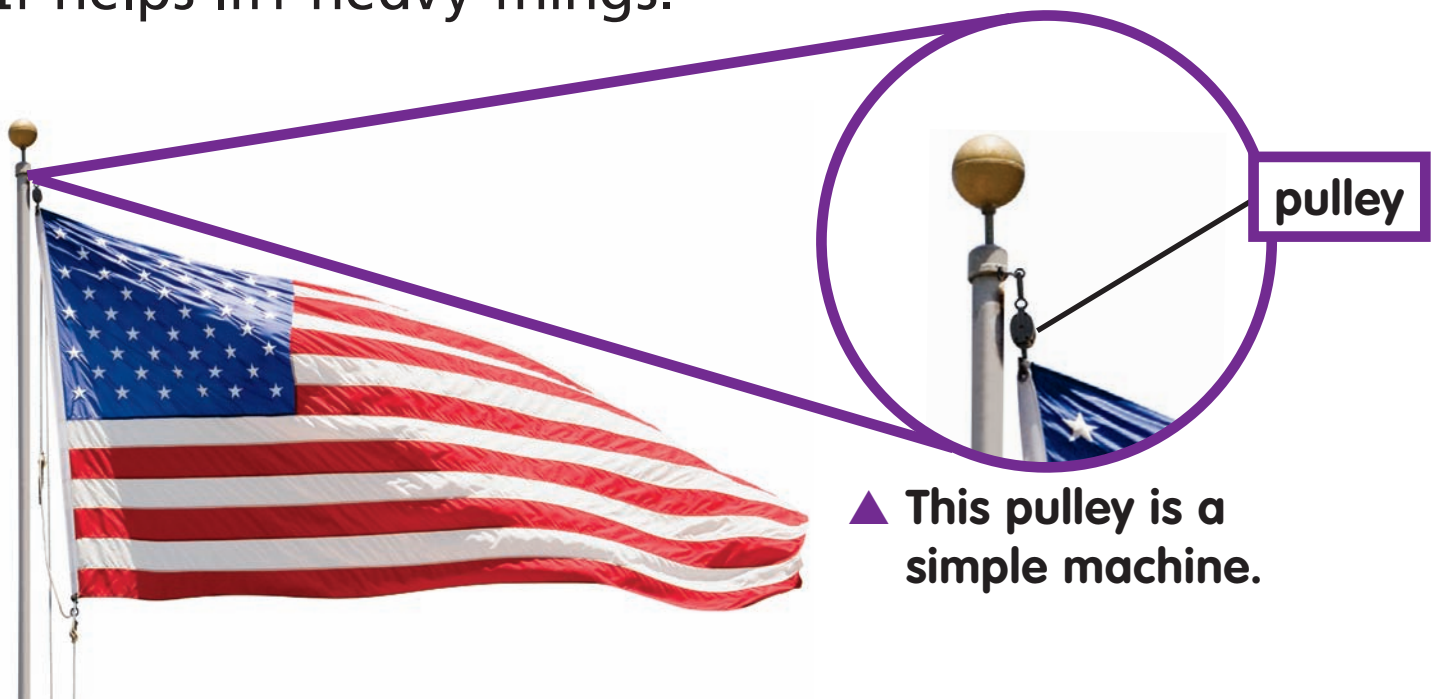
Read a Photo

What simple machines are these children using?

One kind of simple machine is a pulley.

It has a rope that moves over a wheel.

It helps lift heavy things.



 **Quick Check**

Name two ways simple machines help us.

8. They help us _____

9. They help us _____

What are levers and ramps?

A lever is a simple machine.

It has a bar that moves on a point.

It moves like a seesaw.

A lever makes it easier to move something.



▲ This lever can move or lift something.

▼ An oar is a lever. It helps to move the boat.



lever

A ramp is also a simple machine.

One side is lower than the other.

It helps us move things up and down.



▲ A ramp can take the place of steps.

 **Quick Check**

10. Draw a picture of a simple machine.

What is a magnet?

A magnet pulls things.

A **magnet** will pull things that have iron in them.

Iron is a kind of metal.









magnet



◀ Magnets pull things with iron in them.

Magnet Chart

My Magnet Chart	
Attracted	Not Attracted
 paper clips	 rubber bands
 washers	 googly eyes
 twist ties	 pom-poms

Read a Chart

What is one object the magnet attracted?

Magnets do not pull some metals.

Magnets do not pull cloth, feathers,
or crayons.

 **Quick Check**

Look at the picture below. Fill in the blanks.

11. Magnets pull things with _____ in them.

12. Magnets do not pull _____.

**Magnets do not pull paper,
glass, rubber, or wood. ▼**



What are a magnet's poles?

Magnets have two ends where the pull is strongest.

One end is called north.

The other end is called south.



▲ The ends of a magnet are called poles.

Ends that are not the same pull toward each other. ►



A north pole and a south pole pull toward each other.

Two north poles or two south poles will push away from each other.

**These magnets are round.
North poles are red.
South poles are blue. ▶**



Quick Check

Circle all correct answers.

13. Which ends pull toward each other?

N and N N and S S and S

14. Which ends push away from each other?

N and N N and S S and S

Use the words below to answer the questions.

force

magnet

pull

1. What force moves something closer to you?

2. What object pulls things with iron in them?

3. What do we call a push or pull that moves something?

Tell what you know.

Energy Everywhere



What is energy?

Vocabulary

energy a force that makes things work or change



heat a form of energy that makes things warm



vibrate to move back and forth



light a form of energy that lets you see



electricity a form of energy that gives some things power to work



What is energy?

Energy makes things work.

Energy makes things change.

We use energy every day.



▲ Windmills use wind to get energy.



▲ Lights use energy from electricity.

There are different kinds of energy.

Heat, light, and sound are kinds of energy.

Electricity is a kind of energy too.



▲ Cars use energy from gasoline.

 **Quick Check**

List two kinds of energy.

1.

2.

What is heat?

Heat is energy that makes things warm.

We can get heat from burning things.

We can burn wood, oil, or gas for heat.



▲ The Sun's energy warms Earth.

Heat Energy



Read a Photo

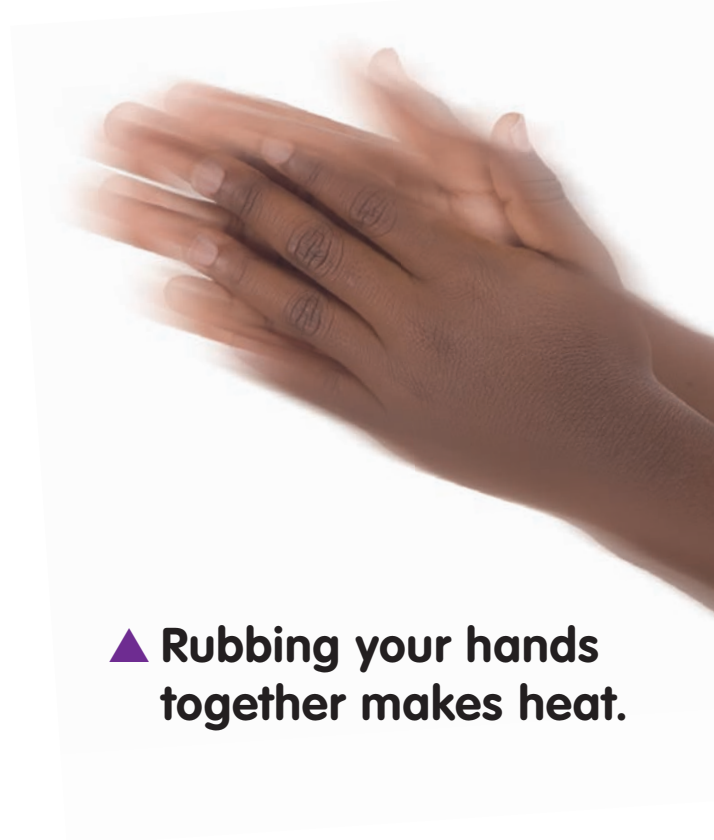
Where is the heat coming from?

Heat energy makes houses warm.

Heat energy cooks food.



▲ Heat energy makes popcorn pop.



▲ Rubbing your hands together makes heat.

✓ **Quick Check**

Circle all correct answers.

3. Heat energy _____ things.

cools

warms

pulls

4. Heat energy comes from _____.

a push

a fire

the Sun

How can you make sound?

Sound is a kind of energy.

It is made when something vibrates.

Vibrate means to move back and forth.

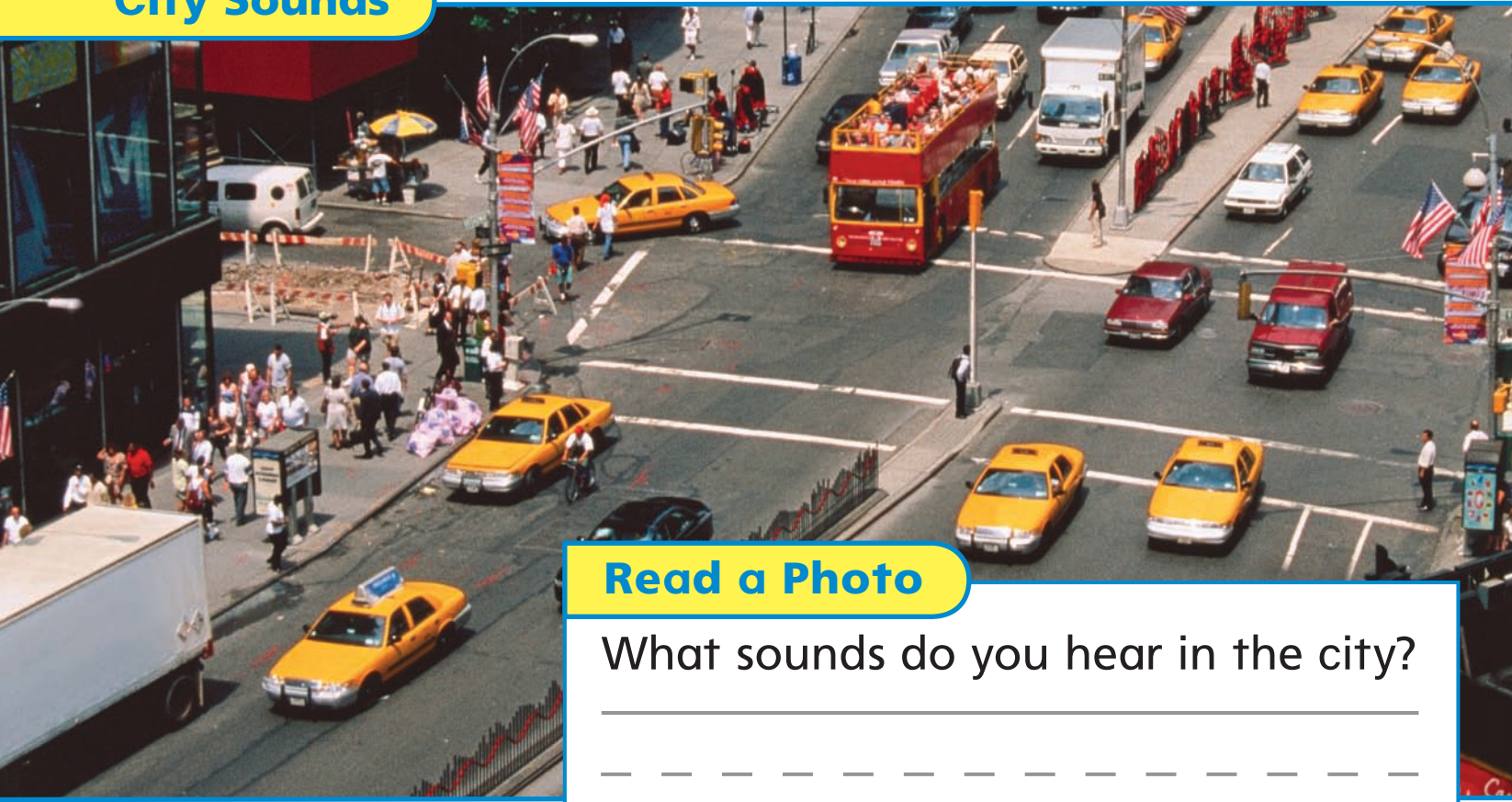
Sounds can tell us things.

They can help us wake up.

Sounds help us stay safe.

▼ The cymbals vibrate.
This makes a sound.





Read a Photo

What sounds do you hear in the city?

Quick Check

5. What are some sounds you hear every day?
Draw a picture. Label the sounds you hear.

How are sounds different?

Sounds can be loud.

Big vibrations make loud sounds.

Sounds can be soft.

Little vibrations make soft sounds.

A coyote's howl can be loud. ►



▲ A broom makes a soft sound.



▲ A fire engine makes a loud sound.

A sound can be high or low.

Fast vibrations make a high sound.

Slow vibrations make a low sound.

 **Quick Check**

Write the answer to the question.

6. What makes a loud sound?



▲ A whistle makes a high sound.

▲ A motorcycle makes a low sound.

What is light?

Light is a kind of energy.

Light lets you see.

Some things let light through them.

Some things do not.

Read a Diagram

What lets the boy see?

Light and Sight



▲ These glasses let a lot of light through.



▲ These glasses let some light through.



▲ This mask lets no light through.

Some things block light.

This makes a shadow.

The girl's body blocks light.
She has a shadow. ▶



Quick Check

Write two things that can block light.

7.

8.

What are some sources of light?

Most of the light on Earth comes from the Sun.

Other lights are made by people.

Light lets us see things.

Light bounces off objects and goes into your eyes.

This lets you see the object.



▲ Lights in the street help us see at night.



▲ Lamps help us see at home.

A blue flashlight with a black lens and a green string of lights. The string of lights has two white, cone-shaped lights with blue and red bases. The flashlight is labeled "flashlight" and the string of lights is labeled "string of lights".

flashlight

string of lights

▲ There are different kinds of lights.

 **Quick Check**

Write the answers to the questions.

9. What makes most of Earth's light?

10. What kinds of things make light?

How do you use electricity?

Electricity is a kind of energy.

It gives some things power to work.

Wires carry electricity.

Batteries store electricity.

We use electricity every day.

Plugged In



Quick Check

- II. List two objects that get electricity from wires.
List two objects that get electricity from batteries.

Electricity from Wires	Electricity from Batteries
<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>
<hr/> <hr/> <hr/>	<hr/> <hr/> <hr/>

Read a Diagram

Name an object you see that needs electricity.

Use the words below to answer each question.

heat

light

vibrate

1. What kind of energy lets you see?

2. What kind of energy makes things warm?

3. What does an object do when it makes a sound?

Tell what you know.

Glossary

A

amphibian An animal that lives on land and in water. (page 33)
A frog is an amphibian.



Arctic A cold and icy place near the North Pole. (page 26) Plants in the Arctic are short.



B

balance A tool used to measure mass. (page 132) The side of a balance with more mass will go down.



bird An animal that has two legs, two wings, and feathers. (page 31)
A duck is a bird.



D

desert A dry place. (page 24)
Cactus plants can live in the desert.



dissolve To mix well into a liquid. (page 148) Drink mix will dissolve in water.



E

electricity A form of energy that gives some things power to work. (page 186) Some things in your home need electricity.



energy A force that makes things work or change. (page 174) Gasoline gives cars the energy to move.

**F**

fall The season after summer. (page 110) Some leaves change colors in fall.



fish An animal that has gills and fins. (page 34) Fish live under water.



flower A plant part that makes seeds. (page 16) Flowers come in many shapes and colors.



food chain The order of how living things get food. (page 62) All animals are part of a food chain.



force A push or a pull that makes a thing move. (page 160) It takes force to move a ball.



forest A place with many trees. (page 54) Many plants and animals live in the forest.



freeze To change from a liquid to a solid. (page 150) Water will freeze if it gets very cold.



friction A force that slows things down. (page 163) Friction makes a skate stop.



G

gas A kind of matter that does not have its own shape. (page 140)
Gas gives balloons their shape.



grassland A dry place with a lot of grass. (page 53) Prairie dogs live in a grassland.



gravity A force that pulls things toward Earth. (page 161) Gravity keeps us from staying up in the air.



H

habitat A place where animals and plants live. (page 52) A forest is a habitat for many plants and animals.



heat A form of energy that makes things warm. (page 176) Heat makes popcorn pop.



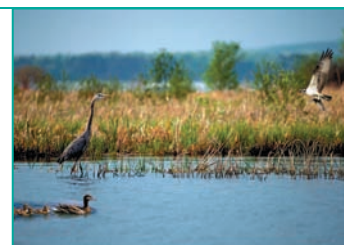
I

insect An animal with six legs. (page 35)
An ant is an insect.



L

lake Water with land around it.
(page 56) A lake is a home for many plants and animals.



leaves Plant parts that make food.
(page 8) Leaves come in different shapes and sizes.



light A form of energy that lets you see.
(page 182) Light can help you see in the dark.



liquid A kind of matter that flows and takes the shape of its container.
(page 138) Milk is a liquid.



living A thing that needs food, air, and water to live. (page 2)
This girl is a living thing.



M

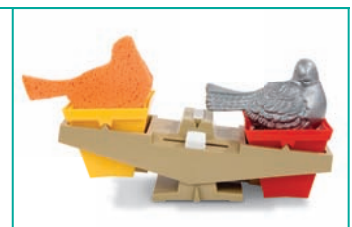
magnet A thing that can pull objects with iron in them. (page 168) A magnet can pull some metals.



mammal An animal with hair or fur.
(page 30) Fur can keep mammals warm.



mass How much matter is in something.
(page 132) These birds both have mass.



matter What all things are made of.
(page 130) A kite is made of matter.



melt To change from a solid to a liquid.
(page 151) Ice cubes can melt and become water.



mixture Different things put together.
(page 146) A fruit salad is a mixture.



Moon A ball of rock that moves around Earth.
(page 124) The Moon does not make its own light.



motion A change in a thing's position.
(page 158) The plane is in motion.



mountain Land that is very high.
(page 72) A mountain is the highest kind of land.



N

natural resources Things from Earth that people use. (page 84)
Rocks are a natural resource.



nonliving A thing that does not need food, water, and air to live. (page 2)
A rock is a nonliving thing.

**O**

ocean Salty water that can be very big and deep. (page 58) Whales live in the ocean.

**P**

plain Flat land that is very wide. (page 73) A plain is wide and flat.



planet A large object that moves around the Sun. (page 126)
Saturn is a planet.



poles Where a magnet's pull is strongest. (page 170) A magnet has a north pole and a south pole.



pollution Things that hurt the air, land, or water. (page 90) Pollution can harm animals.



position The place where something is found. (page 156) You can find something if you know its position.



pull A force that moves something closer to you. (page 160) The boy pulls the bag of balls.



push A force that moves something away from you. (page 160) The girl pushes the ball when she throws it.



R

rain forest A hot and wet place. (page 25) A rain forest has many green plants.



recycle To make a new thing from an old thing. (page 95) You can recycle paper, plastic, and glass.



reduce To use less of something.
(page 94) You can reduce how much water you use.



reptile An animal with dry skin and scales. (page 32) A snake is a reptile.



reuse To use something again. (page 92)
You can reuse cans and bottles.



river Fresh water that moves. (page 71)
A river may flow into an ocean.



root Plant part that holds a plant in the ground. (page 9) Roots hold a plant in the ground.



S

season A time of year. (page 106)
There are four seasons.



seed A plant part that grows into a new plant. (page 16) A seed inside a peach can grow.



simple machine A tool that can make it easier to move things. (page 164)
A rake is a simple machine.



soil The top layer of Earth. (page 76)
Soil can be brown, red, gray, or yellow.



solid A kind of matter that has a shape of its own. (page 134) A block is a solid.



spring The season after winter. (page 107)
Many animals are born in spring.



star An object in the sky that makes its own light. (page 116) We can see many stars in the night sky.



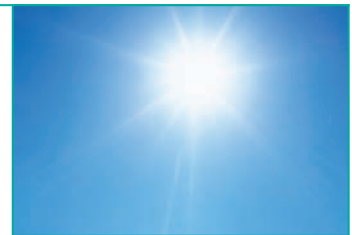
stem Part of a plant that holds it up.
(page 8) The stem holds up the flower.



summer The season after spring.
(page 108) Lemonade can cool you off
in the hot summer.



Sun The star closest to Earth. (page 117)
The Sun gives light and heat to Earth.



T

temperature How cold or warm the
air is. (page 98) The temperature can be
cold in winter.



V

valley Low land between mountains.
(page 72) This valley is flat.



vibrate To move back and forth. (page 178)
Sound is made when something vibrates.

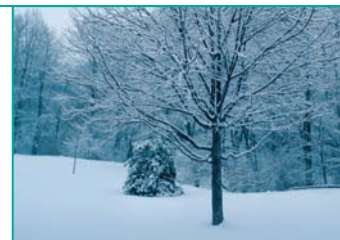


W

water vapor Water that goes up into the air. (page 102) You can not see water vapor.



winter The season after fall. (page 112)
It can snow in winter.



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