HOUGHTON MIFFLIN HARCOURT
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HOUGHTON MIFFLIN HARCOURT

Mississippi Science

Dolphin Facts

Did you know that bottlenose dolphins can jump out of the water as high as 3 meters (about 10 feet)? The bottlenose dolphin is Mississippi's state water mammal. Atlantic bottlenose dolphins live in the Gulf of Mexico near the coast of Mississippi. A bottlenose dolphin breathes through its blow hole, on the top of its head. It usually comes to the water's surface every few minutes to breathe.

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What Do You Know?

Talk with a partner.

Draw an object.

Describe the object.

Comparing Matter

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KWL

What Do You Want to Know?

What do you want to know about matter?

How can you compare different objects?

Lesson Preview

VOCABULARY

gas A state of matter that spreads out to fill a space. *(noun)*

liquid A state of matter that does not have its own shape. *(noun)*

mass The amount of matter in an object. *(noun)*

property Color, shape, size, odor, or texture. *(noun)*

solid A state of matter that has its own size and shape. *(noun)*

volume The amount of space matter takes up. *(noun)*

2.b. Investigate and describe properties and changes of matter. (DOK 2) Unique properties of states of matter (Gases are easily compressed while solids and liquids are not; the shape of a solid is independent of its container; liquids and gases take the shape of their containers.)

2.f. Compare and classify solids, liquids, and gases. (DOK 2)

1 How Can You Compare Matter?

You can tell about something by telling about its properties.
Color, shape, size, odor, and texture are **properties**.
Odor tells how something smells.
Texture tells how something feels.

A balloon can be red or yellow.

A slipper can be soft and fuzzy.

A penny is round and flat.

You can tell about a thing by telling what materials were used to make it. For example, a penny is made of metal.

Marbles are made of glass.

These toy dinosaurs are made of plastic.

1. What are some properties that you can use to describe an object?

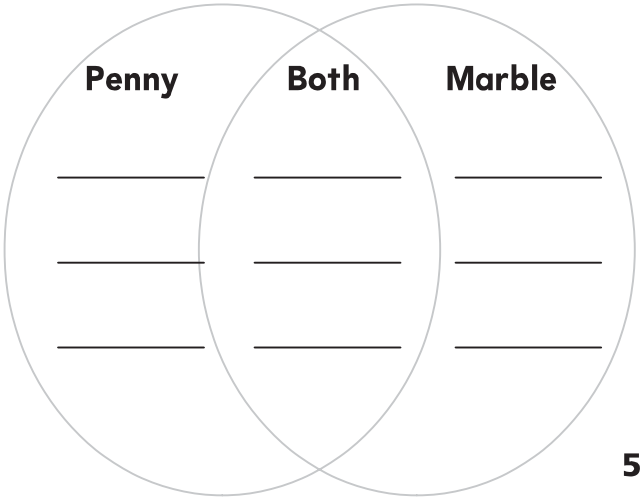
   a. _____

   b. _____

   c. _____

   d. _____

2. How are the penny and the marble alike and different?



3. Circle the object that light can pass through.

4. Label one object on this page with an A. Label another object on this page with a B.

   a. List the properties of object A.

   _____

   _____

   _____

   b. List the properties of object B.

   _____

   _____

Express Lab

Use the Activity Card **Classify Properties.**

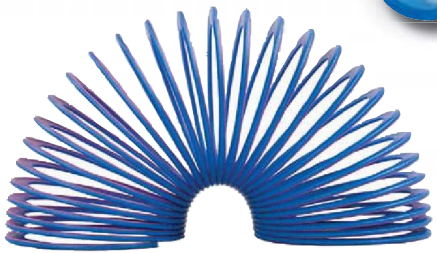
1.b.

Other properties tell what something does.
Some things sink in water.
Other things float.
Some properties tell what the materials do.
Some things bend.
Other things break.
Some materials let light pass through.

This rock will sink in water.

A pencil will float in water.

Light can pass through these.



This toy can bend.

States of Matter

All things are made of matter.
The three states of matter are solid, liquid, and gas.
A **solid** is a state of matter that has its own size and shape.
The amount of space it takes up, or its **volume**, stays the same.

A toy boat keeps its size and shape when you put it in water.

5. What are three states of matter?

   a. _____

   b. _____

   c. _____

6. Put an X on something in the picture that is not a solid.

7. Underline the words that describe a liquid.

I Wonder . . . I know that water is a liquid. I know that a liquid does not have its own shape. What shape is the water in the pool?

_____

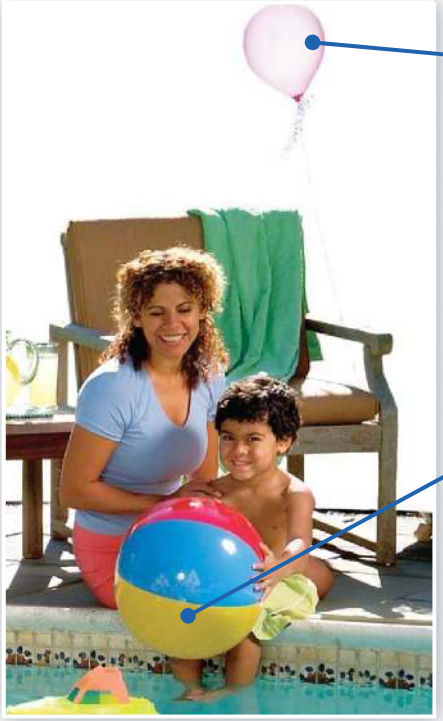
_____

A **liquid** is a state of matter that does not have its own shape.
Liquids flow.
They take the shape of what holds them.
A liquid's shape can change, but its volume does not.

Juice takes the shape of the pitcher and glasses it is put in.

liquid

A **gas** is a state of matter that spreads out to fill a space.
Its shape and volume can change.
It takes the shape of its container.
It always fills a closed container.
Gas from a larger container can be squeezed into a smaller container.



A balloon holds a gas.

This beach ball looks full, but more gas could be squeezed into it.

8. You cannot see the air inside a balloon. How do you know it is there?

_____

_____

9. Fill in the table using the words below.

solid **liquid** **gas**

State of Matter	Does it take the shape of its container?	Does its volume change?	Does it spread to fill its container?
	yes	no	no
	no	no	no
	yes	yes	yes

10. How do you measure the volume of a liquid?

_____

Science Test Practice

Circle the correct answer.

11. You have some items that take the shape of their containers. Their volume does not change. Which item below is like your other items?

(A) milk

(B) shoe

(C) book

2.b. (DOK 2)

Using Tools to Measure

All matter takes up space.
You can measure how much space matter takes up.
You can use a ruler to measure how long a solid is.
You can use a measuring cup to measure the volume of a liquid.
The volume of a gas is the same as the closed container it is in.

You pour a liquid into a measuring cup to find its volume.

All matter has mass.
Mass is the amount of matter in an object.
You can use a balance to measure the mass of something.

Classify

Name two properties that can be measured.

Put the object you want to measure on one side of the balance.

Add mass units until the sides are even.

Summary

You can describe objects by their properties. How do tools help you describe an object's properties?

_____

_____

Classify Name two properties that can be measured.

Properties You Can Measure		
Ruler	Measuring Cup	Balance
Length		

Directed Inquiry

Flip Chart p. 1

Measure Matter

Use simple tools to measure weight and volume.

1.c.

VOCABULARY

mixture Something made of two or more things. *(noun)*

separate To take apart. *(verb)*

VOCABULARY ACTIVITY

Use Syllables

separate

Break the word into syllables.

Say each syllable aloud.

Clap once for each syllable.

How many syllables does this word have?

2.a. Investigate to conclude that when water changes to ice and then melts, the amount of water is the same as it was before freezing. (DOK 2)

2.b. Investigate and describe properties and changes of matter. (DOK 2)
Physical changes (e.g., boiling liquids, freezing ice, tearing paper)
Chemical changes (e.g., burning wood, making ice cream, cooking an egg)

2 How Does Matter Change?

A **mixture** is something made of two or more things.
You can put matter together to make a mixture.
There is no new matter in a mixture.

Trail mix is a mixture.
It is easy to separate.

You can take apart, or **separate**, a mixture.
Each part is still there.
Some mixtures are easy to separate.
The parts stay the same.
The parts are easy to see.

1. Circle the mixture on these pages. Put an X on the parts that make up the mixture.
2. List the parts that make up the trail mix.

a. _____

b. _____

c. _____

d. _____

3. Look at the pictures on these two pages. List three ways to change solid matter.

a. _____

b. _____

c. _____

4. How can you change a sheet of paper?

_____

_____

_____

Changing Matter

You can change solid matter in many ways.

You can break, tear, or cut matter to change its shape.

You can tear or cut paper into smaller pieces to change its size or shape.

cutting paper

You can pound clay to make it flat. You can sand wood to make it smooth.
These kinds of changes do not change the material that the matter is made of.

pounding clay

sanding wood

5. Cutting, sanding, and pounding can change the shape of _____.

6. Some liquids change to _____ when you take away heat.

Science Test Practice

Circle the correct answer.

7. Which of these could melt?

Ⓐ water

Ⓑ ice

Ⓒ juice

2.b. (DOK 2)

Express Lab

Use the Activity Card **Time a Change of State.**

1.c., 2.b.

Changing States

Matter can change from one state to another.

Some liquids can change to solids, or freeze, when you take away heat. Other solids can change to liquids when you add heat.

The juice in the pitcher is a liquid. The juice in the tray is a solid. The juice on the plate is changing from a solid to a liquid.

All matter does not change the same way when you heat it.
Some things melt fast.
Some things melt slowly.
Other things do not melt at all.
When enough heat is added some liquids will boil, or turn to a gas.

Butter melts fast.

8. If a solid changes to a liquid, what can you say happened?

Fact: Matter can change from one state to another.

Fact: Some solids can change to _____ when you add _____.

Conclusion: _____

Directed Inquiry

Flip Chart p. 2

Compare Water

Use simple tools to measure the mass of a liquid and a solid.

1.a., 1.c., 2.a., 2.f.

9. How is an egg different after it has been cooked?

_____

_____

10. Circle the matter that is changing in the picture.

I Wonder . . . Can wood that has been changed to ashes in a fire be changed back to wood?

_____

_____

_____

_____

_____

Other Changes

Matter can be changed in other ways. When you cook an egg, part of it turns white.

The egg also changes from a liquid to a solid.

When wood burns in a fire, it changes to ashes.

It becomes a different kind of matter.

When this wood is finished burning, it will be ashes. Ashes are a different kind of matter than the wood was.

You can change eggs, milk, cream, and sugar to make a favorite treat. When they are changed together, they become ice cream!

Ice cream is a new kind of matter with different properties.

Ice cream is not like the eggs, milk, cream, or sugar that are put into it. Eggs, milk, and cream are not sweet. Sugar does not have to be cold to be a solid.

Matter can be changed to make sweet treats!

Compare and Contrast

How is an egg different from the ice cream it is in?

Summary

Matter can be changed in many ways.

What happens to wood in a fire?

_____

_____

Underline the sentence that tells how sugar is different from ice cream.

Compare and Contrast

How is an egg different from the ice cream it is in?

Eggs	Ice Cream
are not _____	is _____
_____	_____

VOCABULARY

magnify To make objects look larger. *(verb)*

VOCABULARY ACTIVITY

Use Words

In the picture on this page, the children are using a _____ to magnify the small parts of matter.

2.b. Investigate and describe properties and changes of matter. (DOK 2)

3 How Does Matter Look Up Close?

Matter is made of very small parts. The parts are too little to see with only your eyes.

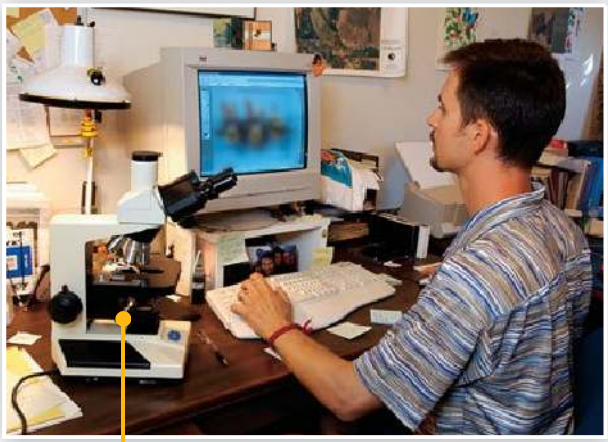
You can use a tool to see these small parts.

The children are using a hand lens.

Tools that Magnify

Some tools can make objects look larger, or **magnify** them.
A hand lens can make objects look bigger.
A microscope can magnify objects even more.

Scientists use microscopes to magnify objects.



microscope

1. Circle the hand lens.
2. Circle the microscope.
3. What do these tools do?

_____

_____

Science Test Practice

Circle the correct answer.

4. **Which tool makes the ant look the biggest?**

   (A) microscope

   (B) hand lens

   (C) ruler

1.c. (DOK 1)

5. Draw lines. Match each object to what it might look like when magnified.

flower 

clothing 

insect 

Ants Up Close

Ants look like this without a magnifying tool.

An ant looks like this through a hand lens.

An ant looks like this through a microscope.

Matter Up Close

You can see the small parts of matter when you use a tool to magnify an object.

feather

fish scales

sugar cube

strawberry

Main Idea and Details

Why are tools needed to see small parts of matter?

Summary

Matter is made of parts too small to see with only your eyes.

What might you learn by magnifying a grasshopper?

_____

_____

Main Idea Why are tools needed to see small parts of matter?

Main Idea

Tools help you see small parts of matter.

Detail

Some tools make objects look _____.

Detail

Some tools help you see _____.

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ A _____ and a _____ can help you see small parts of things.

❸ Mass is

_____

_____

❹ Some mixtures are easy to separate because

_____

_____

KWL

What Did You Learn?

Science Test Practice

❶ **Boiling matter is changing from a liquid to a _____.**

Ⓐ gas

Ⓑ liquid

Ⓒ solid

2.b. (DOK 2)

❷ What two tools can help you see small parts of things?

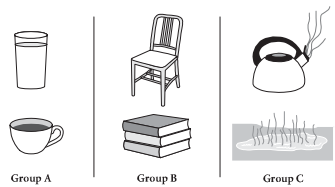
❸ What is mass?

❹ Why are some mixtures easy to separate?

Draw a picture to show how matter can change.

Circle the correct answer.

Use this picture for questions 1 and 2.



1. **Into which group would you put a coat?**

   (A) Group A

   (B) Group B

   (C) Group C

   2.f. (DOK 2)

2. **Which group shows a changing state of matter?**

   (A) Group A

   (B) Group B

   (C) Group C

   2.b. (DOK 2)

3. **Which change makes a different type of matter?**

   (A) tearing paper

   (B) burning grass

   (C) mixing raisins and cereal

   2.b. (DOK 2)

4. **A material takes the shape of its container. It can be squeezed into a smaller container. Which state of matter is the material?**

(A) gas

(B) solid

(C) liquid

2.b. (DOK 2)

5. **You freeze 5 liters of water. Then you melt it. How much water is now in the container?**

(A) 4 liters

(B) 5 liters

(C) 6 liters

2.a. (DOK 2)

6. **Look at this picture.**

A skunk can spray a liquid that smells bad. Which property of matter does this liquid use?

(A) odor

(B) color

(C) size

2.b. (DOK 2)

KWL

What Do You Know?

Talk with a partner.
Describe forces that you have seen.
Make a list of things you know about how objects are pushed and pulled.

Forces

Contents

KWL

What Do You Want to Know?

What do you wonder about forces?

Lesson Preview

VOCABULARY

attract To pull toward something. *(verb)*

force A push or a pull. *(noun)*

poles The two places on a magnet where the force is the strongest. *(noun)*

repel To push away from something. *(verb)*

2.c. Describe observable effects of forces, including buoyancy, gravity, and magnetism. (DOK 1)

1 What Can Magnets Do?

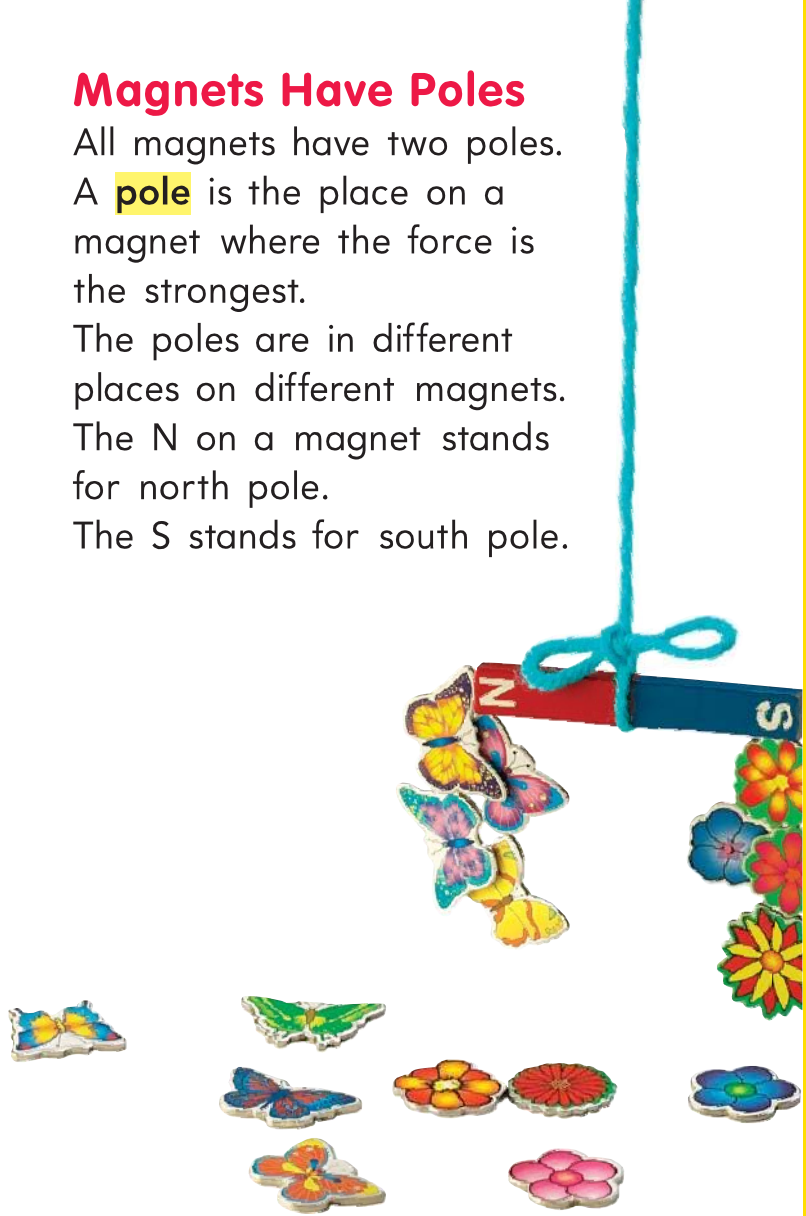
Magnets come in many shapes and sizes.
Some magnets are flat and straight.
Others are curved or round.
All magnets can push or pull some things.
Pushes and pulls are **forces**.

Magnets Have Poles

All magnets have two poles. A **pole** is the place on a magnet where the force is the strongest.

The poles are in different places on different magnets. The N on a magnet stands for north pole.

The S stands for south pole.



1. Circle the poles on the magnets shown on these pages.

I Wonder . . . All magnets have two poles. How can I find the poles on a ring magnet?

_____

_____

_____

Express Lab

Use the Activity Card **Observe Magnets.**

2.c.

2. Which pole of a magnet would be attracted by a north pole of another magnet?

_____

Science Test Practice

Circle the correct answer.

3. What happens when unlike poles of two magnets are next to each other?

(A) They attract each other.

(B) They repel each other.

(C) They do not move.

2.c. (DOK 1)

Magnets Act on Each Other

All magnets push or pull other magnets.

Try putting the north pole of a magnet near the south pole of another magnet.

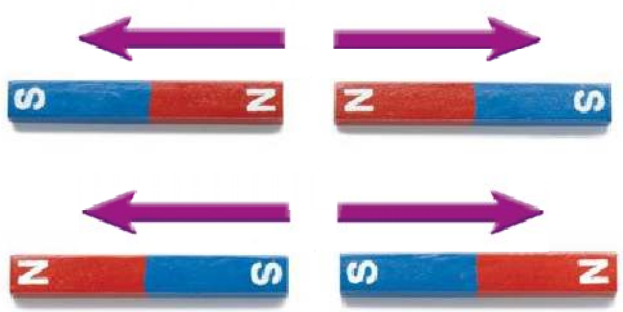
The magnets attract.

When a magnet **attracts**, it pulls something toward itself.

Unlike poles attract each other.

Unlike poles attract, or pull toward each other.

Try putting two north poles near each other.
The magnets repel.
When a magnet **repels**, it pushes something away from itself.
The same thing happens when you put two south poles together.



Like poles repel, or push away from each other.

Cause and Effect

What happens when like poles are near each other?

Summary

Magnets can push or pull things.
All magnets have two poles.
Where is the force strongest on magnets?

Cause and Effect

What happens when like poles are near each other?

Cause	Effect
Like poles are near each other.	

Lesson Preview

VOCABULARY

magnetic Attracted by a magnet. *(adjective)*

nonmagnetic Not attracted by a magnet. *(adjective)*

VOCABULARY ACTIVITY

Use Pictures

magnetic

Look at the picture of the **magnetic** objects on this page.

What do you know about **magnetic** objects from this picture?

2.d. Classify materials that are or are not attracted to magnets and cite examples of useful magnetic tools in everyday living (e.g., can opener, compass, refrigerator door seal). (DOK 2)

2 What Materials Do Magnets Attract?

Magnets can attract other magnets. Magnets can attract other things, too.

Magnetic Objects

Something is **magnetic** if it is attracted by a magnet.

Most magnetic objects have iron in them.

Iron is a kind of metal.

These objects are magnetic.

Nonmagnetic Objects

Some things are not attracted by magnets.

Something is **nonmagnetic** if it is not attracted by a magnet.

Glass is nonmagnetic.

Paper is nonmagnetic.

Wood is nonmagnetic.

Plastic is nonmagnetic, too.

These objects are nonmagnetic.

1. How can you tell if an object is magnetic?

_____

_____

_____

Science Test Practice

Circle the correct answer.

2. Which object cannot be magnetic?

(A) nail

(B) crayon

(C) metal paper clip

2.d. (DOK 2)

Directed Inquiry

Flip Chart p. 3

Classify Objects

Sort and group objects as magnetic or nonmagnetic.

1.a., 2.d.

I Wonder . . . Magnets are in things we use every day. Which things in my home have magnets in them?

_____

_____

_____

Everyday Magnets

Many things use magnetic force to help them work.

Computer games have magnets in them.

Magnets help keep refrigerator doors closed.

Some toy cars have magnets in them.

The magnets make their motors run.

A can opener cuts the lid of a can. A magnet lifts the lid off the can.

Have you ever used a compass?
Ships at sea use a compass.
A compass has a magnet in it.
A compass helps you find direction.
The compass needle always
points north.

Compare and Contrast

How are magnetic and nonmagnetic objects different?

Summary

All magnets have forces that act on other magnets. Objects that are attracted by magnets are magnetic. Draw and label an object that is magnetic.

Compare and Contrast

How are magnetic and nonmagnetic objects different?

Magnetic	Nonmagnetic

VOCABULARY

float To stay on top of water. *(verb)*

sink To drop to the bottom of water. *(verb)*

VOCABULARY ACTIVITY

Classify Words

float

Float means to stay on top of water.

What things do you know that float?

2.c. Describe observable effects of forces, including buoyancy, gravity and magnetism. (DOK 1)

3 What Floats and What Sinks?

Some things **sink**, or drop to the bottom of water.
Other things **float**, or stay on top of water.
Floating and sinking are properties of a thing.
Floating things are pushed up by the water.

You can group things that float.
You can group things that sink.
Look at the picture.
Which things float?
Which things sink?

1. What happens when something floats?

_____

_____

Science Test Practice

Circle the correct answer.

2. What happens when something sinks?

(A) It moves out of the water.

(B) It drops to the bottom of water.

(C) It stays on top of the water.

2.c. (DOK 1)

I Wonder . . . How can you tell if something will float or sink?

_____

_____

_____

3. Why do some things float?

Cause	Effect
Water pushes up on an object.	The object _____.

Directed Inquiry

Flip Chart p. 4

Float or Sink

Compare objects that float or sink.

1.a., 2.c.

The weight of a thing may help it float.

Many light things float.

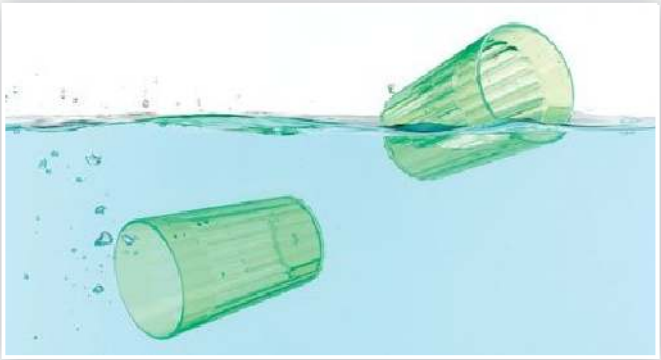
The shape of a thing may help it float.

Many flat things float.

Sometimes things float because they have air in them.

Making Objects Sink

You can make
some floating things sink.
Look at the cups.
A cup will float.
A cup will sink
when you fill it with water.



Classify

What are some things that float?

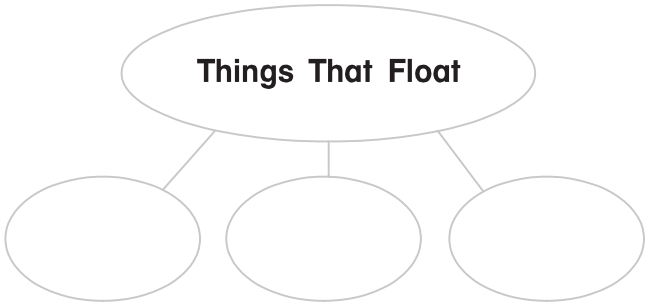
Summary

Different objects float and sink.

Circle the words that tell you what happens to the cup when it fills with water.

Classify

What are some things that float?



VOCABULARY

gravity A force that pulls all objects toward each other. *(noun)*

weight A measure of the pull of gravity on an object. *(noun)*

VOCABULARY ACTIVITY

Use Pictures

gravity

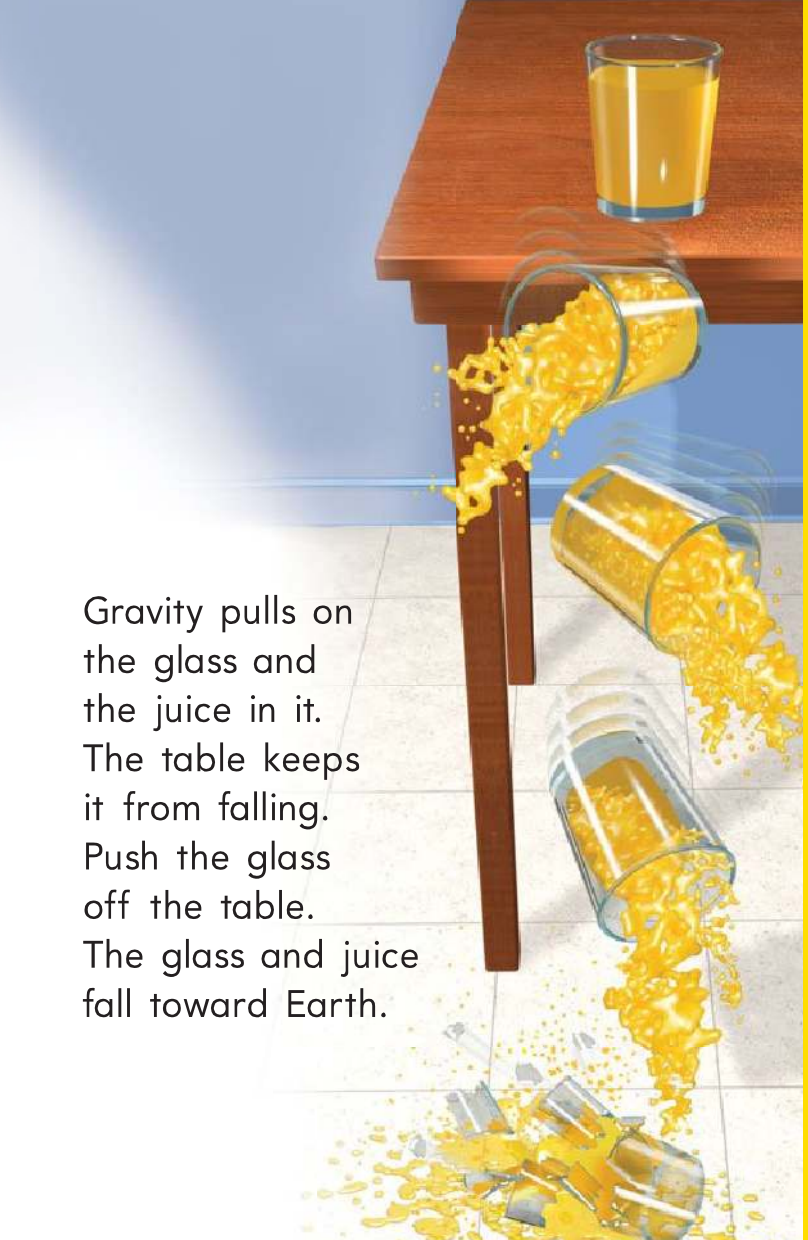
Say the word aloud.
Use clues from the picture to help you understand what **gravity** means.

2.c. Describe observable effects of forces, including buoyancy, gravity, and magnetism. (DOK 1)

4 What Makes Things Fall?

Drop a ball.
Gravity will make it fall to the ground.
Gravity is a force that pulls all objects toward each other.
It makes objects near Earth fall to the ground.

Gravity makes water move down.



Gravity pulls on the glass and the juice in it. The table keeps it from falling. Push the glass off the table. The glass and juice fall toward Earth.

Science Test Practice

Circle the correct answer.

1. **What caused the objects to fall to the ground?**

   Ⓐ water

   Ⓑ air

   Ⓒ gravity

2.c. (DOK 1)

I Wonder . . . What would happen to the glass if there were no gravity?

_____

_____

_____

Express Lab

Use the Activity Card **Experiment with Gravity.**

1.a., 2.c.

2. Underline the definition of weight.

3. What is mass?

_____

_____

_____

4. Circle the object that has more mass. Tell how you know.

_____

_____

_____

Gravity and Weight

Weight is how much gravity pulls on an object.

The pull of gravity is stronger on objects that have more mass.

Mass is how much material is in an object.

**The toy elephant has more mass.
Gravity pulls on it more.
It is heavier.**

A big rock has a lot of mass. The pull of gravity on the rock is strong. It weighs a lot. A feather has little mass. The pull of gravity is not as strong. It weighs less.

The rock is heavier than the feather.

Draw Conclusions

How can you tell that one object is heavier than another?

Summary

The pull of gravity is stronger on objects that have more mass.
Will the pull of gravity be stronger on a book or a pen?

Draw Conclusions

How can you tell that one object is heavier than another?

Fact

The pull of gravity is stronger on objects that are heavier.

Conclusion

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ The boat will _____.

❸ _____ is nonmagnetic.

❹ A rock is heavier than a feather because

_____.

KWL

What Did You Learn?

Science Test Practice

❶ **What happens when you put the north pole of a magnet next to the south pole of a magnet?**

Ⓐ They repel each other.

Ⓑ They attract each other.

Ⓒ Nothing happens.

2.c. (DOK 1)

❷ What happens when you place a toy boat on water?

❸ What is something that is nonmagnetic?

❹ Why is a rock heavier than a feather?

Draw a picture to show how gravity can affect matter.

Circle the correct answer.

1. Which object cannot be magnetic?

   (A) toy car

   (B) magnet

   (C) book

   2.d. (DOK 2)

2. You fill a beach ball with air. You put the ball in a bucket of water. What do you predict will happen to the beach ball?

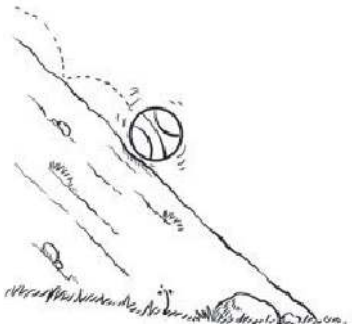
   (A) It will float.

   (B) It will pop.

   (C) It will sink.

   1.a. (DOK 2), 2.c. (DOK 1)

3. Look at the picture.



Which force is moving this ball?

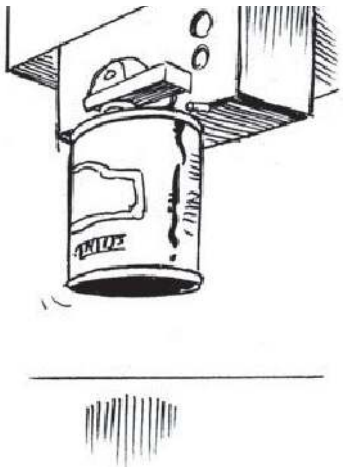
(A) gravity

(B) poles

(C) magnetism

2.c. (DOK 1)

Use this picture for questions 4 and 5.



4. What does the tool in the picture do?

Ⓐ heat food

Ⓑ open cans

Ⓒ make circles

1.d. (DOK 1)

5. In the picture, which force will keep the can lid in the air?

Ⓐ gravity

Ⓑ magnetism

Ⓒ push

2.d. (DOK 2)

6. You sort some things into two piles. One pile has magnetic objects. The other pile has nonmagnetic objects. Which could be the items in one of your piles?

Ⓐ metal paperclip, bar magnet, pencil

Ⓑ sheet of paper, ring magnet, plastic fork

Ⓒ horseshoe magnet, metal paperclip, iron nail

2.d. (DOK 2)

KWL

What Do You Know?

List the sounds you heard and things you saw today.

_____

_____

_____

Pick one item from your list.
Describe what you heard or saw.

_____

_____

Sound and Light

Contents

KWL

What Do You Want to Know?

What do you wonder about sounds and light?

VOCABULARY

energy The ability to cause change. *(noun)*

sound A form of energy that you hear. *(noun)*

sound waves The waves that move vibrating air. *(noun)*

vibrate To move back and forth very quickly. *(verb)*

VOCABULARY ACTIVITY

Use Words

vibrate

Pluck the strings to make them **vibrate.** Use clues from the sentence above to know what **vibrate** means.

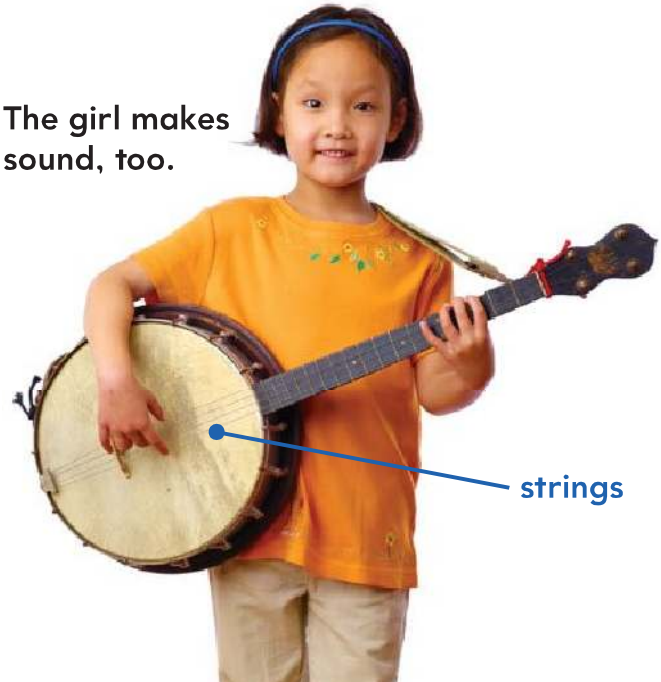
2.g. Identify vibration as the source of sound and categorize different types of media (e.g., wood, plastic, water, air, metal, glass) according to how easily vibrations travel. (DOK 2)

1 How Is Sound Made?

Energy is the ability to change things.
Sound is energy that you hear.
Sound is made when an object vibrates.
Vibrate means to move back and forth very fast.

The boy makes sound.

This is a banjo.
It has strings.
You pull on the strings to make sound.
That makes the strings vibrate.
It makes the air vibrate, too.
You cannot see air vibrate.
You can hear it as sound.



The girl makes sound, too.

Science Test Practice

Circle the correct answer.

1. Which of these makes air vibrate?

Ⓐ sitting
Ⓑ singing
Ⓒ standing

2.g. (DOK 2)

I Wonder . . . Instruments can vibrate to make sounds. Name the parts of instruments that vibrate.

_____

_____

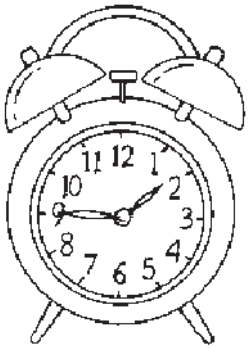
Directed Inquiry

Flip Chart p. 5

Making Sound

Predict outcomes to conduct a simple investigation. Identify vibration as the source of sound.

1.a., 2.g.



2. Circle the parts of the alarm clock that vibrate to make sound.

3. Tell how you hear the sound of the alarm clock.

_____

_____

_____

_____

How You Hear

You use your ears to hear sound.
Air vibrates.
It moves in waves called
sound waves.
Sound waves move into your ear.
You hear a sound.

This is a hearing aid.
Some people use it to help them hear.
They put the hearing aid in their ear.
It helps them hear sound.

Cause and Effect

What causes a person to hear sounds?

Summary

Sound is made when an object vibrates. Sound waves move into your ear. What sounds do you hear right now?

Cause and Effect

What causes a person to hear sounds?

Cause	Effect
	A person hears sounds.

VOCABULARY

echo A sound that repeats when sound waves bounce off a surface. *(noun)*

VOCABULARY ACTIVITY

Use Syllables

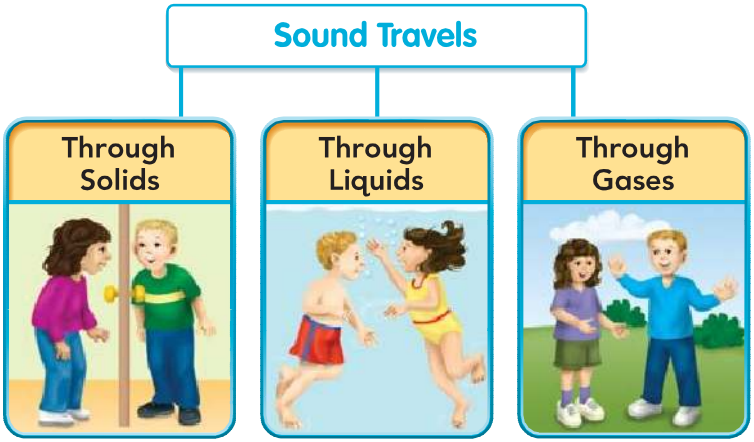
echo

Break the word **echo** into syllables.
Say each syllable aloud.
Clap once for each syllable.
How many syllables are in **echo**?

2.g. Identify vibration as the source of sound and categorize different types of media (e.g., wood, plastic, water, air, metal, glass) according to how easily vibrations travel. (DOK 2)

2 How Does Sound Travel?

Most sounds travel through air.
Air is a gas.
Sound can travel through liquids and solids, too.
It travels differently through different states of matter.



How Sound Travels

Water is a liquid.
Sounds go farther and faster in liquids than they do in gases.
Sounds travel faster through solids than they do in gases and liquids.

The wooden fence is a solid.
Sound travels faster through the fence than through the air.

1. Use the words below to fill in the graphic organizer.

wood water plastic air metal glass

Sound travels faster through some matter than other matter.

travels the most slowly through gases	travels faster through liquids	travels fastest through solids
_____	_____	_____ _____ _____ _____

Express Lab

Use the Activity Card **Compare Sounds.**

2. Draw arrows on the picture to show the direction the sound waves are moving.

3. Underline the sentence that tells how moving sound waves in one direction is helpful.

I Wonder . . . The stage in the picture helps move sound. How does it direct the sound to the people?

_____

_____

_____

_____

Directing Sound

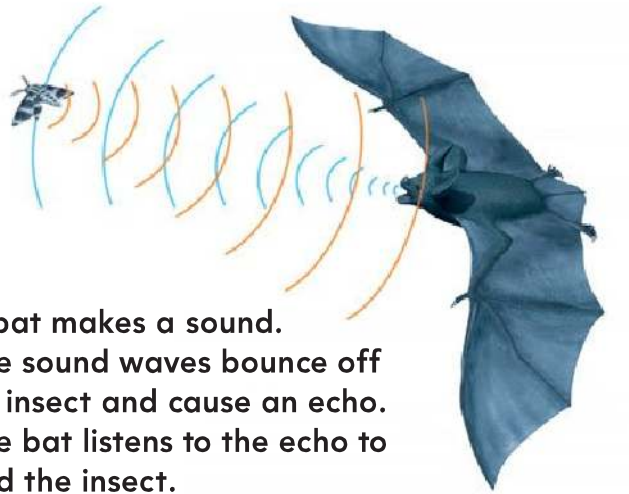
Sound waves move in all directions from a sound.
Some sound waves can be made to go in one direction.
This makes the sounds easier to hear.

The shape of this stage helps move sound waves from the stage to the people.

Bouncing Sound

An **echo** is a sound that repeats when sound waves bounce off a surface.

Some animals use echoes to find things in the dark.



A bat makes a sound. The sound waves bounce off an insect and cause an echo. The bat listens to the echo to find the insect.

Compare and Contrast

How is an echo different from other sounds?

Summary

Sound travels through matter in different directions.

Draw an arrow on the picture to show the direction the echo is traveling.

Science Test Practice

Circle the correct answer.

4. In the picture, which of these made the vibrations?

Ⓐ insect

Ⓑ bat

Ⓒ air

2.g. (DOK 2)

Compare and Contrast

How is an echo different from other sounds?

Echo	Other Sounds
_____	_____

VOCABULARY

light A kind of energy that you can see. *(noun)*

VOCABULARY ACTIVITY

Use Words

light

Look at the picture on this page. Circle the object that is giving off **light**.

2.e. Recognize that an object can be seen only if either light falls on it or it emits light, and that color is a property of light. (DOK 1)

3 What Is Light?

Light is a kind of energy you can see.
Light comes from many things.
Earth gets light from the Sun.

The Sun gives us lots of light.

Fires and candles give off light when they burn.
The light bulbs inside flashlights and lamps give off light too.

1. List sources of light.

Sources of Light

Sources in Nature	Sources with Bulbs
a. _____	c. _____
b. _____	d. _____

2. Circle the source of light shown on this page.

Science Test Practice

Circle the correct answer.

3. Why do people use light?

(A) to see

(B) to melt ice

(C) to warm things

2.e. (DOK 1)

Directed Inquiry

Flip Chart p. 6

Seeing Things

Follow the steps of an experiment to find out how light energy helps us see. Formulate questions.

1.a., 2.e.

How Light Is Used

You need light for many things. Light helps you see.

You can see only objects that give off light or objects that light falls on. Things that are around light can be seen.
You cannot see anything without light.

Light lets you see things in this picture.

4. Circle the objects that give off light on these two pages. Place an X on the objects that light falls on.

I Wonder . . . Why are there areas in this photo that I can't see?

_____

_____

_____

_____

Express Lab

Use the Activity Card **Use Light to Communicate.**

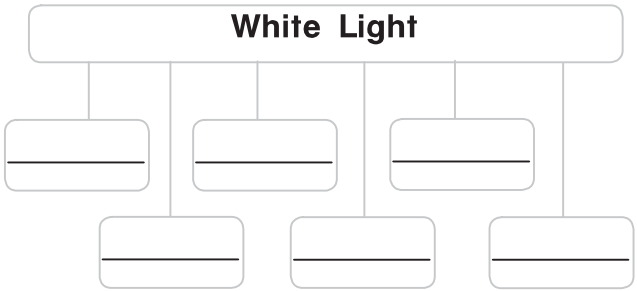
2.e.

Summary

Light helps us see things. White light can be separated into many colors. Circle the place where white light has been separated.

Main Idea and Details

What colors make white light?



Light and Color

When you look at a rainbow, you see many colors—reds, oranges, yellows, greens, blues, and violets. Those colors are a property of light. White light is a mix of all those colors. When raindrops separate white light into colors, you can see a rainbow.

White light can be separated into many colors.

Main Idea and Details

What colors make white light?

Responding

KWL

What Did You Learn?

Science Test Practice

❶ **Which kind of energy lets us see things?**

Ⓐ heat

Ⓑ light

Ⓒ sound

2.e. (DOK 1)

❷ Where does Earth get most of its light from?

❸ Name three things in your home that make sound.

❹ You and your friend are swimming at the beach. He is under water, and you are above the water. A speedboat is coming. Which one of you will hear it first? Tell how you know.

KWL

What Did You Learn?

Science Test Practice

❶ **Circle the correct answer.**

❷ Earth gets most of its light from _____.

❸ Three things in my home that make sound are

_____

_____

❹ My friend will hear it first because

_____

_____

_____

Circle the correct answer.

1. You want to read a story. Which of these will you need?

   (A) light

   (B) music

   (C) snacks

   2.e. (DOK 1)

2. Why can you see a fire in the dark?

   (A) A fire is hot.

   (B) Light falls on a fire.

   (C) A fire gives off light.

   2.e. (DOK 1)

3. Look at the picture.

What is causing vibrations that make sound?

(A) rocks and wood

(B) bushes and hats

(C) violin and people

2.g. (DOK 2)

4. **Dolphins use echoes to help them find fish to eat. Where does the sound for the echo come from?**

(A) The fish makes vibrations.

(B) The water makes vibrations.

(C) The dolphin makes vibrations.

2.g. (DOK 2)

5. **Which set of matter would sound pass through most quickly?**

(A) oxygen, other gases

(B) desk, plastic plate, glass marble

(C) water, lemonade, iced tea, honey

2.g. (DOK 2)

6. **Look at the picture.**

Rainbows have many colors. Which sentence is true?

(A) Color is a property of rain.

(B) Color is a property of light.

(C) Color is a property of sound.

2.e. (DOK 1)

KWL

What Do You Know?

Talk with a partner.

List different plants you know.

What parts do these plants have?

_____

_____

_____

Plants Are Living Things

Contents

KWL

What Do You Want to Know?

What do you wonder about how plants grow?

Lesson Preview

VOCABULARY

living thing A thing that grows, changes, and needs air, food, and water. *(noun)*

nutrient A material in soil that helps a plant live and grow. *(noun)*

shelter A place where a living thing can be safe. *(noun)*

VOCABULARY ACTIVITY

Use Syllables

nutrient

Break the word **nutrient** into syllables.
Say each syllable aloud.
Clap once for each syllable.
How many syllables are in **nutrient**?

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

3.c. Identify the cause/effect relationships when basic needs of plants and animals are met and when they are not met. (DOK 1)

3.e. Investigate and explain the interdependence of plants and animals. (DOK 2)

1 How Are the Needs of Living Things Different?

A **living thing** is something that grows and changes.
Living things make other living things that are like them.
Plants and animals are living things.

Big trees need more water and room to grow than small flowers need.

All living things need air and food. They also need water and room to grow.

A large animal needs more air, food, water, and room than a small animal needs.

A large plant needs more air, food, water, and room than a small plant needs.

These flowers are living things.

1. Circle the things that living things need to grow.

2. A large plant needs _____ food, air, and room than a smaller plant.

3. Look at the pictures on these pages. What do some animals use as shelter?

_____

_____

Animals also need shelter.
A **shelter** is a place where a living thing can be safe.
A big animal needs a big shelter.
A small animal needs a small shelter.

A hummingbird is small.
It needs a small shelter.

Many animals use plants for shelter. Some animals use a hole in a tree for shelter.
Others find shelter under roots or leaves.
Some animals find shelter in the water.
Others find shelter under rocks and logs.
Shelters help keep animals from getting hurt.

An eagle needs a bigger shelter than a hummingbird.

4. Where do animals find shelter?

_____

_____

_____

I Wonder . . . Animals need shelter. Which animals find shelter under rocks or logs?

_____

Science Test Practice

Circle the correct answer.

5. What happens when plants do not get water?

(A) They grow.

(B) They die.

(C) There is no change.

3.c. (DOK 1)

What Plants Need

Plants do not move from place to place like animals do.

Plants must get everything they need where they grow.

These sunflowers are getting what they need to live.

Plants are living things.
They need air, food, water, and room to grow.
Plants that do not get what they need may die.

This plant is not getting enough water.

6. Look at the plant on this page. List what the plant needs to be healthy. Draw the healthy plant.

_____

_____

7. Why do plants need the Sun?

_____

_____

_____

8. Circle the things plants use to make their own food.

Directed Inquiry

Flip Chart p. 7

Record Needs

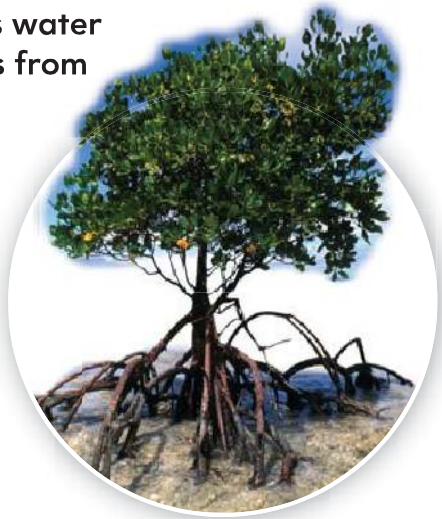
Observe a plant and an animal to learn about basic needs. Formulate questions about organisms.

1.a., 3.c.

Plants also need light from the Sun. Light from the Sun helps plants grow. Plants do not get food like other living things do.
Plants make their own food. They use light from the Sun, air, water, and nutrients.

A **nutrient** is a material in the ground that helps a plant live and grow.
Plants also get water from the ground.
Plants use the food that they make to grow and change.

The tree gets water and nutrients from the ground.



Main Idea

What do plants need to live?

Summary

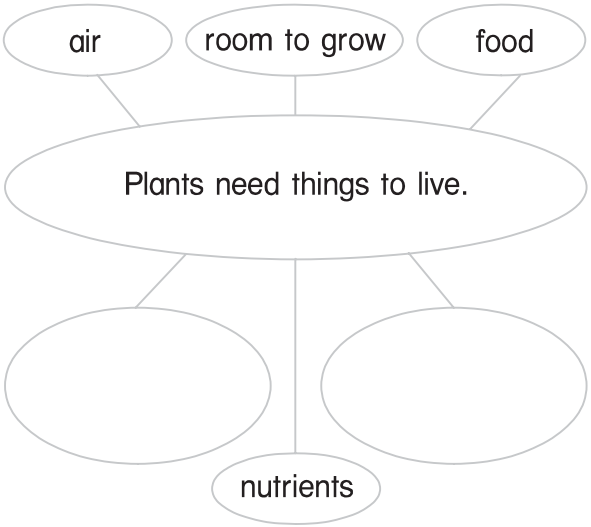
Living things need food, water, air, and room to grow.
What do plants get from the ground?

_____

_____

Main Idea

What do plants need to live?



Lesson Preview

VOCABULARY

flower The plant part where fruit and seeds form. *(noun)*

fruit The part of a flower that grows around a seed. *(noun)*

seed The part from which a new plant grows. *(noun)*

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

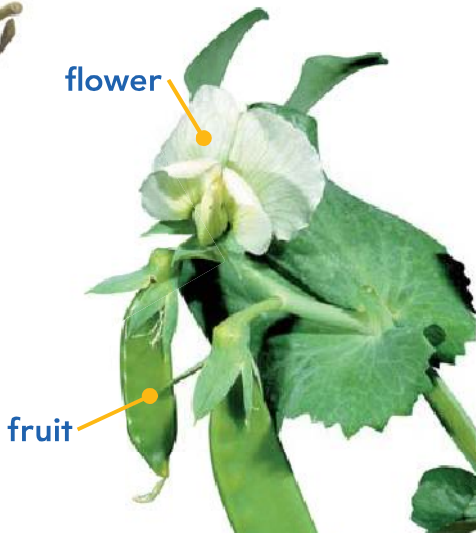
Plant parts (leaves, stems, roots, and flowers)

3.c. Identify the cause/effect relationships when basic needs of plants and animals are met and when they are not met. (DOK 1)

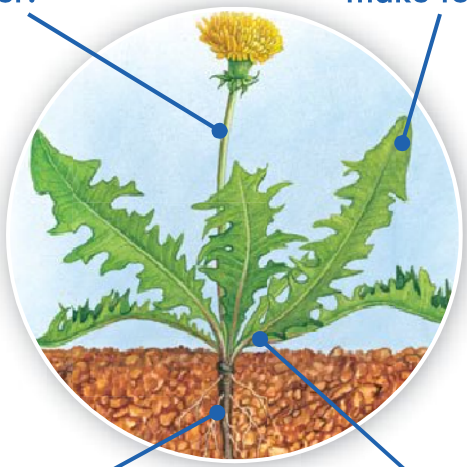
3.d. Compare the life cycles of plants and animals. (DOK 2)

2 How Do Plants Meet Their Needs?

A plant has many parts.
A plant's parts help it grow and change.
Some parts help a plant make new plants.
A **flower** is where fruit and seeds come from.
A **fruit** is the part that grows around a seed.
A **seed** is the part from which a new plant grows.



Some parts help a plant get food. First the parts help the plant get what it needs to make food. Then the parts help move the food through the plant.



1. List the parts of a plant.

_____

_____

Science Test Practice

Circle the correct answer.

2. A plant makes food. Where does the food go?

(A) from the root to the stem

(B) from the flower to the leaf

(C) from the leaf to the root

3.a. (DOK 2)

3. How do plants use their stems?

_____

_____

I Wonder . . . Why do some vines grow up tree trunks?

_____

_____

_____

Directed Inquiry

Flip Chart p. 8

Grow a Plant

Observe a plant to learn about its life cycle. Use a ruler to gather information.

1.c., 3.d.

How Plants Use Their Parts

All plants have roots, stems, and leaves.

The roots, stems, and leaves are not the same on every plant.

The trunk of a tree is a stem. It grows tall so leaves get light from the Sun.

The stem of a cactus stores water. Thorns on some stems keep animals away.

A rosebush has stems with thorns that keep some animals away.

Some plants have roots that spread out in the ground.
Their long roots can get water from all around.
Some trees have long roots.
Their roots help them live in many places.

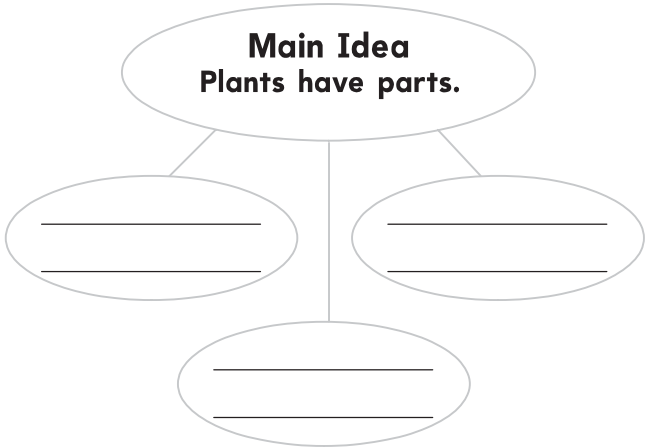
This water lily has a long stem. It goes all the way to the bottom of the pond.

Compare

How are all plants alike?

Summary

A plant's parts help it to grow and change. List the plant parts and their uses.



Compare

How are all plants alike?

VOCABULARY

cone A part of a nonflowering plant where seeds form. *(noun)*

fibrous root A root that has many thin branches. *(noun)*

taproot A root that has one main branch. *(noun)*

VOCABULARY ACTIVITY

Break It Apart

taproot

Write the two smaller words in **taproot.**

_____

_____

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)
Plant parts (leaves, stems, roots, and flowers)

3 How Can Plants Be Grouped?

There are many kinds of plants. Plants can be grouped by their parts.
One group of plants has flowers. Another group of plants has cones.

Flowers and Cones

A flower is where the fruit and seeds come from.
A **cone** is a part of a plant that has no flowers.
It is where the seeds come from.
The cone protects the seeds.

cones

1. One way to group plants is by their _____ or _____.

2. Draw a plant with flowers.
   Draw a plant with cones.

I Wonder . . . Plants can be grouped by their stems. What are other ways to group plants?

_____

_____

_____

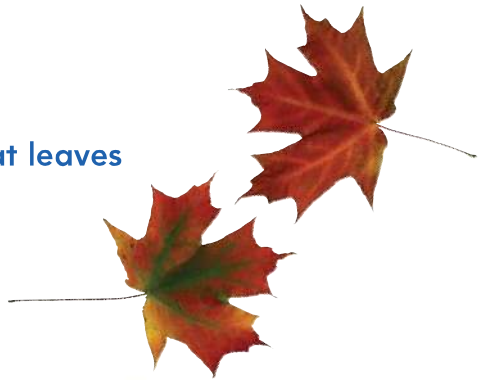
3. What is a stem that we might eat?

_____

4. Put an X on the stems shown on this page.

Plants can be grouped by their stems.
Many flowers and vegetables have soft, green stems.
Many bushes and trees have stems that are hard.
We eat the stems of some plants.
Broccoli is a stem that we eat.

Plants can be grouped by their leaves.
Many trees and small plants have wide, flat leaves.
Many trees with cones have leaves that look like needles.
Pine, fir, and spruce trees have these leaves.



wide, flat leaves

leaves that look like needles

Science Test Practice

Circle the correct answer.

5. You see a tree with leaves that look like needles. Where would you probably find the tree's seeds?

Ⓐ in a fruit
Ⓑ in a cone
Ⓒ in a flower

3.a. (DOK 2)

Express Lab

Use the Activity Card **Model How Leaves Work.**

3.a.

6. Circle the meaning of **taproot**.

7. Draw a plant with a taproot.

Kinds of Roots

Plants can be grouped by their roots. A **taproot** is a root that has one main branch.
We eat some roots, such as carrots.

taproot

A **fibrous root** is a root that has many thin branches.

fibrous root

Classify

What is one way that plants can be grouped?

Summary

Scientists group plants by their parts. How can you group plants by their roots?

Classify

What is one way that plants can be grouped?

Stems	Leaves

VOCABULARY

life cycle The series of changes that a living thing goes through as it grows. *(noun)*

seedling A young plant that grows from a seed. *(noun)*

VOCABULARY ACTIVITY

Use Pictures

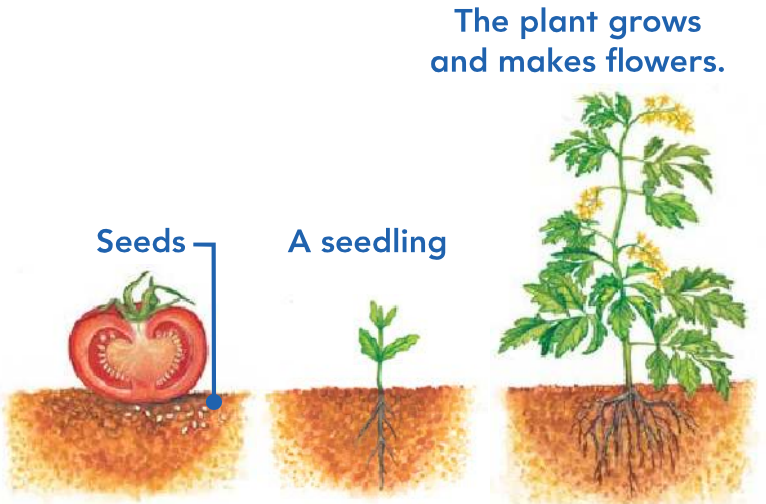
life cycle

Look at the pictures of the tomato plant shown on these pages.
What do you know about a **life cycle** from these pictures?

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)
Plant parts (leaves, stems, roots, and flowers)
3.d. Compare the life cycles of plants and animals. (DOK 2)

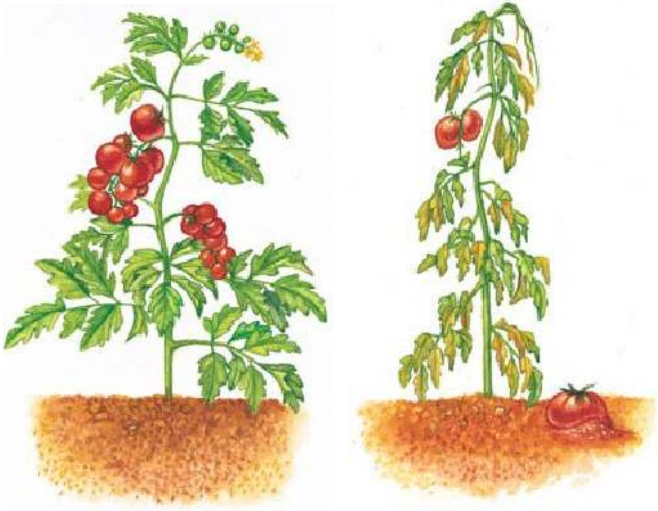
4 How Do Plants Change During Their Life Cycles?

All living things grow, change, and die.
The number of changes that a living thing goes through is its **life cycle**.
All plants are not the same.
They may have different life cycles.
Most plants start from a seed.
The seed sprouts when it gets what it needs.
The young plant is called a **seedling**.



The seedling grows and changes. It grows flowers or cones that make seeds.
New plants can grow from these seeds.
These plants will look like the plant that dropped the seeds.
The cycle of growing and changing starts again.

Flowers make fruit. Seeds grow inside the fruit. Then the plant dies. The seeds fall. They may grow into new plants.



I Wonder . . . Plants have life cycles. What happens after a plant makes fruit?

_____

_____

_____

Science Test Practice

Circle the correct answer.

What would happen if a tomato plant did not make flowers?

Ⓐ The plant would die.

Ⓑ The plant would not make seeds.

Ⓒ The plant would become a seedling.

3.d. (DOK 2)

Express Lab

Use the Activity Card **Order a Plant Life Cycle.**

Summary

Plants grow and change in different ways. How do tomato plants change?

_____

_____

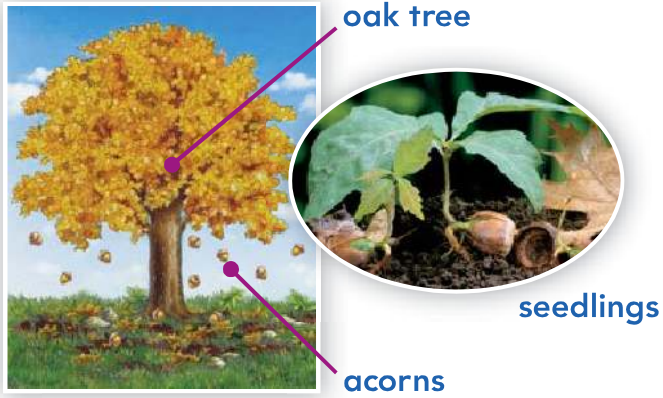
Sequence

When does a young plant sprout?

A young plant may sprout...

The Same but Different

Acorns are the fruit of an oak tree.
Acorns fall to the ground.
Then the seeds inside may grow new plants.
The seedlings may not be the same size or shape.
But the seedlings grow into the same kind of tree.



Sequence

When does a young plant sprout?

KWL

What Did You Learn?

Science Test Practice

Circle the correct answer.

❶ **What kind of plant will grow from the seed of a sunflower?**

Ⓐ pine tree

Ⓑ sunflower

Ⓒ tulip

3.d. (DOK 2)

❷ What four things do all living things need?

❸ Which kind of root has one main branch?

❹ How can you tell when a plant near your home is not getting what it needs?

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ Living things need _____, _____, _____, and _____.

❸ A _____ has one main branch.

❹ I know that the plant near my home is not getting what it needs because

_____

_____

Circle the correct answer.

1. **Which plant parts hold the seeds?**

   (A) flowers and leaves

   (B) fruit and roots

   (C) cones and fruit

   3.a. (DOK 2)

2. **Why can a cactus live in the desert?**

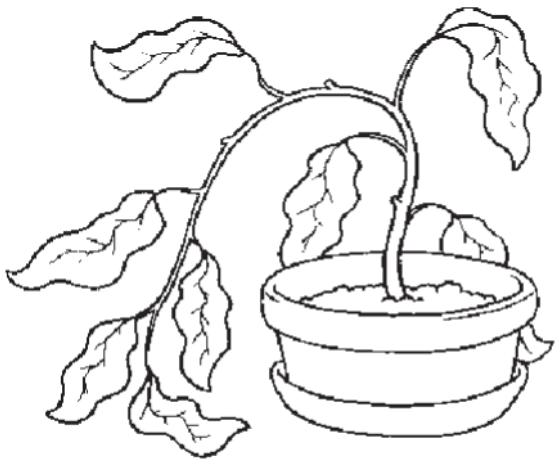
   (A) It does not need any water.

   (B) It is tall enough to get sunlight.

   (C) It has stems that can store water.

   3.a. (DOK 2)

3. **Look at the picture.**



Which need of this plant is <u>not</u> being met?

(A) water

(B) sunlight

(C) nutrients

3.c. (DOK 1)

4. **A peach falls to the ground. The seed from the peach grows into a new plant. The new plant makes fruit. Which type of fruit does it make?**

(A) apple

(B) peach

(C) strawberry

3.d. (DOK 2)

5. **Which of these describes a plant?**

(A) It needs shelter.

(B) It eats other plants.

(C) It makes its own food.

3.a. (DOK 2)

Look at the picture.

6. **Which animal needs are being met by this tree?**

(A) food and shelter

(B) air and room to grow

(C) water and room to grow

3.e. (DOK 2)

KWL

What Do You Know?

Talk with a partner.

Draw two animals.

Tell how they are different.

Animals Are Living Things

Contents

KWL

What Do You Want to Know?

What do you wonder about different types of animals?

VOCABULARY

cold-blooded Describes an animal that has to use its environment to help warm itself. *(adjective)*

invertebrate Animal without a backbone. *(noun)*

vertebrate Animal with a backbone. *(noun)*

warm-blooded Describes an animal that does not have to use its environment to help warm itself. *(adjective)*

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)
Animals (vertebrates or invertebrates, cold-blooded or warm-blooded)

1 How Can Animals Be Grouped?

Dogs, snakes, worms, and beetles are all animals.
How are animals grouped?
A **vertebrate** has a backbone.
Dogs and snakes are vertebrates.
An **invertebrate** does not have a backbone.
Worms and beetles are invertebrates.

Hippos and alligators have a backbone.

The praying mantis and coral shrimp do not have a backbone.

Turtles, snakes, and lizards are cold-blooded.

Cold-blooded animals have to use their environment to warm them. Cows, eagles, and people are warm-blooded.

Warm-blooded animals can stay warm even when their environment is cold.

This lizard sits in the sun to become warm. It is cold-blooded.

This bird can stay warm even when it is cold outside. It is warm-blooded.

Compare and Contrast

How are vertebrates and invertebrates different?

Summary

Animals can be classified by their different characteristics.

Science Test Practice

Circle the correct answer.

An animal with a backbone must sit in the sun to get warm. What kind of animal is it?

Ⓐ cold-blooded animal

Ⓑ warm-blooded animal

Ⓒ invertebrate

3.a. (DOK 2)

Compare and Contrast

How are vertebrates and invertebrates different?

Vertebrates	Invertebrates
_____	_____
_____	_____

Lesson Preview

VOCABULARY

bird An animal that has feathers and wings. *(noun)*

mammal An animal that has fur or hair and makes milk to feed its babies. *(noun)*

VOCABULARY ACTIVITY

Use Pictures

mammal

Look at the picture of the **mammal** on this page.
What do you know about this **mammal** from the picture?

_____

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

2 What Are Mammals and Birds?

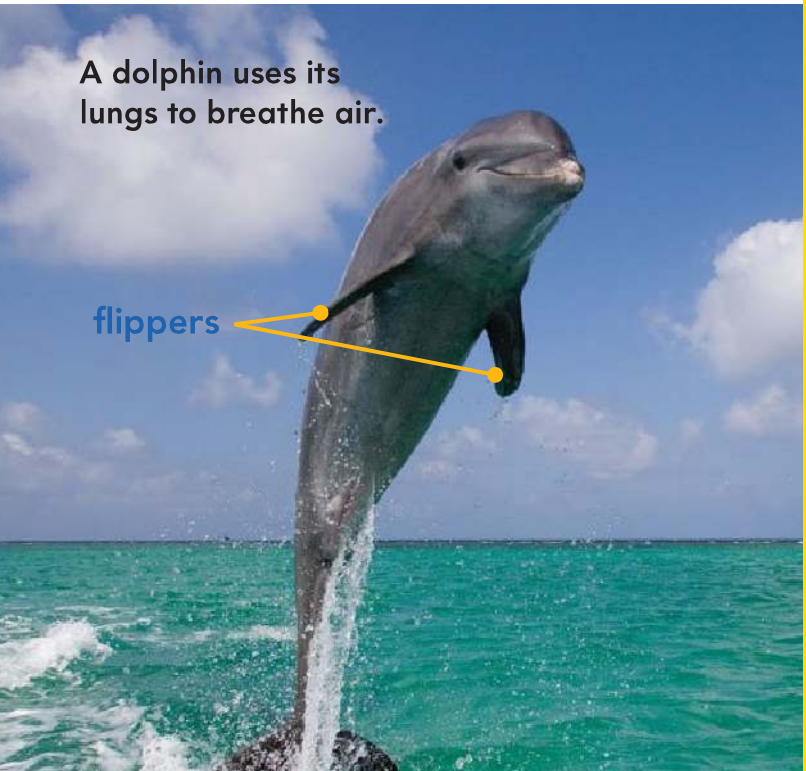
Animals can be grouped by their body parts.
They can also be grouped by how they live.

Mammals

A **mammal** is an animal that has fur or hair.
A mammal makes milk to feed its babies.
Most mammal babies grow inside their mothers.
All mammals use lungs to breathe.

A bear is a mammal. Its fur keeps it warm and dry.

Some mammals are different.
Dolphins and whales are mammals.
They live in the ocean.
They have flippers instead of legs.
They use their flippers and tails to swim.



1. Fill in the graphic organizer.

What are some traits of mammals?

A mammal has _____ ___.	Most mammal babies grow _____ their mothers.	Mammals use _____ to breathe.

2. Use the words to fill in the blanks.

paws **hands** **flippers**

Bears have _____.

Humans have _____.

Dolphins have _____.

Directed Inquiry

Flip Chart p. 9

Measure Handspans

Find out each classmate's handspan. Make a bar graph and a pictograph.

1.c., 1.e., 3.a.

3. Look at the picture. Find the bird's wings. Place an X on each wing.

4. Underline the sentences that tell how feathers help a bird.

I Wonder . . . Do birds have hair or fur?

_____

_____

_____

_____

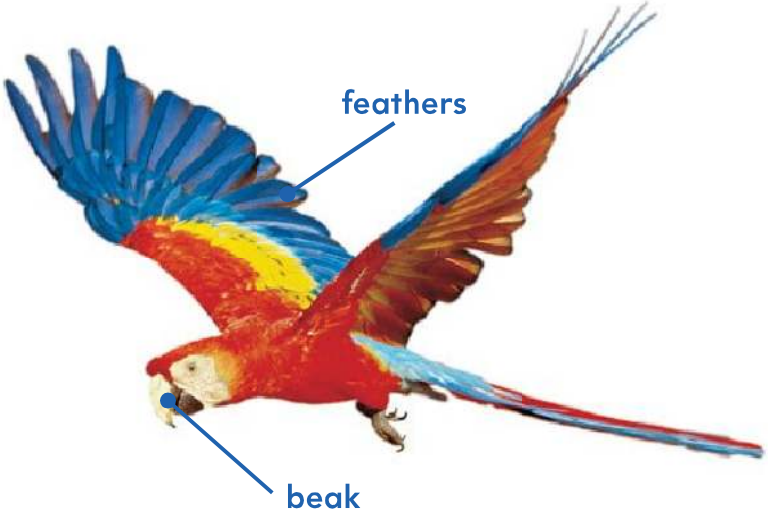
Express Lab

Use the Activity Card **Model Feathers.**

1.a., 3.a.

Birds

A **bird** is an animal that has feathers and wings.
Feathers keep a bird warm and dry.
Feathers help a bird fly.
A bird has two legs and a beak.
It uses lungs to breathe.
Baby birds come out of eggs.



Feathers on a bird's wings help it fly.

Some birds are not able to fly.
Ostriches are not able to fly.
Penguins are not able to fly.
A penguin uses its wings to help it swim.

An ostrich is a bird that cannot fly.

Classify

What kind of animal has fur or hair and makes milk to feed its young?

Summary

Mammals are animals that have hair or fur. Birds have feathers and wings. How can you tell an ostrich is a bird?

Science Test Practice

Circle the correct answer.

5. Juan explored a cave with his dad. They saw a hairy animal fly over them. What was it?

Ⓐ bird

Ⓑ lizard

Ⓒ mammal

3.a. (DOK 2)

Classify What kind of animal has fur or hair and makes milk to feed its young?

Lesson Preview

VOCABULARY

amphibian An animal that lives part of its life in water and part of its life on land. *(noun)*

fish An animal that lives in water and has gills. *(noun)*

reptile An animal that is covered with dry scales. *(noun)*

VOCABULARY ACTIVITY

Use Syllables

amphibian

Break the word **amphibian** into syllables.
Say each syllable aloud.
Clap once for each syllable.
How many syllables are in **amphibian**?

_____

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

3 What Are Reptiles, Amphibians, and Fish?

Lizards and turtles are reptiles. Crocodiles and snakes are reptiles, too.

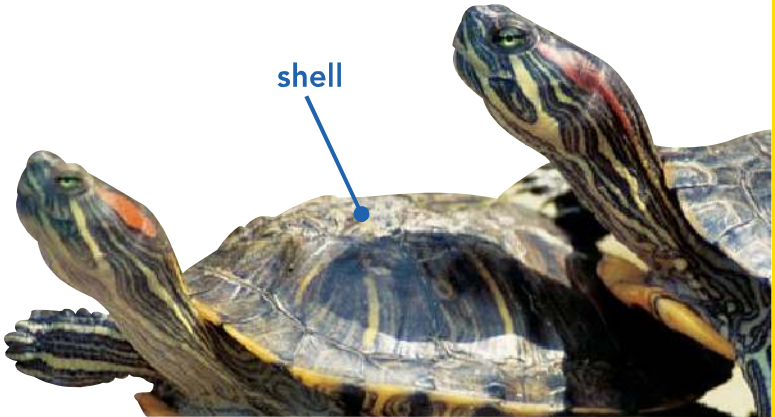
Reptiles

A **reptile** is an animal that is covered with dry scales.
All reptiles use lungs to breathe.
Most reptiles have four legs.
Reptiles get heat from the Sun and other warm things.

A lizard uses heat from the Sun to get warm.

Most reptiles lay eggs.
Baby reptiles come out of the eggs.
The babies look like their parents.
A baby reptile can care for itself.
Reptiles have body parts that help them meet their needs.
Some lizards have colors that help them hide from danger.

A turtle's hard shell helps keep it safe from other animals.



1. Draw a picture of a reptile. Write a sentence about your picture.

I Wonder . . . Are reptiles cold-blooded or warm-blooded?

2. Circle the sentence that tells where amphibians live.

Science Test Practice

Circle the correct answer.

3. Which animal hatches from an egg and looks like its parent?

(A) alligator

(B) dolphin

(C) frog

3.a. (DOK 2)

Express Lab

Use the Activity Card **Act Out an Animal.**

1.a.

Amphibians

An **amphibian** is an animal that lives part of its life in water and part of its life on land.

Frogs, toads, and salamanders are amphibians.

They have wet skin.

grown tree frog

baby tree frogs

Most amphibians lay eggs in water.
The babies use gills to breathe.
They use lungs to breathe when they grow up.
Baby amphibians look different from their parents.
They change as they grow up.

I Wonder . . . Why do the bodies of amphibians change as they grow?

_____

_____

_____

_____

_____

4. Use the graphic organizer to show how a lizard and a tree frog are the same and different.

Lizard has	Both have	Tree Frog has
_____	_ legs	_____
_____		_____
_____		

5. Circle the part of the fish that helps it live in water.

6. Use the graphic organizer to tell about fish.

Traits of Fish

live in _____	use ___ to take in oxygen	use ___ and ___ to move	most are covered with _____

Directed Inquiry

Flip Chart p. 10

Compare Animals

Look at two or more animal traits to compare how they look and move.

1.b., 3.a.

Fish

A **fish** is an animal that lives in water and has gills.
Its gills take in oxygen from the water.
Most fish are covered with scales.
They also have fins.
Fins and tails help fish move.
Baby fish come out of eggs.

Freshwater fish live in ponds, streams, or lakes.
Rainbow trout are freshwater fish.
Saltwater fish live in the ocean.
Sailfish and most angelfish are saltwater fish.


rainbow trout


angelfish

Compare and Contrast

How is a fish different from an amphibian?

Summary

You can group animals as reptiles, amphibians, and fish. Draw an animal in the box. Tell which kind of animal it is. Circle the body parts that help you know the kind of animal it is.

Compare and Contrast

How is a fish different from an amphibian?

Fish	Both	Amphibian

KWL

What Did You Learn?

Science Test Practice

1. Circle the correct answer.

2. _____

   _____

   _____

3. A _____ has feathers.

4. I know it is a mammal because

   _____

   _____

KWL

What Did You Learn?

Science Test Practice

1. **You see an animal with feathers. Which can you tell about this animal?**

   (A) It is cold-blooded.

   (B) It is warm-blooded.

   (C) It is an invertebrate.

3.a. (DOK 2)

2. List three kinds of animals.

3. Which kind of animal has feathers?

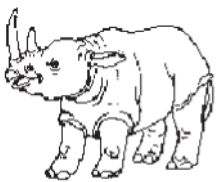
4. You look out your window and see an animal. You know it is a mammal. How might you know?

Draw four types of animals. Label them.

Circle the correct answer.

1. Which of these has a backbone?

(A) 

(B) 

(C) 

3.a. (DOK 2)

2. You see a cold-blooded animal that hatched from an egg. What could the animal be?

(A) bird

(B) mammal

(C) reptile

1.b., 3.a. (DOK 2)

3. Which two things do all bears and dolphins both have?

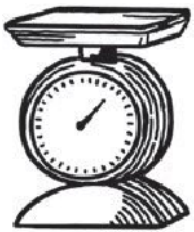
(A) fins and eyes

(B) hair and lungs

(C) tails and legs

1.b., 3.a. (DOK 2)

4. **Which tool would you use to measure the length of a feather?**

Ⓐ 

Ⓑ 

Ⓒ 

1.c. (DOK 1)

5. **You see an animal that came from an egg and spends its whole life in water. Which type of animal is it?**

Ⓐ amphibian

Ⓑ bird

Ⓒ fish

3.a. (DOK 2)

6. **You are putting animals into groups. One animal has wings and can fly. It also has fur. Which group does this animal belong to?**

Ⓐ birds

Ⓑ fish

Ⓒ mammals

1.b., 3.a. (DOK 2)

KWL

What Do You Know?

Talk with a partner.

Make a list of animals that you know.

Basic Needs and Life Cycles of Animals

Contents

KWL

What Do You Want to Know?

What do you wonder about animals?

VOCABULARY

adaptation A body part or action that helps a living thing meet its needs where it lives. *(noun)*

VOCABULARY ACTIVITY

Use Words

adaptation

Some words on this page help you know what **adaptation** means.

Circle them.

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

3.c. Identify the cause/effect relationships when basic needs of plants and animals are met and when they are not met. (DOK 1)

1 How Do Animals Meet Their Needs?

Animals need food, water, air, and shelter to live.

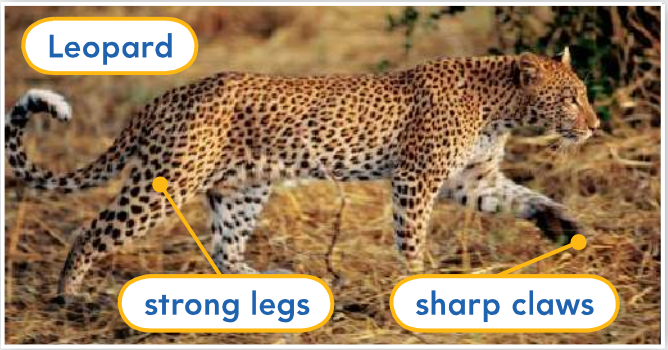
If animals cannot get what they need, they may die.

An **adaptation** is a body part or action that helps a living thing meet its needs where it lives.

Meeting Needs on Land

Some adaptations help animals meet their needs on land.

Strong legs and sharp claws are two kinds of adaptations.

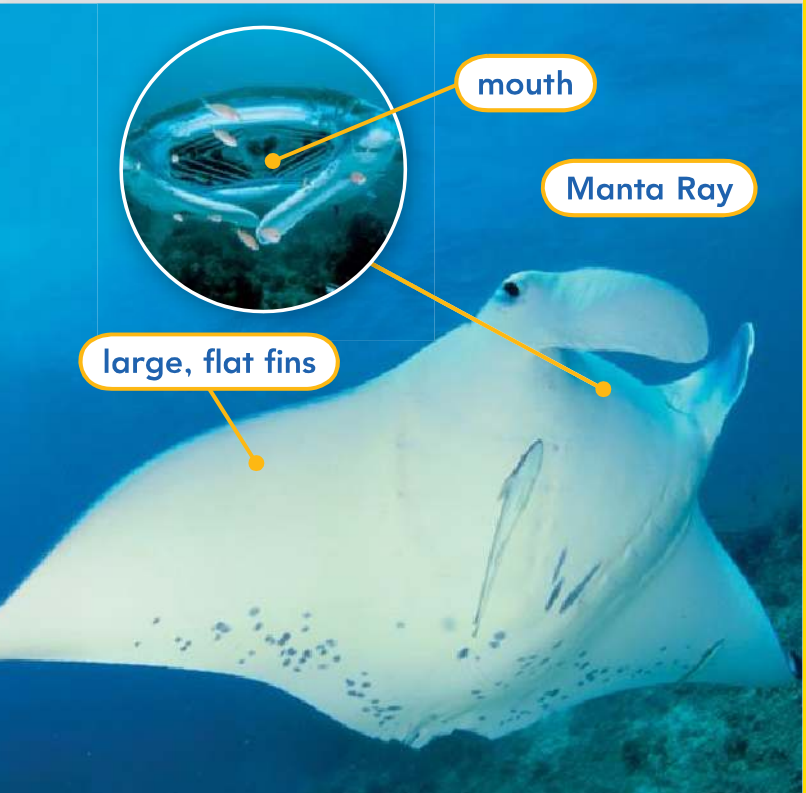


Meeting Needs in Water

Other adaptations help animals meet their needs in water.

Fins or flippers help animals move in water.

Special mouth parts help animals eat.



1. Describe one adaptation a giraffe has.

_____

_____

Science Test Practice

Circle the correct answer.

2. Some animals swim in water. Which adaptation helps these animals?

Ⓐ fins

Ⓑ strong legs

Ⓒ wings

3.c. (DOK 1)

ExpressLab

Use the Activity Card **Model an Adaptation.**

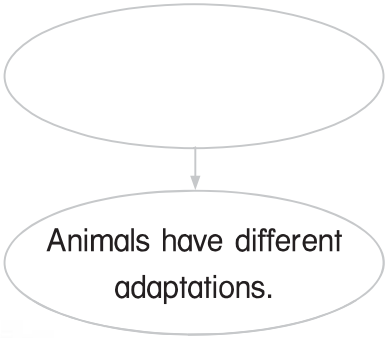
1.a., 3.a.

Summary

Animals have adaptations that help them stay alive. What adaptations does a bird have?

Draw Conclusions

Why do different animals have different adaptations?



Directed Inquiry

Flip Chart p. 11

Model Bird Beaks

Formulate questions about how birds meet their needs.

1.c., 3.c.

Meeting Needs in Air

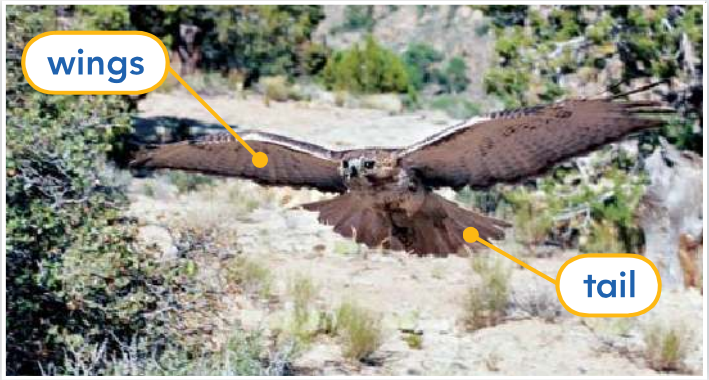
Birds have adaptations that help them fly.

A bird's feathers help it move and fly.

Its tail helps, too.

Birds also have hollow bones that are strong and light.

Red-tailed Hawk



Draw Conclusions

Why do different animals have different adaptations?

How Do People Meet Their Needs?

2

People have the same needs as other living things.
Your body has parts that help you meet your needs.
Your brain, bones, and muscles work together to meet your needs.

This girl's brain, muscles, and bones help her eat an apple slice.

VOCABULARY

muscular system The body system that helps the body move and do other jobs. *(noun)*

nervous system The body system that senses what is around the body and controls all the parts of the body. *(noun)*

skeletal system The body system that holds up the body, gives it shape, and protects soft body parts. *(noun)*

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

3.b. Describe the human body systems with their basic functions and major organs (e.g., brain-nervous, bones-skeletal, muscles-muscular). (DOK 1)

1. Circle the brain in the picture on this page.

2. What is one body part your brain sends messages to?

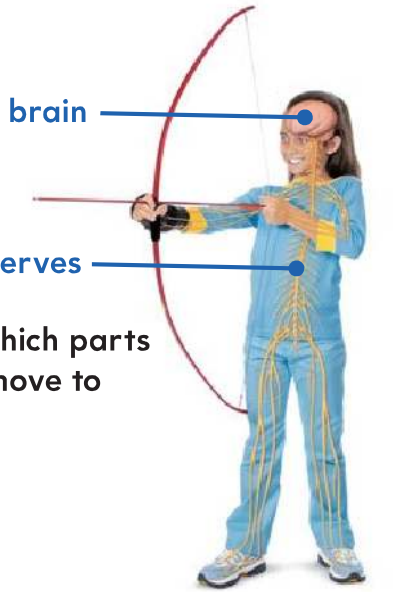
_____

_____

3. Circle the words that tell what your brain does.

Nervous System

Your **nervous system** is made up of your brain and nerves.
Nerves sense the world around you.
Your brain lets you think, remember, and have feelings.
Your nervous system sends messages to your muscles to make them move.



Your brain tells which parts of your body to move to shoot an arrow.

Muscular System

Your muscles make up your **muscular system**.

Your muscular system moves your body and helps it do other jobs.

Your muscular system helps your body move by pulling your bones.

Heart muscles help pump blood through your body.

The picture shows some of the muscles in your body.

4. How do muscles help your body move?

_____

_____

5. Circle one of the muscles in the picture on this page.

Science Test Practice

Circle the correct answer.

6. How do your muscles make your body move?

Ⓐ They twist your bones.

Ⓑ They push your bones.

Ⓒ They pull your bones.

3.b. (DOK 1)

Summary

The human body has systems that help people meet their needs.

Circle some bones that help protect parts of your body.

Main Idea

How do some of your body systems help you meet your needs?

nervous system	muscular system	skeletal system
_____ _____ _____ _____ _____	helps move the body and pumps blood through the body	_____ _____ _____ _____ _____ _____ _____

Skeletal System

Bones make up your **skeletal system**. Your skeletal system holds up your body and gives it shape.

The skeletal system also protects soft parts of the body.

Ribs protect your heart and lungs.

Your skull protects your brain.

Your bones help you stand up straight!

Main Idea

How do some of your body systems help you meet your needs?

Which Baby Animals Look Like Their Parents?

3

All living things grow.
All living things change.
All living things reproduce.
When living things **reproduce**, they make more living things of the same kind.
Things that are not living do not reproduce.

Lesson Preview

VOCABULARY

offspring The group of living things that come from the same living thing. *(noun)*

reproduce To make more living things of the same kind. *(verb)*

VOCABULARY ACTIVITY

Break It Apart

offspring

Write the two smaller words in **offspring.**

_____

_____

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

3.d. Compare the life cycles of plants and animals. (DOK 2)

1. Living things come from _____

_____.

2. Draw a line to match the parent with its offspring.

dog	fawn
deer	kitten
cat	foal
horse	puppy

All living things come from other living things.

Offspring are the group of living things that come from the same living thing.

Children are the offspring of their parents.

Kittens are the offspring of their parents.

Kittens are all young cats.
Kittens born together are the same in some ways.
They are different in some ways, too. Their fur can be different colors.

3. List three ways one of the kittens looks like its parent.

_____

_____

_____

4. List three ways the kittens look different from each other.

_____

_____

_____

I Wonder . . . Birds are hatched from eggs. How does a baby bird change as it grows?

_____

_____

_____

Familiar Life Cycles

Different kinds of animals grow in different ways.
Their life cycles are different.
Birds have young that look like their parents.

Life Cycle of a Bird

A mother bird lays eggs. A baby bird grows inside each egg.

A baby comes out of the egg. A parent feeds it.

The young bird grows up. It can reproduce.

The baby bird gets new feathers as it grows.

Science Test Practice

Circle the correct answer.

5. How are a bird life cycle and a plant life cycle the same?

(A) Birds and plants both have flowers.

(B) Birds and plants both lay eggs.

(C) Birds and plants both have offspring.

3.d. (DOK 2)

6. How may the parent bird take care of its offspring?

7. How does a baby mouse change as it grows?

_____

_____

_____

8. Circle the adult mice shown on these pages.

Directed Inquiry

Flip Chart p. 12

Match Animals

Compare and sort young animals with adult animals.

1.a., 3.d.

Mice have young that look like their parents, too.

Life Cycle of a Mouse

A mother mouse gives birth to baby mice.

The mother mouse makes milk for her babies. The babies drink the milk.

The young mouse grows up.
It can reproduce.

The babies
grow more fur.
They get bigger.

Compare and Contrast

How is the life cycle of a bird different from that of a mouse?

Summary

Animals grow and change during their life cycles. Many animals look like their parents. What baby animals do you know that look like their parents?

Compare and Contrast

How is the life cycle of a bird different from that of a mouse?

Bird	Mouse

VOCABULARY

larva The young stage in the life cycle of some animals, such as butterflies. *(noun)*

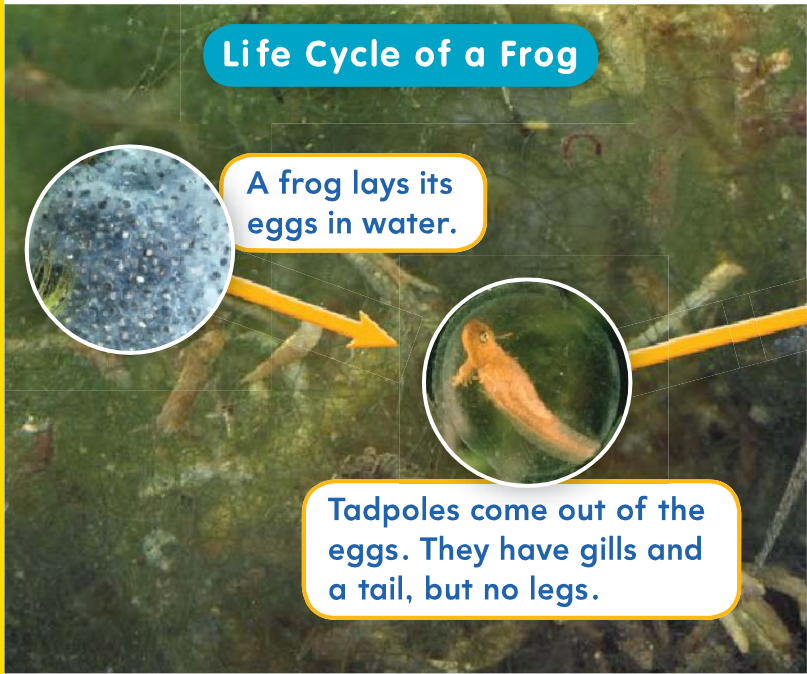
pupa The stage in the life cycle of some animals, such as a butterfly, when it goes through many changes. *(noun)*

3.a. Describe and categorize the characteristics of plants and animals. (DOK 2)

3.d. Compare the life cycles of plants and animals. (DOK 2)

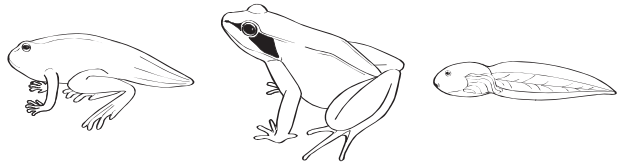
4 Which Baby Animals Do Not Look Like Their Parents?

Some baby animals do not look like their parents.
Young amphibians look different from their parents.
When they grow up, they will look like their parents.



A frog is an amphibian.
When frogs come out of eggs, they have body parts that help them live in water.
Then they grow parts that help them live on land.
Parts that they needed to live in water disappear.
When they grow up, they will look like their parents.

1. Number the correct order of the life cycle of a frog.



_____ _____ _____

2. Compare an adult frog to a young frog.

_____

_____

_____

_____

Express Lab

Use the Activity Card **Measure How a Frog Changes.**

1.c., 3.d.

3. Circle the larva on this page.

4. How does this insect change form as it grows?

_____

_____

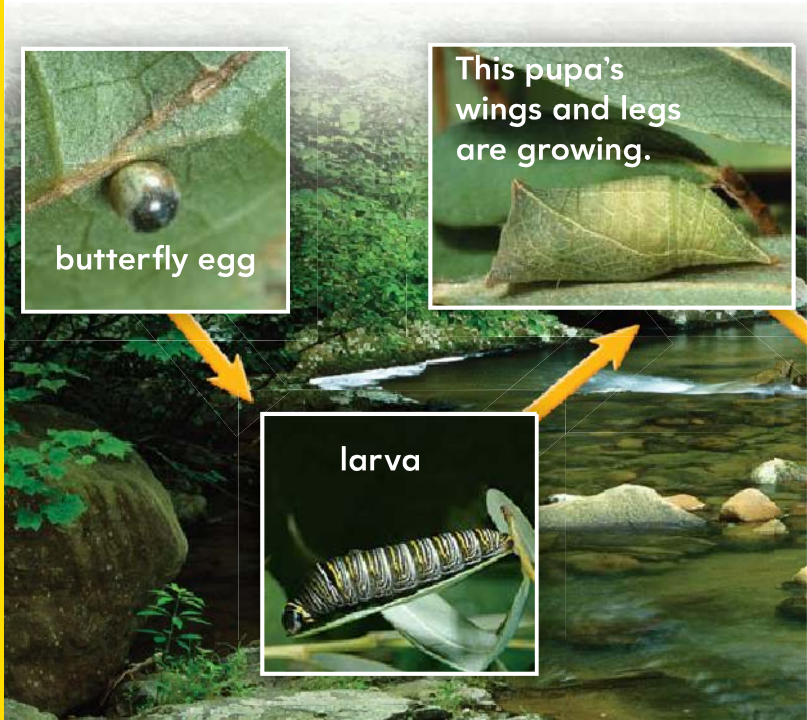
_____

_____

_____

Life Cycle of a Butterfly

Butterflies belong to an animal group called insects.
Most insects change form as they grow.
A butterfly lays eggs on a plant.
A larva comes out of an egg.
A **larva** looks like a worm.
The larva eats the plant.



A larva grows and turns into a pupa. A **pupa** is when the insect changes form. A pupa does not eat.

A butterfly lives for several weeks. It lays eggs. Then a new cycle starts.

Science Test Practice

Circle the correct answer.

5. Which stage in the butterfly life cycle is most like the seed stage in a plant life cycle?

(A) adult butterfly

(B) egg

(C) larva

3.d. (DOK 2)

I Wonder . . . Frogs and butterflies hatch from eggs. The offspring look different from their parents.

What animals that hatch from eggs look like their parents?

6. A larva is one stage in the life cycle of a dragonfly.

How is the larva of a dragonfly different from the larva of a butterfly?

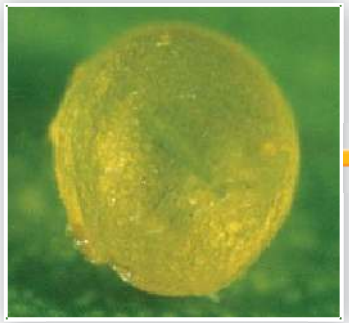
_____

_____

7. Circle the parts a dragonfly uses to fly.

Life Cycle of a Dragonfly

A dragonfly is an insect.
It changes during its life cycle, too.
A dragonfly lays eggs in or near the water.
The larva uses gills to breathe.
It changes its skin as it grows.



egg

larva

It grows parts to help it live on land.
It grows parts to fly in the air.
It comes out of the water.
It is now a dragonfly.

Sequence

What happens to a frog after parts for living on land form?

Summary

Animals grow and change during their life cycles. Frogs and butterflies do not look like their parents when they are born. What other animals do not look like their parents when they are born?

_____

_____

Sequence

What happens to a frog after parts for living on land form?

A frog grows legs and lungs.

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ A dragonfly's life cycle _____

_____

❸ Cat offspring are alike _____

_____

Cat offspring are different _____

_____

❹ A frog _____

_____

_____

_____

KWL

What Did You Learn?

Science Test Practice

❶ Which body part lets you think?

Ⓐ brain

Ⓑ muscles

Ⓒ bones

3.b. (DOK 1)

❷ How is a dragonfly's life cycle different from a butterfly's life cycle?

❸ How are cat offspring alike and different?

❹ How are the life cycles of a frog and a butterfly different?

Draw the life cycles of one plant and one animal.

Circle the correct answer.

1. **Which body system protects your heart and lungs?**

   (A) muscular system

   (B) nervous system

   (C) skeletal system

   3.b. (DOK 1)

2. **An eagle gets food, water, shelter, and air. Which will probably happen?**

   (A) The eagle will live.

   (B) The eagle will die.

   (C) The eagle will not learn how to fly.

   3.c. (DOK 1)

3. **Which of these shows the stage when plants and chickens can each have offspring?**

   (A) 

   (B) 

   (C) 

   3.a., 3.d. (DOK 2)

4. **Which does an animal need to live?**

Ⓐ leaves

Ⓑ light

Ⓒ water

3.c. (DOK 1)

5. **Which stage of a bird life cycle and a butterfly life cycle are the same?**

Ⓐ egg stage

Ⓑ pupa stage

Ⓒ larva stage

3.a., 3.d. (DOK 2)

6. **Look at the picture.**

This is part of which body system?

Ⓐ muscular system

Ⓑ nervous system

Ⓒ skeletal system

3.b. (DOK 1)

KWL

What Do You Know?

List environments you know.

Pick one environment.

What kind of plants and animals live there?

Environments

Contents

KWL

What Do You Want to Know?

What do you wonder about environments?

VOCABULARY

environment All of the living and nonliving things around a living thing. *(noun)*

habitat The part of an environment where a plant or an animal lives. *(noun)*

VOCABULARY ACTIVITY

Use Syllables

environment

Break the word **environment** into syllables.

Say each syllable out loud.

How many syllables are in the word **environment?**

3.c. Identify the cause/effect relationships when basic needs of plants and animals are met and when they are not met. (DOK 1)

3.e. Investigate and explain the interdependence of plants and animals. (DOK 2)

1 What Makes Up an Environment?

All the living and nonliving things around a living thing make up an **environment**.

Plants and animals are living things.
Soil and water are nonliving things.
Rocks and air are nonliving things.

The world has many kinds of environments.
Different plants and animals live in each one.
They are adapted to the environment where they live.
Tundra is cold and dry.
Plants grow low to the ground to be safe from the wind.

1. List the living and nonliving things in an environment.

Living	Nonliving

2. Describe tundra.

_____

_____

_____

Directed Inquiry

Flip Chart p. 13

Living or Nonliving

Observe living things to see how they depend on their environment.

1.a., 1.c., 3.c.

I Wonder . . . Rain forests are wet environments. Which living things might live in a rain forest?

_____

_____

_____

3. What nonliving things are found in a rain forest?

_____

_____

_____

_____

An environment can be hot or cold. It can be wet or dry.
Some environments have many trees and plants.
A rain forest is a warm and wet place.
It has many kinds of plants.

Other environments have only a very few kinds of plants.
A prairie is hot in the summer.
It is cold in the winter.

4. Circle the words that describe the prairie.

5. Draw an animal that lives in a prairie environment.

I Wonder . . . What might happen if an animal cannot meet its needs?

_____

_____

_____

6. Why does a fish live in a water habitat?

_____

_____

_____

_____

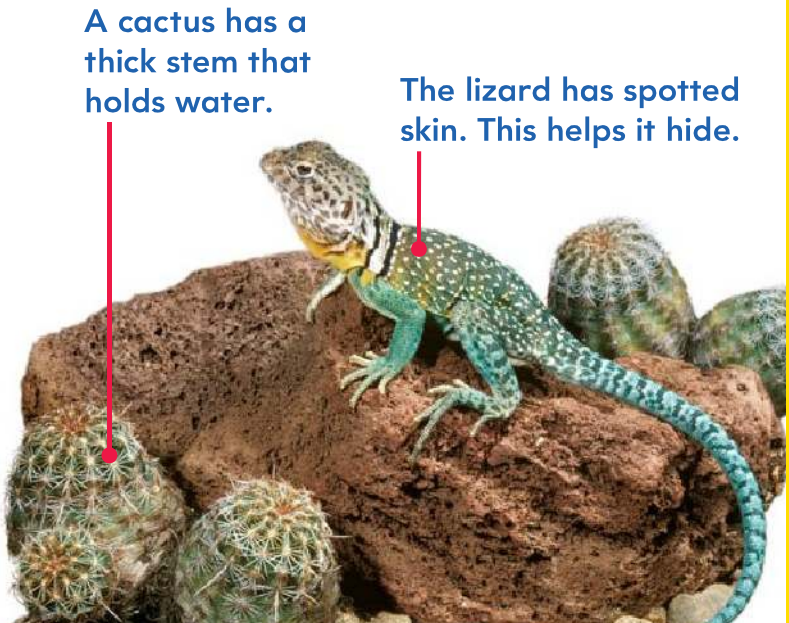
Meeting Needs

Living things will keep living if they get what they need. Different plants and animals live in different environments.

A **habitat** is the part of an environment where a plant or an animal lives.

A fish lives in a water habitat.

It is hot in a desert.
Animals find shelter under rocks.
Animals find shelter under the ground.
They look for food at night, when it is cool.
Many desert animals get water from the foods they eat.



Science Test Practice

Circle the correct answer.

7. Where do some desert animals find shelter?

(A) in a forest
(B) in an ocean
(C) under rocks

3.c. (DOK 1)

8. Draw a desert environment. Show living and nonliving things found there.

9. Draw an animal.
Label the body part that it uses to get food.

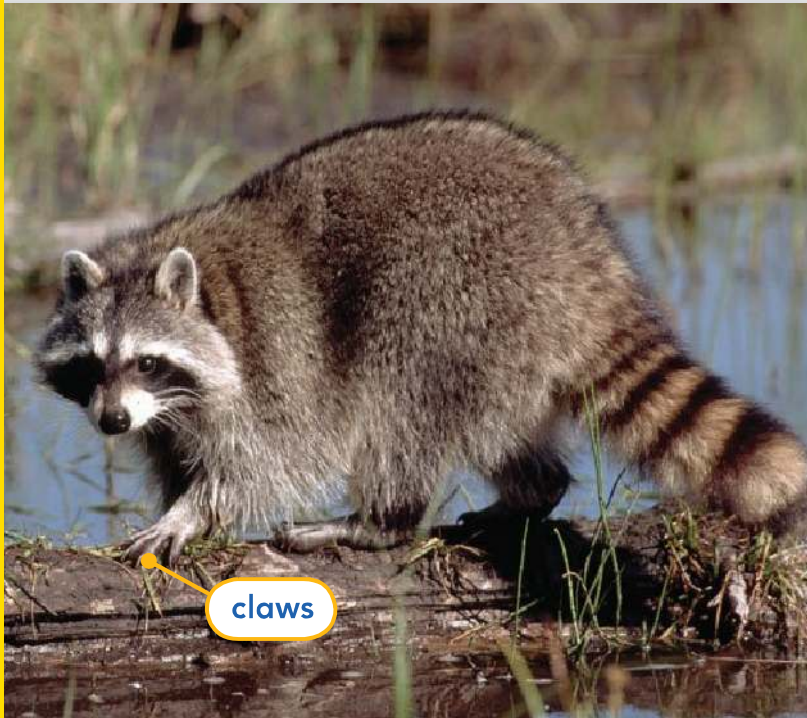
Express Lab

Use the Activity Card **Describe a Habitat.**

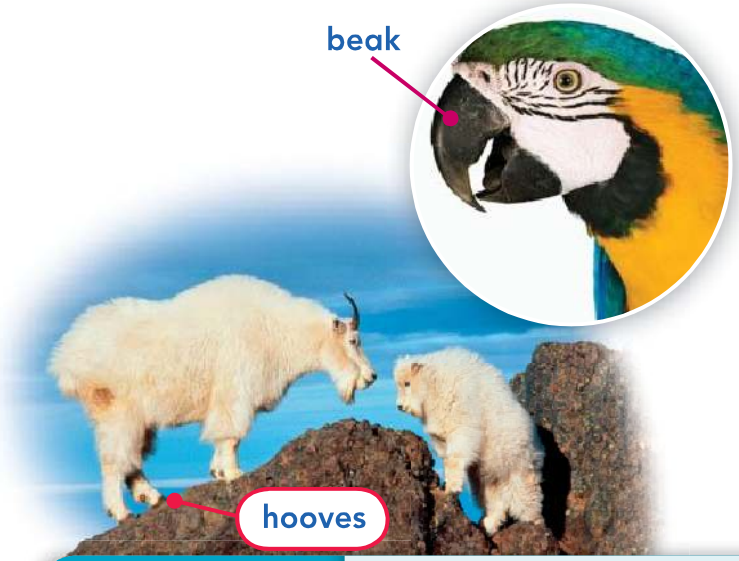
3.e.

Plants have parts that help them live in their habitats.
Animals do, too.
Some parts help them stay safe.
Other parts help them get food and water.

Raccoons use long, sharp claws to catch food.



This bird lives in a rain forest.
It has a large beak.
The beak helps the bird get food.
These goats live in the tundra.
Their hooves help them climb
the rocks.



Main Idea

What are three different kinds of environments?

Summary

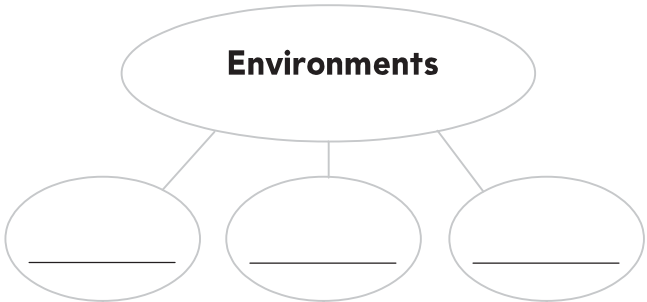
Living things get what they need from their environment.
How do birds get what they need from a rain forest?

_____

_____

Main Idea

What are three different kinds of environments?



VOCABULARY

energy The ability to cause change. *(noun)*

food chain The order in which energy passes from one living thing to another. *(noun)*

food web A model that shows how different food chains are related. *(noun)*

VOCABULARY ACTIVITY

Use Pictures

food chain

Turn the page to look at the pictures of a **food chain.**

What do you know about a **food chain**?

_____

_____

3.e. Investigate and explain the interdependence of plants and animals. (DOK 2)

Herbivore, carnivore, or omnivore

Predator-prey relationships

2 How Do Plants and Animals Get Energy?

You use energy when you run or play.

Energy is the ability to cause change.

Living things get energy from food.

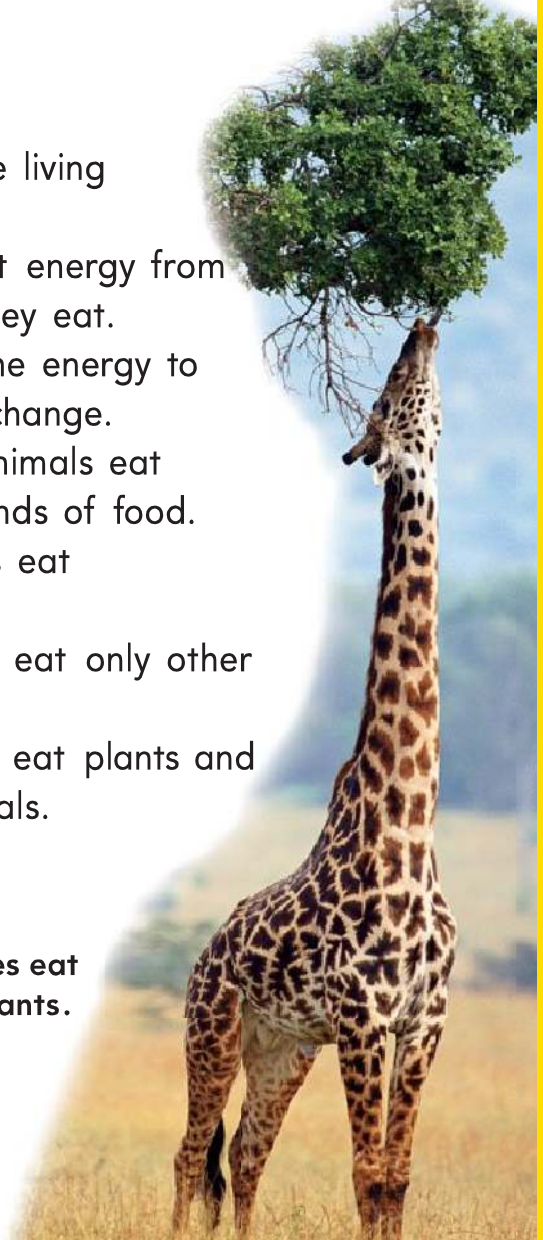
Plants are living things.

Plants use sunlight to make food.

The food gives them energy to grow and change.

Young wasps get energy by eating the hornworm.

Animals are living things, too.
Animals get energy from the food they eat.
They use the energy to grow and change.
Different animals eat different kinds of food.
Herbivores eat only plants.
Carnivores eat only other animals.
Omnivores eat plants and other animals.



Giraffes eat only plants.

I Wonder . . . Some animals eat both other animals and plants. What animals eat only plants?

_____

_____

1. Animals get energy from _____

_____

2. Use the words below to fill in the blanks.

herbivore **carnivore** **omnivore**

An animal that eats only other animals is a _____.

An _____ eats plants and other animals.

An _____ eats only plants.

3. Why is the Sun important in this food chain?

_____

_____

_____

_____

_____

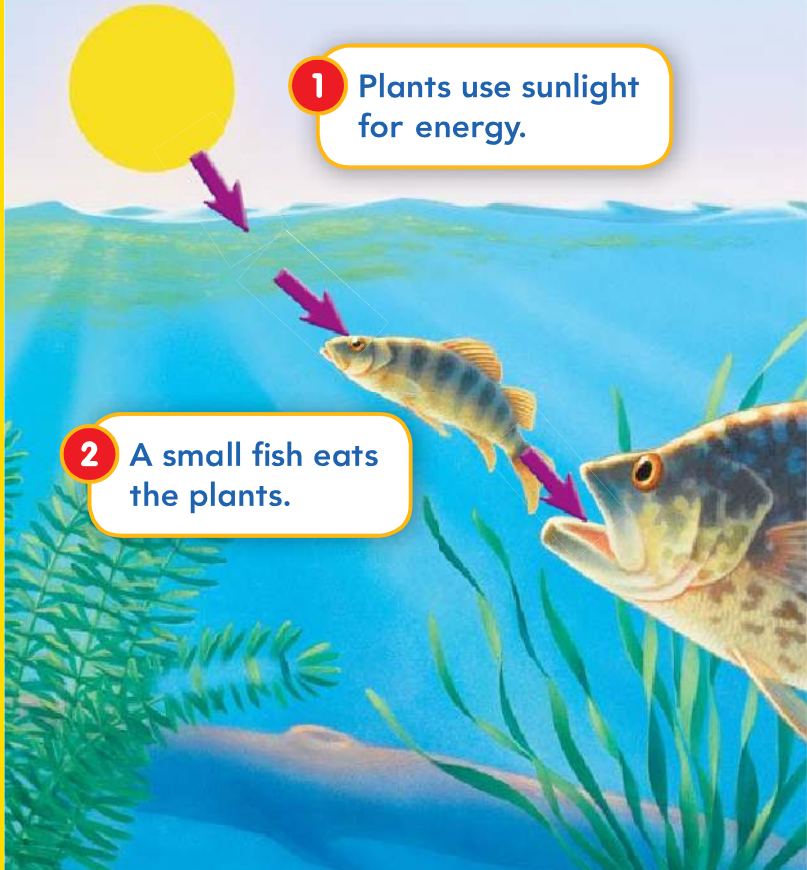
4. What might small fish eat?

_____

_____

Food Chains

A chain is made of parts that are linked together.
Plants and animals are linked by the energy they use to live.



A **food chain** shows how energy moves from one living thing to another.

In a food chain some animals are eaten.

The animal that is eaten is called **prey**.

The animal that eats it is called a **predator**.

Science Test Practice

Circle the correct answer.

5. How does a wolf get energy?

Ⓐ by eating other animals

Ⓑ by drinking water

Ⓒ by breathing air

3.e. (DOK 2)

6. Circle the predator in this food chain.

7. Put an X on the prey in this food chain.

Directed Inquiry

Flip Chart p. 14

Make a Food Chain

Formulate questions about how plants and animals depend on each other.

1.a., 3.e.

8. Fill in the chart using the food chain shown on these two pages.

Sun

Most food chains start with the Sun.
Most plants use sunlight to make food.
Food gives the plants energy.

Grass gets energy from the Sun.

A cow eats the grass.

Look at these pictures.
The arrows show how energy moves in the food chain.

People drink milk that came from the cow.

9. A rabbit eats grass.
Draw a food chain with a rabbit.

Express Lab

Use the Activity Card **Write a Food Chain Song.**

3.e.

10. A food web shows _____

_____.

11. Circle the animals that are prey in this food web.

12. Put an X on the predators in this food web.

Food Webs

There can be many food chains in one environment.

A **food web** shows how food chains are related.

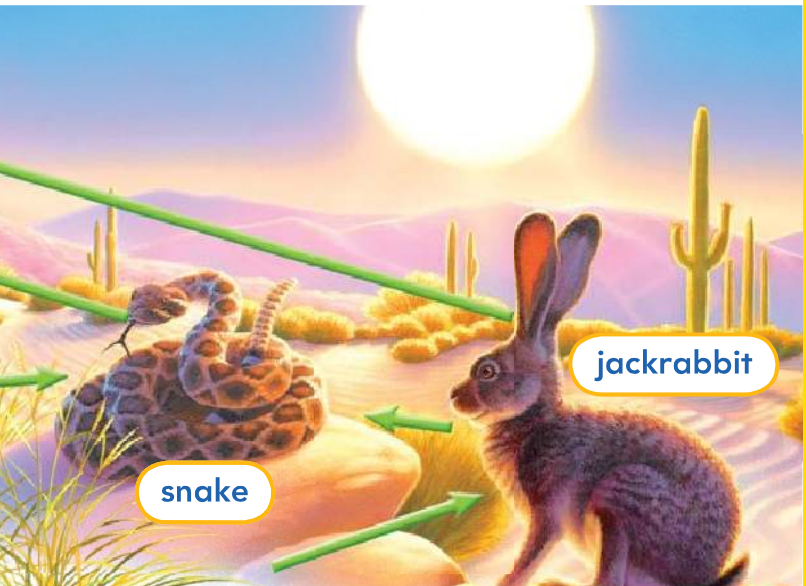
Look at this picture.

It shows a food web made up of some desert food chains.

One part of a food web may change.
The change may touch the lives of other living things in the web.
Their lives may change, too.

Sequence

With what do most food chains begin?



Summary

Living things must get energy from food, or they will die.

Compare one of the hawk's food chains with the jackrabbit's food chain.

Hawk	Jackrabbit

Sequence With what do most food chains begin?

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ Raccoons _____ with their claws.

❸ Plants get energy from _____. Animals get energy from

_____.

❹ Adaptations help animals

_____.

KWL

What Did You Learn?

Science Test Practice

❶ Which would eat both fruits and insects?

Ⓐ omnivore

Ⓑ herbivore

Ⓒ carnivore

3.e. (DOK 2)

❷ How do raccoons use their claws to meet their needs?

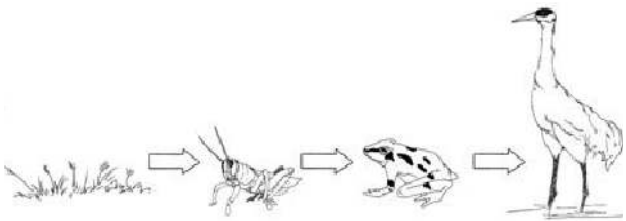
❸ Describe how plants and animals get energy.

❹ How do adaptations help animals survive?

Draw and label a food web.

Circle the correct answer.

1. Look at the picture.



In this food chain, which animal is prey?

(A) bird

(B) frog

(C) grass

3.e. (DOK 2)

2. Look at the picture.

Chickens eat insects and corn. Which type of animal is a chicken?

(A) carnivore

(B) herbivore

(C) omnivore

3.e. (DOK 2)

3. Which provides energy for living things to keep living?

(A) air

(B) food

(C) water

3.c. (DOK 1)

4. **Look at the picture.**

Which need does the deer get from the plant?

Ⓐ air

Ⓑ food

Ⓒ shelter

3.c. (DOK 1)

5. **Which types of animals might eat both leaves and grass?**

Ⓐ carnivores and omnivores

Ⓑ herbivores and carnivores

Ⓒ omnivores and herbivores

3.e. (DOK 2)

6. **A mouse eats a seed. Then a snake eats the mouse. Which is the predator?**

Ⓐ mouse

Ⓑ seed

Ⓒ snake

3.e. (DOK 2)

KWL

What Do You Know?

Talk with a partner. List what you know about volcanoes.

_____

_____

List what you know about pollution.

_____

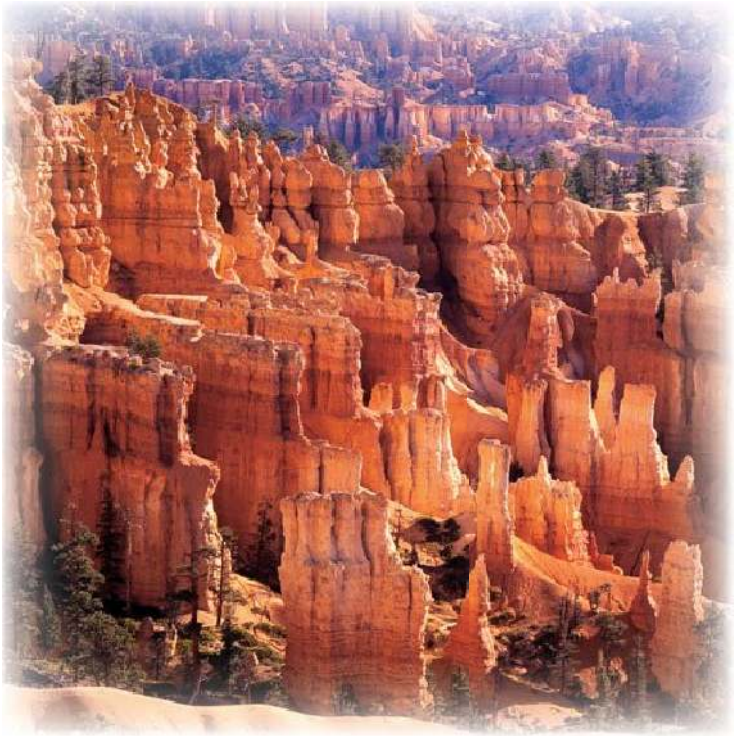
_____

List what you know about recycling.

_____

_____

Environments Change



Contents

KWL

What Do You Want to Know?

What do you wonder about how environments change?

Lesson Preview

VOCABULARY

erosion The carrying of weathered rock and soil from place to place. *(noun)*

weathering The wearing away and breaking apart of rock. *(noun)*

VOCABULARY ACTIVITY

Use Syllables

weathering

Break the word **weathering** into syllables. Say each syllable aloud. Clap once for each syllable. How many syllables are in **weathering?**

4.d. Distinguish how actions or events related to the Earth's environment may be harmful or helpful. (DOK 2)

1 How Do Environments Change Naturally?

Many things change an environment. Fires can change environments. When trees or grass burn, many animals lose their shelters. Fires can also be helpful. Some trees won't grow until after a fire.

Fires can change an environment quickly.

Volcanoes can change environments. Lava can kill plants and animals that live near the volcano.
Volcanoes can also form new land. Volcanoes have made many islands.
Earthquakes can change environments. They can knock down buildings and cause landslides.

Volcanoes can form new land.

1. Underline two ways that volcanoes can change the environment.

2. In the top box, draw an environment. In the bottom box, draw how that environment might look after a fire changed it.

Science Test Practice

Circle the correct answer.

3. Which of these is an example of weathering?

(A) A fire burns a forest.

(B) A tree's roots break rocks.

(C) Wind blows leaves on the ground.

4.d. (DOK 2)

Express Lab

Use the Activity Card **Observe How Rocks Change.**

4.d.

Weathering

Sometimes environments change slowly. **Weathering** happens when rock wears away or breaks apart.

Wind, water, and plants can cause weathering.

Rocks can become very small. These small pieces of rock can be helpful to plants.

Weathering changed the shape of this rock.

Erosion

Erosion happens when weathered rock, sand, and soil are carried from place to place.

Wind can blow rock, sand, and soil to new places.

Moving water and ice can move these materials, too.

Water moving downhill can cause erosion.

Cause and Effect

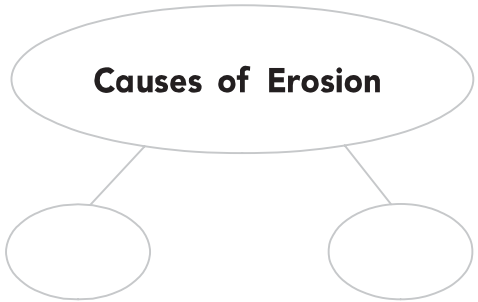
What are some causes of erosion?

Summary

Changes to an environment can be helpful or harmful.

Tell one helpful change.

Cause and Effect



Directed Inquiry

Flip Chart p. 15

Compare Soils

Compare and sort different types of soils.

1.b., 1.c., 4.a.

Lesson Preview

VOCABULARY

litter Trash on the ground. *(noun)*

natural resource Something found in nature that people need or use. *(noun)*

pollution Waste that harms the land, water, or air. *(noun)*

recycle To make new things from old items. *(verb)*

reduce To use less of a resource. *(verb)*

reuse To use a resource again. *(verb)*

4.d. Distinguish how actions or events related to the Earth's environment may be harmful or helpful. (DOK 2)

2 How Do People Change the Environment?

A **natural resource** is something found in nature that people need or use. People change the environment when they use natural resources.
People build dams to collect water. This changes rivers.

This dam was built to collect water.

People cut down trees to build houses and roads.
This changes forests.
People put trash in landfills.
A landfill is land where trash is buried.
Some landfills are getting too full.

The trees were cut down in this forest.

landfill

1. How do you think cutting down trees harms animals?

_____

_____

Science Test Practice

Circle the correct answer.

2. **Which might be thrown away in a landfill?**

   (A) water
   (B) rocks
   (C) plastic bags

4.d. (DOK 2)

Express Lab

Use the Activity Card **Identify Rock Uses.**

1.d., 4.a.

3. Circle the one that makes air pollution.

bicycles trees trucks

4. What can make water dirty?

_____

_____

People can cause pollution.
Pollution is waste that harms the land, water, or air.
Pollution can hurt plants.
It can make people and animals sick.

Trash can hurt birds.

Many things can cause pollution. Gases from cars cause air pollution. Oil and other waste cause water pollution.

Litter, or trash on the ground, causes land pollution.

air pollution

water pollution

Science Test Practice

Circle the correct answer.

5. Which can cause the three types of pollution?

(A) litter, oil, and trucks

(B) litter, water, and trucks

(C) volcanoes, oil, and trucks

4.d. (DOK 2)

Science Test Practice

Circle the correct answer.

6. **Which is a way people can help the environment?**

   (A) litter

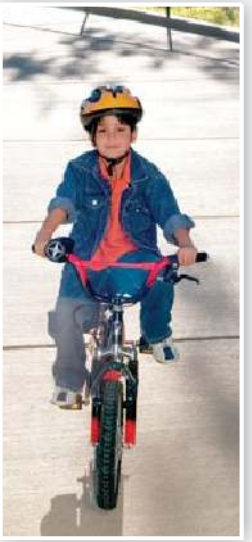
   (B) drive cars

   (C) use less gasoline

4.d. (DOK 2)

Positive Changes

People can help the environment. People can help stop air pollution by changing the way they go places. They can ride bikes or walk instead of riding in a car.



People can conserve resources.
Recycling helps by making new things from old items.
Plastic may be recycled.
Reusing means using old items in a new way.
An empty can may be used to hold pencils.
Reducing is using less.
Turning off lights you are not using helps conserve resources.

When you recycle, less trash goes into a landfill.

Wash full loads of clothes.

I Wonder . . . Earth has many resources. How can people save resources?

Directed Inquiry

Flip Chart p. 16

Wasted Water

Use simple tools to measure how much water can be wasted from a leaky faucet in a certain amount of time.

1.c., 4.d.

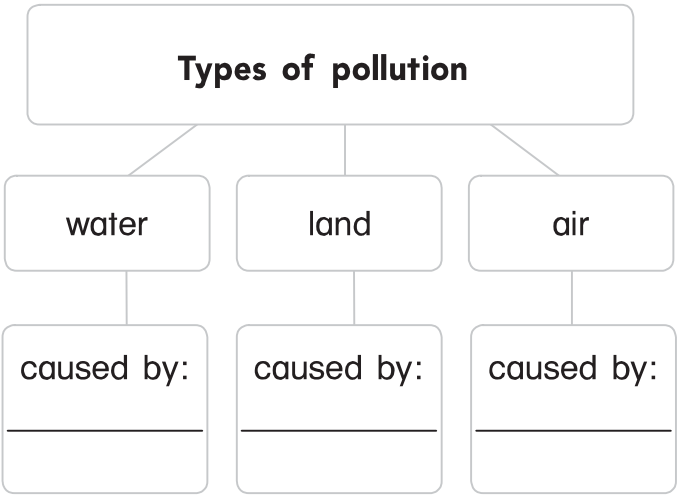
Summary

People can cause helpful and harmful changes to the environment.
How can people help the environment?

_____

_____

Cause and Effect What are three causes of pollution?



People can pick up litter to help stop land and water pollution.
This can also save plants and keep animals from getting hurt.
People can plant trees to help the land.
Trees will give some animals homes, too.

People can plant new trees after a fire.

Cause and Effect

What are three causes of pollution?

KWL

What Did You Learn?

Science Test Practice

❶ **Trey turned off the water while he brushed his teeth. What is this an example of?**

Ⓐ littering

Ⓑ reducing

Ⓒ weathering

4.d. (DOK 2)

❷ How do people cause pollution?

❸ How can the wind change an environment slowly?

❹ How can you conserve the amount of paper you use in school?

KWL

What Did You Learn?

Science Test Practice

❶ **Circle the correct answer.**

❷ People cause pollution when they _____.

❸ The wind can change an environment slowly through _____.

❹ You can conserve the amount of paper you use by

_____

_____.

Circle the correct answer.

1. **Which would you use to represent air pollution on a pictograph?**

(A) 

(B) 

(C) 

1.e. (DOK 2)

2. **How can a fire be helpful to an environment?**

(A) A fire can burn an animal's shelter.

(B) A fire can make room for new trees to grow.

(C) A fire can cause smoke that blocks light from the Sun.

4.d. (DOK 2)

3. **How can erosion change an environment?**

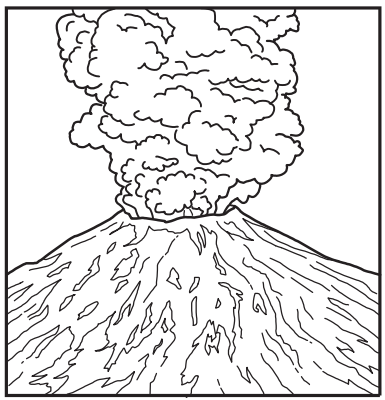
(A) Erosion can cause fires to start.

(B) Erosion can cause landfills to become full.

(C) Erosion can cause sand from a beach to be moved away.

4.d. (DOK 2)

4. **Look at the picture.**



Which harmful effect is the smoke from this volcano causing to the environment?

(A) air pollution
(B) land pollution
(C) water pollution

4.d. (DOK 2)

5. **Scientists in Mississippi measure how much land erodes each month. How would scientists in another state do the same investigation?**

(A) They would use a hand lens to observe the land.
(B) They would investigate the same way as the scientists in Mississippi.
(C) They would try to stop air pollution.

1.f. (DOK 2)

6. **All of the fish in a pond die. Which may have caused this?**

(A) fire
(B) oil
(C) weathering

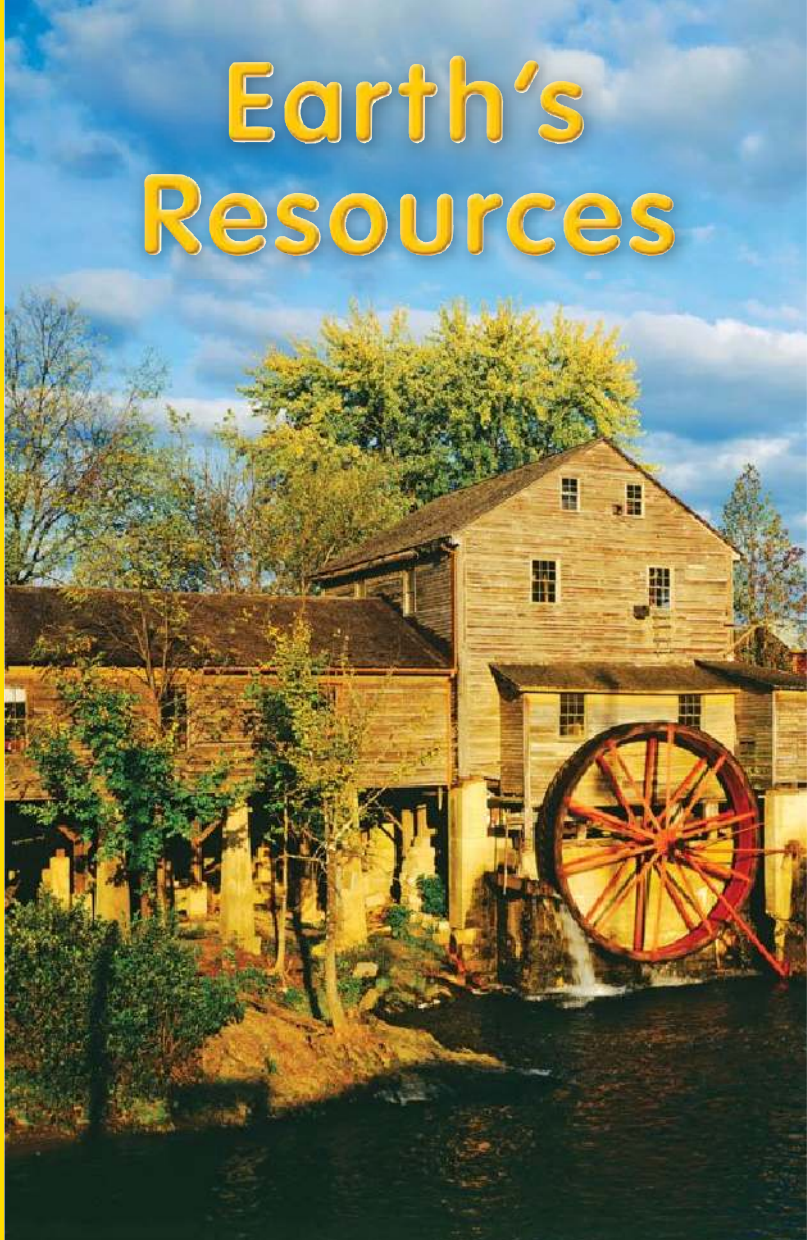
4.d. (DOK 2)

KWL

What Do You Know?

What do you know about Earth's resources?

Make a list of Earth's resources.



Contents

KWL

What Do You Want to Know?

What do you wonder about Earth's resources and how we use them?

VOCABULARY

soil The loose material that covers Earth's surface. *(noun)*

VOCABULARY ACTIVITY

Use Words

soil

Some words on this page help you know what **soil** means.

Circle them.

3.e. Investigate and explain the interdependence of plants and animals. (DOK 2)

4.a. Categorize different types of Earth materials, (e.g., rocks, minerals, soils, water, atmospheric gases). (DOK 2)

1 What Resources Do People Use?

Air, water, soil, and rocks are natural resources.

Soil is the loose material that covers Earth's surface.

Soil is used to grow food.

People use water for drinking, washing, and cooking.

Sometimes they use rocks to build their homes.

You use water to wash your hands.

Trees and other plants are natural resources, too.
People get food from plants.
Some plants help sick people get well.
People use trees to make many things.
People need to plant new trees to take the place of trees that they cut down.

Summary

People use resources from Earth to meet their needs.
Some objects in your classroom are made from trees. Circle them.

Science Test Practice

Circle the correct answer.

Which resource would a person use to plant a tree?

Ⓐ air
Ⓑ rocks
Ⓒ soil

4.a. (DOK 2)

Main Idea

What are three ways trees are used as a resource?

How Trees Are Used		

Lesson Preview

VOCABULARY

core The center of Earth. *(noun)*

crust The outer layer of Earth. *(noun)*

mantle The middle layer of Earth. *(noun)*

VOCABULARY ACTIVITY

Use Words

core

Some words on this page help you know what **core** means.

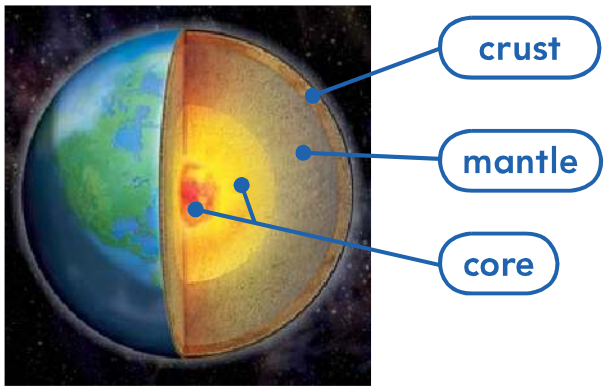
Circle them.

4.a. Categorize different types of Earth materials, (e.g., rocks, minerals, soils, water, atmospheric gases). (DOK 2)

4.b. Describe the three layers of the Earth. (DOK 1)

2 Where Are Resources Found?

Earth has three layers.
The center of Earth is the **core**.
It is part solid and part liquid.
The layer above the core is the **mantle**.
The outer layer is the **crust**.
It is solid.
We live on the crust.
It is where many of the resources we use are found.



Earth has three layers.

Some resources are found **in** the crust.
Rocks are one resource in the crust.
Some resources are **on** the crust.
Water and soil are on the crust.
Some resources are **above** the crust.
The air that plants and animals need is above the crust.

Fish are a resource that come from water.

Science Test Practice

Circle the correct answer.

1. Which layer of Earth provides resources?

(A) core
(B) crust
(C) mantle

4.b. (DOK 1)

2. Circle three words that name resources that people use.

Express Lab

Use the Activity Card **Categorize Water Uses.**

1.b., 4.a.

I Wonder . . . Why don't we get resources from Earth's core?

_____

_____

3. Circle on this page two types of water.

4. Put an X on the picture that shows fresh water.

Directed Inquiry

Flip Chart p. 17

Make a Pinwheel

Observe how natural resources can be used.

1.d., 4.a.

Water Resources

Water is a resource.
Salt water is in oceans and seas.
It has a lot of salt.
People can swim, surf, and go fishing in salt water.
Fresh water does not have a lot of salt.
It is found mostly in lakes and rivers.
People use fresh water for swimming, fishing, drinking, and washing.

Most rivers are made of fresh water.

The Gulf of Mexico is made of salt water.

Air Resources

The air above Earth's crust is a mixture of gases.
Plants use one gas to make food.
Animals use another gas to help them get energy from food.
One gas in the air is water vapor.
Clouds form from water vapor.
Wind energy is a resource we get from air.

These clouds formed from water vapor in the air.

Main Idea

How are air and water used as resources?

Summary

Earth has three layers. We get resources from in, on, and above the crust. Circle the words that tell how plants use resources from the air.

5. Put an X on the water in the picture.

Main Idea

How are air and water used as resources?

Air	Water
	People swim, fish, and surf in water. Water can also be used to wash things and to drink.

VOCABULARY

mineral A solid found in nature that was never living. *(noun)*

rock A solid made of one or more minerals. *(noun)*

VOCABULARY ACTIVITY

Use Words

mineral What words on these two pages help you understand what a **mineral** is? Underline them.

4.a. Categorize different types of Earth materials, (e.g., rocks, minerals, soils, water, atmospheric gases). (DOK 2)

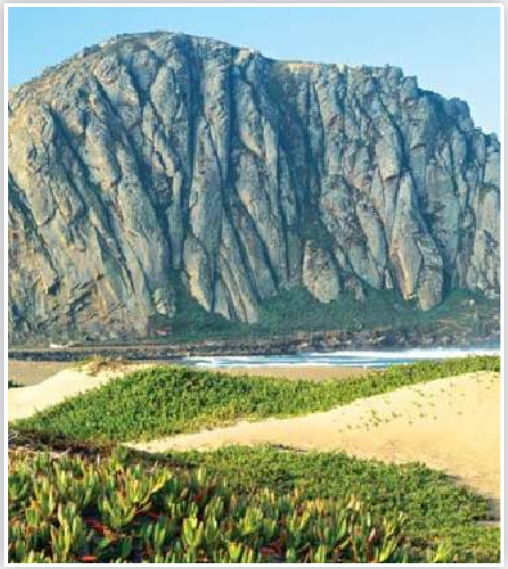
3 What Makes Up Rocks?

Earth is made of rocks.
A **rock** is made of minerals.
A **mineral** is a solid found in nature.
A mineral was never a living thing.
Minerals go together to make different kinds of rocks.

This huge rock was made from a mineral called sandstone.

Rocks and minerals are found under soil and water.
They make up mountains, too.

This is part of an old volcano.



1. What are mountains made of?

_____

_____

_____

2. Compare the two mountains on these two pages.

_____

_____

_____

3. Hardness is a _____.

4. Hardness is how _____ or _____ something is.

5. Describe the mineral on this page.

_____

_____

_____

Properties of Minerals

There are many kinds of minerals. Minerals have different properties. Hardness is a property. Hardness is how hard or soft something is. Diamonds are very hard.

This mineral is hard.

Luster is a property.
Luster is how shiny something is.
Some minerals are shiny.
Some are dull.
Color is a property, too.
Some minerals come in different colors.

ruby

emerald

These colorful stones are used to make jewelry.

6. Circle one mineral. List its properties that you can see.

_____

_____

_____

_____

Science Test Practice

Circle the correct answer.

7. You examine a mineral. It is soft and green. Which two properties of the mineral did you observe?

Ⓐ hardness and luster

Ⓑ luster and color

Ⓒ hardness and color

4.a. (DOK 2)

8. Describe the minerals that make up this rock.

_____

_____

_____

_____

9. Underline the words on these two pages that describe the properties of a rock.

Directed Inquiry

Flip Chart p. 18

Compare Rocks

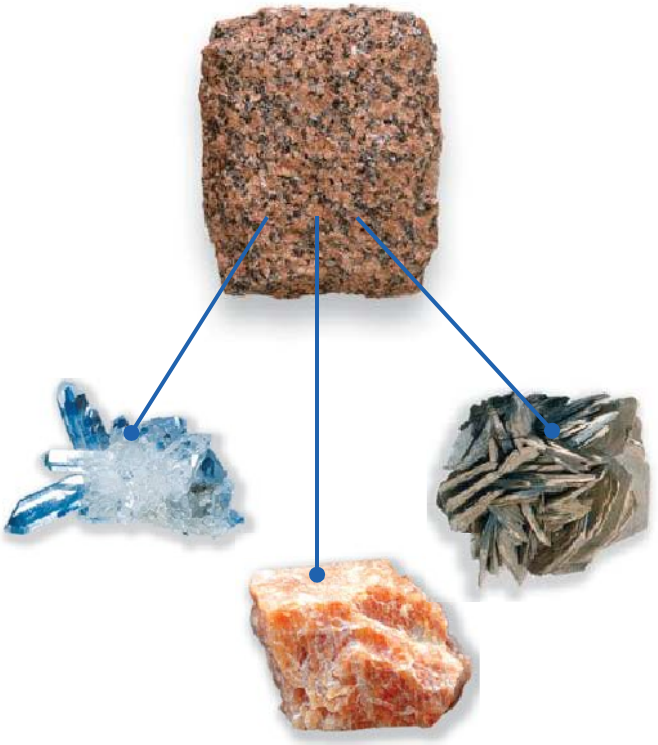
Use simple tools to compare rocks.

1.b., 1.c., 4.a.

Properties of Rocks

A rock can be made of one mineral. It can be made of many minerals. The minerals in rocks can be big. They can be small.

This rock is made up of three minerals.



The color of the rock comes from the minerals in it.
Rocks can be hard or soft.
They can feel smooth.
They can feel rough.

This rock is shiny.

Classify

How can you sort rocks?

Summary

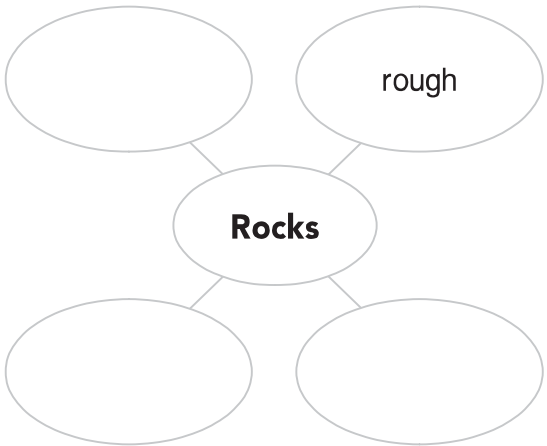
Minerals make up rocks. Rocks and minerals have different properties. List the properties of this rock.

_____

_____

Classify

How can you sort rocks?



VOCABULARY

humus Tiny bits of dead plants and animals in soil. *(noun)*

nutrient Material in soil that helps a plant grow well. *(noun)*

VOCABULARY ACTIVITY

Use Words

nutrients

What words on this page help you understand the meaning of **nutrients**?

_____

_____

3.e. Investigate and explain the interdependence of plants and animals. (DOK 2)

4.a. Categorize different types of Earth materials, (e.g., rocks, minerals, soils, water, atmospheric gases). (DOK 2)

4 What Makes Up Soil?

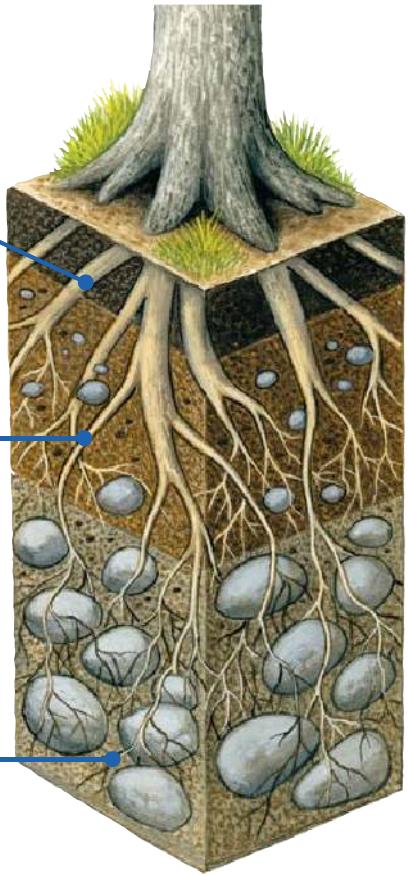
Soil has rock and water in it.
It has air and humus, too.
Humus is tiny bits of dead plants and animals in soil.
Humus is full of nutrients.
Nutrients help a plant grow well.

Dead plants fall to the ground.

They break down into small bits.

The bits mix with rock to make soil.

Soil is made up of three parts. These parts are called layers.



Top This layer has a lot of humus. Plants grow here.

Middle This layer has less humus. It is full of small rocks.

Bottom This layer has big rocks. Tree roots can grow down into this layer.

1. Underline words on the left-hand page that tell what is in soil.

Science Test Practice

Circle the correct answer.

2. Which layer of soil has the most nutrients?

Ⓐ top

Ⓑ middle

Ⓒ bottom

4.a. (DOK 2)

3. List different properties soil might have.

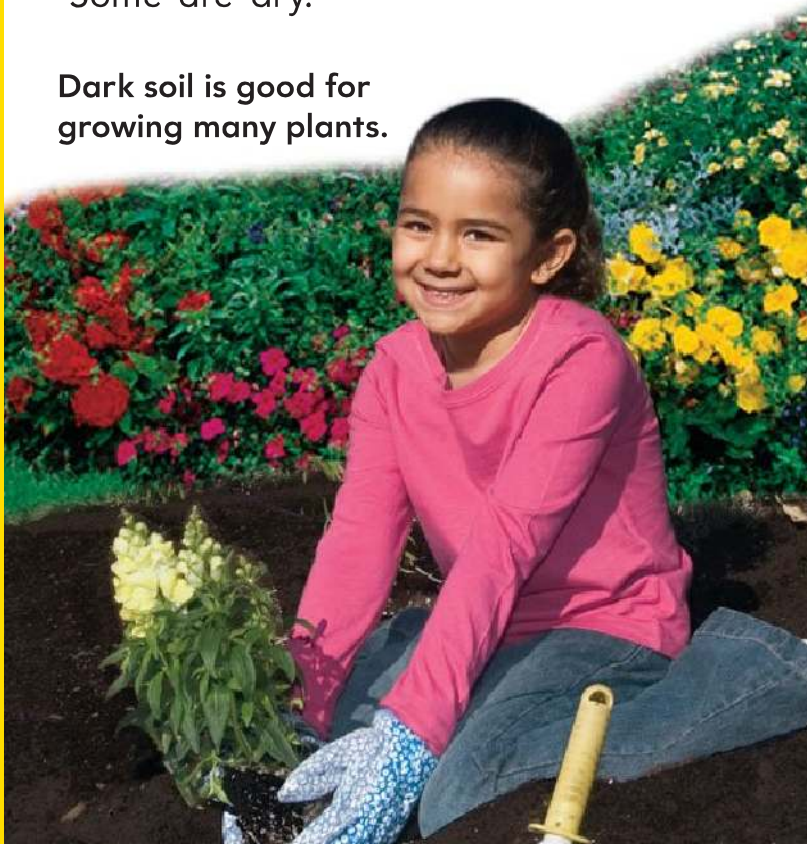
_____

_____

_____

How Soils Differ

Soils have different properties.
Some soils have a lot of humus.
They are dark in color.
Some soils have a lot of rock.
Some are wet.
Some are dry.



Dark soil is good for growing many plants.

Kinds of Soil

Topsoil	Clay Soil	Sandy Soil
		
		
• has a lot of humus • is best for growing plants • is dark in color	• is made of clay • is sticky when wet • is brown, red, or yellow	• has a lot of rock • feels gritty • is tan or light brown

I Wonder . . . Soils have different properties. Which soil would be the best to plant a garden in? Why?

Express Lab

Use the Activity Card **Compare Soils.**

1.b., 1.c., 4.a.

4. How are worms and lice alike?

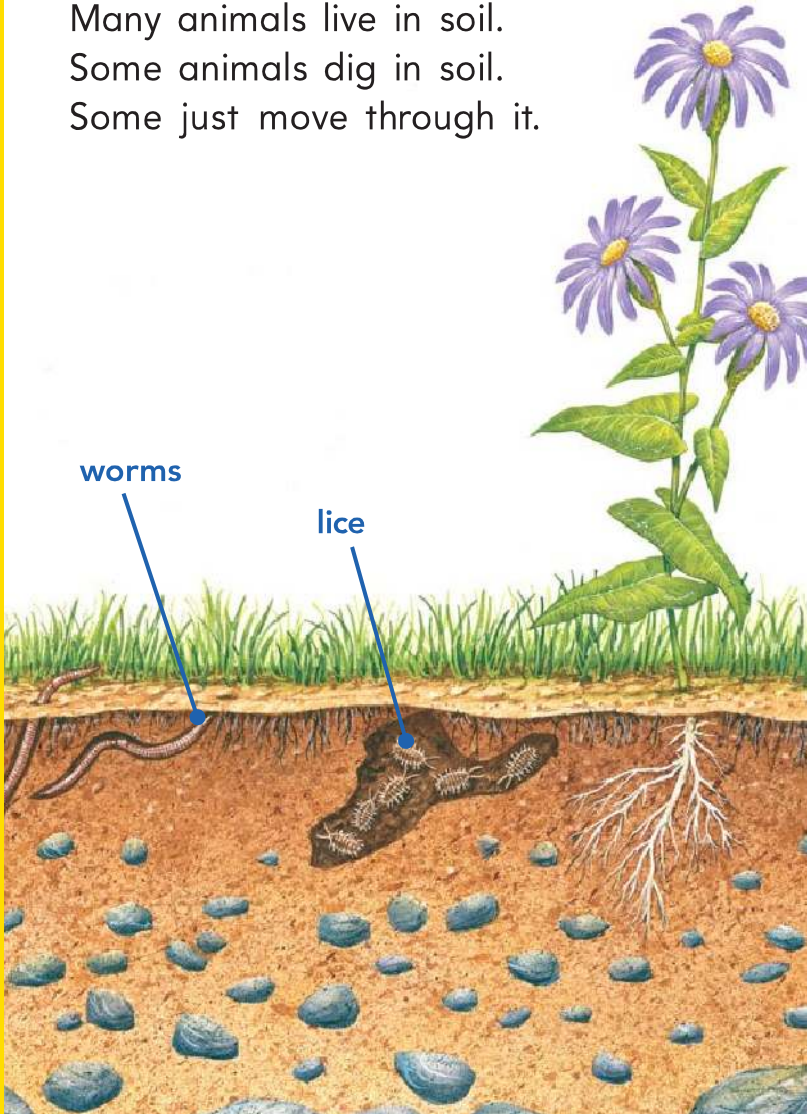
_____

_____

5. Draw other animals that live in soil. Label your drawing.

Animals Help Soil

Many animals live in soil.
Some animals dig in soil.
Some just move through it.



Animals break soil into small bits. This helps air get in the soil. It keeps it from washing away. It helps plants get nutrients from the soil.

Animals dig in soil.
They help air and water move through it.

Compare and Contrast

How are soils different?

Summary

Soils have different properties. Animals help air get in the soil. How is this helpful?

_____

_____

_____

Compare and Contrast

How are soils different?

Compare	Contrast

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ _____

_____

_____

❸ _____ provides a place for fish to live.

❹ It is a _____.

I know this because

_____

_____

KWL

What Did You Learn?

Science Test Practice

❶ **Which is the middle layer of Earth?**

Ⓐ core

Ⓑ crust

Ⓒ mantle

4.b. (DOK 1)

❷ List three kinds of soil.

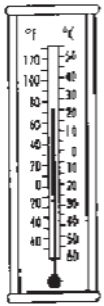
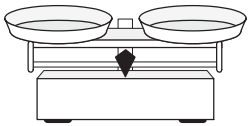
❸ Which type of Earth material provides a place for fish to live?

❹ You are testing the hardness of an Earth material. Which type of Earth material might it be? How do you know?

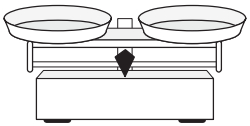
Draw a picture to show the layers of Earth.

Circle the correct answer.

1. You want to know the mass and weight of a rock. Which tools will you use

Ⓐ  

Ⓑ  

Ⓒ  

1.c. (DOK 1)

2. Which layer of Earth is part solid and part liquid?

Ⓐ core
Ⓑ crust
Ⓒ mantle

4.b. (DOK 1)

3. Which type of water would be best for washing clothes?

Ⓐ lake water
Ⓑ ocean water
Ⓒ sea water

4.a. (DOK 2)

4. Which natural resource can be found on the crust and above the crust?

(A) soil
(B) water
(C) wind

4.a. (DOK 2), 4.b. (DOK 1)

5. Which does humus provide for rose bushes?

(A) minerals
(B) nutrients
(C) rocks

3.e. (DOK 2)

6. Look at the picture.

Which resource is turning the blades?

(A) light energy
(B) water energy
(C) wind energy

4.a. (DOK 2)

KWL

What Do You Know?

Talk with a partner. List different types of weather. Circle the words that tell about weather where you live.

_____

_____

_____

Weather Patterns

Contents

KWL

What Do You Want to Know?

What do you wonder about weather?

Lesson Preview

VOCABULARY

condense To change from water vapor to drops of water. *(verb)*

evaporate To change to a gas. The Sun warms water, and water evaporates. *(verb)*

precipitation Water that falls from clouds. *(noun)*

water cycle Water moving from Earth to the air and back again. *(noun)*

water vapor Water as a gas. You cannot see water vapor. *(noun)*

4.c. Collect, organize, and graph weather data obtained by using simple weather instruments (wind vane, rain gauge, thermometer) and explain the components of the water cycle. (DOK 2)

4.e. Model and explain the concept of Earth's rotation as it relates to day and night and infer why it is usually cooler at night than in the day. (DOK 2)

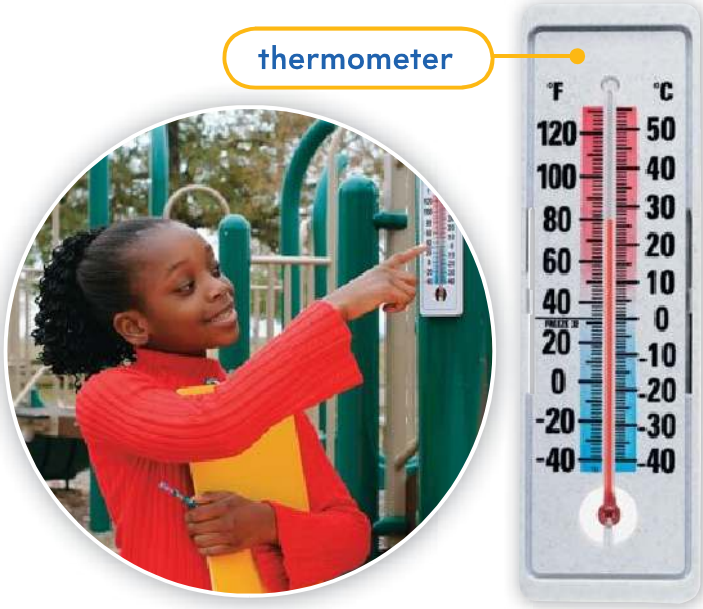
1 How Does Weather Change?

Weather changes over time. These changes happen again and again in the same order, or pattern. Weather can change from day to day.

Weather can also change during the day.

Daily Weather Patterns

The Sun warms the air during the day.
This makes the afternoon air warmer than the morning air.
The air cools at night.
The temperature tells how warm or cool the air is.
Temperature is measured with a thermometer.



1. Circle the temperature on the thermometer. Record the temperature here in degrees Fahrenheit (F).

_____

2. Tell how you would feel if the temperature were 95°F.

_____

_____

3. Underline the sentence that tells why temperatures are usually cooler at night.

I Wonder . . . I know that weather can change during the day. What different kinds of weather might happen today?

Directed Inquiry

Flip Chart p. 19

Compare Weather

Collect, organize, and graph weather data.
Use thermometers to gather information.
Make a line graph to communicate data.

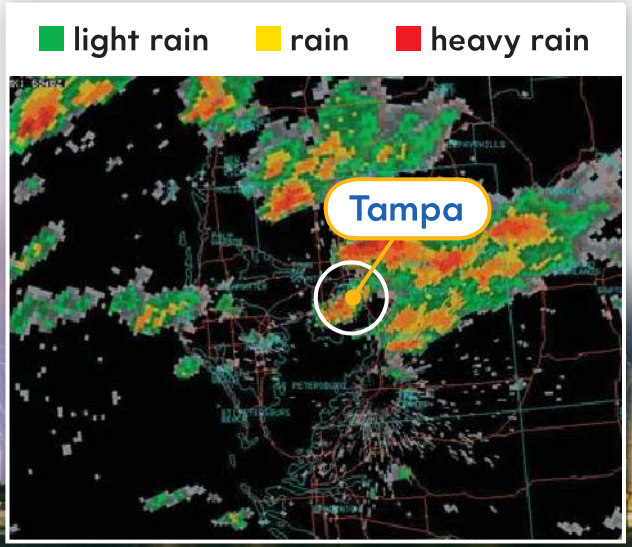
1.c., 1.e., 1.f., 4.c.

Sudden Changes

Sometimes weather can change very fast.
The Sun might be out in the morning.
Then clouds move in.
It rains in the afternoon.

a storm over Tampa, Florida

Meteorologists are scientists who study the weather.
They use tools to tell what kind of weather is coming.
They use radar to keep track of weather changes.



The radar shows the storm over Tampa, Florida.

4. What does a meteorologist do?

_____

5. In the radar map, what does the color green stand for?

_____

6. Circle a place on the map where there is heavy rain.

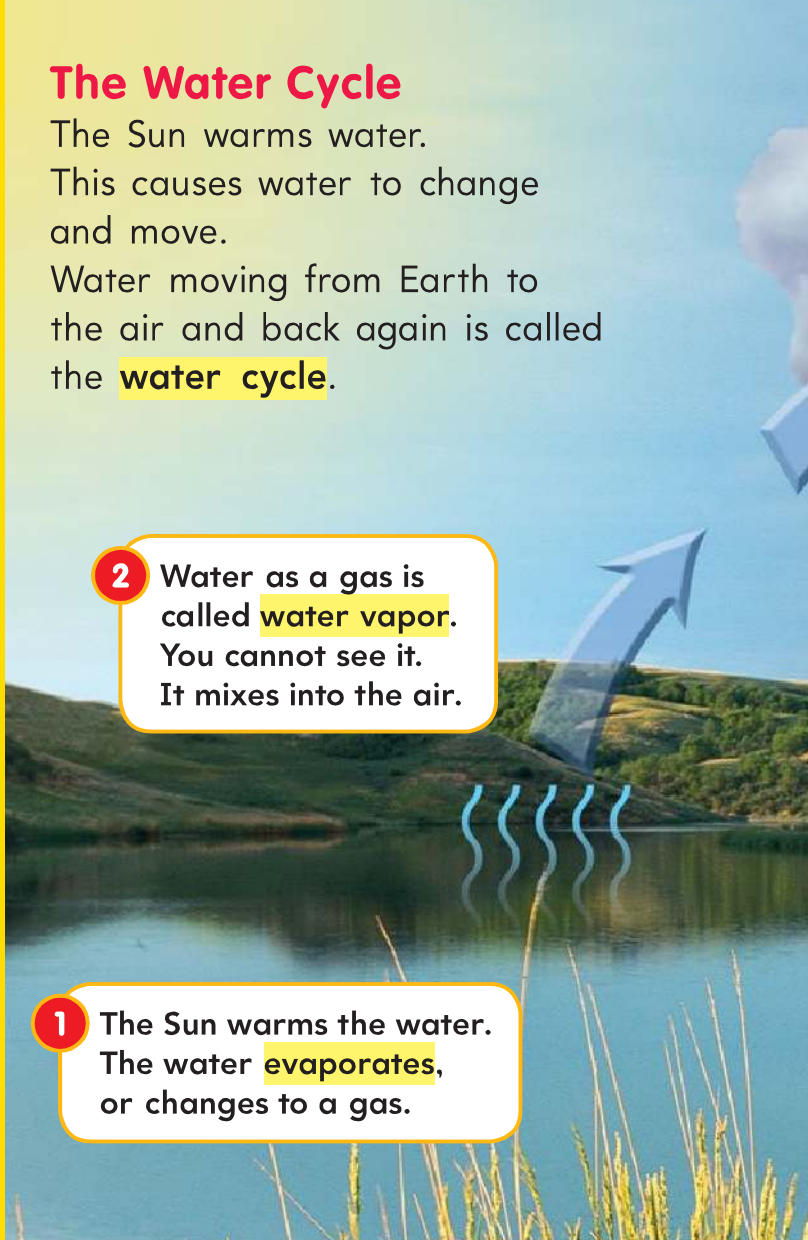
7. Put an X on the picture where water is evaporating.

8. What happens when a puddle is warmed by the Sun?

_____

The Water Cycle

The Sun warms water.
This causes water to change and move.
Water moving from Earth to the air and back again is called the **water cycle**.



2 Water as a gas is called **water vapor**. You cannot see it. It mixes into the air.

1 The Sun warms the water. The water **evaporates**, or changes to a gas.

3 Air with water vapor rises and cools.
Water vapor condenses, or changes to drops of water.
These drops of water make clouds.

4 The drops get bigger and heavier.
The drops fall to the ground.
The drops can be rain, snow, sleet, or hail.

5 Rain and melted snow collect in rivers, lakes, and oceans.
The water cycle begins again.

9. Fill in the blanks. Tell how clouds form.

a. Air with water vapor _____ and _____.

b. Water vapor _____, or changes to drops of water.

c. The water drops _____.

10. What is precipitation?

_____

_____

Science Test Practice

Circle the correct answer.

11. Tony checks his rain gauge. What might he find out?

(A) It was windy.

(B) Two inches of rain had fallen.

(C) The temperature was 75°F outside.

4.c. (DOK 2)

Express Lab

Use the Activity Card **Master Measuring Rainfall.**

1.c., 4.c.

Precipitation

Precipitation is water that falls from clouds.

Rain and snow are precipitation.

Rain falls when the air is warm.

Snow falls when the air is cold.

A rain gauge can show how much rain has fallen.

Sleet and hail are kinds of precipitation, too.
Sleet is falling snow that melts and freezes again.
Hail is falling rain that freezes into balls of ice.

12. Fill in the blanks. Tell how sleet forms.

a. _____ falls through the air.

b. The falling snow _____.

c. The melted snow _____.

13. Look at the picture on this page. How do you know that the wind is blowing?

_____

_____

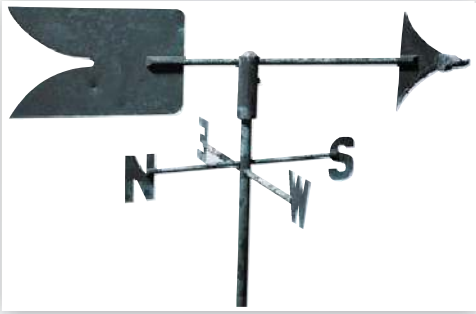
_____

Wind

Wind is moving air.
Wind can be gentle.
Wind can be strong.

Wind can blow in many directions. The four main directions wind can blow are north (N), south (S), east (E), and west (W).

A wind vane points in the direction the wind is blowing from.



Main Idea

What are two different kinds of precipitation?

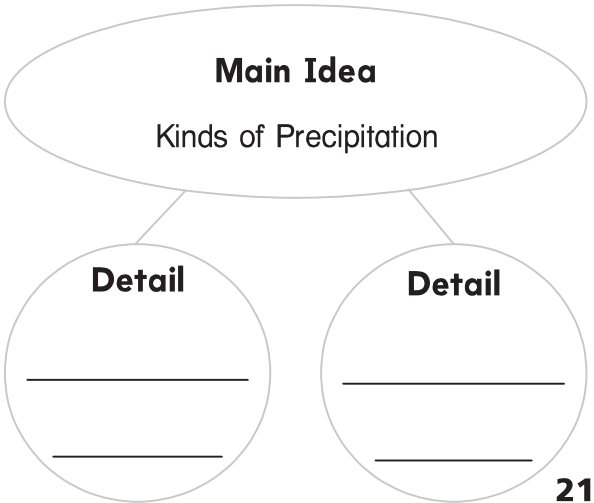
Summary

Weather changes in patterns over time. How might the weather change in one day?

_____

_____

Main Idea What are two different kinds of precipitation?



VOCABULARY

season A time of year. *(noun)*

VOCABULARY ACTIVITY

Use Words

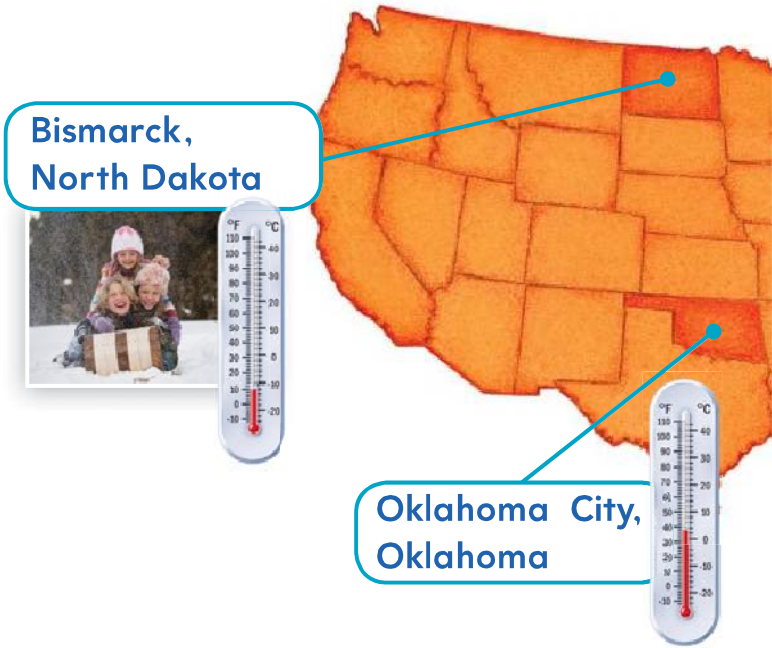
season

List four words on this page that help you understand the word **season**.

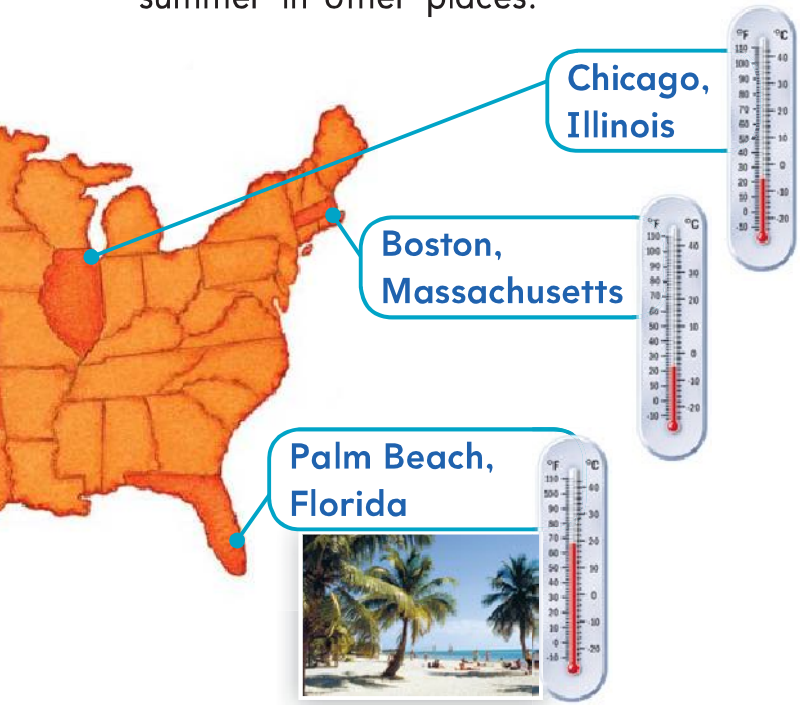
4.c. Collect, organize, and graph weather data obtained by using simple weather instruments (wind vane, rain gauge, thermometer) and explain the components of the water cycle. (DOK 2)

2 What Is the Pattern of the Seasons?

A **season** is a time of year.
The four seasons are winter, spring, summer, and fall.
They are always in this order.
Each season has its own weather pattern.
Air temperatures are different in each season.



Winter is the coolest season.
In spring, temperatures slowly rise.
Summer is the warmest season.
In fall, temperatures slowly fall.
Different places have different weather patterns.
Winter is very cold in some places.
Winter is just a littler cooler than summer in other places.



1. Look at the thermometers on these two pages. List the temperatures for Bismarck, Oklahoma City, and Palm Beach.

_____

_____

Science Test Practice

Circle the correct answer.

2. Look at the thermometers on this page. Is it colder in Boston or in Chicago?

(A) Boston

(B) Chicago

(C) They are the same temperature.

4.c. (DOK 2)

Express Lab

Use the Activity Card **Compare Temperatures.**

1.c., 4.c.

3. All of the pictures show the same time of day. Tell how the Sun is different in each picture.

Winter:

_____

Spring:

_____

Summer:

_____

Fall:

_____

Directed Inquiry

Flip Chart p. 20

Measure Weather

Collect, organize, and graph weather data. Make a bar graph to communicate data.

1.c., 1.d., 4.c.

Daylight Patterns

The Sun shines during the day. The number of daylight hours is different in each season.

winter

Winter days are the shortest.

spring

Spring days slowly get longer.

Summer has the most hours of daylight.
The Sun warms the land and the water for a longer time.
Summer has the warmest weather.

summer

Summer days are the longest.

fall

Fall days slowly get shorter.

Sequence

How does the number of daylight hours change as the seasons change?

Summary Each season has its own weather pattern. Which season is warmest and has the most hours of daylight?

_____

Sequence How does the number of daylight hours change as the seasons change?

Winter
Daytime is the shortest.

↓

Spring
_____

↓

Summer
Daytime is the longest.

↓

Fall
Daytime slowly gets shorter.

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ In the water cycle, water

_____

_____

❸ The four seasons in order are

_____

❹ Draw a tree in winter and in spring.

KWL

What Did You Learn?

Science Test Practice

❶ **When drops of water come together in the air, what do they form?**

Ⓐ clouds

Ⓑ precipitation

Ⓒ water vapor

4.c. (DOK 2)

❷ What happens to water in the water cycle?

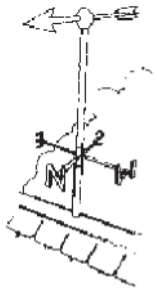
❸ List the seasons in the order in which they occur.

❹ Draw the same tree or plant in winter and spring. How are the drawings the same? How are they different?

Draw a picture to show the water cycle.

Circle the correct answer.

1. Look at the picture.



Which direction is the wind blowing from?

(A) north (N)

(B) south (S)

(C) west (W)

4.c. (DOK 2)

2. Look at the picture.

What is the temperature?

(A) about 0°F

(B) about 40°F

(C) about 70°F

4.c. (DOK 2)

3. **Which tells why Earth is usually cooler at night than during the day?**

(A) The stars warm the air.

(B) The Sun warms the air.

(C) The Moon warms the air.

4.e. (DOK 2)

4. **Which measures precipitation?**

(A) rain gauge

(B) thermometer

(C) wind vane

4.c. (DOK 2)

5. **Which causes the water cycle?**

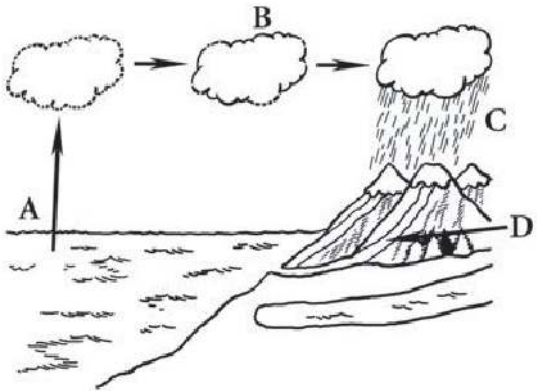
(A) Sun

(B) water

(C) wind

4.c. (DOK 2)

6. **Look at the picture.**



Which letter shows water condensing?

(A) letter A

(B) letter B

(C) letter C

4.c. (DOK 2)

KWL

What Do You Know?

Talk with a partner.

Make a list of things that you can see in the sky.

_____

_____

_____

Motions in the Sky

Contents

KWL

What Do You Want to Know?

What do you wonder about the Sun and the planets?

VOCABULARY

planet A large object that moves around the Sun. *(noun)*

solar system The Sun and the space objects that move around it. *(noun)*

Sun The brightest object in the day sky. *(noun)*

VOCABULARY ACTIVITY

Use Words

Sun

What words on these two pages help you understand what the **Sun** is? Circle them.

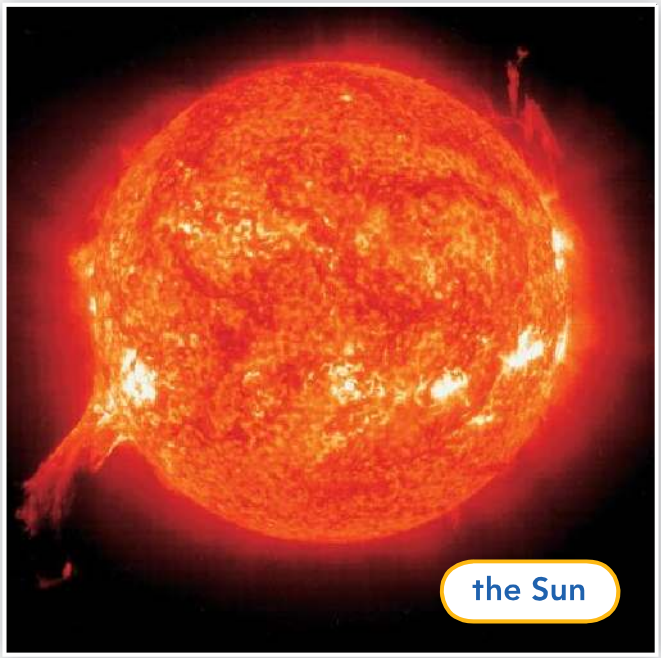
4.f. Describe characteristics and effects of objects in the universe. (DOK 1)

The major characteristics of planets (revolution and rotation periods, size, number of moons)

1 What Makes Up the Solar System?

The **Sun** is the brightest thing in the day sky.
It is much larger than Earth.
The Sun looks small because it is very far away.

The Sun is made of hot gases.
The gases give off energy.
The Sun's energy comes to Earth as light.
Some of the Sun's light is changed to heat.


the Sun

1. Look at the picture of the girl. What tells you that the Sun is bright?

_____

_____

Science Test Practice

Circle the correct answer.

2. What do we get from the Sun?

(A) light
(B) water
(C) hot gases

4.f. (DOK 1)

3. The Sun and the space objects that move around it make up the

_____.

4. Look at the drawing on these two pages. The space objects moving around the Sun are called

_____.

Express Lab

Use the Activity Card **Compare the Sun and Moon.**

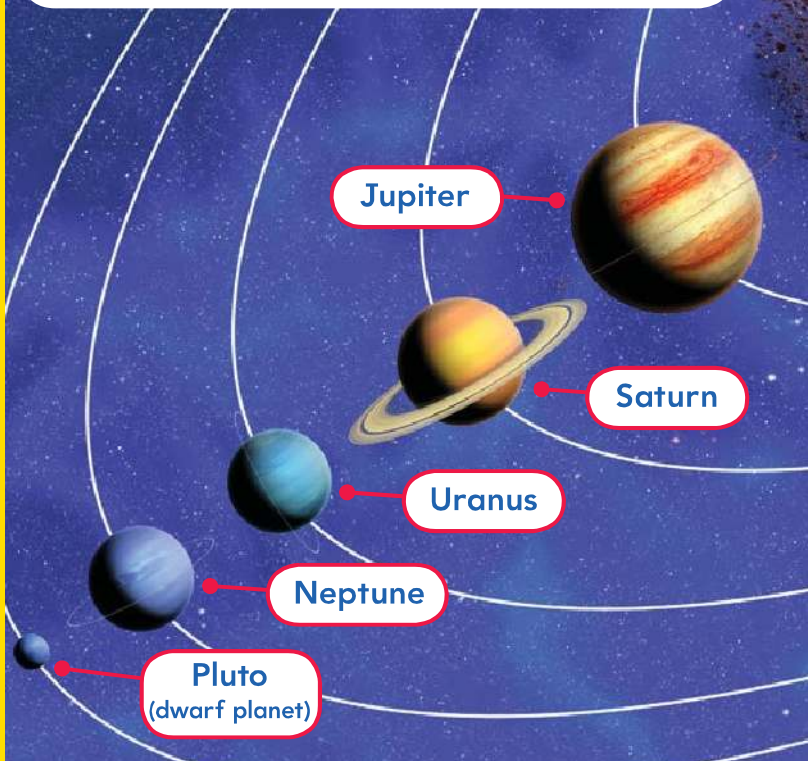
1.b., 4.f.

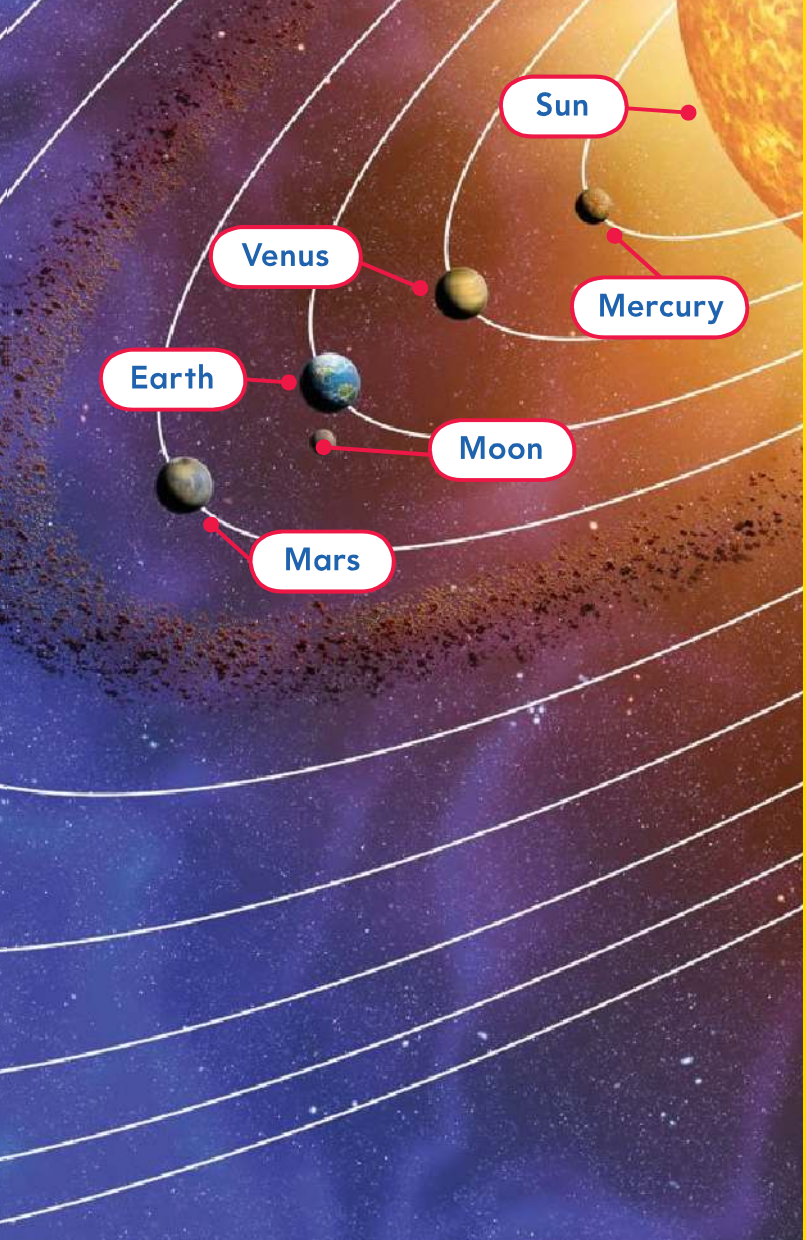
The Solar System

The Sun and the space objects that move around it make up our **solar system**.

A **planet** is a large object that moves around the Sun.

Our solar system has many planets. Planets are always in the sky.





5. Circle the largest planet on these pages.

6. Place an X on the planet that is closest to the Sun.

7. Circle the word that tells how long it takes for a planet to go around the Sun once.

8. Use the table on the next page. Which planet has the shortest day?

_____

9. Which planet has the shortest distance across?

_____

Compare the Planets

All the planets move around the Sun. A year is how long it takes a planet to go all the way around the Sun.
The planets also spin.
A day is how long it takes a planet to spin all the way around once.
Each planet is a different size.
Most planets have one or more moons.

Triton is one of Neptune's moons.

Planet	Length of Day	Length of Year	Distance Across	Number of Moons
Mercury	59 Earth days	88 Earth days	4,900 kilometers	0
Venus	243 Earth days	225 Earth days	12,000 kilometers	0
Earth	24 Earth hours	365 Earth days	12,750 kilometers	1
Mars	25 Earth hours	687 Earth days	6,800 kilometers	2
Jupiter	10 Earth hours	12 Earth years	143,000 kilometers	more than 60
Saturn	11 Earth hours	29 Earth years	120,000 kilometers	more than 55
Uranus	18 Earth hours	84 Earth years	51,000 kilometers	more than 25
Neptune	19 Earth hours	164 Earth years	49,500 kilometers	more than 10

Main Idea

What makes up the solar system?

Summary

The Sun gives us heat and light. It is the center of the solar system. The planets are different from one another.

Which planet has a day that is almost the same length as a day on Earth?

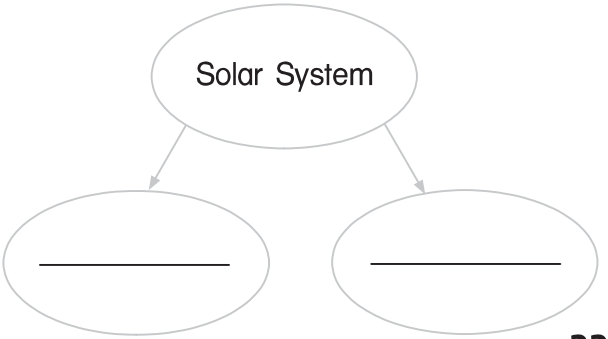
_____

Which two planets have the same number of moons?

_____

Main Idea

What makes up the solar system?



Lesson Preview

VOCABULARY

orbit The path that one space object travels around another. *(noun)*

revolve To move in a path around an object. *(verb)*

rotate To spin around an imaginary line. *(verb)*

VOCABULARY ACTIVITY

Use Words

rotate

Day and night happen because Earth **rotates.**

Use clues from the sentence above to help you understand what the word **rotate** means.

4.e. Model and explain the concept of Earth's rotation as it relates to day and night and infer why it is usually cooler at night than in the day. (DOK 2)

4.f. Describe characteristics and effects of objects in the universe. (DOK 1)

Position of the sun in relation to a fixed object on Earth at various times (day and night)

2 How Does Earth Move?

It looks like the Sun moves across the sky each day.
The Sun does not move, but Earth does.

Earth Spins

Earth **rotates**, or spins around an imaginary line.
This make-believe line is called an axis.

Different parts of Earth face the Sun as Earth rotates.
It is day on the part of Earth that faces the Sun.
It is night on the part of Earth that faces away from the Sun.
It takes Earth one day to rotate one time.

1. Put an X on the part of Earth where it is day.

2. How long does it take the Earth to rotate one time?

_____

I Wonder . . . Why is it usually cooler at night?

_____

_____

_____

Express Lab

Use the Activity Card **Model Day and Night.**

1.a., 4.e.

3. List two ways in which shadows change.

a. _____

b. _____

4. Circle the shadows on these pages.

I Wonder . . . Why can't you see the Sun at night?

_____

_____

_____

Directed Inquiry

Flip Chart p. 21

Observe Shadows

Formulate questions about why shadows change throughout the day.

1.a., 4.e.

Shadows Change

Light from the Sun shines on Earth. Shadows are made when something blocks the Sun's light.
Shadows change when Earth rotates.
Shadows change how long they are.
Shadows change where they are.

People can tell time by looking at shadows.

Shadows Change

morning

The Sun is low in the sky.
Shadows are long.
Shadows get shorter and shorter until noon.

noon

The Sun is at its highest point in the sky.
Shadows are shortest.

afternoon

The Sun is low in the sky again.
Shadows grow longer.

Science Test Practice

Circle the correct answer.

5. **Shadows change because the Sun appears to move across the sky. When are shadows the shortest?**

   (A) morning

   (B) noon

   (C) afternoon

4.f. (DOK 1)

6. Use your finger to trace the path of Earth around the Sun. What is this path called?

_____

7. Find winter in the picture. Circle the correct words.

   a. Mississippi is tipped (toward / away from) the Sun.

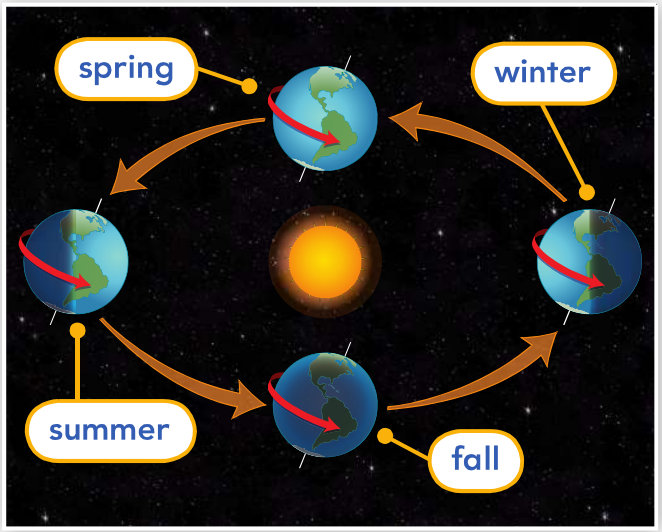
   b. Mississippi gets (more light / less light) in winter than in summer.

Earth Moves Around the Sun

Earth moves in another way as it rotates.

Earth and the other planets **revolve**, or move in a path, around the Sun. The path that one space object travels around another is called an **orbit**.

It takes one year for Earth to revolve around the Sun.



The seasons change as Earth orbits the Sun.
The part of Earth tipped toward the Sun gets the most light.
It is summer there.
The part of Earth tipped away from the Sun gets less light.
It is winter there.

Draw Conclusions

If it is spring, how long will it be until it is spring again?

Summary

Earth moves in two different ways. It rotates and it revolves.
What changes happen on Earth because the planet rotates?

_____

_____

Draw Conclusions If it is spring, how long will it be until it is spring again?

A year has four seasons:
spring, summer, fall, and winter.

↓

_____

_____

VOCABULARY

Moon A large sphere made of rock. *(noun)*

phase The different way the Moon can look. *(noun)*

VOCABULARY ACTIVITY

Use Words

Moon

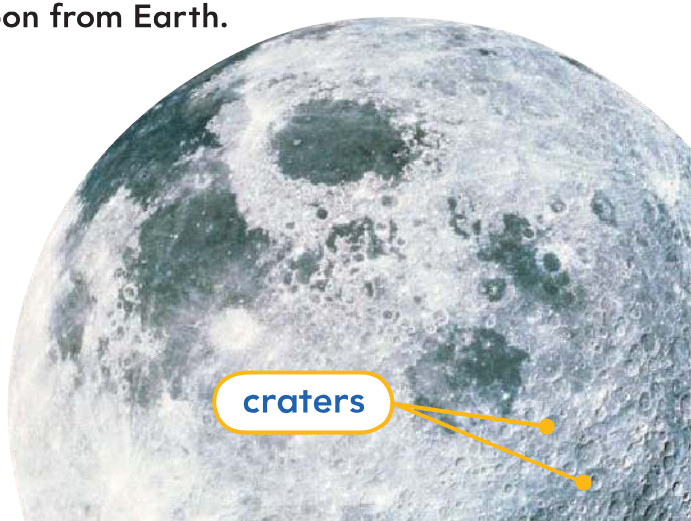
Circle the words on this page that describe the **Moon.**

4.f. Describe characteristics and effects of objects in the universe. (DOK 1)
Changes in the appearance of the moon

3 How Does the Moon Move?

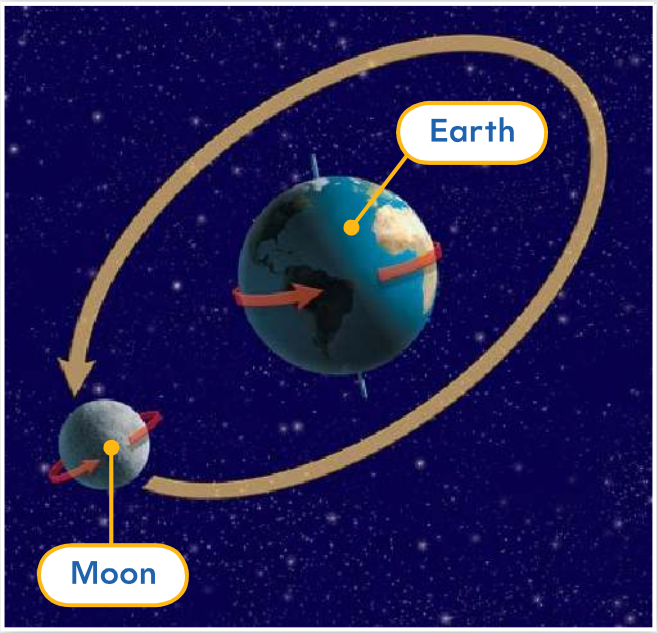
The **Moon** is a large sphere made of rock.
It is the closest large space object to Earth.
It looks like the Moon moves across the sky at night.
This happens because Earth is rotating.

The Moon has mountains and craters, or pits. You can see dark spots on the Moon from Earth.



The Moon in Motion

The Moon revolves in an orbit around Earth.
It takes about one month for the Moon to go around Earth one time. This happens month after month.



1. How does the Moon move?

2. Why does the Moon appear to move across the sky at night?

Science Test Practice

Circle the correct answer.

3. What causes Moon phases?

(A) Earth rotating on its axis

(B) Earth orbiting the Moon

(C) the Moon orbiting Earth

4.f. (DOK 1)

Directed Inquiry

Flip Chart p. 22

Moon Phases

Make a line graph to show how the Moon changes as it moves around Earth.

1.e., 4.f.

The Changing Moon

The Moon does not have its own light.

It reflects the Sun's light.

The Sun shines on only one side of the Moon at a time.

You may only see part of the side of the Moon that is lighted as it revolves around Earth.

first quarter

new

The Moon looks a little different every night.
The different ways the Moon looks are called **phases**.

full

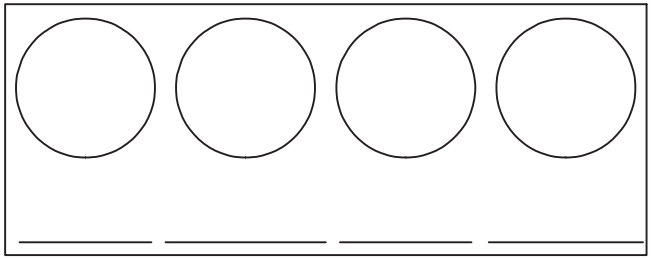
last quarter

Cause and Effect

Why does the Moon look bright in the night sky?

Summary

The Moon is a large sphere of rock that orbits Earth.
Draw and label the four phases of the Moon.



Cause and Effect

Why does the Moon look bright in the night sky?

Cause	Effect
_____ _____	The Moon looks bright.

KWL

What Did You Learn?

Science Test Practice

❶ Circle the correct answer.

❷ _____ causes night and day on Earth.

❸ The Moon seems to change shape because _____ _____.

❹ Some of the Sun's light is _____.

KWL

What Did You Learn?

Science Test Practice

❶ **Which planet has the longest year?**

Ⓐ Jupiter

Ⓑ Mars

Ⓒ Neptune

4.f. (DOK 1)

❷ What causes night and day on Earth?

❸ Why does the Moon seem to change shape?

❹ How do we get heat from the Sun?

Draw a picture to show how the Sun causes day and night.

Circle the correct answer.

1. How long does it take Earth to rotate one time on its axis?

   (A) one day

   (B) one month

   (C) one year

   4.f. (DOK 1)

2. Which causes day and night?

   (A) The Sun shines on different parts of Earth as Earth rotates.

   (B) The Sun moves across the sky during the day until it becomes night.

   (C) The Sun seems to move across the sky because Earth revolves around the Sun.

   4.e. (DOK 2)

3. Look at the picture.

Which moon phase is shown?

(A) full moon

(B) first quarter moon

(C) last quarter moon

4.f. (DOK 1)

Use the table to answer questions 4, 5, and 6.

Planet	Length of Day	Length of Year	Distance Across
Earth	24 Earth hours	365 Earth days	12,750 kilometers
Jupiter	10 Earth hours	12 Earth years	143,000 kilometers
Mercury	59 Earth days	88 Earth days	4,900 kilometers
Neptune	19 Earth hours	164 Earth years	49,500 kilometers
Saturn	11 Earth hours	29 Earth years	120,000 kilometers
Venus	243 Earth days	225 Earth days	12,000 kilometers

4. Which planet is 49,500 kilometers across?

Ⓐ Earth

Ⓑ Jupiter

Ⓒ Neptune

4.f. (DOK 1)

5. Which planet has the shortest year?

Ⓐ Mercury

Ⓑ Saturn

Ⓒ Venus

4.f. (DOK 1)

6. Which planet has the longest day?

Ⓐ Earth

Ⓑ Neptune

Ⓒ Venus

4.f. (DOK 1)

Glossary

Ⓐ

adaptation A body part or action that helps a living thing meet its needs where it lives. **(p. 114)**

amphibian An animal that lives part of its life in water and part of its life on land. **(p. 104)**

attract To pull toward something. **(p. 32)**

Ⓑ

bird An animal that has feathers and wings. **(p. 100)**

Ⓒ

cold-blooded Describes an animal that has to use its environment to help warm itself. **(p. 97)**

condense To change from water vapor to drops of water. **(p. 207)**

cone A part of a nonflowering plant where seeds form. **(p. 83)**

core The center of Earth. **(p. 180)**

crust The outer layer of Earth. **(p. 180)**

Ⓔ

echo A sound that repeats when sound waves bounce off a surface. **(p. 59)**

energy The ability to cause change. **(pp. 52, 148)**

environment All of the living and nonliving things around a living thing. **(p. 140)**

erosion The carrying of weathered rock and soil from place to place. **(p. 165)**

evaporate To change to a gas. **(p. 206)**

Ⓕ

fibrous root A root that has many thin branches. **(p. 87)**

fish An animal that lives in water and has gills. **(p. 106)**

float To stay on top of water. **(p. 38)**

flower The plant part where fruit and seeds form. **(p. 78)**

Glossary

food chain The order in which energy passes from one living thing to another. **(p. 151)**

food web A model that shows how different food chains are related. **(p. 154)**

force A push or a pull. **(p. 30)**

fruit The part of a flower that grows around a seed. **(p. 78)**

G

gas A state of matter that spreads out to fill a space. **(p. 9)**

gravity A force that pulls all objects toward each other. **(p. 42)**

H

habitat The part of an environment where a plant or an animal lives. **(p. 144)**

humus Tiny bits of dead plants and animals in soil. **(p. 190)**

I

invertebrate An animal without a backbone. **(p. 96)**

L

larva The young stage in the life cycle of some animals, such as butterflies. **(p. 130)**

life cycle The series of changes that a living thing goes through as it grows. **(p. 88)**

light A kind of energy that you can see. **(p. 60)**

liquid A state of matter that does not have its own shape. **(p. 8)**

litter Trash on the ground. **(p. 169)**

living thing A thing that grows, changes, and needs air, food, and water. **(p. 70)**

M

magnetic Attracted by a magnet. **(p. 34)**

magnify To make objects look larger. **(p. 21)**

mammal An animal that has fur or hair and makes milk to feed its babies. **(p. 98)**

Glossary

mantle The middle layer of Earth. **(p. 180)**

mass The amount of matter in an object. **(p. 11)**

mineral A solid found in nature that was never living. **(p. 184)**

mixture Something made of two or more things. **(p. 12)**

Moon A large sphere made of rock. **(p. 234)**

muscular system The body system that helps the body move and do other jobs. **(p. 119)**

N

natural resource Something found in nature that people need or use. **(p. 166)**

nervous system The body system that senses what is around the body and controls all the parts of the body. **(p. 118)**

nonmagnetic Not attracted by a magnet. **(p. 35)**

nutrient A material in soil that helps a plant live and grow. **(pp. 77, 190)**

O

offspring The group of living things that come from the same living thing. **(p. 122)**

orbit The path that one space object travels around another. **(p. 232)**

P

phase The different way the Moon can look. **(p. 237)**

planet A large object that moves around the Sun. **(p. 224)**

poles The two places on a magnet where the force is the strongest. **(p. 31)**

pollution Waste that harms the land, water, or air. **(p. 168)**

precipitation Water that falls from clouds. **(p. 208)**

property Color, shape, size, odor, or texture. **(p. 4)**

Glossary

pupa The stage in the life cycle of some animals, such as a butterfly, when it goes through many changes. **(p. 131)**

Ⓡ

recycle To make new things from old items. **(p. 171)**

reduce To use less of a resource. **(p. 171)**

repel To push away from something. **(p. 33)**

reproduce To make more living things of the same kind. **(p. 121)**

reptile An animal that is covered with dry scales. **(p. 102)**

reuse To use a resource again. **(p. 171)**

revolve To move in a path around an object. **(p. 232)**

rock A solid made of one or more minerals. **(p. 184)**

rotate To spin around an imaginary line. **(p. 228)**

Ⓢ

season A time of year. **(p. 212)**

seed The part from which a new plant grows. **(p. 78)**

seedling A young plant that grows from a seed. **(p. 88)**

separate To take apart. **(p. 13)**

shelter A place where a living thing can be safe. **(p. 72)**

sink To drop to the bottom of water. **(p. 38)**

skeletal system The body system that holds up the body, gives it shape, and protects soft body parts. **(p. 120)**

soil The loose material that covers Earth's surface. **(p. 178)**

solar system The Sun and the space objects that move around it. **(p. 224)**

solid A state of matter that has its own size and shape. **(p. 7)**

Glossary

sound A form of energy that you hear. **(p. 52)**

sound waves The waves that move vibrating air. **(p. 54)**

Sun The brightest object in the day sky. **(p. 222)**

Ⓣ

taproot A root that has one main branch. **(p. 86)**

Ⓥ

vertebrate An animal with a backbone. **(p. 96)**

vibrate To move back and forth very quickly. **(p. 52)**

volume The amount of space matter takes up. **(p. 7)**

Ⓦ

warm-blooded Describes an animal that does not have to use its environment to help warm itself. **(p. 97)**

water cycle Water moving from Earth to the air and back again. **(p. 206)**

water vapor Water as a gas. **(p. 206)**

weathering The wearing away and breaking apart of rock. **(p. 164)**

weight A measure of the pull of gravity on an object. **(p. 44)**

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PHOTOGRAPHY CREDITS

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