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"Extensive knowledge and modern science must be acquired. The educational process we see today is in an ongoing and escalating challenge which requires hard work.
We succeeded in entering the third millennium, while we are more confident in ourselves."

H.H. Sheikh Khalifa Bin Zayed Al Nahyan
President of the United Arab Emirates

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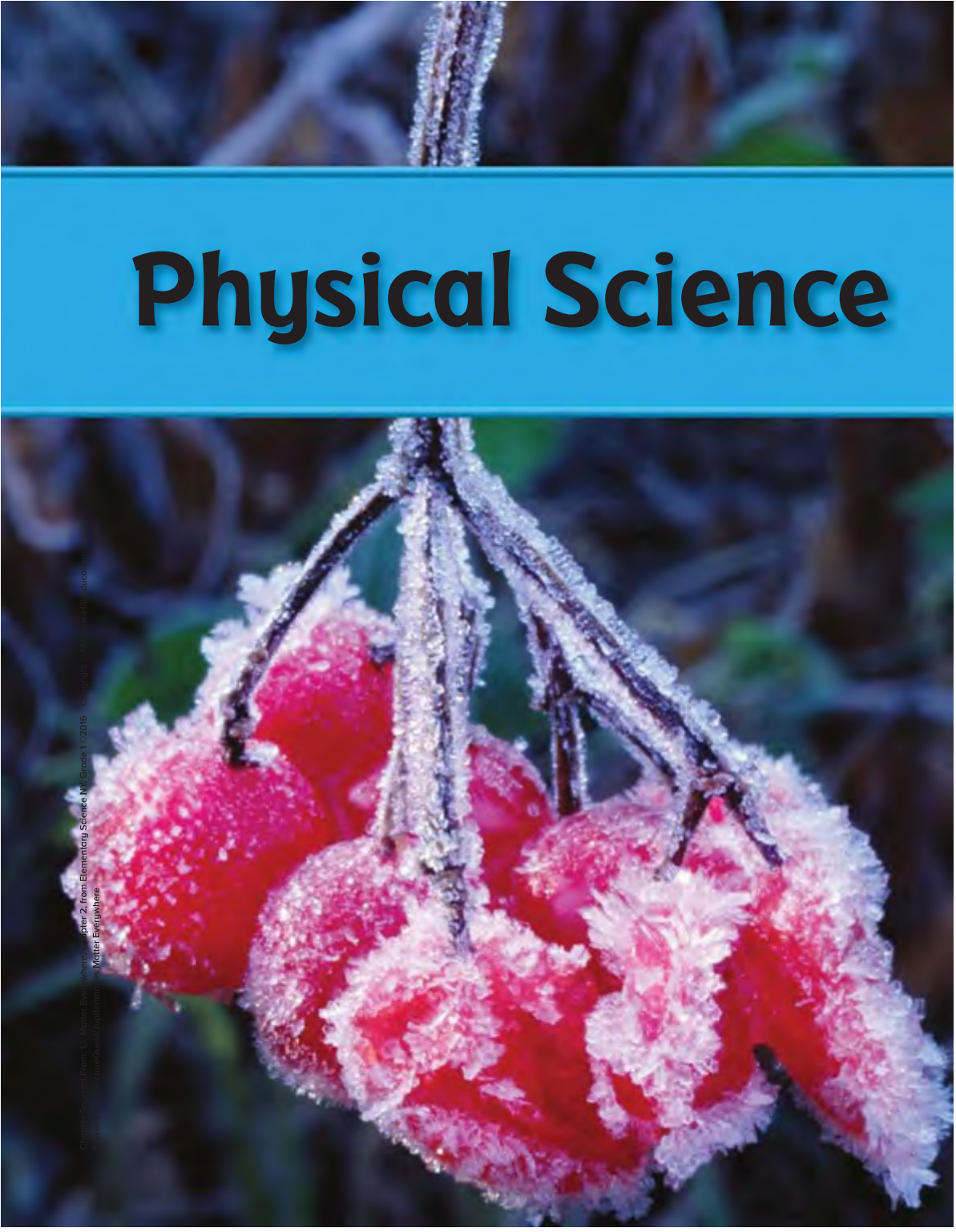
Be a Scientist

LIFE SCIENCE

Physical Science



CHAPTER 13

Matter Everywhere

The Big Idea

What are things made of?

Answers will vary. Accept all reasonable responses.

Vocabulary

matter what all things are made of

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

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

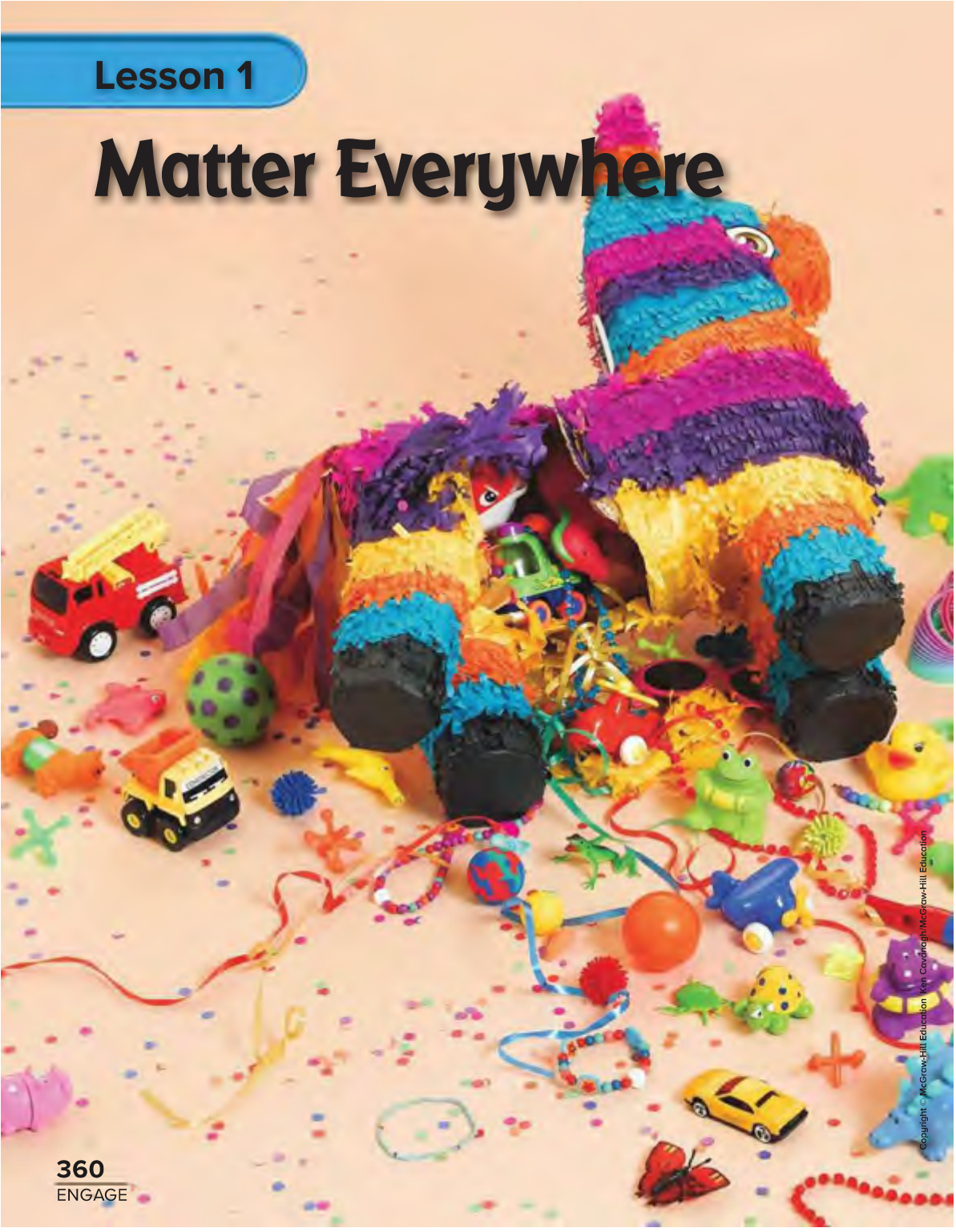
gas a state of matter that does not have its own shape

Before reading this chapter, write down what you already know in the first column. In the second column, write down what you want to learn. After you have completed this chapter, write down what you learned in the third column.

Matter		
What We **K**now	What We **W**ant to Know	What We **L**earned
Objects are different shapes.	Why do things have a shape?	Solids have a shape of their own.
Water can be poured.	Does water have a shape?	Liquids and gases do not have a shape of their own.
You can mix objects together.		

Lesson 1

Matter Everywhere



Look and Wonder

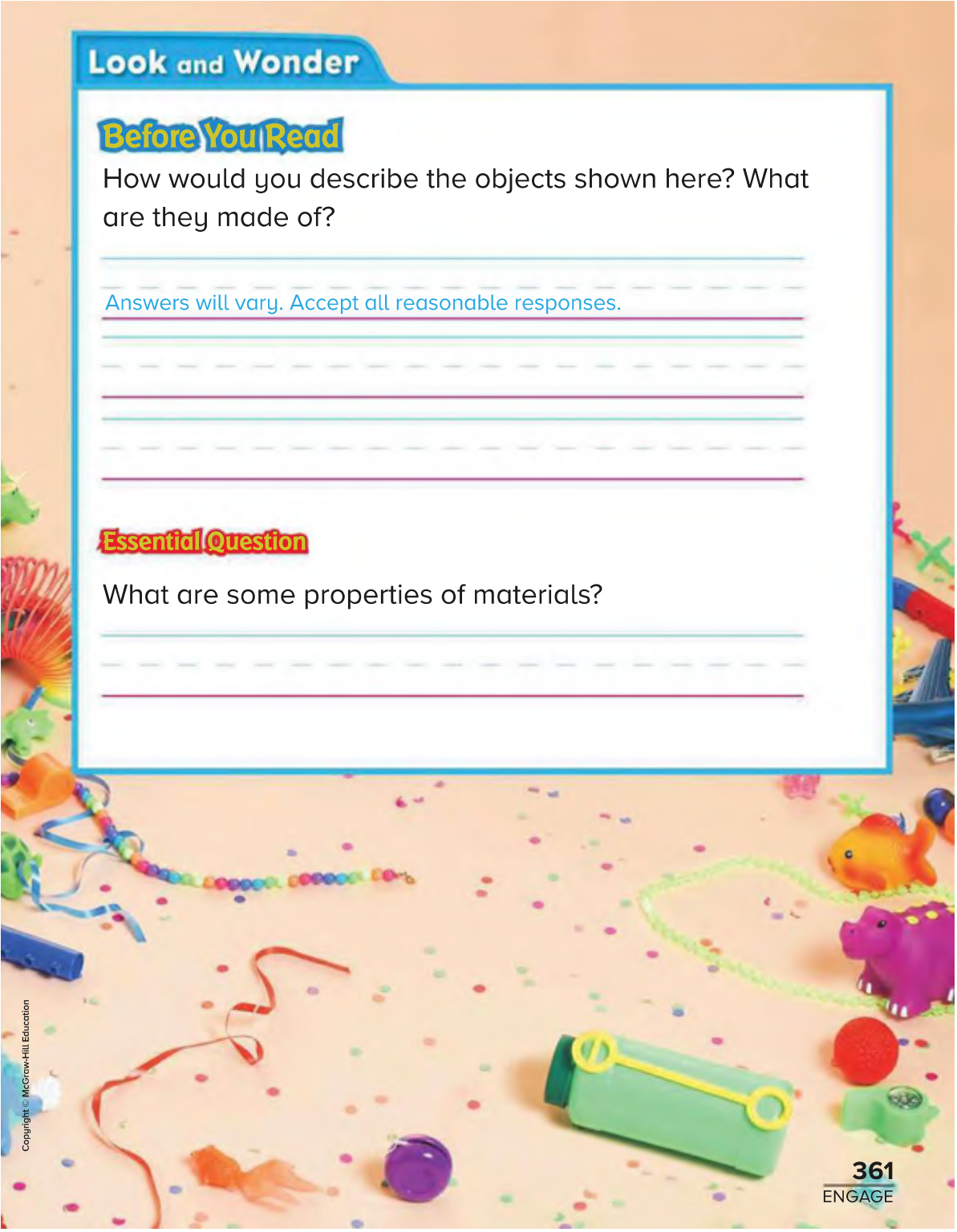
Before You Read

How would you describe the objects shown here? What are they made of?

Answers will vary. Accept all reasonable responses.

Essential Question

What are some properties of materials?



What are the properties of these objects?

You need

spoons

tub of water

pencil

What to Do

1. **Observe.** Look at and feel each spoon. Record what each one looks and feels like.

	Wood	Plastic	Metal
Looks	brown	smooth	shiny
Feels	light	hard	heavy

2. **Predict.** Which spoons will float in water? Which will sink? Try it out.

Possible prediction: I think the wood and plastic will float. I think the metal will sink.

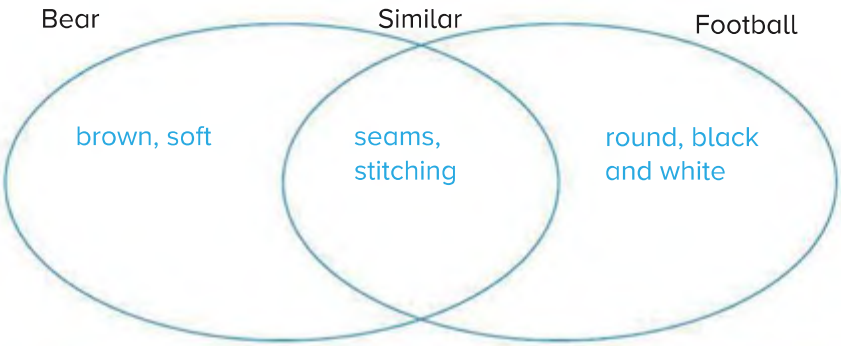
Every kind of matter has its own properties.

Matter is what all things are made of.

Solids, liquids, and gases are three forms of matter. All matter takes up space. Two objects cannot be in the same space at the same time.

Quick Check

1. Compare the properties of a teddy bear and a football.



▲ **Brown and soft are two properties of this toy bear.**

What are materials?

A **material** is the type of matter that makes up solids. Cotton, rubber, metal, and glass are different materials.

Objects that are made out of the same material can have the same properties. Some materials sink in water. Others float in water. Some materials are hard. Others are soft. Texture describes how a material feels. Rough and smooth are textures.

Quick Lab

Sort objects in your classroom by type of material. Describe their properties.

Sinking and Floating

Read a Photo

Which materials sink in water?

glass, toy car

Some materials dissolve in water. When a material dissolves, it stays evenly mixed. Sugar dissolves in water. Sand does not dissolve. It sinks to the bottom. **Solubility** is the property that describes whether or not a material will dissolve. Sugar is soluble in water. Sand is not.

▲ **This drink mix is soluble.**

Quick Check

2. What is a material?

Possible answers: A material, such as cotton, rubber, metal, or glass, is the type of matter that makes up solids.

Visual Summary

Write about what you learned.

Matter

Possible answers: Matter is what all things are made of. Every kind of matter has its own properties. Properties are how something looks, feels, smells, tastes, and sounds.

Solid material

Possible answers: A material is the type of matter that makes up solids. Cotton, rubber, metal, and glass are different materials.They are characterized by characteristics such as diving in the water or buoyancy over its surface, roughness, softness and others

Think, Talk, and Write

1 **Vocabulary.** What is matter?

Matter is what all things are made of.

2 **Classify.** Sort different materials by their texture.

Hard	Soft
Answers will vary, but children should sort materials according to the properties.	

3 Describe how objects can be different.

Possible answer: Objects can have different properties, be made of different materials, and have different parts.

Essential Question What are some properties of materials?

Possible answer: Properties are texture, whether a material is soft or hard, and whether a material sinks or floats.

Be a Scientist

How can you make an object float?

Test materials to find out which float. If they sink, find out if you can change their shapes to make them float.

What to Do

1. **Predict.** List the objects that you think will sink in the water. List the things that will float.

Things That Will Float	Things That Will Sink

2. **Investigate.** Test your predictions. Place each object in the tub of water.

You need


tub of water


rubber eraser

paper


aluminum foil


wooden block


rock


ball of clay


plastic cup

3 **Compare.** Which materials float? Which sink? Were your predictions correct?

Answers will vary.

4 **Observe.** Can you change the shape of any of the materials? Which ones?

Yes, I can change the shapes of paper, aluminum foil, and clay.

5 **Investigate.** Change the shape of the materials to see if you can make them float. Test three different shapes.

6 **Communicate.** How can you make an object float? Can you make all materials float? Explain.

I can change the shape to make an object float. I can make other materials float if I put it inside something that can float, like a boat.

Investigate More

7 How can you make the best boat? Make a plan to test your ideas.

Answers will vary. Accept all reasonable responses.

Lesson 2

Measuring Matter

Look and Wonder

Before You Read

Many of these things look almost the same, but they are different. How can you describe and measure their differences?

Possible answer: The items are different sizes, colors, and shapes. If I weighed them, I could tell more precisely how they differ in size. I could also measure them with a ruler to determine their sizes.

Essential Question

How do you observe and m sure properties?

How can you describe differences in objects?

You need

objects made of different materials

hand lens

balance

What to Do

1. **Compare.** What properties of the object are the same? What properties are different?

Answers will vary depending on the objects students observe.

2. **Observe.** Observe the differences between the objects. Use a hand lens to help you.

3. **Measure.** Use a balance to find out which object is heaviest.

4 **Communicate.** Describe the differences in the objects using your observations and measurements.

Answers will vary. Accept all reasonable responses.

Explore More

5 **Compare.** Measure, observe, and compare the properties of other objects.

Answers will vary.

Open Inquiry

Learn more about properties of other objects.
My question is:

Sample question: How are rocks and marbles different?

Read ar

What too matter?

When you carefully (l or smell it. matter, yo about the

Tools can describe n

▼ Too me

A **hand lens** is a tool that makes objects seem larger. It helps you observe. With a hand lens, you can see things that you cannot see with just your eyes. A hand lens can help you see small differences in materials.

Quick Check

1. Fill in each blank.

A hand lens makes objects seem larger

You can see small differences in materials.

▼ **The hand lens helps you observe small parts of the paper.**

How can you measure matter?

A **ruler** is a tool that measures length. Some rulers measure length in centimeters. Other rulers measure in inches. Many rulers give both measurements.

When you measure, you find out how long or how heavy something is. **Mass** and length are properties of matter. Mass is how much matter is in an object. Heavier objects have more mass that lighter objects. A **balance** can be used to measure mass.

▲ **The chalk is 10 centimeters long.**

Read a Photo

Which bird has more mass?

The metal bird has more mass than

the sponge-shaped bird.

Using a Balance

▲ **The side with more mass will be lower.**

You can also measure temperature. Temperature is how warm or cold something is. A **thermometer** is a tool that is used to measure temperature.

Quick Lab

Measure the temperature of water using a thermometer.

A thermometer tells you how warm or how cold something is. ▶

Quick Check

2. What properties can be measured?

Length, mass, and temperatures are properties that can be measured.

Visual Summary

Write about what you learned.

Observing Matter

Possible answers: When you observe matter, you carefully look, hear, taste, touch, or smell it. A hand lens is a tool that makes an object seem larger.

Measuring Matter

Think, Talk, and Write

1 **Vocabulary.** What is mass?

Mass is how much matter is in an object.

2 **Put Things in Order.** Use a balance to put three objects in order from the least to the most mass.

Answers will vary depending on
the objects children measure.

3 What can you notice about matter by observing it?

Essential Question How do you observe and measure properties?

A Shoe Story

Look at Emad's shoes. Where do you think they could have been?

Write About It

Write a story about Emad's shoes and where they have been. Describe the properties of the shoes.

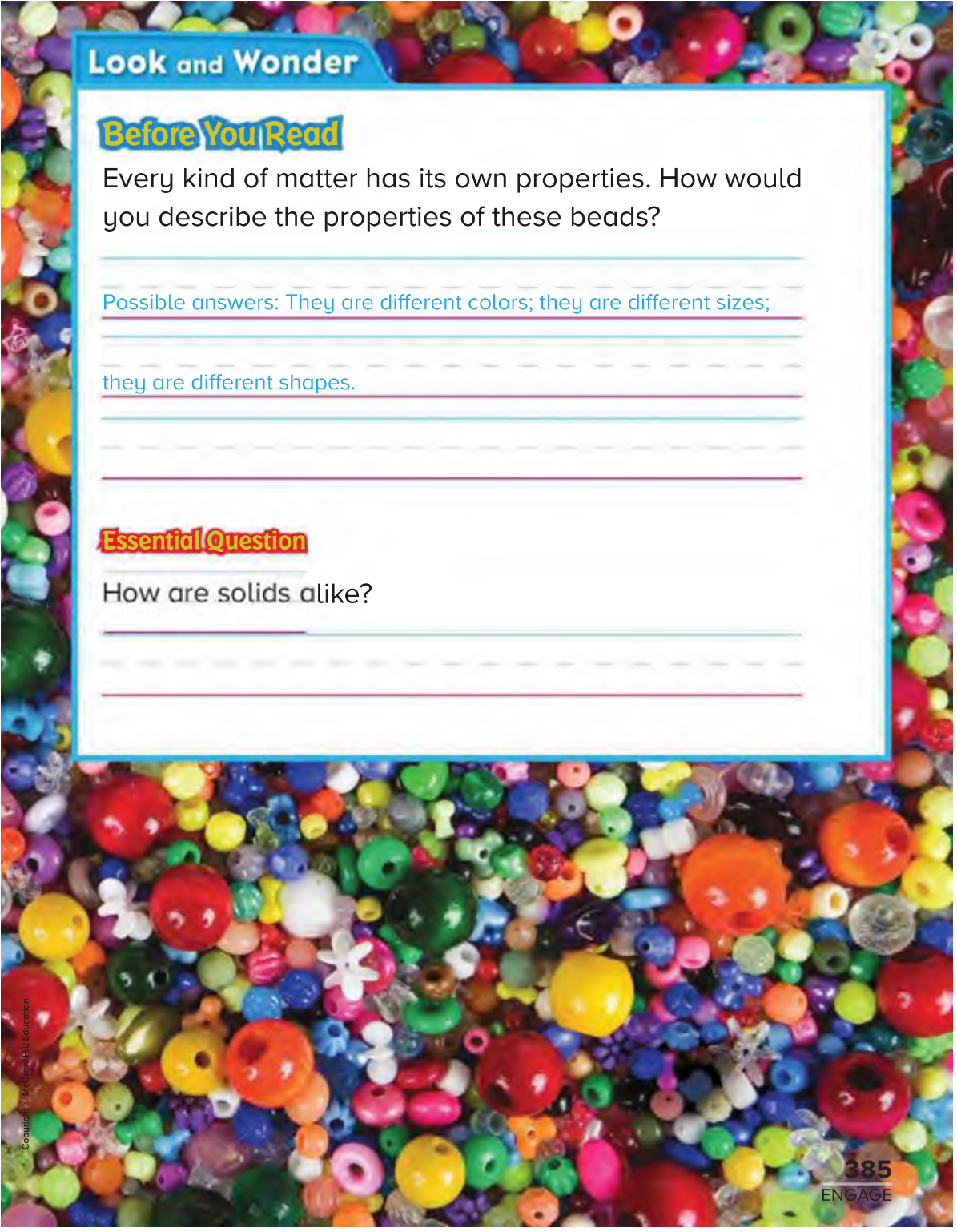
Remember

A story has a clear beginning, middle, and end.

Students' responses will vary. Accept all reasonable responses.

Lesson 3

Solids



Look and Wonder

Before You Read

Every kind of matter has its own properties. How would you describe the properties of these beads?

Possible answers: They are different colors; they are different sizes; they are different shapes.

Essential Question

How are solids alike?

Explore

How can you compare some solids?

What to Do

You need

classroom objects

balance

1. Collect five solid objects around your classroom.

2. **Compare.** Describe the objects' properties. How are they alike? How are they different? Sort them by their properties.

Answers will vary depending on the objects students gather. Students might sort objects by color, shape, or texture.

3. **Measure.** Use a balance to put the objects in order from the most mass to the least mass.

Answers will vary.

Explore More

4 **Classify.** What other properties can you use to sort the objects?

Answers will vary. Accept all reasonable responses.

Open Inquiry

Learn more about the properties of other solids.
My question is:

Sample question: Do large solids always have more mass than smaller solids?

Read and Respond

What is a solid?

A **solid** is a form of matter. Only a solid has a shape of its own.

A solid can keep its shape even if it is moved.

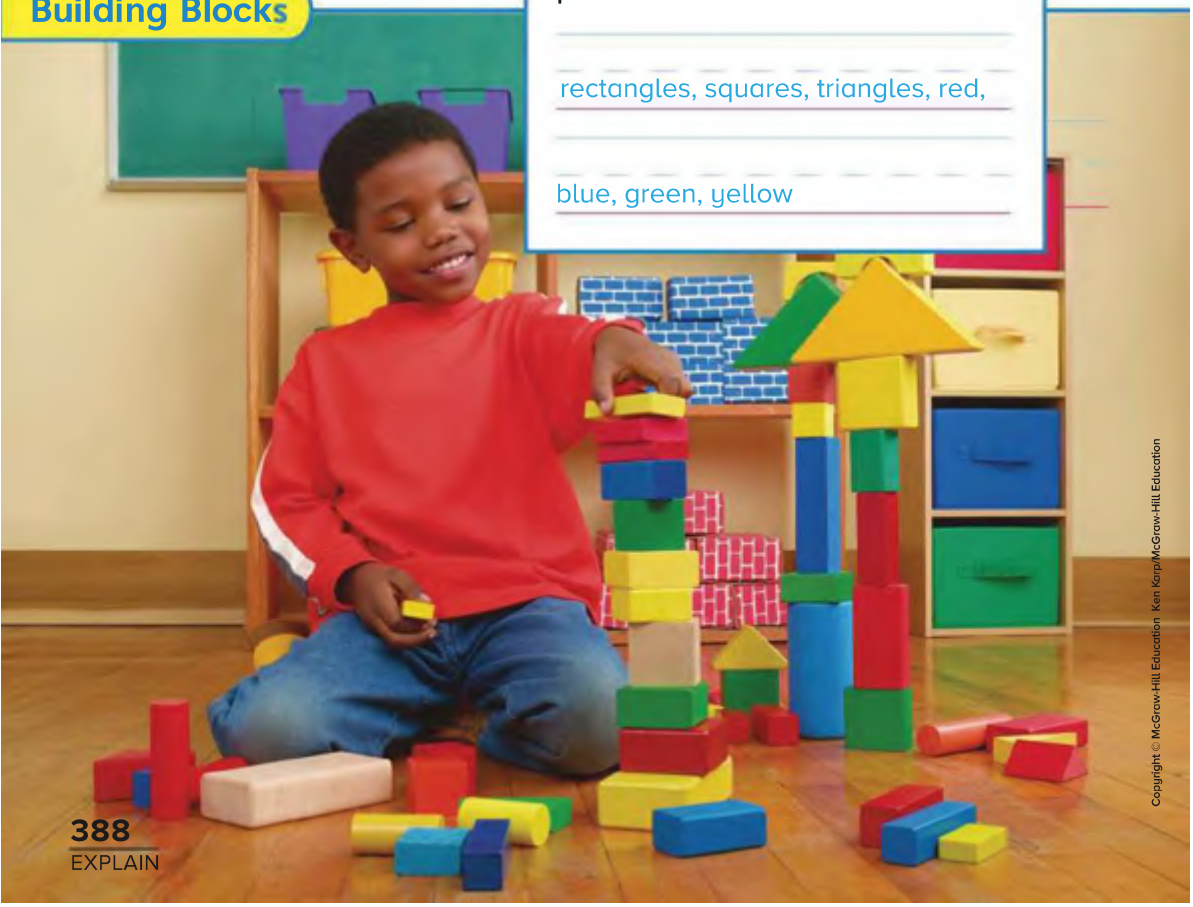
Read a Photo

Describe the solids in this picture.

rectangles, squares, triangles, red,

blue, green, yellow

Building Blocks



The amount of matter in a solid always stays the same.

If you take apart a puzzle, the total amount of matter in the puzzle does not change.

The puzzle pieces and the completed puzzle have the same amount of matter.

Quick Check

1. Circle the objects that are a solid.

book air juice ball

What are some properties of solids?

Solids can have many different properties. They come in many different shapes and colors. Some solids are flexible. When a solid is flexible you can bend it. Some solids float in water. Other solids sink.

Solids can be large or small. They can also be long or short. You can use a ruler to measure some solids.

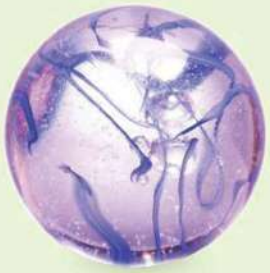
Quick Lab

Use a ruler to **measure** some solids.

Some Properties of Solids

rock

- hard
- speckled
- jagged



glass

- smooth
- breakable
- clear

yarn

- soft
- colorful
- long and thin

FACT Not all solids are hard.

Solids are made of different materials. Some metals, woods, and plastics are hard. Materials can be smooth or rough when you touch them. The chart below shows the properties of some solids.

Quick Check

2. Circle the properties that describe how the objects below feel when you touch them.

		
toy	**sea sponge**	**clay**
• blue • pointy • plastic	• yellow • soft • scratchy	• sticky • bendable • firm

What are shadows?

Have you ever made a shadow on a wall? A shadow is a dark area where light does not reach.

Different objects let different amounts of light through. A book is a solid object. It can block light and make a shadow. Glass is clear. It does not make a shadow because light passes through it.

Shadows

Read a Photo

How is this shadow made?

Possible answers: puppet is blocking the Sun, light bulbs, flashlights

A shadow's size depends on where a light source is. A large shadow forms when the light source is close to the object. Light coming from above creates a short shadow. As the light source gets lower, the shadow gets longer.

▲ **The size of your shadow can change.**

Quick Check

3. What kinds of objects make shadows?

Possible answer: Solid objects make shadows. Objects that light can pass through do not make shadows.

Visual Summary

Write about what you learned.

Solids

Possible answers: Solids have a shape of their own. The amount of matter in a solid always stays the same.

Properties of Solids

Possible answers: Solids come in many different shapes, colors, and sizes. Some solids float in water. Other solids sink. The texture of solids can be smooth or rough. Solids block light and can make shadows.

Think, Talk, and Write

1 **Observe.** Use a hand lens to observe properties of some solids up close.

Answers will vary, depending on the solid that children choose.

2 Write a list of solids you can bend.

Possible answer: sponge, clay, rubber

Essential Question How are solids alike?

Possible answer: All solids keep their shape even if they are moved.

BUILDING BLOCKS

Do you know the story about the three little sheep? Each sheep built a house from a different material to hide from the wolf.

The first sheep used straw to build a house. The second sheep used wood to build a house. The third sheep used bricks to build a house.

▶ **Straw is dry, hollow grass. Straw can make walls and a roof.**

Wood comes from trees. Wood is stronger than straw. A wood house can last for more than a hundred years.

Bricks are made from hard clay. Bricks are very strong. A brick house can last for more than a thousand years.

Predict. Which one of these materials would make the strongest building? Why?

What I Predict	What Happens
Possible answer: Bricks would make the strongest building because they are stronger than straw and wood.	Possible answer: Bricks are the strongest building material because they are made from hard clay and can last longer than straw and wood.


Lesso
Liq
398
ENGAGE

Before You Read

This boy is swimming in water. Why do you think there are bubbles in the water?

Possible answer: The boy blows the bubbles in the water.

Write the lesson vocabulary words below.

liquid

gas

Essential Question

How are liquids different from gases?

Explore

What are some properties of a liquid?

You need

dropper

colored water

wax paper

toothpicks

What to Do

1. **Measure.** Fill a dropper with colored water. Place drops of water next to each other on wax paper.

2. **Observe.** Use a toothpick to move the drops. What happens to the drops?

Possible answer: The size and shape of each drop changes.

3. **Communicate.** What are some properties of water?

Possible answers: clear, wet, warm, cool, flows quickly

Explore More

4 **Infer.** Do liquids have their own shape? How do you know?

Liquids do not have a shape of their own. They take on the shape of whatever they are in.

Open Inquiry

Learn more about the properties of liquids.

My question:

Sample question: Do other liquids share the same properties as water?

What is a liquid?

A **liquid** is a form of matter. Like solids, liquids have mass and take up space.

Liquids do not have a shape of their own. They take the shape of whatever they are in. Liquids flow when you pour them.

Liquids like honey and ketchup flow slowly.

Liquids like milk and oil flow quickly.

You can use a measuring cup to measure liquids. A measuring cup measures how much space a liquid takes up.

Quick Check

Circle the correct answer.

1. A liquid ~~does~~ ~~does not~~ have its own shape.

does (does not)

2. A measuring cup measures how much ~~space~~ ~~air~~ a liquid takes up.

(space) air

▲ **The amount of liquid in these containers is the same.**

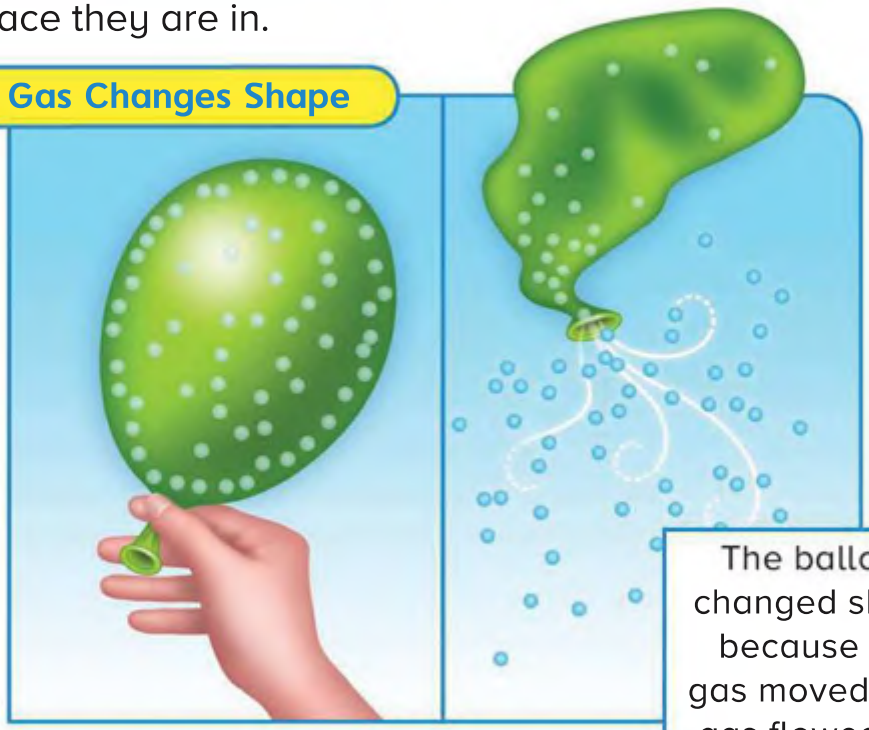
What is a gas?

A **gas** is a form of matter too. Like liquids, gases do not have a shape of their own.

Underline the sentence that tells you how a gas is the same as a liquid.

Gases spread to fill all the space of whatever they are in. Gases spread evenly in the space they are in.

Gas Changes Shape



The balloon changed shape because the gas moved. The gas flowed out of the balloon and spread out evenly.

FACT Air is matter. It has mass and takes up space.

The air we breathe is made up of different gases.

You cannot see these gases, but you can feel them. Air can feel hot or cold. It can also move.

Quick Lab

Observe how air in a cup keeps a tissue dry in water.

Even though you cannot see the air, it helps these ribbons stay up. ▶

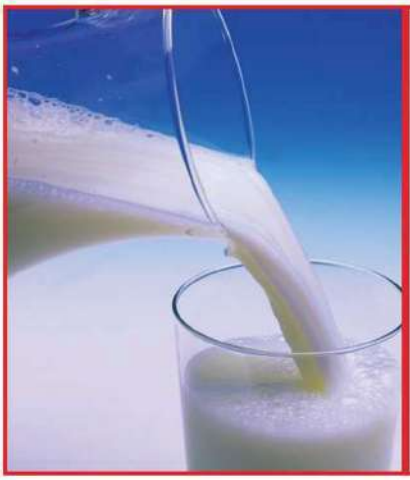
Quick Check

3. How can you describe gas?

Possible answers: Gases fill all the space of their containers; we often cannot see gases; we can feel the movement of gases.

Visual Summary

Write about what you learned.



Liquids

Possible answers: Liquids do not have a shape of their own. Liquids flow when you pour them. Some liquids are thick. They flow slowly. Some liquids are thin. They flow quickly.

Gases

Possible answers: Like liquids, gases do not have a shape of their own. Gases spread evenly to fill the space they are in. The air we breathe is made of different gases. Gases cannot be seen but we can feel them.

Think, Talk, and Write

1 Vocabulary. What is a liquid?

A liquid is a form of matter.

2 Predict. What would happen to the gas in a balloon if it had a hole?

What I Predict	What Happens
Possible answer: The air would flow out of the hole and the balloon would become flat.	Possible answer: The air flows out of the hole and the balloon is flattened.

3 How do measuring cups measure liquids?

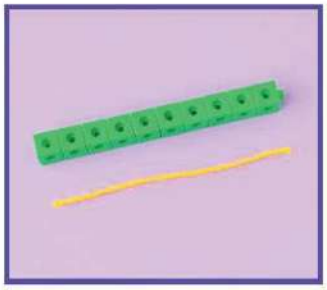
A measuring cup measures how much space a liquid takes up.

Essential Question How are liquids different from gases?

Possible answers: Liquids can be poured to fill a container. You can use a measuring cup to measure liquids. Gases spread evenly to fill all the shape of whatever they are in. They spread evenly in the space they are in.

Inquiry Skill: Measure

You **measure** to find out the size or amount of something. You can use string or cubes to measure how long or wide something is. You can also use a ruler to measure some things.



Learn It

Duaa used cubes and a ruler to compare the length of three books. She made a chart to show what she found out.

How Long Is a Book?

Book	Cubes	Centimeters
I Spy	13 cubes	25 centimeters
The Biggest Tree	9 cubes	18 centimeters
Watch It Grow	9 cubes	18 centimeters

Try It

Look at the pictures on the previous page.

1. How many cubes around is the can in the picture?

It is ten cubes round.

2. Use string to measure the width of two classroom objects. How many cubes wide is each object?

Answers will vary.

3. Use a ruler to measure the cubes. Use a chart like Duaa's to show what you find out.

Width of My Objects		
Object	Cubes	Centimeters
Answers will vary.		

CHAPTER 13 Review

Vocabulary

Use each word once to complete the sentences.

balance
gases
liquid
matter
solid

1. All things are made of matter.

2. A liquid does not have its own shape.

3. A solid has a shape of its own.

4. A tool used to measure mass is a balance.

5. The air is made of different gases.

Science Skills and Ideas

Answer the questions below.

6. Describe the different textures you see on these puppets.

Possible answers: soft, fuzzy, rough, smooth

7. **Measure.** How can you measure mass?

You can measure mass by using a balance.

8. **Predict.** If you blow into a balloon, what will happen?

What I Predict	What Happens
Air will fill the balloon and it will get bigger.	The balloon got bigger.

9. Describe the properties of the liquids below.



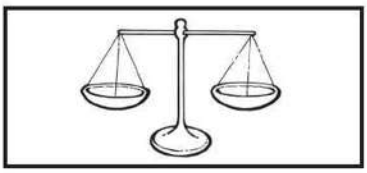
Possible answers: Ketchup is red, salty, and thick, and it flows slowly; honey is brown, sweet, thick, and sticky, and it flows very slowly; milk is white and thin, and it flows quickly.

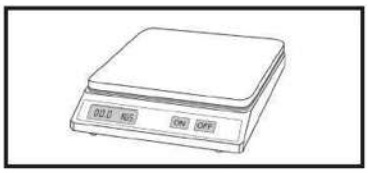
The Big Idea

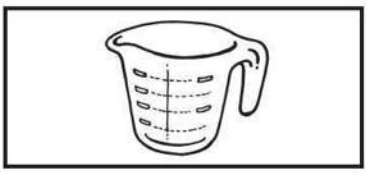
10. What are properties of natural and human-made materials?

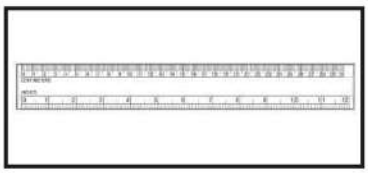
Accept all reasonable responses.

1. Amirah wants to measure how much space a liquid takes up.


balance


scale


measuring cup


ruler

What tool should she use?

A balance
B scale
C measuring cup
D ruler

2. Which is not a property of solids?

A They have mass.
B They take the shape of the space they are in.
C They can be rough or smooth.
D They take up space.

CHAPTER 14

Motion

The Big Idea

How can you make things move?

Answers will vary. Accept all reasonable responses.

Vocabulary

push a force that moves something away from you

pull a force that moves something closer to you

ramp a slanted surface that you can use to move things up or down

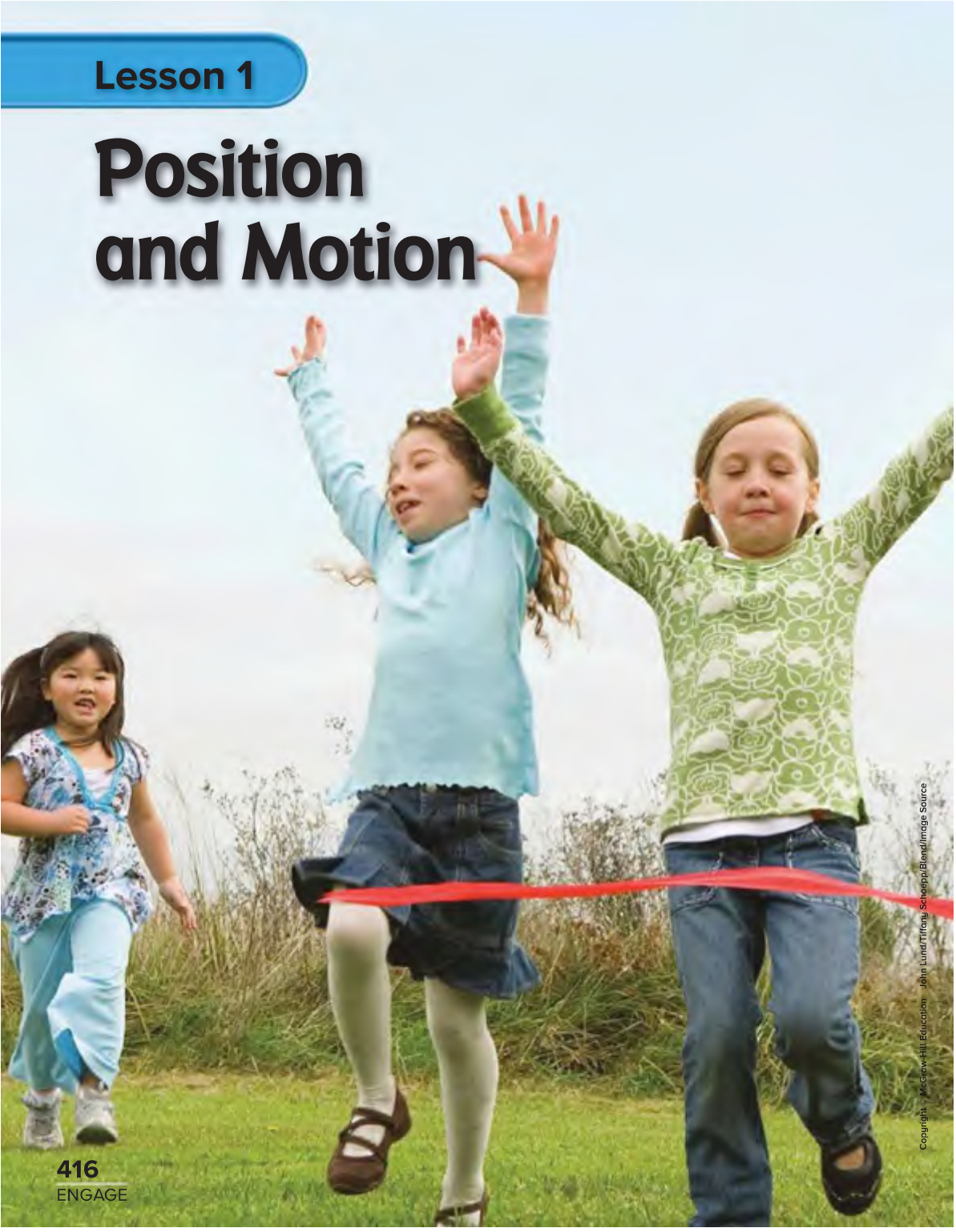
magnet something that can pull, or attract, some objects with metal in them

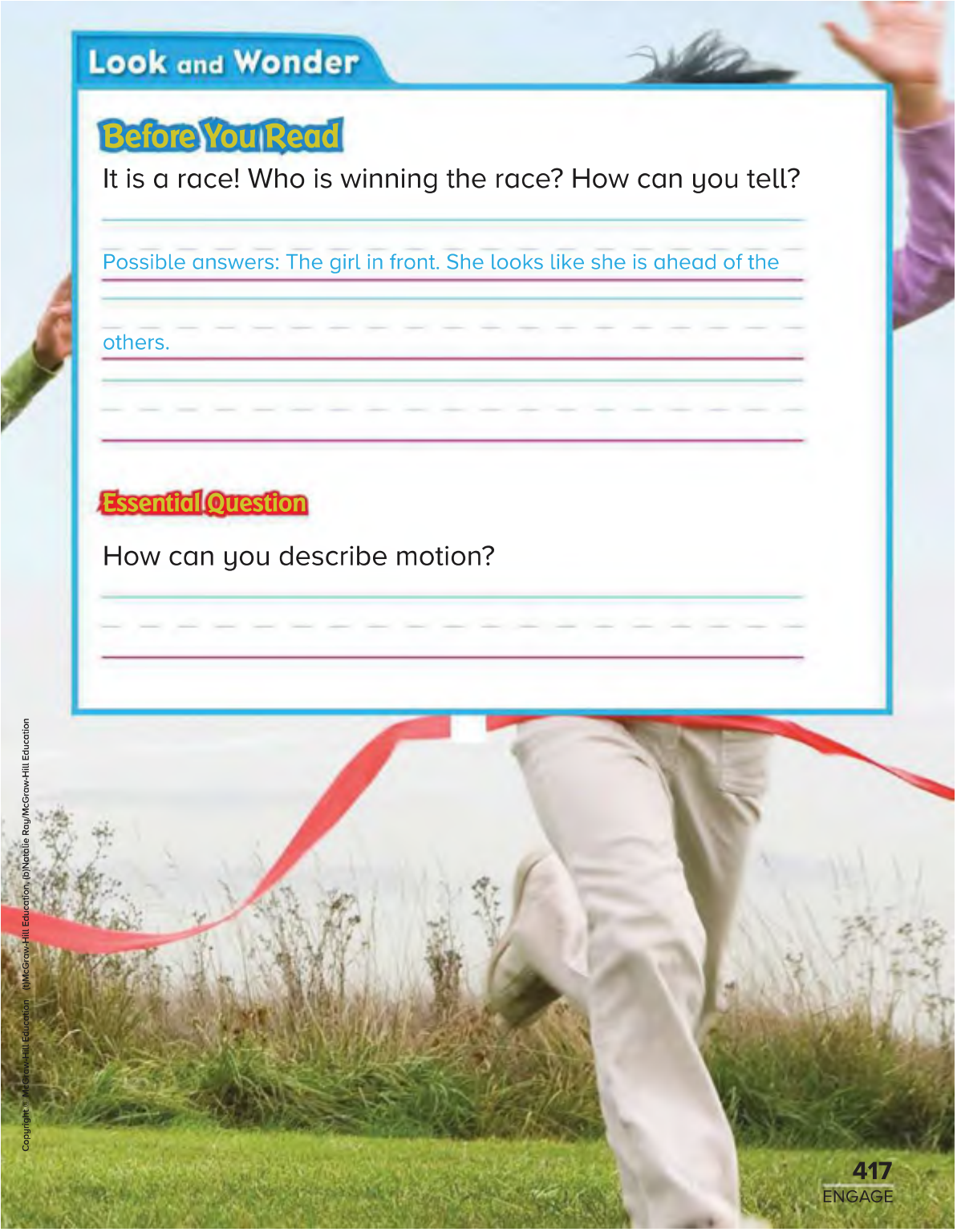
Before reading this chapter, write down what you already know in the first column. In the second column, write down what you want to learn. After you have completed this chapter, write down what you learned in the third column.

Motion		
What We **K**now	What We **W**ant to Know	What We **L**earned
Things move.	How do things move?	An object is moved when it changes position.
Pushing moves things.	What moves heavy things?	
Round things roll.		

Lesson 1

Position and Motion





Look and Wonder

Before You Read

It is a race! Who is winning the race? How can you tell?

Possible answers: The girl in front. She looks like she is ahead of the others.

Essential Question

How can you describe motion?

Explore

How do you know something moved?

You need

classroom objects

What to Do

1. Put three objects on a table.

2. **Observe.** Look closely at the objects. Where are they on the table?

Possible answer: They are next to each other at the edge of the table.

3. Cover your eyes. Have your partner move one object.

4 **Infer.** Open your eyes. Which object did your partner move? How can you tell?

Possible answer: My partner moved the cube. I know because it is not next to the other objects.

Explore More

5 **Investigate.** Can making a map of the table and objects help you find out which object moved? Try it.

Possible answer: Yes, making a map of the table and objects can help you find out which object moved.

Open Inquiry

Investigate other ways to determine if something has moved.

My question is:

Sample question: What other ways can you record how an object has moved?

How can you tell where something is?

Have you ever told a friend where something is? You probably described the object's position.

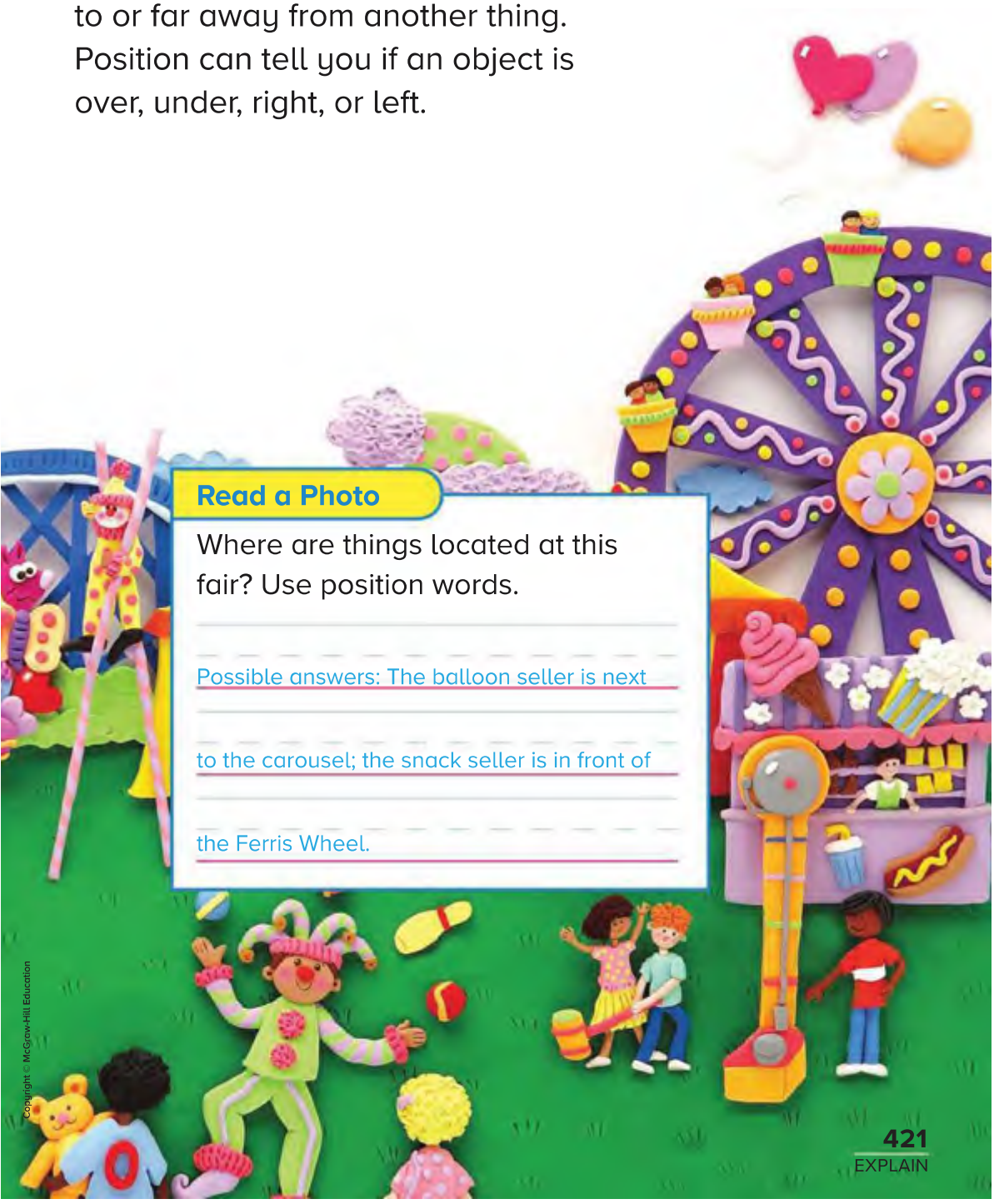
Position is the place where something is located.

Quick Check

Fill in the blank.

1. An object changes its position when it is moved from one place to another.

Position tells you if one thing is close to or far away from another thing. Position can tell you if an object is over, under, right, or left.



Read a Photo

Where are things located at this fair? Use position words.

Possible answers: The balloon seller is next to the carousel; the snack seller is in front of the Ferris Wheel.

How do things move?

Objects can move in many ways. **Motion** is a change in an object's position.

Things can move forward, backward, or in a circle. They can even zigzag!

Quick Lab

Make a ball move in a curvy line and in a straight line.

▲ **This car drives down a curvy road.**

▲ **This airplane moves in a straight line.**

Speed is how fast or slow something moves. Different objects move at different speeds.

A rocket ship moves much faster than an airplane. ▶

Quick Check

2. What words can you use to describe an object's position?

Possible answers: near, next to, beside, above, below

3. How can you tell if one object is moving faster than another?

Possible answers: It moves farther away than the other object; it is ahead of the other object.

Visual Summary

Write about what you learned.

Position

Possible answers: Position is the place where something is located. Position words can tell if something is close or far, above, under, to the right or left.

Motion

Possible answer: Motion is a change in an object's position. Objects can move forward, backward, or in a circle.

Think, Talk, and Write

1 **Vocabulary.** What is speed?

Speed is how fast or slow something moves.

2 **Compare and Contrast.** How are a rocket ship and an airplane alike? How are they different?

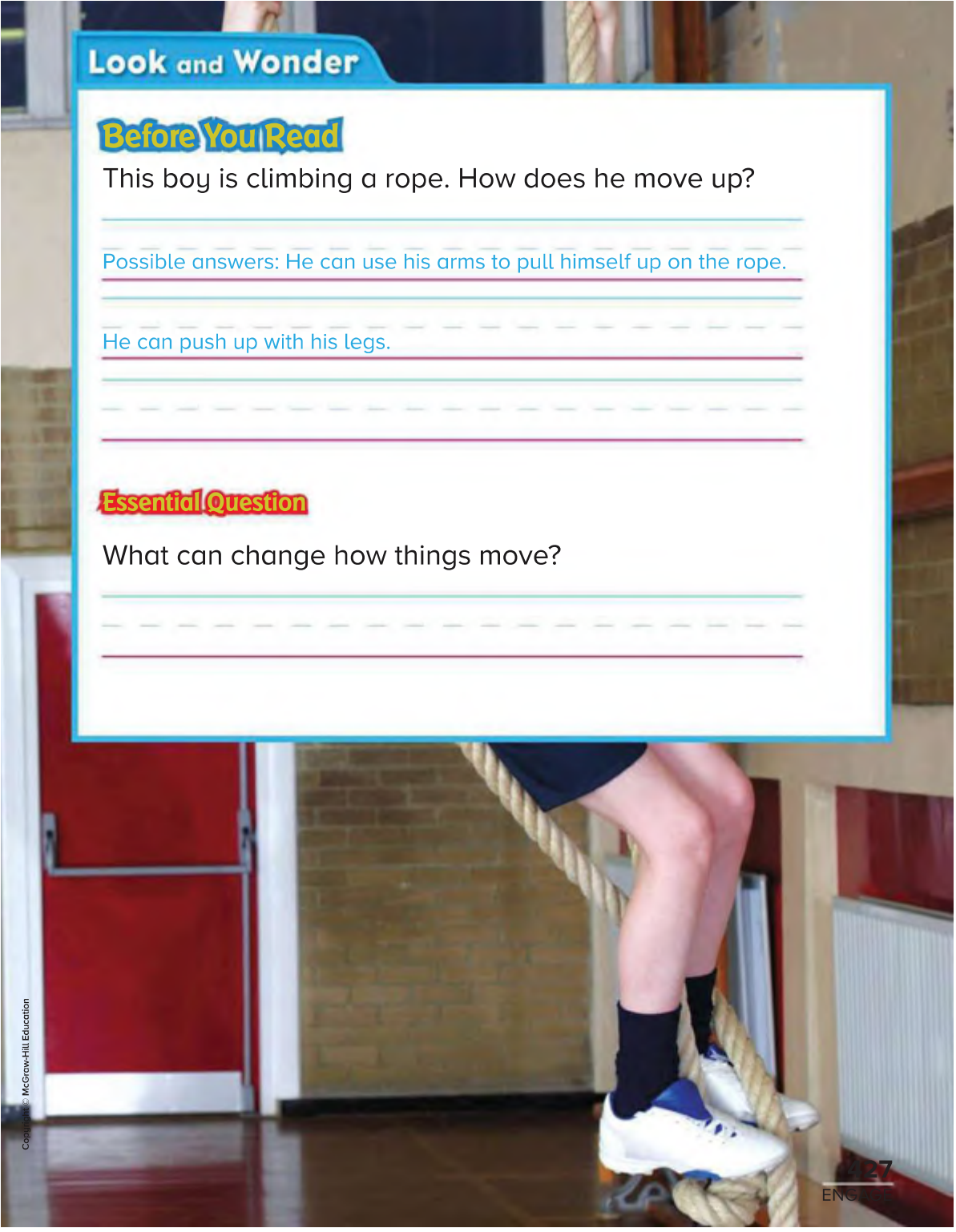
Possible answers: Decreased similarity is they both can move; they both fly; they both carry people.

The differences: A rocket ship is faster than an airplane; a rocket ship travels farther into space than an airplane.

Essential Question How can you describe motion?

Possible answers: You can describe motion by using words like backward, forward, in a circle, or zigzag. You can also describe motion by describing the speed of an object.

Push and Pull



Look and Wonder

Before You Read

This boy is climbing a rope. How does he move up?

Possible answers: He can use his arms to pull himself up on the rope.

He can push up with his legs.

Essential Question

What can change how things move?

Explore

How can you make something move?

You need

index card

tissue

What to Do

1. Fold an index card.

2. **Investigate.** Try different ways to make the card move. How can it move?

Possible answers: I can flick it, drop it, push it, and blow on it.

3 **Observe.** What changes about the card? What stays the same?

Possible answers: The card is in a different position; the card moved. The card is still a solid; the card's properties are the same.

Explore More

4 **Infer.** Do you think a tissue will move in the same way as the card? Why or why not? Try it.

Student answers will vary, but students may note that a push or pull will move the card.

Open Inquiry

Investigate other ways things move.
My question is:

Sample question: How can you make things move?

Read and Respond

What makes things move?

Things cannot move on their own. You have to use force to move them. A **force** is a push or a pull that makes an object move.

A **push** moves the object away from you. A **pull** moves it toward you.

Answer true or false.

1. You pull an object to move it away from you.

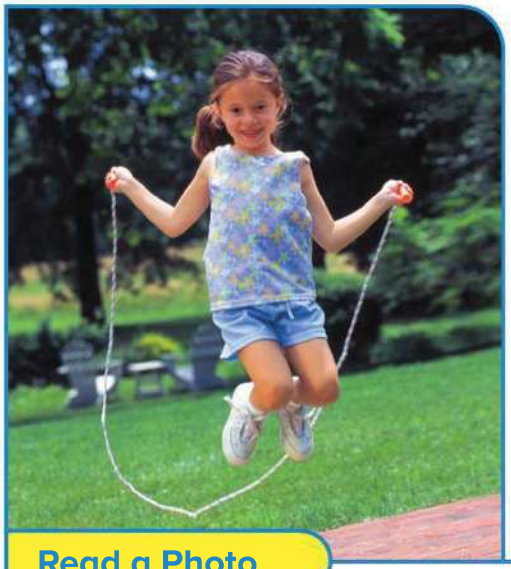
false

◀ **This boy pushes the basketball away from him.**

▲ **This boy pulls the bag of basketballs toward him.**

Gravity is the force that pulls things toward Earth.

When you jump up, gravity pulls you back down. If you let go of something, gravity pulls it to the ground.



Read a Photo

Will this girl stay up in the air? Why or why not?

Possible answer: No, gravity will pull her back down.

Quick Check

2. What things do you push and pull every day?

Possible answers: doors, crayons, drinking cups, ball.

Gravity pulls this egg to the ground. ▼

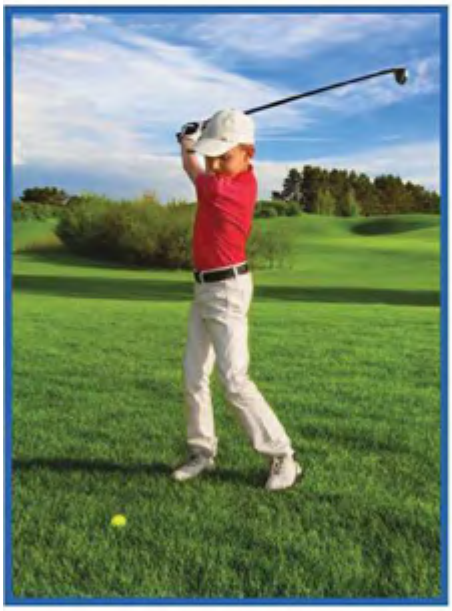
How are forces different?

The size of a push or pull moves things differently. A small push can move a light object. A bigger push can move a heavy object.

A big push also makes an object move faster and farther than a small push.

Quick Lab

Investigate how much force you need to slide a checker piece.



▲ **This boy uses a big force to push the golf ball far away.**

▲ **This boy uses a small force to push the golf ball a short way.**

Friction is a force that slows things down. **Friction** is two things rubbing together.

Have you ever dragged your feet to slow down on a swing? That is friction.

Drag a rubber stopper on the ground. Friction makes you stop.

Quick Check

3. What could make something move slower?

Possible answers: a small push or less force would make something move slower than a big push; moving an object on a surface with friction would make the object move slower than moving it on a surface with no friction.

Visual Summary

Write about what you learned.

Forces

Possible answers: A force is a push or a pull that makes an object move. A push moves the object. A pull moves it toward you. Gravity is the force that pulls things toward Earth.

Differences between Forces

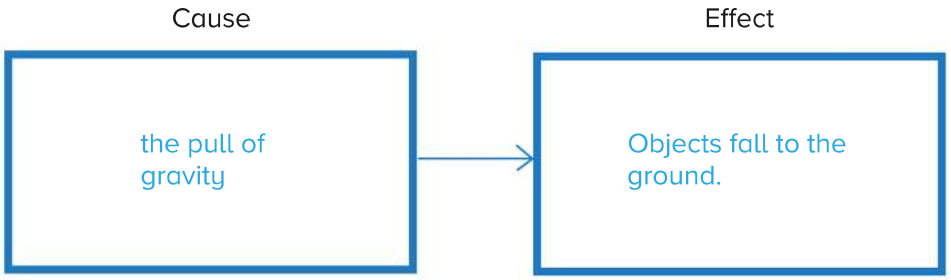
Possible answers: Pushes and pulls depend on the size of objects. A small push can move a light object. A bigger push can move a heavy object.

Think, Talk, and Write

1 Vocabulary. What is friction?

Friction is two things rubbing together.

2 Cause and Effect. What makes things fall to the ground?

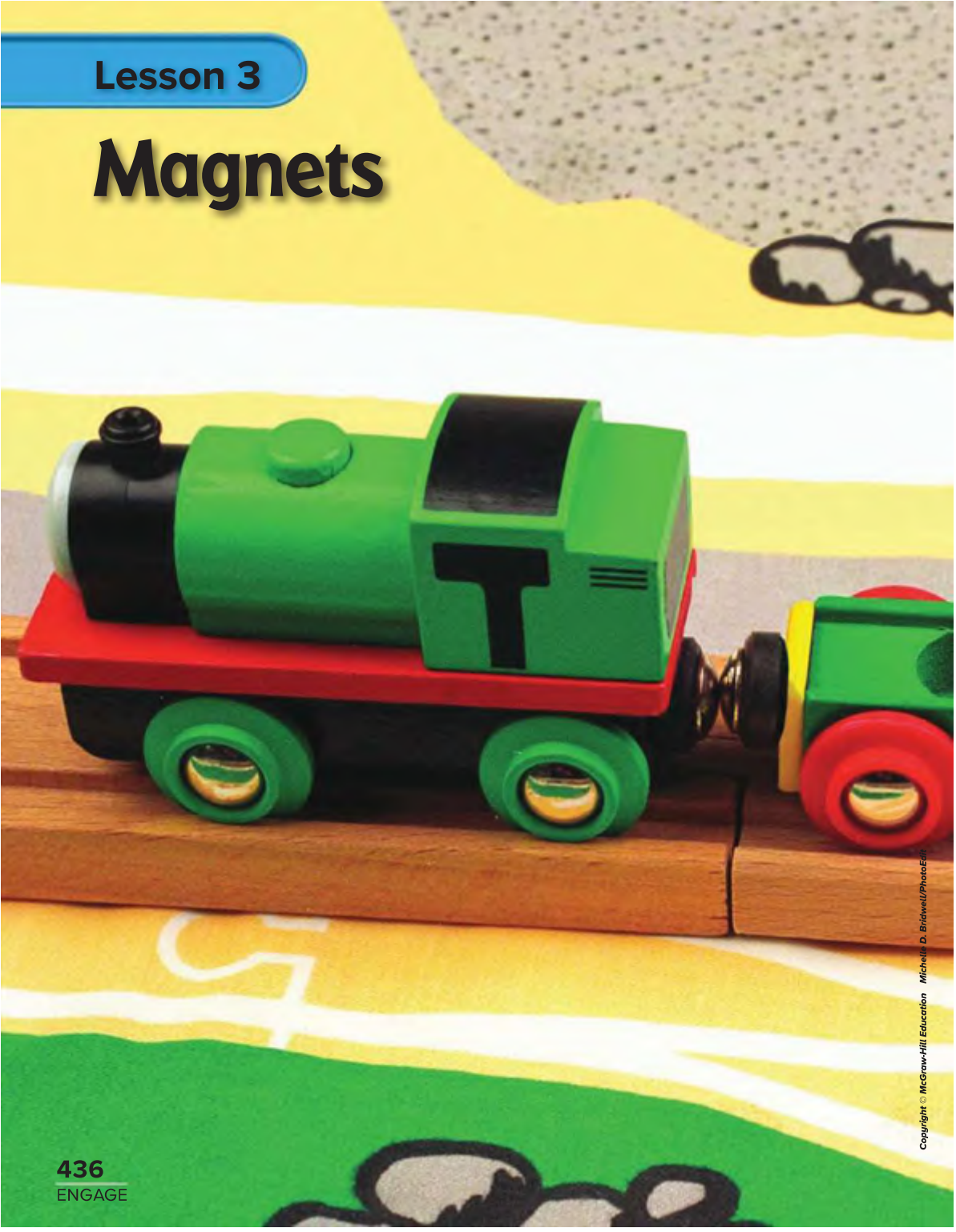


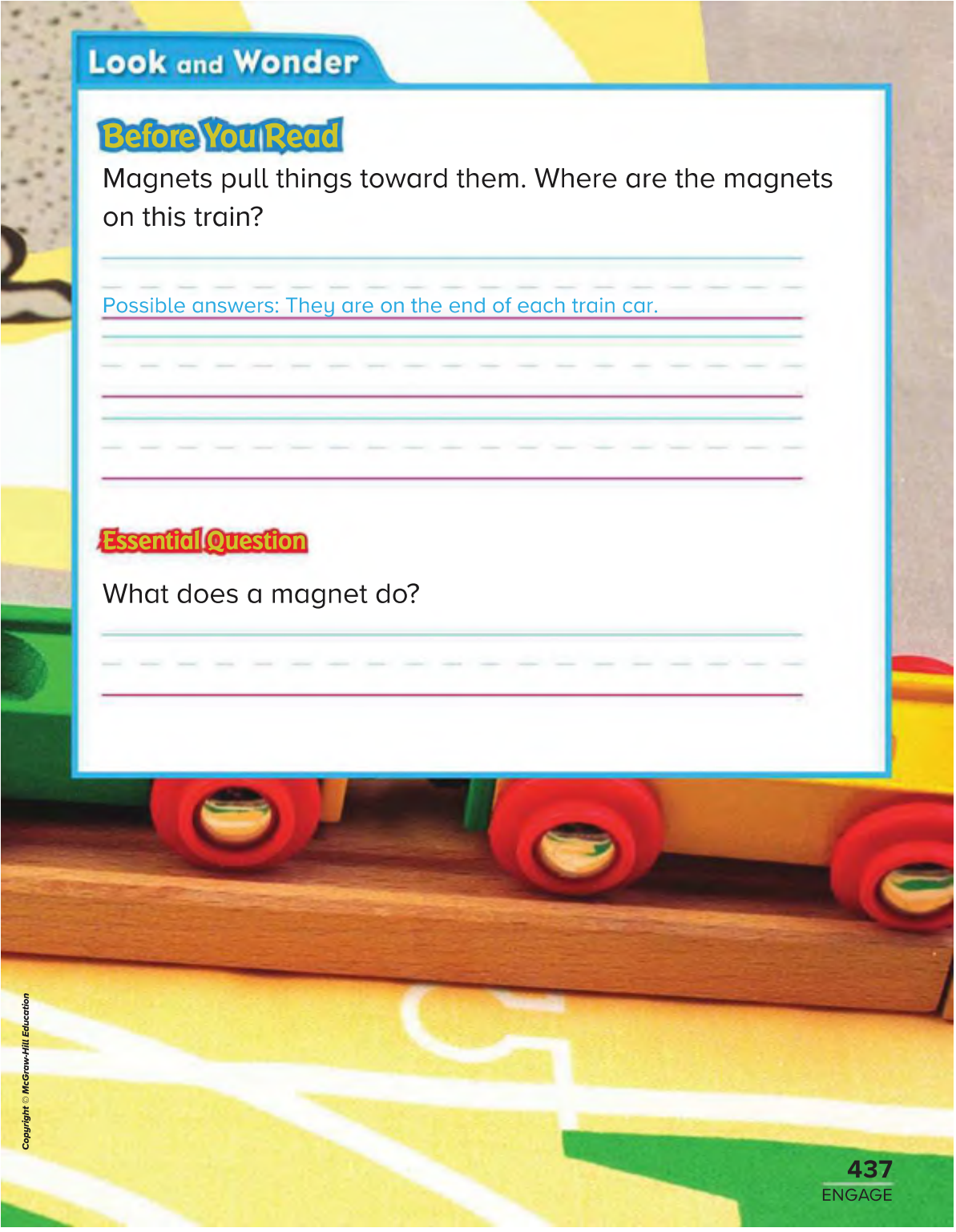
Essential Question What can change how things move?

Possible answers: Forces like a push, a pull, gravity, and friction can change how things move.

Lesson 3

Magnets





Look and Wonder

Before You Read

Magnets pull things toward them. Where are the magnets on this train?

Possible answers: They are on the end of each train car.

Essential Question

What does a magnet do?

Explore

What will a magnet pull?

You need

magnet

classroom objects

What to Do

1. **Predict.** Put objects that you think a magnet will pull in one pile. Put objects it will not pull in another pile.

2. **Investigate.** Put the magnet close to different objects. What happens?

Possible answer: Some objects are pulled to the magnet. Other objects are not pulled to the magnet.

3 **Classify.** Which objects were pulled by the magnet? Which objects were not?

Pulled	Not Pulled
pencil band	eraser
paper clip	plastic cup
foil	pencil wood

Explore More

4 **Infer.** What kinds of objects do magnets pull?

Possible answers: Magnets pull metal objects.

Open Inquiry

Investigate why magnets attract objects.
My question is:

Sample question: Why do magnets attract some objects and not others?

What is a magnet?

Some things stick together with tape or glue. A magnet does not need those things to stick to something.

A **magnet** pulls, or attracts, some kinds of objects.

Quick Check

Fill in each blank.

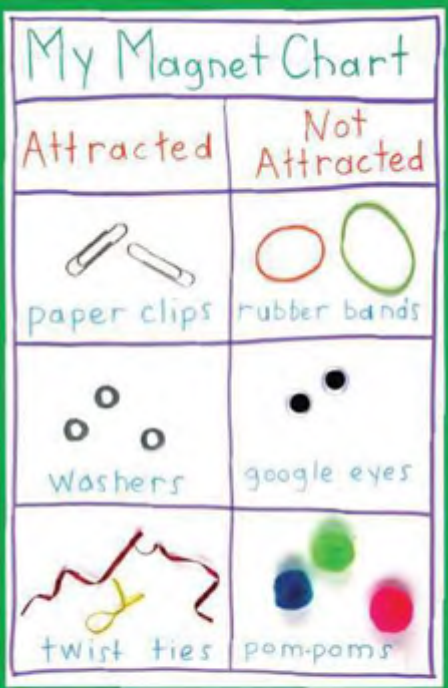
1. A magnet is attracted to some metal objects.

Which objects on the table will this magnet attract? ▼

Magnets attract things that have iron in them. Iron is a kind of metal.

Magnets do not attract things that are made of plastic, rubber, or cloth.

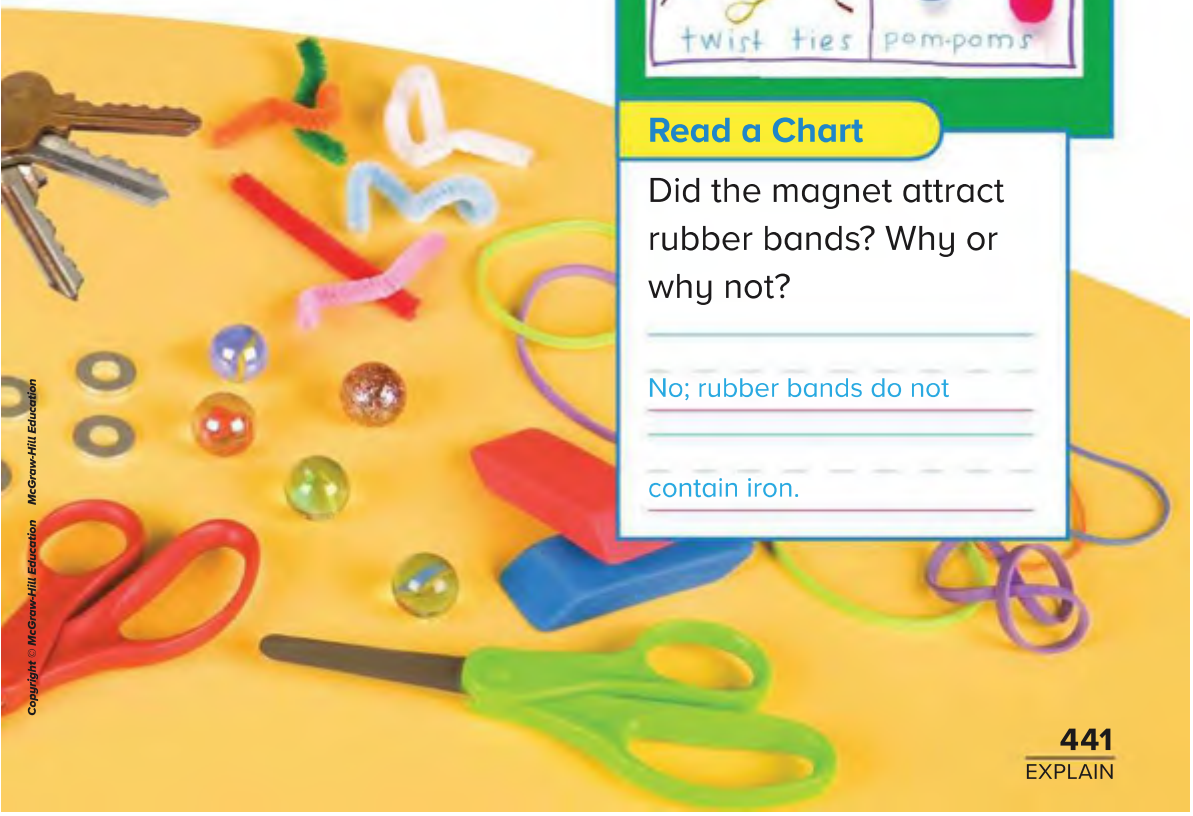
Magnet Chart



Read a Chart

Did the magnet attract rubber bands? Why or why not?

No; rubber bands do not contain iron.



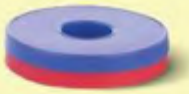
What are a magnet's poles?

Every magnet has two poles. **Poles** are where the magnet's pull is strongest. The N shows the north pole.

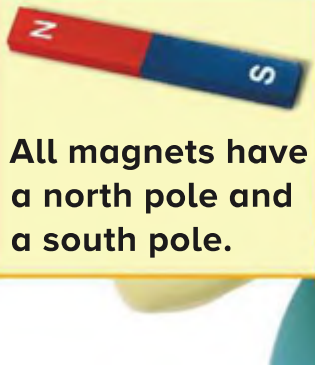
The S shows the south pole. If you hold the north pole of one magnet up to the south pole of another magnet, the poles will attract.

Quick Lab

See if a magnet can pull through paper, water, or your hand.



Magnets can be different shapes.



All magnets have a north pole and a south pole.

If you put two north poles or two south poles next to each other, they will repel one another. **Repel** means to push away.

These magnets have red north poles and blue south poles. ▶

Quick Check

2. What kinds of objects will a magnet attract?

Possible answer: Magnets will attract objects that have iron in them.

3. Why is there space between some magnets on this pencil?

Possible answer: The magnets are repelling each other because two of the same poles are next to each other.

Visual Summary

Write about what you learned.

Magnets

Possible answers: A magnet pulls, or attracts some objects. Magnets attract things that have iron in them. Iron is a kind of metal. Magnets do not attract things that are made of plastic, rubber, or cloth.

Magnet Poles

Possible answers: Every magnet has two poles. Poles are where the magnet's pull is strongest.

Think, Talk, and Write

1 Vocabulary. What is the meaning of the word *repel?*

Repel means to push away.

2 Classify. What will happen when the poles of two magnets are put together?

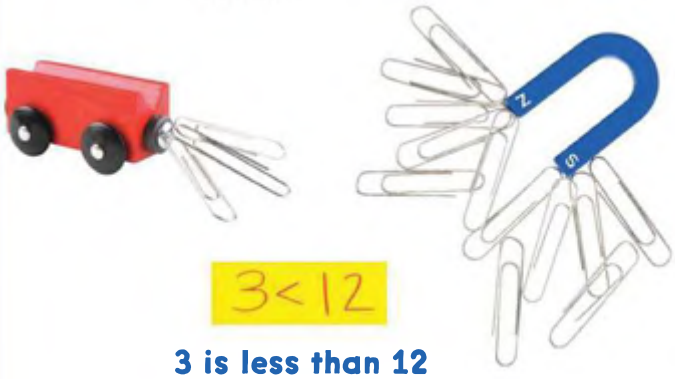
What I Predict	What Happens
Possible answers: If the poles are the same, the magnets will repel. If the poles are different, the magnets will attract.	Possible answers: When you put two north poles or two south poles next to each other, they repel one another.

Essential Question What does a magnet do?

Possible answers: A magnet pulls, or attracts, objects that have iron in them.

Comparing Magnets

Nahla had two magnets. She wondered which one would pick up more paper clips. She compared the amounts.



3<12

3 is less than 12

Compare

Use two different magnets. See which one picks up more paper clips. Compare the amounts.

Magnet 1	Magnet 2
Answers will vary.	

Remember

The < symbol always points to the smaller number.

CHAPTER 14 Review

Vocabulary

Use each word once to complete the sentences.

force
magnet
motion
position
repel

1. An object's movement from one place to another is called motion.
2. When an object is moving, its position changes.
3. When the two north poles of magnets face each other, they repel.
4. Objects made of iron will be attracted to a magnet.
5. A force is a push or pull that makes an object move.

Science Skills and Ideas

Answer the questions below.

6. Use position words to describe where the cotton candy stand is in the picture below.

Possible answers: in front of the roller coaster; to the right of the merry-goround; on the front of the tents

7. Infer. What will happen if this girl drags her rollerblades' rubber stopper on the ground? Why?

Possible answers: she will slow down; she will stop; because of friction; because the stopper rubs on the ground.

CHAPTER 14 Review

Science Skills and Ideas

The Big Idea

8. How can you make things move?

Accept all reasonable responses.

Test Prep

1. Look

What
groun

A Th
B Th
C Th
D Th

2. Which

A me
B rub
C plc
D glc

CHAPTER 15

Energy Everywhere

The Big Idea What is energy?

Answer will vary. Accept reasonable responses.

Vocabulary

energy a force that makes things work or change

heat a form of energy that makes things warm

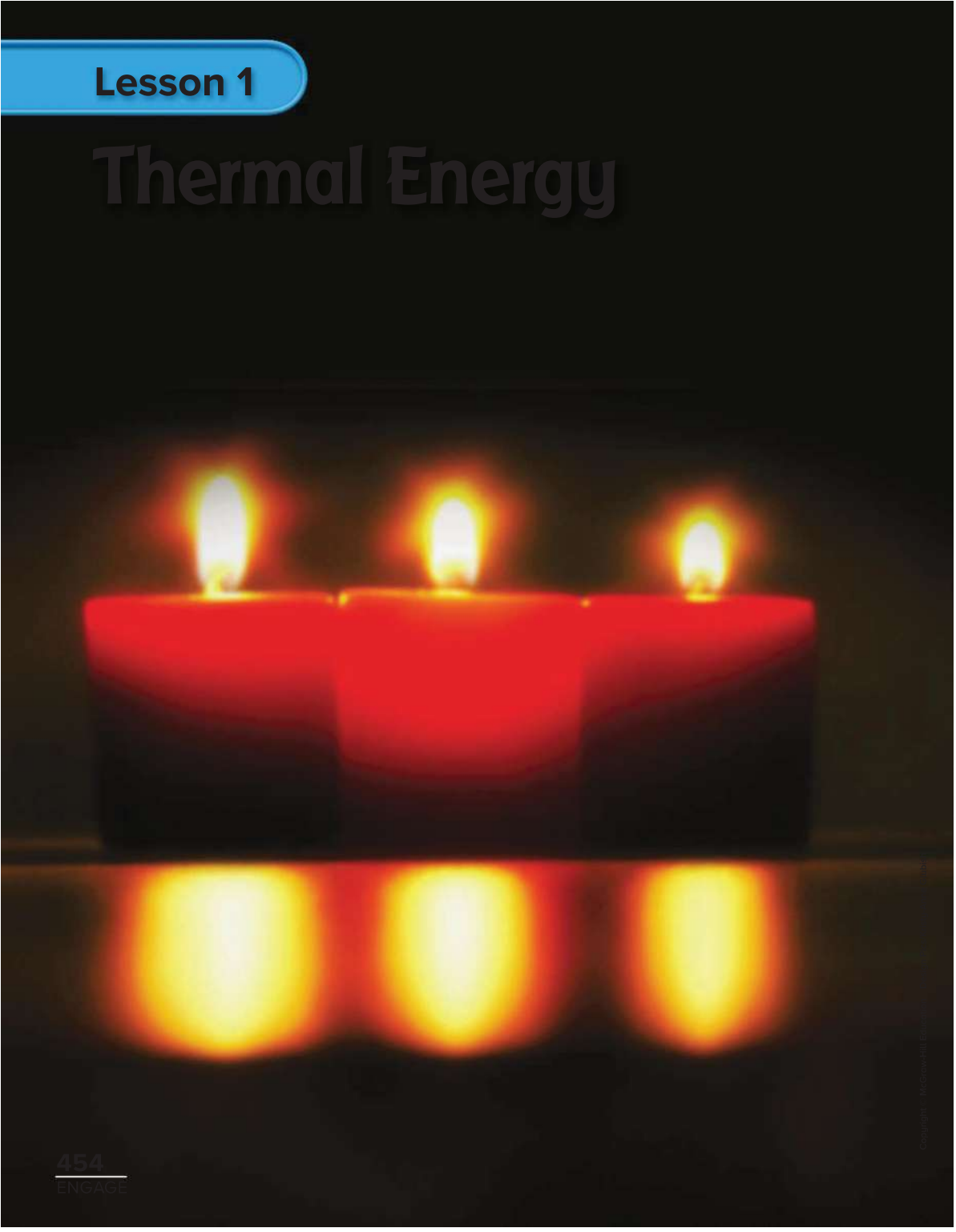
light a form of energy that lets you see

Before reading this chapter, write down what you already know in the first column. In the second column, write down what you want to learn. After you have completed this chapter, write down what you learned in the third column.

Energy		
What We **K**now	What We **W**ant to Know	What We **L**earned
Heat comes from the Sun.	What else makes heat?	We can get heat from burning things like wood, oil, or gas.
Sounds can be loud.	What makes a sound loud or soft?	
Electricity lights streets at night.		

Lesson 1

Thermal Energy



Look and Wonder

Before You Read

Heat can change things in many ways. How is heat changing these candles?

Possible answer: The candles are melting.

Essential Question

How do we use energy and heat?

How can heat change things?

What to Do

You need

plastic plates

butter

ice cube

crayons

1. Put butter, an ice cube, and crayons on two plates. Place one plate in a warm place and the other in a cool place.

2. **Predict.** What will happen to the objects on each plate?

Possible prediction: The things in the warm place will melt, except for the crayons. The things in the cool place will stay the same.

3 **Observe.** Wait ten minutes. How have the objects changed?

Students' predictions will vary, but may include that the ice melted more, and that the butter started to soften or melt.

4 **Draw Conclusions.** What made the objects change?

Heat made them change.

Explore More

5 **Investigate.** Wait two hours. Check the objects. Have they changed?

Possible answer: The ice melted into water. The butter melted more.

The crayons got warm.

Open Inquiry

Investigate how heat energy affects other objects.

My question is:

Sample question: How does heat affect other materials?

What is energy?

When you eat food, you get energy to work and play.

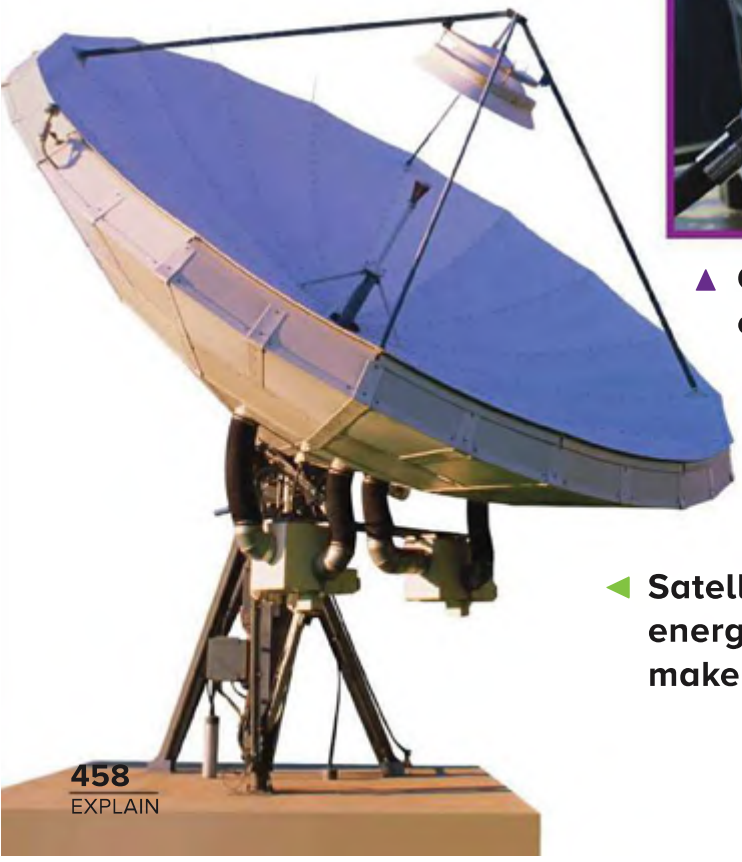
Energy makes things work and change. There are many different forms of energy.

Quick Check

1. What is energy?

Energy makes things work and change.

▲ **Gasoline gives cars energy to move.**



◀ **Satellite dishes send energy from space to make pictures on TVs.**

Heat, light, sound are some forms of energy.

We use different forms of energy every day.

Quick Lab

Use energy from the Sun to **observe** how colors absorb heat.

▲ **Windmills turn energy from wind into electricity.**

▲ **Electrical energy can make lights work.**

What is heat?

Heat is energy that makes things warm. We can get heat from burning things like wood, oil, or gas.

People can use this energy to warm their homes.

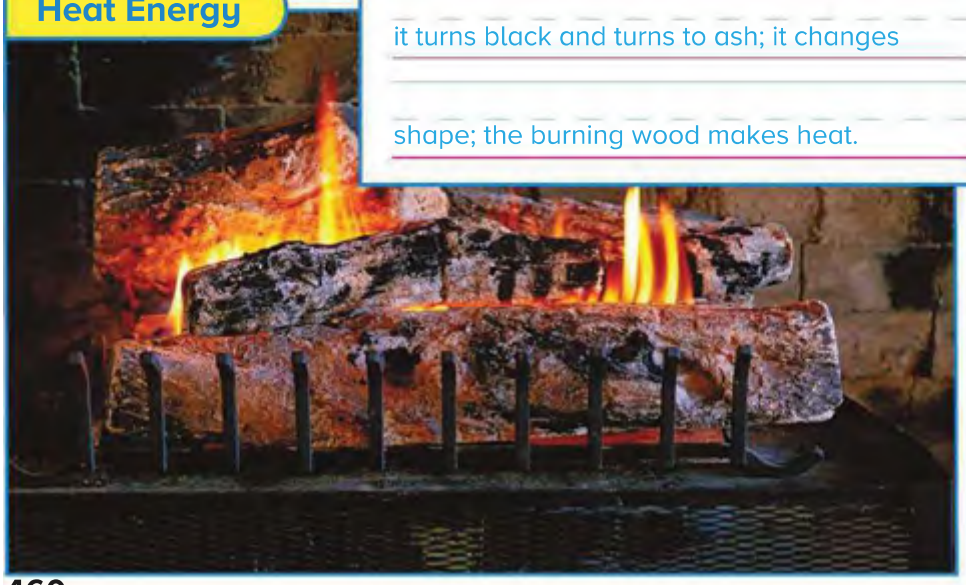
Most of the heat energy on Earth comes from the Sun. ▶

Read a Photo

What happens when wood burns?

Possible answers The wood glows bright red; it turns black and turns to ash; it changes shape; the burning wood makes heat.

Heat Energy



People also use heat to cook.

Rubbing things together is a source of heat too. You can feel the heat when you rub your hands together.

▲ **Heat popcorn kernels and they will pop!**

Quick Check

2. Where do we get energy?

Possible answers: We get energy from the food we eat; wind energy makes electricity; cars get energy from gasoline.

Rub your hands together. Friction makes heat. ▶

3. How do we use heat?

Possible answer: We can use heat to warm our houses and to cook.

Visual Summary

Write about what you learned.

Energy

Possible answers: Energy makes things work and change. Heat, light, sound, and electricity are some forms of energy.

Heat

Possible answers: Heat is energy that makes things warm. Heat comes from burning things like wood, oil, or gas.

Think, Talk, and Write

1 **Vocabulary.** What is energy?

Energy makes things work and change.

2 **Main Idea and Detail.** What are some different ways we get heat?

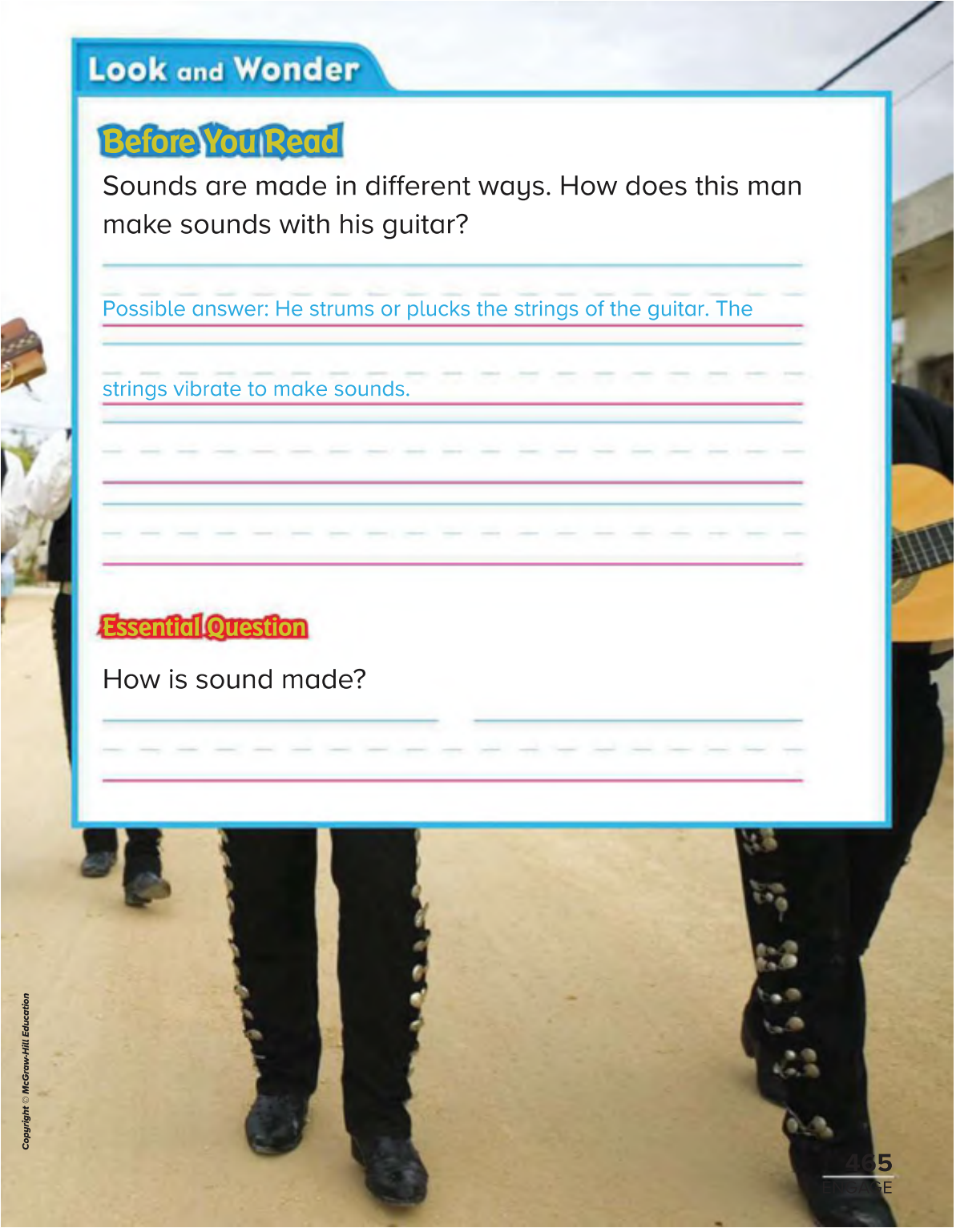
Possible answers: from the Sun; from fire; from oil; from gas; from rubbing things together

Essential Question How do we use energy and heat?

Possible answers: We use energy from electricity to turn on lights; we use energy from gasoline to make cars move; we use heat to cook food and warm our homes.

Lesson 2

Sound



Look and Wonder

Before You Read

Sounds are made in different ways. How does this man make sounds with his guitar?

Possible answer: He strums or plucks the strings of the guitar. The strings vibrate to make sounds.

Essential Question

How is sound made?

Can you make sound with a rubber band?

You need

goggles

rubber band

plastic bowl

What to Do

1. Put a rubber band across a bowl.
Be Careful. Remember to wear safety goggles.

2. **Observe.** Pull the rubber band. Let go. What do you see and hear?

Possible answers: The rubber band moves and it makes a sound.

3 Pull it
happe

Possible

sound.

4 **Draw**

Answers

or vibrati

Explore

5 **Invest**
same

Possible

Open Inc

Investigat

My questi

Sample ques

3. Pull it again. Stop the rubber band from moving. What happens?

Possible answers: The rubber band stops moving and it does not make a sound.

4. **Draw Conclusions.** What do you think made the sound?

Answers will vary, but may include: the rubber band moving back and forth, or vibrating.

Explore More

5. **Investigate.** Find out if a thicker rubber band makes the same sound.

Possible answer: The thicker rubber band made a different sound.

Open Inquiry

Investigate how sounds are different.

My question is:

Sample question: What makes sounds change?

How can you make sound?

You cannot see sound, but you can hear it. Sometimes you can even feel it.

Sound is a form of energy. It is made when an object vibrates. **Vibrate** means to move back and forth. When an object stops vibrating, the sound stops too.

Quick Check

Fill in each blank.

1. Sound is energy that is made when an object vibrates.

When you hit cymbals together, the metal vibrates, making a sound.

FACT When you speak, cords in your throat vibrate.

Different things make different sounds. Sounds can tell us things.

A clock's alarm tells you when to wake up. Fire alarms and car horns can warn you about danger.

Quick Check

2. How can sounds help you stay safe?

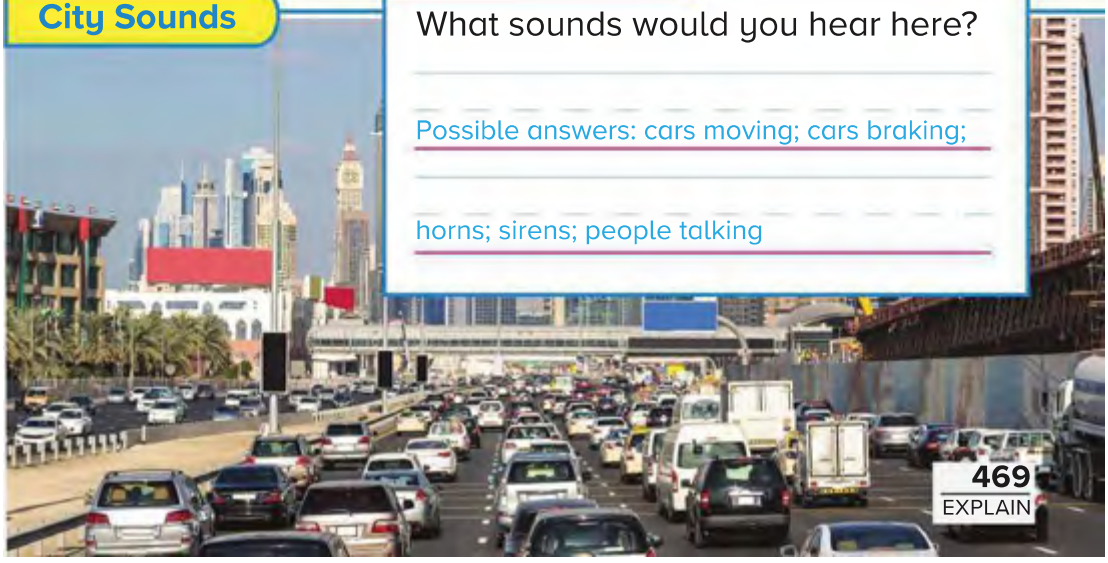
Possible answers: Sounds can help me stay safe by alerting me to danger. Smoke detectors, car horns, police and fire sirens, and lifeguards' whistles all make sounds to warn us of something dangerous.

City Sounds

Read a Photo

What sounds would you hear here?

Possible answers: cars moving; cars braking; horns; sirens; people talking



How are sounds different?

There are many different kinds of sounds. Sounds can be loud or soft.

Big vibrations make loud sounds. Small vibrations make soft sounds.

Quick Lab

Make an instrument out of different objects.

▼ **Are these sounds loud or soft?**

Some sounds, such as a whistle, produce fast vibrations. Others, like a motorcycle, produce slower vibrations.

A sound's **pitch** is a quality by which your ear distinguishes fast vibrations from slower vibrations. Fast vibrations make sounds with a high pitch. Slow vibrations make sounds with a low pitch.

Quick Check

3. What are some soft sounds?

Possible answers: a whisper, a cat's purr

Visual Summary

Write about what you learned.

Sound

Possible answers: Sound is a form of energy. It is made when an object vibrates. Vibrate means to move back and forth.

Different Sounds

Possible answers: Sound can be loud or soft. Big vibrations make loud sounds. Small vibrations make soft sounds.

Think, Talk, and Write

1 **Vocabulary.** What is the meaning of the word *pitch*?

Quality by which your ear distinguishes fast vibrations from slower vibrations.

2 **Classify.** What are some different ways we get heat?

Possible answers: Sounds can be loud or soft. Sounds can have a high or low pitch.

Essential Question How is sound made?

Possible answer: Sound is a form of energy made when an object vibrates, or moves back and forth. An alarm clock, car horn, and whistle make different sounds.

Sounds and Safety

There are different kinds of sounds.

Some sounds warn you about danger. They can help you stay safe.

◀ **Fire alarms are very loud. They tell you to move to a safe place.**

▲ **Sirens and flashing lights warn other cars on the road of an emergency.**

Some people cannot hear. They use their other senses to stay safe.

They can see the flashing lights of an alarm, police car, or ambulance. This warns them of danger.

Smoke alarms beep and flash lights to warn you of danger. ▼

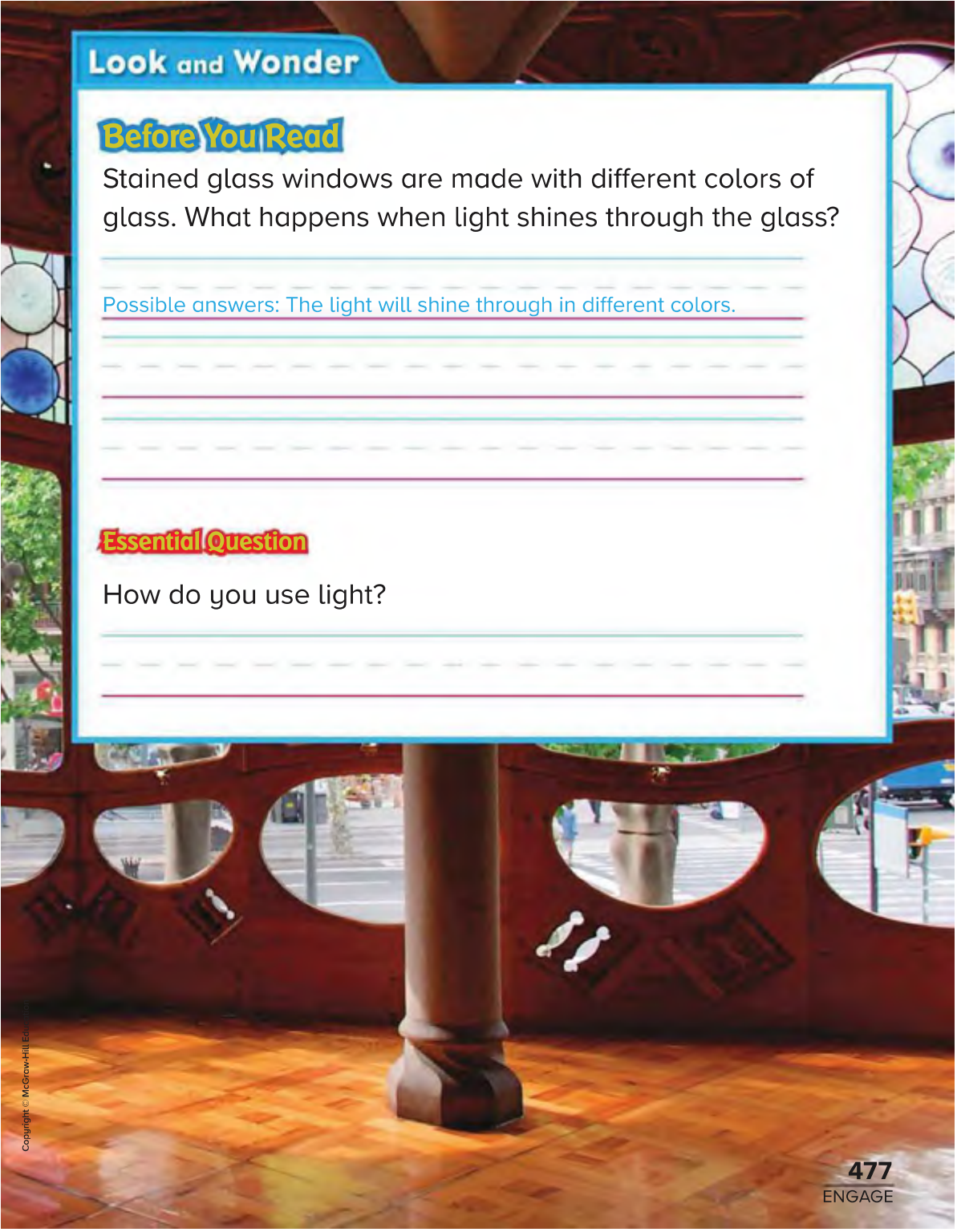
Summarize. List the most important ideas in the chart below. Then summarize the article. Remember, when you summarize, you retell the most important ideas in the selection.

Idea 1	Idea 2

Summarize
Answers will vary. Accept all reasonable responses.

Lesson 3

Light



Look and Wonder

Before You Read

Stained glass windows are made with different colors of glass. What happens when light shines through the glass?

Possible answers: The light will shine through in different colors.

Essential Question

How do you use light?

What lets light through?

What to Do

You need


cardboard tube

aluminum foil

wax paper

plastic wrap


rubber band

1 **Observe.** Look through a cardboard tube. Can you see light in the tube?

Possible answer: Yes, light is seen in the tube.

2 Cover the end of the tube with aluminum foil. Can you see light now?

Possible answer: No, light cannot be seen if the end of the tube is covered.

3 **Record Data.** Repeat with wax paper and plastic wrap. Record whether or not you can see light.

What I Predict	What Happens
tin foil will not let in light	tin foil did not let in light

4 **Draw Conclusions.** Repeat with wax paper and plastic wrap. Record whether or not you can see light.

Students' sentences will vary, depending on their predictions.

Explore More

5 **Predict.** What other materials will let light through? Try it.

Students' answers will vary, but might include glass or water.

Open Inquiry

Investigate other materials that light can and cannot pass through.

My question is:

Sample question: How does color affect light that passes through objects?

What is light?

Light is a form of energy that lets you see. Different objects let different amounts of light pass through them.

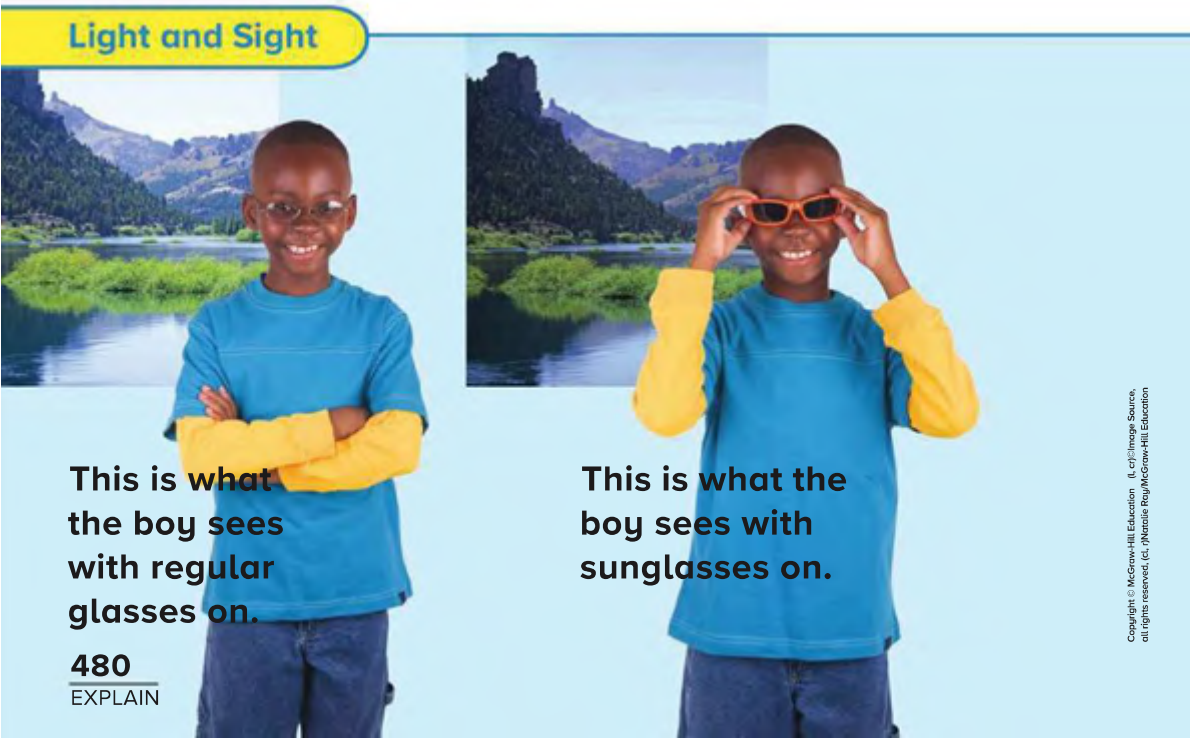
Some objects do not allow any light to go through them.

Quick Check

Answer true or false.

1. Light is a form of energy that does not go through any objects.

false



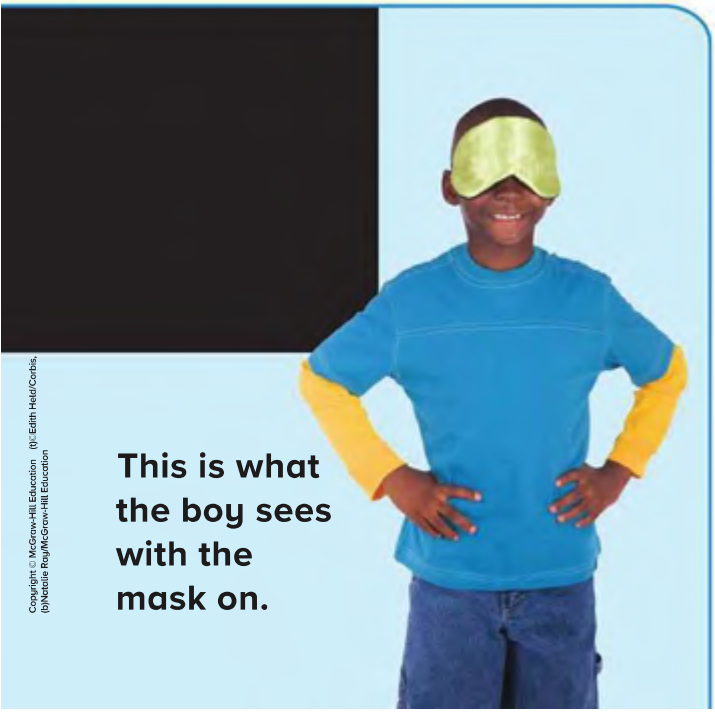
When light is blocked, there is a shadow.

Sometimes your body blocks light. This forms a shadow on the ground.

Read a Diagram

Why does the boy see things differently?

Possible answers: The two pairs of glasses and the blindfold allow different amounts of light to pass through them.



This is what the boy sees with the mask on.

▲ **This girl has a shadow because light cannot shine through her body.**

What are some sources of light?

Most of the light on Earth comes from the Sun. Other stars also make light.

Some lights, like lamps, streetlights, and flashlights, are made by people.

Quick Lab

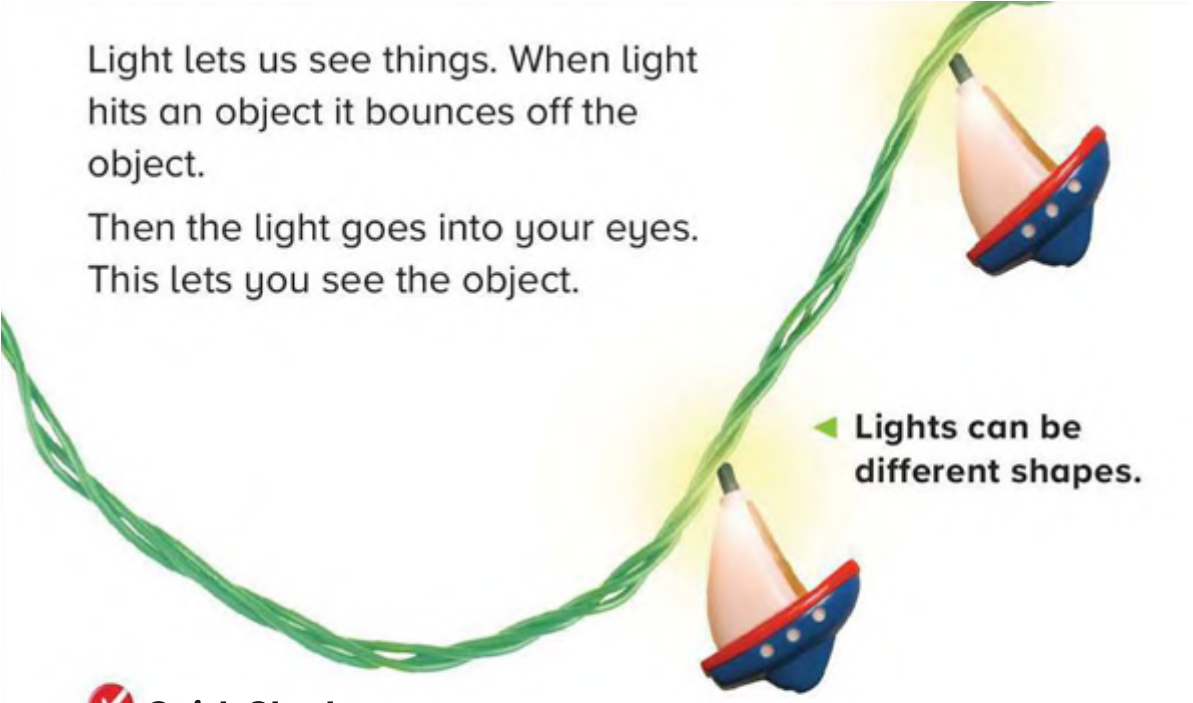
Shine light on a mirror. **Record** what you see.

▼ **Streetlights help you see at night.**

▼ **You need light to see your homework.**

Light lets us see things. When light hits an object it bounces off the object.

Then the light goes into your eyes. This lets you see the object.



Lights can be different shapes.

Quick Check

2. What are some objects that light cannot go through?

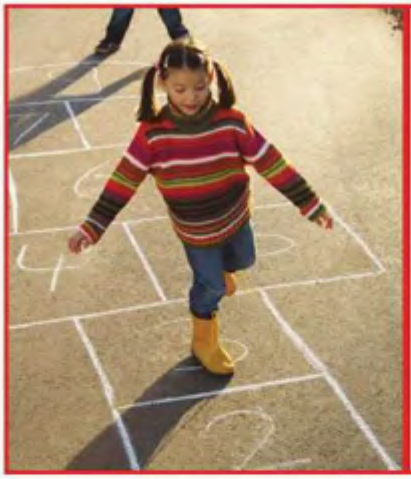
Possible answers: our bodies; aluminum foil; the classroom walls

3. Why is light important?

Possible answer: Light is important because it lets us see things.

Visual Summary

Write about what you learned.



Light

Possible answers: Light is energy that lets you see objects. Objects let different amounts of light pass through them. Some objects do not allow any light to go through them.

Sources of Light

Possible answers: Light comes from the Sun and other things like lamps, streetlights, and flashlights.

Think, Talk, and Write

1 Vocabulary. What is light?

a form of energy that lets you see

2 Arrange events. How does your body make a shadow?

Light shines on my body

↓

My body blocks the light.

↓

A shadow is formed.

Essential Question How do you use light?

Possible answers: I use light to see things; I use a flashlight to help me see outside at night; I use a lamp to help me see inside.

Stained Glass

Stained glass windows are made with many pieces of colored glass. When sunlight shines through stained glass, you can see different colors of light.

Sort the Shapes

What shapes do you see in the stained glass window above? How many circles do you see? How many rectangles do you see?

Answers will vary. Accept all reasonable responses.

Remember

Use tally marks to keep track of the shapes you counted.

CHAPTER 15 Review

Vocabulary

Use each word once to complete the sentences.

energy
heat
pitch
vibrates

1. Heat, light , and sound are some forms of __ __energy__ __.

2. Quality by which your ear distinguishes fast vibrations from slower vibrations __ __ pitch __ __.

3. A sound is made when an object __ vibrates__ __.

4. When you rub your hands together, you can feel __ __heat __ __.

Skills and Concepts

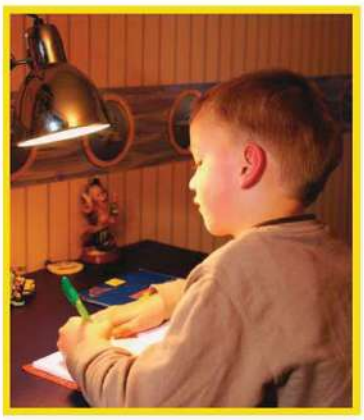
Answer the questions below.

5. How could you make different sounds on a guitar?

Possible answer: strum the strings so they vibrate slowly or quickly; pluck one string; pluck more than one string at once; lightly drum on the body

6. **Draw Conclusions.** Talk about the forms of energy in these pictures.

Text Clues	Conclusion
Popcorn is popping.	Heat energy is working.
Light is shining.	Electric energy is working.



CHAPTER 15 Review

Skills and Concepts

7. **Summarize** Where can we get heat?

Possible answer: From the Sun and from burning wood, oil and gas, and some electrical devices such as an oven.

8. What makes shadows on the ground?

Possible answer: something blocking the light from the Sun.

The Big Idea

9. What is energy?

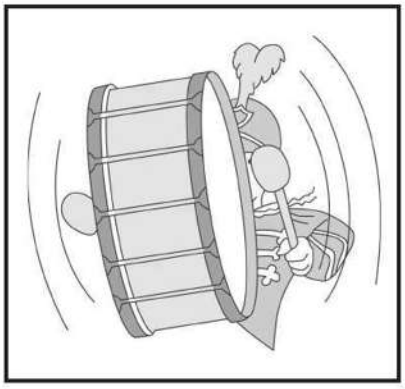
Answers will vary. Accept all reasonable responses.

1. This windmill can give your computer the power to work.

What does a windmill turn wind energy into?

A heat
B electricity
C light
D sound

2. Look at this picture.



How can you make a loud sound with this drum?

A Beat the drum lightly.
B Beat the drum heavily.
C Beat the drum slowly.
D Beat the drum quickly.

Musician

A musician's job is to make different sounds. Musicians need to study and practice hard. Musicians have to know all about fast, slow, high, and low sounds. Jazz, classical, and rock are kinds of music.


musician

Write a question you have about one of the careers on this page.

Questions will vary. Accept all reasonable responses.

More Careers to Think About


sound engineer


instrument maker

Musician

A musician's job is to make different sounds. Musicians need to study and practice hard. Musicians have to know all about fast, slow, high, and low sounds. Jazz, classical, and rock are kinds of music.


musician

Write a question you have about one of the careers on this page.

Questions will vary. Accept all reasonable responses.

More Careers to Think About


sound engineer


instrument maker

A

adaptation a body part or a way an animal acts that helps it stay alive **The giraffe long neck is a perfect adaptation.**

التكيّف تغيّر في عضو من جسم الحيوان يساعده في البقاء حيًا، أو الطريقة التي يتبعها الحيوان للحفاظ على حياته.
رقبة الزرافة الطويلة هي مثال نموذجي على التكيف.

amphibian an animal that lives on land and in water **A frog is an amphibian.**

برمائي حيوان يعيش في الماء وعلى اليابسة.
الضفدع حيوان برمائي.

anemometer a device which is used to measure the wind speed. **We calculate wind speed using Anemometer.**

مقياس الرياح جهاز يُستخدَم لقياس سرعة الرياح.
نقيس سرعة الرياح باستخدام مقياس الرياح.

axis a center line that an object spins around **Earth spins on its axis.**

المحور خط مركزي يدور حوله الجسم.
تدور الأرض حول محورها.

B

balance a tool used to measure mass **The side of a balance with more mass will go down.**

ميزان أداة تُستخدَم لقياس الكتلة. **تنخفض كفة الميزان ذات الكتلة الأكبر.**

bird an animal that has two legs, two wings, and feathers **A duck is a bird.**

طائر حيوان له قدمان وجناحان ويغطي جسمه الريش. **البط من الطيور.**

burn a way of changing matter using heat **When you burn paper, it changes to ash.**

احتراق طريقة لتغيير حالة المادة بالحرارة. **تتحول الورقة إلى رماد عندما تحترق.**

C

camouflage a way that animals blend into their surroundings **Animals use camouflage to stay safe.**

تمويه طريقة تُخفي الحيوانات في البيئة المحيطة. **تلجأ الحيوانات إلى التمويه لتحافظ على نفسها.**

carnivore an animal that eats other animals **A tiger is a carnivore.**

آكل اللحوم حيوان يتغذى على الحيوانات الأخرى.
النمر من آكلات اللحوم.

cloud the tiny drops of water and bits of ice that collect in the sky **Rain or snow can fall from a cloud.**

سحابة قطرات الماء وقطع الثلج الصغيرة التي تتجمّع في السماء.
يتساقط المطر أو الثلج من السحاب.

condense to change from a gas to a liquid **Water vapor can condense on a cold glass.**

تكاثف التحوُّل من الحالة الغازية إلى الحالة السائلة.
يتكثف بخار الماء على الزجاج البارد.

D

dissolve to completely mix into a liquid **Drink mix will dissolve in water.**

ذوبان الامتزاج التام بالسائل.
يذوب مزيج (حبيبات) المشروب في الماء.

E

evaporate to change from a liquid to a gas **Water can evaporate from oceans, rivers, lakes, or land.**

تبخر التحول من الحالة السائلة إلى الحالة الغازية.
يتبخر الماء من المحيطات أو الأنهار أو البحيرات أو اليابسة.

F

fall the season after summer **Some leaves change colors in fall.**

خريف الفصل الذي يلي الصيف.
تتغيّر ألوان بعض أوراق الشجر في فصل الخريف.

fish an animal that lives in water and has gills and fins **Fish use gills to breathe in water.**

أسماك حيوانات تعيش في الماء ولها خياشيم وزعانف.
يتنفس السمك في الماء بواسطة الخياشيم.

freeze to change from a liquid to a solid **Water will freeze if it gets really cold.**

تجمد التحول من الحالة السائلة إلى الحالة الصلبة.
يتجمّد الماء عندما يصبح باردًا جدًا.

G

gas a state of matter that does not have its own shape **Gas gives balloons their shape.**

غاز حالة المادة التي ليس لها شكل خاص بها.
تتشكل البالونات بأشكالها عند ملئها بالغاز.

gills the part of a fish that takes in oxygen from water **A fish uses its gills to breathe in water.**

خياشيم عضو في جسم السمك يستخلص من خلاله السمك الأكسجين من الماء.
تستخدم الأسماك خياشيمها في التنفس في الماء.

H

habitat the place where an animal lives **A forest is a habitat for many plants and animals.**

موطن بيئي المكان الذي تعيش فيه الكائنات الحية.
الغابة هي الموطن البيئي لكثير من النباتات والحيوانات.

hand lens a tool that makes objects seem larger **A hand lens lets us see very small things.**

عَدَسة يدوية أداة تستخدم لتكبير الأشياء.
يمكننا رؤية الأشياء الصغيرة جدًا عند الاستعانة بالعَدَسة اليدوية.

hatch a baby animal breaking out of an egg
Birds hatch from eggs.

فرخ صغير الحيوان الذي يفقس من بيضته.
تفقس الطيور من البيض.

herbivore an animal that eats plants **A rabbit is a herbivore.**

آكل النباتات حيوان يتغذى على النباتات.
الأرنب من آكلات النباتات.

human-made materials materials not found on Earth that are made by people **Plastic is a human-made material.**

مواد مصنّعة مواد لم تُوجد على الأرض صنعت بيد الإنسان.
اللدائن من المواد المصنّعة.

I

insect an animal with three body parts and six legs **An ant is an insect.**

حشرة حيوان يتكوّن جسمه من ثلاثة أجزاء وست أرجل.
النمل من الحشرات.

L

life cycle the series of changes in one's life like birth, growth, reproduction and death **A butterfly has four stages in its life cycle.**

دورة الحياة (العُمر) هي المرحل التي تمر نها الكائنات الحية من الولادة إلى الممات.
تمر الفراشة بأربع مراحل في دورة حياتها.

life span the period of time from birth to death **The insects have a very short life span.**

مدة الحياة الفترة التي تمر منذ الميلاد إلى الوفاة.
مدة حياة الحشرات قصيرة جدًا.

liquid a state of matter that flows and takes the shape of its container **Milk is a liquid.**

سائل كل مادة تسيل وتأخذ شكل الوعاء الموجودة فيه.
اللبن من السوائل.

lodge a shelter made of tree branches and mud **Beavers make their lodges in the middle of a lake or pond.**

كوخ مأوى مصنوع من فروع الأشجار والطين.
تبني القنادس أكواخها وسط البحيرات أو البرك.

lungs the body parts used to breathe air **Birds use lungs to breathe.**

الرئتان عضوان في جسم بعض الكائنات الحية تتنفس بهما الهواء.
تتنفس الطيور من خلال الرئتين.

M

mammal an animal with hair or fur **Most mammals give birth to live young.**

ثديي حيوان يغطي جسمه الشعر أو الفرو.
تلد معظم الثدييات صغارها.

mass the amount of matter in an object **A metal bird has more mass than a sponge bird.**

كتلة مقدار ما يحتويه الجسم من المادة.
كتلة الطائر المصنوع من المعدن أكبر من كتلة الطائر المصنوع من الإسفنج.

material the matter that makes up solids **Cotton and rubber are two different materials.**

خامة المادّة الأوليّة التي توجد على حالتها الطبيعيَّة قبل ان تُعَالَج أو تصنع.
القطن والمطاط خامتان مختلفتان.

matter what all things are made of **A kite is made of matter.**

مادة كل شيء حولنا ويشمل حيز (ما تتكون منه كل الأشياء).
الطائرة الورقية مصنوعة من مادة.

melt to change from a solid to a liquid **Ice cubes can melt and become water.**

انصهار تغير المادة من الحالة الصلبة إلى الحالة السائلة
تنصهر مكعبات الثلج وتتحوّل إلى ماء.

mixture two or more different things put together **A fruit salad is a mixture of different fruits.**

خليط شيئان مختلفان أو أكثر موضوعان معًا
تتكوّن سلطة الفواكه من خليط من فواكه مختلفة.

Moon a ball of rock that moves around Earth **The Moon does not make its own light.**

القمر جسم صخري كبير يدور حول كوكب ما.
لا يُصدر القمر ضوءًا من ذاته.

N

natural resources materials that come from Earth that people use **Plants and animals are natural resources.**

الموارد الطبيعية مواد نحصل عليها من الطبيعة ويمكن للإنسان أن يستخدمها.
النباتات والحيوانات من الموارد الطبيعية.

P

phase the Moon's shape as we see it from Earth **The Moon's phase will change each night.**

أوجه القمر الاشكال المختلفة التيبدو عليها القمر في السماء.
يتغيّر طور القمر كل ليلة.

physical change a change in the size or shape of matter **When you fold matter, you make a physical change.**

تغير فيزيائي تغير في حجم المادة أو شكلها. **يحدث تغير فيزيائي عند ثني المادة.**

property how something looks, feels, smells, tastes, or sounds **Color is a property of the puppets.**

خاصية كيف تبدو الأشياء من حيث الشكل أو الملمس أو الرائحة أو المذاق أو الصوت الصادر عنها. **اللون هو خاصية الدمى.**

R

rain gauge a tool that measures how much rain falls **A rain gauge is a weather tool.**

مقياس المطر أداة تُستخدَم لقياس مقدار المطر المتساقط. **مقياس المطر من أدوات قياس الطقس.**

reptile an animal that has dry skin covered with scales **A snake is a reptile.**

زواحف حيوانات يغطي جسمها الجلد الجاف المكسو بالحراشف. **الثعبان من الزواحف.**

rotation a turn or spin **Earth makes one rotation in 24 hours.**

دوران محوري دورة كاملة حول المحور.
تدور الأرض دورة كاملة حول محورها كل 24 ساعة.

ruler a tool used for measuring length **A ruler tells us how long or wide something is.**

مسطرة أداة تُستخدَم لقياس الطول.
تقيس المسطرة طول الأشياء أو عرضها.

S

season a time of year **Fall, winter, spring, and summer are the four seasons.**

فصل فترة زمنية في السنة.
الخريف والشتاء والربيع والصيف هي الفصول الأربعة.

shelter a place where animals can live and be safe **These raccoons find shelter in a log.**

مأوى مكان تعيش فيه الحيوانات في أمان.
تتخذ حيوانات الراكون من جذوع الأشجار مأوىً لها.

solid a state of matter that has a shape of its own **A block is a solid.**

صلبة المادة التي تحافظ على شكلها.
الخشب مادة صلبة.

solubility the property that describes whether or not a material will dissolve **Sugar has more solubility than sand.**

ذائبية خاصية تصف ما إذا كانت المادة ستذوب أم لا.
يتميز السكر بذائبية أكبر من الرمال.

spring the season after winter **Many baby animals are born in spring.**

الربيع الفصل الذي يأتي عقب الشتاء.
تُولد العديد من صغار الحيوانات في فصل الربيع.

star an object in the sky that makes its own light **We can see many stars in the night sky.**

نجم جسم يظهر في السماء يُصدر الضوء بذاته.
نرى العديد من النجوم في السماء ليلًا.

summer the season after spring **Lemonade can cool you off in the hot summer.**

الصيف الفصل الذي يأتي عقب الربيع.
ستشعر بالانتعاش عندما تشرب عصير الليمون في الصيف الحار.

Sun the star closest to Earth **The Sun gives light and heat to Earth.**

الشمس النجم الأقرب إلى الأرض.
ترسل الشمس أشعتها إلى الأرض وتمنحها الدفء والضوء.

T

tadpole a young frog **A tadpole grows into an adult frog.**

شرغوف (أبو ذنيبة) صغير الضفدع.
ينمو الشرغوف ليصبح ضفدعًا يافعًا.

temperature how hot or cold something is **In winter the temperature can be very cold.**

درجة الحرارة مدى سخونة الجسم أو برودته.
تكون درجة الحرارة منخفضة جدًا في فصل الشتاء.

thermometer a tool that measures temperature **The thermometer shows a temperature of 65 degrees Fahrenheit.**

ترمومتر أداة تقيس درجة الحرارة.
يبيِّن الترمومتر درجة الحرارة.

tool an object or body part that helps do work **Badgers use their paws as tools.**

عضو جزء في الجسم يساعد على أداء الأعمال.
تستخدم حيوانات الخُلد مخالبها في حفر الأنفاق.

trait the way animals look or act (page 61) **Animals have the same traits as their parents.**

سمة شكل الحيوانات أو سلوكها.
تتميز (صفة) الحيوانات بنفس سمات آبائها.

water vapor the water that goes up into the air as a gas and is too small to see

You can not see water vapor.

بخار الماء الماء الذي يتبخر في الهواء كالغاز وهو صغير جدًا ولا يمكن أن نراه.

. لا يمكنك رؤية بخار الماء.