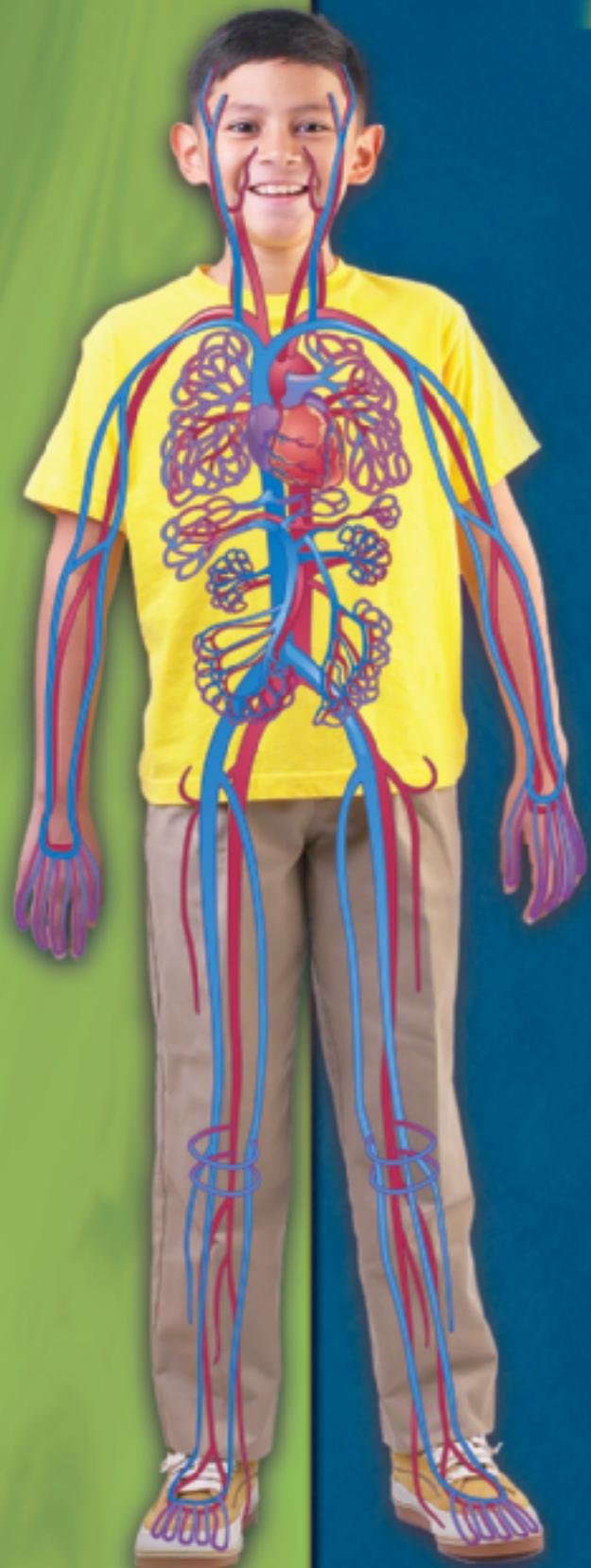
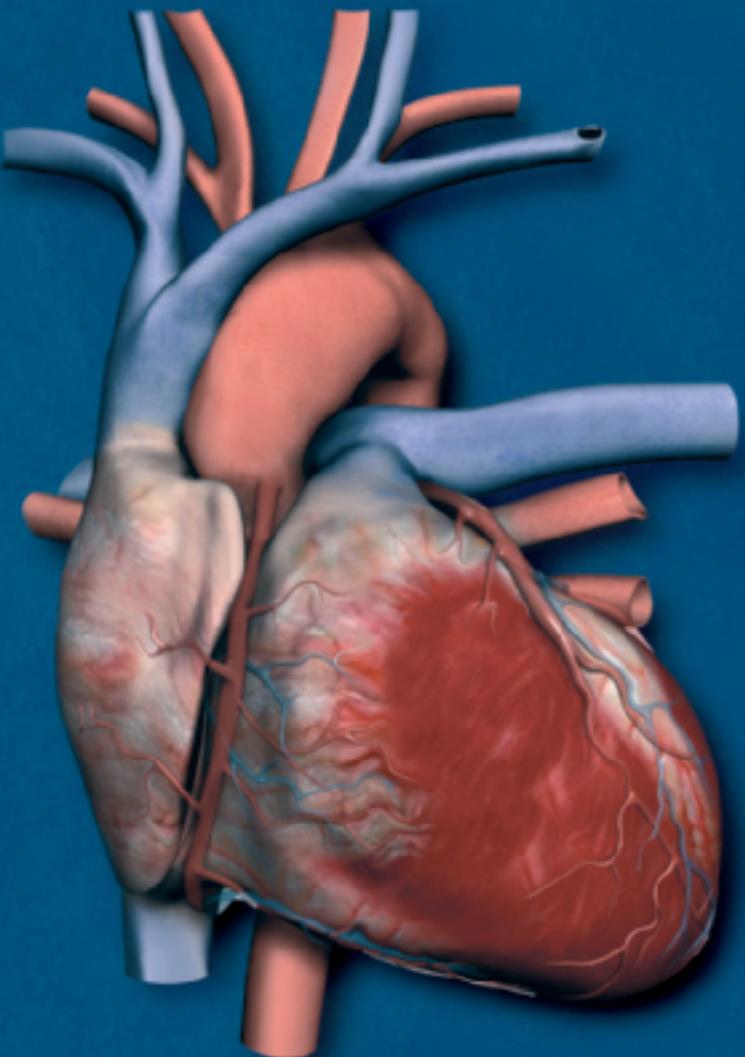


GRADES K-2

SCIENCE
A CLOSER LOOK



The
Human
Body



Macmillan/McGraw-Hill

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Send all inquiries to:
Macmillan/McGraw-Hill
8787 Orion Place
Columbus, OH 43240-4027

ISBN: 978-0-07-288021-7
MHID: 0-02-288021-6

Printed in the United States of America.

1 2 3 4 5 6 7 8 9 10 021 13 12 11 10 09 08

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Lesson 1

Your Body

Look and Wonder

How are all these children alike? How are they different?

Explore

Inquiry Activity

How are faces alike and different?

What to Do

- 1 **Observe.** Work with two classmates. Look closely at their faces.
- 2 **Record Data.** Draw a picture of their faces.
- 3 **Compare.** Share your drawings with the group. Discuss how their faces are alike and different.

Explore More

- 4 **Communicate.** Find photographs of people in books or magazines. How do their faces compare with yours?

You need



crayons



paper

Step 1



Read Together and Learn

Vocabulary system



▲ The body and a toy clock are made of parts that work together.

What parts make up the body?

The body needs many things to stay alive. It needs food, water, and air.

The body also must get rid of wastes. Wastes are things the body makes but does not need.

Many parts make up the body. There are parts on the outside and the inside. All body parts work together to keep you alive and healthy. They help the body get what it needs.



What body parts are you using right now?

Body Parts

head

chest

arm

hand

finger

leg

foot



brain

lung

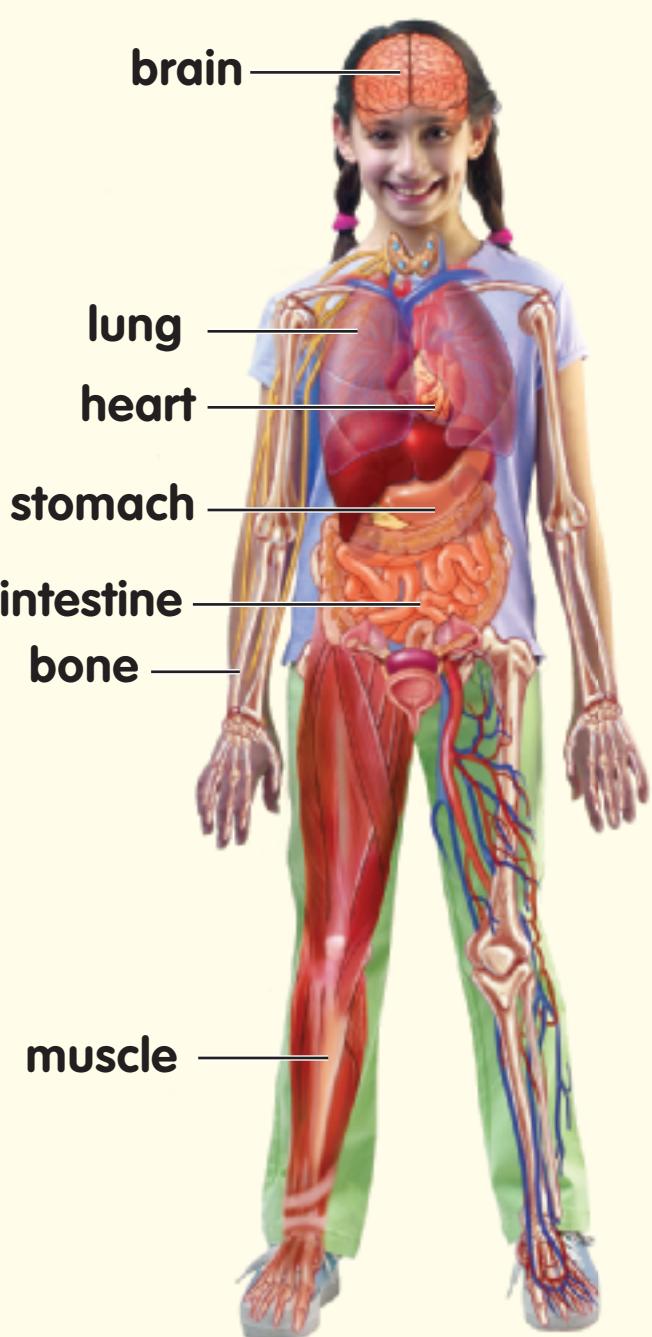
heart

stomach

intestine

bone

muscle



Read a Diagram

What body parts
are in the chest?

Body Systems

Each body part does a different job. Some parts work only when they are needed. Other parts work all the time.

A **system** is a group of parts that work together. The body uses many systems to meet its needs.



moving



keeping warm



eating and drinking

The nose and lungs work in a body system that takes in air. The teeth and stomach work in a system that takes in food. Bones and muscles work in systems too.

What do body systems do?

Quick Lab

Classify. List three things you did today. Which body parts helped you do them?

You use many body systems every day. ▼

breathing

One of a Kind

Everyone uses the same kinds of body systems and the same kinds of parts. But people are different from one another too.

Everyone is one of a kind! Bodies come in different colors, sizes, and shapes. People also think, act, and feel in many ways.



How are you one of a kind?

▼ Everyone is one of a kind.



Think, Talk, and Write

Complete each sentence.

1. Your body is made of many _____.

parts

system

2. A group of body parts that works together is a _____.



Answer the questions below.

3. What is one way that body parts work together?

4. What is one way that all people are alike? What is one way they can be different?

Art Link

Think of three ways that you used your body today. Draw pictures to show each way.





Focus

Discovering X-rays

In 1895 Wilhelm Roentgen discovered the X-ray. The ray passed through skin and other soft things. It did not pass through bone.



Today doctors know how to read an X-ray picture of the human body. X-rays can show damage to bones, lungs, and other inside body parts.

In 1974 the MRI camera was invented. It can show better pictures of your heart, brain, and lungs. An MRI took this picture of a human brain.



MRI picture

ultrasound picture



One tool uses sounds to take pictures. Sounds made this picture of a baby inside the mother.

Talk About It

How do X-rays help doctors?

Lesson 2

Bones and Muscles

Look and Wonder

What can you do with
your arms and hands?

Explore

Inquiry Activity

How can you pick up things?

What to Do

- 1 Choose places along your arm. Try to pick up a ball at each place. Do not use other body parts.
- 2 **Communicate.** Draw a picture of your arm. Label the places that could pick up the ball.
- 3 **Compare.** How are the places that could pick up the ball alike?

You need



tennis ball

Step 1



Explore More

- 4 **Make a model.** How could you build a model of your arm? Discuss your ideas.

Read Together and Learn

Vocabulary

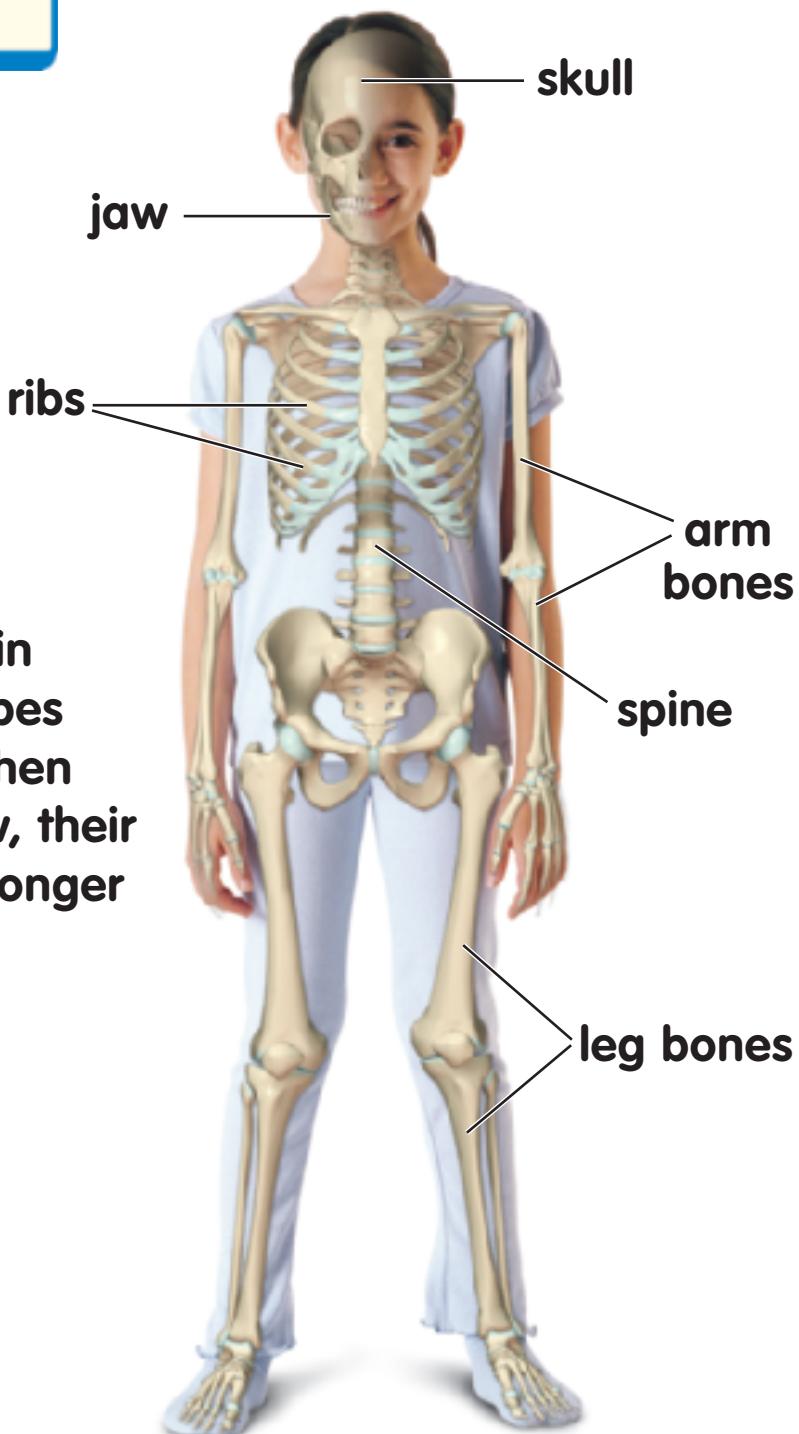
skeleton

joint

muscle

How does the body move?

Bones are hard parts inside the body. All together bones make up the **skeleton**. The skeleton allows the body to stand and move.

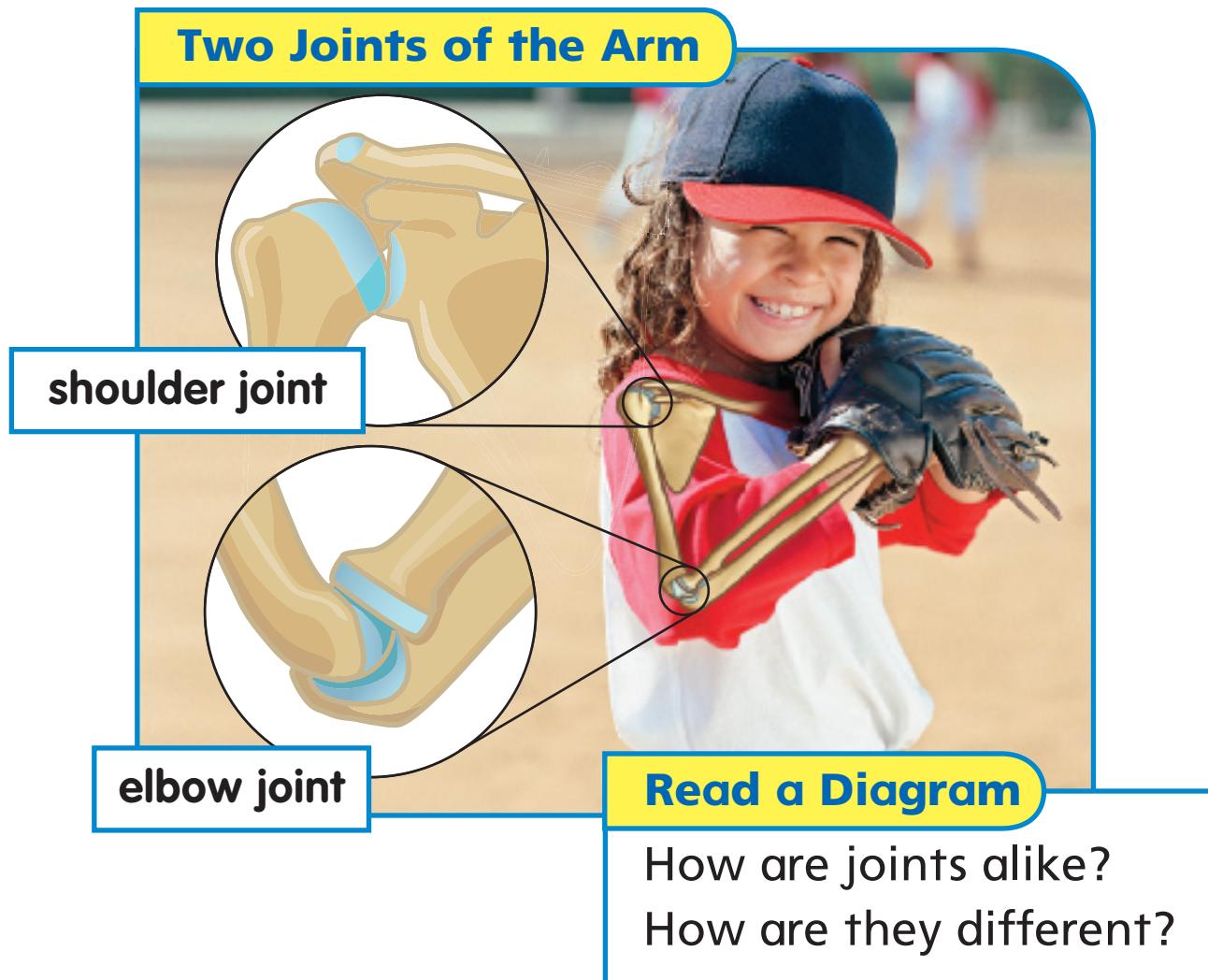


Bones come in different shapes and sizes. When children grow, their bones grow longer and wider. ►

Bones also protect the soft parts of the body. Rib bones in the chest protect the heart and lungs. The skull protects the brain.

Bones meet at **joints**. Joints allow body parts to bend, turn, or twist. Together the joints let the body move in many ways.

✓ How do bones help the body?



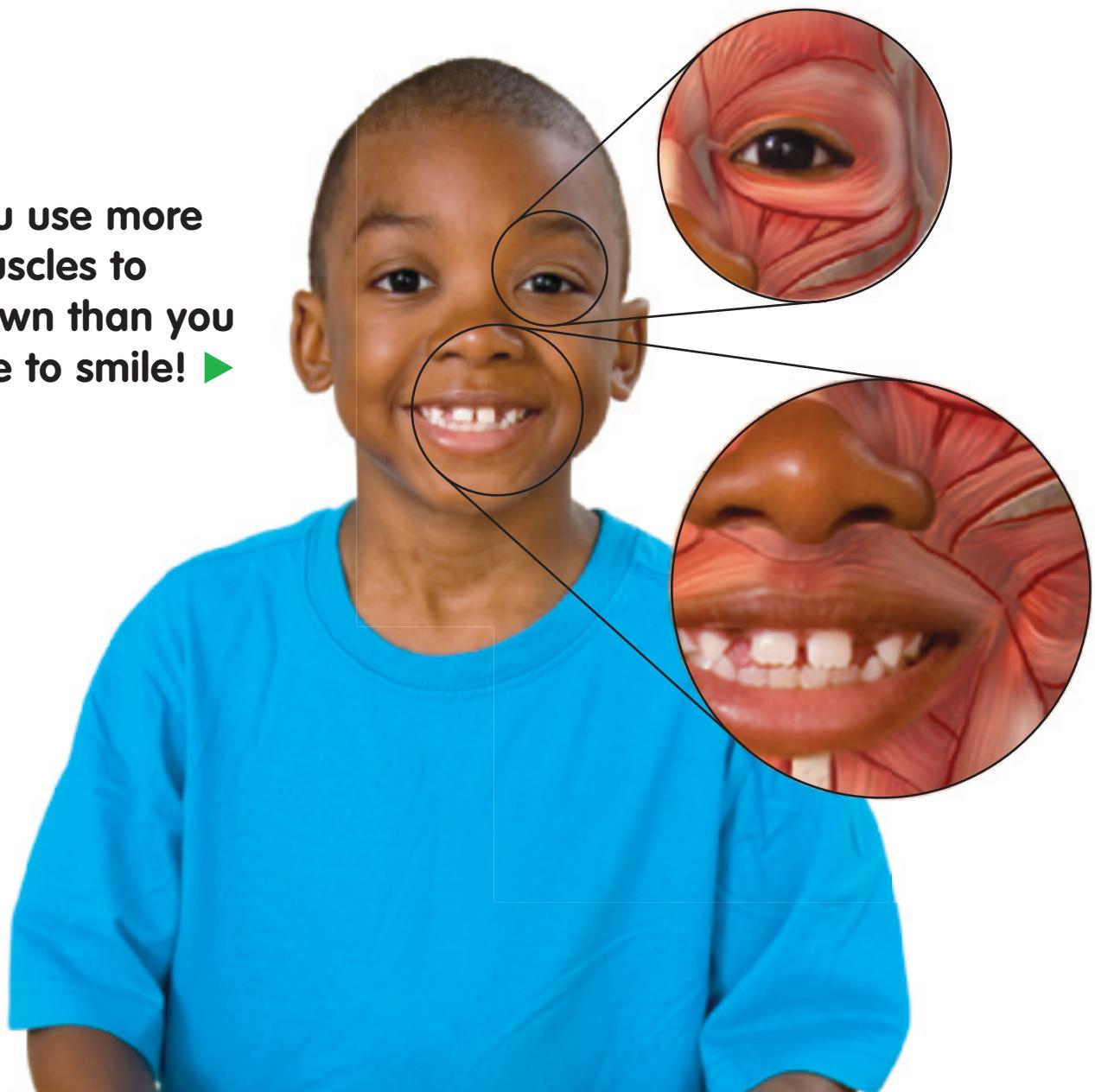
Muscles

Bones do not move by themselves.

Muscles move the skeleton and other body parts.

A muscle can tighten or relax. Many muscles pull on bones to make them move. Muscles inside the face pull on skin.

You use more muscles to frown than you use to smile! ►



Muscles can pull, but they can not push. Most muscles work in pairs. If one muscle pulls a bone up, a second muscle pulls it back down.

 **How do muscles move bones?**

Quick Lab

Compare. How is the thumb different from other fingers? Compare how they bend and move.



◀ Two muscles work together to move the elbow. One muscle tightens, or pulls. The other muscle relaxes.

Types of Muscle

The body uses three types of muscle. They are skeletal, heart, and smooth muscle.

You can control only skeletal muscle. Other muscles work without you ever thinking about them.

What are the three types of muscle? What do they do?

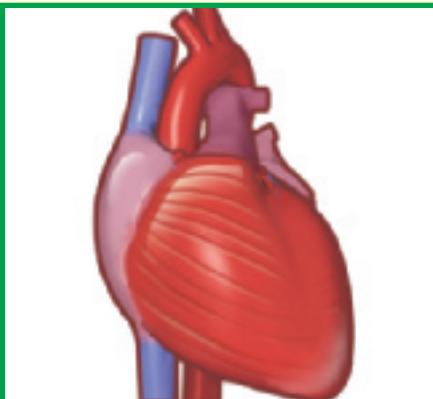


▲ Exercising every day helps keep all of your bones and muscles strong.

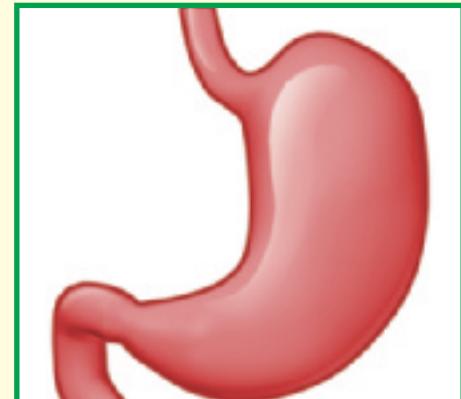
Three Types of Muscle



Skeletal muscle moves bones.



Heart muscle pumps blood through the heart.



Smooth muscle moves the stomach and other soft body parts.

Think, Talk, and Write

Complete each sentence.

1. All of the bones inside the body make up the _____.
2. Body parts that move bones are called _____.
3. Two bones meet at a _____.

joint

muscles

skeleton

Answer the question below.

4. Name three places in the body where you can find muscles.

Art Link

Choose a joint in the body.
Draw a picture that shows how it moves.



Lesson 3

Heart and Lungs



Look and Wonder

What body parts work harder when you play?

Explore

Inquiry Activity

What is your pulse?

What to Do

- 1 Use one finger to feel the side of your neck. Feel for a beating just below the skin. This beating is called the pulse.
- 2 Press the clay on this spot. Carefully push one end of the straw into the clay. The other end should stick out straight.
- 3 **Measure.** Have your partner count the number of times the straw moves in one minute.

Explore More

- 4 **Compare.** Run in place for 30 seconds. Then repeat the activity. How did your pulse change?

You need



stop watch

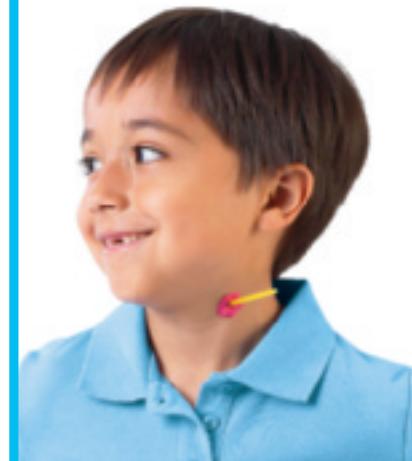


clay



thin straw

Step 2



Read Together and Learn

Vocabulary

heart

artery

vein

lungs

diaphragm

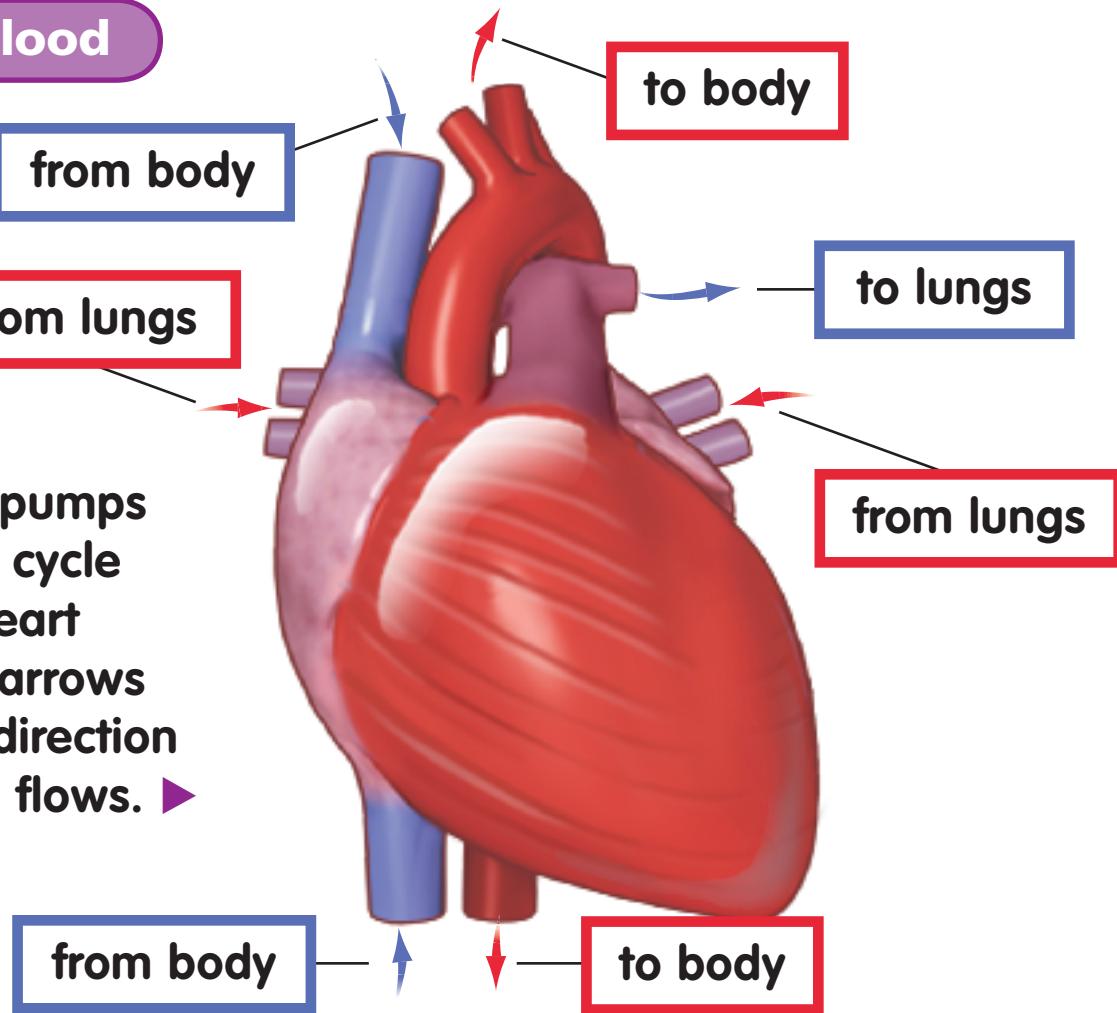
What do your heart and lungs do?

Blood brings food, water, and oxygen to every body part. It also carries away wastes. The heart and lungs work together to help blood do this.

The **heart** pumps blood through the body. Its walls are made of thick muscle.

Pumping Blood

The heart pumps blood in a cycle called a heart beat. The arrows show the direction that blood flows. ►

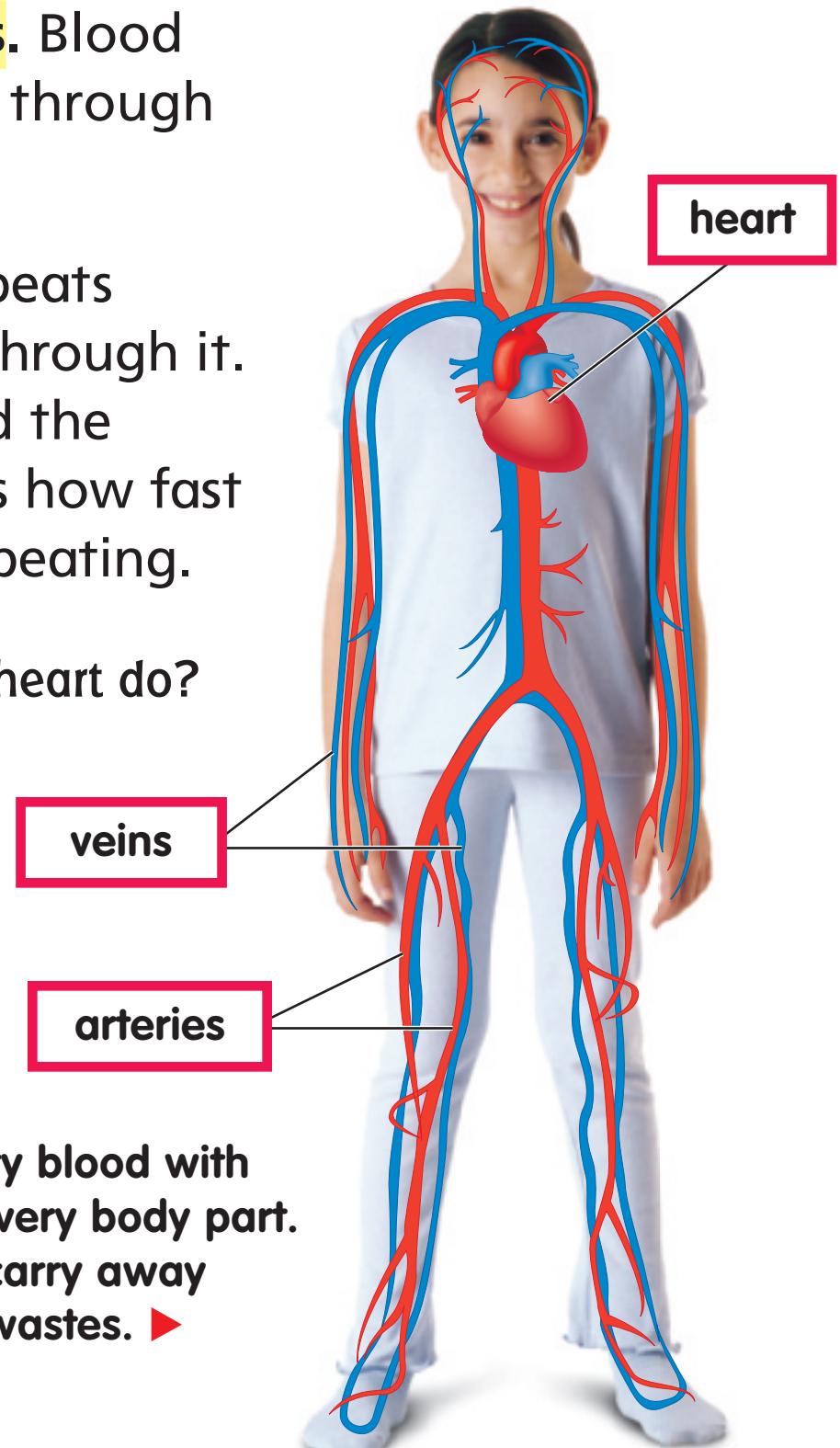


The heart contracts, or squeezes, blood out through tubes called **arteries**. Blood returns to the heart through tubes called **veins**.

An artery moves or beats when blood rushes through it. This beating is called the pulse. The pulse tells how fast or slow the heart is beating.

✓ What job does the heart do?

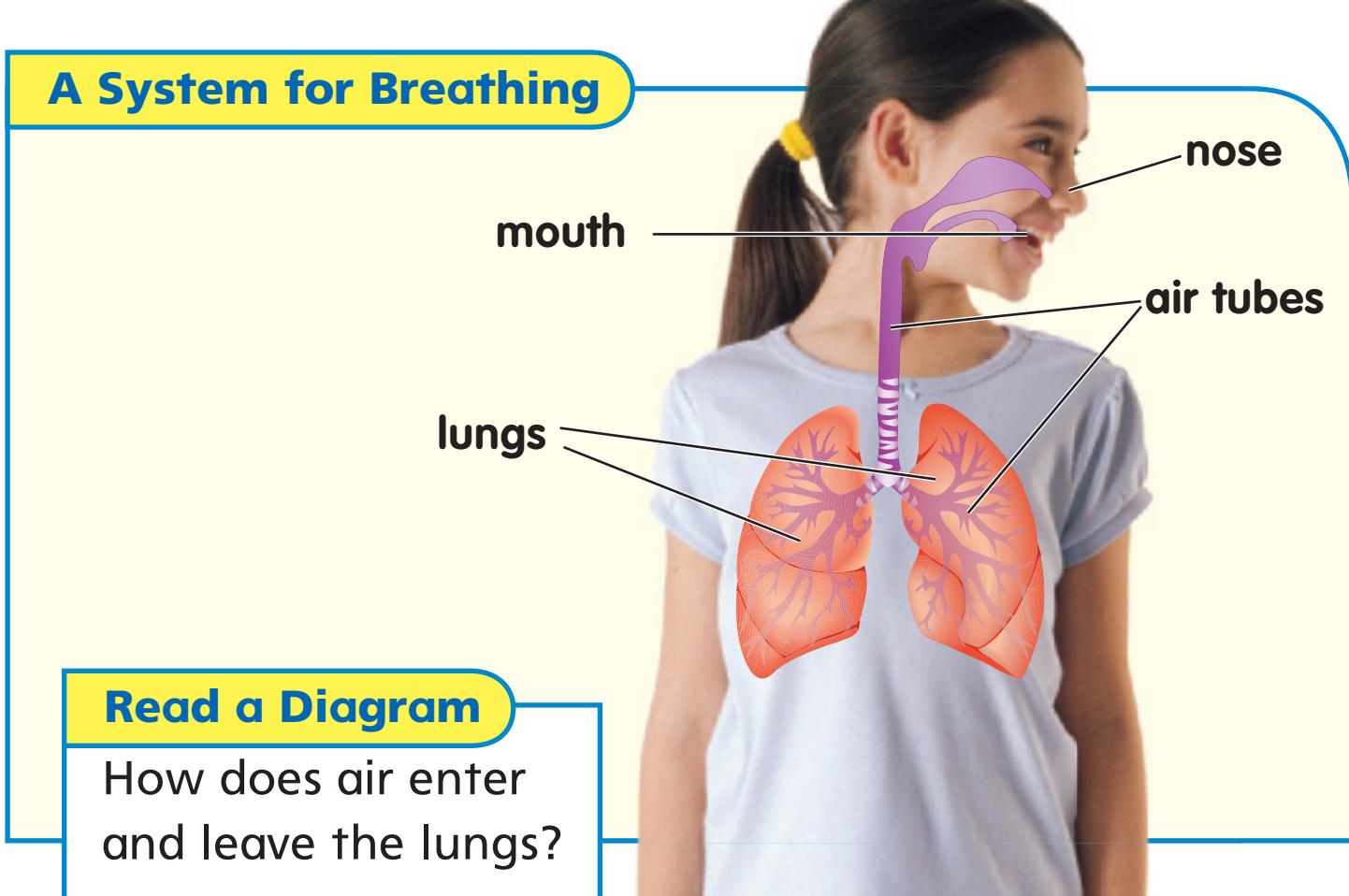
Arteries carry blood with oxygen to every body part. Then veins carry away blood with wastes. ►



Breathing

Breathing brings air into the body. Then blood gets oxygen from air. Breathing also removes a waste gas called carbon dioxide.

When you breathe, air enters the body through the nose or mouth. Tubes carry air from the throat to the lungs. The **lungs** are where air enters the blood.



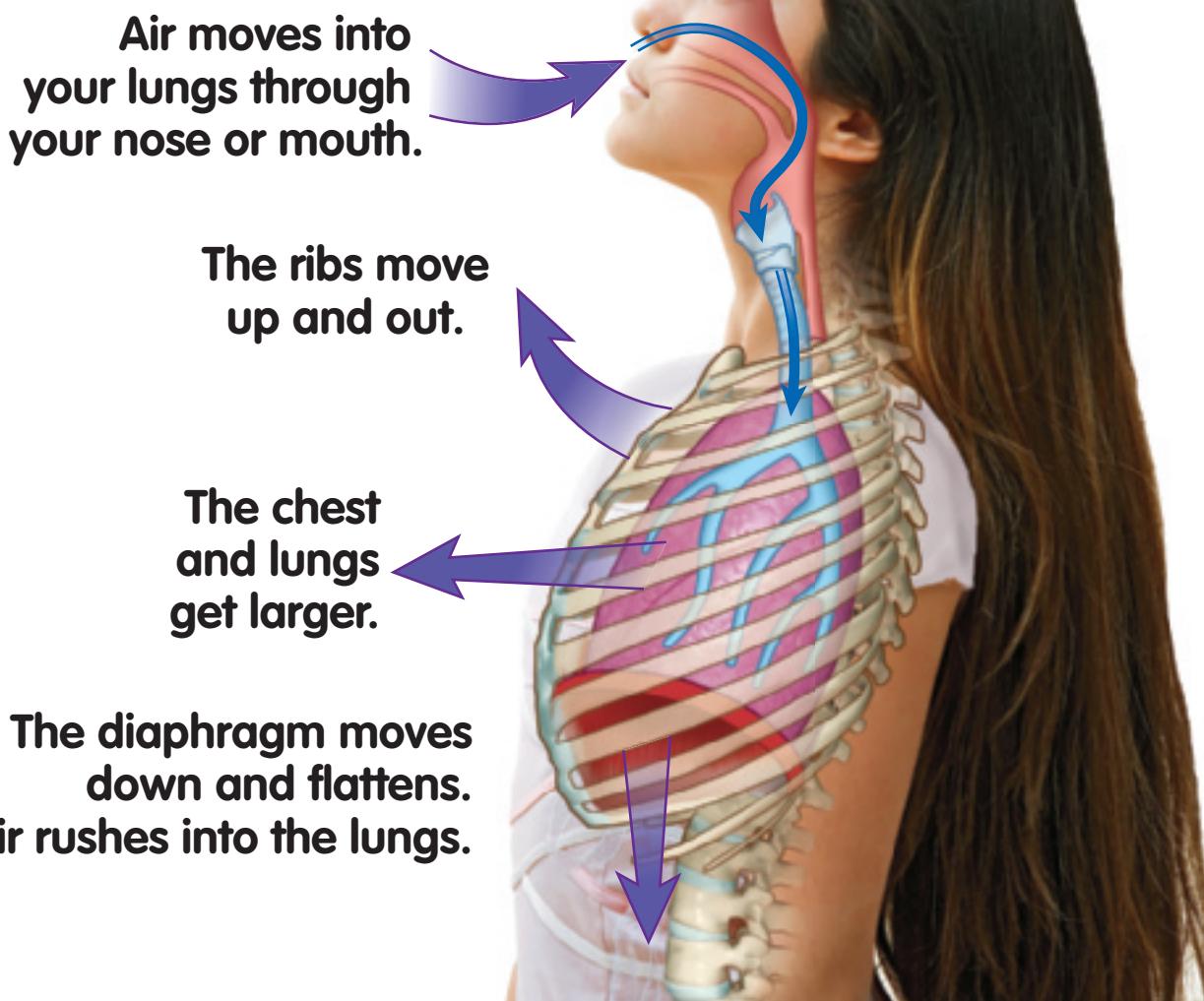
The lungs can not move by themselves. A muscle called the **diaphragm** works to fill and empty them.

What do the lungs do?

Quick Lab

Observe. Hold a piece of paper in front of your mouth. Observe the paper as you breathe in and breathe out.

The Diaphragm at Work



Working Hard

Your heart and lungs work all the time. They work even when you are sleeping.

You breathe faster when you exercise. Your heart beats faster too. This helps bring more food and oxygen to the muscles.

- When do the heart and lungs work their hardest?

When you exercise, your body needs more oxygen.▼



Think, Talk, and Write

Complete each sentence.

1. A muscle called the _____ pumps blood through the body.
2. Tubes called _____ carry blood with oxygen to body parts.
3. Air meets blood in the _____.

arteries

heart

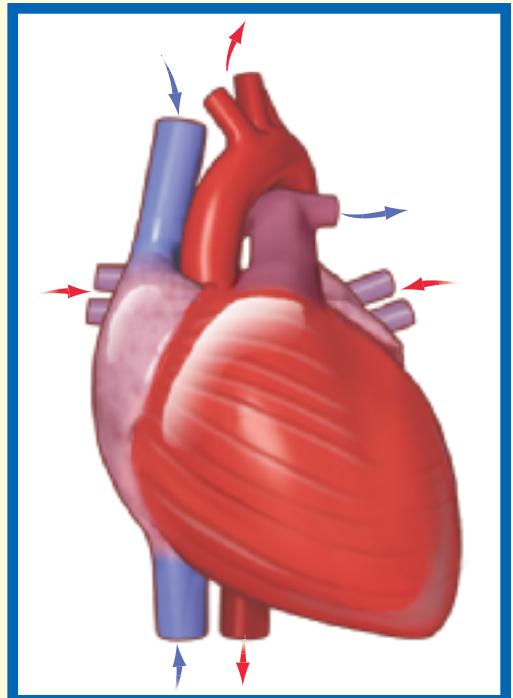
lungs

Answer the question below.

-  4. How is the heart different from other muscles of the body?

Art Link*

Draw a picture of yourself when your heart and lungs are working very hard.



Lesson 4

Your Stomach



Look and Wonder

What happens to the food you eat?

Explore

Inquiry Activity

How does your mouth change the food you eat?

What to Do

- 1 Put one cracker in a cup. Break the other cracker into pieces.
- 2 Place the pieces in the second cup. Add water and mash the pieces with a spoon.
- 3 **Compare.** How are the crackers in the cups the same? How are they different?
- 4 **Infer.** How does your mouth change the food you eat?

Explore More

- 5 Wet and mash other foods. Try a slice of apple or cheese.

You need



two saltine
crackers



two small
cups



water



spoon

Read Together and Learn

Vocabulary

digest

saliva

esophagus

stomach

intestines

How does the body digest food?

Food is fuel for the body. The body must digest food to get energy from it.

To **digest** is to break apart food into tiny pieces that the body can use. The stomach and other parts work together to digest food.

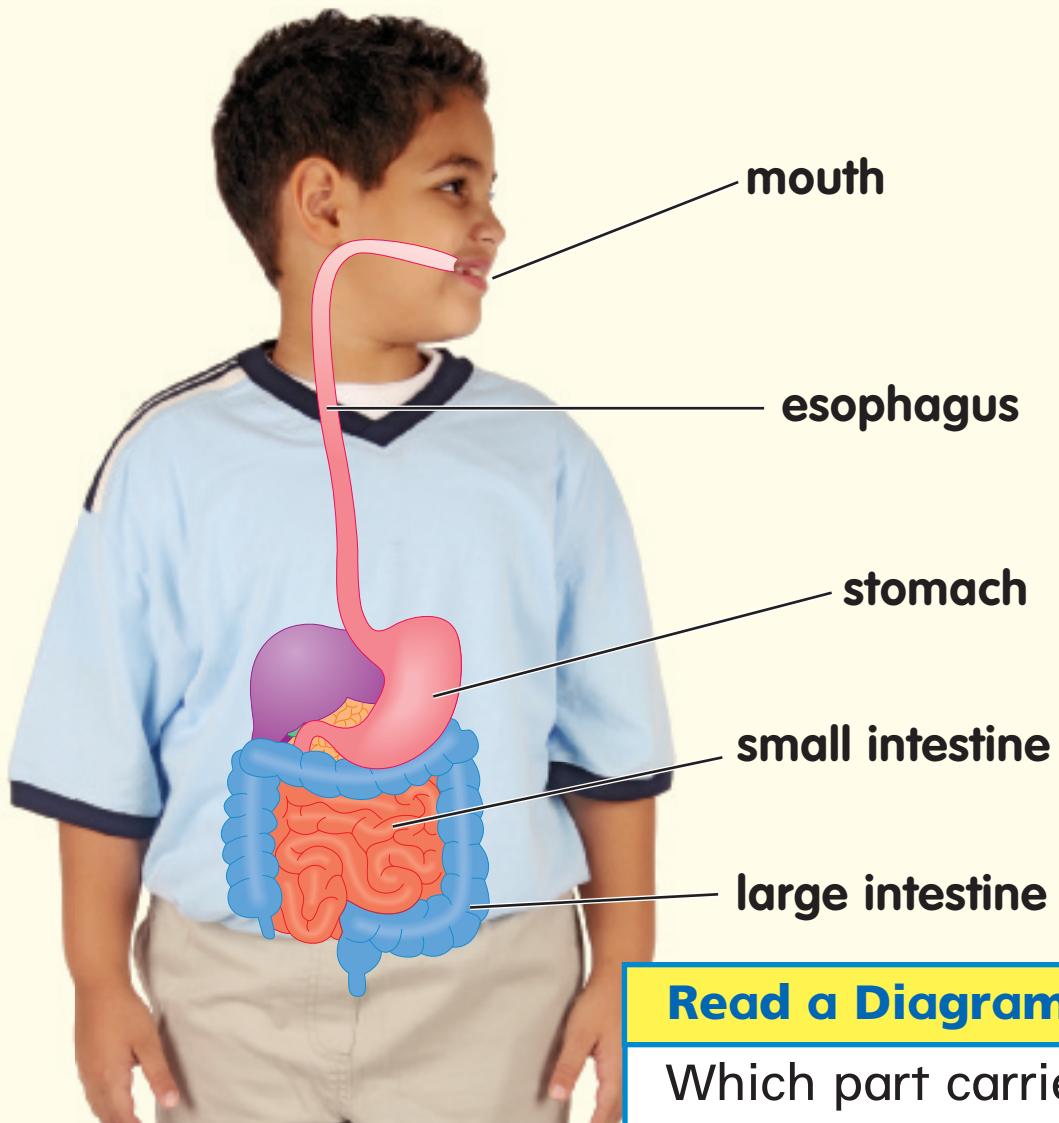


◀ As soon as you bite your food, the body begins to digest it.

Together these parts are connected like a tube through the body. The tube is wider in some places than others. Different parts do different things to digest food.

✓ Why must the body digest food?

Digesting Food



Read a Diagram

Which part carries food through a curvy path?

The Mouth and Stomach

The mouth begins digesting food. Teeth cut, tear, and grind food as you chew.

The mouth also mixes food with saliva. **Saliva** is a liquid that wets food and helps break it apart.



Quick Lab

Observe. Look at your teeth in a mirror. What kinds of teeth do you see?



for biting



for tearing

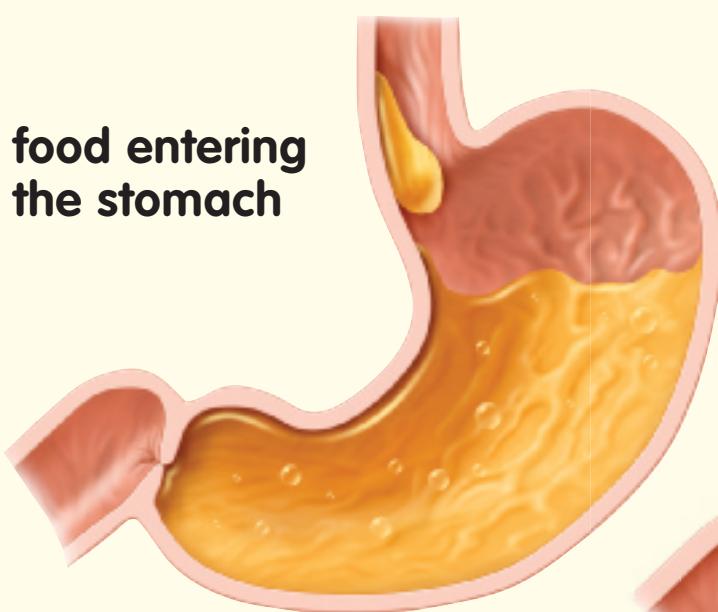


for grinding

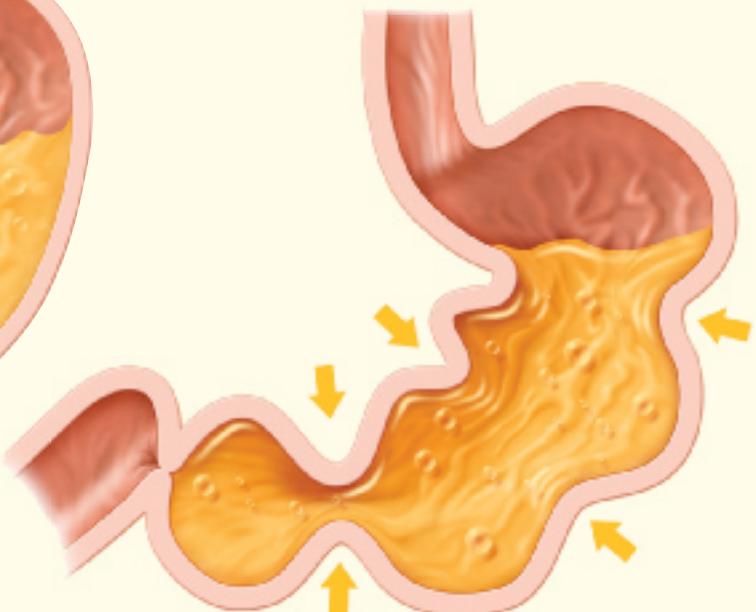
► Teeth are different sizes and shapes.

How the Stomach Works

food entering
the stomach



stomach mixing
and churning food



When you swallow, food enters a thin tube called the esophagus. The **esophagus** pushes food down from the mouth to the stomach.

The **stomach** mixes and churns food. Food stays there for six to eight hours. When it leaves, it is like thick soup.



What does the stomach do?

The Intestines

The **intestines** finish digesting food.

The small intestine breaks down food even more. Then blood carries away the tiny pieces of food and brings them to all the body parts.

The food pieces leftover move to the large intestine. The large intestine soaks up water. Then the waste food left leaves the body.



What happens to food in the small intestine?



► Food goes through the small intestine in a long, curving path. Food pieces enter the blood through its folded wall.

Think, Talk, and Write

Complete each sentence.

1. Food leaves the stomach and enters the _____.

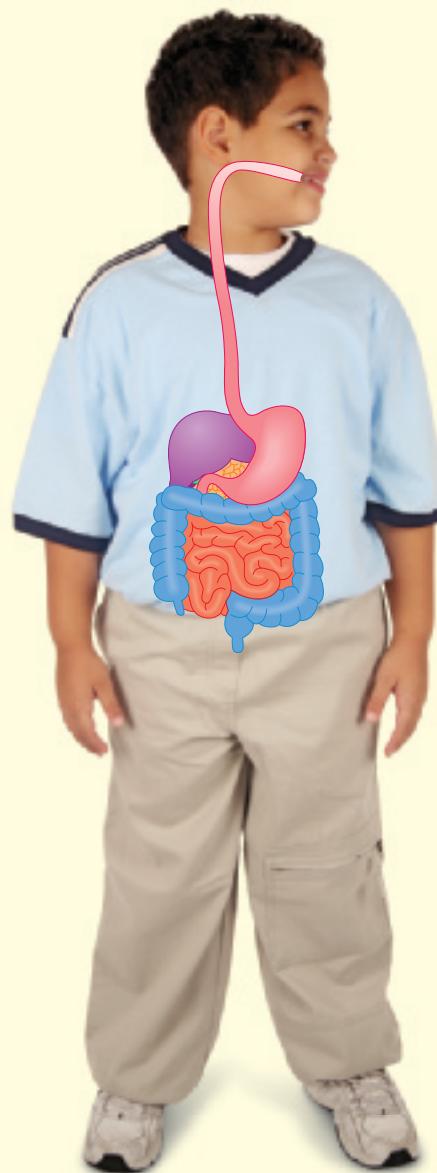
esophagus

intestines

saliva

2. The _____ is a tube that connects the mouth and stomach.

3. A liquid called _____ wets food and helps break it apart.



Answer the question below.

4. Why should you chew food well before you swallow it?

Art Link

Draw a picture to show what happens to your favorite food when you eat it.

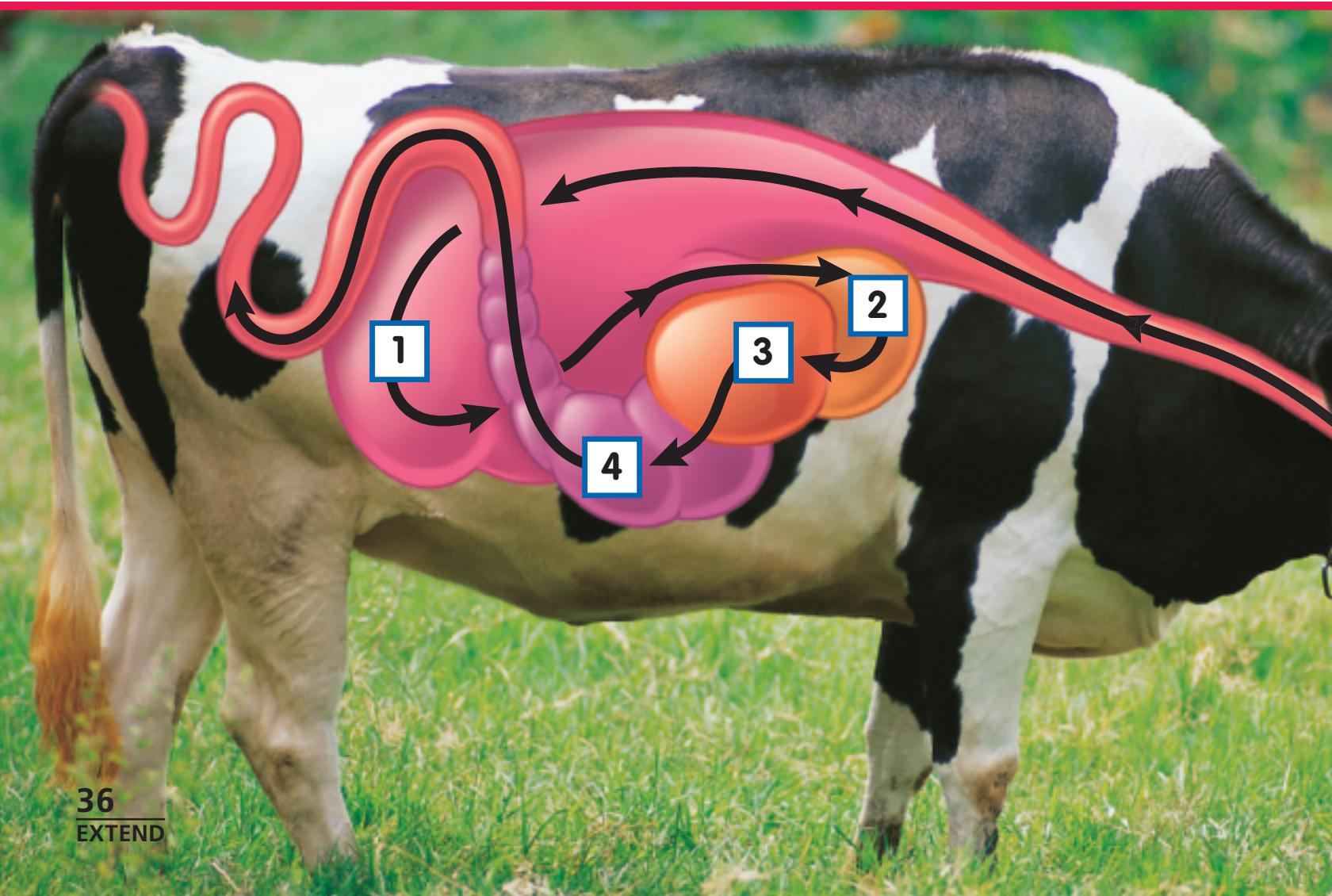


Focus

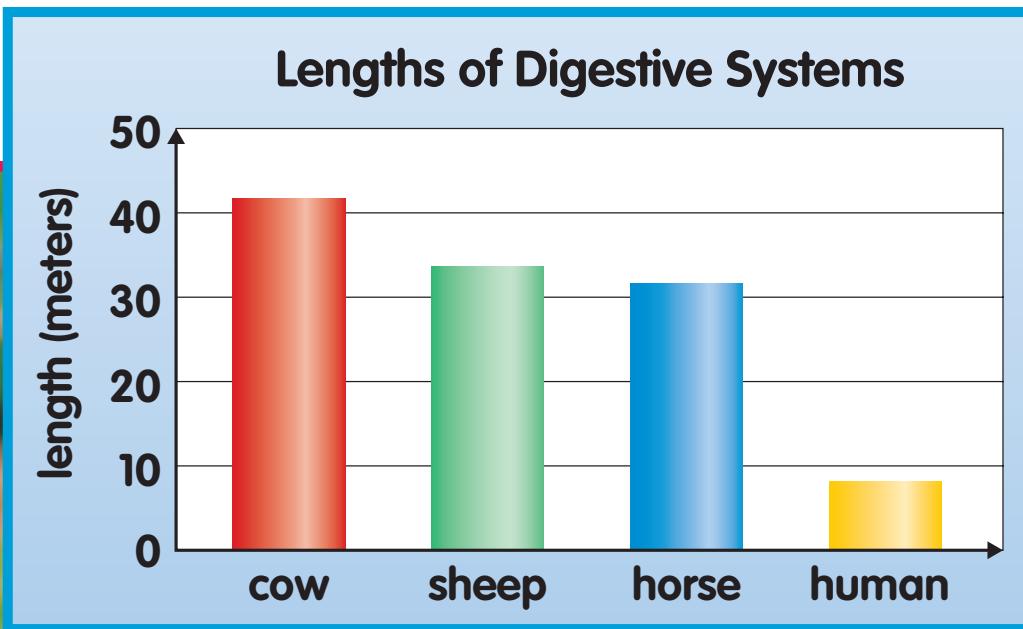
The Cow Stomach

A cow has a stomach with four parts. The parts break down grass and other plants that a cow eats.

A stomach with
four parts helps a
cow eat grass. ▼



The first part mashes grass into soft food. The soft food is called cud. The cud then goes back up to the mouth. The cow chews the cud. Then it moves through the other stomach parts.



Write About It

Cows, sheep, horses and humans have different body paths for food. What does the graph show about their bodies?

Your Senses



Look and Wonder

Even if you do not see a fire truck, how can you tell when one is nearby?

Explore

Inquiry Activity

What is in the bag?

What to Do

- 1 Ask a partner to hide something inside a brown bag.
- 2 **Predict.** Guess what is in the bag. You may tap the bag, feel it, smell it, and listen to it. But do not tear the bag or look inside it.
- 3 Open the bag. Was your guess correct?
- 4 **Communicate.** What clues helped you guess the hidden objects?

Explore More

- 5 Try the activity many times. Hide different things in the bag. Take turns with your partner.

You need



brown
bag



small
objects

Step 2



Read Together and Learn

Vocabulary

sense

taste buds

What are senses?

You see with your eyes. You hear with your ears and smell with your nose. These parts give senses to the body.

A **sense** is a way that the body learns about the world. The body uses five senses.



▲ Which senses are these people using?

Eyes give the sense of sight. This sense lets you see the sizes, shapes, and colors of things.

Ears give the sense of hearing. This sense lets you hear sounds.

✓ How are you using your eyes and ears right now?



sight



hearing

More Senses

The nose gives the sense of smell. Many flowers smell good. The spray from a skunk smells bad!

The sense of taste comes from taste buds. **Taste buds** are tiny bumps on the tongue.



smell



taste



Most senses come from special parts of the head. But the sense of touch comes from skin all over the body.

Touching tells how something feels. Things may feel hard or soft, smooth or rough, and hot or cold.

✓ How is touch different from the other senses?

Quick Lab

Compare. Find five things that feel very different from one another. Describe the feel of each.



How do you use your senses?

You use all of your senses every day.

They may show things you need or dangers to avoid. They also help you enjoy the world around you.

Using Senses



Read a Photo

How are these people using their senses?

Think, Talk, and Write

Complete each sentence.

1. You learn about the world by using _____.
2. You taste with bumps on the tongue called _____.

senses

taste buds

Answer the questions below.

3. How can you use your senses to describe a peach?
4. Write about when you have used two senses at the same time.



Art Link

Make a poster to show how the body uses each of the five senses.





Focus

Hearing Aids

Some people hear poorly.
Hearing aids can help them.



▲ Can you see the hearing aid?

Hearing aids are tools that make sounds louder. People may wear them in one ear or both ears.



hearing aids

Talk About It

How do hearing aids help people?

Deaf people can not hear. They use sign language to communicate. ▼



Growing and Changing



Look and Wonder

What do you think life is like for a baby?

Explore

Inquiry Activity

How have you changed?

What to Do

- 1 Fold two sheets of paper in half. Have your teacher staple the sheets to make a book. Draw your picture for the cover.
- 2 **Communicate.** On each left page, draw or write about things that babies can or can not do.
- 3 On each right page, draw or write about things you can or can not do.

Explore More

- 4 **Predict.** What new things will you do when you are older?

You need



paper



pencil



crayons

Step 3



**Read Together
and Learn**

Vocabulary
life cycle

**People in this family are
in different stages of the
human life cycle.** ▼

What is the human life cycle?

You once were a baby. Now you are older. You will grow to be an adult.

Everyone grows and changes. These changes make up the human **life cycle**. We start growing and changing as soon as we are born.



A baby is born after about nine months inside the mother. New babies need a lot of help. They can not take care of themselves.

Babies learn to crawl and then walk. They also learn how to talk and to feed themselves.



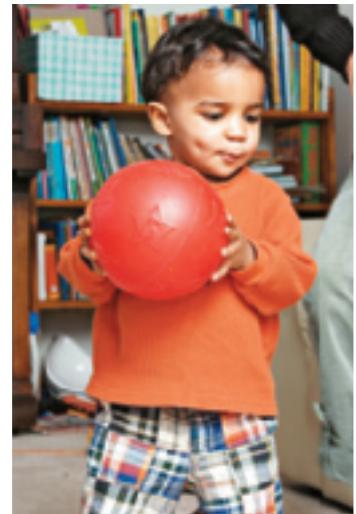
Are people in your family in different stages of the life cycle? Explain.

A Baby Grows and Changes



before birth

age 2 weeks



age 2 years

Read a Photo

How do babies change as they get older?

Children

Young humans are called children from about ages 2 to 12. The bodies of children grow taller and stronger each year.

Children make friends, learn new things, and play games and sports. They also learn what they like and what they do not like.



What do these photos show about the lives of children?

Teenagers

The body grows and changes even more during the teenage years. It becomes more like the body of an adult man or woman.

Like children, teens study at school and spend time with friends. They also do many things on their own. They may plan for their lives as adults.



How are teens different from children?

Teens look
more like
adults than
children. ►

Quick Lab

Use numbers.

When will you be
a teenager?





Adults

The adult stage of life lasts the longest. Adults work at jobs. They may choose to marry and raise children of their own.

As adults age, their bodies begin to slow down. Older adults may have gray hair and wrinkled skin.

► Your body looks different than an adult's body.

✓ What is life like for an adult?

Think, Talk, and Write

Complete each sentence.

1. A child grows to become a _____, then an adult.

life cycle

teenager

2. People grow and change through the stages of the human _____.

Answer the questions below.

3. List three things that babies learn as they grow older.
4. What can adults do that children can not do?



Art Link

Draw what you think you will look like as a teen or an adult.



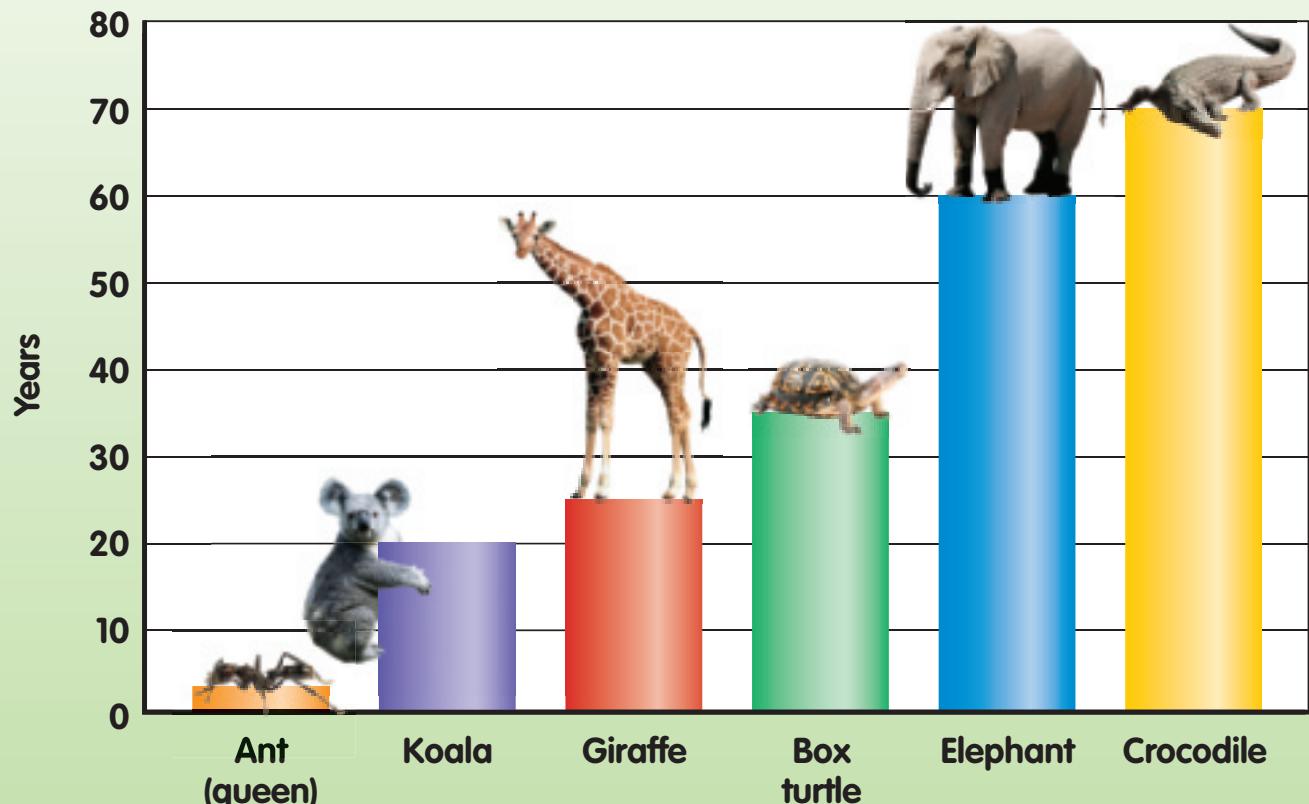


Focus

Long Lives, Short Lives

Some people have lived for over 100 years. Most animals live much shorter lives. Many live for a few years, a few months, or an even shorter time.

Length of Life



Turtles may live for 100 years or longer. ►



▼ Most ants live for only a few months. Queen ants live longer.



Write About It

How do you think turtles can live so long?



Lesson 7

Eating Healthful Foods

Look and Wonder

Which fruits and vegetables do you like to eat?

Explore

Inquiry Activity

What makes a healthful meal?

What to Do

- 1 Work in a small group. Discuss the foods you like to eat.
- 2 **Record data.** Choose five foods that would make a healthful dinner. Draw a picture or write the name of each food.
- 3 **Communicate.** Share your list with the class. Explain your choices.

Explore More

- 4 Find out who chooses the foods served at your school. Ask them about the choices they make.

You need



pencil or
crayons



paper

Step 2



Read Together and Learn

Vocabulary

protein

vitamin

mineral

food pyramid

A healthful
breakfast gives
you energy to
start your day. ▼

What foods should we eat?

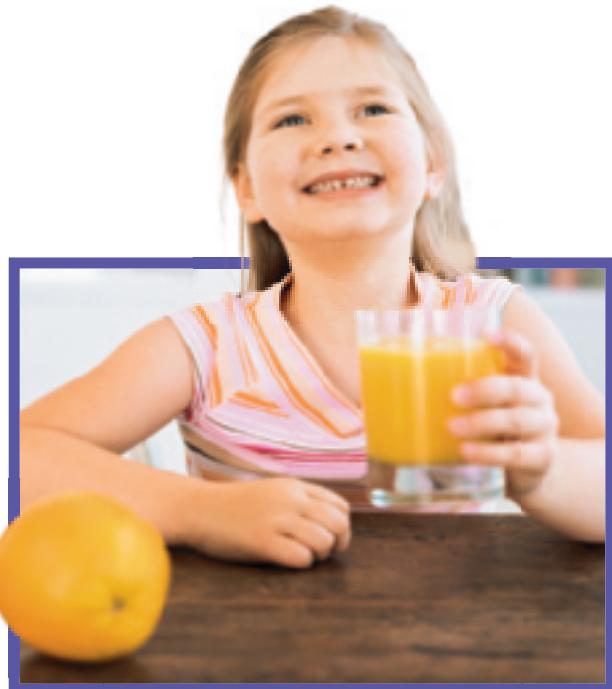
You need to eat food for many reasons. One reason is you need energy. Bread, potatoes, and pasta are full of the kind of energy that the body needs.

Proteins in food help the body grow. Meat, fish, and beans have a lot of protein.



Vitamins and **minerals** in food help body parts do their jobs. The body uses many kinds of vitamins and minerals. Only small amounts of each kind are needed.

- ✓ How does the body use food?



- ▲ The vitamin C in oranges helps scrapes and cuts to heal.



- ▲ Proteins in meat and beans help the body grow.



- ▲ A mineral in milk helps bones and teeth stay strong.

What is the food pyramid?

The **food pyramid** is a guide for eating. It shows how you can eat healthful meals.

Each color of the food pyramid stands for a food group. To get everything your body needs, choose foods from each group every day.

What are the food pyramid groups?



▲ The food pyramid helps you choose healthful foods to eat.

Quick Lab

Classify. List five foods you like.

What groups in the food pyramid are they from?

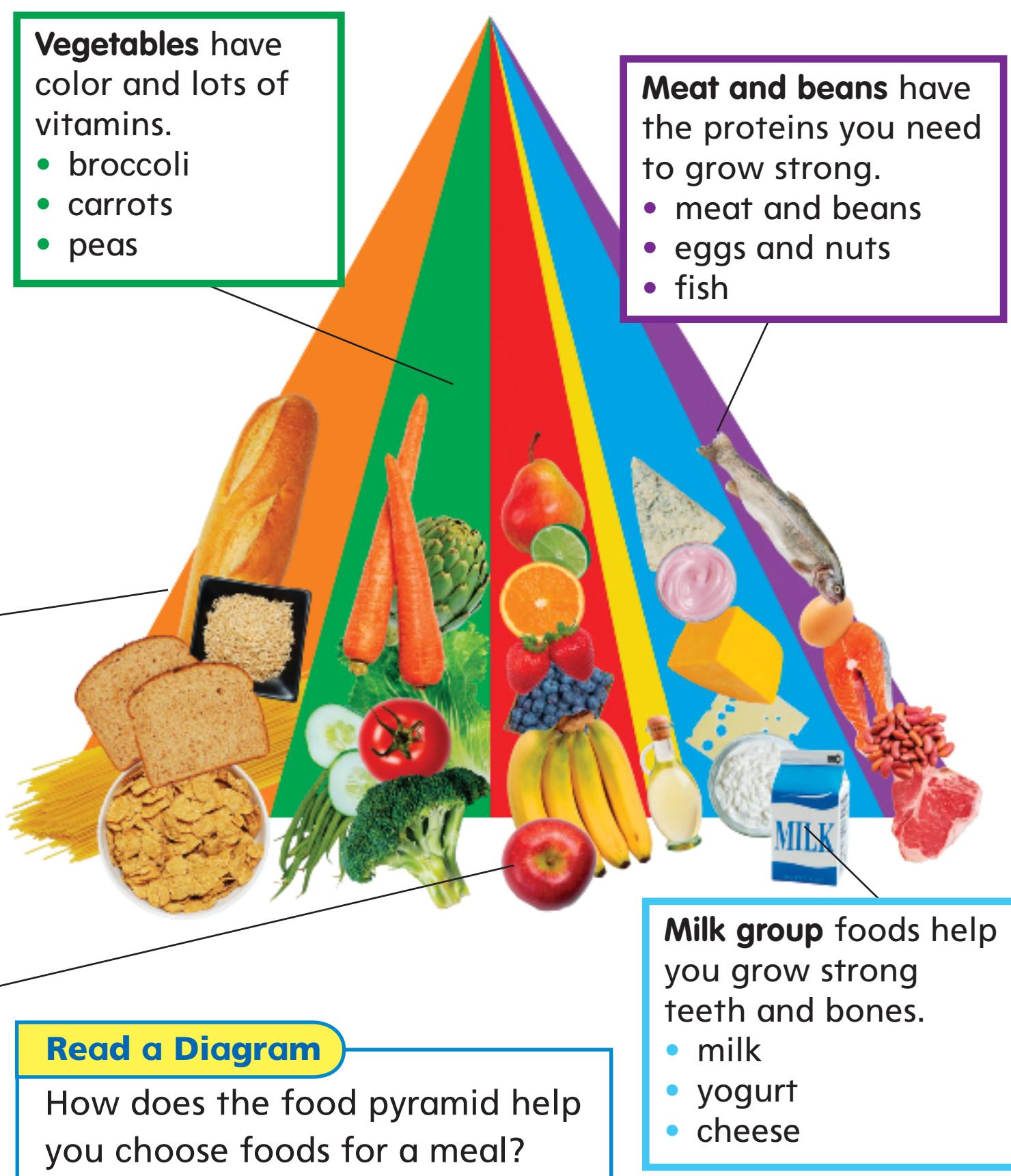
Grains have the energy your body needs.

- bread and cereal
- pasta
- rice

Fruits are great for desserts or snacks.

- apples
- bananas
- oranges

The Food Pyramid



How is food important?

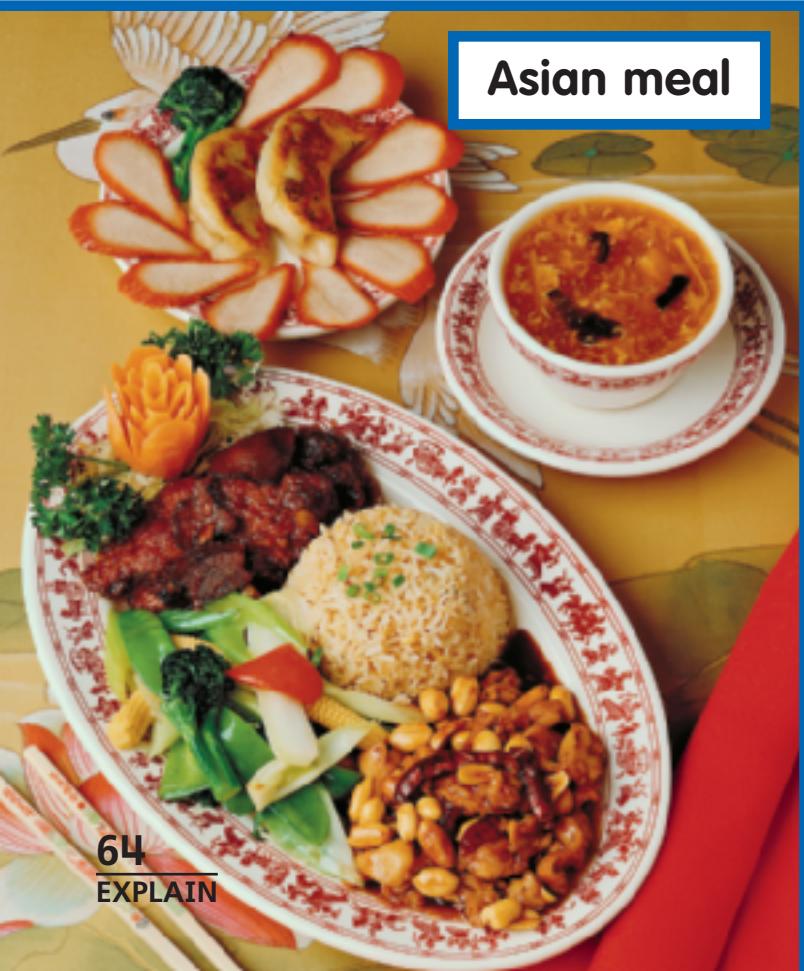
Food is an important part of many cultures. A culture is a way people live.

Have you ever eaten the foods shown here? If not, try them! You might find a new favorite.

✓ What foods would you like to try next?



tropical fruits



Asian meal



grilled fish

Think, Talk, and Write

Complete each sentence.

1. Colors show the food groups in the _____.
2. Body parts need _____ to work at their best.
3. Meat and beans have _____ that help the body grow.

food pyramid

proteins

vitamins

Answer the question below.

-  4. Why do you think people should try new foods?

Art Link*

Draw a picture of a healthful meal that you would like to eat. Choose a food from each food group.

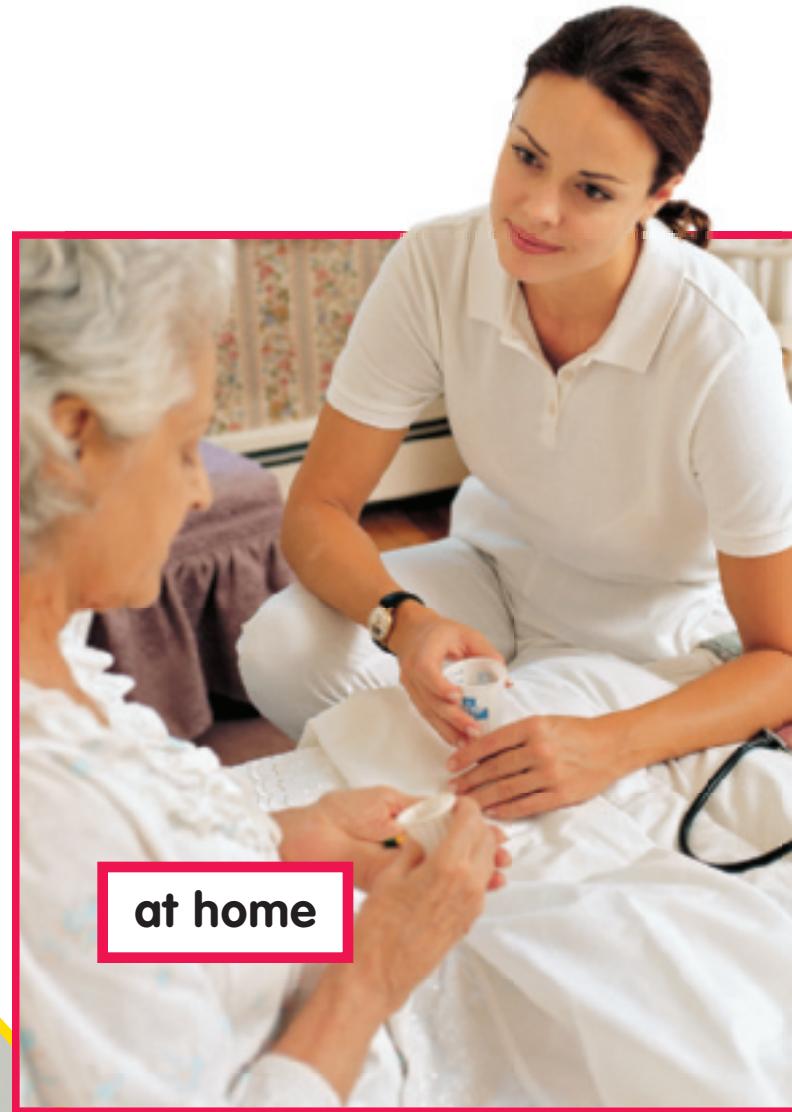




Focus

Nurses

Nurses have many jobs. They work in many places. Some nurses work in hospitals. They help sick people get well. Other nurses help people in homes, schools, or businesses.



Teaching children is another job that nurses do. You can ask a nurse about ways to stay healthy.

at the hospital

Talk About It

How do nurses help people?



Staying Healthy and Safe



Look and Wonder

Why are these children
wearing helmets?

Explore

Inquiry Activity

What things help keep you healthy or safe?

What to Do

- 1 **Observe.** Look at the pictures. Describe how these things help keep you healthy or safe.
- 2 **Classify.** Which things can you use by yourself? Which must an adult give you?
- 3 **Infer.** Why is it important to know about health and safety?

Explore More

- 4 **Classify.** List other things that help keep you safe or healthy. How are they alike? How are they different?



soap



stop sign



helmet



medicine



bandage

Read Together and Learn

Vocabulary

germs

vaccine

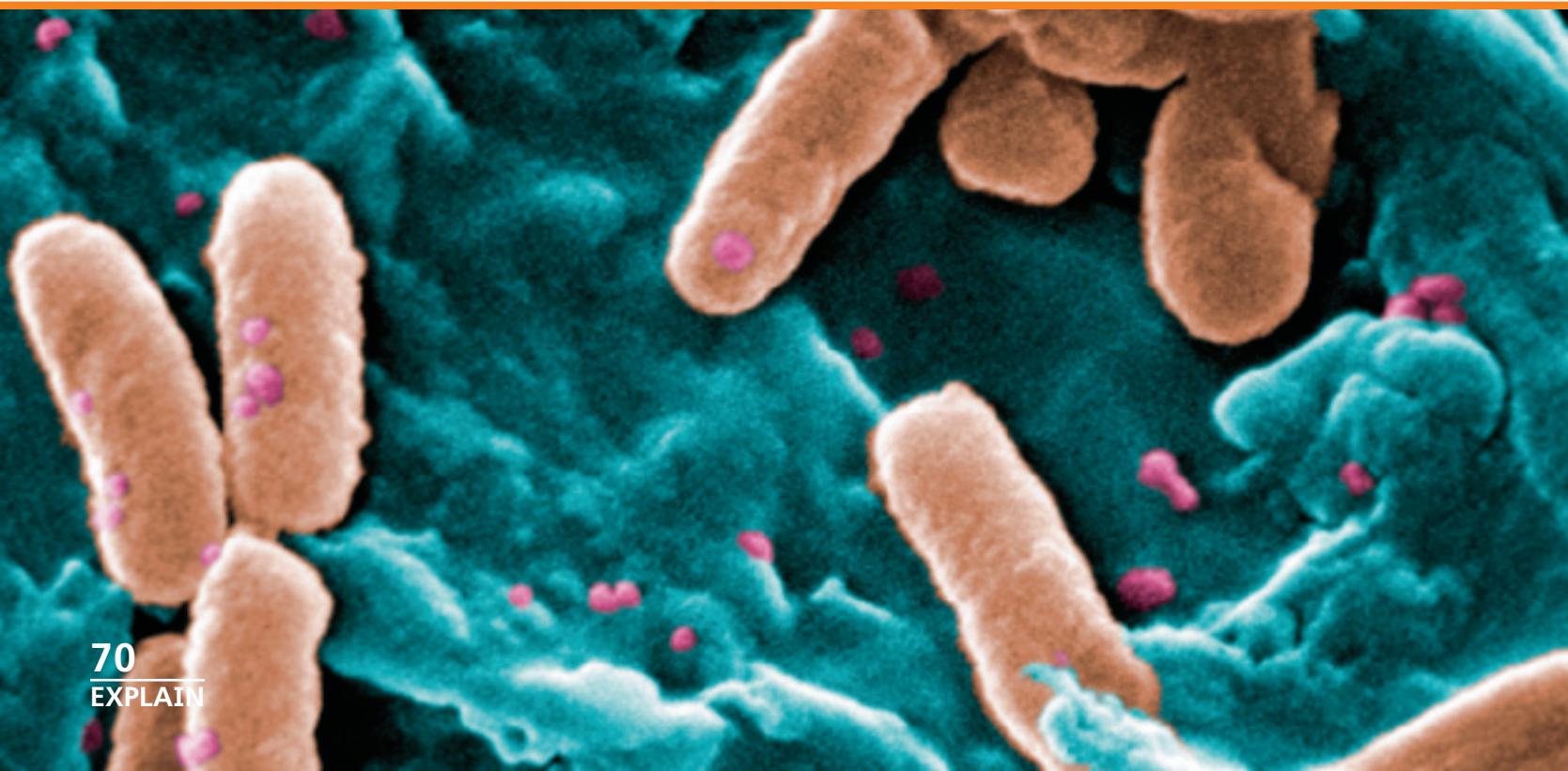
How can people stay healthy?

Colds, the flu, and other illnesses are caused by germs.

Germs are very tiny things that sometimes harm the body. Many germs are alive.

Germs are everywhere. They can be in the air, in food, or even on a doorknob. Most germs are harmless. They can even be helpful. Some germs can make you sick.

Germs are too small to see with just your eyes. ▼



Most illnesses last only a few days.
They go away because the body has
a system that fights germs.

Medicines and vaccines fight germs
too. A **vaccine** helps your body stop
germs before they cause harm.

✓ What can germs do?



▲ Most vaccines are
given with a needle.
They help your body
stop harmful germs.



▲ Medicine must be taken
the right way. Only adults
should give it.

Stopping Germs

You can stop germs by washing your hands with soap and warm water. Be sure to scrub well!

Sneezing and coughing can spread germs. Using tissues and covering your mouth can stop germs from spreading.

Wash your hands before eating, after playing with pets, and after using the bathroom. ▼



Food can carry germs too.
Never eat spoiled food.
Some foods can be eaten
raw, but others must be
cooked.

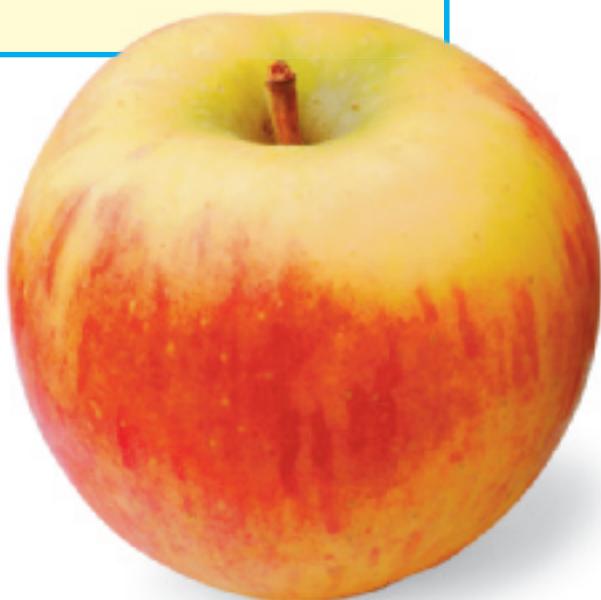
✓ What can you do to keep
germs from spreading?



▲ This meat must be cooked
to be safe to eat.

Quick Lab

Compare. Look at the two apples. Which is better to eat? Why?



Keeping Safe

Safety is important everywhere!

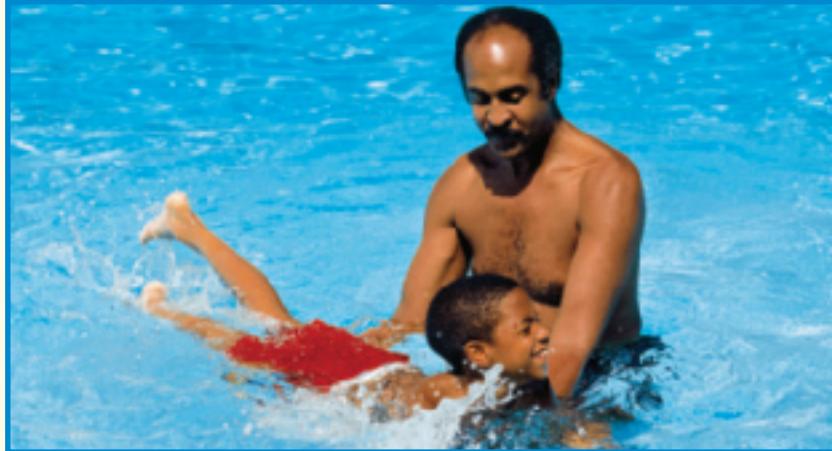


What can you do to stay safe?

Four Safety Tips



In the sunshine wear sunscreen.



At the beach swim with a buddy and with an adult watching.



In the car wear a seat belt.



On a busy street let an adult help you cross.

Read a Photo

How are these safety tips useful?

Think, Talk, and Write

Complete each sentence.

1. Sneezing and coughing can spread _____.

germs

vaccine

2. A _____ can help your body stop an illness before it starts.

Answer the questions below.

3. When is it important to wash your hands?
4. Should everyone know the rules for staying healthy and safe? Explain.

Art Link*

Make a poster that shows a rule about health or safety. Show the rule being followed.

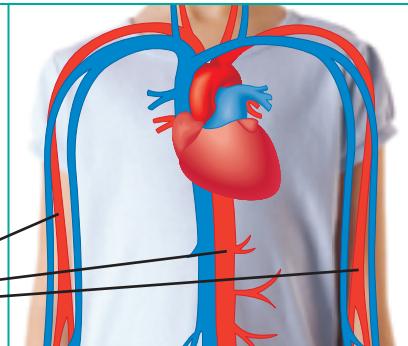


Glossary

A

artery A tube that carries blood from the heart to the body. (p. 23) The pulse can be felt by touching the skin over an artery.

arteries (red)



D

diaphragm A muscle that helps move air in and out of the lungs. (p. 25) The diaphragm moves up and down when you breathe.

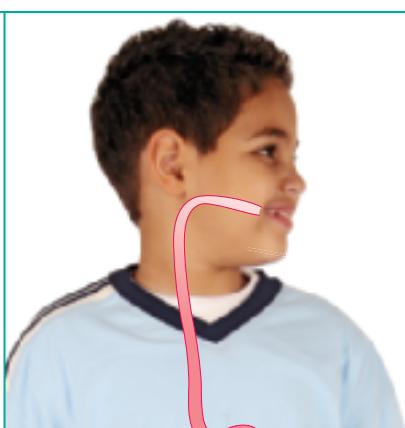


digest To break food into tiny pieces that the body can use. (p. 30) The stomach helps the body digest food.



E

esophagus The thin tube that brings food to the stomach. (p. 33) When you swallow food it moves into the esophagus.



F

food pyramid A chart that shows the food groups and helps people eat healthful meals. (p. 62) You should eat foods from each group in the food pyramid.

**G**

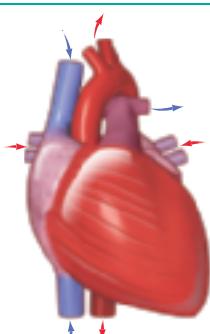
germs Tiny living things that may cause illness. (p. 70) Washing with soap helps stop germs from spreading.

**H**

hearing The sense that allows the ears to receive sounds. (p. 41) The sense of hearing lets people enjoy music.

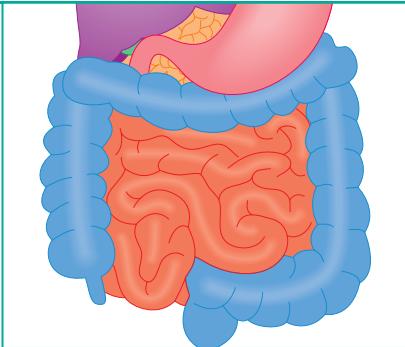


heart The muscle that pumps blood through the body. (p. 22) The heart keeps working even when the body is sleeping.



I

intestines Long tubes that are part of the digestive system. (p. 34) The intestines break down food.

**J**

joint Where two bones meet. (p. 15) Joints allow body parts to bend, turn, or twist.

**L**

life cycle The stages of growth and change. (p. 50) A child and an adult are at different stages of the human life cycle.



lungs The body parts where air meets the blood. (p. 24) When you breathe, air goes in and out of the lungs.



M

minerals Food parts from nonliving sources that help the body work properly. (p. 61) Milk has minerals that the body needs.



muscle A body part that moves bones and other body parts. (p. 16) A muscle in the leg can bend the knee.

**P**

proteins Food parts that help the body grow. (p. 60) Meat, fish, and beans have a lot of proteins.



pulse The movement or beat of an artery as blood moves through it. (p. 23) The pulse tells how fast or slow the heart is beating.



S

saliva A liquid that wets food and helps break it apart. (p. 32) The mouth makes saliva when you eat food.



sense A way that the body learns about the world. (p. 40) The body uses the senses of sight, hearing, taste, touch, and smell.



sight The sense from the eyes that lets you see the sizes, shapes, and colors of things. (p. 41) We use the sense of sight to look at objects around us.



skeleton Bones that allow the body to stand and move. (p. 14) The skeleton includes bones of many shapes and sizes.



smell The sense from the nose that tells about smells. (p. 42) We can smell many flowers.



stomach The body part that mixes and churns food. (p. 33) The stomach fills with food during a meal.



system A group of parts that work together. (p. 6) Body parts work in systems to meet many needs.



taste The sense that tells what kind of food is in the mouth (p. 42) Food can taste sweet, salty, sour, or bitter.



taste buds Tiny bumps that give the sense of taste. (p. 42) Taste buds are tiny bumps on the tongue.

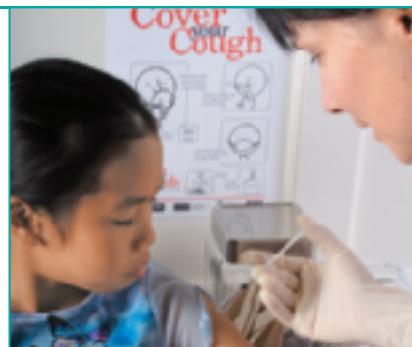


touch The sense from the skin that tells how things feel. (p. 43) The sense of touch tells you that fur is soft and smooth.



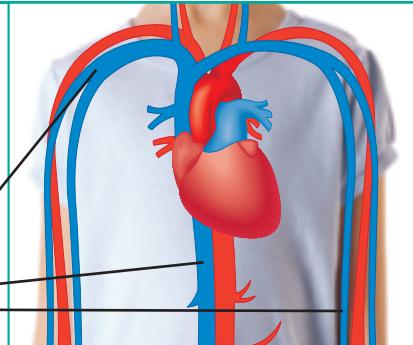
V

vaccine A medicine that stops germs from causing harm. (p. 71) Vaccines help protect you from disease.



vein A tube that carries blood from the body back to the heart. (p. 23) Blood travels to the heart through the veins.

veins (blue)



vitamins Food parts from a living source that help the body work properly. (p. 61) Orange juice has vitamin C.



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