



Let's Do

SCIENCE

Primary 2

Textbook

A





The 5E Model – Guided Inquiry

The Let's Do Science series is based on the Biological Sciences Curriculum Study (BSCS) 5E teaching and learning instructional model. The 5E model is centered on the idea that students understand science concepts best by using prior knowledge to pose questions and find answers through guided inquiry.

This hands-on approach, integrated with engineering and design skills, has students learn science by doing science. Teachers guide the learning process and are able to assess student performance by evaluating student explanations and the application of newly acquired knowledge and skills.

Engage

The Engage phase of the 5E model provides students with the opportunity to demonstrate their prior knowledge and understanding of the topic or concept. Students are presented with an activity or question which serves to motivate and engage students as they begin the lesson. Teachers identify and correct any misconceptions and gather data from students which will guide informed teaching and learning.

Essential to stimulating and engaging students is the use of mixed media such as colorful photos, illustrations and diagrams found throughout the textbooks and activity books. Let's Do Science also includes extensive digital resources such as narrated videos, interactive lessons, virtual labs, slideshows and more.





Explore

This phase encourages exploration of concepts and skills through hands-on activities and investigations. Students are encouraged to work together and apply various process skills while gaining concrete, shared learning experiences. These experiences provide a foundation for which students can refer to while building their knowledge of new concepts. This student-centered phase comes before formal explanations and definitions of the concept which are presented by the teacher.

Explain

This phase follows the exploration phase and is more teacher-directed. Students are initially encouraged to draw on their learning experiences and demonstrate their understanding of the concept through explanations and discussion. After the students have had the opportunity to demonstrate their understanding of the concept, the teacher then introduces formal definitions and scientific explanations. The teacher also clarifies any misconceptions that may have emerged during the Explore phase.

Elaborate

In the Elaborate phase, students refine and consolidate their acquired knowledge and skills. Opportunities are provided for students to further apply their knowledge and skills to new situations in order to broaden and deepen their understanding of the concept. Students may conduct additional investigations, share information and ideas, or apply their knowledge and skills to other disciplines.

Evaluate

This final phase includes both formal and informal assessments. These can include concept maps, physical models, journals as well as more traditional forms of summative assessment such as quizzes or writing assessments. Students are encouraged to review and reflect on their own learning, and on their newly acquired knowledge, understanding and skills.

Let's Do Science

Let's Do Science is based on the United States Next Generation Science Standards (NGSS). The series consists of full-color textbooks and full-color activity books for Grades K to 6.

Let's Do Science engages students with a highly visual presentation of the disciplinary core ideas in the textbooks and places an emphasis on applying scientific knowledge using NGSS practices through numerous scientific investigations. Let's Do Science sees engineering as an essential element of science education and as such is tightly integrated into both the textbooks and activity books.

The Let's Do Science textbooks include the following features:



Think Deeply

Topic-related questions for group discussion aimed at deepening students' understanding of the topic.



Engineer It!

Goes beyond inquiry by encouraging students to design, model and build to engineer solutions to defined problems.



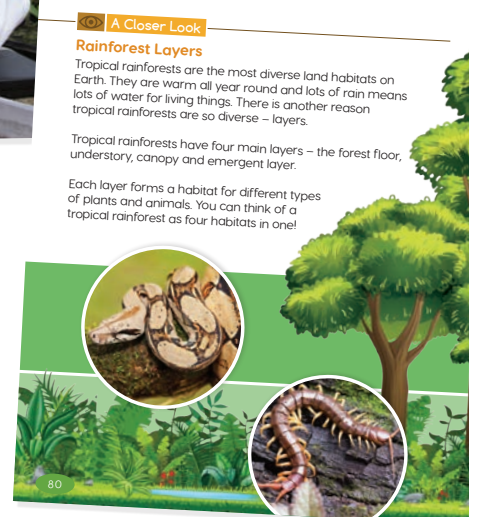
In the Field

Inspirational science-related professions to stir interest in science-related careers.



A Closer Look

Invokes enthusiasm in science by presenting interesting topics beyond the syllabus.





Animals with a body covered in feathers. They have two pairs of wings. Many birds use their wings to fly.

Birds have beaks of all shapes and sizes. The shape of the beak helps the bird to get the food it needs.

Birds reproduce by laying eggs. Parents often care for their young when they hatch from the eggs.




AB Activity 2.3

What are the characteristics of birds?



Did You Know?
All birds have feathers and wings, but not all can fly. Flightless birds include penguins, emus, ostriches and cassowaries.



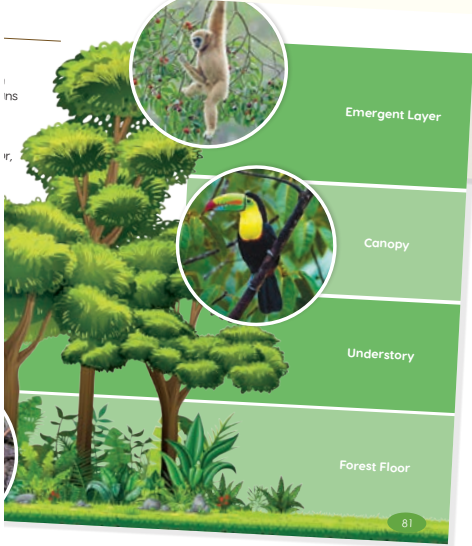
Science Words

volcano	flood	tornado
erupt	landslide	weathering
magma	thunderstorm	erosion
lava	wildfire	deposition
earthquake	hurricane	land reclamation
tsunami		

Review

- Which best describes the process when soil and rocks fall from mountains and hills.
(a) Tsunami
(b) Wildfire
(c) Landslide
- Which best describes the process when hot molten rock flows onto the Earth's surface?
(a) Earthquake
(b) Volcanic eruption
4. What process is shown in the picture?

(a) Erosion
(b) Weathering
(c) Deposition
5. Describe the difference between erosion and weathering.
6. Use the words in the box to label the picture.
erosion deposition

7. Describe the difference between a landslide and weathering.
8. List three processes that change the shape of the land rapidly.
9. List three processes that change the shape of the land slowly.
10. Describe two ways people can slow or prevent changes to the shape of the land.

109



Emergent Layer

Canopy

Understory

Forest Floor

81

Review

Topical questions at the end of each chapter for formative assessment.

Amazing Fact!

Interesting facts to build interest and enthusiasm.

Did You Know?

Extra information to build students' knowledge base of the current topic.

Try This!

Optional hands-on activities to be conducted in groups or at home.

AB Activity

Links students to the Let's Do Science Activity Book at the appropriate juncture.

Discussion

Topic-related questions and situations for class discussion to build a deeper understanding of topics.

Science Words

Lists the essential science vocabulary covered in each chapter.

Contents

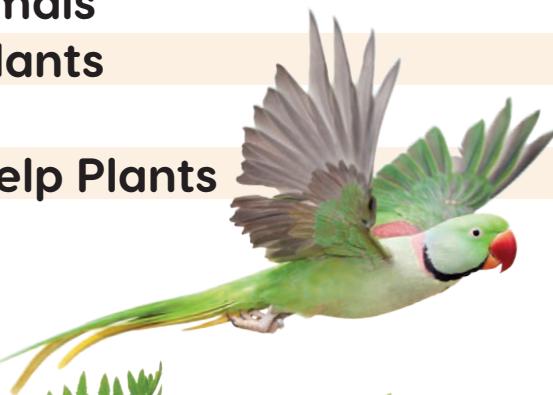
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108





Science Skills

Scientists use special skills to learn about the world around them.

Let's look at how you can use these skills so you can be a scientist too.

Observe

You **observe** when you gather information about something using your senses. You can observe how something looks, feels, sounds, smells or tastes.



What senses are the children using to observe?

You can use different tools to observe things closely. You can use a hand lens, binoculars or a telescope.



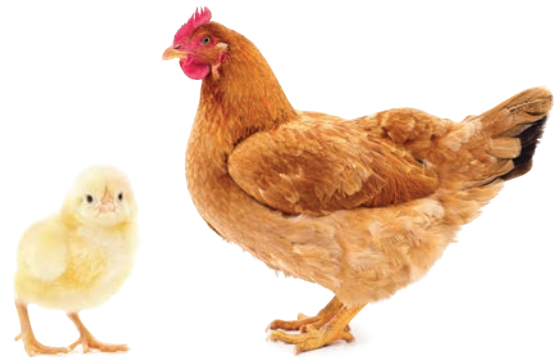


Compare

You **compare** things when you observe and tell how things are similar or different.



How are the hen and chick similar? How are they different?



Classify

When you compare two or more things, you can **classify** them into groups based on ways they are similar.



How have the leaves been classified into groups?





Measure

You **measure** when you find the size or amount of something.



You can use tools to help you measure things. You can use a ruler to compare and measure length.

You can use a balance to compare and measure mass.





Make a Model

You can make a model to test or see how something works.

You can make a model by drawing a picture.

You can also make a model by using the things around you to make a smaller version of something to show how it works.





Infer

You **infer** when you make a guess about something based on what you know or what you observe.



What can you infer about the cause of the holes in the leaf?



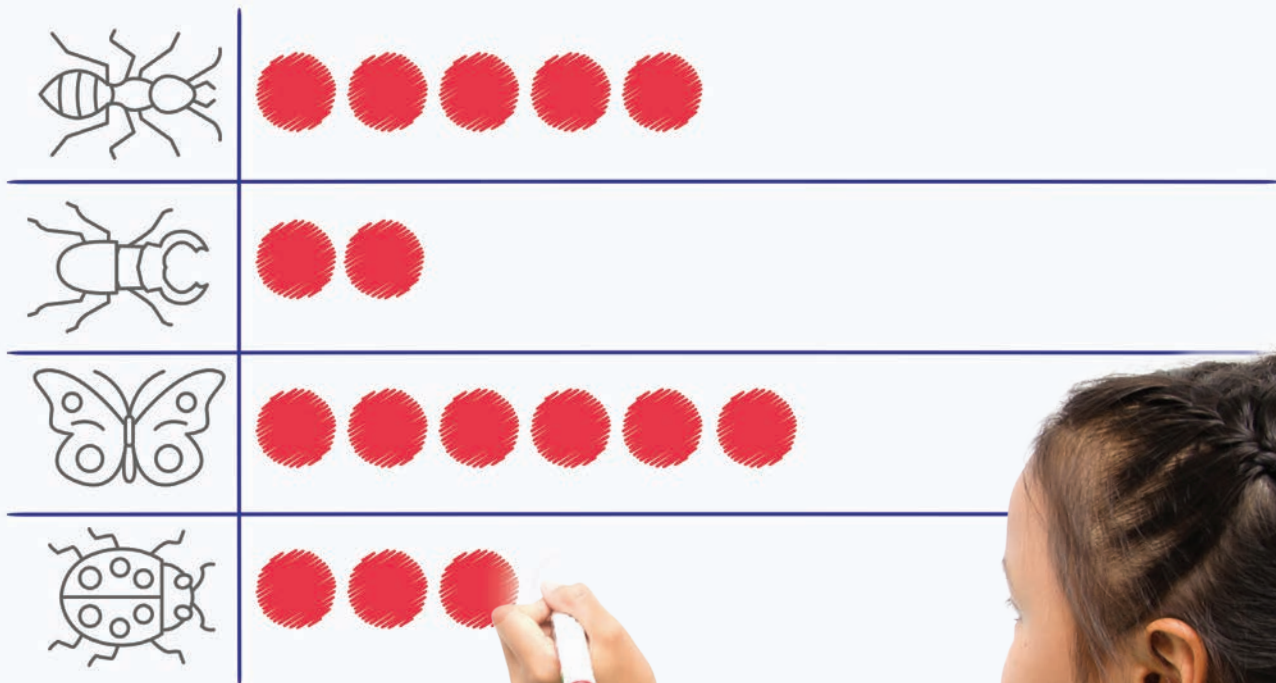
What can you infer from observing the tracks in the sand?



Communicate

You **communicate** when you tell or show other people what you find out.

Insects in School Garden



You can communicate by making charts, drawing pictures or writing about what you find out.



Science Investigations

Ask Questions

Before a science investigation, ask questions about what you would like to find out.

Make a Prediction

A prediction is a guess about what you will observe before you make the observation.



What are some things you would like to find out about in science?

Will a plant grow better in sunshine or darkness?

A plant will grow better in sunlight.

What do plants need to live and grow?



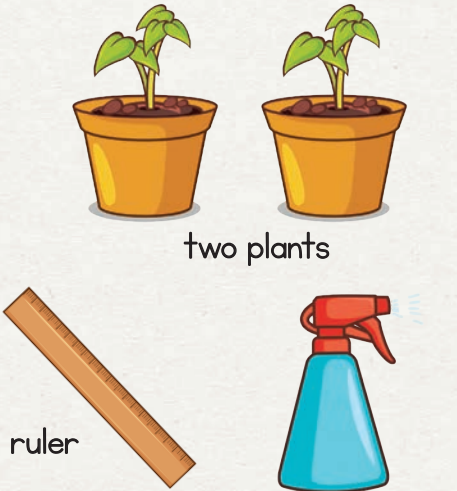
Plan and Carry Out an Investigation

Make a plan with steps that others can follow.
List all the materials you will need.

Procedure

1. Measure the heights of the plants.
2. Put one plant near a window. Put the other plant in a dark cupboard.
3. Water and observe the plants every day for one week.

Materials



two plants

ruler

spray bottle with water

Observe and Record Data

Record the things you observe.
You can write or draw the things you observe. You can use charts and tables.





Analyze and Interpret Data

You analyze when you look closely at recorded data.

You interpret when you understand and explain what the data means.

Make a Conclusion and Communicate

Make a conclusion and communicate it to others.



Science Safety

Follow these safety rules when carrying out investigations.



Wear safety gear.



Follow your teacher's instructions.



Keep your workspace clean.



Be careful with sharp objects.



Wash your hands after every activity.



1

Your Healthy Body



In this chapter you will ...

- learn about the different parts inside your body.
- describe how different parts inside your body help you in different ways.
- list some ways you can keep your body fit and healthy.



Can you name some different parts inside your body?
What does each part do?



What things can you do to stay healthy?



Go Online! 

Access interactive content relating to this topic on the NGScience website. ngscience.com



What foods do you eat to stay healthy?





Go Online!

Discover more about the things inside your body on the NGScience website.

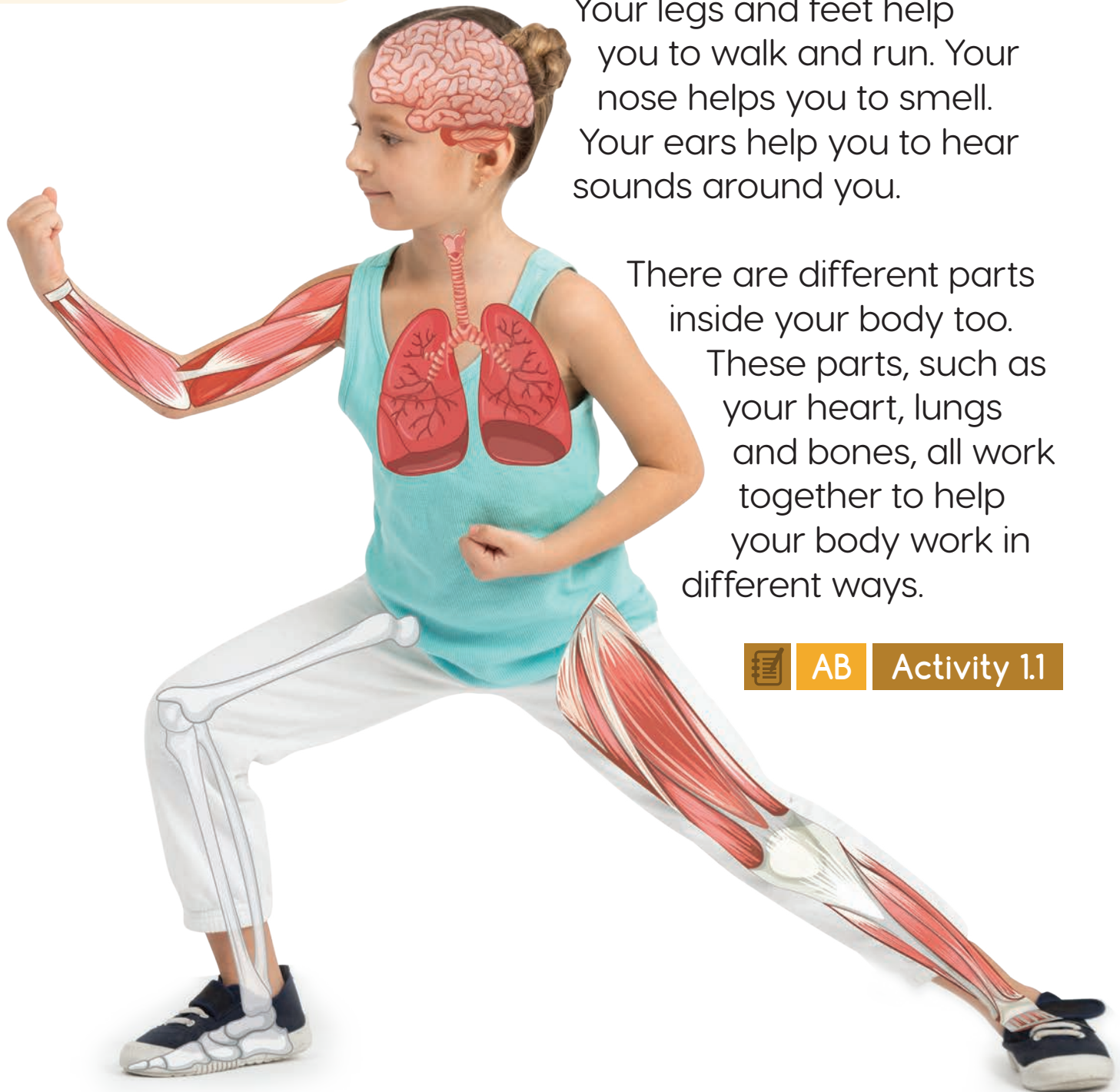
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Your Body Systems

Your body is made up of different parts. The different parts help your body in different ways.

Your legs and feet help you to walk and run. Your nose helps you to smell. Your ears help you to hear sounds around you.

There are different parts inside your body too. These parts, such as your heart, lungs and bones, all work together to help your body work in different ways.



AB

Activity 1.1

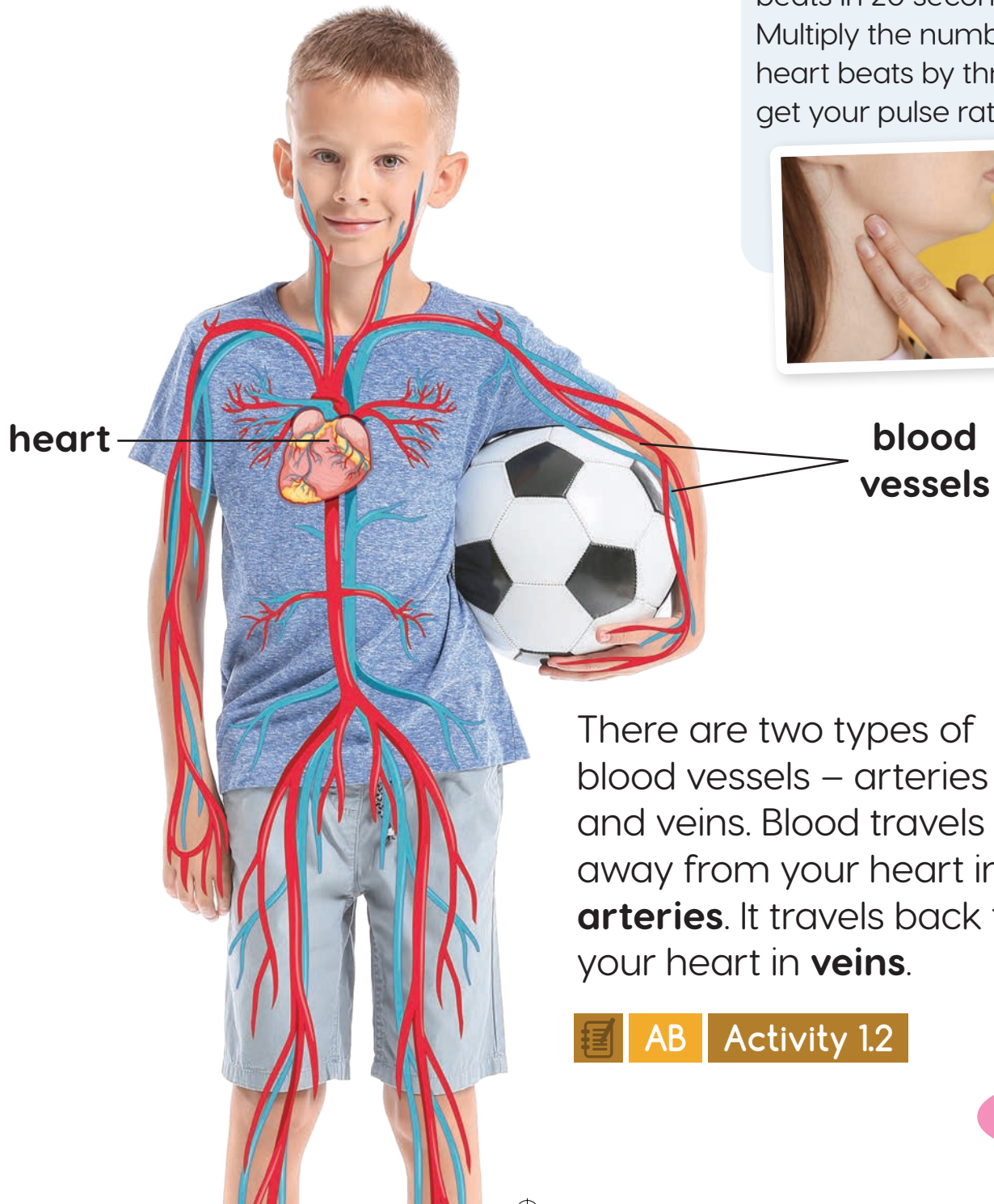
Your Heart and Blood Vessels

Your **heart** pumps blood throughout your body. Your blood travels to and from your heart through tubes called **blood vessels**. Your blood vessels branch out to all parts of your body.



Try This!

Gently place two fingers on the left side of your neck. Use a stopwatch to time how many times your heart beats in 20 seconds. Multiply the number of heart beats by three to get your pulse rate.



There are two types of blood vessels – arteries and veins. Blood travels away from your heart in **arteries**. It travels back to your heart in **veins**.



AB

Activity 1.2



Try This!

Use a stopwatch to find out how many times you breathe in and out in one minute. Calculate how many times you breathe in and out in one hour. How many times do you breathe in and out in one day?

Your Nose, Mouth and Lungs

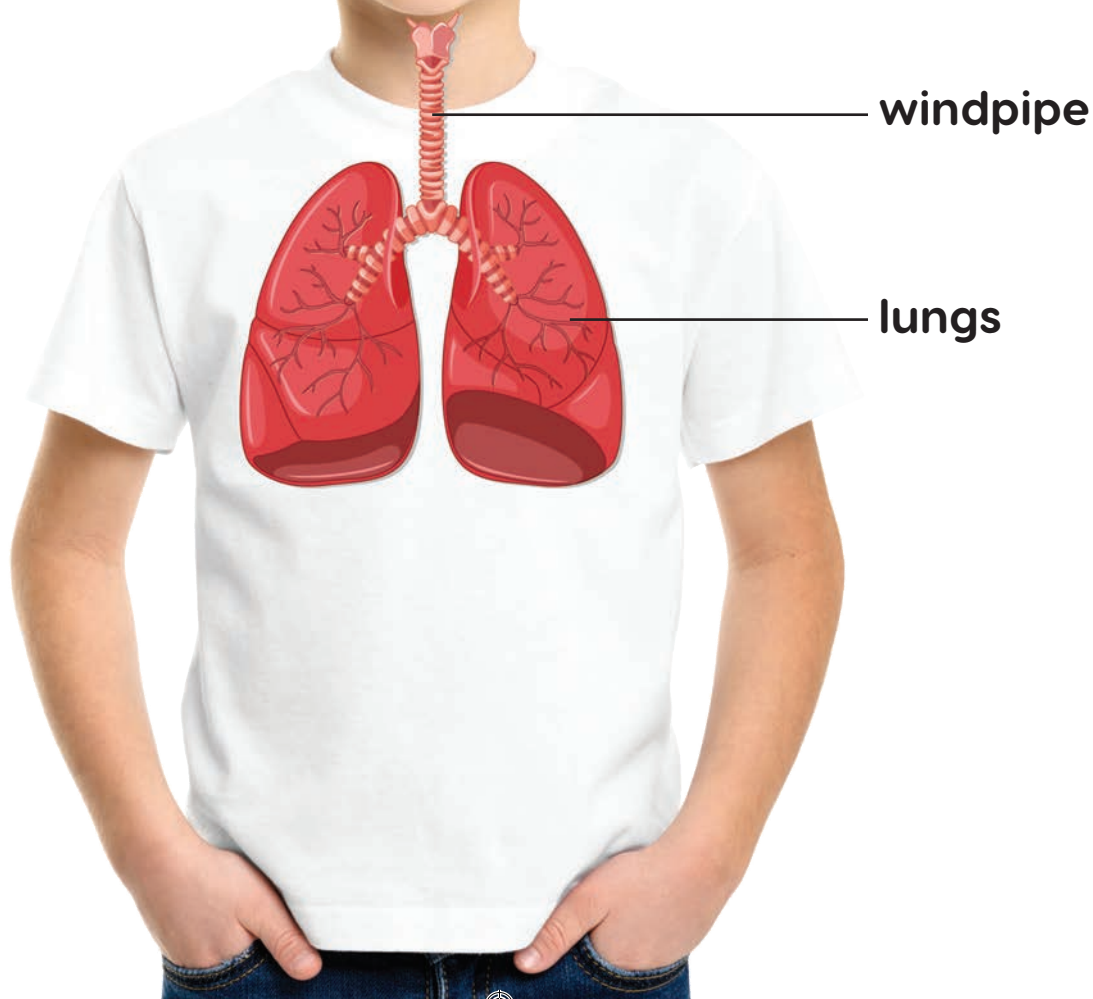
When you breathe in, your mouth and nose take in air. The air moves down your **windpipe** and into your **lungs**. Your body needs a special part of air called **oxygen**. Your lungs take in oxygen from the air and pass it to your blood. Your body makes a gas called **carbon dioxide**. The carbon dioxide leaves your body when you breathe out.

nose
mouth



AB

Activity 1.3





Your Mouth, Stomach and Intestines

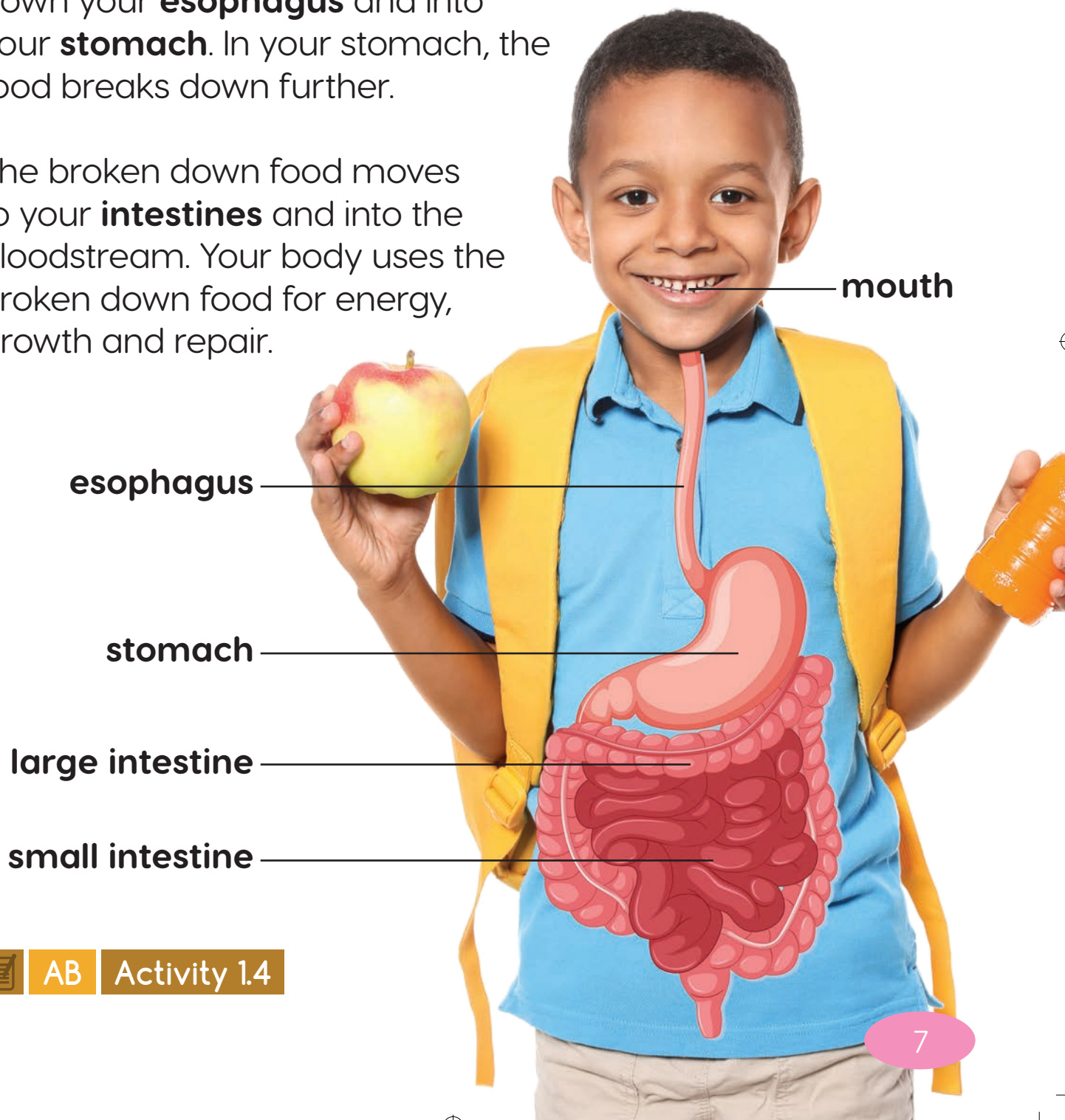
In your mouth, your teeth and tongue work to break down the food you eat into small pieces. When you swallow, the food moves down your **esophagus** and into your **stomach**. In your stomach, the food breaks down further.

The broken down food moves to your **intestines** and into the bloodstream. Your body uses the broken down food for energy, growth and repair.



Amazing Fact!

If you unraveled your intestines, your large intestine would be about 5 feet long. Your small intestine would be more than 20 feet long!



AB

Activity 1.4



Did You Know?

Your bones help to protect important parts inside your body. Your ribs protect your heart and your skull protects your brain.

Your Skeleton



Use your right hand to gently squeeze your left wrist. What do you feel?



The hard parts you felt when you squeezed your wrist are **bones**.

Your bones help to support your body and give your body its shape. All the bones in your body make up your **skeleton**.



AB

Activity 1.5

Your Muscles

Your **muscles** cover your bones. Muscles pull on your bones to help you to move about.



Try This!

Lightly squeeze your left arm just above your elbow. Flex your left arm and describe what you feel.

The more you move around and exercise, the stronger your muscles will become.



What are some things you can do to strengthen your muscles?



AB

Activity 1.6

Go Online!



Discover more about your body's amazing systems on the NGScience website.
QuickCode: W6X5



Staying Healthy

Your body can do many different things. To make sure your body is working properly, you need to look after your body by staying healthy.



What can you do to keep your body healthy?

When you keep your body healthy, it can keep doing all the things you do in a day. If you don't stay healthy, your body may not work as it normally does. You may get sick more often.



Healthy Eating

Eating healthy is important. Eating healthy food gives your body the energy it needs to function. Eating healthy food can also stop you from getting sick. If you do get sick, eating healthy food will help you to get well sooner.

Here are some tips on healthy eating:

- Start the day with a healthy breakfast.
- Eat a good balance of all kinds of food.
- Eat lots of fresh vegetables and fruits.
- Drink lots of water.

 **AB** Activities 1.7 – 1.8



Try This!

Keep a healthy food diary. Give yourself a daily diet score. A high score will have lots of fresh vegetables and fruits! Compare your score with your friends.





A Closer Look

Healthy Food Pyramid

Different foods and drinks help your body in different ways. When you eat a balanced diet, you eat a variety of healthy food. This helps your body to get all the things it needs to give you energy and help to keep you strong and healthy.

Some foods, such as cereals, bread, pasta and potatoes, give you energy.

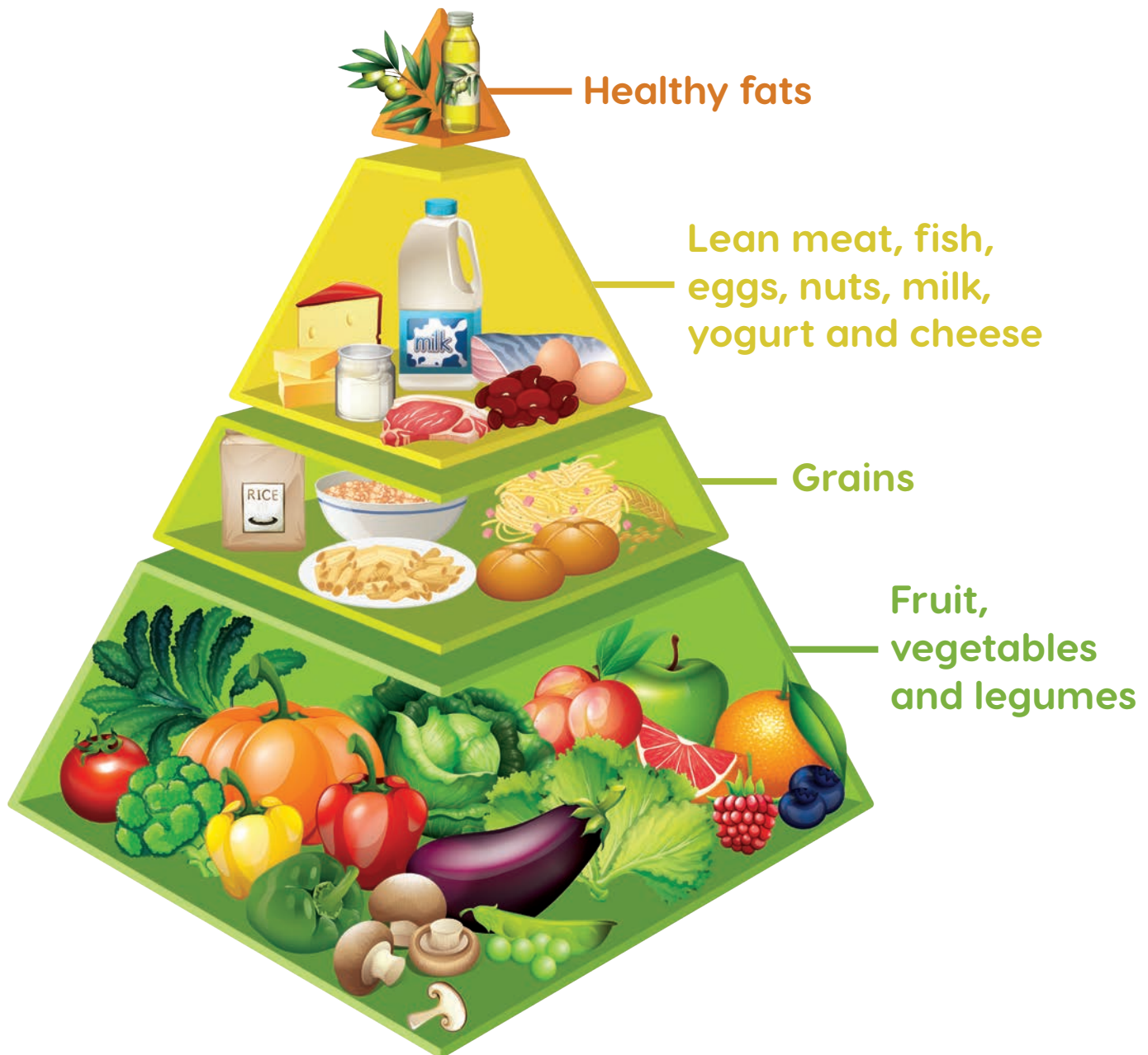


Food like meat, chicken, fish and milk help to keep your growing muscles and bones strong.

Vegetables and fruits provide your body with the vitamins and nutrients it needs to keep you healthy as you grow.



A healthy eating pyramid is a diagram that shows you how much of different foods you should include in your balanced diet. You should eat more foods from the bottom part of the pyramid and less foods from the top of the pyramid.



Drinking lots of water and being active every day are also important when following a balanced diet.



Keep Fit and Active

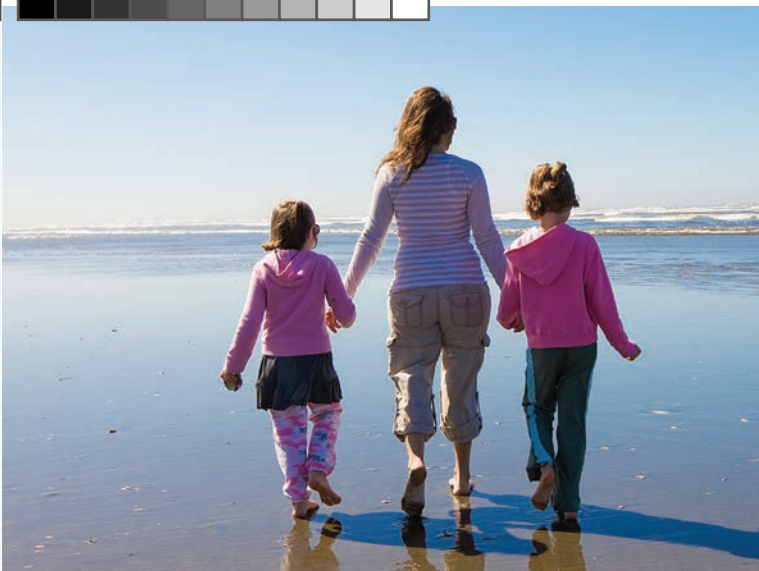
Doing lots of exercise keeps your body strong and fit. Doing lots of exercise will help you sleep better too.

To get daily exercise, you could ride a bike, play a sport, walk and run, or just play with your friends.



Make a list of some things you can do to keep fit and active.





The Great Outdoors

Regular exercise is a fun way to keep fit and active. It's even more fun when you exercise in nature!

In nature, you'll get plenty of fresh air and sunshine. You can play your favorite sports, go for a nature hike or go camping with family and friends.



Try This!

Make a 'nature bracelet' by wrapping a piece of sticky tape around your wrist. Go on a nature walk and collect small things to stick on your bracelet!





Good Hygiene

Keeping your body clean is an important part of staying healthy.

The best way to stay clean is to take a bath or shower two times a day – once in the morning and again before you sleep. When you bathe or shower, use soap to wash all parts of your body.

Here are some other ways to maintain good hygiene:

- Brush your teeth twice a day.
- Wear clean clothes.
- Use shampoo to wash your hair.
- Wash your hands after playing outside and before you eat.



What are some other ways you can keep your body clean?



Getting Enough Sleep

It is important to get enough sleep. Each night, try to get about 10 to 12 hours of sleep.

When you are asleep, your body gets a chance to take a rest and get ready for the next day. Just like eating healthy food and staying clean, sleep helps you to stay fit and healthy.

If you don't get enough sleep, you may not have much energy the next day. You may feel grumpy too.



How do you feel on days when you have not had enough sleep?



Try This!

Keep a sleep diary by recording the number of hours you sleep each night for one week. Write or draw how you feel each morning.



Did You Know?

Scientists believe that dreaming helps you to store memories from the things you've learned during the day. People usually have about four or five dreams a night, but usually forget about them by the time they wake up.



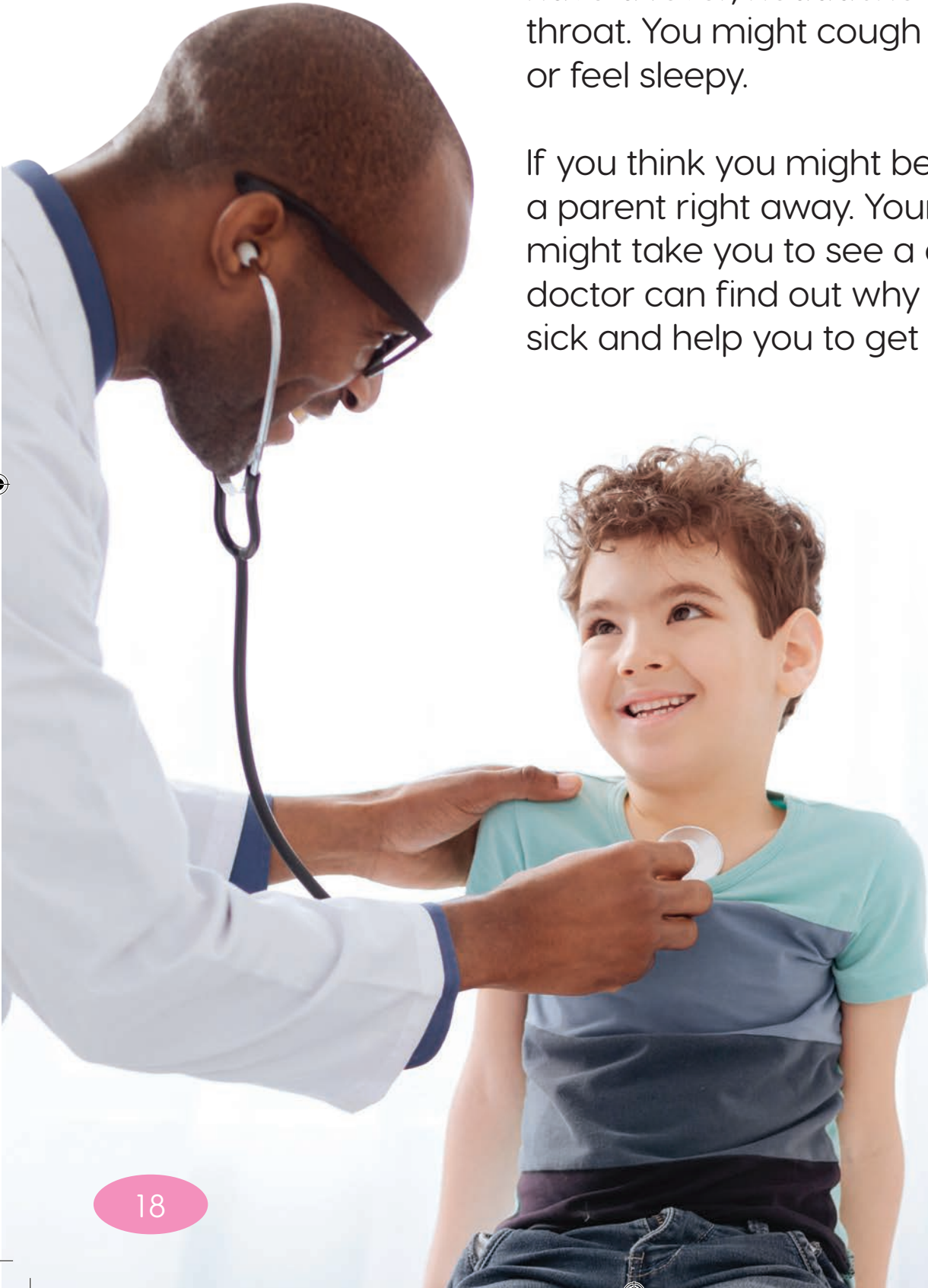
AB Activities 1.9 – 1.10



When You Get Sick

Everybody gets sick from time to time. When you are sick, you might have a fever, headache or a sore throat. You might cough and sneeze or feel sleepy.

If you think you might be sick, tell a parent right away. Your parents might take you to see a doctor. A doctor can find out why you are sick and help you to get better.





Go Online!

Find out more about colds and the flu on the NGScience website.

QuickCode: **J4J5**

Colds and the Flu

A common way that people get sick is by catching a **cold** or the **flu**. You can get a cold or the flu when small **germs**, called viruses, get inside your body.

When you have a cold or the flu, you may have a runny nose and a sore throat. You may cough and sneeze too.

If you think you may have a cold or the flu, it is important to see a doctor and get lots of rest.

Did You Know?

When you get the flu, you are **contagious**. This means you can cause other people to get sick too. That's why it's really important to stay home if you think you may have the flu.





A Closer Look

What Are Germs?

Germs are very tiny things that can cause you to get sick if they get inside your body. Germs are too small to see, but there are some things you can do to keep them out of your body.

Germs can get on your hands when you touch objects or other people. Once germs are on your hands, they can get inside your body when you touch your mouth, nose or eyes.





— Germs can also spread from person to person through the air when someone coughs or sneezes without covering their mouth and nose.

Here are some things you can do to stop the spread of germs:

- Wash your hands with soap and water after playing outside, going to the bathroom and before you eat.
- Cover your nose and mouth when you sneeze or cough.
- Stay at home and away from other people if you are sick.
- Wear a face mask if you are sick.



AB

Activity 1.11



Did You Know?

When you're sick, a face mask is very useful at stopping the germs in your body from getting into the air. This can stop others from getting sick too.



Science Words

heart

blood vessels

artery

vein

windpipe

lungs

oxygen

carbon dioxide

esophagus

stomach

intestines

bones

skeleton

muscles

cold

flu

germs



Review

1. True or false.
 - (a) Your heart pumps blood around your body.
 - (b) All of your muscles make up your skeleton.
 - (c) Your lungs help you to take in oxygen from the air.
2. List three body parts that help to break down food.
3. How do your bones and skeleton help your body?
4. What is the difference between arteries and veins?
5. How do your muscles help your body?
6. Which describes a balanced diet?
 - (a) Eating mostly bread and pasta.
 - (b) Eating a variety of different healthy foods.
 - (c) Eating junk food and vegetables often.

7. Write a sentence to tell how each child is keeping healthy.

(a)



(b)



(c)



(d)



(e)



(f)



8. List three things you can do to stop the spread of germs.

2

Plants and Animals



What does a plant need to live and grow?
How does it get the things it needs?





In this chapter you will ...

- classify animals into groups based on observable characteristics.
- list and describe plant needs, parts and functions.
- plan and conduct an investigation to determine if plants need sunlight and water to grow.
- describe the role of animals in the processes of pollination and seed dispersal.

Go Online!



Access interactive content relating to this topic on the NGScience website.
ngscience.com



How do animals help plants reproduce?



Classifying Animals

There are many different kinds of animals. Different animals have different characteristics. We can observe the characteristics of animals and classify them into groups based on how they are similar.



Go Online!

Learn about the different ways we can classify animals on the NGScience website.

QuickCode: **Z7N1**





We can classify animals by looking at their body parts and body coverings. We can also look at how they move, where they live or how they reproduce. **Reproduce** means to make new young.



How could you classify these animals into groups?



AB

Activity 2.1





Mammals

Mammals are animals that have a body covered in hair or fur.

Many mammals live on land. Some mammals live in water. All mammals have lungs to get the air they need.

Many land mammals use legs and feet to move about. Some, such as bats, have wings and can fly.





Most mammals reproduce by giving birth to live young. They often care for the young when they are born.



Amazing Fact!

Platypuses are fascinating animals that are a little different from other mammals. They have a duck-like bill, a beaver-like tail and reproduce by laying eggs!



AB Activity 2.2



Birds

Birds are animals with a body covered in feathers. They have two legs and two wings. Many birds use their wings to fly.

Birds have beaks of all shapes and sizes. The shape of the beak helps the bird to get the food it needs.

