Let's Do SCIENCE

Primary 1

Textbook B

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 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.

eeds of Animals nd People

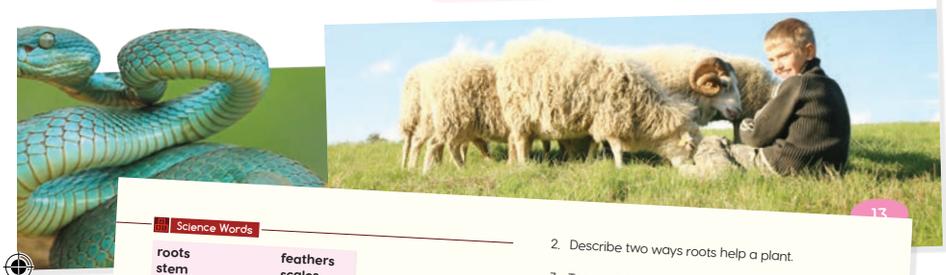
nimals and people are ving things. They need ood, water and air.

ome animals eat plants or food. Others eat other nimals. Some animals eat oth plants and animals.

Animals and people drink the water they need.

People and land animals breathe in the air around them. Some animals, like fish, are able to get the air they need from water.

How do you get the things you need from day to day.



Science Words

roots
stem
leaves
flowers
fruits
fur
feathers
scales
lungs
gills
respond

Review

1. Use the words in the box to label the picture.

fruit roots stem leaves flower

(a) _____ (d) _____

2. Describe two ways roots help a plant.

3. True or false.
(a) The roots hold the seeds for the plant.
(b) Leaves use water, air and sunlight to make food for the plant.

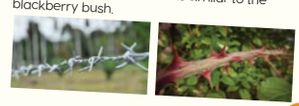
4. Copy and complete the table.

Body Covering	Animal 1	Animal 2
Hair or Fur		
Feathers		
Scales or Shell		

5. Which body part do fish use to breathe in water?

6. Describe one way an animal can respond to changes in its surroundings.

7. Describe how a wire fence is similar to the blackberry bush.



55

They have a long, sticky tongue that they shoot out to catch food such as insects.

Chameleons have curled tails which help them to hold on to tree branches.

Some chameleons can change the color of their skin. This helps them to blend in with their surroundings and avoid being spotted by predators such as birds.

45

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.

Review

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

Science Words

Lists the essential science vocabulary covered in each chapter.

Contents

Unit 8 – Sound 42

Unit 9 – Light 70

6 Forces and Motion

How can we describe the ways things move?

In this chapter you will ...

- describe the position and motion of objects.
- identify pushes and pulls.
- describe how forces affect motion.

How are people moving in these pictures?

Go Online!

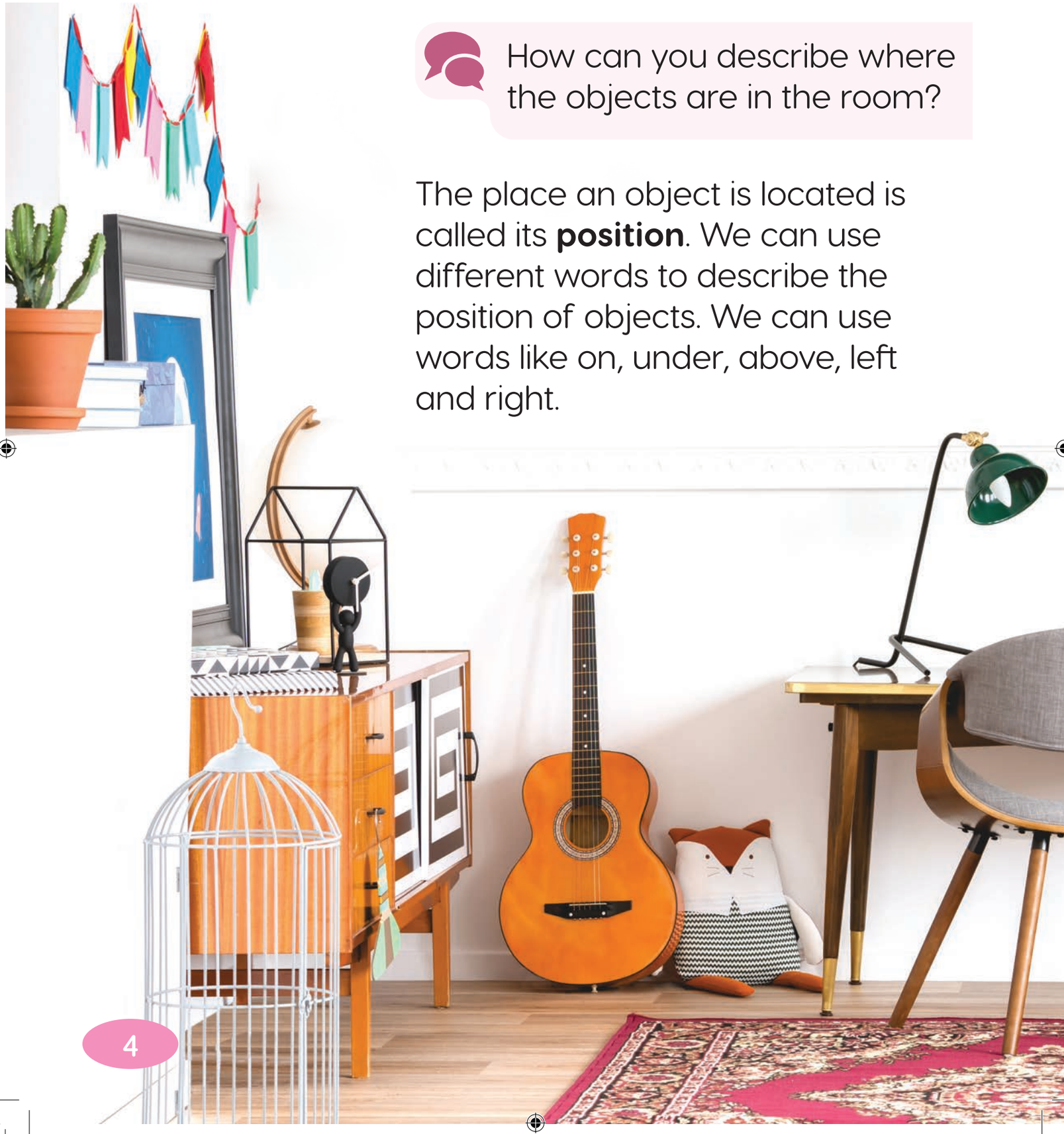
Access interactive content relating to this topic on the NGScience website.
ngscience.com

Describing Motion

Position

How can you describe where the objects are in the room?

The place an object is located is called its **position**. We can use different words to describe the position of objects. We can use words like on, under, above, left and right.



When we describe position, we often compare the position of one object to another.

Let's compare the position of objects to the desk.

We can say the guitar is to the left of the desk. The lamp is on the desk. The chair is under the desk.

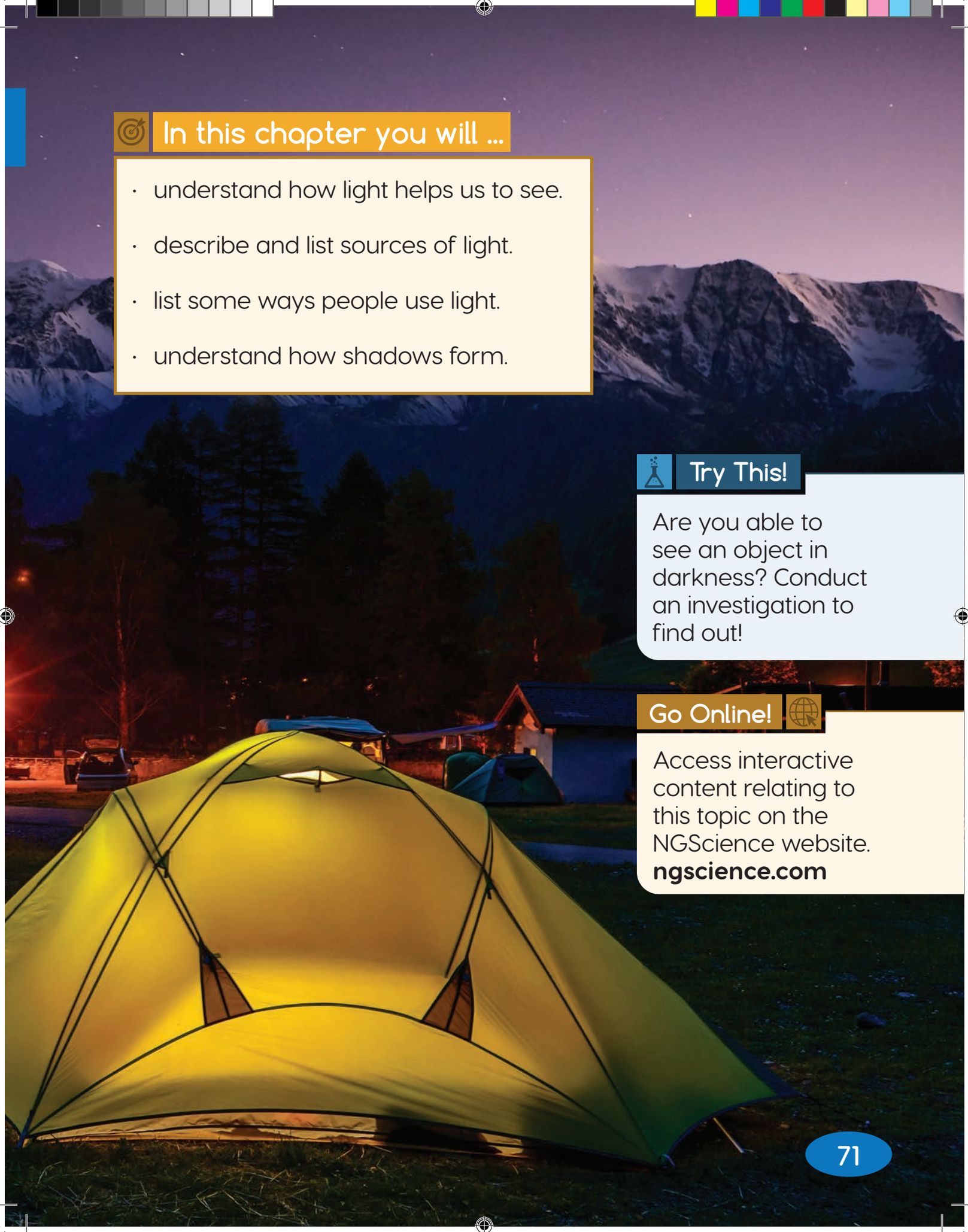
AB Activity 6.1

Try This!

With a partner, take turns in describing the positions of objects in your classroom. See if your partner can name the objects.

9 Light

Why do we need light?
What happens if there is no light?
How do we use light?



In this chapter you will ...

- understand how light helps us to see.
- describe and list sources of light.
- list some ways people use light.
- understand how shadows form.

Try This!

Are you able to see an object in darkness? Conduct an investigation to find out!

Go Online!

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

Light and Dark

Light

Go outside and look around you. What things can you see?

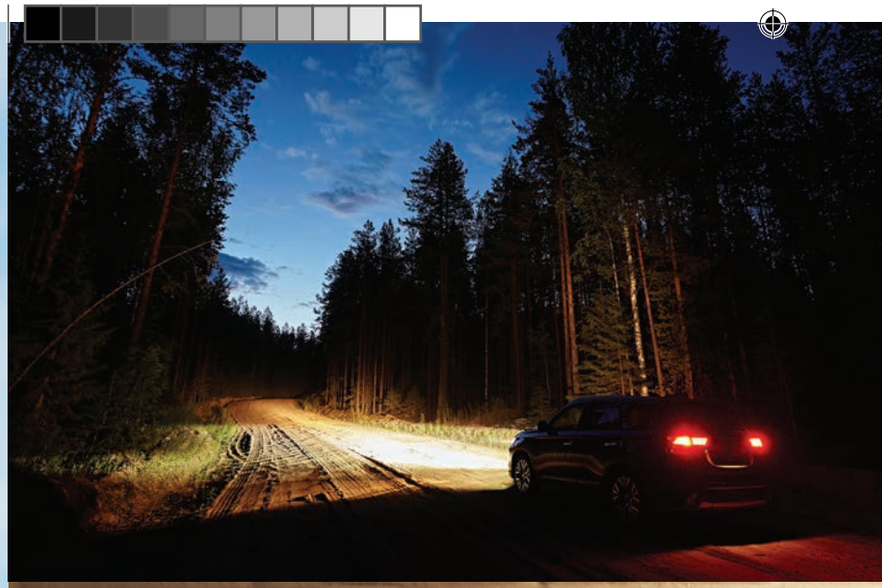
You can see the things around you because of light. **Light** is a form of energy.

During the day, the light from the Sun helps you to see.

Did You Know?

The light from the Sun is very helpful, but it can also be harmful. It can damage your eyes and skin.

Never look directly at the Sun and wear sunscreen on sunny days.



At night, there is no light from the Sun. People use light bulbs, flashlights, headlights and fire to see the things around them.

What things do people use to help them see at night?

Dark

In the **dark** there is no light. You are in **darkness**.

Try This!

Can a camera take photographs in darkness? Conduct an experiment to find out!

Transparent Materials

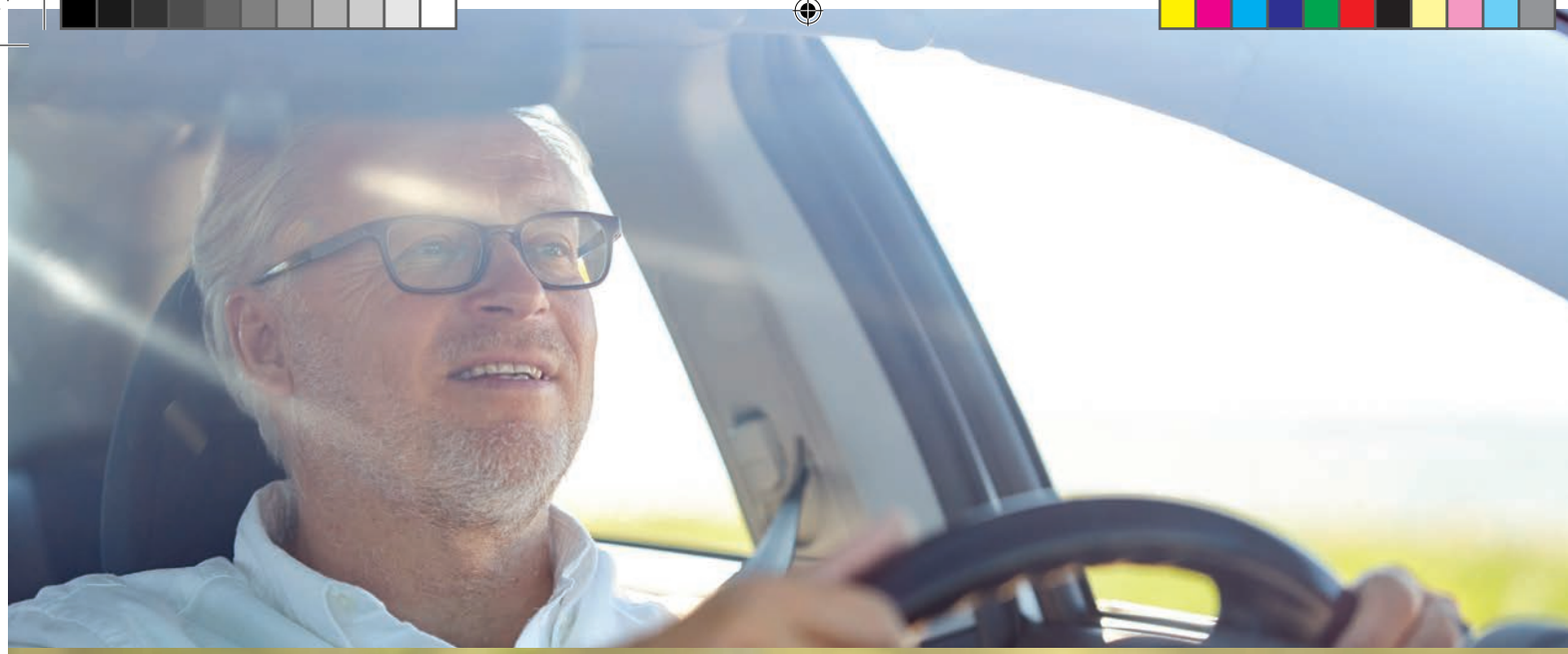
A material that allows light to pass through is **transparent**.

We can see through transparent materials.

When light hits an object made of a transparent material, no shadow is made.

Why are you able to see the mountain clearly?

AB Activities 9.8 – 9.9



Knowing how light can pass through materials allows us to choose materials that are useful and safe for how they are used.

A car windscreen is made of transparent glass. This allows the driver to see clearly and drive safely.

What are some objects that are useful because they are opaque?

The boy's hat is opaque. This blocks the sunlight from reaching his face.

What are some objects that are useful because they are transparent?

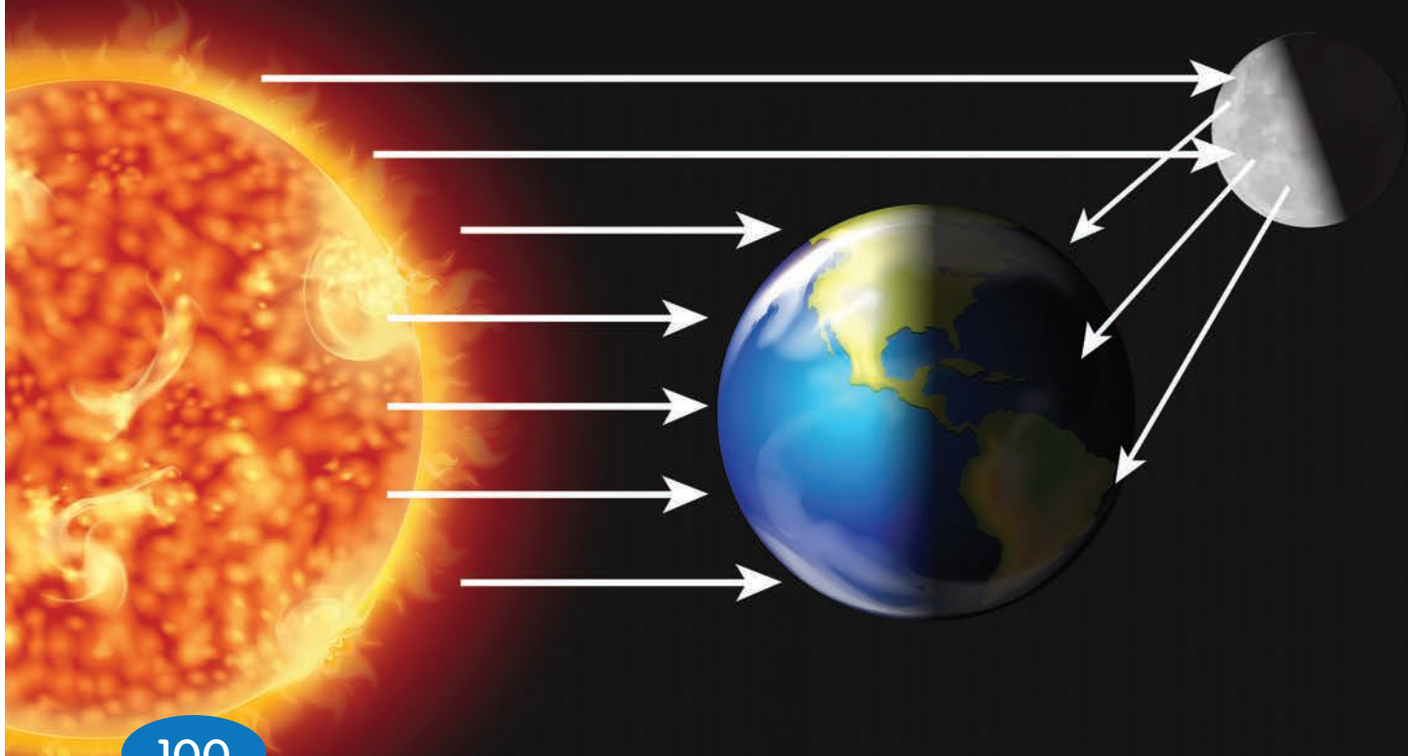
How is the amount of light passing through these objects useful?

Reflecting Light

You are able to see a source of light when light travels from the source to your eyes.

Many things around you are not sources of light. How are you able to see them?

The moon is not a source of light. The moon appears bright because it reflects the light from the Sun. **Reflect** means to bounce off.



You are able to see the things around you when they reflect light.

Trace the path the light takes from the Sun to the girl's eyes.

Some shiny, smooth objects reflect light in a way that allows you to see reflections.

The girl is able to see her reflection because the mirror reflects light to her eyes.

A newly washed car and the still water in a pond have a smooth and shiny surface. They reflect a lot of light.

Dull and rough surfaces do not reflect light well.

Science Words

light	**material**
dark	**opaque**
source of light	**translucent**
shadow	**transparent**

Review

1. True or false.

   (a) Light is a form of energy.
   (b) We can see in darkness.
   (c) The moon is a source of light.

2. List two natural sources of light.

   (a) _____ (b) _____

3. List two artificial sources of light.

   (a) _____ (b) _____

4. Describe two ways you use light during the day.

5. Describe two ways you use light at night.

6. True or false.
   (a) A shadow is formed when light passes through an object.
   (b) A shadow is formed when an object blocks light.

7. Use each word to label the objects.

opaque	translucent	transparent

(a)

(b)

(c)

This publication would not have been possible without the tireless effort of our production team.

Special thanks to:
Matthew Cole, Daniel Cole, Wang Hui Guan
Joseph Anderson, Halle Taylor-Pritchard, Sophie Taylor-Pritchard, Tejal Thakur
Varasinun Mathanattapat, Kanungnit Pookwanmuang, Saijit Lueangsrisuk

Original Illustrations: Natchanuch Nakapat, graphicsRF, Blue Ring Media and Interact Images
Royalty-free images: Shutterstock, Adobe Stock