



*Let's Do*

# SCIENCE

Kindergarten

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.





AB Activity 5.3

Rainforests have lots of plants and water. This makes them a suitable place to live for many different kinds of animals.

Can you name some of these rainforest animals?

Science Words

force  
push  
pull  
motion

change direction  
speed up  
slow down

Review

1. What is a force?
2. True or false.  
(a) A pull is when you press something away.  
(b) A pull is when you tug something closer.

3. Choose a word to label the type of force.

pull    push

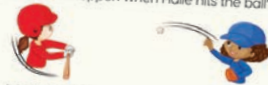


4. Describe two ways you use a push force.
5. Describe two ways you use a pull force.
6. Describe an activity that uses pushes and pulls.
7. List two forces in nature.
8. What will happen when Blake pedals harder?



- (a) He will slow down.
- (b) He will stop.
- (c) He will speed up.

9. What will happen when Halle hits the ball?



- (a) The ball will stop.
- (b) The ball will change direction.
- (c) The ball will start moving.

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.



Although many deserts are hot, a desert is a place that is dry with very little rainfall. Deserts can be hot or cold.

While Antarctica may be the coldest place on Earth, it is also the driest. This makes Antarctica a very cold desert.

Being so cold and dry makes it difficult for plants and animals to live there.

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# 6

## Changes to the Environment



How do plants, animals and people change the environment?



In this chapter you will ...

- understand and describe ways in which plants and animals can change the environment.
- understand and describe ways in which people can change the environment.
- list and describe ways in which we can reduce our impact on other living things and/or the environment.





Go Online! 

Access interactive content relating to this topic on the NGScience website. [ngscience.com](http://ngscience.com)



How can we reduce our impact on the environment?



# Natural Changes

## Plant Changes

Everything surrounding a living thing is its **environment**.



### Try This!

Walk around your schoolyard. Can you spot ways in which plants are changing the environment? Draw pictures or make notes about what you observe.

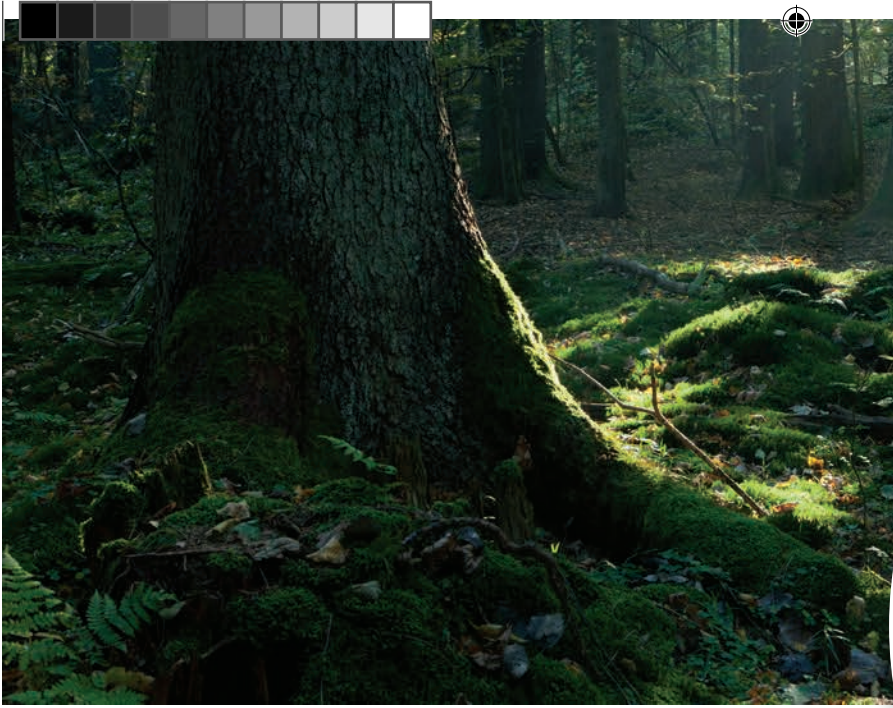
Plants can cause changes to their environment.



What are some ways plants can change the environment?

Tree roots cause changes when they break apart concrete.



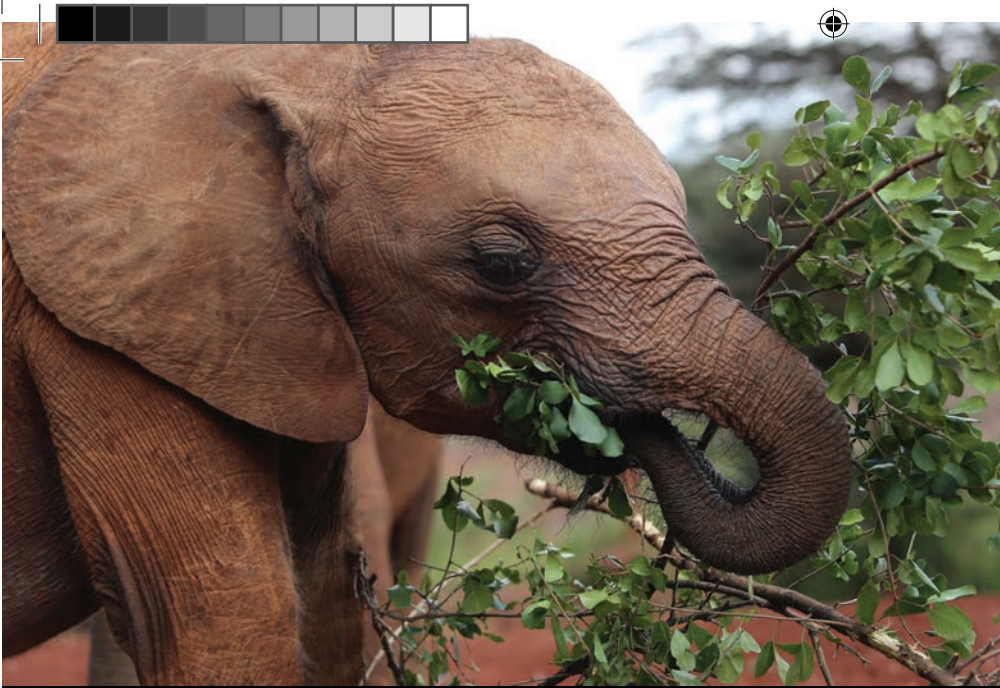


As trees grow, they can block sunlight, making the environment darker.

When a tree falls, it changes the environment too.

 **AB** Activities 6.1 – 6.2





## Animal Changes

What are some ways animals can change the environment?

Animals can change their environment when they eat the plants around them.





# 7

# The Earth and the Sun



In this chapter you will ...

- be able to describe the Sun.
- understand how the Sun affects the Earth.
- understand the importance of the Sun to living things.



How does the Sun cause changes on Earth?

Go Online! 

Access interactive content relating to this topic on the NGScience website.  
[ngscience.com](http://ngscience.com)



AB

Activity 7.1





## Our Sun

The **Sun** is a large ball of hot, glowing gas. The Sun is a **star**.


There are many stars in space. The Sun is the closest star to Earth.

Sun

**Earth** is the planet we live on.



**Earth**

 How does the Sun affect the Earth?

 **Amazing Fact!**

The Sun is so big that more than one million Earths could fit inside it!





### Did You Know?

Never look at the Sun directly. The light is so bright that it can damage your eyes.

During the day, the Sun is the largest and brightest object in the sky.

The Sun gives out **light**. It lights up the Earth and helps us to see.



What would daily life be like without the light from the Sun?

The Sun also gives out **heat**.  
It helps to keep all living  
things on Earth warm.



How does the heat from  
the Sun help living things?



## The Heat from the Sun

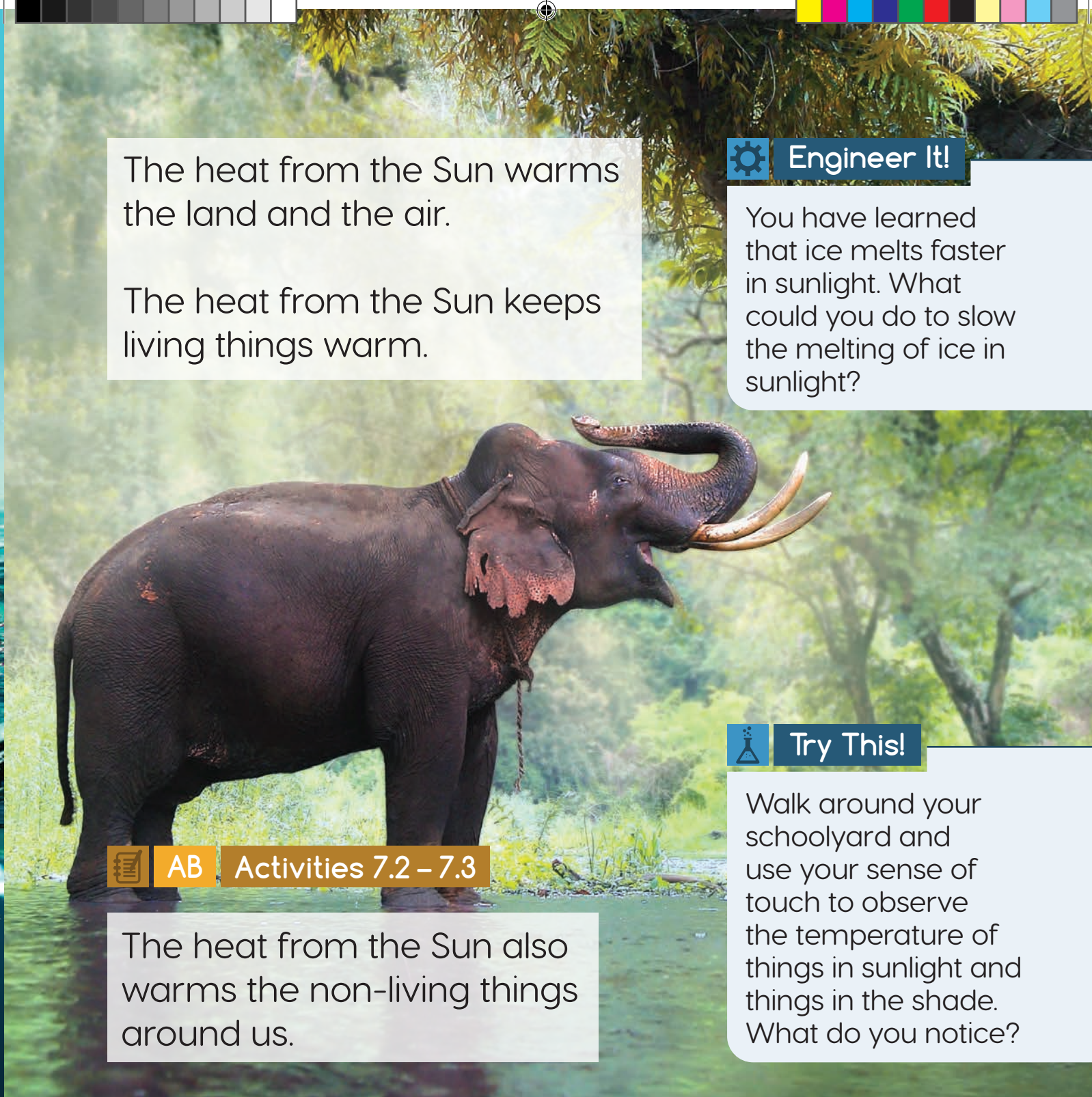
The heat from the Sun warms all parts of the Earth.



### Try This!

Using a thermometer, design an experiment to show how sunlight warms water.

The heat from the Sun warms our oceans.




The heat from the Sun warms the land and the air.

The heat from the Sun keeps living things warm.

 **Engineer It!**

You have learned that ice melts faster in sunlight. What could you do to slow the melting of ice in sunlight?

 **AB** **Activities 7.2 – 7.3**

The heat from the Sun also warms the non-living things around us.

 **Try This!**

Walk around your schoolyard and use your sense of touch to observe the temperature of things in sunlight and things in the shade. What do you notice?



## The Light from the Sun

The light from the Sun is called **sunlight**.

Plants use the energy from sunlight to make the food they need to live and grow.

Without the light from the Sun, there would be no plants on Earth.



Why is sunlight important for living things?

Animals need sunlight.

Many animals get the food they need by eating plants.

Sunlight also helps many animals to see during the day.



### Engineer It!

Think of your favorite pet. Design and build a shelter that will provide your pet with shade and keep it cool on a hot, sunny day.





**? Did You Know?**

Sunlight can be damaging to your skin. Always wear Sun protection when outdoors on a sunny day.



People need sunlight too.  
Sunlight helps us to see.



How do you use sunlight during the day?



Without sunlight, we would not be able to get the food we need from plants and animals.





# Earth and the Moon



Go Online!

Discover more about the Earth and the moon on the NGScience website.

QuickCode: **R6N9**

There are many **planets** in space. Earth is the planet we live on. It is the only planet that is known to have living things.



Why does the Earth look blue from space?



What things can you see in the sky at night?



### Try This!

Observe the moon in the night sky at different times of the month. What changes or patterns do you see?



If you look into the sky on a clear night, you might see the Earth's **moon**.



The moon appears bright in the night sky when the light from the Sun shines on it.



### Amazing Fact!

Things are always moving in space. The Earth moves in a pattern around the Sun. The moon moves in a pattern around the Earth!



## Science Words

Sun	planet
star	heat
Earth	light



## Review

1. What is the Sun?
  - (a) A star.
  - (b) The Earth.
  - (c) A planet.
2. True or false.
  - (a) The Sun is much bigger than the Earth.
  - (b) The Sun is the planet we live on.
3. List two things that the Sun gives out.
4. How does the light from the Sun affect the Earth?
  - (a) It keeps the Earth cool.
  - (b) It warms the Earth.
  - (c) It lights up the sky.

- 5. How does the heat from the Sun affect the Earth?
  - (a) It keeps the Earth cool.
  - (b) It warms the Earth.
  - (c) It lights up the sky.
  
- 6. How does the Sun help plants?
  - (a) Plants use its light to make food.
  - (b) It keeps plants cool.
  - (c) It helps plants to see during the day.
  
- 7. Describe two ways the Sun helps people and animals.

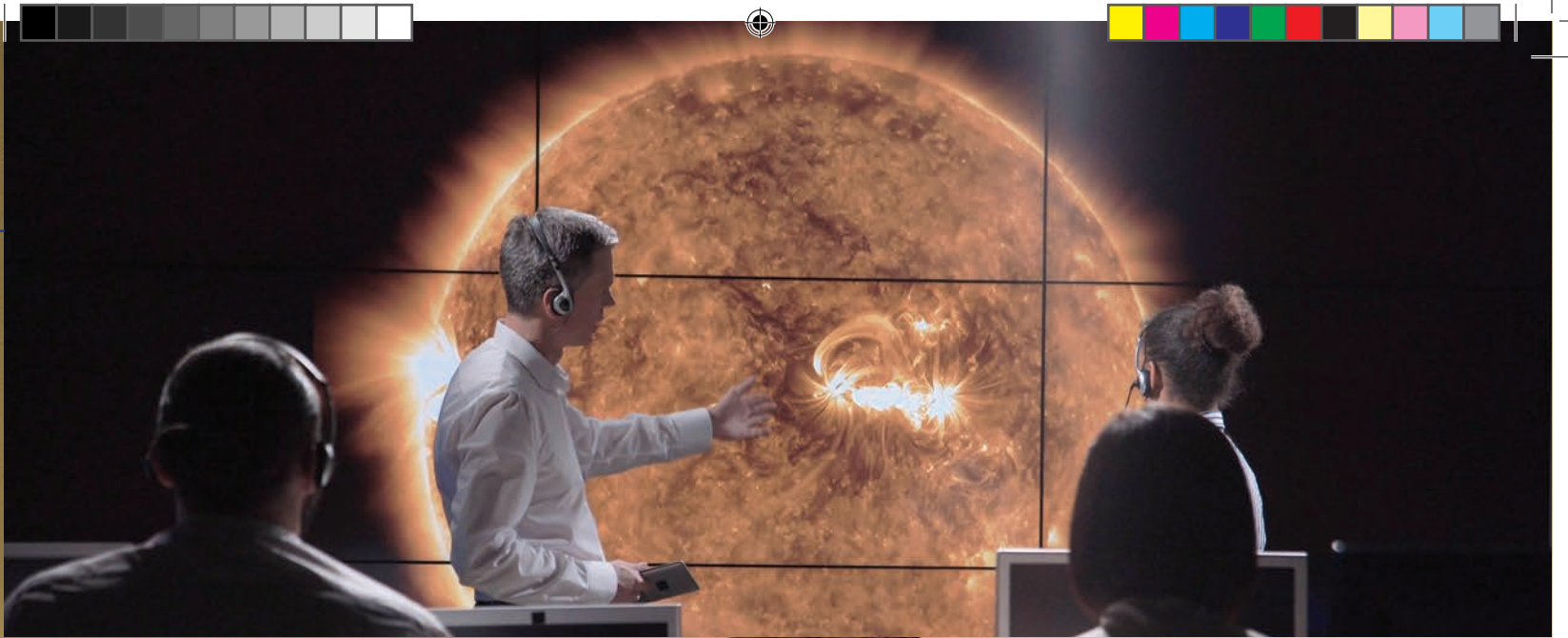




## In the Field

A **climatologist** is a specialized scientist. Climatologists collect and study data from ice, soil, water and plants. They look for patterns about how the temperature of Earth is changing.





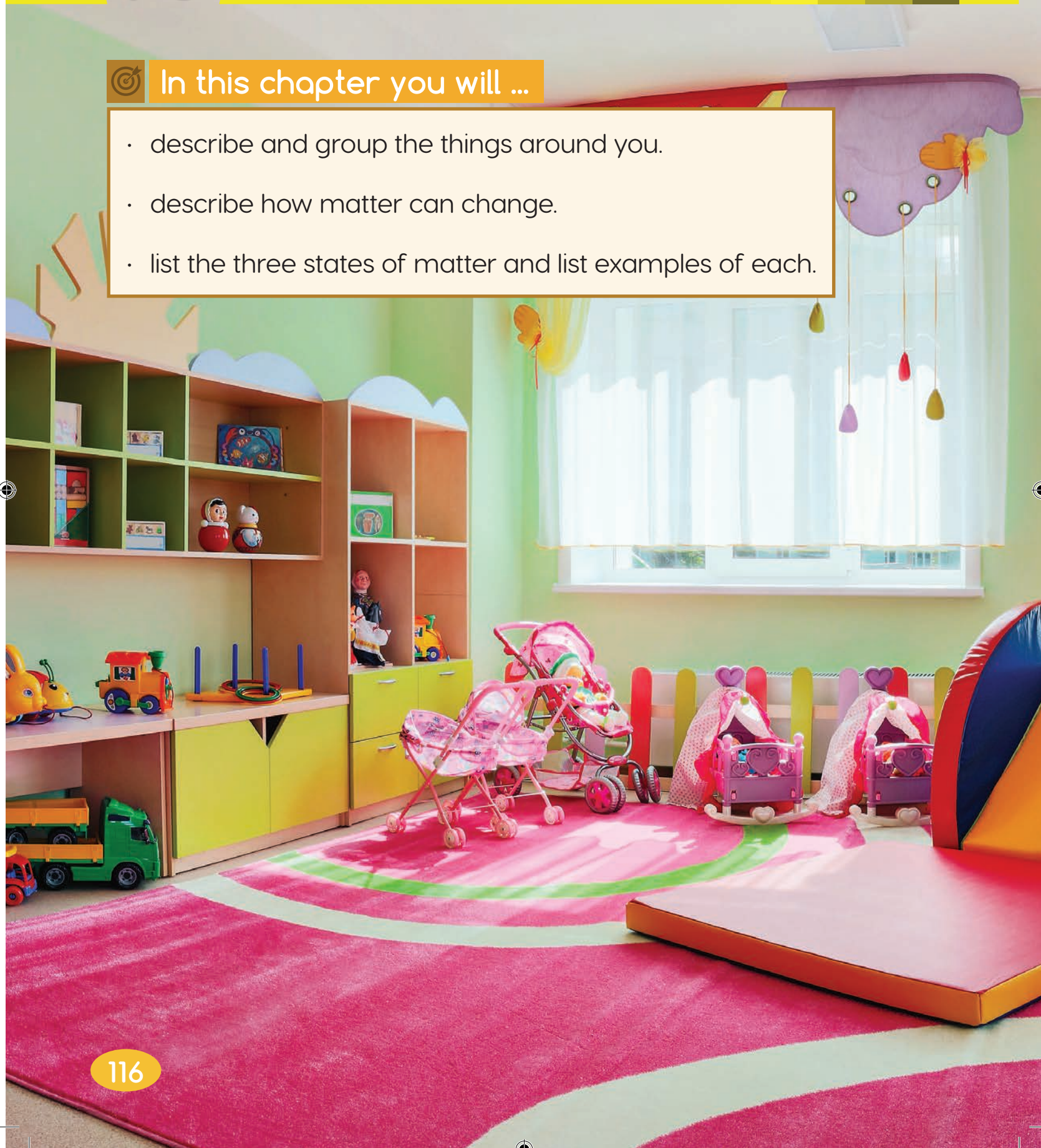
Climatologists look at how long-term changes in temperature affect the environment and living things.



# 10 Matter

 In this chapter you will ...

- describe and group the things around you.
- describe how matter can change.
- list the three states of matter and list examples of each.





How can we observe and describe the world around us?



AB Activity 10.1

Go Online!



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





## Describing Matter

The air you breathe, the water you drink and the toys you play with are all matter.

**Matter** is what all things are made of. Even you are matter.

We can describe matter in many ways.



What are some examples of matter in your classroom?

We can describe matter by how it looks. We can describe the size, color and shape of matter.

We can also describe matter by how it feels.



How can you describe the matter in the bedroom?



AB

Activity 10.2



Try This!

At home, use your senses of touch and sight to describe your favorite toy.



## Grouping Matter

We can group the objects around us by the ways they are the same.

We can group things by color, shape, size or how they feel.

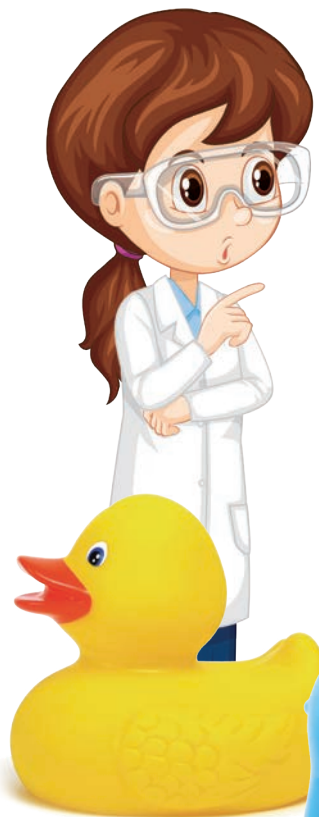


The objects are grouped by color.





We can also group things by their use or function.



The objects are grouped by how they are used.



AB Activities 10.3 – 10.4