

# THE ENVIRONMENT

## LEARNING OBJECTIVES

### Key Reading Skills

Reading for details; taking notes on causes and effects

### Additional Reading Skills

Understanding key vocabulary; predicting content using visuals; reading for main ideas; scanning to find information; identifying purpose; previewing; summarizing; making inferences; synthesizing

### Language Development

Academic vocabulary; environment collocations

## ACTIVATE YOUR KNOWLEDGE

**Work with a partner. Discuss the questions.**

- 1 Is the weather changing in your country? How?
- 2 What are some ways that humans have affected the environment?
- 3 What is the biggest environmental problem in your country?







# READING 1

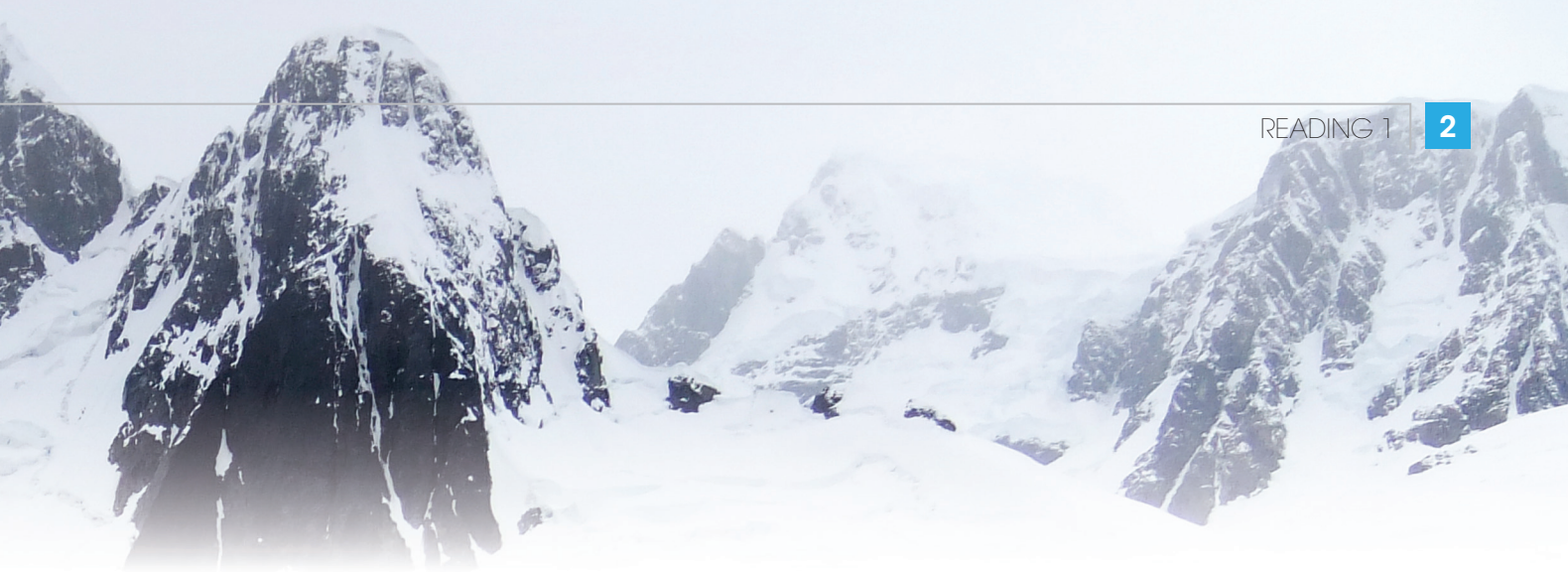


## PREPARING TO READ

**1 UNDERSTANDING KEY VOCABULARY** You are going to read a Web page about climate change. Before you do, read the sentences below. Complete the definitions with the words in bold.

- 1 The Amazon rainforest is one of the largest **ecosystems** in the world. It is home to more than 10% of all the known plants and animals on Earth.
  - 2 Southern California has a very pleasant **climate**. The winters are not too cold and the summers are not too hot.
  - 3 Pesticides—chemicals generally used to kill insects that damage plants—also **threaten** helpful insects, such as bees.
  - 4 In order to fight pollution, scientists are developing car engines that use electric or solar energy instead of **fossil fuels** like gasoline.
  - 5 Methane (CH<sub>4</sub>) is a **greenhouse gas** that is found naturally inside the Earth and under the sea. It is used for cooking and heating homes and buildings.
  - 6 The Earth's **atmosphere** is 300 miles (480 km) thick and contains a mixture of about 10 different gases, which we call *air*.
  - 7 Because of **global warming**, polar ice is melting, sea levels are rising, and some islands might soon be underwater.
  - 8 Habitat loss is the most important **cause** of species extinction.
- 
- a \_\_\_\_\_ (n) a gas that makes the air around the Earth warmer
  - b \_\_\_\_\_ (n) someone or something that makes something happen
  - c \_\_\_\_\_ (n) the layer of gases around the Earth
  - d \_\_\_\_\_ (n) the general weather conditions usually found in a particular place
  - e \_\_\_\_\_ (n) an increase in the Earth's temperature because of pollution
  - f \_\_\_\_\_ (v) to be likely to damage or harm something
  - g \_\_\_\_\_ (n) all the living things in an area and the effect they have on each other and the environment
  - h \_\_\_\_\_ (n) a source of energy like coal, gas, and petroleum, that was formed inside the Earth millions of years ago





**2** PREDICTING CONTENT USING VISUALS Work with a partner. Look at the photo of the Upsala glacier on pages 36–37 and discuss the questions.

- 1 What do you think has happened to the glacier?
- 2 What do you think caused this transformation?
- 3 What are some other places where a similar transformation is happening today?
- 4 How do you think this will affect the world?





# Our Changing Planet

The Upsala glacier in Argentina used to be one of the biggest glaciers in South America. In 1928, it was covered in ice and snow, but now the glacier is melting at an annual rate of about 650 feet (about 200 meters), so the area is covered in water. This is evidence of **global warming**.

## Effects of Climate Change

**1** In the last 100 years, the global temperature has gone up by around 1.33°F (0.75°C). This may not sound like much, but such a small increase is causing sea levels to rise and **threatening** the habitat of many species of plants and animals. An increase of 3.6°F (2°C) in global temperatures could result in extinction for 30% of the world's land species.

**2** The Northwest Passage is a sea route that runs along the northern coast of Canada between the Atlantic and the Pacific Oceans. In the past, it was often difficult to use because the water was frozen; however, increasing temperatures and the subsequent deglaciation<sup>1</sup> have made it easier for ships to travel through this route. The trouble is that the melting of the ice will lead to loss of habitat for the polar bears and other species that live in this area.

**3** Experts predict that global sea levels could rise by 12 to 48 inches (30.5 to 122 centimeters) by the end of the century. Consequently, some areas that were land a few hundred years ago are now underwater, and many low-lying islands may be underwater in the future.

**4** As a result of the changing **climate**, the world's **ecosystems** are also changing faster than ever before. More than one-third of the world's mangrove forests<sup>2</sup> and around 20% of the world's coral reefs<sup>3</sup> have been destroyed in the last few decades. Forests are being cut down to provide land for food, because human population is growing at such a rapid rate. Approximately a quarter of the land on Earth is now used for growing food. As a result of the higher temperatures and higher levels of carbon dioxide in the **atmosphere**, plants are producing more pollen, which could lead to more cases of asthma, a medical condition that makes it hard to breathe.





## Causes of Climate Change

**5** What is causing climate change? The main **cause** is the huge amount of **greenhouse gases**, such as methane and carbon dioxide (CO<sub>2</sub>), in the atmosphere, but the reason for the high levels is the world's population—you and I. As the population increases, more land is needed to provide food and energy. Burning **fossil fuels** for heating, lighting, transportation, electricity, or manufacturing produces CO<sub>2</sub>. Furthermore, humans breathe out CO<sub>2</sub> while trees “breathe in” CO<sub>2</sub> and produce oxygen, so by cutting down trees, we are increasing the amount of CO<sub>2</sub> in the atmosphere and reducing the amount of oxygen. As a result of human activities, CO<sub>2</sub> levels are now at their highest in 800,000 years.

## What Can Be Done

**6** The biggest challenge we all face is to prevent further environmental disasters. We must do something before it is too late. We need to reduce the amount of CO<sub>2</sub> in the atmosphere. We need to stop burning fossil fuels and start using renewable energy. We can get enough energy from renewable fuels such as solar energy, hydroelectric energy, or wind power to be able to stop using fossil fuels completely.

**[Click here to sign the petition to tell governments to take action before it is too late!](#)**



<sup>1</sup> **deglaciation** (n) the melting of a glacier

<sup>2</sup> **mangrove forests** (n) large areas of trees and shrubs that live in coastal areas, e.g., in Florida and Bangladesh

<sup>3</sup> **coral reefs** (n) diverse underwater ecosystems built by tiny animals



## WHILE READING



- 3 READING FOR MAIN IDEAS** Read the Web page, and number the main ideas in the order that they are mentioned.

solution to the problem \_\_\_\_\_

changing ecosystems \_\_\_\_\_

melting glaciers \_\_\_\_\_

causes of climate change \_\_\_\_\_

- 4 SCANNING TO FIND INFORMATION** Read the Web page again. Complete the sentences using the words and phrases in the box.

CO <sub>2</sub> levels	coral reefs	extinction	farming
global sea levels	global temperatures	mangrove forests	

- Over the last century, \_\_\_\_\_ have gone up by 0.75 degrees Celsius.
- Global increases in temperature could cause the \_\_\_\_\_ of 30% of land species.
- \_\_\_\_\_ could rise by about 12 inches by the end of the century.
- Recently, over a third of the world's \_\_\_\_\_ have been destroyed.
- Twenty percent of the Earth's \_\_\_\_\_ have been lost in the last few decades.
- Twenty-five percent of the land on Earth is used for \_\_\_\_\_.
- \_\_\_\_\_ are at their highest for 800,000 years.

### SKILLS

#### READING FOR DETAILS

In a paragraph, the sentences that come after the topic sentence contain *supporting details*—information to help the reader understand the main idea more fully. Types of supporting details include facts, statistics, examples, reasons, explanations, comparisons, and descriptions.

Often, the topic sentence includes words that tell you what type of supporting sentences to expect in the body of the paragraph. For example:

**Topic sentence:** *What is causing climate change?*

The words *is causing* tell you that the paragraph will use causes, or reasons, to explain the main idea.





- 5 READING FOR DETAILS** Read the Web page again and complete the chart with supporting details.

1 country where the Upsala glacier is located	
2 name of sea route through the Arctic ice	
3 why forests are being cut down all over the world	
4 medical problem caused by pollen	
5 main chemicals responsible for climate change	
6 human activities that reduce the amount of oxygen in the atmosphere	
7 how to reduce the amount of CO <sub>2</sub> in the atmosphere	

## READING BETWEEN THE LINES

- 6 IDENTIFYING PURPOSE** Why did the author write the Web page? Circle the correct answer.

- a To inform the reader about the causes of melting glaciers
- b To educate the reader about how to stop climate change
- c To convince people to sign a petition about using renewable fuels

## CRITICAL THINKING

- 7 Work with a partner. Discuss the questions.**

### REMEMBER

What is the advantage to the melting of the glaciers in the Northwest Passage?

### ANALYZE

What are the possible disadvantages of using renewable energy like solar or wind?

### EVALUATE

Why don't governments, corporations, and individuals do more to help prevent global warming?



## COLLABORATION

- 8 A** Work in a small group. Make a list of ten things you, the government, and/or corporations can do to reduce global warming and slow climate change. Discuss and put them in order of importance.
- B** Present your best ideas to the class. Each person should discuss one idea.



## READING 2

### PREPARING TO READ



- 1 UNDERSTANDING KEY VOCABULARY** Read the definitions. Complete the sentences with the correct form of the words in bold.

**absorb** (v) to take in a liquid or gas through a surface and hold it

**construction** (n) the process of building something, usually large structures such as houses, roads, or bridges

**destruction** (n) the act of causing so much damage to something that it stops existing because it cannot be repaired

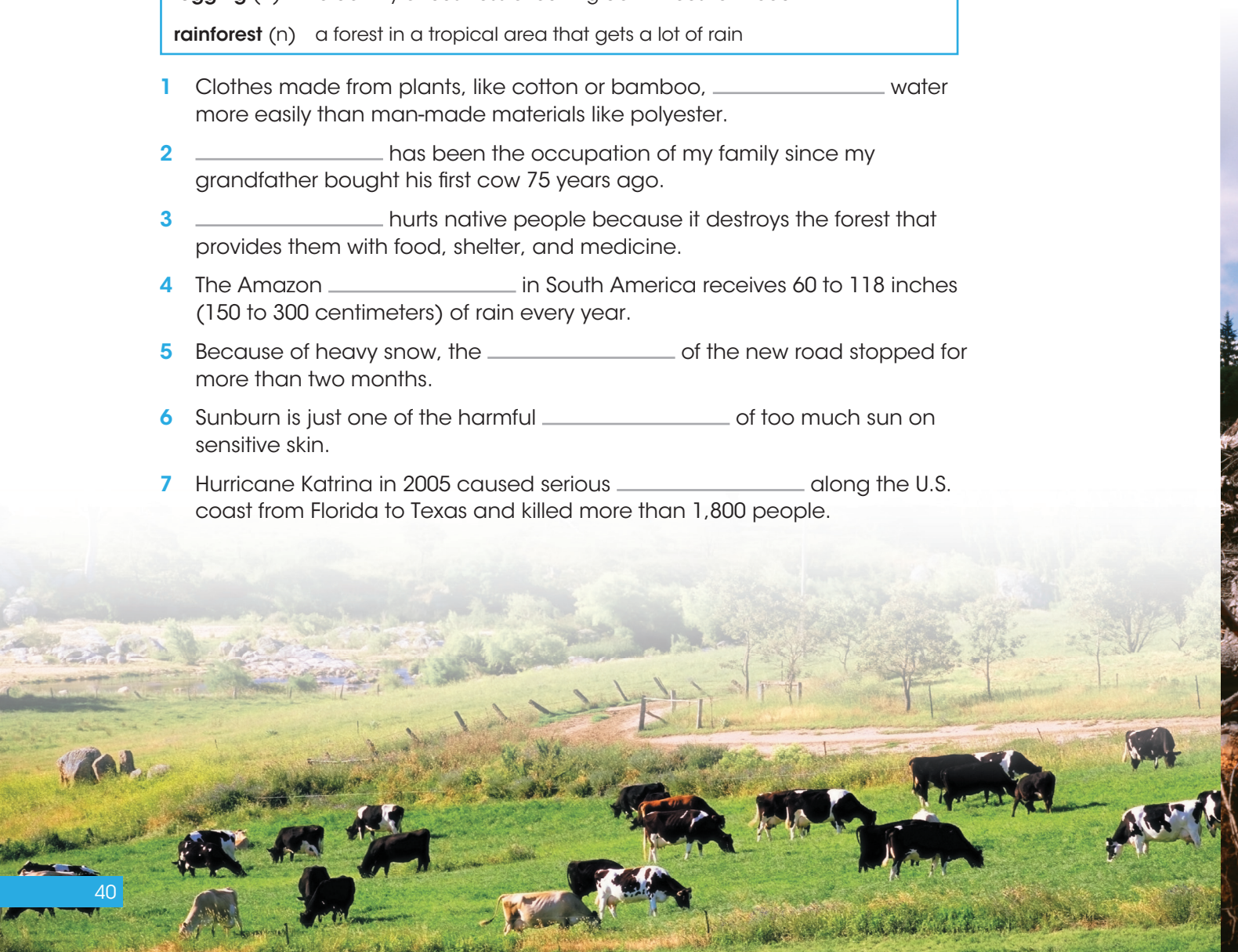
**effect** (n) result; a change that happens because of a cause

**farming** (n) the job of working on a farm or organizing work on a farm

**logging** (n) the activity or business of cutting down trees for wood

**rainforest** (n) a forest in a tropical area that gets a lot of rain

- 1 Clothes made from plants, like cotton or bamboo, \_\_\_\_\_ water more easily than man-made materials like polyester.
- 2 \_\_\_\_\_ has been the occupation of my family since my grandfather bought his first cow 75 years ago.
- 3 \_\_\_\_\_ hurts native people because it destroys the forest that provides them with food, shelter, and medicine.
- 4 The Amazon \_\_\_\_\_ in South America receives 60 to 118 inches (150 to 300 centimeters) of rain every year.
- 5 Because of heavy snow, the \_\_\_\_\_ of the new road stopped for more than two months.
- 6 Sunburn is just one of the harmful \_\_\_\_\_ of too much sun on sensitive skin.
- 7 Hurricane Katrina in 2005 caused serious \_\_\_\_\_ along the U.S. coast from Florida to Texas and killed more than 1,800 people.





**2** **PREVIEWING** You are going to read an academic article about deforestation. Before you read, look at the title and photos on pages 42–43. Then answer the questions.

**1** Why are trees important for the environment?

---

---

**2** Why do people cut down trees?

---

---

**3** What will happen if we destroy too many trees?

---

---





# The Dangers of Deforestation

**1** Forests, which cover almost one-third of the surface of the Earth, produce oxygen and provide homes to plants, animals, and humans. These days, many of the world's great forests are threatened by deforestation: the process of removing trees from large areas of land. The **destruction** of forests occurs for several reasons: trees are used as fuel or for **construction**, and cleared land is used as pasture<sup>1</sup> for animals and fields for planting food. The main harmful **effects** of deforestation are climate change and damage to animal habitats.

**2** The main causes of deforestation are commercial **farming** by big business and farming by local people. Huge commercial farms have taken over large areas of forest in many countries. In Indonesia, for example, industrial **logging** is carried out to clear huge areas for the production of palm oil, while in Brazil, large areas of the Amazon **rainforest** are cleared to grow soy and vegetable oil. In contrast, local farmers may cut down and burn trees to clear an area just big enough to graze cattle or grow crops. However, after two or three years, the land can no longer be used, so the farmer moves to another piece of land. Normally, it takes around ten years for cleared land to recover, but in populated areas, the land is never allowed to recover. This constant reuse of land leads to heavy erosion—the loss of the top layer of soil that protects the ground. Erosion, in turn, can cause flooding in heavy rain.

<sup>1</sup>**pasture** (n) an area of land with grass for animals to eat

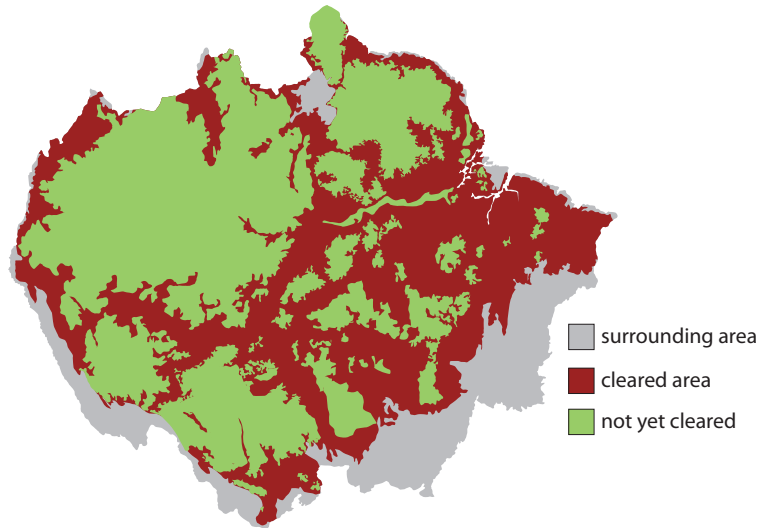
<sup>2</sup>**biodiversity** (n) the variety of different animals and plants in an area





**3** One serious effect of deforestation is climate change. Normally tropical rainforests help control the Earth's temperature by absorbing carbon dioxide. As an example, the vast rainforest of the Amazon covers an area of more than 2.6 million square miles—about 10 times the size of Texas—and **absorbs** an estimated 1.5 billion tons of carbon dioxide annually. However, in areas where deforestation has taken place, the carbon dioxide goes into the atmosphere and traps heat in a process called the greenhouse effect. The result is global warming. Increasing global temperatures result in less rain. This causes the rainforests to dry out and leads to fires—which cause more emissions of carbon dioxide. In this way, the rainforests actually contribute to global warming instead of helping to solve it.

**4** Forest destruction also has an effect on biodiversity<sup>2</sup>. Deforestation causes the loss of habitats and damage to land where plants and animal species live, leading to the extinction of many species. A decrease in biodiversity threatens entire ecosystems and destroys future sources of food and medicine.



Large areas of the Amazon rainforest have been destroyed.

**5** In conclusion, damage to the world's forests is leading to changes in the natural environment and causing global warming. Looking to the future, governments should act to plant more trees that will absorb carbon dioxide and protect forests from illegal logging. Otherwise, deforestation on such a large scale is sure to have terrible effects on the environment.

“Increasing global temperatures lead to forest fires.”



## WHILE READING

### 3 SUMMARIZING Read the article. Complete the summary with the words in the box.

animals   crops   decade   deforestation   effects  
environment   erosion   habitats   protected   warming

The article discusses the human causes of <sup>(1)</sup>\_\_\_\_\_ and the <sup>(2)</sup>\_\_\_\_\_ on the environment. Trees are removed for grazing of <sup>(3)</sup>\_\_\_\_\_ and growing <sup>(4)</sup>\_\_\_\_\_ like soy and palm oil. Farmers traditionally leave the land for a <sup>(5)</sup>\_\_\_\_\_ before reusing it, but if the land is constantly reused, it results in <sup>(6)</sup>\_\_\_\_\_ of the soil. Deforestation allows CO<sub>2</sub> to escape into the atmosphere and contributes to global <sup>(7)</sup>\_\_\_\_\_. It also affects biodiversity because it leads to the loss of <sup>(8)</sup>\_\_\_\_\_. Governments should make sure forests are <sup>(9)</sup>\_\_\_\_\_ from logging. Otherwise, deforestation will have terrible consequences for the <sup>(10)</sup>\_\_\_\_\_.

### 4 READING FOR DETAILS Read the article again. Correct the mistakes in the sentences.

- 1 In Indonesia, trees are cut down to make way for olive oil plantations.
- 2 Farmers can graze animals on their land for ten years.
- 3 The rainforests of the Amazon cover an area 10 times the size of the U.S.
- 4 Deforestation protects future sources of food and medicine.
- 5 Governments should plant more trees to absorb oxygen.
- 6 Small-scale deforestation will have disastrous effects on the environment.

## SKILLS

### TAKING NOTES ON CAUSES AND EFFECTS

Look for causes and effects when you read academic texts. Sometimes they are discussed in separate paragraphs. For example:

**Problem:** traffic congestion in my city

**Cause:** too many cars on the road

**Effects:** air pollution; noise; people are often late to work or school; accidents

Sometimes they are connected in a chain of events in the same paragraph. For example:

**Cause 1:** a shortage of housing → **Effect 1:** people live in the suburbs →

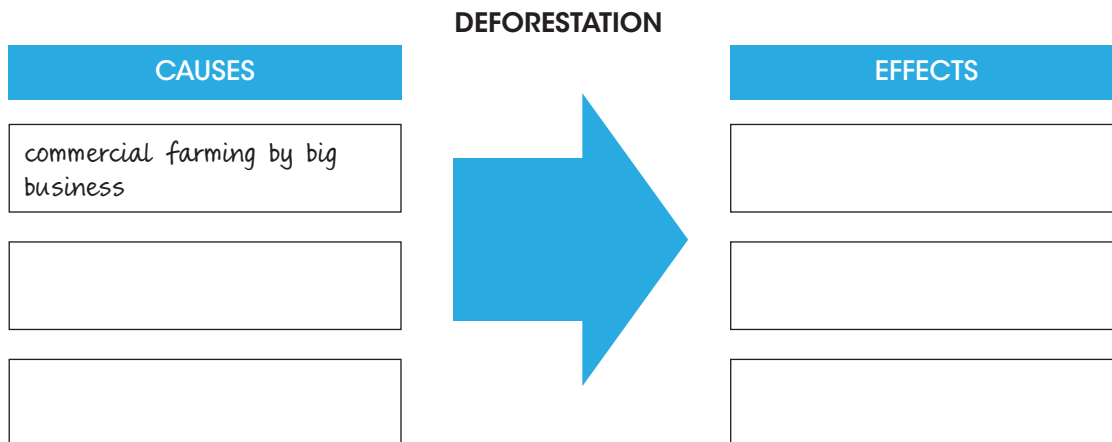
**Cause 2:** people live in the suburbs → **Effect 2:** they must drive to get to work

Use a chart to take notes on causes and effects.





- 5 TAKING NOTES** Work in a small group. Look back at the article. Underline three causes of deforestation and circle three effects. Then complete the chart.



## READING BETWEEN THE LINES

- 6 MAKING INFERENCES** Work with a partner. Discuss the questions.

- 1 What does the writer mean by the phrases *industrial logging* and *commercial farming*?
- 2 What will probably happen if the Amazon rainforest disappears?
- 3 Why does deforestation reduce future sources of food and medicine?



## CRITICAL THINKING

- 7 SYNTHESIZING** Work with a partner. Use information from Reading 1 and Reading 2 to answer the questions.

### UNDERSTAND

As the world's climate changes, which places will have too much water? Which places will become drier?

### EVALUATE

How do both the melting of the glaciers and deforestation contribute to the extinction of species?



## COLLABORATION

- 8 A** Work with a partner. Look online for organizations that work to stop deforestation or slow climate change. Choose one, and research their work. Answer these questions:
- What is their mission, or goal?
  - Where do they get money for their work?
  - What is one of their successful projects or programs?
- B** Report your findings to the class. As a class, vote on the organization that is making the biggest difference.



# LANGUAGE DEVELOPMENT

## ACADEMIC VOCABULARY



**1** Replace the underlined words in the sentences with the academic words in the box.

annual (adj)    areas (n)    challenge (n)    consequences (n)  
contributes to (v)    issue (n)    predict (v)    trend (n)

- 1 The most serious problem that threatens the environment is climate change. \_\_\_\_\_
- 2 Experts think that there will not be enough fresh water in the future.  
\_\_\_\_\_
- 3 Pollution and climate change are the effects of human activity. \_\_\_\_\_
- 4 Fortunately, we are seeing a pattern where people recycle more and use less packaging. \_\_\_\_\_
- 5 In some places, the glaciers have melted or even disappeared as a result of higher temperatures. \_\_\_\_\_
- 6 The yearly rate of species loss in the rainforest is nearly 50,000—that's 135 plant, animal, and insect species each day! \_\_\_\_\_
- 7 The biggest test we face is to protect the planet. \_\_\_\_\_
- 8 Human activity causes climate change. \_\_\_\_\_

## ENVIRONMENT COLLOCATIONS



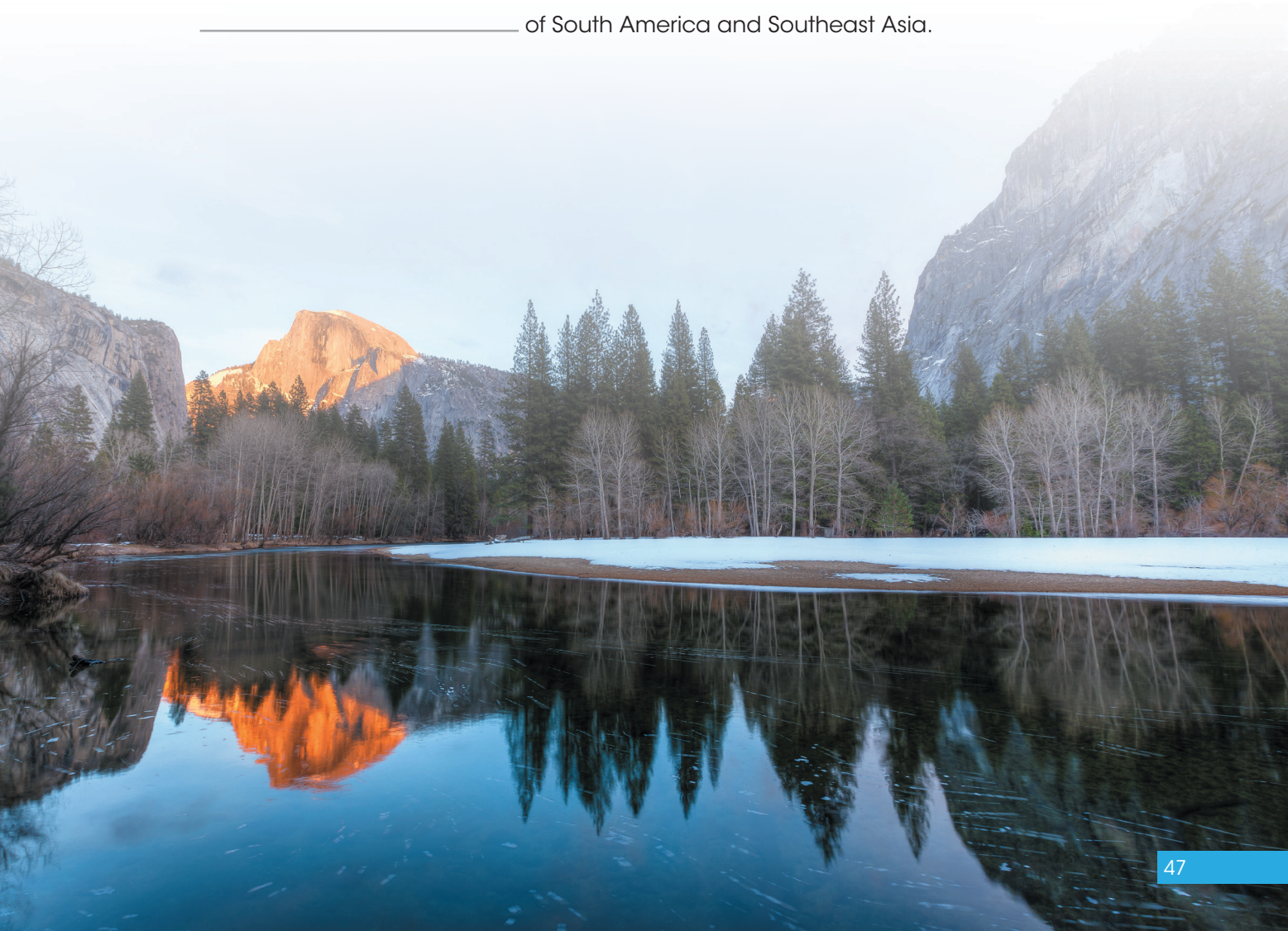
**2** Match the nouns to make collocations about the environment.

- |                 |              |
|-----------------|--------------|
| 1 climate       | a group      |
| 2 environmental | b plant      |
| 3 tropical      | c change     |
| 4 carbon        | d gas        |
| 5 power         | e rainforest |
| 6 natural       | f resource   |
| 7 greenhouse    | g dioxide    |

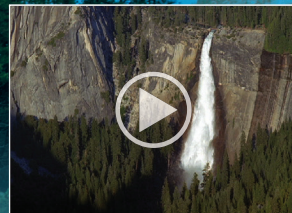


**3 Complete the sentences with the correct form of the collocations from Exercise 2.**

- 1 In my town, about 70% of the electricity comes from a \_\_\_\_\_ that uses coal for energy.
- 2 Carbon dioxide and methane are examples of \_\_\_\_\_.
- 3 Almost all scientists these days agree that \_\_\_\_\_ is happening and it is a serious threat to our planet.
- 4 Trees absorb \_\_\_\_\_ and give off oxygen.
- 5 All over the world, \_\_\_\_\_ are working to educate people about the dangers of deforestation and habitat destruction.
- 6 Fresh water is the most precious \_\_\_\_\_ on Earth.
- 7 Thousands of unique plants, animals, birds, and insects live in the \_\_\_\_\_ of South America and Southeast Asia.



# WATCH AND LISTEN



## GLOSSARY

**canyon** (n) a deep valley with very steep sides

**form** (v) to create; to make something begin to exist or take a particular shape

**cavern** (n) a large cave

**spectacular** (adj) extremely good, exciting, or beautiful

**glacier** (n) a large mass of ice that moves very slowly, usually down a slope or valley

## PREPARING TO WATCH

**1 ACTIVATING YOUR KNOWLEDGE** You are going to watch a video about the natural environment. Before you watch, work with a partner and discuss the questions.

- 1 What are the Seven Natural Wonders of the World?
- 2 What are some important geographical features, like mountains or rivers, in your country?
- 3 What street or place names in your city or country refer to geography? (e.g., Pacific Coast Highway, Lake Street)

**2 PREDICTING CONTENT USING VISUALS** Work with a partner. Look at the photos from the video and discuss the questions.

- 1 Where are these places located?
- 2 How old do you think these places are?
- 3 Who owns these places?

## WHILE WATCHING

**3 UNDERSTANDING MAIN IDEAS** Watch the video. Number the sentences in order (1–6).

- \_\_\_\_\_ a The weather in the Grand Canyon can change very quickly.
- \_\_\_\_\_ b Water is still changing the inside of Carlsbad Caverns.
- \_\_\_\_\_ c Half Dome in Yosemite National Park was made by glaciers.
- \_\_\_\_\_ d The Colorado River formed the Grand Canyon.
- \_\_\_\_\_ e The rocks in the Grand Canyon are very old.
- \_\_\_\_\_ f Yosemite Falls is the tallest waterfall in North America.




**4 UNDERSTANDING DETAILS Watch the video again. Circle the correct answer.**

- 1 The Grand Canyon was formed in \_\_\_\_\_ years.
  - a a million
  - b a few million
  - c a billion
- 2 Some of the rocks in the Grand Canyon are \_\_\_\_\_ the Earth.
  - a as old as
  - b half as old as
  - c almost as old as
- 3 The weather in the Grand Canyon can suddenly change from \_\_\_\_\_.
  - a hot to dry
  - b dry to wet
  - c hot to cold
- 4 The Carlsbad Caverns is the \_\_\_\_\_ cave system in North America.
  - a oldest
  - b largest
  - c widest
- 5 The water in Yosemite National Park comes from \_\_\_\_\_.
  - a snow
  - b glaciers
  - c a cave


**CRITICAL THINKING**
**5 Work with a partner. Discuss the questions.**
**APPLY**

What other natural wonders were created by water?

**ANALYZE**

How might water change the Earth's geography in the next 100 years?

**EVALUATE**

In your opinion, who should protect special natural areas in the world?


**COLLABORATION**

- 6 **A** Work in a small group. Choose one of the Seven Natural Wonders of the World. Research the place and prepare a presentation for your class. Answer these questions:
  - Where is the natural wonder?
  - Why is it special?
  - What is its history?
  - Is it affected by climate change? How?
  - Are there any other threats to it?
  - How is it protected?
- B** Present your natural wonder to the class. Answer questions.