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FOUNDATIONS

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READING EXPLORER



Second Edition



FOUNDATIONS

READING EXPLORER



BECKY TARVER-CHASE • DAVID BOHLKE

Second Edition



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Reading Explorer Foundations
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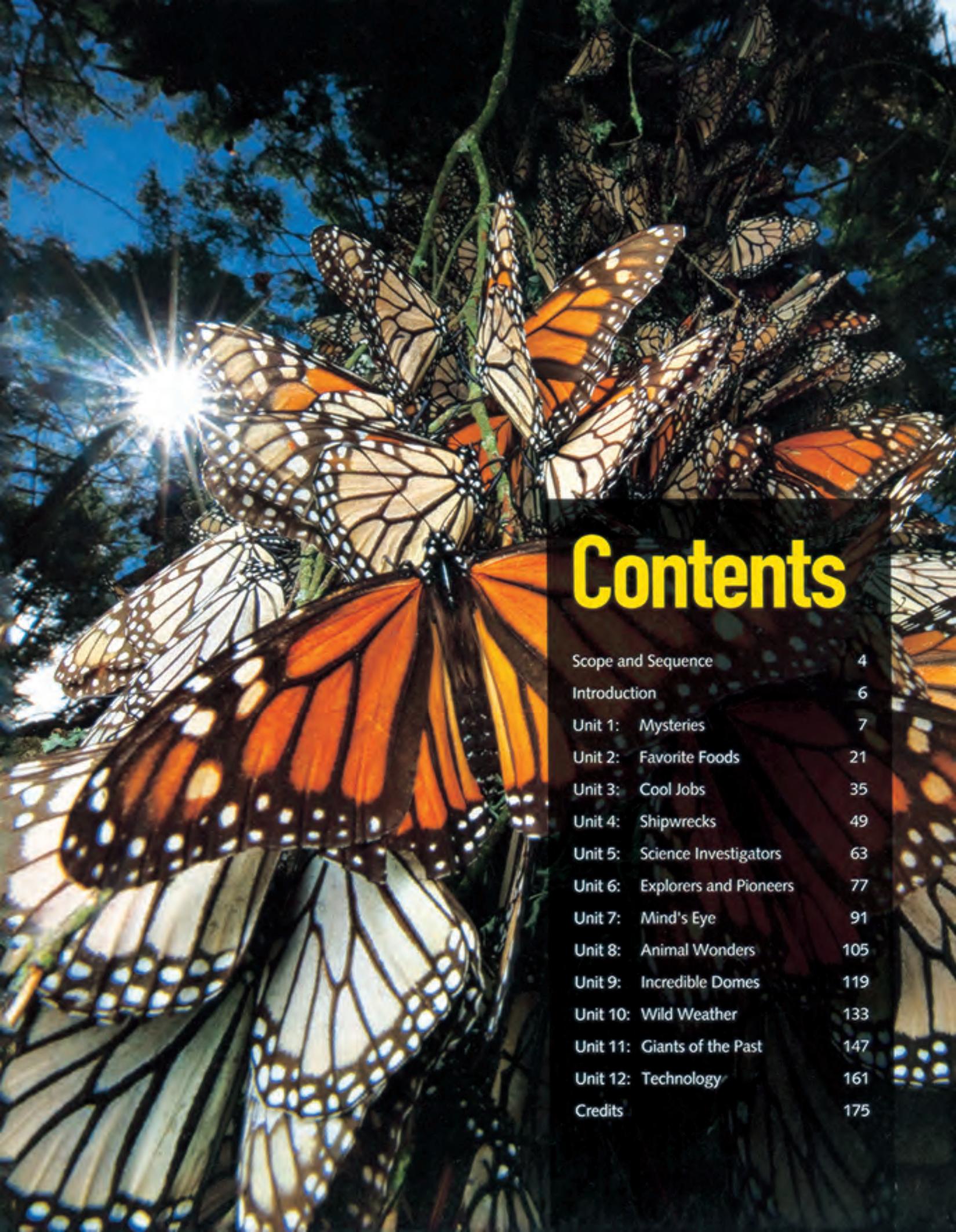
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Scope and Sequence

Unit	Theme	Reading
1	Mysteries	A: Have Aliens Visited Us? B: The Lost City of Atlantis
2	Favorite Foods	A: The History of Pizza B: The Hottest Chilies
3	Cool Jobs	A: Training Grizzlies! B: Getting the Shot
4	Shipwrecks	A: I've Found the <i>Titanic</i> ! B: Treasure Ship
5	Science Investigators	A: At the Scene of a Crime B: The Disease Detective
6	Explorers and Pioneers	A: Who Was Sacagawea? B: Polar Pioneer
7	Mind's Eye	A: The Meaning of Dreams B: Seeing the Impossible
8	Animal Wonders	A: A Penguin Family B: Do Animals Laugh?
9	Incredible Domes	A: A Love Poem in Stone B: The Great Dome of Florence
10	Wild Weather	A: A Warming World B: Freaky Forces of Nature
11	Giants of the Past	A: The Mammoth's Tale B: Sea Monsters
12	Technology	A: The Robots Are Coming! B: How Will We Live in 2035?



Reading Skill	Vocabulary Building	Video
A: Scanning B: Skimming	A: Usage: <i>research</i> B: Usage: <i>solid</i>	Loch Ness Mystery
A: Identifying the Parts of a Passage B: Pronoun Reference	A: Word Partnership: <i>basic</i> B: Word Partnership: <i>painful</i>	A Taste of Mexico
A: Finding the Correct Definition of a Word in a Dictionary B: Understanding the Use of Commas	A: Thesaurus: <i>difficult</i> B: Word Partnership: <i>spend</i>	Right Dog for the Job
A: Identifying a Paragraph's Main Idea B: Recognizing Compound Subjects and Objects	A: Usage: <i>agree</i> B: Usage: <i>coast/beach</i>	Saving Ocean Life
A: Inferring Meaning B: Identifying the Purpose of a Paragraph	A: Word Partnership: <i>space</i> B: Word Link: <i>-ous</i>	Virus Detectives
A: Creating a Timeline of Events B: Understanding Compound Nouns	A: Usage: <i>village/town/city</i> B: Usage: <i>drive/ride</i>	Native Americans
A: Creating a Concept Map B: Understanding Compound Sentences	A: Word Partnership: <i>problem</i> B: Word Partnership: <i>mistake</i>	Parasomnia
A: Paraphrasing B: Identifying Supporting Details	A: Word Partnership: <i>enter</i> B: Word Partnership: <i>similar</i>	Penguins in Trouble
A: Understanding Complex Sentences B: Recognizing Prepositions	A: Word Partnership: <i>promise</i> B: Thesaurus: <i>material</i>	Brunelleschi's Dome
A: Identifying Text Types B: Identifying Cause and Effect	A: Word Partnership: <i>temperature</i> B: Usage: <i>drop vs. fall</i>	Storm of the Century
A: Recognizing Active and Passive Sentences B: Organizing Information in a Chart	A: Usage: <i>further/farther</i> B: Usage: <i>probably/definitely/possibly</i>	Days of the Dinosaurs
A: Supporting Ideas with Examples B: Understanding Prefixes and Suffixes	A: Word Partnership: <i>operate</i> B: Word Partnership: <i>future</i>	Deep-sea Robot

Welcome to Reading Explorer!

In this book, you'll travel the globe, explore different cultures, and discover new ways of looking at the world. You'll also become a better reader!

What's new in the Second Edition?

New and updated topics

Explore the animal world, the lives of explorers and pioneers, and amazing feats of architecture.

New Reading Skills section

Learn how to read strategically—and think critically as you read.

Reading Comprehension		Reading Skills	
Multiple Choice. Choose the best answer for each question.		Reading Comprehension	
Question 1:	a. Is she flying during the day or night, what does the sun tell us?	Commas	Learning how commas can help you read and understand texts better is an important skill to have. Here are some tips:
Answer:	A. It's day. B. It's night. C. It's sunrise.		<ul style="list-style-type: none"> a. In a sentence, a comma is used to separate items. b. In a sentence, a comma is used to separate words. c. In a sentence, a comma is used to separate clauses. d. In a sentence, a comma is used to separate parts of a sentence. e. In a sentence, a comma is used to separate words. f. In a sentence, a comma is used to separate clauses. g. In a sentence, a comma is used to separate parts of a sentence. h. In a sentence, a comma is used to separate words. i. In a sentence, a comma is used to separate clauses. j. In a sentence, a comma is used to separate parts of a sentence. k. In a sentence, a comma is used to separate words. l. In a sentence, a comma is used to separate clauses. m. In a sentence, a comma is used to separate parts of a sentence. n. In a sentence, a comma is used to separate words. o. In a sentence, a comma is used to separate clauses. p. In a sentence, a comma is used to separate parts of a sentence. q. In a sentence, a comma is used to separate words. r. In a sentence, a comma is used to separate clauses. s. In a sentence, a comma is used to separate parts of a sentence. t. In a sentence, a comma is used to separate words. u. In a sentence, a comma is used to separate clauses. v. In a sentence, a comma is used to separate parts of a sentence. w. In a sentence, a comma is used to separate words. x. In a sentence, a comma is used to separate clauses. y. In a sentence, a comma is used to separate parts of a sentence. z. In a sentence, a comma is used to separate words.
Question 2:	a. What are butterflies' favorite colors? b. Butterflies like to eat flowers. c. Butterflies like to drink nectar. d. Butterflies like to drink water.	Fact	Analogy. Think of the sentence below that can continue correctly.
Answer:	A. Butterflies like to drink water. B. Butterflies like to drink nectar. C. Butterflies like to drink flowers. D. Butterflies like to drink water.		<ul style="list-style-type: none"> a. Butterflies like to drink flowers. b. Butterflies like to drink nectar. c. Butterflies like to drink water. d. Butterflies like to drink flowers. e. Butterflies like to drink water. f. Butterflies like to drink flowers. g. Butterflies like to drink nectar. h. Butterflies like to drink water. i. Butterflies like to drink flowers. j. Butterflies like to drink nectar. k. Butterflies like to drink water. l. Butterflies like to drink flowers. m. Butterflies like to drink nectar. n. Butterflies like to drink water. o. Butterflies like to drink flowers. p. Butterflies like to drink nectar. q. Butterflies like to drink water. r. Butterflies like to drink flowers. s. Butterflies like to drink nectar. t. Butterflies like to drink water. u. Butterflies like to drink flowers. v. Butterflies like to drink nectar. w. Butterflies like to drink water. x. Butterflies like to drink flowers. y. Butterflies like to drink nectar. z. Butterflies like to drink water.
Question 3:	a. Butterflies like to drink water. b. Butterflies like to drink nectar. c. Butterflies like to drink flowers. d. Butterflies like to drink water.	Fact	Completion. Add commas to the following sentence. There should be two commas in the sentence. You have to add one comma at the beginning and one at the end of the sentence.
Answer:	A. Butterflies like to drink water. B. Butterflies like to drink nectar. C. Butterflies like to drink flowers. D. Butterflies like to drink water.		<ul style="list-style-type: none"> a. Butterflies like to drink water. b. Butterflies like to drink nectar. c. Butterflies like to drink flowers. d. Butterflies like to drink water. e. Butterflies like to drink water. f. Butterflies like to drink nectar. g. Butterflies like to drink flowers. h. Butterflies like to drink water. i. Butterflies like to drink flowers. j. Butterflies like to drink nectar. k. Butterflies like to drink water. l. Butterflies like to drink flowers. m. Butterflies like to drink nectar. n. Butterflies like to drink water. o. Butterflies like to drink flowers. p. Butterflies like to drink nectar. q. Butterflies like to drink water. r. Butterflies like to drink flowers. s. Butterflies like to drink nectar. t. Butterflies like to drink water. u. Butterflies like to drink flowers. v. Butterflies like to drink nectar. w. Butterflies like to drink water. x. Butterflies like to drink flowers. y. Butterflies like to drink nectar. z. Butterflies like to drink water.
Question 4:	a. Butterflies like to drink water. b. Butterflies like to drink nectar. c. Butterflies like to drink flowers. d. Butterflies like to drink water.	Fact	Editing. Fix the punctuation errors in the following sentence. There should be one punctuation error in the sentence. You have to find one punctuation error at the beginning and one at the end of the sentence.
Answer:	A. Butterflies like to drink water. B. Butterflies like to drink nectar. C. Butterflies like to drink flowers. D. Butterflies like to drink water.		<ul style="list-style-type: none"> a. Butterflies like to drink water. b. Butterflies like to drink nectar. c. Butterflies like to drink flowers. d. Butterflies like to drink water. e. Butterflies like to drink water. f. Butterflies like to drink nectar. g. Butterflies like to drink flowers. h. Butterflies like to drink water. i. Butterflies like to drink flowers. j. Butterflies like to drink nectar. k. Butterflies like to drink water. l. Butterflies like to drink flowers. m. Butterflies like to drink nectar. n. Butterflies like to drink water. o. Butterflies like to drink flowers. p. Butterflies like to drink nectar. q. Butterflies like to drink water. r. Butterflies like to drink flowers. s. Butterflies like to drink nectar. t. Butterflies like to drink water. u. Butterflies like to drink flowers. v. Butterflies like to drink nectar. w. Butterflies like to drink water. x. Butterflies like to drink flowers. y. Butterflies like to drink nectar. z. Butterflies like to drink water.
Question 5:	a. Butterflies like to drink water. b. Butterflies like to drink nectar. c. Butterflies like to drink flowers. d. Butterflies like to drink water.	Fact	Editing. Fix the punctuation errors in the following sentence. There should be one punctuation error in the sentence. You have to find one punctuation error at the beginning and one at the end of the sentence.
Answer:	A. Butterflies like to drink water. B. Butterflies like to drink nectar. C. Butterflies like to drink flowers. D. Butterflies like to drink water.		<ul style="list-style-type: none"> a. Butterflies like to drink water. b. Butterflies like to drink nectar. c. Butterflies like to drink flowers. d. Butterflies like to drink water. e. Butterflies like to drink water. f. Butterflies like to drink nectar. g. Butterflies like to drink flowers. h. Butterflies like to drink water. i. Butterflies like to drink flowers. j. Butterflies like to drink nectar. k. Butterflies like to drink water. l. Butterflies like to drink flowers. m. Butterflies like to drink nectar. n. Butterflies like to drink water. o. Butterflies like to drink flowers. p. Butterflies like to drink nectar. q. Butterflies like to drink water. r. Butterflies like to drink flowers. s. Butterflies like to drink nectar. t. Butterflies like to drink water. u. Butterflies like to drink flowers. v. Butterflies like to drink nectar. w. Butterflies like to drink water. x. Butterflies like to drink flowers. y. Butterflies like to drink nectar. z. Butterflies like to drink water.

Expanded Viewing section

Apply your language skills when you watch a specially adapted National Geographic video.



Getting the Shot

Before You Read

- A. Discussion.** Look at the photo above and read the caption. Then discuss these questions with a partner.

 1. What kinds of things do you usually take photos of?
 2. Do you think a photographer's job is easy?

B. Skim. Skim the interview on pages 42–43. Then write each interview question above its answer in the passage.

 1. I want to be a photographer. Do you have any advice for me?
 2. What kind of photographs in the *National Geographic Magazine* looking for?
 3. Is it difficult to get a job as a photographer today?
 4. How did you become a *National Geographic* photographer?

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VIEWING Right Dog for the Job

Before You Watch

A. Reflections. Look at the section and what you can remember about the video. At the ready! You will have time to write down your answers.

At the ready... You'll need a pencil and paper. You can print off the viewing guide or write directly on the page. You can also download the viewing guide from the website: www.dogtv.com.

B. Predict. What do you think the program will be about? Check off what you think the show might include:

- dog agility
- dog, the movie
- dog tricks
- dog food
- dog help
- drive a car
- dog grooming
- dog puzzle

C. Predict. What do you think the program will be about? Check off what you think the show might include:

- dog agility
- dog, the movie
- dog tricks
- dog food
- dog help
- drive a car
- dog grooming
- dog puzzle

While You Watch

Checking. Are you seeing the things that were listed as possibilities in the video?

After You Watch

A. Comprehension. Answer the questions about the video to check your level of comprehension.

1. According to the video, the dog trainer's job is to teach the dog to do what?

2. According to the dog's "teacher," what does the dog do?

3. In the last scene, the dog's "teacher" says something. What did he say?

4. The dog trainer says that one of the dog's responsibilities is to do what?

B. Responding. The questions below are from the video. After you answer them, think about:

1. If your canine could be trained, like dogs have, to serve as big helpers, "to do" certain things, would you want to train your dog?

2. When the dog trainer says, "Will you just sit up for me?" Will the dog "sit up" for the dog? Is pretty cool dog like this? (The dog does sit up.)

3. A night security dog is in one officer's office and when everything is functioning it stays right next to it, even when it's cold. (It gets cold outside.)

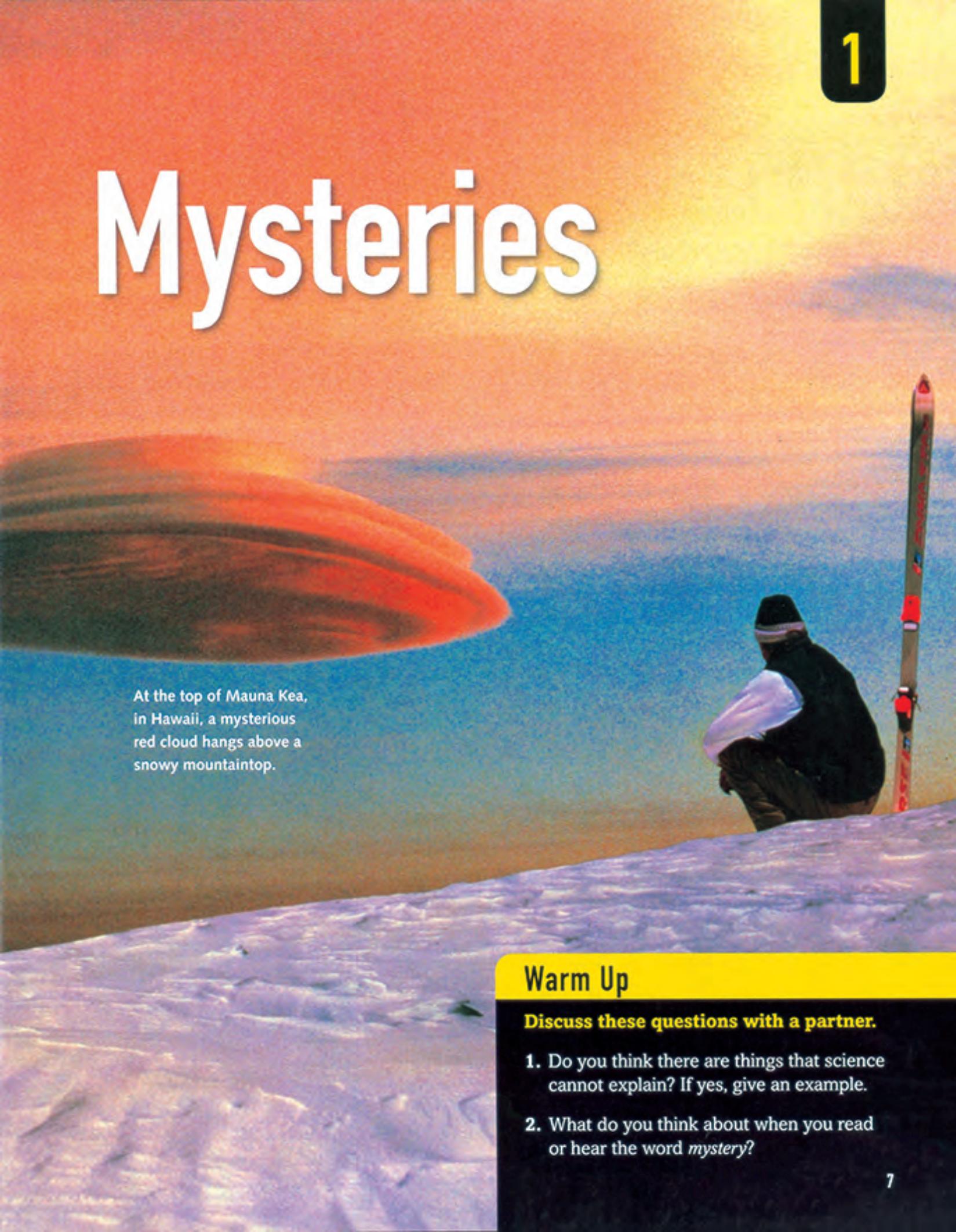
4. Should you let your dog have a special "assistant" if you ever go outside alone, who would assist you?

5. Another kind says that dogs make great partners to do things with. Why does this seem like a good idea?

40 Sesame

Now you're ready
to explore your world!

Mysteries



At the top of Mauna Kea, in Hawaii, a mysterious red cloud hangs above a snowy mountaintop.

Warm Up

Discuss these questions with a partner.

1. Do you think there are things that science cannot explain? If yes, give an example.
2. What do you think about when you read or hear the word *mystery*?



Before You Read

A. Definitions. Look at the photo and read the caption. Then match each word in **bold** with its definition.

- | | | |
|-------------|---|---------------------------------|
| 1. pilots | • | a. machines that fly |
| 2. aircraft | • | b. people who fly airplanes |
| 3. disks | • | c. from other places or planets |
| 4. alien | • | d. objects with a round shape |

► Sometimes **pilots** see mysterious lights in the sky. Others have seen **aircraft** that look like **disks** or "flying saucers." We call these "UFOs" (unidentified flying objects). Some people think UFOs are **alien** spaceships visiting Earth.

B. Skim. Quickly skim pages 9–10. What is the passage mainly about? Circle **a**, **b**, or **c**. Then read the passage to check your answer.

- a. UFO sightings around the world
- b. a famous place to see UFOs
- c. famous movies about UFOs



Have Aliens Visited Us?

- 1 Many people have stories about seeing aliens. Here are two.

Judy Varns works for a group called the Mutual UFO Network. The **purpose** of this group is to **research** UFO sightings.¹ Varns thinks a place called Area 51, in Nevada in the U.S., may be the best place on Earth to see UFOs. One day, she took some photos in the **area** and saw something she thinks is a UFO. "We saw this little disk-shaped thing in our photos. It's kind of exciting," she says.

Pat Travis lives near Area 51. One night, she saw a **strange** light in the sky. The light's **movements** were very unusual. Travis saw the lights move sideways² and up and down. She saw them make many strange moves. Travis thinks it was a UFO.

¹ When someone has a **sighting** of something unusual, they see it.

² Moving **sideways** is moving from left to right or right to left.



Secrets of Area 51

15 Some people think Area 51 is where the U.S. Air Force³ keeps **secrets**, like UFOs that came to Earth and the aliens inside them. But really, Area 51 is a place the U.S. Air Force uses to test new **technology**, such as new kinds of aircraft.

20 James McGaha is a pilot who flew airplanes at Area 51. "There is absolutely⁴ no UFO activity at Area 51," he says. "No flying saucers, no live aliens, no dead aliens."

25 So what did Varns and Travis see? Bill Fox worked at Area 51, too. He thinks he knows the answer. "We did build some strange-looking airplanes," he says. "I could see why some people would think they were UFOs."

So are UFOs real? You'll have to **decide** for yourself. But if you do visit Nevada, keep your eyes on the skies!

▲ A fake alien body lies in a display in Roswell, New Mexico, where people think an alien ship landed on Earth. Some believe the ship and aliens were taken to Area 51.

³ An **air force** is the part of an army that fights in the air.

⁴ **Absolutely** means "totally."

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Detail

- Which of these sentences about Judy Varns is true?
 - She works at an airport in Area 51.
 - She helped Bill Fox build new airplanes.
 - She works for a group that studies UFO sightings.

Main Idea

- What is the main idea of the second paragraph (from line 9)?
 - Pat Travis lives near Area 51.
 - Pat Travis thinks she saw a UFO.
 - Pat Travis has seen many unusual things.

Vocabulary

- In line 18, the word *kinds* means _____.
 - a lot
 - types
 - people

Detail

- What was James McGaha's job at Area 51?
 - He flew airplanes.
 - He made airplanes.
 - He took secret photos.

Paraphrase

- What does "*I could see why some people would think they were UFOs.*" (lines 24–25) mean?
 - I agree with people who believe in UFOs.
 - I saw UFOs near Area 51 with my own eyes.
 - I understand why some people think they saw UFOs.

Inference

- Which person is likely to say "*I believe UFOs are real, and could be alien spaceships.*"?
 - Bill Fox
 - Judy Varns
 - James McGaha



Did You Know?

There is a UFO sighting somewhere on Earth every three minutes.

Reading Skill

Scanning

You scan a text when you want to find specific information. When you scan, you only look for the information you want. You don't read the rest of the text. For example, for the question *Where is Area 51?*, look through the text for a place name, possibly a word beginning with a capital letter (Nevada or U.S.).

A. Scan. Look back at the passage on pages 9–10. Find and underline these words in the passage as quickly as you can.

1. Earth 3. flew 5. dead
2. sideways 4. saucers 6. skies

B. Scan. Read the questions below. Think about what answers you need to look for. Then scan the passage on pages 9–10, and write the answers. Try to find the answers as quickly as you can.

1. Who works for the Mutual UFO Network? _____
2. Who lives near Area 51? _____
3. What does the U.S. Air Force test at Area 51? _____
4. What is James McGaha's job? _____
5. What did Bill Fox build? _____

Critical Thinking Discuss with a partner. Do you think UFOs are real?

Why or why not? What other things do you think could explain what Judy Varns and Pat Travis saw?



◀ A model of a saucer-shaped aircraft, the Couzinet Aerodyne RC-360, built in France, in 1952.

Vocabulary Practice

A. Matching. Read the information. Then match each word in red with its definition below.

Crop Circles

A farmer wakes up to find something very **strange** in his field. Someone or something has made strange shapes in the field by pushing down his crops.¹ The shapes can only be seen from the sky! These are called crop circles.

1 Crops are plants grown in large amounts.

Where do these crop circles come from? Some people think that UFOs make the crop circles when they land. But **research** shows most crop circles are made by people. The **technology** to make them is very simple—just a rope and some wood.



What is the **purpose** of making crop circles? Some people make them so others will believe in aliens. Some people make crop circles just for fun. Today, some farmers even make them to mark out each different **area** of their farms.

1. _____ : hard to understand or explain
2. _____ : the reason you do something
3. _____ : a part of a place, or of some land
4. _____ : the use of science and machines to do things
5. _____ : the work of trying to find facts about something

B. Words in Context. Complete each sentence with the correct answer.

1. When you **decide** what to have for lunch, you _____ what you want.
a. don't know b. know
2. A **secret** is something you want _____ to know about.
a. very few people b. a lot of people
3. An example of **technology** is _____.
a. a computer b. a song
4. The **purpose** of your English textbook is to _____.
a. have 160 pages b. help you read better
5. An example of **movement** is _____.
a. something you hear b. something you do

► A crop circle is made when something pushes the crops down, leaving empty spaces in the field.

Usage

Research can be used as a verb or a noun. *Professor Baker researches UFOs. His research will take five years.*



Before You Read

- A. Matching.** Look at the picture and read the information below. Then match each word in **bold** with its definition.

Long ago, the Greek writer Plato wrote about Atlantis—an **island** that **sank** into the sea. In his story, the people of Atlantis were very **rich**. But they were also very **greedy**. They wanted too much, so they lost everything.

1. _____ : went underwater
2. _____ : having a lot of money
3. _____ : land with water around it
4. _____ : wanting a lot of money, things, or food

- B. Scan.** Quickly scan the passage on the next page. Remember that names of people and places usually start with capital letters.

1. What names of people can you find? Underline them.
2. What names of places are mentioned? Circle them.

Many believe that Atlantis had rings of land with water between them. A temple stood right in the center of the island.

The Lost City of ATLANTIS

- 1 Most people have heard the story of the **lost** island of Atlantis. But is any part of the story true?

Over two thousand years ago, the Greek writer Plato wrote about Atlantis, an island in the Atlantic Ocean. The 5 island's people were very rich. They built a big city with many great buildings. At the center of the island, they built a beautiful golden temple.¹ But the people became greedy—they had many things, but they still wanted more. So the gods became angry, and the island was **struck** by 10 earthquakes² and very large waves. **Finally**, the whole island sank into the sea.

Many explorers have looked for Atlantis. In 2004, explorer Robert Sarmast **reported** finding the remains³ of a city under the sea near Cyprus. However, Sarmast and other 15 scientists later found out the **structures** he found under the sea were **natural**, not man-made.

Many people think Atlantis is simply a story. The purpose of the story is to teach people not to be greedy. Richard Ellis wrote a book about Atlantis in 1999. 20 He says "there is not a **piece** of **solid** evidence"⁴ for a real Atlantis.

So was the island real or not? We only know one thing: The mystery of Atlantis will be with us for a long time.

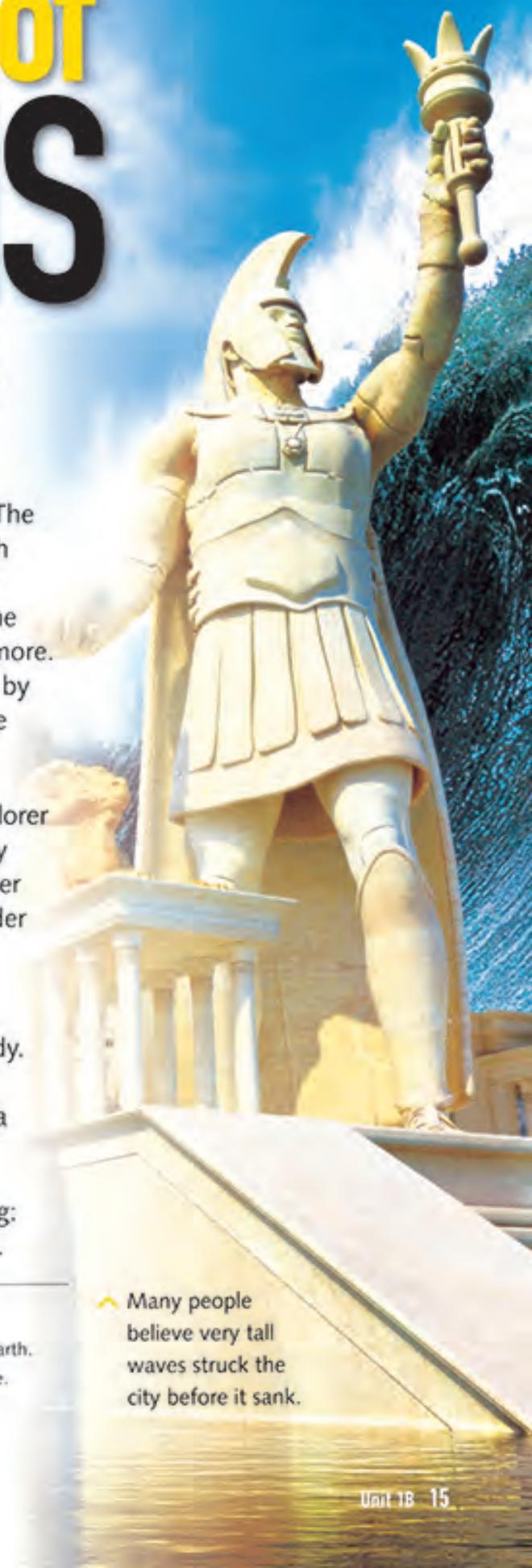
¹ A **temple** is a building where people practice a religion.

² An **earthquake** is the shaking of the ground caused by movement of the Earth.

³ The **remains** of something are the parts that are left after most of it is gone.

⁴ **Evidence** is anything that makes you believe that something is true.

▲ Many people believe very tall waves struck the city before it sank.



Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. Another title for this passage could be _____.

- a. Atlantis Sinks
- b. Is Atlantis Real?
- c. I Found Atlantis!

Detail

2. In Plato's story about Atlantis, the people were _____.

- a. angry at the gods
- b. wealthy but greedy
- c. greedy but beautiful

Sequence

3. What happened after Robert Sarmast said he found Atlantis?

- a. He wrote a book about his findings.
- b. Richard Ellis said that Atlantis was not real.
- c. He found out the structures were not man-made.

Main Idea

4. What is the main idea of the third paragraph (from line 12)?

- a. Scientists found out the structures were natural.
- b. Explorers found a city under the sea near Cyprus.
- c. People are looking for Atlantis, but no one has found it.

Vocabulary

5. We can replace the word *simply* (line 17) with _____.

- a. just
- b. easy
- c. sometimes

Paraphrase

6. Which sentence is closest in meaning to "*there is not a piece of solid evidence*" for a real Atlantis.

(lines 20–21)?

- a. There is only one reason to believe the Atlantis story is true.
- b. The story of Atlantis is made up of many small pieces.
- c. There is nothing to make us believe the Atlantis story is true.

Did You Know?

The story of Atlantis was first written down in Plato's *Dialogues* in 360 B.C. Even today, Plato is known as one of the great thinkers of all time.



Reading Skill

Skimming

You skim a passage when you look at the whole passage quickly to see what it is about. You do not read every word. Instead, look at the title, headings, photos, and captions. Read the first line of each paragraph, and quickly read the conclusion.

- A. Skim or Scan.** Look at these reasons for reading. For each reason, should you skim or scan? Check (✓) the correct boxes.

	Skim	Scan
1. to see if a story is funny or serious	<input type="checkbox"/>	<input type="checkbox"/>
2. to find the names of countries mentioned	<input type="checkbox"/>	<input type="checkbox"/>
3. to find a quote (" ") by a scientist	<input type="checkbox"/>	<input type="checkbox"/>
4. to see if the author feels positive about the topic	<input type="checkbox"/>	<input type="checkbox"/>

- B. Skim.** Quickly skim the passage below. What is it mainly about? Circle **a**, **b**, or **c**.

- a. Kimura has found Atlantis in the Pacific Ocean.
- b. Kimura believes he has found a lost land near Japan.
- c. Kimura has shown that the strange structures he found were made by humans.

The Lost Continent in the Pacific Ocean

People believe that thousands of years ago, like Atlantis, the lost continent of Mu sank because of an earthquake. Today, no one knows if there really was a place called Mu, or where it was.

However, Professor Masaaki Kimura thinks he knows where the remains of Mu are. He believes they are near the Yonaguni Islands of Japan. Kimura thinks the strange structures he has found were made by people. Some other researchers don't think so. No one is sure, but the research continues.



▲ A diver explores the strange steplike structures in the waters near the Yonaguni Islands.

Critical Thinking Discuss with a partner. Can you think of times you scan or skim things outside of class? What kinds of texts do you usually scan or skim?

Vocabulary Practice

A. Completion.

Choose the correct words to complete the information below.

Leeds Castle, in England, has a long history. The 1. (**structure** / **piece**) of the castle is very old, and today, it is empty—except, some say, for the ghost¹ of a big black dog. Some believe that people who see the dog are 2. (**struck** / **lost**) with bad luck.

But one woman 3. (**struck** / **reported**) that the dog brought her very good luck. She was sitting by a window in the castle one day. She looked up and saw a big black dog walk through a 4. (**solid** / **natural**) wall. She got up to look for it—and then a 5. (**piece** / **natural**) of the window where she was sitting fell into the water below. Thanks to the ghost dog, the lucky woman got out of the castle safely!

¹ A **ghost** is the spirit of a dead person or animal.

B. Words in Context.

Read the sentences and circle true (T) or false (F).

- | | |
|--|----------|
| 1. When an area is struck by a storm,
it is suddenly hit by the storm. | T F |
| 2. Something that is natural is made by humans. | T F |
| 3. If something is lost , you know where it is. | T F |
| 4. When you report something has happened,
you say it never happened. | T F |
| 5. You use the word finally to say something
happened after a long time. | T F |

Usage

The word **solid** is used to describe objects that are fixed in shape and volume. **Solid** can also describe information that can be trusted.



Is there really the ghost of a dog in Leeds Castle?

VIEWING Loch Ness Mystery

Before You Watch

- A. Definitions.** Look at the picture and read the caption. Then match the words in **bold** with their definitions below.



◀ This photograph was **published** in London's *Daily Mail* newspaper on April 21, 1934. According to the report, the photograph was taken in Loch Ness, a famous **lake** in Scotland, where a strange **creature** is said to live. Some people are **certain** that the **monster** is real. Others are not so sure.

- | | |
|----------------|--|
| 1. published • | • a. an animal of any type |
| 2. lake • | • b. sure, believing completely in something |
| 3. creature • | • c. an animal of strange or frightening shape or size |
| 4. certain • | • d. put in a book, newspaper, magazine, or online for all to see |
| 5. monster • | • e. a large body of water that is on land and not part of the sea |

- B. Discuss.** Look at the picture again. Then discuss the questions below with a partner.

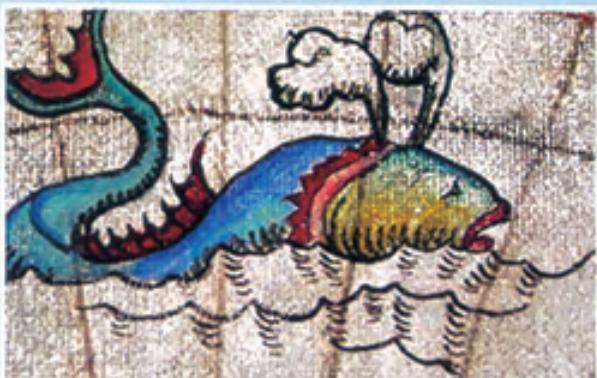
1. What do you think the picture shows?
2. Do you think it's real?

While You Watch

Checking. As you watch the video, check your answers in **Before You Watch B**. Were your ideas correct?

After You Watch

A. Sequencing. Number these events in the order they really occurred.



- People first reported strange movements in the lake.



- This photograph was published in newspapers.



- ### The Loch Ness story continued to grow.



- Christian Spurling told people the true story.



- “Duke” Wetherall took a photo of “Nessie.”

COURIER. TUESDAY, MAY 2, 1933.		
ORPHANAGE	STRANGE SPECTACLE ON LOCH NESS	CORRESPONDENCE
It's Confidence Trustees	What was it?	INQUIRIES TO THE POSTMASTER
5 TO SCHEME	FROM A CORRESPONDENT.—	TO THE EDITOR OF THE COURIER.— Sir,—May I trouble you to excuse me or apologise, which has made in your last column a general mention of the stealthy and mysterious creature seen at Loch Ness, a most un- likely

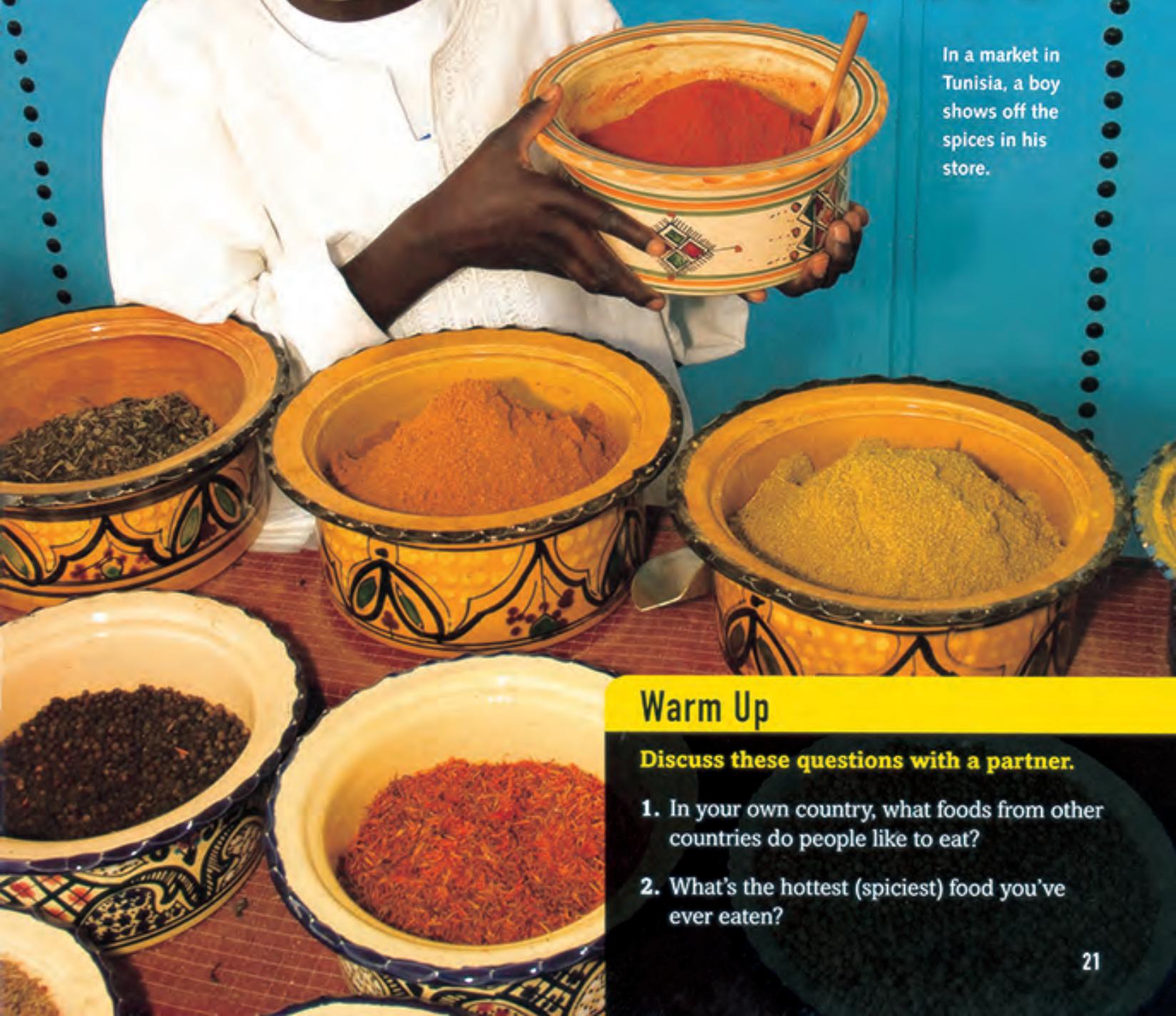
- Newspapers in the 1930s published stories about the monster, but they had no pictures.

B. Discuss. Discuss these questions with a partner.

1. Do you believe there is a creature in Loch Ness? Why do you think so many people have reported seeing Nessie?
 2. Look back at the mysteries mentioned in this unit. Which things can scientists explain? Which things can't they explain?

FAVORITE Foods

In a market in Tunisia, a boy shows off the spices in his store.



Warm Up

Discuss these questions with a partner.

1. In your own country, what foods from other countries do people like to eat?
2. What's the hottest (spiciest) food you've ever eaten?



Before You Read

A. Quiz. What do you know about pizza? Look at the pictures and captions on pages 22–24. Then answer the questions below.

1. Who made the first pizza?
2. Name some things people put on pizza.
3. What is your favorite pizza topping?

B. Predict. Read the title and subheadings on pages 23–24.

Check (✓) the questions you think the passage answers.

- Where is pizza from?
- What kind of pizza do most people like?
- When did people first put tomatoes on pizza?

Many people believe pizzas were first made by the Greeks. Pictures like this one show the Romans made them, too. They made large, round pieces of bread and put food, olive oil, and spices on them.



The History of PIZZA

- 1 Today, pizza is one of the world's favorite foods. All over the world, people make different pizzas, with different **ingredients**. But where does pizza come from? And who made the first one?

| The First Pizza

- 5 People have been making pizza for a very long time. In the Stone Age,¹ some people mixed flour² with water to make dough. Then they **cooked** it on hot rocks. Over time, people started using the cooked dough as a plate, covering it with **various** other foods, herbs, and spices.³ They had made the world's first pizza.

▲ The foods that people put on top of their pizzas are called "toppings." Lombardi's, in New York City, is said to be the first pizza restaurant in the U.S.

1 The **Stone Age** is a very early time in human history when people used things made of stone.

2 **Flour** is powder made from the seeds of wheat or corn.

3 **Herbs** and **spices** are used to add taste to food.

10 | A New Ingredient

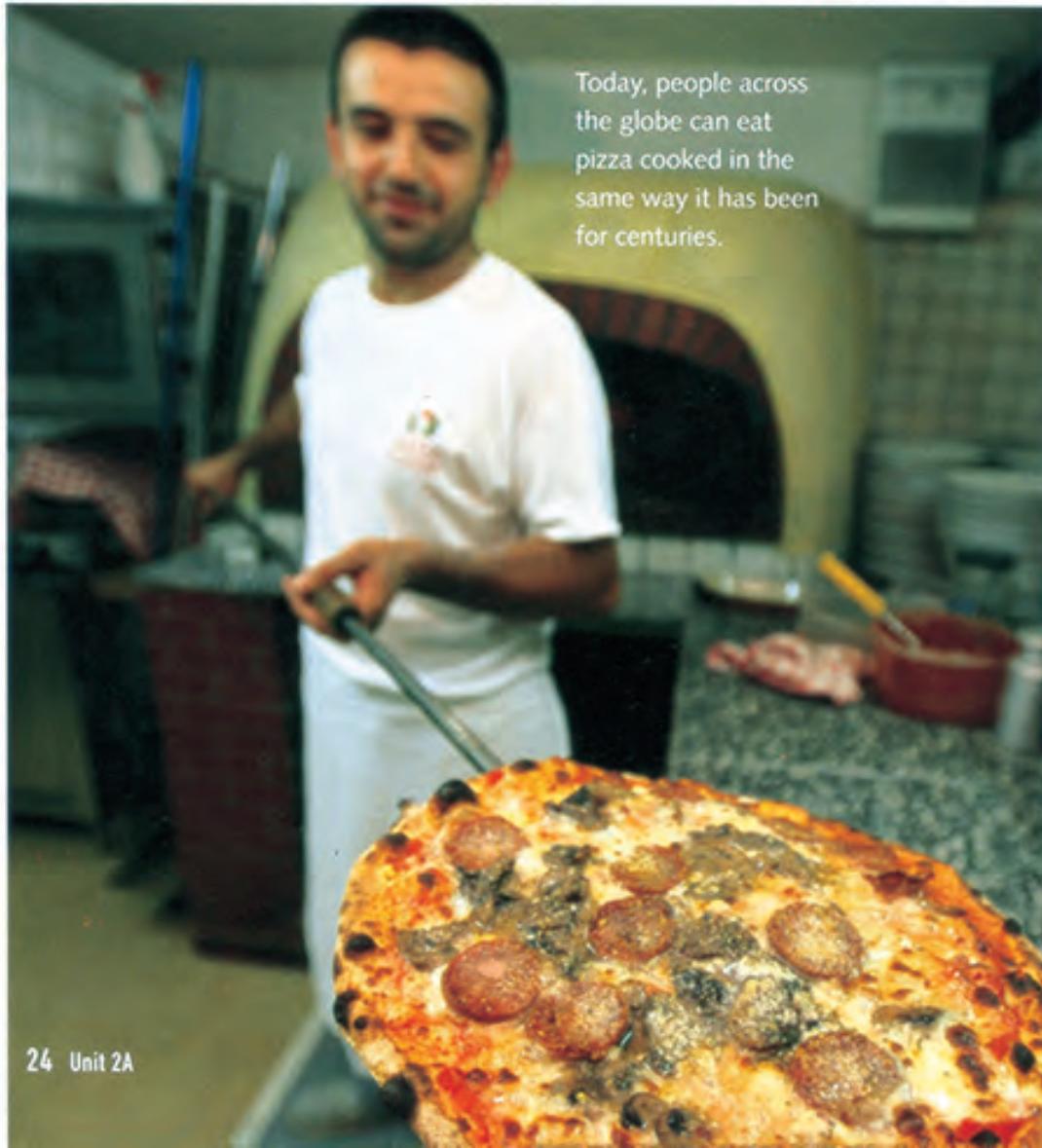
Then—in the early 1500s—European explorers brought the first tomatoes back from the Americas. Tomatoes are a **basic** ingredient in many pizzas today. At first, however, most Europeans thought eating tomatoes would make them sick. So, for about 15 200 years, few people ate them.



Slowly, people learned that tomatoes were safe to eat, as well as **tasty**. In the early 19th century, cooks in Naples, Italy, started the **tradition** of putting tomatoes on baking dough. The **flat** bread soon became a favorite food for **poor** people all over Naples. 20 In 1830, a cook in Naples took another big step in the history of pizza—he opened the world's first pizza restaurant.

| A World Food

Today, about five billion pizzas are made every year around the world. In the U.S. alone, people eat about 350 slices every second! 25 People may not know it, but every piece is a slice of history.



Today, people across the globe can eat pizza cooked in the same way it has been for centuries.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Main Idea

- What is the main idea of the passage?
 - Stone Age people made the first pizza.
 - Pizza was an important food in Naples, in Italy.
 - Pizza has a long history and has changed over time.

Detail

- What does *people started using the cooked dough as a plate* (lines 7–8) mean?
 - People put other foods on top of the dough.
 - People cooked the pizza dough on hot rocks.
 - People used the same pizza dough again and again.

Paraphrase

- In lines 16–17, the phrase *safe to eat, as well as tasty* could be replaced with _____.
 - only safe when they tasted good
 - safe to eat, and they tasted good
 - good to eat if they were cooked well

Vocabulary

- In line 17, the word *century* refers to _____.
 - 50 years
 - 100 years
 - 200 years

Detail

- Who were the first people to put tomatoes on pizza?
 - people in the U.S.
 - people in Naples, Italy
 - people in the Stone Age

Inference

- Which of the following sentences is likely to be true?
 - Tomatoes were a basic ingredient in pizzas in the 1700s.
 - The first pizzas in Naples didn't cost much money.
 - Europeans in the 1500s didn't like the taste of tomatoes.



Did You Know?

The world's largest pizza was made in Italy. It was about 40 meters (131 feet) across.

Reading Skill

Identifying the Parts of a Passage

A reading passage can have several parts. Look at every part to get a complete understanding of the passage. This is very useful when previewing a passage or predicting what it contains. These parts include:



The **title** is a kind of **heading**. It tells you what the whole text is about.

Subheadings above paragraphs tell you what they are about.

The **main text** contains the most important information.

Photos and illustrations show information visually.

Globes and maps show you where in the world a place is. They also give you more visual information about a place.

Captions explain the pictures.

Footnotes give meanings for harder vocabulary words or more information.

A. Identifying. Look back at the passage on pages 23–24. Which parts of a passage are used there? Check (✓) the parts you can find.

- a title photos a globe
- subheadings illustrations a map
- a main text captions footnotes

B. Scan. Look back at the passage again, and answer the questions below.

1. How many paragraphs are there? (3 / 5)
2. How many headings are there? (4 / 6)
3. Does every picture have a caption? (Yes / No)
4. How many footnotes are there? (3 / 5)
5. Is there a globe or map? (Yes / No)

Critical Thinking Discuss with a partner. Why do you think pizza is so popular? Do you think pizza is good for you? Why or why not?

Vocabulary Practice

A. Words in Context. Complete each sentence with the correct answer.

1. If you are **poor**, you have _____ money.
a. a lot of b. only a little
2. An example of something **flat** is _____.
a. a piece of paper b. a ball
3. To **cook** food, you usually make it _____.
a. cold b. hot
4. A **tradition** is _____ way to do something.
a. a new b. an old
5. An example of a **basic** food is _____.
a. bread or rice b. chocolate cake

B. Completion. Complete the information below with words from the box. One word is extra.

cook flat ingredient tasty traditional various

Who Made the First Hamburger?

Around the world, there are 1. _____ people who say the first hamburger was made in their country. For example:

Some say that in the 1200s, Mongolian soldiers had no time to 2. _____ their food. So they put meat under their saddles¹ to make it soft and flat, like the patties in hamburgers today.

Others in Hamburg, Germany, say hamburgers came from "Hamburg steak"—a(n) 3. _____ German dish. The main 4. _____ in this dish is salty meat, which is put on bread.

One story says, in 1885, a man named Charles Nagreen was selling meatballs at a U.S. fair. The meatballs were very 5. _____, but were hard to eat while walking. So Nagreen put them between pieces of bread. Without knowing it, he had made a new type of food.

Which story is true? No one knows for sure.

▼ A hamburger



¹ A **saddle** is a seat for a rider that is placed on a horse's back.

**Word
Partnership**
Use **basic** with:
(n.) basic skills,
basic needs,
basic training,
basic questions.

HOT Carolina Reaper
1.5–2 million SHU

Trinidad Moruga Scorpion
1,463,700 SHU

Naga Jolokia 1,041,427 SHU

Dorset Naga 923,000 SHU

Tabasco 190,542 SHU

Thai Chili 60,000 SHU

Jalapeño 5,500 SHU

MILD Sweet Bell Pepper 0 SHU

Before You Read

A. True or False. Look at the information above. Then mark each sentence below as true (T) or false (F).

- | | |
|---|----------|
| 1. The Trinidad Moruga Scorpion is hotter than the Dorset Naga. | T F |
| 2. The Scoville is a type of chili pepper. | T F |
| 3. Tabasco peppers are hotter than jalapeños. | T F |
| 4. Sweet bell peppers have a very high SHU level. | T F |

B. Scan. In Assam, India, a woman named Anandita Dutta Tamuly likes to eat very hot chilies. Quickly scan the passage on the next page. Which of the chilies above is she famous for eating?



Scientists use Scoville heat units (SHU) to rate a chili pepper's "heat" level.

The Hottest Chilies

- 1 You may have **experienced** the feeling—your mouth feels like it's on fire, and the heat causes your eyes to water. You've just eaten one of nature's hottest foods—the chili pepper!

- 5 Chili peppers, also called chilies, are found in **dishes** around the world. They are in dishes like Indian curries, Thai tom yum soup, and Mexican enchiladas. Chilies come from the **capsicum plant**. They are "hot" because they **contain** something called *capsaicin*.

- 10 Capsaicin is very good for your health. It helps you breathe better, and it may even help keep you fit: Capsaicin makes you feel less **hungry**. It also makes your body burn more calories.¹

- 15 We can **measure** the heat of chilies in units called Scoville heat units (SHU). The world's hottest chili is the Carolina Reaper. It sometimes measures up to 2 million SHU!

- 20 Eating a hot chili can be **painful**, but some people really like to eat them. **Recently**, Anandita Dutta Tamuly, a woman from Assam, India, became famous for eating chilies. She ate 51 hot peppers in just two minutes! The peppers she ate were Naga Jolokia ("Ghost Peppers"). They grow in Assam and are the third hottest chilies in the world.

- 25 "I found eating chilies was a great way to stay healthy," says Tamuly. She began eating chilies when she was a child. She eats chilies when she is sick, too. "Every time I have a cold or flu, I just munch on² some chilies and I feel better. To be honest,³ I barely notice them now."



▲ Anandita Dutta Tamuly eats a tray full of Naga Jolokia, "Ghost Peppers."

¹ Calories are units used to measure the energy value of food.

² If you **munch on** food, you eat it, often noisily.

³ If someone is **honest**, they tell the truth.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. What is the reading mainly about?
 - a. how to eat very hot chili peppers
 - b. interesting facts about hot chili peppers
 - c. ideas for cooking using chili peppers

Purpose

2. What is the purpose of the third paragraph (from line 10)?
 - a. to explain why eating chilies is painful
 - b. to show the effect of chilies on the mind
 - c. to inform you about how chilies are good for you

Detail

3. How is capsaicin good for your health?
 - a. It helps you breathe better.
 - b. It makes you feel happier.
 - c. It makes you feel hungrier.

Detail

4. How many SHUs are in the world's hottest chili pepper?
 - a. up to 1,000,000
 - b. up to 2,000,000
 - c. up to 3,000,000

Detail

5. Which of the following sentences about Anandita Dutta Tamuly is true?
 - a. She is making a movie about chilies.
 - b. She uses chilies to help sick people.
 - c. She started eating chilies as a child.

Paraphrase

6. In line 27, the phrase *I barely notice them now* can be replaced with _____.
 - a. I usually don't eat hot chilies anymore
 - b. I feel the heat of the chilies even more now
 - c. I almost don't feel the heat of the chilies now



Did You Know?

It's a tradition in Mexico to put chilies on Christmas trees.

Reading Skill

Pronoun Reference

Pronouns are words such as *he*, *she*, *it*, *they*, and *them*, and usually refer to a noun earlier in a passage. To understand a passage, it is important to know what each pronoun refers to.

Sara bought chilies. She put them in my favorite curry. It was too hot to eat!

A. Reference. In each sentence, draw an arrow between the pronoun in **bold** and the word it refers to, as in the example above.

1. The jalapeño is a popular chili from Mexico. **It** takes its name from Jalapa, in Veracruz.
2. My brother and sister asked my mother not to put chilies in the food **she** made.
3. After Europeans brought chilies from the Americas, **they** spread very quickly around the world.
4. The cayenne pepper is hotter than the sweet bell pepper, but **it** isn't as hot as the Carolina Reaper.
5. Indians put chili peppers in many of their dishes. They often add **them** to curries.



► People in the Americas were eating chilies as early as 7,500 B.C.

B. Reference. Look back at the passage on page 29. Find the following sentences in the passage, and write the word each pronoun in **bold** refers to.

1. **It** helps you breathe better. (lines 10–11) it = _____
2. She began eating chilies when **she** was a child. (line 24) she = _____
3. To be honest, I barely notice **them** now. (line 27) them = _____

Critical Thinking Discuss with a partner. What do you like or dislike about chili peppers? Why do you think Anandita Dutta Tamuly ate so many Naga Jolokia peppers?

Vocabulary Practice

A. Completion. Complete the information below with words from the box.

contains dishes measure painful recently

They may not look very tasty, but some types of cactus plants can be eaten and are very healthy. In Mexico, *nopalitos*—young stems of the cactus—have been eaten for hundreds of years.

Eating cactus has 1. _____ become more and more popular outside of Mexico. There are many tasty and healthy 2. _____ that use cactus stems. One easy way to cook them is in a pan, in some oil. This is how to do it.

- Clean and cut up the cactus stems. Watch out for the sharp parts of the plant! You don't want to cut yourself. That could be quite 3. _____.
- Next, 4. _____ how much oil you need. Heat the oil in a pan. Add the pieces of cactus. Add some salt and cover the pan to let the cactus cook.
- The cactus 5. _____ a strange liquid. Cook the cactus until all the liquid comes out and dries up. After that, the rest of the cactus stem can be eaten.



In a Mexican market,
a man cuts and
cleans cactus stems.

B. Definitions. Match the words in red with their definitions.

- | | | |
|----------------------|---|---|
| 1. plant | • | • a. a short time ago |
| 2. hungry | • | • b. having a need for food |
| 3. measure | • | • c. a living thing that grows in the ground |
| 4. recently | • | • d. to find out something's length, height, etc. |
| 5. experience | • | • e. to do or see something, or have it happen to you |

Word Partnership

Use **painful** with: (n.) painful cut, painful **experience**, painful reminder, painful **memory**.

VIEWING A Taste of Mexico

Before You Watch

A. Definitions. Look at the picture and read the caption.

Pay attention to the words in **bold**. Then match them with their definitions below.



◀ The land around the **historic** city of Oaxaca (/we'həkə/) in Mexico is very hard for people to move across. So, many of the **native**¹ **cultures** in this region—some that have **developed** for over 13,000 years—have been kept safe. This means their traditions, as well as their unique foods, are still around today. In fact, it is this **complex** mix of native traditions and cultures that makes Oaxacan food—for example, the seven types of *mole*² it is famous for—one of a kind.

1 If something is **native** to a place, it originally comes from there.

2 **Mole** is a kind of sauce that has chilies and often chocolate in it.

1. _____ : famous or important in history
2. _____ : grew; slowly started to exist
3. _____ : having many parts, often different from each other
4. _____ : the ideas and traditions of different groups of people

B. Predict. You will hear the following words in the video.

traditions dishes ingredients chocolate dances national treasures

What do you think the video will be about? Discuss your ideas with a partner.

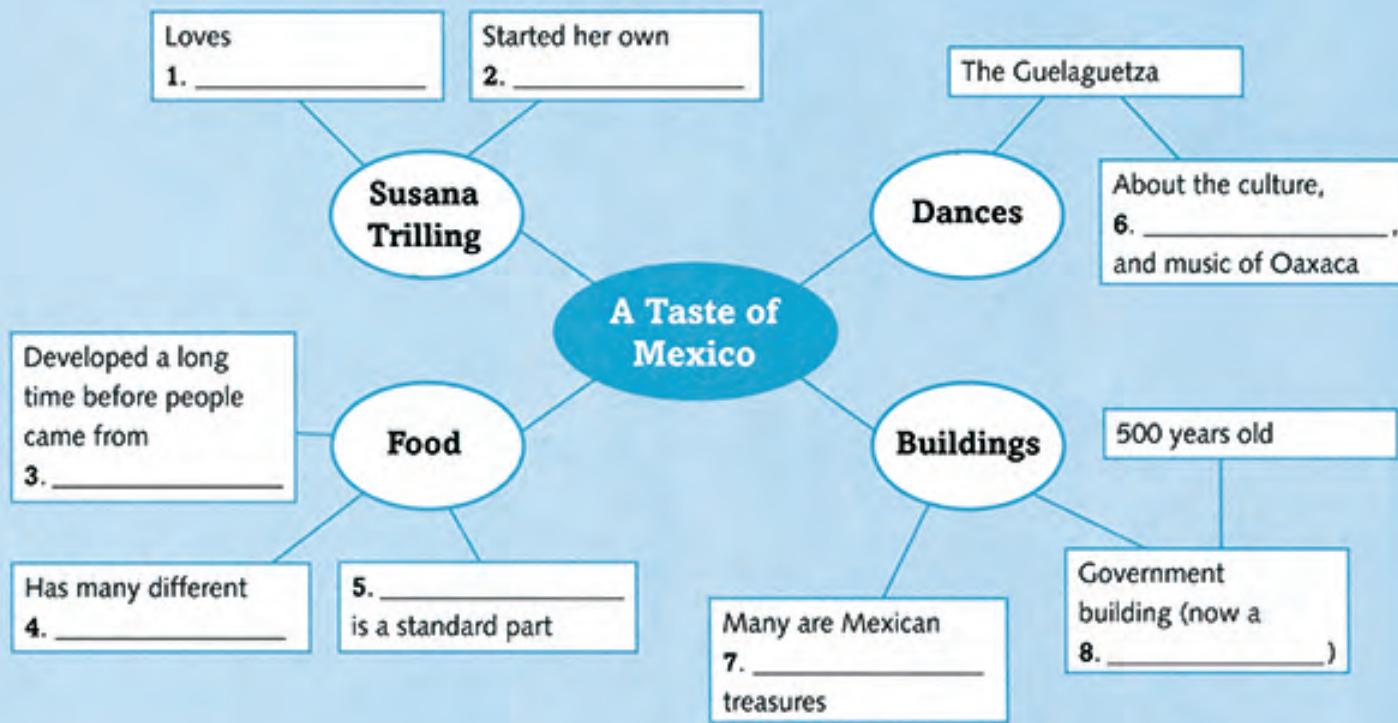
While You Watch

Checking. As you watch the video, check your answers in **Before You Watch B**. Were your ideas correct?

After You Watch

A. Completion. Complete the word web with words and phrases from the box.

chilies cooking school Europe history hotel ingredients mole national



B. Discuss. Discuss these questions with a partner.

1. What traditions about food do you have in your country?
2. If you could go to a cooking school, what kind of cooking would you want to learn?



◀ A Zapotec woman makes traditional tamales. The Zapotec people are one of Oaxaca's native cultures.

Cool JOBS



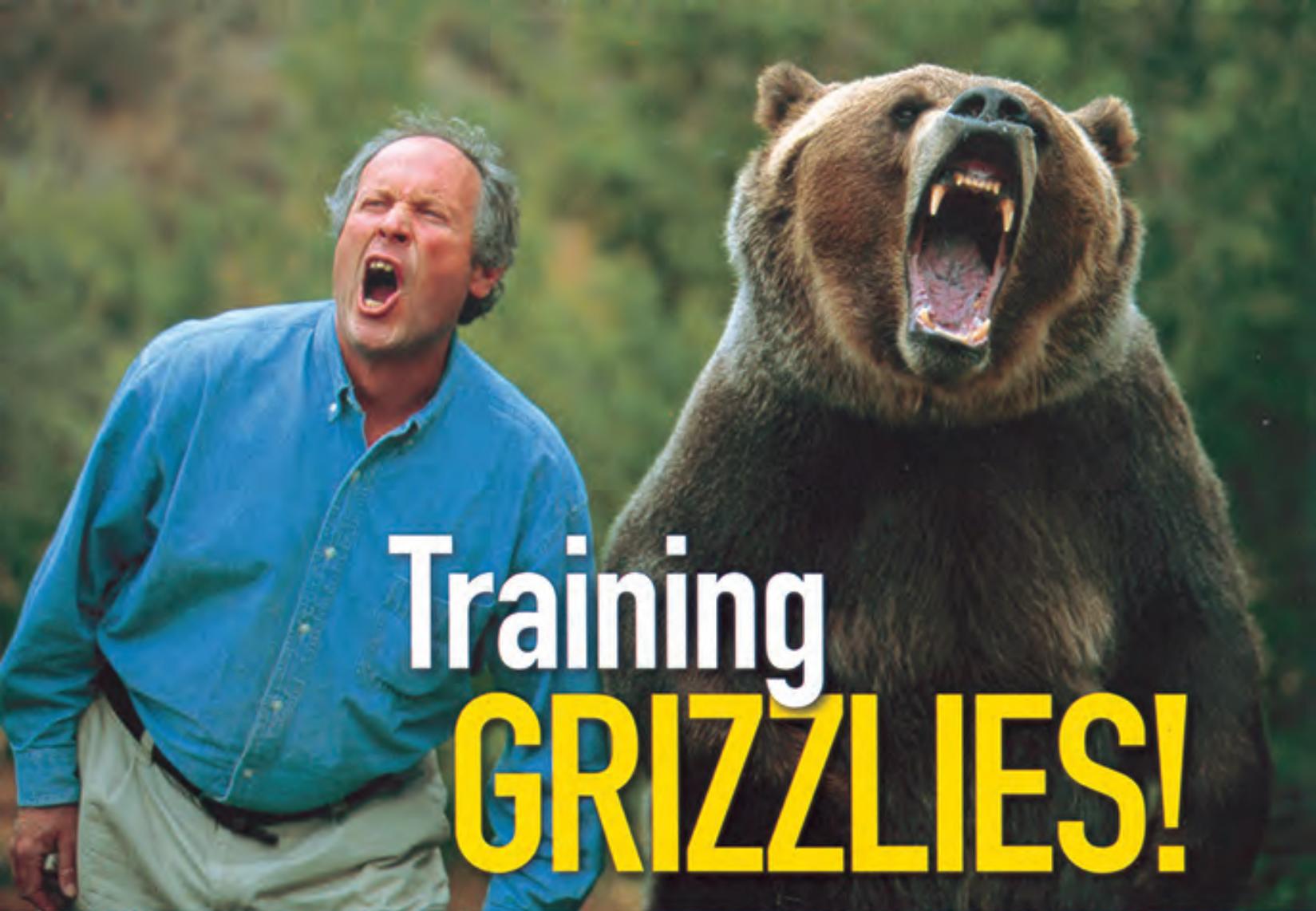
Hi-tech suits keep climate scientists safe from the extreme cold as they are lowered onto the Arctic ice.



Warm Up

Discuss these questions with a partner.

1. What are the people in the photo doing? Would you like this job?
2. What interesting—or “cool”—jobs can you name? What makes them “cool”?



Training **GRIZZLIES!**

Before You Read

A. Definitions. Look at the photos and read the captions on pages 36–37. Then match each word below with its definition.

- | | | |
|------------|---|--|
| 1. wrestle | • | a. a baby lion, wolf, or bear |
| 2. paw | • | b. a person in a TV show, movie, or play |
| 3. actor | • | c. the foot of an animal, like a dog or bear |
| 4. cub | • | d. to teach a person or an animal |
| 5. train | • | e. to use your body to fight someone or push them down |

Author Doug Chadwick roars next to Tank, a bear from the Wasatch Wildlife Training Center. At the center, Lynne and Doug Seus train animals to be actors in TV shows and movies.

B. Scan. When he was 16, Russell Chadwick had an unusual summer job. Scan the first two paragraphs on page 37. Answer the questions below. Read the passage to check your answers.

1. What did Russell Chadwick do that summer?

2. Where did Russell Chadwick work?



▲ Russell Chadwick copies Tank as he holds his paw up in the air.



▲ Russell Chadwick wrestles with a little bear cub.

1 Russell Chadwick **remembers** the summer he turned 16. It was the summer he wrestled with grizzly bears!

It all started when Russell worked as an animal trainer at Wasatch Rocky Mountain Wildlife. Wasatch Wildlife is an 5 animal-training center in Utah, in the U.S. At the center, Doug and Lynne Seus train animals to be actors.

Doug and Lynne asked Russell to help **take care of** two four-month-old grizzly bear cubs named Little Bart and Honey Bump. That's more **difficult** than it sounds. Baby 10 bears are big!

Russell's job was to play with the bears. This teaches them to be **comfortable** with humans. Playing with the bears was fun, but Russell had to remember that bears are **wild** animals.

"One time, Honey Bump took a bite¹ out of my back, and I 15 had to wrestle her to the ground. But it also showed me how smart² she is. She knew she had done something wrong and 'apologized' by putting her head in my lap."³

Russell found that bears can understand more than just "sit" and "stay." For example, when Russell said "Peekaboo!" to 20 one baby bear, he **covered** his eyes with his paws, just like a human child.

Russell didn't get much money for doing this job. But he 25 **enjoyed** the experience. He also learned a lot from it. When you've wrestled with a grizzly bear, things like work and exams don't seem so difficult anymore!



¹ A **bite** refers to a small piece of food, or something you grab with your teeth.

² If someone is **smart**, they are good at learning things.

³ Your **lap** is the front area formed by your thighs when you are sitting down.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

- What is the reading passage mainly about?
 - how to get a summer job in Utah
 - why wild animals make good actors
 - what Russell Chadwick did for his summer job

Vocabulary

- In line 1, we could change the word *turned* to _____.
 - became
 - grew up
 - went around

Detail

- Which of these sentences about Doug and Lynne Seus is NOT true?
 - They are movie actors.
 - They are animal trainers.
 - They work at Wasatch Rocky Mountain Wildlife.
- What was the main thing that Doug and Lynne Seus wanted Russell Chadwick to do?
 - play with the bears
 - teach the bears to sit and stay
 - teach the bears to live in the wild

Reference

- In line 20, *he* refers to _____.
 - Doug Seus
 - a baby bear
 - Russell Chadwick

Main Idea

- What is the main idea of the last paragraph (from line 22)?
 - Tests and homework are good ways to get ready for a summer job.
 - Russell Chadwick's experience helped him get ready for other things in his life.
 - Russell Chadwick didn't get enough money for his summer job.

Did You Know?

When they stand on their back legs, grizzly bears can be over 2.4 meters (8 feet) tall.



Reading Skill

Finding the Correct Definition of a Word in a Dictionary

When you look up a word in a dictionary, there is often more than one definition. To find the correct definition, first identify what part of speech the word is (e.g., noun, verb, adjective, adverb). Then look at the other words in the sentence to help you find the correct definition.

A. Matching. Identify the part of speech of the word ***smart*** in each sentence below. Then match each sentence to the correct definition.

1. The actor's clothes are very ***smart***. _____
2. I bought a ***smartphone***. _____
3. Smoke makes my eyes ***smart***. _____
4. The bear is very ***smart***. _____

- smart*** \'smɑ:t\
adjective
a. good at learning
b. fashionable
c. controlled by computers
verb
d. to hurt

B. Completion. Circle the part of speech for each underlined word. Then look up the word in a dictionary, and write down its definition.

1. At the center, Doug and Lynne Seus train animals.

(lines 5–6)

part of speech: **noun / verb**

definition: _____

2. That's more difficult than it sounds. (line 9)

part of speech: **noun / verb**

definition: _____

3. Honey Bump took a bite out of my back. (line 14)

part of speech: **noun / adverb**

definition: _____

4. I had to wrestle her to the ground. (lines 14–15)

part of speech: **noun / adjective**

definition: _____

Critical Thinking Discuss with a partner. What animals do you think are easy to train? Would you like a summer job like Russell Chadwick's? Why or why not?



Animal trainer Doug Seus works with Tank, a grizzly bear actor.

Vocabulary Practice

A. Matching.

Read the information below. Then match each word in red with its definition.

There are many jobs that animal-lovers would be good at. For example, some people work as caregivers. Their job is to **take care of** animals. Caregivers need to feed, wash, and play with the animals they work with.

People who **enjoy** teaching animals to do tricks could become trainers. Trainers can work in a pet store, an animal park, or a zoo, but if they want to train people's pets, they have to be **comfortable** teaching the owners, too.

Some animal-lovers become veterinarians. Being an "animal doctor" can be fun sometimes. However, a vet's work is often quite **difficult**.



▲ A zoo vet holds a baby orangutan.

1. _____ : not easy
2. _____ : to like or have fun doing something
3. _____ : okay with; relaxed
4. _____ : to look after something and keep it safe

B. Words in Context.

Choose the correct word or phrase to complete each sentence below.

1. If you **remember** something, you _____.
a. think of it again b. forget all about it
2. Examples of **wild** animals are _____.
a. dogs and cats b. lions and bears
3. If you **cover** something with your hands, you put your hands ____ it.
a. under b. over
4. Something that is **difficult** is _____ to do.
a. hard b. easy
5. If you **apologize**, you say that you are _____.
a. happy b. sorry

Thesaurus

difficult Also look up:
(adj.) hard, tough, challenging

Getting the Shot



Before You Read

A. Discussion. Look at the photo above and read the caption. Then discuss these questions with a partner.

1. What kinds of things do you usually take photos of?
2. Do you think a photographer's job is easy?

B. Skim. Skim the interview on pages 42–43. Then write each interview question above its answer in the passage.

- a. I want to be a photographer. Do you have any advice for me?
- b. What kind of photographers is the *National Geographic* magazine looking for?
- c. Is it difficult to get a job as a photographer today?
- d. How did you become a *National Geographic* photographer?

▲ National Geographic photographer Joel Sartore photographs an Adélie penguin chick in Antarctica.



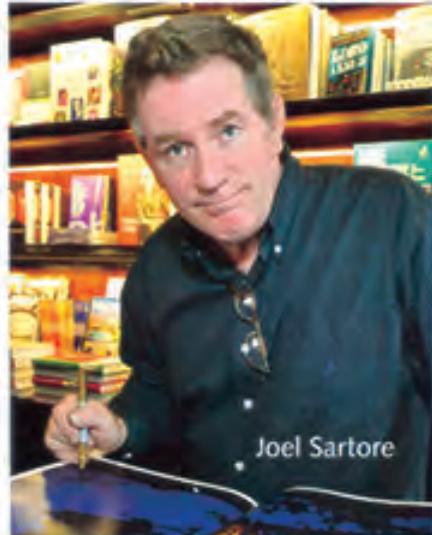
Monarch butterflies at rest completely cover a tree.

1 An interview with Joel Sartore

*Joel Sartore is a writer, teacher, and photographer. His words—and **images**—show his **passion** for photography and for the world around us.*

5 **Question 1:** _____

My first job was for a newspaper. After a few years there, I met a *National Geographic* photographer. He liked my photos and said I should send some to the magazine. So I did. That led to a one-day job. And that 10 led to a nine-day job, and so on.



Question 2: _____

To get into *National Geographic*, you have to give them something they don't have. It's not **enough** just to be a great photographer. You also have to, for example, be 15 a scientist, or be able to dive under sea ice, or **spend** several days in a tree.



At the cutest-baby contest in Barrow, Alaska, the babies wear coats made of seal and wolf fur.

Question 3: _____

It's now more difficult to work for magazines. Technology now makes it easy to take good pictures, which means there are more photos and photographers. Also, the web is full of photos from all around the world that are free, or **cost** very little. These photos are often good enough to be put in books and magazines that once **paid** for photographers and their photos.

Question 4: _____

Advice?¹ Well, work hard. Be passionate about every project you work on. Take lots of pictures in different **situations**. Look at others' photos thoughtfully and learn from them. And be curious² about life. There's something to photograph everywhere.

But be a photographer for the right reasons. If you do it for the money, you **probably** won't really be happy. Do you want to make the world a better place, or make people see things in a different way? If so, you'll enjoy the work much more.

¹ If you ask someone for **advice**, you ask them what you should do.

² If you are **curious** about something, you want to know more about it.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Vocabulary

1. In the title *Getting the Shot* on page 41, what does the word *shot* mean?
- job
 - photo
 - magazine

Detail

2. Which of the following sentences about Joel Sartore is true?
- His first job was with *National Geographic*.
 - He once worked for a newspaper.
 - He wants to be a teacher someday.

Purpose

3. What was Sartore's main point in his answer to Question 3?
- Photographers need to use more technology.
 - Putting your photos online can lead to other jobs.
 - It's not easy to get paid work as a photographer these days.

Paraphrase

4. The sentence *There's something to photograph everywhere.* (line 28) is closest in meaning to _____.
- Anyone can be a photographer these days.
 - Take more photos than you think you will need.
 - You can find interesting things to take pictures of anywhere.

Inference

5. Which of the following things can you infer from the passage?
- Sartore is a scientist.
 - Sartore didn't like his first job.
 - Sartore carries a camera everywhere he goes.

Main Idea

6. What is the main idea of the last paragraph (from line 29)?
- You should try to see people in different ways.
 - If you work hard, you can make money as a photographer.
 - You should ask yourself why you want to be a photographer.



Did You Know?

The first photo ever was taken in 1826. The first color photo (above) was taken in 1861. It was of a ribbon.



Reading Skill

Understanding the Use of Commas

Knowing how writers use commas helps you read and understand texts better. Look at some rules for comma use. You should use a comma . . .

- to separate things in a series
e.g., *I enjoy taking pictures of people, animals, and flowers.*
- to separate a city, state, or country
e.g., *I recently traveled to Rome, Italy, to study photography.*
- to set off an introductory word or expression
e.g., *At first, I was shy about taking pictures.*
- to separate different ideas in a sentence
e.g., *I have a camera, but it's not a very good one.*
- to set off a word or phrase within a sentence
e.g., *I am, however, a very good photographer.*

A. Analyzing. Check (✓) the sentences below that use commas correctly.

1. I flew to San Diego, California, last week to see my sister.
2. She moved, there several years ago.
3. When I got there, my sister took me to the zoo.
4. She works at the zoo, so she gave me a tour.
5. She works with, bears wolves and, monkeys.

B. Completion. Add commas to the sentences below. (The number in parentheses shows the number of commas needed.) Look back at the passage on pages 42–43 to check your answers.

1. Joel Sartore is a writer teacher and photographer. (2)
2. And that led to a nine-day job and so on. (1)
3. To get into *National Geographic* you have to give them something they don't have. (1)
4. If you do it for the money you probably won't really be happy. (1)
5. If so you'll enjoy the work much more. (1)

Critical Thinking Discuss with a partner. What other questions would you have asked Joel Sartore? Do you think you would enjoy being a photographer? Why or why not?

Vocabulary Practice

A. Completion. Choose the correct words in red to complete the information below.

Stories Behind the Shots



Joel Sartore took this photo of an ocelot at the Omaha Zoo in Nebraska, U.S.A. Sartore 1. (spent / paid) a lot of time with the animal, but getting the shot was not easy. "They hardly ever hold still," says Sartore. "So I really had to act quickly when he looked into my camera's lens." Many animals will stand still only long 2. (probably / enough) to get food. After they eat enough and are not hungry anymore, the photo shoot is over.



Behind this 3. (passion / image) is another great story. At an aquarium in Baltimore, Maryland, U.S.A., Sartore came across a very angry frog. While he tried to take a photo of it, it tried to bite him. He never thought he would be in a 4. (situation / cost) where he was afraid of a frog! "First time for everything," says Sartore.

B. Words in Context. Read the sentences below. Then mark each sentence as true (T) or false (F).

- | | |
|---|--------|
| 1. Something that's probably true is likely to be true. | T F |
| 2. When you're paid for a photo, you get money for it. | T F |
| 3. If something is free, it costs a lot. | T F |
| 4. If you have passion for something, you like doing it very much. | T F |
| 5. If you have enough money, you don't need any more. | T F |

Word Partnership

We use **spend + time** to mean we allow time to pass when doing something (e.g., *I spent an hour at the mall.*). We use **spend + money** to mean we use money to pay for something (e.g., *I spent \$100 on a new camera.*).

VIEWING Right Dog for the Job

Before You Watch

- A. Definitions.** Look at the picture and read the caption below. Pay attention to the words in **bold**. You will hear them in the video.



Since 1991, Canine¹ Assistants has **trained** over 1,500 dogs. In Canine Assistants' super-dog **program**, puppies learn more than just tricks. These very **smart** dogs will grow up to be **service dogs** and will be given to people who need them. The **recipients** are people who cannot move around without help or have other special needs.² These dogs have an important job to do. It is the **animal trainers'** job to teach them to do it.

¹ The term **canine** refers to a dog or doglike animal. For example, wolves and foxes are also canines.

² In this context, **special needs** refers to mental, emotional, or physical problems that cause some people to need help with their daily activities.

- B. Predict.** What do you think the trainers in the video teach the dogs to do?

Check (✓) your ideas from the skills below.

- | | | |
|---|--|---|
| <input type="checkbox"/> pick up things | <input type="checkbox"/> call the police | <input type="checkbox"/> turn lights on |
| <input type="checkbox"/> run in a race | <input type="checkbox"/> attack bad people | <input type="checkbox"/> be comfortable with people |
| <input type="checkbox"/> find help | <input type="checkbox"/> drive a car | <input type="checkbox"/> perform in contests |
| <input type="checkbox"/> buy groceries | <input type="checkbox"/> use a phone | <input type="checkbox"/> get along with other animals |

While You Watch

Checking. As you watch the video, check your answers in **Before You Watch B**. Which skills are mentioned in the video? Are your answers correct?

After You Watch

- A. Completion.** Choose the correct word or phrase to complete each of the sentences below.



1. According to the video, the dogs have to learn to **(take care of themselves / want to help their owners)**.

A photograph of a black dog walking away from the camera in a large room filled with other dogs and people. The room appears to be a puppy training facility.

2. Scientists think this kind of training makes the dogs **(better learners / healthier)**.

A photograph of a person in a grocery store aisle, looking at a display of fresh vegetables like lettuce and cauliflower.

- B. Paraphrasing.** The sentences below are from the video.

What do the phrases in **bold** mean?

1. *If their owner is in trouble, the dogs have to press a big button . . .*

"is in trouble" = **(needs help / has done something bad)**

2. *When the recipient says: "Will you pick this up for me?" It's all **up to the dog**.*

"up to the dog" = **(only the dog can do it / the dog can decide)**

3. *At eight weeks they hit a time of fear, where just about everything is frightening.*

*If they don't **get past** it now, they never will.*

"get past" = **(move away from / find a way to deal with)**

- C. Discuss.** Discuss these questions with a partner.

1. Would you like to be a trainer at Canine Assistants? If you were an animal trainer, what animal would you train?
2. Jennifer Arnold says the dogs must love their jobs to do them well. Do you think this is true for people, too? Why or why not?

Shipwrecks



A shipwreck lies half-covered by the sands of the Namib Desert in Namibia.

Warm Up

Discuss these questions with a partner.

1. Do you know about any famous shipwrecks?
2. What do you think happened to the ship in the photo?



Called the "Ship of Dreams," the *Titanic* was the biggest passenger ship of its time. Its makers said it was "unsinkable," but the great ship sank on its very first trip.

April 10, 1912

The *Titanic* leaves England, traveling toward New York.

April 14, 11:40 p.m.

The *Titanic* smashes into an **iceberg**.

April 15, 12:00–2:20 a.m.

Water begins to fill the ship's lower levels. **Passengers**, mostly women and children, get into small lifeboats. But there aren't enough lifeboats.

Before You Read

A. True or False. Look at the picture and read the information above. Pay attention to the words in **yellow**. Then mark each sentence below as true (**T**) or false (**F**).

- | | | |
|--|----------|----------|
| 1. An iceberg caused the <i>Titanic</i> to sink. | T | F |
| 2. Most of the male passengers got into lifeboats. | T | F |
| 3. Over 1,500 passengers died. | T | F |
| 4. Nobody knew where the ship was for 100 years. | T | F |

B. Scan. Read the title and the first sentence of each paragraph on pages 51–52. How many times did Robert Ballard explore the *Titanic*? Then read the whole passage to check your answer.

I've Found the **TITANIC!**



April 15, 2:20 a.m.

The ship breaks into two and sinks. 1,514 people die that night.

August 31, 1985 The *Titanic*'s resting place is found after 73 years. Explorers use deep-sea **submarines** to study the **shipwreck** lying on the ocean floor.

- 1 As a boy, Robert Ballard liked to read about shipwrecks. He read a lot about the *Titanic*. "My lifelong **dream** was to find this great ship," he says.

On August 31, 1985, Ballard's dream came true. He found the wreck of the *Titanic*. The ship was in two main parts lying four kilometers (2.4 miles) under the sea. Using video cameras and an undersea robot,¹ Ballard looked around the ship. He found many **items** that told the sad story of the *Titanic*'s end. For example, he found a child's shoes, a reminder² of the many **deaths** that happened that night in 1912.

¹ A **robot** is a machine controlled by a computer.

² A **reminder** of something makes you remember it.

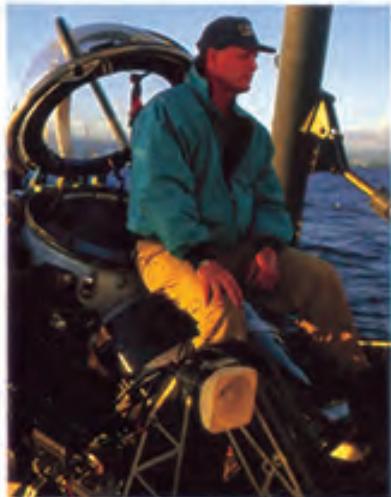
15 In 1986, Ballard visited the *Titanic* again. This time, he **reached** the ship in a small submarine. A deep-sea robot—a “swimming eyeball”—took photos inside the ship. When other people saw the photos, they wanted to visit the ship, too.

20 When Ballard **returned** in 2004, he found the *Titanic* in very bad **condition**. Other explorers had taken away about 6,000 items, like clothes, dishes, and shoes. Some even took pieces of the ship. They think these things should be moved to a safer place, but Ballard doesn’t **agree**.

25 Ballard believes that taking things from the *Titanic* is like robbing a grave.³ **Instead**, he wants to put lights and cameras on and around the shipwreck. This way, people can see the great shipwreck and remember what happened to it. “As long as she needs protection,”⁴ says Ballard, “the *Titanic* will always be part of my life.”

³ **Robbing a grave** is taking things from where a dead body is kept.

⁴ If someone gives you **protection**, they keep you safe from danger.



▲ Deep-sea explorer Robert Ballard with one of the submarines he used to explore the *Titanic*

“As long as she needs protection, the *Titanic* will always be part of my life.”

— Robert Ballard

Lights from a submarine break the darkness of the deep sea to show the bow (the front) of the *Titanic*.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

- What is the reading mainly about?
 - how visitors to the *Titanic* leave it in bad condition
 - Robert Ballard's hopes that more people will visit the *Titanic*
 - how Robert Ballard found the *Titanic* and wants to keep it safe

Detail

- The first time he explored the *Titanic*, Ballard did NOT _____.
 - take photos inside the shipwreck
 - find a child's shoes in the shipwreck
 - use a robot to look around the shipwreck

Detail

- Which of the following sentences about Ballard is true?
 - He read about the *Titanic* when he was a child.
 - He swam into the *Titanic* wreck to take photos.
 - On his second trip to the *Titanic*, he found the ship in bad condition.

Detail

- According to the passage, what did people see that made them want to visit the *Titanic*?
 - the submarine Ballard used
 - photos from inside the ship
 - items that were taken from the ship

Reference

- Who does *they* refer to in line 20?
 - Robert Ballard and his team
 - other visitors to the *Titanic* shipwreck
 - people from the *Titanic* who are still alive

Inference

- Which statement would Ballard probably agree with?
 - People should not remove anything from the *Titanic*.
 - Lights and cameras will hurt the remains of the *Titanic*.
 - The *Titanic* wreck should be moved out of the water completely.



Did You Know?

Each lifeboat on the *Titanic* could hold 65 people. Sadly, when the ship sank, many lifeboats were not full. One boat, for example, only had 35 people in it.



Reading Skill

Identifying a Paragraph's Main Idea

The main idea of a paragraph is its central idea. To determine the main idea, skim the paragraph and ask yourself, "What point is the author trying to make?" The first and last sentences of a paragraph, as well as its heading (if it has one), can also give you clues about the main idea.

A. Multiple Choice. What is the main idea of the text below? Circle **a**, **b**, or **c**.

- a. The *Carpathia* took over three hours to get to the *Titanic*.
- b. The *Carpathia* answered the *Titanic's* call and helped save lives.
- c. The *Carpathia* was too far away to help stop the *Titanic* from sinking.

On April 15, 1912, at 12:20 a.m., the British ship *Carpathia* got a message from the *Titanic*. The "Ship of Dreams" was sinking.

The *Carpathia* was 93 kilometers (58 miles) away. It traveled at top speed to where the *Titanic* was, even though there were dangerous icebergs in the ocean. It arrived at 3:30 a.m., over an hour after the *Titanic* sank. Still, the *Carpathia* was able to pick up 711 people.

The ship then went to New York, arriving there on April 18.

B. Matching. Look back at the passage on pages 51–52. What is the main idea of each paragraph?

- Paragraph 1:** a. Ballard read a lot about the *Titanic*.
b. Ballard's dream was to find the *Titanic*.
- Paragraph 2:** a. Ballard found items like a child's shoe.
b. Ballard finally found the shipwreck he was looking for.
- Paragraph 3:** a. Ballard reached the ship in a small submarine.
b. Ballard returned and took photos of the ship.
- Paragraph 4:** a. Other explorers had taken things from the *Titanic* wreck.
b. Ballard thinks taking items from the ship hurts the wreck.
- Paragraph 5:** a. Ballard wants to protect the *Titanic*.
b. Ballard wants to put lights and cameras around the ship.

Critical Thinking Discuss with a partner. Robert Ballard thinks no one should take things from the *Titanic*. Do you agree with him?

Vocabulary Practice

A. Completion. Complete the information using words from the box.

One word is extra.

conditions deaths items reach returned

Why were there so many 1. _____ on the night the *Titanic* sank? One reason is that the 2. _____ in which people waited to be saved were very bad. The air and water were very cold. Scientists believe most of the people who fell into the water died from the cold in less than 15 minutes. However, the main reason is that there were not enough lifeboats. There were 2,223 people on the ship, but lifeboats for only 1,186 people. Also, many people could not 3. _____ the boats before the ship sank. In the end, only 705 people 4. _____ safely to land.



▲ At first, most people could not believe the news of the *Titanic's* sinking.

B. Words in Context. Complete each sentence with the correct answer.

1. If people **agree**, they have _____ about a subject.
a. the same idea b. different ideas
2. If you drink tea **instead of** coffee, you drink _____.
a. tea b. both tea and coffee
3. An example of an **item** of clothing is _____.
a. warmth b. a jacket
4. A lifelong **dream** is something you have _____ all your life.
a. wanted to do b. tried to stop doing
5. If you **reach** a place, you are _____ get there.
a. able to b. not able to
6. If you **return** to somewhere, you go there _____.
a. for the first time b. again

Usage

If you **agree with** someone, you have the same idea or opinion as that person.
If you **agree to** do something, you say that you will do it.



Treasure Ship

Before You Read

A. Matching. Look at the picture and read the caption.

Match each word in **bold** with its definition.

1. _____ : land next to the sea
2. _____ : people who work on a ship
3. _____ : hard pieces inside a body that give it shape
4. _____ : the shape that all the bones in your body make

▲ In the 1500s, the fastest way to travel from Europe to India was to pass the **coast** of southern Africa. But **sailors** feared this area, named **Skeleton Coast** for the many animal **bones** found there. It is now famous for its large number of shipwrecks.

B. Predict. Read the first sentence of each paragraph on the next page.

Check (✓) the information you think you'll read about. Then read the passage to check your answers.

- how a ship became wrecked
- what was found on the shipwreck
- maps that show where the ship is
- a fight over gold coins



Part of the treasure of the *Bom Jesus*. Almost 23 kilograms (50 pounds) of gold coins were found in the sand.

- 1 On a **beach** along the Skeleton Coast, the sand is filled with diamonds. But in April 2008, workers found something very different: a piece of lost history—a shipwreck and its treasure.¹

The story began when a worker from the nearby diamond mines
5 found a piece of **metal** on the beach. It was a piece of copper. Soon, they found more copper and many gold coins.² The workers then found that these came from the remains of a large ship. The shipwreck was the real treasure.

Archeologists³ studied the shipwreck. They thought the ship
10 probably came from Portugal about 500 years before. However, it was difficult to find information about it. In 1775, many maps and books about the ships of the time were lost in a fire in Lisbon. "That left a big **hole** in our history," says Portuguese archeologist Alexandre Monteiro.

15 Finally, Monteiro found out that a group of ships left Lisbon for India in 1533. One of them, the *Bom Jesus*, **carried** 300 people and a large **amount** of treasure. The Portuguese sailors planned to use the treasure to buy **expensive** Indian spices. Archeologists now believe the wreck might be the *Bom Jesus*. This is because
20 many of the gold coins found were Spanish. Monteiro found an old **letter** in the Spanish royal archives.⁴ The letter said that Spain gave Portugal money for the trip. Two thousand Spanish coins were put on the *Bom Jesus*. This could explain why so many Spanish coins were found in a Portuguese shipwreck.

25 So what happened to the ship? The *Bom Jesus* probably got lost in a storm. Then it smashed into rocks near the coast and sank. There were few human bones found, so the sailors were probably able to get off the ship. But even if they swam onto the beach, they would have found themselves in a strange, **distant** land. They had no way to get home. They might as well have been on Mars. To this day, no one knows what happened to them.



¹ Treasure is something expensive and hard to find.

² A **coin** is a small piece of metal used as money.

³ An **archeologist** studies old things, to find out about the past.

⁴ The term **royal archives** refers to a place where old papers, etc., owned by the king are kept.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Detail

- What did the worker first find on the beach?
 - a diamond
 - a piece of gold
 - a piece of copper
- Which sentence is closest in meaning to *The shipwreck was the real treasure.* (line 8)?
 - There were a lot of expensive items on the ship.
 - The shipwreck was a very important discovery.
 - The coins on the ship weren't real, but it was an important ship.

Purpose

- What is the purpose of the third paragraph (from line 9)?
 - to describe how a fire destroyed a part of the ship
 - to describe what books and maps were like in the 1500s
 - to explain why it's difficult to know much about the ship

Detail

- What is NOT true about the *Bom Jesus*?
 - It was a Portuguese ship.
 - It was returning from India.
 - It was carrying Spanish money.

Fact or Theory

- Which statement is a fact?
 - All the sailors were able to swim to land.
 - There were 2,000 Spanish coins on the *Bom Jesus*.
 - The ship got lost in a storm and smashed into rocks.

Inference

- Why does the author say the sailors *might as well have been on Mars.* (lines 30–31)?
 - to show how bad the sailors' situation was
 - to compare the Skeleton Coast to what Mars looks like
 - to say that the sailors had found a beautiful but strange place

Did You Know?

There are over a thousand shipwrecks on the Skeleton Coast.



Reading Skill

Recognizing Compound Subjects and Objects

A sentence can have a single subject or a compound subject. A compound subject is a subject that contains two or more nouns. Sentences can also contain compound objects. Look at the examples below.

Compound subject: (Ballard and his team) found the Titanic in 1985.

Compound object: Ballard used (cameras and a robot) to look at the ship.

A. Analyzing. Find and circle examples of compound subjects and objects in the passage below. In each example, underline the different subjects or objects.

On July 17, 1956, the *Andrea Doria* left Italy for New York. The ship was carrying over 1,700 passengers and crew members. A week later, the *Stockholm* left New York for Sweden. That night, the *Andrea Doria* and *Stockholm* crossed paths with tragic results. Just after 11:00 p.m., the *Stockholm* smashed into the side of the *Andrea Doria*. The *Andrea Doria* began to slowly sink. The *Stockholm* helped with the rescue of the passengers, but there would be 52 deaths that night. Were darkness and bad weather the cause of the accident? It remains a mystery to this day.

B. Scan. Find examples of compound subjects and objects in the passage on page 57. Fill in the blanks.

1. Compound object: _____ and _____ (paragraph 2)
2. Compound subject: _____ and _____ (paragraph 3)
3. Compound object: _____ and _____ (paragraph 4)



▲ The *Andrea Doria* and the *Stockholm* crash into each other in the North Atlantic Ocean.

Critical Thinking Discuss with a partner. What do you think should happen to the treasure from ships like the *Bom Jesus*? Should the people who find it get to keep it? Why or why not?

Vocabulary Practice

A. Definitions. Read the information. Then complete the sentences below with the correct form of the words in red.

Silver Shipwreck

On August 2, 2013, a company called Odyssey Marine Exploration removed over 50,000 kilograms (120,000 pounds) of silver from a shipwreck off the coast of Ireland—the heaviest amount of the metal ever taken from a shipwreck. The ship, the S.S. Gairsoppa, was carrying tea, iron, and silver from the distant lands of India, when it sank in 1941. Today, that much silver is worth almost \$75 million. In addition to the silver, the company also found some newspapers and letters written by the sailors.



▲ Silver from the S.S. Gairsoppa

1. If you are _____ something, you are moving it somewhere.
2. The _____ of something is how much of it there is.
3. Something that is _____ is very far away in space and time.
4. Silver and gold are two types of _____.
5. A(n) _____ is a written message from someone, usually sent by mail.

B. Completion. Complete each sentence with a word from the box.

One word is extra.

beach distant expensive hole metals

1. After the ship ran into the rocks, a big _____ in its side let in water.
2. The ship sank quickly. Only one man was able to reach a(n) _____ and live to tell the story.
3. Many older ships carried a lot of silver and gold coins. More recent ships carry heavy bars of these _____.
4. Searching for shipwrecks can be _____. Some people can spend millions of dollars looking for a wreck.

Usage

Coast refers to a piece of land along or near the ocean, while **beach** refers to a piece of land near a large body of water that is filled with sand or small stones.

VIEWING Saving Ocean Life

Before You Watch

A. Definitions. Look at the picture and read the caption. Pay attention to the words in **bold**. You will hear them in the video. Match the words with their definitions below.



▲ Trawling is a way of fishing in which giant **nets** with heavy **weights** are put into the ocean. These nets are pulled along the **bottom** of the ocean, so the fish can't get away. Many **fishermen**¹ like trawling because they can bring in a lot of fish at a time. However, the nets and the weights **scrape** up everything on the ocean floor, and a lot of plants and animals that the fishermen don't need are hurt, too. Today, experts are trying to find ways to **protect** ocean life from trawling ships. One of these ways is to sink an old ship, and leave the shipwreck on the ocean floor.

1 Fishermen are people who make money by fishing.

- | | | |
|------------|---|---|
| 1. nets | • | • a. to keep safe |
| 2. weights | • | • b. the lowest part |
| 3. bottom | • | • c. heavy things used to hold something down |
| 4. scrape | • | • d. pieces of cloth, string, etc., tied together to hold things |
| 5. protect | • | • e. to remove a layer off something by moving something rough or sharp across it |

B. Predict. How do you think a shipwreck can help save ocean life?
Discuss your ideas with a partner.

While You Watch

Checking. As you watch the video, check your answers in **Before You Watch B**. Were your ideas correct?

After You Watch

A. Completion. Choose the correct word or phrase to complete each sentence below.



1. This shipwreck was once a
(war / passenger) ship.



2. The shipwreck protects ocean life by
(tearing up trawl nets / damaging the trawler ships).



3. Before they sink an old ship, workers take off
all the (metal / wood).



4. After a few years, the shipwreck
(moves to a new place / falls apart).



5. According to the video, another way to
protect the ocean floor may be to
(build concrete walls /
grow more sea plants).



6. Sobel believes people are (smart / scared),
so they'll do the right thing to protect
the ocean.

B. Discuss. Discuss these questions with a partner.

1. Jack Sobel says, "I'm an optimist. I think we'll be successful." What do you think he means?
2. What other ways can we protect ocean life? Are there things you can do to help?

Science INVESTIGATORS

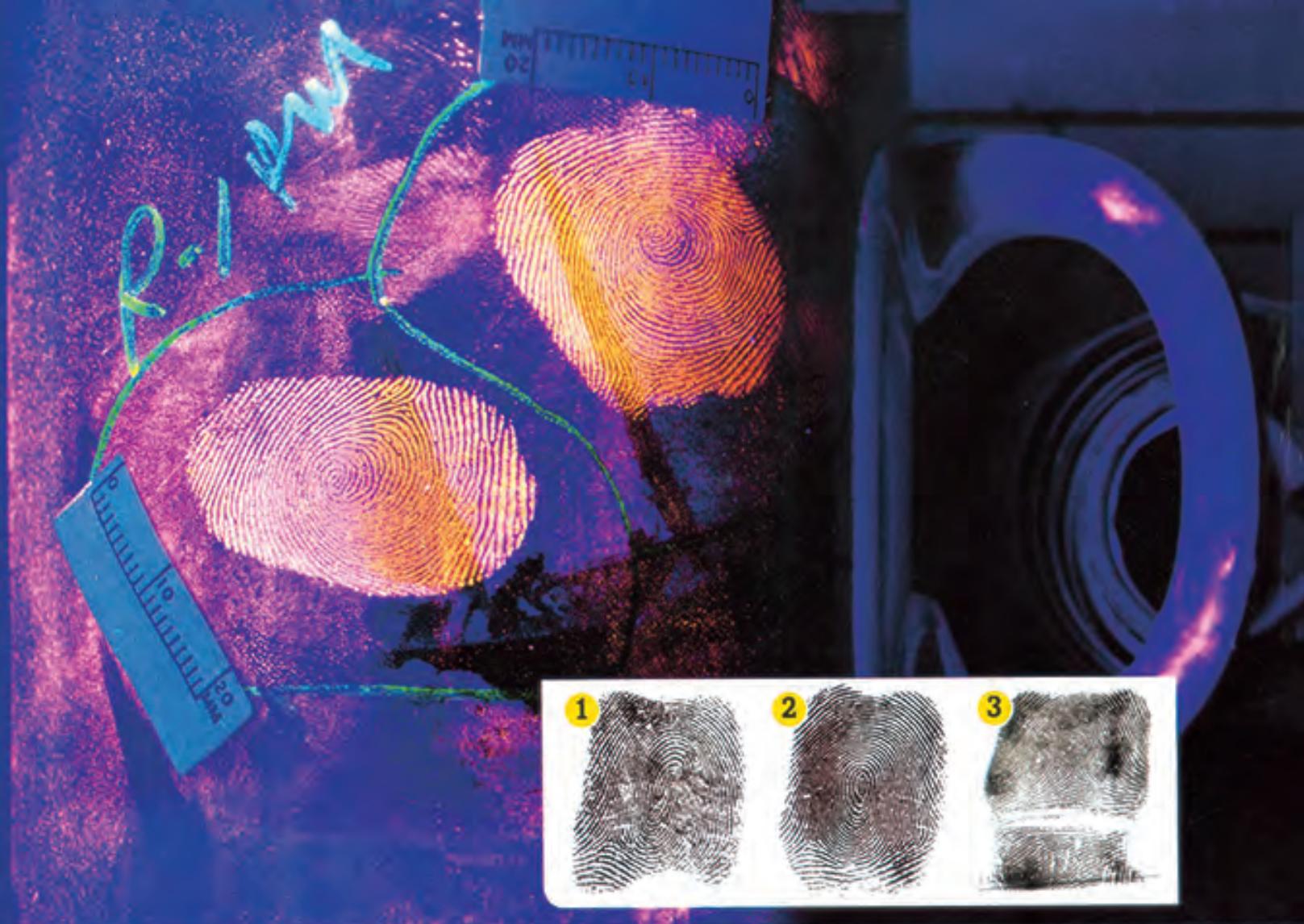
An investigator looks at a piece of broken glass. Crime scene investigators are scientists who work with the police.



Warm Up

Discuss these questions with a partner.

1. What do you think the investigator in the photo is looking for?
2. What kinds of people, besides crime scene investigators, use science in their jobs?



Before You Read

When there's a crime,¹ the police often call a **crime scene investigator**. This person helps the police study the **scene**, looking for evidence.² One thing they look for is **fingerprints**. Everyone has a different **pattern** of fingerprints.

A. Discussion. Look at the pictures and information above. Pay attention to the words in **bold**. Then answer the questions.

1. Who do crime scene investigators help?
2. Besides fingerprints, what else do you think a crime scene investigator could look for?
3. Look at your own fingers. What patterns can you find?

B. Scan. Quickly scan the passage on pages 65–66. Underline all the clues the crime scene investigator finds.

1 The lines on this fingerprint form patterns that are called **loops**.

2 These lines form around a single point. These are called **whorls**.

3 The lines here form **arches**. Many people have this pattern.

¹ A **crime** happens when someone does something bad, or breaks the law.

² **Evidence** refers to things that can help the police find out who did the crime.



At the Scene of a Crime

1 Your phone rings. The police officer says someone broke into¹ a store and took some expensive items. They need you right away. It is your job to study the whole scene for **clues** that will help **catch** the thief.² You are a crime scene investigator, and the game is on.

Outside the store, you see a broken window, some glass on the street, shoeprints, and marks made by a **vehicle's** tires.³ You look at the shoeprints. They're large, so you're likely looking for a man. You photograph the shoe's pattern. This can tell you the type of shoe. You then measure the **space** between the shoeprints. You now know how long the man's **steps** were. This gives you an idea of how tall he was.

As you follow the shoeprints over to the tire marks, they get farther away from each other. They lead to the passenger's side of the vehicle. Now you know the man probably didn't work alone. You photograph the tire marks. They can help you find out what type of vehicle it was, and the **direction** it went in.

► A crime scene investigator begins looking for fingerprints in places the thief is likely to have touched, like the front door.

¹ If someone **breaks** into a place, they go inside though they are not allowed to be there.

² A **thief** is someone who takes something that they do not own.

³ A **tire** is the outside of a car wheel. It is usually black and made of rubber.



▲ The print left by a shoe can say a lot about the person wearing it. So at a crime scene, the print is measured. Then it is studied under colored light that makes the pattern clearer.

On the Case

- 20 The most important clues will come from a person's body. The person who broke in left a little of himself behind. In the store, you find some fingerprints. Using a computer, you can **compare** these prints against millions of others.

- 25 In the store, there is a lot more glass. Then you find something else—a hair. You keep this because you know hair contains a person's DNA.⁴ You can compare this with other people's DNA, too. If you find a match for the fingerprint or the DNA, you will know who was in the store.

- Will you find the thief? You now have a lot of information, so it's **possible**. For a crime scene investigator, it's all in a day's work.

⁴ A person's DNA contains information about that person. It tells a person's body things like what color its eyes or hair should be.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

- What is this reading mainly about?
 - how an investigator used clues to find a famous thief
 - what a crime scene investigator finds at a crime scene
 - how thieves are using new technology to break into places

Vocabulary

- What can the word *likely* in line 8 be replaced with?
 - carefully
 - probably
 - comfortably

Detail

- In the passage, why was the investigator interested in a shoeprint?
 - because it had a very strange pattern
 - because it showed how tall the thief was
 - because it showed the direction the thief went

Detail

- Which of the following do the tire marks NOT show?
 - the direction the thief went
 - how heavy the thief's car was
 - the type of car the thief used

Detail

- What are the most important clues that the investigator finds?
 - fingerprints and a hair
 - shoeprints and tire marks
 - video from the store's camera

Inference

- How would the author probably answer the question, "Will the thief be caught?"
 - Yes, he will.
 - Maybe.
 - I don't think so.



koala



human

Did You Know?

A koala's fingerprints look just like a person's fingerprints.

Reading Skill

Inferring Meaning

A text does not always state everything directly. Sometimes you need to infer meaning by "reading between the lines." You can infer meaning by using what you already know about the topic, clues in the text, and common sense. For example, in the passage on pages 65–66, we know the shoeprints were large, so it is likely that they were a man's.

A. Inference. Look at some facts from the passage on pages 65–66. What can you infer?

1. There was more broken glass inside the store than outside.
 - a. The thief broke the window from the inside.
 - b. The thief broke the window from the outside.
2. The space between shoeprints near the tire marks got farther apart.
 - a. The thief was walking slower, and then stopping.
 - b. The thief was walking faster, maybe running.
3. The shoeprints led to the passenger's side of the car.
 - a. The thief drove the car.
 - b. Someone else drove the car.



▲ A burglar breaks a window while breaking into someone's house.

B. Inference. How sure are you of these things? Check (✓) the things you can infer from the passage.

1. The crime happened at night.
2. Some things were missing from the store.
3. The fingerprints belong to the thief.
4. The hair belongs to the thief.
5. The investigator will look for a match for the fingerprints.
6. The investigator will find a match for the fingerprints.

Critical Thinking Discuss with a partner. Can the information from fingerprints and DNA ever be wrong?

Vocabulary Practice

A. Completion.

We know that one of the best ways to 1. (**catch / step**) a thief is by collecting fingerprints from a crime scene and then 2. (**comparing / stepping**) them to others with a computer. But how difficult is it to get the prints?

Try this: Press a finger onto a drinking glass. If your fingers are oily or wet, the print will be better. Then cover the print with a small amount of powder. You can use things you have in your kitchen, such as flour or cocoa powder.

Now remove some of the powder with a small, dry paintbrush. Go in a circular 3. (**direction / space**) until you see the print. Then place some tape over the print. Take the tape off and put it on a piece of paper. If 4. (**catching / possible**), use colored paper. You should now see the fingerprint clearly.

✓ Powder covers the pattern of the fingerprint, so it can be seen clearly.



B. Words in Context.

Choose the best answer for each question below.

1. In which of these situations would a **clue** be helpful?
a. when doing a puzzle b. when building a house
2. Which of these do you use to take a **step**?
a. your hands b. your feet
3. Which of these things is an example of a **vehicle**?
a. a house b. a bus
4. Which of these things has more **space**?
a. a large room b. a box filled with books

Word Partnership

Use **space** with: (adj.) **open space**, **empty space**, **office space**, **living space**, **public space**.



Before You Read

A. Matching.

Look at the photo and read the caption. Then match each word in **bold** with its definition.

1. _____ : kinds or groups of bacteria
2. _____ : sick
3. _____ : a kind of very small living thing
4. _____ : a machine that shows a larger view of something very small

► **Bacteria** are so small, you need a **microscope** to see them. *E. coli* is a type of bacteria that can be found in both animals and humans. Many **strains** of *E. coli* won't hurt you, but some can make you very ill or cause death.

B. Predict.

Look quickly at the photos and headings on page 71. Check (✓) the information you think you'll read about. Then read the passage to check your answers.

- how a doctor found the cause of an illness
- how *E. coli* has caused many deaths around the world
- how more people want to become doctors

The Disease Detective

- 1 Six children were in the hospital. They were very sick, but the doctors didn't know what to do. They called Dr. Richard Besser, an **expert** on strange illnesses.¹ Dr. Besser knew just what to do.

Finding a Cause

- 5 First, Dr. Besser needed to find the cause of the illness. He used a microscope to look for **germs** like bacteria in the children's bodies. Dr. Besser found that all the children had a strain of the bacteria *E. coli*. Then he looked at the bacteria's DNA. The DNA showed him that this strain of *E. coli* was **dangerous** to humans.

Where Did It Come From?

- Dr. Besser knew *E. coli* could move from animals to humans. **Perhaps** the children had **touched** animals that carried the bacteria? Besser found other *E. coli* cases in the area where the children lived. But it wasn't enough.

- 15 Besser then made a **list** of what the sick children had eaten. They had all eaten cheese, apple juice, and fish. He then made a list of what healthy children in the area had eaten, and compared his lists. They had eaten the cheese and fish, but not the apple juice.

Case Closed

- 20 Besser went to where the apple juice was made. He saw that there were animals around the apple trees, and he saw the workers using **dirty** apples that had fallen on the ground. More importantly, he saw that the apples were not washed before the juice was made, and that the juice was not heated. Doing these things would **kill** the bacteria. Besser then knew it was the apple juice that made the children sick.

Besser's *E. coli* case has a happy ending. The children got better. And what Besser learned that day now helps keep others safe.



▲ Dr. Richard Besser is an expert on illnesses that move and kill quickly.

¹ A **disease** or an **illness** is something that makes you sick.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. Another title for this passage could be _____.

- a. Good vs. Bad Bacteria
- b. Looking for Answers
- c. A Death at the Hospital

Sequence

2. Which of the following things happened first?

- a. Dr. Besser found out what made the children sick.
- b. Dr. Besser made a list of what the sick children ate.
- c. Dr. Besser went to where the apple juice was made.

Detail

3. Which of the following is NOT true about *E. coli*?

- a. It's a kind of plant.
- b. It can make people sick.
- c. It moves from animals to people.

Reference

4. Who does *they* refer to in line 18?

- a. the sick children
- b. the healthy children
- c. both the sick and the healthy children

Cause and Effect

5. What made the children sick?

- a. old fish
- b. dirty apples
- c. smelly cheese

Inference

6. What advice would Dr. Besser probably agree with?

- a. Never drink apple juice from a supermarket.
You should make it yourself.
- b. Stay away from animals that live near trees.
They will make you sick.
- c. Don't eat fruit from the ground.
Wash the fruit before you eat it.

Did You Know?

There are about two kilograms (four pounds) of bacteria in a human body.



Reading Skill

Identifying the Purpose of a Paragraph

Identifying a paragraph's purpose (or purposes) helps you understand the organization of a passage. The first line of a paragraph and its heading (if it has one) can give you clues about its purpose. These purposes can include:

- to introduce a topic
- to continue a point
- to answer a question
- to give data and statistics
- to give an example
- to make an argument
- to describe a solution
- to summarize ideas

A. Identifying Purpose. Look back at the photo and caption on page 70. Check (✓) the purpose(s) of the information in the caption.

- | | |
|--|---|
| <input type="checkbox"/> to introduce a topic | <input type="checkbox"/> to ask a question |
| <input type="checkbox"/> to give statistics | <input type="checkbox"/> to give a definition |
| <input type="checkbox"/> to help explain a photo | <input type="checkbox"/> to provide facts |

B. Identifying Purpose. Look back at the passage on page 71. What is the main purpose of each paragraph?

1. Paragraph 1

- a. to give background information
- b. to summarize what will come later

2. Paragraph 4

- a. to list a sequence of actions
- b. to answer a question

3. Paragraph 5

- a. to introduce a new topic
- b. to answer a question

4. Paragraph 6

- a. to describe the end of an event
- b. to predict what will happen

✓ A good way to keep safe from germs is to wash your hands often.



Critical Thinking Discuss with a partner. How do you think we can keep safe from germs?

Vocabulary Practice

A. Completion. Complete the information below with the correct form of words in the box. One word is extra.

dangerous dirty expert kill touch

When a bee stings a person, the bee's "poison"¹ goes into their body. To most people, a bee sting is painful, but it's not really 1. _____ . However, for some, a little bee sting can 2. _____. In fact, every year, there are many people who die from bee stings.

But scientists are learning that bee stings can also be used to help people. Dr. Chris Kleronomos is a(n) 3. _____ on natural medicines. He is trying to help a young man named Erick. Erick has a disease that causes his muscles to hurt. He experiences a lot of pain when people 4. _____ him. Dr. Kleronomos uses the bee's poison to take away Erick's pain. It may sound strange, but for people like Erick, it seems to be working.



¹ A poison is something that causes illness or death if you eat or drink it.

B. Words in Context. Read the sentences below.

Mark each sentence as true (T) or false (F).

- | | |
|--|--------|
| 1. In a restaurant, most people are happy to eat off a dirty plate. | T F |
| 2. Perhaps is another way to say <i>maybe</i> or <i>possibly</i> . | T F |
| 3. A list usually has just one thing on it. | T F |
| 4. An expert on a subject knows a lot about it. | T F |
| 5. Germs can make people sick. | T F |

Word Link

The suffix **-ous** (meaning "full of") can be added to some nouns to make adjectives. For example: *danger* → *dangerous*, *mystery* → *mysterious*, *adventure* → *adventurous*.

VIEWING Virus Detectives

Before You Watch

- A. Definitions.** Look at the picture and read the caption. Pay attention to the words in **bold**. You will hear them in the video. Match the words with their definitions below.



◀ Nathan Wolfe is a scientist who studies viruses. A virus is very small. It lives inside other creatures—like bacteria, plants, animals, and people. Some viruses are **deadly**, and can **kill**. Many diseases caused by viruses are difficult to **cure**, but we can **prevent** them from getting into our bodies. In today's globalized¹ world, scientists in different countries can work together more easily to help sick people, but viruses can also **spread** more quickly than ever.

¹ When we say the world is **globalized**, we mean technology has made it easy for people to move around and talk to people from other parts of the world.

1. _____: to stop something from happening before it happens
2. _____: very dangerous, able to cause death
3. _____: to increase and happen over a greater area
4. _____: to make a sick person completely well again
5. _____: to cause death

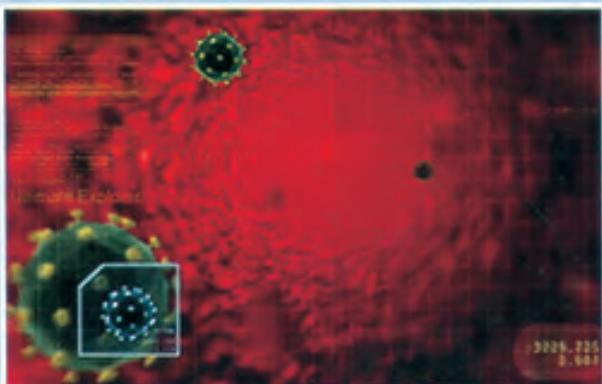
- B. Discuss.** Nathan Wolfe is the leader of a group of scientists that study viruses. Where do you think these scientists go to study viruses? Discuss your ideas with a partner.

While You Watch

Checking. As you watch the video, check your answers in **Before You Watch B**. Were your ideas correct?

After You Watch

A. Completion. Choose the correct word or phrase to complete each sentence below.



1. Nathan Wolfe and his team study how viruses move from (**animals** / **plants**) into people.



3. Wolfe's team believes that many diseases started in a (**warm** / **cold**) place.
4. According to the video, if a deadly virus begins to spread, (**the whole world** / **people living close to animals**) will be in danger.

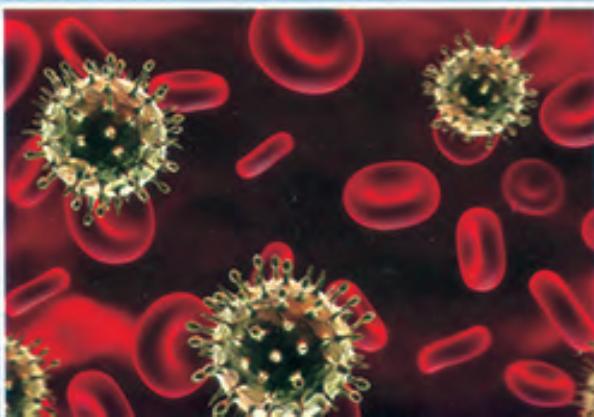
B. Inferring Meaning. Answer the questions below. Then discuss your answers with a partner.

1. Can viruses be found in chickens?
2. What is one way viruses get from animals into humans?
3. How does a virus spread from country to country?

C. Discuss. Discuss these questions with a partner.

1. What do you think a day in the life of a scientist like Nathan Wolfe is like? Would you like to work with his team?
2. How do you think people can help prevent viruses from spreading?

✓ A virus can go into a person's blood and make copies of itself.



EXPLORERS AND PIONEERS

Early European settlers moving across the land in wagons, spread out across North America.



Warm Up

Discuss these questions with a partner.

1. Pioneers are people who explore new places or do things that have never been done before. Do you know about any famous pioneers?
2. Who were the first people to explore, or live in, your country? What stories do you know about them?



Before You Read

A. Matching. Look at the picture and read the caption. Then match the correct form of each word in **bold** with its definition.

1. _____ : a piece of metal, usually round, used as money
2. _____ : a group of many families with the same language, traditions, and beliefs
3. _____ : a piece of art made of stone, metal, or wood, usually showing a person or an animal

► In 1804, mapmakers Lewis and Clark began to explore the western part of North America. Sacagawea, a Native American woman from the Shoshone **tribe**, went with them. Today, there are many **statues** of her in the U.S. Her face is also on an American **coin**.

B. Skim. Skim the passage on the next page. Check (✓) the information given in the passage. Then read the passage to check your answers.

- how Sacagawea helped the explorers
- how Sacagawea lived after the trip
- how people remember Sacagawea today

Who was Sacagawea?

- 1 There are more statues of her than of any other American woman. Her face is on a U.S. coin. **Clearly**, she was an important person. But what do we know about the real Sacagawea?

- 2 Sacagawea was part of a Native American tribe called the Shoshone.
- 3 At the age of 13, she was taken away by people from the Hidatsa tribe. She was living **among** the Hidatsa when Meriwether Lewis and William Clark met her in 1804.

- 4 Meriwether Lewis and William Clark were mapmakers. These pioneers were exploring the western part of the U.S. Because Sacagawea spoke two different Native American languages, they asked her to **travel** with them, along with her husband and baby son.

- 5 Sacagawea became an important part of the group and helped the explorers in many ways. For example, on May 14, 1805, a strong storm tipped over¹ one of their boats. Sacagawea stayed **calm**. She acted quickly and was able to **save** many of the maps and other things from the water. Her **actions** saved important **knowledge** from being lost.

- 6 As they traveled, Sacagawea helped Lewis and Clark talk to the Native American people in each **village** they visited. She helped the explorers make friends among the Native Americans, so they could trade with them. She also helped Lewis and Clark find a way across the mountains to the Pacific Ocean, and helped them find food on the way.

- 7 Sacagawea died when she was about 25. Sadly, we don't know much more about this amazing woman. But two hundred years later, she is remembered as an important woman in U.S. history.

¹ When something **tips over**, it turns and falls on its side.



▲ The Sacagawea dollar coin was first made in 2000.

▼ Lewis and Clark traveled from St. Louis to the Pacific Ocean and back again.



the Columbia River. at least we did not see them until
we reached the waters of that river, nor knew we how

Reading Comprehension

They are about the size of a

Multiple Choice. Choose the best answer for each question.

Gist

- The reading is mainly about why _____.
 - not much is known about Sacagawea
 - Sacagawea left Lewis and Clark's group
 - Sacagawea was an important woman in U.S. history
- Which of these sentences about Sacagawea is NOT true?
 - She took her child with her on the trip.
 - She asked Lewis and Clark if she could come on the trip.
 - She started living with the Hidatsa tribe when she was 13 years old.
- When the explorers' boat tipped over, Sacagawea _____.
 - lost all the food they were carrying
 - was able to save Meriwether Lewis
 - was able to save maps from the water
- Which of the following did Sacagawea do to help Lewis and Clark?
 - She helped them draw maps of the places they saw.
 - She helped them make friends with the native people.
 - She saved their lives when wild animals attacked them.
- The word *trade* (line 19) means _____.
 - fight
 - tell stories
 - buy and sell things
- Which of the following sentences is likely to be true?
 - The author thinks Sacagawea was too young to travel.
 - The author would like to know more about Sacagawea.
 - The author believes the story of Sacagawea is not true.

Detail

Detail

Vocabulary

Inference

Did You Know?

Lewis kept a journal of the trip. He wrote nearly 5,000 pages.



left those mountains. They are about the size of
well grown hen. The contour of the bird is mu-

Reading Skill

the brown Pheasant common-

Creating a Timeline of Events

When you read a passage that has a series of events, it can be useful to place them on a timeline. This gives you a clear picture of what things happened in the order that they happened. Look carefully at ages, dates, and years. But be careful—events may not always appear in the passage in the order that they happened.

A. Scan. Find and underline these events in the reading passage on page 79.

- The Hidatsa take Sacagawea from her people at age 13.
- About 200 years ago, Sacagawea dies at about age 25.
- In 1805, Sacagawea saves maps and other items during a storm.
- Sacagawea lives among the Shoshone people during her childhood.
- In 1804, Sacagawea meets Lewis and Clark.
- With Sacagawea's help, Lewis and Clark reach the Pacific Ocean.
- Sacagawea joins Lewis and Clark on their trip.

B. Sequencing. Label the timeline with the events in A.



Critical Thinking Discuss with a partner. What do you think Sacagawea's life was like after the expedition? Why do you think we don't know much about Sacagawea's life?



During the trip, Sacagawea visited her own tribe. Her brother, who was now the chief, was very happy to see her.

Vocabulary Practice They are about the size of a

Vocabulary Practice

A. Completion. Complete the timeline below with words from the box.

Two words are extra.

actions among calm clearly save travel village

Amy Johnson—A Pioneer of Flight

- 1903** Amy Johnson is born in Hull, England.

1928 She takes flying lessons. She is 1. _____ not a natural—at first, she is quite bad at it. But she doesn't give up and after a lot of hard work, finally learns to fly.

1930 Johnson becomes the first woman to fly solo¹ from England to Australia. The world starts to take notice of her, and her 2. _____ inspire many other pilots. When she returns to England, the king and queen are 3. _____ the many people who send their congratulations.²

1931 Johnson is the first person to 4. _____ from London to Moscow in one day. She then flies across Siberia to Tokyo.

1936 Johnson becomes the first person to fly solo from England to South Africa.

1941 Johnson's plane crashes in the River Thames in London. People from a nearby ship try to 5. _____ her, but they are too late.



 Amy Johnson sits aboard her plane.

1 If someone flies **solo**, they fly alone.

2 Congratulations are nice messages sent, or things people say, to someone who has done something well.

B. Words in Context. Complete each sentence with the correct word or phrase.

Usage

A **town** is usually bigger than a **village**.

A **city** is usually bigger than a **town**.

*About 90 people live in that **village**. Seven thousand people live in my **town**. Tokyo is the world's biggest **city**.*



Polar PIONEER

Before You Read

A. Completion. Read the definitions. Then complete the information below with the correct form of the words in **bold**.

on foot: by walking

sleds: objects used for traveling over snow

team: a group of people working together

member: one of the people that makes up a group

▲ In 1937, Matthew Henson was invited to be a member of the Explorers Club. He was the first African American to be invited.

In 1909, Matthew Henson became the first man to reach the North Pole. He did this as a 1. _____ of a 2. _____, led by explorer Robert Peary. To get to the North Pole, the explorers traveled by ship, in 3. _____ pulled by dogs, and 4. _____.

B. Scan. Quickly scan the passage on pages 84–85. In total, how many times did Peary and Henson try to reach the North Pole? Read the passage to check your answer.

1 | Matthew Henson: Arctic Explorer

Robert Peary and Matthew Henson both wanted to be great explorers. When Peary needed someone to **join** him on his trip to the North Pole, he thought of Henson. They had once worked together in Central America. At the time, it was unusual for an African American to be a **well-known** explorer. Henson wanted to change that. So, though he knew the trip would be hard, he agreed to go.

First, they traveled by ship to Greenland. The members of Peary's team lived among the Inuit people there. The Inuit called Henson "Maripaluk—Matthew, the Kind One." Henson learned their language. The Inuit taught him how to live outdoors on the ice, find food, build igloos,¹ make snowshoes, and **drive** dogsleds through the snow and ice.

1 An **igloo** is a round house made of ice.

Robert Peary, the explorer, stands in Greenland with his sled dogs.



Among other things, the explorers' ship, the *Roosevelt*, carried over 200 sled dogs.



To the Top of the World

15 Between 1891 and 1906, the Peary-Henson team made seven **attempts** to get to the North Pole. Each time, they learned hard lessons about the dangers there. Sleds broke. Dogs died. Men got hurt. They got close to the North Pole, but they always had to go back.

20 In 1909, they decided to make one more attempt. Peary and Henson found themselves within 56 kilometers (35 miles) of the North Pole. Peary sent Henson **ahead**. Henson made a **trail** through the snow for Peary to **follow**. Peary followed 45 minutes later. "I think I am the first man to sit on top of the world," Henson told Peary.

25 The team returned home as **heroes**. Both men's dreams had come true:
They were the first explorers to reach the North Pole.



**"I think I am the first man
to sit on top of the world."**

—Matthew Henson,
April 6, 1909

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Main Idea

- What is the main idea of the second paragraph (from line 8)?
 - The Inuit have a difficult life in Greenland.
 - Henson learned how to speak the Inuit language.
 - Henson learned many things from the Inuit.

Detail

- Which of the following sentences about Matthew Henson is true?
 - He was from Central America.
 - The Inuit called him “the Kind One.”
 - He was the leader of the team on this trip to the North Pole.

Reference

- The word *their* in line 10 can be replaced by _____.
 - the Inuit’s
 - the team’s
 - Peary and Henson’s

Vocabulary

- The phrase *hard lessons* (line 16) refers to _____.
 - things that are hard to understand
 - ways they learned to break up hard ice
 - things they learned because bad things happened

Paraphrase

- The sentence *Peary sent Henson ahead*. (line 21) is closest in meaning to _____.
 - Peary sent Henson a message
 - Peary asked Henson to go first
 - Peary and Henson traveled together

Inference

- Which of these statements would Henson likely agree with?
 - He and Peary were a good team.
 - Bringing dogs to the North Pole was a bad idea.
 - The explorers could have reached the North Pole without the help of the Inuit.

Did You Know?

Peary and Henson’s 1909 expedition to the North Pole included 19 dogsleds, 133 dogs, and 24 men, including 17 Inuit. Only Peary, Henson, and four Inuit men got to the North Pole.



Reading Skill

Understanding Compound Nouns

A compound noun is a word created by putting two words together. It can be formed from different parts of speech, such as a noun + a noun (e.g., *homework*), an adjective + a noun (e.g., *whiteboard*), or a preposition + a noun (e.g., *afternoon*).

- A. Noticing.** Look back at the second paragraph of the passage on pages 84–85. Find and write the four compound words in the paragraph. Take notice of what smaller words are used to make up each word.

1. _____ 3. _____
2. _____ 4. _____

- B. Completion.** Circle the words that create compound nouns. Then write the compound nouns.

1. class	mate	room	student	<u>classmate</u>	<u>classroom</u>
2. black	life	board	bird	_____	_____
3. out	side	one	doors	_____	_____
4. some	body	day	color	_____	_____
5. day	food	time	light	_____	_____
6. rain	wet	coat	water	_____	_____
7. sun	shine	set	yellow	_____	_____
8. up	hill	class	grade	_____	_____

Critical Thinking Discuss with a partner. Why do you think being an African American explorer in the 1900s was difficult? What qualities do you think Henson had that made him a good explorer?

Matthew Henson sits on his sled, dressed in warm furs.



Vocabulary Practice

A. Matching. Read the information below and match the correct form of each word in red with its definition.

Arctic Firsts

Following in the footsteps of Peary and Henson, many people have traveled to the North Pole. Here are some of their stories.

- 60 years after Peary's team, **well-known** British explorer Wally Herbert reached the North Pole. He completed the trip in 1969.
- Teenager Jan Mela became a **hero** to many when he **joined** Polish explorer Marek Kamiński and two others for 2004's "Together to the Pole" trip. They walked to both the North and South Poles in the same year.
- In 2007, a team from the TV show *Top Gear* became the first to **drive** a car to the North Pole. As part of the trip, the team raced against a dogsled. The car won, getting there **ahead** of the sled.

1. _____ : famous
2. _____ : in front of or before something
3. _____ : to become involved in an activity with someone else
4. _____ : someone who does something good, and is admired for it
5. _____ : to operate and control the movement of a car or other vehicle



When he was 13 years old, Jan Mela lost his left leg and right arm. Mela is the youngest person ever to go to both the North and South Poles.

B. Words in Context. Read the sentences and circle true (T) or false (F).

1. People usually don't like their **heroes**. T F
2. A **trail** is a route or path, usually for walking. T F
3. If you make an **attempt** to do something, you try to do it. T F
4. When you are **ahead** of someone, they are behind you. T F
5. If you **follow** someone, you walk in front of the person. T F

Usage

You **drive** a car, bus, or truck. You **ride** a bicycle or motorcycle.

I drive a car to work. My brother rides a bicycle to school.

VIEWING Native Americans

Before You Watch

- A. Warm Up.** Look at the picture and read the caption. What do you know about Native Americans? Discuss with a partner.



When the first Europeans arrived in North America, they found a population¹ of one million Native Americans already living there. There were many tribes, each with its own culture and language. The new settlers² wanted the native peoples' land. There was a lot of fighting between the two groups. The Native American tribes lost their land. Today, many tribes are still trying to win back their land, while others work to rebuild parts of their culture and tribal identity.³

¹ The **population** of a place is the number of people living there.

² **Settlers** are people who travel to a new place and start to live there.

³ Your **identity** describes who you are.

- B. Predict.** What do you think happened to the Native Americans after Europeans came to settle in North America? Check (✓) your ideas below.

- Many of them got sick.
- Their population decreased.
- They became a single tribe.
- They had to leave their homes.
- Many left North America.
- They lived in bad conditions.
- They taught the settlers about their culture.
- Their culture grew stronger.

While You Watch

Checking. As you watch the video, check your answers in **Before You Watch B.** Were your ideas correct?

After You Watch

A. Sequencing. Read the events described below. Then complete the timeline.



1. Humans first come to North America.
2. The first Europeans arrive in North America.
3. Many Native Americans die from new diseases.
4. Traditional art forms and ceremonies begin again.
5. The Native Americans become hundreds of different groups.
6. The government makes the Native Americans leave their land.

B. Completion. Look at the pictures below. Choose the correct word or phrase to complete each sentence.



1. People think the Native Americans came from (Asia / Europe).



2. This (painting / totem pole) is an example of Native American art.



3. Some tribes have held meetings with (other tribes / the government) to talk about getting their land back.



4. The patterns in this picture represent the (cloud people / Europeans).

C. Discuss. Discuss these questions with a partner. Who were the first people in your country? Can you still see their culture today?



7

An amazing 3-D drawing
on the street plays tricks
on our eyes and minds.

MIND'S EYE

Warm Up

Discuss these questions with a partner.

1. What is unusual about the picture above?
2. Do you usually remember your dreams?
What is the last dream you remember?



Before You Read

A. Matching. Many people have different ideas about what dreams might mean. Here are some interesting examples. What do you think it might mean if you dream about these things?

- | | |
|------------------|--|
| 1. a snake • | • a. You're thinking about your mother. |
| 2. a queen • | • b. You're thinking about a bad memory. |
| 3. your teeth • | • c. You're afraid of something you can't see. |
| 4. a bad smell • | • d. You have trouble sharing your thoughts. |

Many people believe our dreams have meanings and can tell us more about our lives in the real world.

B. Predict. Read the title and headings on the next page, and answer the questions below. Then read the passage to check your ideas.

1. How many kinds of dreams can you read about in the passage?
2. What do you think the passage will tell you about each type of dream?

The Meaning of Dreams

- 1 Did you have any interesting dreams last night?

Our dreams come from a part of the brain that contains our thoughts and memories. A person can have up to six dreams a night, and each dream usually **lasts** from 10 to 40 minutes. Everyone dreams, but not everyone remembers their dreams. Most people dream in color, usually with sound. And we usually dream about ourselves and the people we know.

Why Do We Dream?

- Alan Siegel is a scientist who studies dreams. "Dreams help us get in touch with our deeper feelings," he says. "They can tell us a lot about ourselves, and can help us figure out **problems**." Another scientist, Robert Stickgold, thinks dreams come from our memories. He believes we dream to remember, because memories are **useful** to the brain. Stickgold says the purpose of dreaming through these memories is to help us learn from the past.

Here are a few types of dreams and what people think they mean.

Dream 1: You Meet Someone While in Your Pajamas¹

- Sometimes people dream that they meet someone they know while wearing their underwear (or nothing at all!). This dream may be the **result** of an embarrassing² event in your life. Some people think we dream about embarrassing situations if our brains are trying to deal with³ an event in our own lives.

Dream 2: You're Flying

- If you dream about flying, you are probably quite happy. This is a good **period** in your life. You may feel that other people see you as a **leader**.

Dream 3: You Didn't Study for a Test

- This probably means you are **worried** about an important event coming in your life. If you're not **prepared** for the event, your dream may be telling you, "It's time to get to work!"

¹ Pajamas are clothes that are specially made to sleep in.

² If something is **embarrassing**, it makes you feel shy or ashamed.

³ If you **deal with** a problem, you try to do something about it.



Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Main Idea

1. What is the main idea of the reading?
 - a. Dreams come from only one part of the brain.
 - b. Everyone has dreams, but not everyone remembers them.
 - c. Dreams can help us to understand our feelings and problems.

Detail

2. Which of these sentences about dreams is NOT true?
 - a. They usually have color and sound.
 - b. Each dream usually lasts for 10 to 40 minutes.
 - c. Most people have about ten dreams a night.

Detail

3. Robert Stickgold believes that dreams _____.
 - a. can tell us about ourselves
 - b. help us figure out problems
 - c. are made from our memories

Vocabulary

4. In lines 9–10, another way to say *get in touch with* would be _____.
 - a. talk to
 - b. dream about
 - c. find out and understand

Detail

5. According to the passage, which of these sentences is true?
 - a. If you dream you're wearing no clothes, something embarrassing probably happened to you.
 - b. If you dream you're flying, this is probably a difficult time in your life.
 - c. If you dream you didn't study for a test, you're probably not getting enough sleep at night.

Inference

6. If someone says, "The concert is tomorrow, and I haven't had time to practice!" which dream from the passage might they have?
 - a. Dream 1: You Meet Someone While in Your Pajamas
 - b. Dream 2: You're Flying
 - c. Dream 3: You Didn't Study for a Test

Did You Know?

Most people forget half of their dreams within five minutes of waking up. After ten minutes, 90 percent of their dreams are usually gone.



Reading Skill

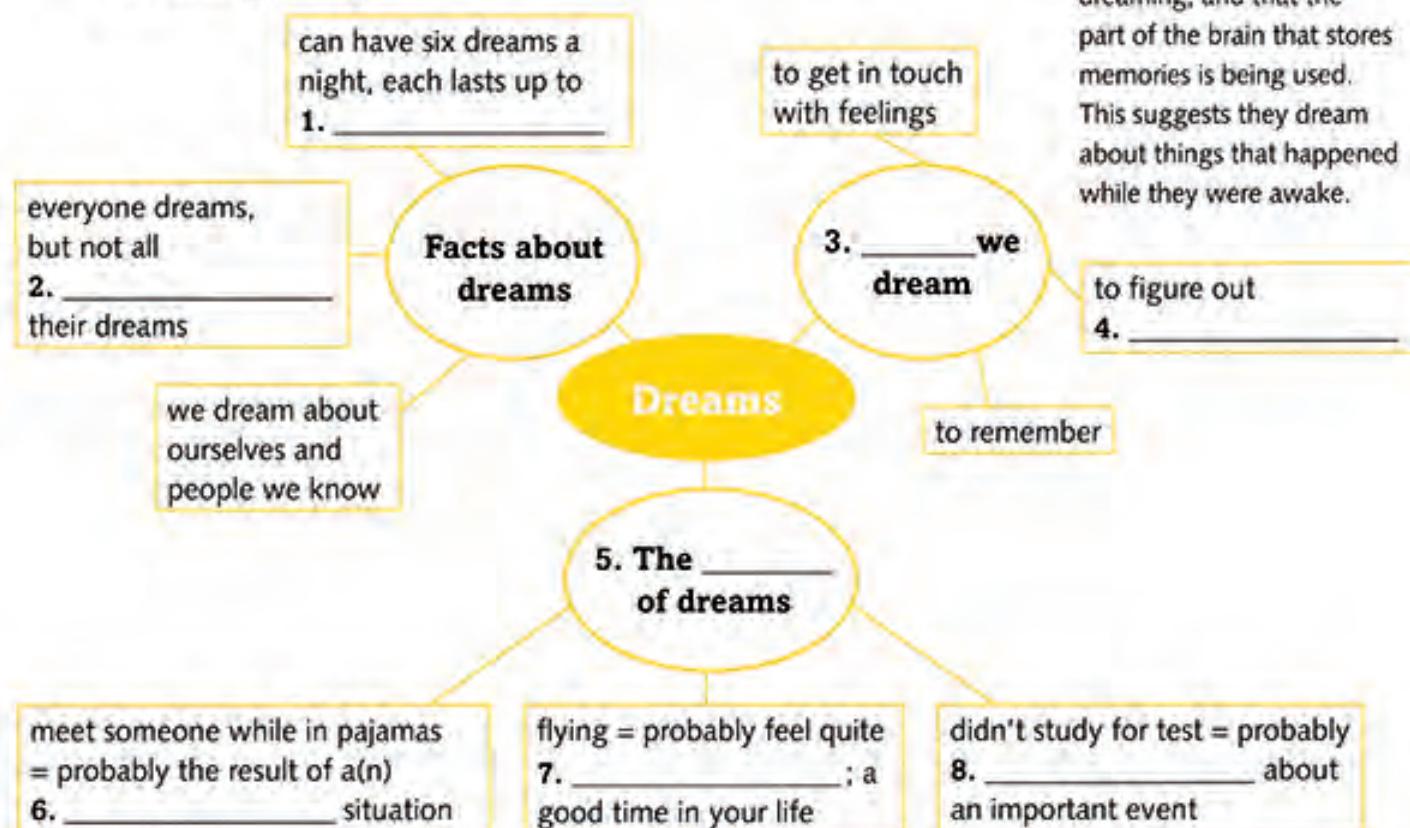
Creating a Concept Map

A concept map helps you organize information in a visual way. To create a concept map, start by writing the general topic or main idea of the text in a center box. Then write other key ideas related to this around the box, linking with lines to show relationships. After that, add and link additional details. Generally, ideas in a concept map move from general to specific as you move outward from the center.



- A. Analyzing.** Look back at the reading passage on page 93. What information is important to remember? Circle the main ideas and underline the key details.

B. Completion. Complete the concept map with words from the reading passage.



Critical Thinking Discuss with a partner. Which idea from the passage on page 93—Stickgold's or Siegel's—do you believe? Do you think dreams have meaning?

Vocabulary Practice

A. Definitions. Use the correct form of the words in the box to complete the definitions below.

last leader period prepare problem result useful worried

1. A _____ is something caused by something else.
2. If a class _____ one hour, it's 60 minutes long.
3. If something is _____, it's helpful in some way.
4. If you _____ for something, you get ready for it.
5. Someone who fears something bad will happen is probably _____.
6. _____ are things that are difficult to deal with.
7. A _____ of time is a length of time in which something happens.
8. A _____ is someone who others follow.

B. Completion. Complete the information below with the correct form of the words from the box in **A**.

We spend about one-third of our lives sleeping. Children usually need a lot of sleep because they are still growing. Older people need to sleep for shorter 1. _____ of time. In general, sleep that 2. _____ seven or eight hours is enough for most people.

However, a lot of people don't get enough sleep. This causes 3. _____ for the part of the brain that controls our emotions. For example, one of the 4. _____ of not getting enough sleep is that we can become angry or 5. _____ more easily.

If you have trouble sleeping, you can 6. _____ for sleep by taking a warm bath or listening to slow music. Some people find it 7. _____ to drink warm milk.

Word Partnership

Use **problem** with: (v.) **cause** a problem, **solve** a problem, **fix** a problem;
(adj.) **big** problem, **serious** problem, **major** problem, **common** problem.



▲ A glass of warm milk helps some people fall asleep. Milk contains melatonin, a chemical that causes us to feel sleepy.



Seeing the IMPOSSIBLE

Before You Read

A. Discussion. Look at the picture above and read the caption. Then answer the questions below.

1. Can you explain what you see? How do you think this photo was taken?
2. Have you seen photos with illusions like this before?

B. Predict. Look at the title and the pictures on pages 97–99. What is unusual about each picture? Discuss each picture with a partner. Then read the passage to check your ideas.

▲ This photo was taken in the middle of Salar de Uyuni, the world's largest salt flat, in Bolivia. In the dry season, the area is completely flat and white, making photos like this one possible.

- Can you believe everything you see? Not always! Sometimes our minds and our eyes make **mistakes**. At other times, our eyes and minds can become confused.¹ This may be because we are looking at something called an *optical illusion*.
- The word *optical* means "related to sight"—the way we see things with our eyes. An *illusion* is something that looks different from the way it really is. In short, an optical illusion is a kind of trick that our eyes play on us.

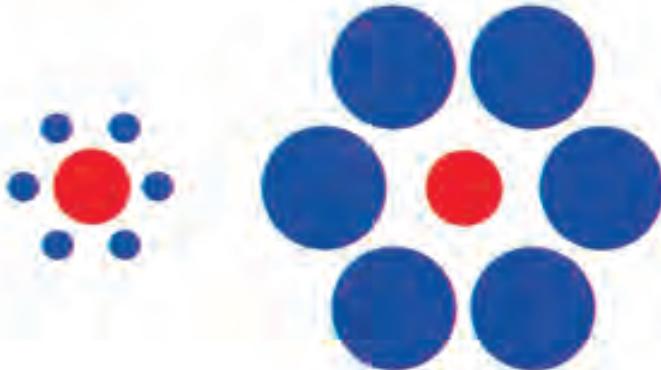
- Look at these optical illusions and compare what you see with what your classmates see. The way we see things is often **personal**, so you may not see things the same way as someone else.

So can you **trust** your eyes? Perhaps the answer is "sometimes." Sometimes our eyes see something, and our minds understand it easily. At other times, we may need to look twice.

1 If you **confuse** two things, you get them mixed up.

15 | Which red dot is larger?

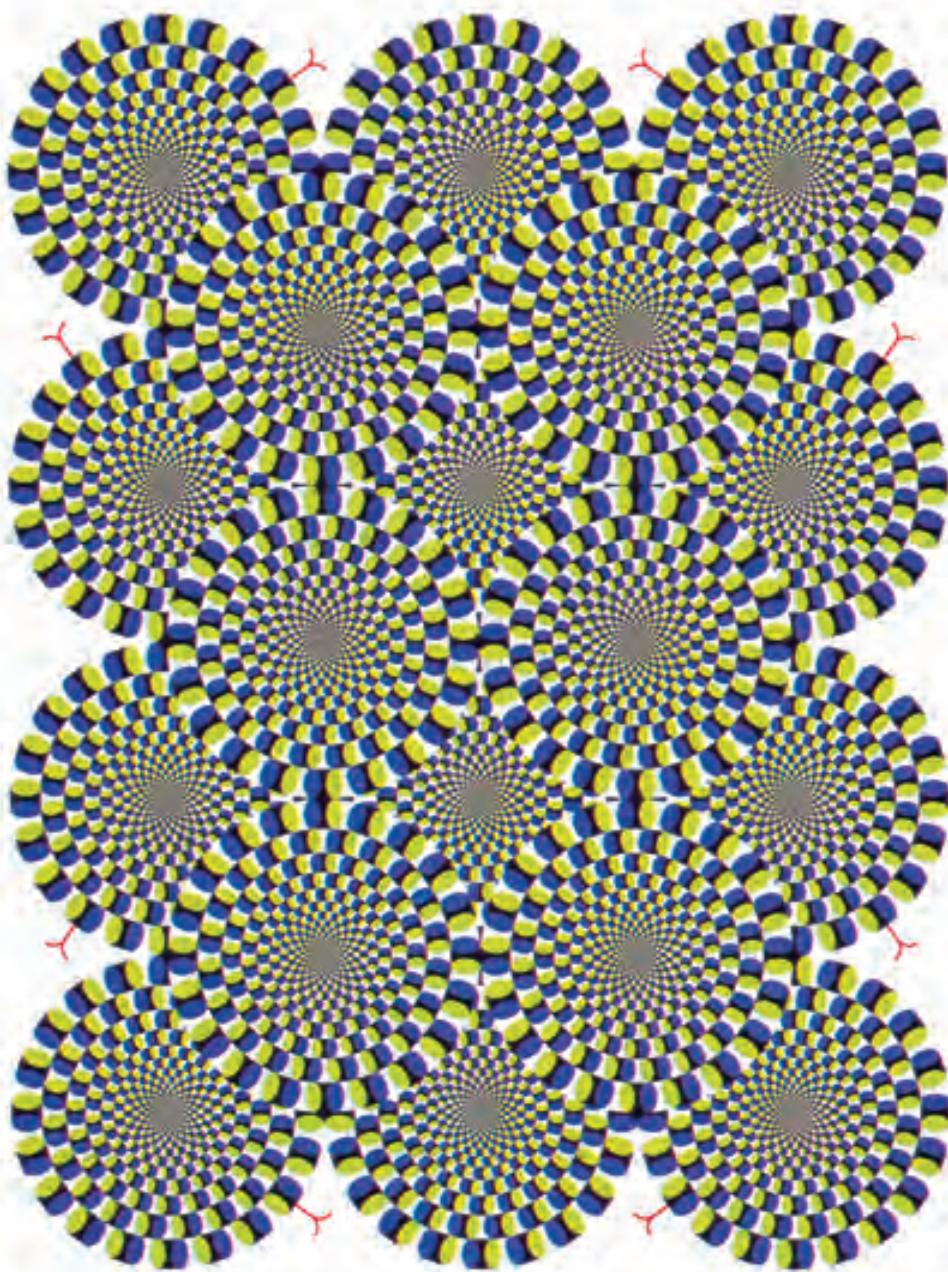
- Most people say it's the dot on the left. Now measure the dots. The red dot on the left may seem larger because of the small blue dots around it, but they're really the same **size**.



| Look at this picture. What do you see?

- Do you see a cup, or do you see two faces? Now look again! The illusion shows two different images at the same time. **Therefore**, our minds have to choose which image to look at. Scientists think this choice is difficult, because different parts of your brain are getting different information.
- One part "sees" the cup and another part "sees" the faces, so the image keeps changing.





| Are the circles moving?

When you **stare** at this picture, your mind may tell you that the

35 circles are moving, but this is **impossible!** How can a picture move?

Some people think the circles seem to move because, often, when we see circle-in-circle shapes, like in car wheels or snake bodies, they are usually moving. Our brains are used to seeing these shapes move.

40 So when our eyes see this shape, our mind infers that the image is moving. Other scientists believe the illusion of movement is caused by the tiny movements of our eyes as we look at the different colors and patterns of the picture.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Main Idea

- What is the main idea of the first paragraph?
 - Optical illusions can only be seen by a few people.
 - Optical illusions are things that aren't real.
 - Optical illusions make us think we see something that's not there.

Detail

- What causes optical illusion 1 (from line 15)?
 - The red dots aren't close to each other.
 - We can see the blue dots clearly, but not the red dots.
 - We compare each red dot with the blue dots around it.

Reference

- The word *they're* (line 19) refers to the _____.
 - red dots
 - big blue dots
 - small blue dots

Detail

- What causes optical illusion 2 (from line 21)?
 - Your left and right eyes see different things.
 - Different parts of your brain get different information.
 - Your brain thinks that it can see faces that aren't really there.

Vocabulary

- In line 41, the word *tiny* can be replaced with _____.
 - very fast
 - very small
 - very strange

Inference

- Which of these is an optical illusion?
 - hearing a voice in your head that isn't there
 - seeing water on a road when it's not really there
 - looking up at a strange cloud and noticing its shape

Did You Know?

3-D movies are a type of optical illusion.



Reading Skill

Understanding Compound Sentences

A compound sentence consists of two simple sentences joined by a comma and a conjunction. Conjunctions include *and* (to add information), *but* (to contrast information), *or* (to show a choice), and *so* (to show a result). Look at these examples.

I want to buy a new dictionary, and I need some new notebooks.

I want to buy a new dictionary, but I don't have any money.

I might just buy a new dictionary, or I might just borrow my friend's.

I want to buy a new dictionary, so I'm going to go to the bookstore.



This fountain in Ypres, Belgium, forms an optical illusion, that of a floating faucet.

A. Completion. Circle the correct conjunction to complete each sentence.

1. I like optical illusions. They're interesting to look at, (**and / or**) they can be a lot of fun.
2. You can find optical illusions in books, (**or / so**) you can look for them online.
3. Optical illusions play tricks on the mind, (**but / so**) they can make people very confused.
4. Optical illusions use color, light, and patterns, (**and / but**) they don't use sound.

B. Completion. Complete these sentences using words from the box. Then look back at the reading on pages 98–99 to check your answers.

or so but and

1. Sometimes our eyes see something, _____ our minds understand it easily. (lines 13–14)
2. The red dot on the left may seem larger because of the small blue dots around it, _____ they're really the same size. (lines 17–20)
3. Do you see a cup, _____ do you see two faces? (lines 23–24)
4. One part "sees" the cup and another part "sees" the faces, _____ the image keeps changing. (line 30–32)

Critical Thinking Discuss with a partner. Look back at the optical illusions on pages 98–99. Which of the illusions is most confusing to you? Why?

Vocabulary Practice

A. Completion.

Choose the correct words to complete the information below.

Look at the photo. What do you see? Do you

1. (trust / stare) your eyes? Maybe you shouldn't. Your eyes—and your mind—might be making a 2. (stare / mistake).

If you see only dark camels crossing the desert, your eyes are playing tricks on you. The photographer took this photo toward the end of the day. 3. (Impossible / Therefore), the sun was low in the sky and the camels had long shadows. The dark camel shapes you see in the photo are really just the camels' shadows. If you 4. (trust / stare) at it closely, you can see that the real camels are the thin brown shapes below the darker camel shapes.



This photo of camels walking in the desert forms a kind of optical illusion. Sometimes optical illusions happen naturally.

B. Words in Context.

Complete each sentence with the correct answer.

1. An idea that is **related to** something is _____ that thing.
a. linked with b. different from
2. It is **impossible** for an elephant to _____.
a. carry a tree branch b. carry a large whale
3. The **size** of something is how _____ it is.
a. heavy b. big
4. When you **stare** at something, you look at it for a _____ time.
a. short b. long
5. If you make a **mistake**, you do something that is _____.
a. correct b. wrong
6. If something is **personal**, you _____.
a. share it with everyone b. keep it to yourself

Word Partnership

Use **mistake** with: (v.) **make a mistake**, **correct** a mistake, **repeat** a mistake; (adj.) **terrible** mistake, **stupid** mistake, **common** mistake.

VIEWING Parasomnia

Before You Watch

- A. Warm Up.** Look at the picture and read the caption. Have you, or anyone you know, experienced parasomnia? Discuss with a partner.



Have you ever seen someone walking around while they're asleep? Their eyes may be open, but they don't seem to see anything. It may sound strange, but many people do get out of bed and move around without ever waking up. Sleepwalking is an example of a type of sleep problem called *parasomnia*. Other people who have parasomnia may move around in their sleep and seem to be having nightmares (bad dreams), or move their legs as if they are kicking something.

- B. Predict.** Answer the questions below. Discuss with a partner.

1. What causes people to experience parasomnia?
 - a. They have slept for too long.
 - b. A part of their brain is awake.
 - c. They're having a very scary dream.

2. Which of these is another example of parasomnia?
 - a. snoring very loudly
 - b. eating while sleeping
 - c. waking up many times in one night

While You Watch

- A. Checking.** As you watch the video, check your answers in **Before You Watch B**. Were your ideas correct?

- B. Viewing.** What other kinds of sleep activities does the video mention?

- fighting cooking dancing talking driving

After You Watch

A. Multiple Choice.

Choose the correct answer for each question below.

1. The video says people who fight in their sleep may _____.
 - a. be angry with their partner
 - b. be worried about a problem
 - c. be dreaming about being attacked
2. When people with parasomnia wake up they _____.
 - a. think they're still in a dream
 - b. remember their dreams clearly
 - c. don't know what they have done
3. When people sleepwalk, their _____ is awake.
 - a. upper brain
 - b. middle brain
 - c. lower brain

B. Matching.

Match the stages of NREM sleep with their descriptions.

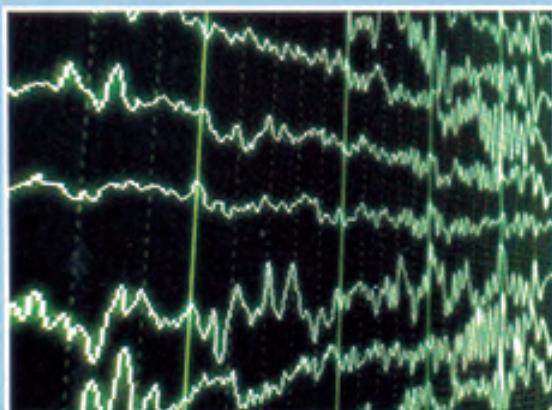
Stage 1	Stage 2	Stages 3 and 4

1. Your body relaxes.
2. You're in deep sleep.
3. You sleep lightly.
4. Brain waves are small.
5. Heart beat and breathing get slower.
6. Brain waves are large and far apart.
7. Your brain shuts off sounds and movements from the outside world.

C. Discuss.

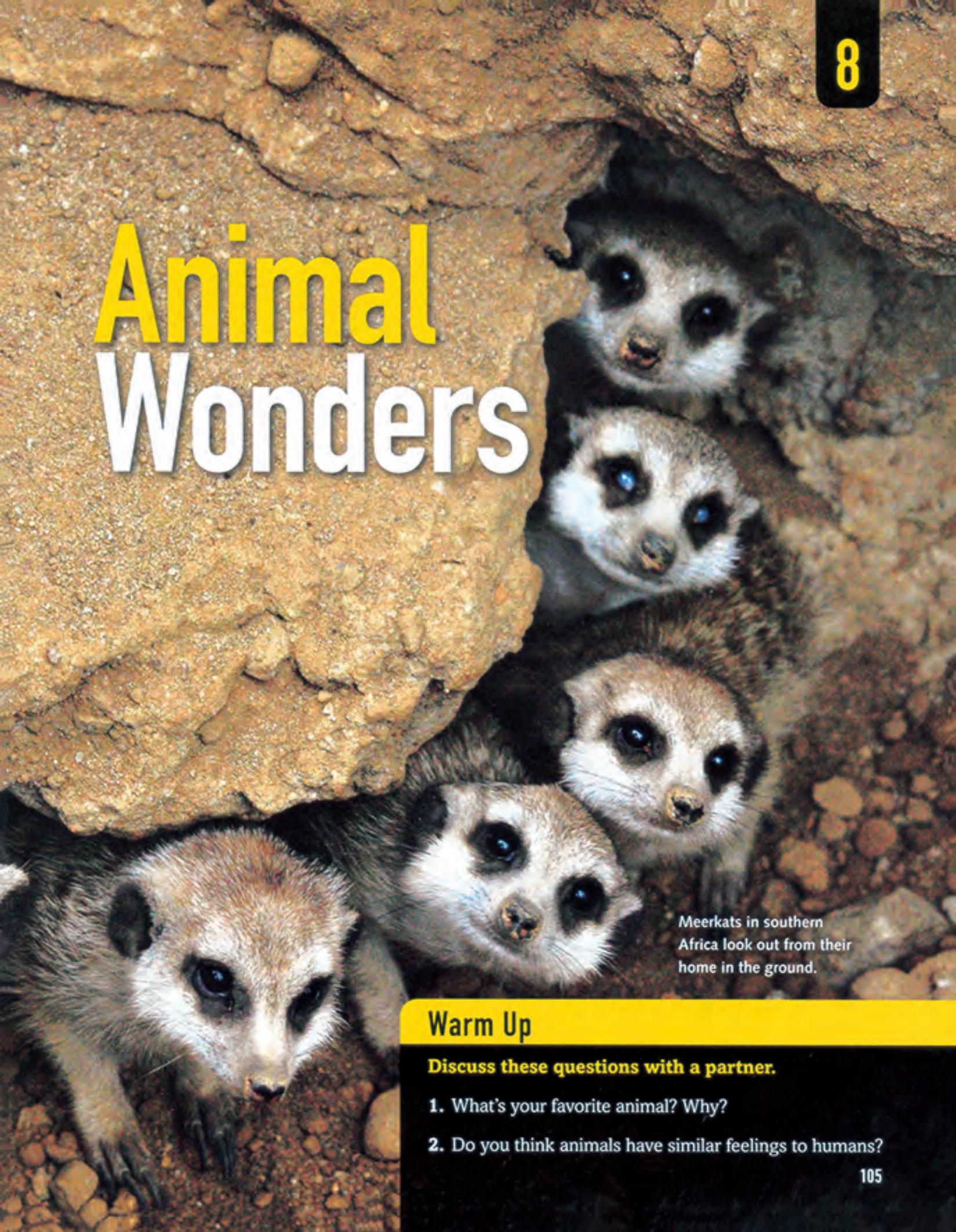
Discuss these questions with a partner.

1. What do you think you should do if you see someone with parasomnia?
2. The video says parasomnia can be dangerous. In what ways do you think parasomnia can be dangerous?



▲ This pattern of lines shows a person's brain waves as he or she goes from R.E.M. sleep to waking up.

Animal Wonders

A close-up photograph of several meerkats (suricates) looking out from a hole in a rocky ground. The meerkats have distinctive black and white markings around their eyes and ears. They are looking directly at the camera with alert expressions.

Meerkats in southern Africa look out from their home in the ground.

Warm Up

Discuss these questions with a partner.

1. What's your favorite animal? Why?
2. Do you think animals have similar feelings to humans?



Before You Read

A. Quiz. What do you know about penguins?

Mark each sentence below as true (T) or false (F).

- | | | |
|---|---|---|
| 1. Penguins can breathe underwater. | T | F |
| 2. Wild penguins only live in Antarctica. | T | F |
| 3. There are six different types of penguins. | T | F |
| 4. Once a year, penguins lose all their feathers. | T | F |
| 5. Penguins feed their babies food that they already ate. | T | F |

B. Predict. Look quickly at the photos and headings on pages 107–108. Check (✓) the information you think you'll read about. Then read the passage to check your answers.

- emperor penguins and their babies
- young penguins getting older
- global warming and penguins

► In Antarctica, home of the emperor penguin, it can get as cold as -60°C (-75°F).

A Penguin Family



- 1 Emperor penguins are the largest penguins on Earth. Each **adult** is over a meter tall, and can weigh¹ up to 40 kilograms.

For many months each year, emperors live near the sea in large groups called *colonies*. However, in May, the weather gets colder and ice covers large areas of ocean. Each colony moves many kilometers from the water. There, each mother penguin lays² just one egg. Then all the hungry mothers must walk back to the ocean to find food. The father penguins put their eggs on top of their feet, under a **special** piece of skin called the *brood pouch*.

Sharing the Work

For two months, the father penguins keep the eggs safe and warm. They do this through some of the coldest weather conditions on Earth. By July, it is winter in Antarctica. Most animals leave for warmer places, but the father penguins stay. In this time, without food, a father penguin can lose almost half of his body weight.

¹ If something **weighs** 40 kilograms, that is how heavy it is.

² When an animal **lays** an egg, it pushes it out from its body.

New Life

By August, the babies begin to hatch!³ The mother penguin returns just in time to see her baby come out of its egg. The chick⁴ is then moved to her brood pouch. This can be difficult. If the chick falls, it can freeze⁵ quickly, so the penguin parents must be very careful. Once this is done, the father penguin can go back to the ocean to find food.

Growing Up

Over the next few months, penguin parents take turns going to the ocean for food. They each make the trip several times, bringing back food for the chick. The chick grows quickly and is always hungry.

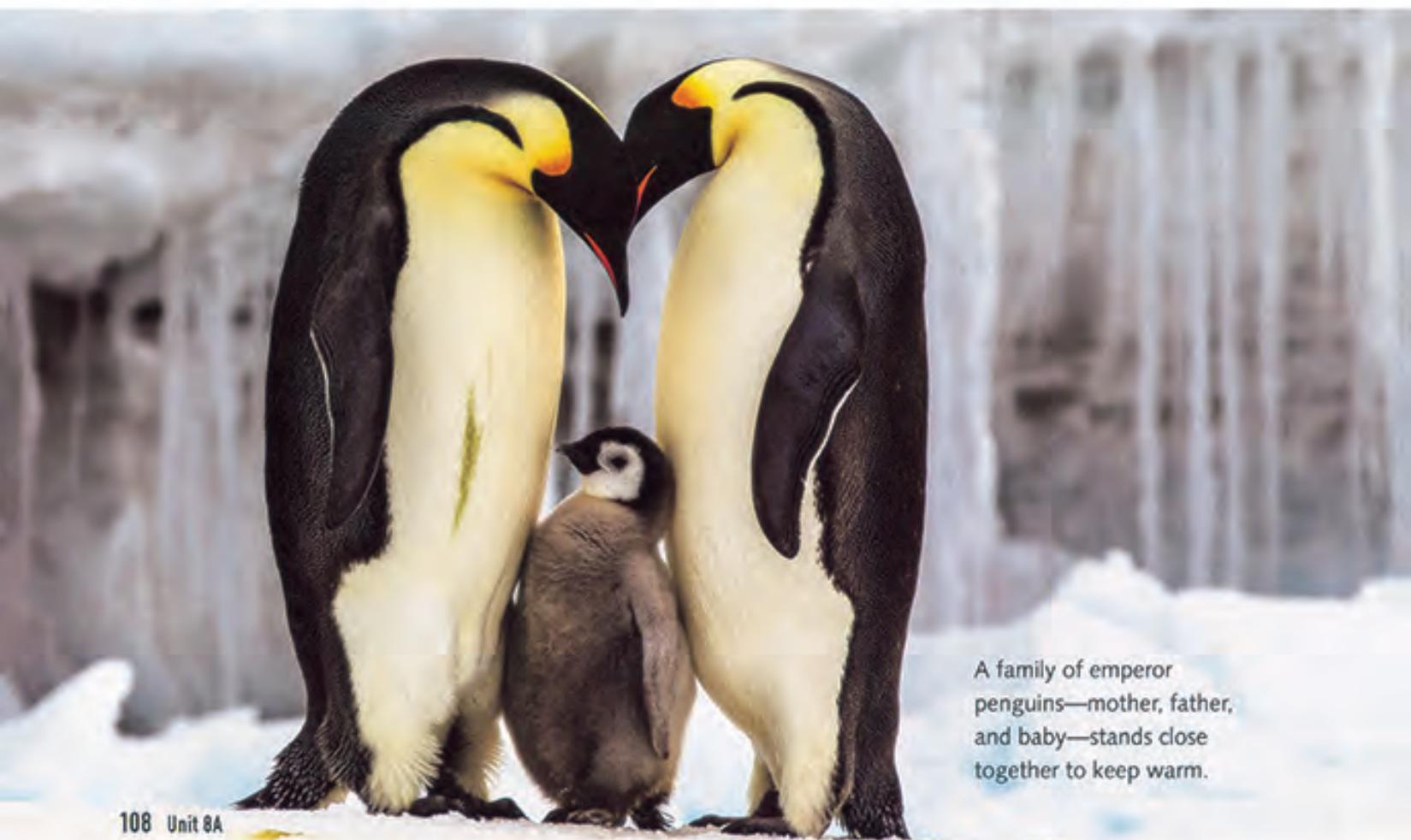
Into the Water

By December, winter is ending. The chick is five months old and can live on its own. Soon it enters the water for the first time. It will swim and eat until next April, and then return here. After a few more years, it, too, will start its own family.

³ If baby animals hatch, they come out of an egg.

⁴ A chick is a baby bird.

⁵ If a liquid freezes, it becomes solid like ice because of low temperatures.



A family of emperor penguins—mother, father, and baby—stands close together to keep warm.



Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. Another good title for this passage would be _____.

- a. A Study of Penguin Families
- b. Types of Penguins Around the World
- c. Emperor Penguins and Global Warming

Sequence

2. Which of the following things happens first?

- a. The adult penguins walk away from the ocean.
- b. The mother penguin walks to the ocean to find food.
- c. The father penguin loses half of his body weight.

Detail

3. When does the father penguin care for the egg without the mother penguin?

- a. from May to August
- b. from August to October
- c. from October to December

Vocabulary

4. The word *almost* (line 16) means _____.

- a. nearly
- b. exactly
- c. more than

Inference

5. What will probably happen if the chick falls onto the ice?

- a. Another penguin will take the chick.
- b. The chick will die because of the cold.
- c. The father penguin cannot go find food.

Reference

6. The word *here* (line 31) refers to _____.

- a. the water
- b. where it grew up
- c. where it learned to swim



Did You Know?

As young penguins grow, the adults leave them in groups of chicks called *crèches*. Some adults stay behind to care for the chicks.



Reading Skill

Paraphrasing

A paraphrased sentence has the same meaning as the original sentence, but uses different words and (sometimes) different grammar. Paraphrasing can make a passage more interesting. Look at this example.

Original: Emperor penguins are the largest penguins on Earth.

Paraphrased: There are no penguins on Earth larger than emperor penguins.

A. Multiple Choice. Which sentence correctly paraphrases the first?

Circle **a** or **b**.

1. Penguins cannot fly.
 - a. Penguins are not able to fly.
 - b. Penguins swim but don't fly.
2. Penguins get all their food from the sea.
 - a. Penguins get some food on land.
 - b. Penguins only find food in the sea.
3. Penguins prefer to be around other penguins.
 - a. Penguins are never alone.
 - b. Penguins like to be in groups.

B. Completion. Look back at the passage on pages 107–108.

Find and underline sentences from the passage that match what these paraphrased sentences mean.

1. The father penguin takes care of the egg for two months.
2. The mother penguin comes back from the ocean before the egg hatches.
3. It's not easy to do this.
4. The baby is getting bigger fast and needs a lot of food.
5. The baby is older and is living without its parents.

Critical Thinking Discuss with a partner. Which do you think is the more important penguin parent—the mother or the father? Why?

Vocabulary Practice

A. Matching. Read the information below and match each word in red with its definition.

- Siberian tigers are the largest tigers in the world. An adult male's body can grow to three meters (ten feet).
- Each tiger has a special pattern of black and orange marks on its fur. These make them difficult to see among the trees.
- Tigers generally like to live on their own. They leave their parents when they are still young.
- Most other cats do not like to enter water, but tigers love to swim.
- There are about 500 Siberian tigers in Asia, but few live in the wild. Most live in zoos today.

1. _____ : father and mother
2. _____ : not a child; fully grown
3. _____ : alone, not with anyone else
4. _____ : unusual; not like other kinds
5. _____ : to go into (something)

B. Words in Context. Complete each sentence with the correct answer.

1. If you have several pets, you have _____ pets.
a. one or two b. more than two
2. If you and a friend take turns riding a bike, you ride it _____.
a. one after the other b. at the same time
3. You need to be careful when you are _____.
a. carrying a glass statue b. trying to fall asleep
4. When you enter someone's house, you go _____.
a. outside b. inside



Today, wild Siberian tigers are found only in an area called Primorsky Krai, in Russia. It is very cold there, but the tigers' thick fur keeps them warm.

Word Partnership

Use **enter** with: (n.) enter a room, enter school, enter college, enter a contest.



► Through their faces and body language, animals often seem to show very humanlike emotions.

Before You Read

- A. Discussion.** Look at the photos above. Which word(s) in the box could describe each animal? Do you think animals really have these feelings?

anger boredom happiness surprise

- B. Scan.** Quickly scan the passage on the next page. Underline the names you find. How many are there? Which are pets, and which are humans? Read the passage to check your answers.

Do Animals LAUGH?

- 1 We know animals have **emotions**. They can feel fear. We also think they feel love, since they have strong **relationships** with each other. So are animal emotions all **similar** to our own? And do animals have a sense of humor?¹

5 | A Parrot Named Bongo Marie

Sally Blanchard's parrot Bongo Marie didn't **get along** with her other parrot, Paco. In fact, Bongo Marie clearly didn't like Paco at all! One day, Blanchard cooked a chicken for dinner. She started to cut the chicken with a knife. "Oh, no! Paco!" Bongo Marie said loudly and **laughed**. Blanchard laughed, too, and said, "That's not Paco." "Oh . . . no," said Bongo Marie. This time, she sounded disappointed.² Then the parrot laughed at her own joke.³

10 | Yoga Dog

- 15 Jean Donaldson enjoys doing yoga—and so does her dog Buffy. While Jean Donaldson does yoga, Buffy carefully places her **toys** on Donaldson's body. If a toy falls, Buffy runs to put it back. Does this **behavior** have any real purpose? "She thinks it's hilarious!"⁴ says Donaldson.

20 | Animal Laughter

Can dogs "laugh"? Recent research shows that dogs can tell each other when they want to play. They make a special sound—a kind of "laugh." Psychologist Patricia Simonet recorded the sound. Then she played it back to dogs to **assess** their behavior. "All the dogs seemed to like the laugh," says Simonet. So do animals have a sense of humor? If laughter is a clue, then perhaps the answer is "yes!"



▲ Do dogs really laugh?

¹ Someone's **sense of humor** is their ability to know what is funny.

² If someone is **disappointed**, they are sad they didn't get what they wanted.

³ A **joke** is something that makes you laugh.

⁴ If something is **hilarious**, it is very funny.



Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. What does the author want to know?
 - a. Do animals have emotions?
 - b. Do animals have a sense of humor?
 - c. Do animals laugh in the same way as humans?

Detail

2. Which of the following sentences is NOT true?
 - a. Paco and Bongo Marie are both parrots.
 - b. Paco and Bongo Marie are good friends.
 - c. Sally Blanchard thinks Bongo Marie is funny.

Reference

3. The word *she* (line 12) refers to _____.
 - a. Paco
 - b. Bongo Marie
 - c. Sally Blanchard

Detail

4. Which of the following sentences is true?
 - a. Buffy feels sad when Jean Donaldson does yoga.
 - b. Jean Donaldson thinks Buffy has a sense of humor.
 - c. Buffy laughs at Jean Donaldson when she does yoga.

Vocabulary

5. In line 24, the phrase *played it back* is closest in meaning to _____.
 - a. recorded it again
 - b. played with the dogs
 - c. let the dogs hear the recording

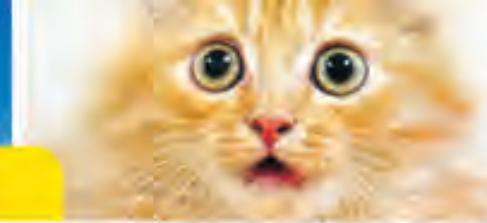
Main Idea

6. What is the main idea of the last paragraph?
 - a. A scientist showed that dogs talk to each other, so they seem to be funnier than most animals.
 - b. A scientist showed that dogs make a laughing sound, so animals might really have a sense of humor.
 - c. A scientist recorded dogs making a laughing sound, but doesn't believe they have a sense of humor.

Did You Know?

Most African Grey Parrots, like Bongo Marie, are able to learn a few words, but some have a vocabulary of over 500 words and phrases.





Reading Skill

Identifying Supporting Details

It's important to identify the main idea of a passage. But it's also important to identify details that support that idea. These might include reasons, examples, facts, or descriptions. As you read, ask yourself how well the author supports the main idea of the passage.

A. Analyzing. Circle the letters of the statements that support the idea "Elephants are very smart animals."

- a. Elephants can live for 60 to 80 years in the wild.
- b. Elephants know themselves when they look in a mirror.
- c. Elephants can paint pictures and play music.
- d. Elephants pull off tree branches and use them to keep flies away.
- e. Elephants live in both Africa and Asia.
- f. Elephants usually have a good sense of humor.
- g. People often kill elephants for their tusks.

B. Completion. In the passage on page 113, the author asks, "Do animals have a sense of humor?" Complete the information below with words from the passage.

Sally Blanchard owns two parrots named Bongo Marie and Paco. One day, Bongo Marie told a 1. _____ and then she 2. _____.

Jean Donaldson's dog Buffy likes to put 3. _____ on Jean's body while she does yoga. If one falls, Buffy puts it back. Jean says that Buffy thinks this is 4. _____.

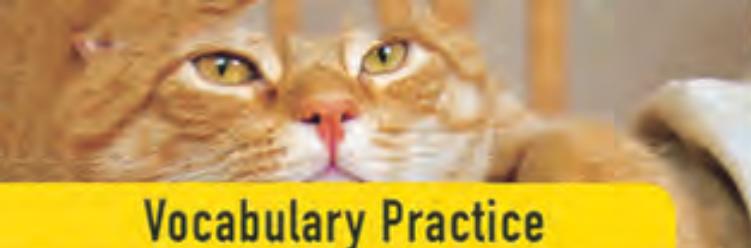
Psychologist Patricia Simonet thinks that dogs make a sound that is similar to a human 5. _____. The sound lets other dogs know when they want to 6. _____.



► A picture of some flowers painted by an elephant

Critical Thinking Discuss with a partner. Do you think the supporting details in **B** helped you answer the question, "Do animals have a sense of humor?" Have you ever seen animals show emotions? Describe the situations.

Vocabulary Practice



A. Completion. Complete the sentences with the correct words from the box. One word is extra.

assess behavior laughter relationship similar

Chimpanzees are 1. _____ to humans in many ways.

For example, the 2. _____ between chimps is often very close. This was clear when researchers studied a pair of brother and sister chimps, Kanzi and Panbanisha.

The researchers wanted to 3. _____ how well the chimps had learned to make stone knives. So they gave each chimp a box with a banana in it. They also gave the chimps the items they needed to make knives, to cut open the boxes.

Kanzi made a good knife, but his sister could not. When he saw that she was sad, Kanzi tried to give his knife to her. When no one was looking, he put his knife where his sister could find it, and she finally got her banana. Kanzi's 4. _____ showed the researchers that he cared for his sister.



▲ Kanzi the bonobo can make knives from stone, play music, and understand more than 500 English words.

B. Words in Context. Read the sentences below.

Then mark each sentence as true (T) or false (F).

- | | | |
|---|---|---|
| 1. If you get along with someone, you often fight with them. | T | F |
| 2. If you assess something, you test or measure it. | T | F |
| 3. A toy is something you can play with. | T | F |
| 4. Two things that are similar are the same in some way. | T | F |
| 5. Emotions are different from thoughts. | T | F |
| 6. The sound of laughter is usually a happy sound. | T | F |

Word Partnership

Use **similar** with: **be + similar + to.**

e.g., *Animals are similar to humans in some ways.*

VIEWING **Penguins in Trouble**

Before You Watch

- A. Warm Up.** Look at the picture and read the caption. How do you think a leopard seal catches a penguin? Discuss with a partner.



Because their food comes from the sea, penguins spend as much as half their lives swimming. In the water, penguins can reach speeds of up to 27 kilometers per hour (17 miles per hour). However, this speed can't always save them from predators like the leopard seal. Leopard seals may seem too big to move quickly, but they can often move quickly enough to catch penguins. And penguins are one of their favorite meals.

- B. Quiz.** What do you know about leopard seals? Answer the questions below. Then check your answers at the bottom of page 118.

1. Adult (**female** / **male**) leopard seals are larger.
2. Leopard seals usually live (**on their own** / **in groups**).
3. A baby leopard seal is called a (**cub** / **pup**).
4. Leopard seals eat penguins, birds, and (**small whales** / **other seals**).

While You Watch

True or False. As you watch the video, mark each sentence below as true (T) or false (F).

In the video . . .

- | | | |
|--|---|---|
| 1. There is only one leopard seal but many penguins. | T | F |
| 2. The penguins jump onto land, but the seal does not. | T | F |
| 3. The seal catches two penguins. | T | F |
| 4. The seal goes away hungry. | T | F |

After You Watch

A. Cause and Effect. Match the causes with their effects.

Causes	so	Effects
1. the baby penguins are hungry	•	a. they turn around fast
2. a leopard seal waits nearby	•	b. they cannot move very fast
3. more penguins arrive, but they sense the leopard seal	•	c. the penguins are in danger
4. the penguin that is caught relaxes its body	•	d. the penguin parents have to fish
5. the penguins and seal are out of their usual environment, the water	•	e. it can escape when the seal drops it

B. Paraphrasing. Use the information above to help you describe the events of the video in your own words to a partner.

C. Discuss. Discuss these questions with a partner.

1. The video says, "In Antarctica, every day is a fight for survival." What do you think this means?
2. How did you feel when the leopard seal caught the penguin or when the penguin got away? Why?



A leopard seal swims away with its lunch. >

1. female; 2. on their own; 3. pup; 4. other seals

INCREDIBLE DOMES

High above Red Square in Moscow, Russia, the great domes of Saint Basil's Cathedral stand as reminders of Russia's colorful past.



Warm Up

Discuss these questions with a partner.

1. What do you think is the most interesting thing about this building?
2. What is the most famous building in your country? Why?



Before You Read

A. Matching. Look at the picture and read the information below. Match the words in **bold** with their definitions.

The Taj Mahal in Agra, India, is one of the most famous **monuments** in the world. The **emperor** Shah Jahan built the Taj Mahal from white **marble**. The large **dome** at its center is one of the most famous parts of the building.

1. _____ : the male ruler of an empire
2. _____ : a rounded roof
3. _____ : a type of stone often used in buildings
4. _____ : large structures built to remind people of a famous event or person

The Taj Mahal was built by the emperor Shah Jahan for the love of his life, Arjumand Banu Begum. The empress is more famously known as Mumtaz Mahal—*Chosen One of the Palace*.

B. Predict. Look at the title, photos, and captions on this page and the next. Why do you think Shah Jahan built the Taj Mahal? Read the passage to check your ideas.

A Love Poem in Stone

Often called “a love poem¹ in stone,” the Taj Mahal is well-known for being one of the most beautiful buildings ever created. It is also perhaps the most beautiful **expression** of love in the world.

The emperor Shah Jahan built the Taj Mahal for his empress, Mumtaz Mahal. The **couple** lived happily together for 18 years. Then Mumtaz died during the **birth** of their fourteenth child. Before she died, the emperor made her a **promise**. To remember her, he would build the most beautiful monument in the world.

The emperor poured his passion and wealth into building the Taj Mahal. It is said that it took more than 20,000 people and 1,000 elephants to build. They worked for over 20 years to build the monument and its central dome, which stands over 73 meters above the ground.

Soon after the building was **finished**, Shah Jahan's son became emperor. He put Shah Jahan in prison.² Shah Jahan lived there until his death in 1666, when his body was put in the Taj Mahal with the woman he loved.

There are many **legends** about the Taj Mahal. In one story, when the building was complete, Shah Jahan had the builders' hands cut off, **supposedly** so they could never build anything as beautiful as the Taj Mahal. Another says he also wanted to build a black Taj Mahal. These are interesting stories, but they are most likely not true.

The love story between Shah Jahan and his wife ended sadly. But the monument to their love still stands today. It is visited by millions of **tourists**, who come to see the marble change color in the light of the rising sun or a full moon.



▲ A painted picture of Shah Jahan and Mumtaz Mahal

¹ A **poem** is a piece of writing that usually has rhythm; something beautiful.

² A **prison** is a place where people who break the law are kept, where they cannot get out.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

- What could be another title for this reading?
 - The Emperor and Empress's Home
 - How an Emperor Showed His Love
 - The Beautiful Writings of Shah Jahan

Sequence

- When was the Taj Mahal built?
 - after the death of Mumtaz Mahal
 - when Shah Jahan's son became emperor
 - while Shah Jahan was in prison

Paraphrase

- What is another way of saying *It is said that* (line 13)?
 - It is true that
 - We said that
 - Some people believe that

Reference

- Who does the word *He* refer to in line 17?
 - Shah Jahan
 - Shah Jahan's son
 - Shah Jahan's father

Detail

- Which of these statements about the Taj Mahal is true?
 - It took 20 years to build.
 - Shah Jahan died inside it in 1666.
 - Its central dome was never completed.

Main Idea

- What is the main idea of the fifth paragraph (from line 20)?
 - The Taj Mahal has a very dark and sad history.
 - Shah Jahan was known to be a terrible person.
 - There are many stories about the Taj Mahal, many untrue.

Did You Know?

Shah Jahan used 28 different kinds of gems and stones to make the inside of the Taj Mahal beautiful. These gems and stones came from many places, including China, Afghanistan, Sri Lanka, and Arabia.



Reading Skill

Understanding Complex Sentences

Compound sentences consist of two independent clauses (see Unit 7).

Complex sentences, on the other hand, consist of an **independent clause** and a **dependent clause** connected by a **conjunction**. Conjunctions include *before*, *after*, *when*, *while* (to show time), *if* (to show condition), *because* (to show a reason), and *but* or *although* (to show a contrast). In these examples, the dependent clause is underlined.

I plan to go on a trip after I save enough money.

If I save enough, I want to visit Florence.

I want to go there because I'm very interested in art.

Although I speak Italian, I'm going to take a phrase book with me.

A. Scan. Look back at the passage on page 121. Complete each sentence with a conjunction.

1. _____ Mumtaz Mahal died, the emperor made her a promise. (lines 8–9)
2. _____ the Taj Mahal was finished, Shah Jahan's son became emperor. (lines 16–17)
3. In one story, _____ the building was complete, Shah Jahan had the builders' hands cut off. (lines 20–21)
4. There are many interesting stories about the Taj Mahal, _____ they are most likely not true. (lines 23–24)

B. Completion. Choose the correct conjunctions to complete the information.

Tips for Visiting the Taj Mahal

1. Enter through the south gates (**because / although**) there are usually long lines at the east and west gates.
2. (**When / Because**) you visit, keep the areas inside and outside clean.
3. Take off your shoes (**although / before**) you enter.
4. You can also wear shoe covers (**while / before**) you are inside.
5. Do not bring video cameras (**while / because**) they are not allowed inside.
6. (**If / Although**) it is not required, consider hiring a guide.
7. (**Before / If**) you hire a guide, hire only the ones with official I.D. cards.
8. Do not touch the walls (**when / because**) this can harm the monument.

Critical Thinking Discuss with a partner. Do you know of any other famous or interesting ways that people have expressed their love?

Vocabulary Practice

A. Definitions.

Read the information below. Then match each word in red with its definition.

The **legend** of the black Taj Mahal has been around for a long time. According to the story, Shah Jahan wanted a monument for himself. His monument would be similar to the Taj Mahal, but would use black marble. Some believe the monument was never **finished**. Others don't think the story is true.

Shah Jahan **supposedly** wanted to build his monument in a garden across the river from the Taj Mahal. Archeologists searched this area, and some thought they found pieces of black stone. However, these were just white stones that had turned black. They weren't black marble at all.

The archeologists also rebuilt part of a pool that was in the garden, which **couples** like to visit in the evening. When the couples look at the Taj Mahal in the reflection of the pool's water, it sometimes looks black. Perhaps this is where the story came from.

1. _____ : two people, usually in a relationship
2. _____ : ended or completed
3. _____ : a story that is passed down from earlier times
4. _____ : reportedly; believed to be true



► The reflection of the Taj Mahal at sunset may have started the story of the black Taj Mahal.

B. Words in Context.

Complete each sentence with the correct answer.

1. People often _____ to **express** love.
a. give flowers b. hide their emotions
2. When you make a **promise**, you tell someone that you _____ something.
a. can do b. will do
3. A **tourist** is someone who _____.
a. travels for fun b. works in a different country
4. The **birth** of a person describes the time he or she _____.
a. is born b. gets married

Word Partnership

Use **promise** with: (v) **make** a promise, **keep** a promise, **break** a promise; (adj.) **broken** promise, **empty** promise, **false** promise.

The Great Dome of Florence



Before You Read

A. Discussion. Look at the picture and read the caption. Then discuss the questions below with a partner.

1. What city is the dome above in?
2. What do you think the dome is made of?

B. Predict. What problems do you think the builders of the dome had? Check (✓) your ideas below. Then read the passage on pages 126–127 to check your answers.

The builders couldn't build the dome because they didn't know . . .

- | | |
|--|---|
| <input type="checkbox"/> what materials to use | <input type="checkbox"/> how to raise money |
| <input type="checkbox"/> how to support the dome | <input type="checkbox"/> how to lift things high up |



Today, the dome of the Basilica di Santa Maria del Fiore is one of Florence's greatest sights. But for over 100 years, the Basilica was unfinished because builders of the time couldn't build the dome.



1 Brunelleschi and the Dome

In 1419, at the beginning of the Renaissance¹ in Italy, a clockmaker named Filippo Brunelleschi started work on a very difficult **project**. He was building the dome of Florence's main cathedral,² the Basilica di Santa Maria del Fiore. At 55 meters (180 feet) above ground, it would be the largest dome built since the Pantheon in Rome was finished 1,500 years before.

After most of the cathedral was built in 1296, many builders tried to complete the dome. But none could do it. No one knew what **material** to use. Many builders knew how to build concrete³ domes. However, the dome in Florence needed to be wider than any dome ever built. Also, tall buildings of the time **relied** on structures that **supported** the heavy stone from the outside. The cathedral didn't have these structures, so a concrete dome was too heavy. It would easily fall. So, the cathedral's roof was left unfinished for over a hundred years.

Filippo Brunelleschi promised to **solve** all these problems. He said he would build two domes, an inner dome made of stone, and an outer one made of light bricks.⁴ He would use lighter materials as he worked upwards, and would hold it all together with strong rings made of stone, wood, and iron.

Brunelleschi also had to find a way to **lift** the materials high into the air. What did he do? He **invented** a new machine to do the job.

Building the dome took 16 years. The crown at the top took another ten. Brunelleschi died a few years later, in 1446. He had done something no one else could. However, he left no pictures of his **design**. So—even today—experts don't fully understand how this amazing structure was built.

Among the world's most amazing domes, the dome in Florence is second in size only to St. Peter's Basilica in Vatican City.

¹ The Renaissance, meaning "rebirth," was a time of great thinkers, builders, and inventors.

² A **cathedral** is a kind of church building, usually quite big and beautiful.

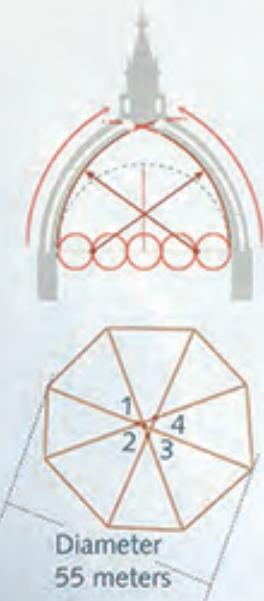
³ **Concrete** is a hard construction material similar to stone.

⁴ **Bricks** are pieces of baked clay used for building.

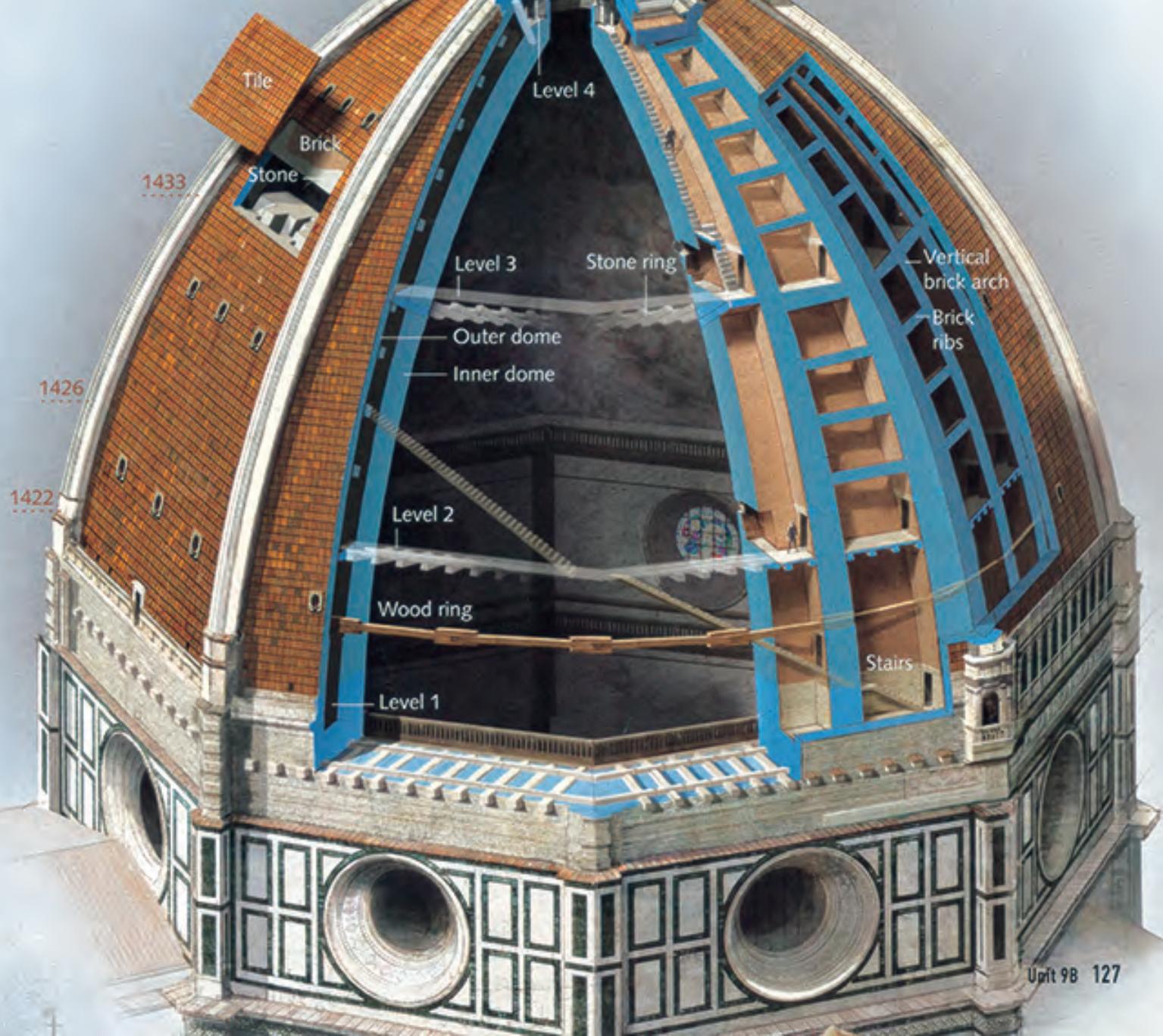


114 meters
from the
ground

Filippo Brunelleschi's
ideas made building
the great dome
possible.



Completed in:
1436



Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Detail

- Which of the following is NOT given as a reason the dome was difficult to build?
 - No one had ever built a dome from concrete before.
 - No one had built such a wide dome before.
 - The cathedral didn't have structures that could support a dome from the outside.

Purpose

- What is the purpose of the third paragraph (from line 17)?
 - to argue another side of an issue
 - to explain a solution to a problem
 - to provide background information

Sequence

- Which of these things happened last?
 - The Renaissance began.
 - The cathedral was built.
 - The dome was completed.

Detail

- What is true about Filippo Brunelleschi?
 - He built three domes for the cathedral.
 - He died before seeing the dome completed.
 - He invented a machine that lifted things into the air.

Cohesion

- The following sentence would best be placed at the end of which paragraph? *As a result, there was a large hole in the cathedral's roof.*
 - paragraph 1
 - paragraph 2
 - paragraph 3

Detail

- Why don't we fully understand how the dome was built?
 - Brunelleschi didn't leave any pictures of his design.
 - Some structures are completely covered in concrete.
 - The dome has been rebuilt many times over the years.



Did You Know?

Inside Florence's cathedral is a 700-year-old clock that places the end of each day—or the 24th hour—at sunset instead of midnight.

Reading Skill

Recognizing Prepositions

There are different types of prepositions, including those that indicate time (*on Monday, for a day*), place (*in India, at school*), movement (*to the library, into the water*), and possession (*a friend of mine, the boy with black hair*). Here are a few examples of English prepositions.

above	at	behind	below	by	during	for	from
in	inside	near	of	on	to	under	with

A. Recognizing. Read the information below. Find and underline all the prepositions.

Tips for Visiting the Great Dome in Florence

- Any visitor to Florence should climb to the top of the cathedral. It's an easy walk up the stairs to the dome area.
- The dome is covered with lovely paintings. Look closely at the walls for graffiti that was made by other tourists. Much of it is over a hundred years old. It gives you an idea of the many people who came before you.
- From the top, you get a great 360-degree view of Florence. You can see many of the famous places in the city from there.

B. Completion. Complete the sentences with the correct prepositions from the box. You can use each preposition more than once. Then look back at the reading to check your answers.

for from in into of with

- The Renaissance began ____ Italy. (paragraph 1)
- Filippo Brunelleschi built the dome ____ Florence's main cathedral. (paragraph 1)
- Buildings ____ that time needed to support heavy stone ____ the outside. (paragraph 2)
- Brunelleschi planned to hold the dome together ____ strong rings. (paragraph 3)
- Brunelleschi invented a machine to lift heavy materials ____ the air. (paragraph 4)
- Brunelleschi died ____ 1446. (paragraph 5)
- Brunelleschi left no pictures ____ his design. (paragraph 5)

Critical Thinking Discuss with a partner. Which do you think was more difficult to build—the Taj Mahal or the dome of Florence's cathedral? Why?



The inside of the great dome of Florence

Vocabulary Practice

A. Completion. Complete the information below with the correct words in the box. One word is extra.

design material project rely supported

Some love it. Others hate it. But it looks like London's Millennium Dome is here to stay. The dome itself is made of a very strong 1. _____ that is only a millimeter thick. This makes the dome very light. The air inside the dome is heavier than the roof itself. This material is 2. _____ by twelve towers, one for every hour of the clock. This makes the whole dome look like a big clock from above.

When the dome opened in 2000, many were pleased with the interesting 3. _____. But some were unhappy because—for such an expensive 4. _____—it had not brought in as many visitors as the builders predicted. Today, the Millennium Dome is better known as the O2 Arena, and is a stadium for music and sporting events.

B. Words in Context. Complete each sentence with the correct answer.

1. If you **invent** something, you _____ it for the first time.
a. make b. use
2. When you **lift** something, you move it to a _____ place.
a. lower b. higher
3. Someone who has **solved** a problem has found a way to _____.
a. make it bigger b. end it
4. If you **rely** on someone, you _____ them.
a. don't believe b. trust

Thesaurus

material Also look up: (*n.*) *cloth, fabric, textile, matter, substance, stuff, medium*



► Designed by architect Richard Rogers, the Millennium Dome is 52 meters tall, each meter representing one week of the year.

VIEWING Brunelleschi's Dome

Before You Watch

- A. Warm Up.** Look at the picture and read the caption. Pay attention to the words in **bold**. You will hear them in the video. Match the words with their definitions below.



In 1418, a contest was held to solve the problem of the great dome of Florence. Part of the problem was that the cathedral didn't have **arches** to support the dome. Also, the dome's **base** was an **octagon**, so it was not possible to build the usual **semicircle** dome. Filippo Brunelleschi, a master goldsmith,¹ had never trained as an **architect**, but he won the contest and built the dome, using a design that few understand, even today.

¹ A **master goldsmith** is someone who is very good at working with gold.

- | | | |
|---------------|---|---|
| 1. architect | • | • a shape that is half of a circle |
| 2. arches | • | • b. a shape with eight sides of the same length |
| 3. base | • | • c. curved structures that support a wall |
| 4. octagon | • | • d. someone who designs buildings |
| 5. semicircle | • | • e. the lowest part; the part on which something rests |

- B. Quiz.** What do you know about Florence and its great dome? Answer the questions below. Then check your answers at the bottom of page 132.

1. There are (163 / 463) stone steps inside the dome.
2. Around (400 thousand / four million) bricks were used to build the dome.
3. When Brunelleschi died, his body was put (in the dome / under the cathedral).
4. (Michelangelo's David / The Venus de Milo) is a famous statue kept in Florence.

While You Watch

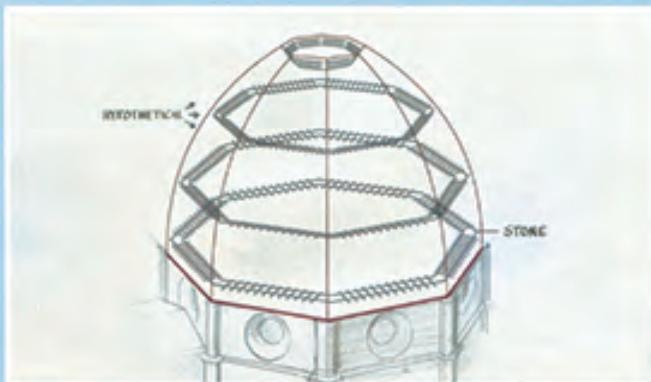
Checking. As you watch the video, check your answers in **Before You Watch B**. Were your ideas correct?

After You Watch

A. Completion. Choose the correct word or phrase to complete each sentence below.



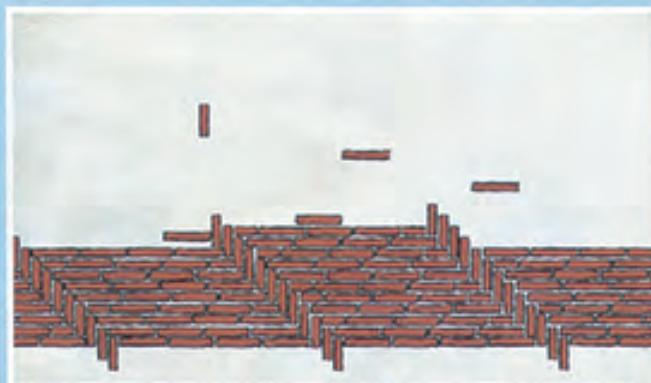
1. The dome needed to be (eight- / sixteen-)sided.



2. The rings in Brunelleschi's design would stop the (dome from changing shape / arches from falling off).



3. According to the video, Brunelleschi's machines were (hard to use / ahead of their time).



4. The special (pattern / material) of the dome's bricks helps hold them together.

B. Discuss. Discuss these questions with a partner.

1. Are there any interesting buildings in your city? Do you know why they were built that way?
2. Brunelleschi wasn't trained as an architect, but he was a master goldsmith and clockmaker. Do you think these skills helped him design and build the dome? How?

1. 463; 2. four million; 3. under the cathedral; 4. Michelangelo's David



WILD WEATHER



A cold snap strikes the city of Veroix, Switzerland. The freezing temperatures cause snow and ice to cover everything in sight.

Warm Up

Discuss these questions with a partner.

1. What's the weather usually like where you live? Have you experienced any wild weather in your country?
2. Do you think humans are able to cause changes in the weather?



Before You Read

A. True or False. What do you know about wild weather events? Read the sentences below. Then mark each sentence as true (T) or false (F).

- | | |
|--|-------|
| 1. The center of a hurricane is called its "head." | T F |
| 2. A drought can happen when there's no rain. | T F |
| 3. The country with the most tornadoes is Australia. | T F |
| 4. A heat wave can happen in any part of the world. | T F |
| 5. A "flash" flood is sometimes caused by snow melting. | T F |

B. Skim for the Main Idea. On this page and the next, skim the title, headings, photos, and captions. What is the passage mainly about?

Circle **a**, **b**, or **c**. Then read the passage to check your answer.

- a. why the U.S. is getting more dangerous storms
- b. what scientists are doing to change the weather
- c. how the weather is changing around the world

A Warming WORLD



- 1 One weekend in May 2010, the weather **forecast** for Nashville, Tennessee, U.S.A., predicted 10 centimeters (4 inches) of rain. By Sunday, over 33 centimeters (13 inches) had fallen. Soon the city was flooded. On the roads, cars
5 were covered by the rising water. "We've got buildings running into cars," the news reported as a small building **flooded**. There were 11 deaths that weekend.

▲ Hurricanes, droughts, tornadoes, and floods are examples of wild weather events. This picture shows the result of a drought, leaving a pond in China completely dried out.

Changing Weather

- The weather is changing. Over the last few years, heavy
10 rains have caused floods in Brazil, Pakistan, and Thailand. Droughts have struck Russia and Australia. Heat waves have killed thousands in Europe, and all over the world, hurricanes and tornadoes strike more **frequently** and with greater **force** than ever before. In 2011 alone, **losses** caused by the
15 weather cost the world 150 billion dollars.

Warmer and Wetter

As more wild weather events happen, a worried world is beginning to ask questions like: *What is going on with the weather? And why?* Many also want to know: *Is this natural, or are we to blame?*

- 20 The answer seems to be: *a little of both*. Wild weather is natural. But most scientists agree human activity has made the Earth warmer. This global warming makes heat waves more likely to occur. The higher temperatures also cause more water to enter the air. This causes heavier and more frequent rain. Some scientists
25 also believe global warming makes hurricanes and other storms stronger.

This means we're likely to see more wild weather. "[But] we don't have to just stand there and take it," says scientist Michael Oppenheimer. He and other experts say we need to stop the Earth from getting warmer. We also need to be prepared, to do things that will help save lives.



In May 2010, heavy rains caused floods in Nashville, U.S.A. The flood waters covered whole areas of the city, like this parking lot.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Main Idea

- What is the main idea of the reading passage?
 - There was a deadly flood in Nashville, Tennessee, U.S.A.
 - Global warming is causing wilder weather events.
 - Wild weather events are making people very worried.

Purpose

- What is the purpose of the second paragraph (from line 8)?
 - to give examples of recent wild weather events
 - to describe the weather events that occurred in 2011
 - to predict how the weather will change in a few years

Paraphrase

- Which of the following is closest in meaning to *What is going on with the weather?* (line 18)?
 - What will the weather do next?
 - What was the weather like before?
 - Why are we having such strange weather?

Reference

- What does *this* refer to in line 19?
 - a worried world
 - the increase in wild weather
 - deaths caused by wild weather

Vocabulary

- In line 28, the word *take* could be replaced by _____.
 - feel good about
 - do nothing about
 - find out more about

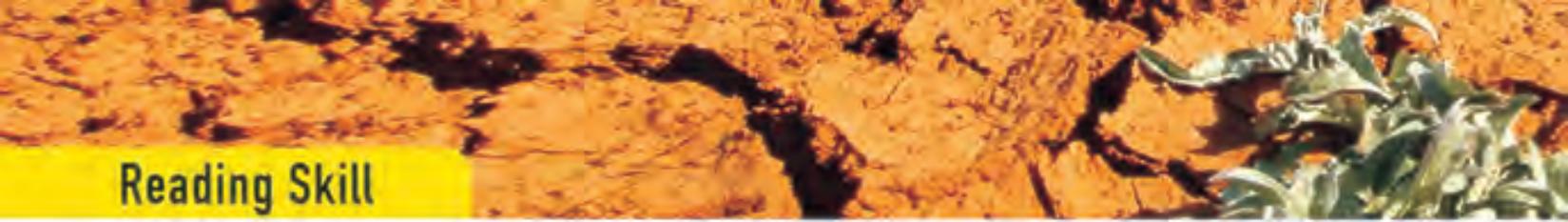
Inference

- Which of the following statements would Oppenheimer probably agree with?
 - It is too late to stop global warming.
 - Stop global warming, and the weather will get better.
 - The most important thing, in preparing for wild weather, is to find ways to keep our things safe.

Did You Know?

Lightning is very hot—a flash can heat the air around it to temperatures five times hotter than the surface of the sun.





Reading Skill

Identifying Text Types

Each time you encounter a new reading passage, try to determine what type of text it is. Knowing the text type allows you to predict what kind of information the text may contain and how it is organized. This will help you follow it more easily. Here are four of the most common text types.

Narrative texts entertain the reader by telling a story.

Expository texts inform the reader by providing facts and general information.

Technical texts provide information that helps the reader perform a task.

Persuasive texts try to convince the reader to agree with an opinion.

A. Multiple Choice. Look back at the passage on pages 135–136.

What kind of text is it? Circle **a**, **b**, **c**, or **d**.

- a. narrative b. expository c. technical d. persuasive**

B. Matching. Read the four paragraphs below. Then match each one to the correct text type.

- a. narrative b. expository c. technical d. persuasive**

- _____ . . . since floods occur more often than tornadoes or earthquakes. There is a strong chance that you will experience a flood in your lifetime. This is why it's important to protect your home. Everyone should . . .
- _____ . . . may just save your life. First, go to the safest place possible. This is usually in the basement of your building, if you have one. Next, go to the center of the room and keep away from windows. Stay there until you are sure the tornado . . .
- _____ . . . and just as we got to the top of the mountain, it started to rain. There was lightning all around, so we knew we had to find a safe place right away. I wanted to run under a tree, but my friends . . .
- _____ . . . a cyclone is a collection of thunderstorms. In general, both typhoons and hurricanes are tropical storms, but they occur in different places. Cyclones in the Pacific are called typhoons, and those in the Atlantic are called hurricanes . . .

Critical Thinking Discuss with a partner. How prepared are you for "wild weather"? What are some ways you can be better prepared?

Vocabulary Practice

A. Completion.

In early 2012, "once-a-century" floods in Ireland left large areas of land underwater. In June, very high 1. (**losses / temperatures**) caused wildfires in Russia. Months later, Hurricane Sandy killed hundreds in North America with 2. (**losses / forecasts**) that cost the country about \$150 billion.

Each of these events was dangerous enough on its own. However, in 2013, *all* of these types of weather events 3. (**blamed / occurred**) one after another in Australia. In fact, the country has experienced a huge increase in wild weather events in the past few years, including more 4. (**frequent / floating**) droughts, tornadoes, and heat waves.

Because there is so much wild weather in Australia, more and more scientists are studying its weather patterns to see if they can help make better weather 5. (**forecasts / temperatures**).

B. Words in Context.

1. An example of something that **floats** is _____.
a. a rock b. a piece of wood
2. The **force** of a tornado refers to its _____.
a. shape b. strength
3. If you **blame** someone, you say they _____.
a. caused something bad to happen b. stopped something bad from happening
4. Something that happens **frequently** happens _____.
a. often b. rarely

Word Partnership

Use **temperature** with:
(adj.) **high** temperature,
low temperature,
average temperature,
daytime temperature.

A man carries a child through floodwaters in Jakarta, Indonesia ➤



FREAKY FORCES of Nature



Before You Read

A. Discussion. Look at the picture above and read the caption. Then discuss these questions with a partner.

1. What other strange weather events have you heard of? Can you explain why they happen?
2. Do you know any interesting stories about strange weather?

B. Skim. Quickly skim the reading passage on page 141. Match the headings below to the correct paragraphs in the passage. One heading is extra.

- a. Tornadoes of Fire
- b. Floods Rising!
- c. Great Balls of Ice!
- d. Strange Rain!

▲ A giant cloud of dust, called a *haboob*, quickly covers the city of Phoenix, Arizona, U.S.A. The wall of dust is 1,500 meters (5,000 feet) tall and 160 kilometers (100 miles) long. It is just one of many strange weather events seen on Earth.

When Weird Weather Strikes

Most of us know about fires, hurricanes, droughts, and floods. But from time to time, Mother Nature¹ surprises us, and **delivers** a weather event that is really **weird**. Here are some examples of truly weird weather.

1. _____: One day in 2005, residents² of a small town in Serbia looked out their windows and saw an unusual sight. It was raining frogs! Without any **warning**, they found their streets filling with the little jumping creatures. "There were thousands of them," one resident told a **local** newspaper. "I thought perhaps a plane carrying frogs had exploded,"³ said another. Scientists think a tornado passed over a lake. It sucked up animals that lived there. The frogs were carried into the air. Then they were **dropped** in the Serbian town, far away.

2. _____: As if tornadoes aren't dangerous enough, some of them can **actually** be made of fire. When a wildfire reaches very high temperatures, it causes the air to become hot and to rise. Cooler air **rushes** in to replace the hot air. This creates strong winds. These winds suck up burning plants and even the fire itself. When this happens, like it did on March 14, 2014, in Denver, Colorado, U.S.A., a tornado of fire is produced. This tornado can become 15 meters (50 feet) wide and grow as tall as a 40-story building.

3. _____: In 1942, hundreds of thousand-year-old skeletons were found under the ice of Lake Roopkund in the Himalayas. Many had holes in their skulls. But they weren't hurt in any other way. Scientists thought the people must have been hit from above. But for years, the cause of their deaths was a mystery. Today, scientists think these people were killed by giant hailstones—balls of ice. Hailstones form when raindrops high in the sky turn into pieces of ice. The ice pieces **increase** in size until the wind cannot hold them up. This results in hailstones falling to the ground, often at speeds of over 160 kilometers (100 miles) an hour. For the unlucky people at Lake Roopkund, there was nowhere to run. They were all killed by the hailstones.

A tornado of fire is formed by strong winds in a forest fire.

¹ Mother Nature is a term used to describe nature as if it were a woman.

² A **resident** is a person who lives in a certain place.

³ If something **explodes** (e.g., a bomb), it suddenly breaks apart with parts flying outward.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. Another title for this reading could be _____.

- a. Unusual Tornadoes
- b. Humans vs. Nature
- c. Strange Weather

Vocabulary

2. The words *sucked up* in line 13 could be replaced with _____.

- a. lifted
- b. used
- c. blew

Detail

3. What is probably true about the frogs that rained down in Serbia?

- a. They fell out of an airplane that exploded.
- b. A tornado took them from a lake and dropped them over the town.
- c. They were carried away as babies, grew in the clouds, and then fell down to Earth.

Reference

4. The word *this* in line 22 refers to the moment when _____.

- a. a wildfire grows really big
- b. rushing winds suck up the fire
- c. the tornado of fire becomes 15 meters wide

Cohesion

5. The following sentence would best be placed at the end of which paragraph? *This makes them very dangerous.*

- a. paragraph 1 (from line 1)
- b. paragraph 2 (from line 6)
- c. paragraph 3 (from line 16)

Detail

6. What happens when little pieces of ice move around in the wind?

- a. They become bigger.
- b. They become raindrops.
- c. They fall to the ground as snow.

Did You Know?

In November 2007, residents in Changsha, China, were surprised when they found a street filled with "fish rain." They later found out it never really rained fish. The fish probably fell off a truck.



Reading Skill



Identifying Cause and Effect

Identifying causes and effects in a passage can help you see how events change other events. To identify causes and effects, you can often look out for words like *cause*, *result*, *create*, and *produce*.

Sometimes causes and effects are described without using these words. When two events in a passage seem to be connected, ask yourself: *Which event occurred first? Did it change the event that follows?*

A. Scan. Look back at the reading on page 141. Find examples of causes and effects in the passage. Underline the causes and circle the effects.

B. Matching. Look at the chart below. Match the causes on the left with the effects on the right.

Causes	Effects
1. a tornado passes over a lake	• a. hundreds of people died
2. a wildfire reaches high temperatures	• b. hail falls to the ground
3. cool air rushes into a wildfire	• c. strong winds are created
4. wildfire winds suck up the fire itself	• d. the air becomes hot and rises
5. pieces of ice in the air grow too big	• e. frogs are lifted into the air
6. hailstones fell from the sky	• f. a tornado of fire is produced

Critical Thinking Discuss with a partner. What would you do if you were caught in a hailstorm? Saw a tornado of fire? Got rained on by frogs?

A fire tornado comes dangerously close to people's homes in California, in the U.S.



Vocabulary Practice

A. Completion.

Complete the information with the words from the box.
One word is extra.

actually increase local rushing warning weird

Mystery Waves

Imagine this: You are out at sea, relaxing on a boat. It's a beautiful day. No rain is falling, and the winds are calm. All at once, something very 1. _____ happens. Out of nowhere, you see a wall of water ten stories tall 2. _____ toward you.

This is known as a *rogue wave*, also called a *freak wave*. Some people mistake them for tsunamis, but they are 3. _____ very different. Tsunamis start out very small in the open ocean, and only 4. _____ in speed and height as they get close to the coast. When a tsunami is coming, the water will often seem to be sucked back into the ocean. There is usually no 5. _____ before a rogue wave strikes. This kind of wave can appear even in the best of weather.

Scientists aren't sure what causes these waves. In fact, as recently as 15 years ago, people thought these waves didn't really exist. But scientists now know they are very real—and very dangerous—even to the largest ships.

B. Words in Context.

Complete each sentence with the correct answer.

1. If something **drops**, it _____.
a. falls to the ground b. moves up into the air
2. You are a **local** in the city, you _____.
a. grew up in b. just moved to
3. If you describe a movie as **weird**, you think it is _____.
a. funny b. strange
4. When you **deliver** a letter, you usually ____ someone.
a. bring it to b. get it from

Usage

Drop vs. *fall*

Both *fall* and *drop* mean "to move downward quickly". However, we use *drop* when someone or something holds an object and lets it go, e.g., *I fell down the stairs*. vs. *I dropped my phone on the street*.

VIEWING Storm of the Century

Before You Watch

Warm Up. Look at the picture and read the caption. Then answer the questions below. Discuss your ideas with a partner.



- Often, tropical storms with heavy rain and strong winds start in the Atlantic Ocean. When a tropical storm reaches wind speeds of 63 kilometers per hour (39 miles per hour), it is given a name, like Sandy, Dolly, or Hugo. When it gains wind speeds of 119 kilometers per hour (74 miles per hour), it is no longer a tropical storm; it is now called a *hurricane*.

The worst hurricane in U.S. history was the Great Galveston Hurricane of 1900, which killed between 8,000 and 12,000 people. That day, floodwaters came up to almost five meters. Since then, there hadn't been a storm as bad, until the arrival of what many are now calling "the storm of the century."

- Does your country experience big storms? When was the last big weather event in your country?
- The video is about Hurricane Katrina, which hit New Orleans in the U.S., in 2005. Have you heard of this hurricane? If so, what do you know about it?

While You Watch

A. Checking. Are your ideas from **Before You Watch** talked about in the video?

B. Multiple Choice. As you watch the video, choose the correct answer for each question below.

1. The video says that in recent years there were _____ as many strong storms.
a. twice b. three times c. four times
2. Scientists use images that show _____ to see the power of the storm.
a. heat b. waves c. losses
3. Mayfield thinks that after people see what the storm did, they should _____.
a. want to help stop global warming
b. find a new place to live, away from the sea
c. buy better weather-prediction machines

After You Watch

A. Completion. Complete the sentences below using the numbers in the box.

1 1 2 2 3

1. Katrina's winds reached about _____ hundred eighty kilometers per hour.
2. Over a few days, _____ million people lost their homes to the floods.
3. Katrina took almost _____ thousand lives.
4. Water levels in Mayfield's neighborhood rose to almost _____ meters.
5. The losses caused by Katrina cost the U.S. about _____ hundred billion dollars.

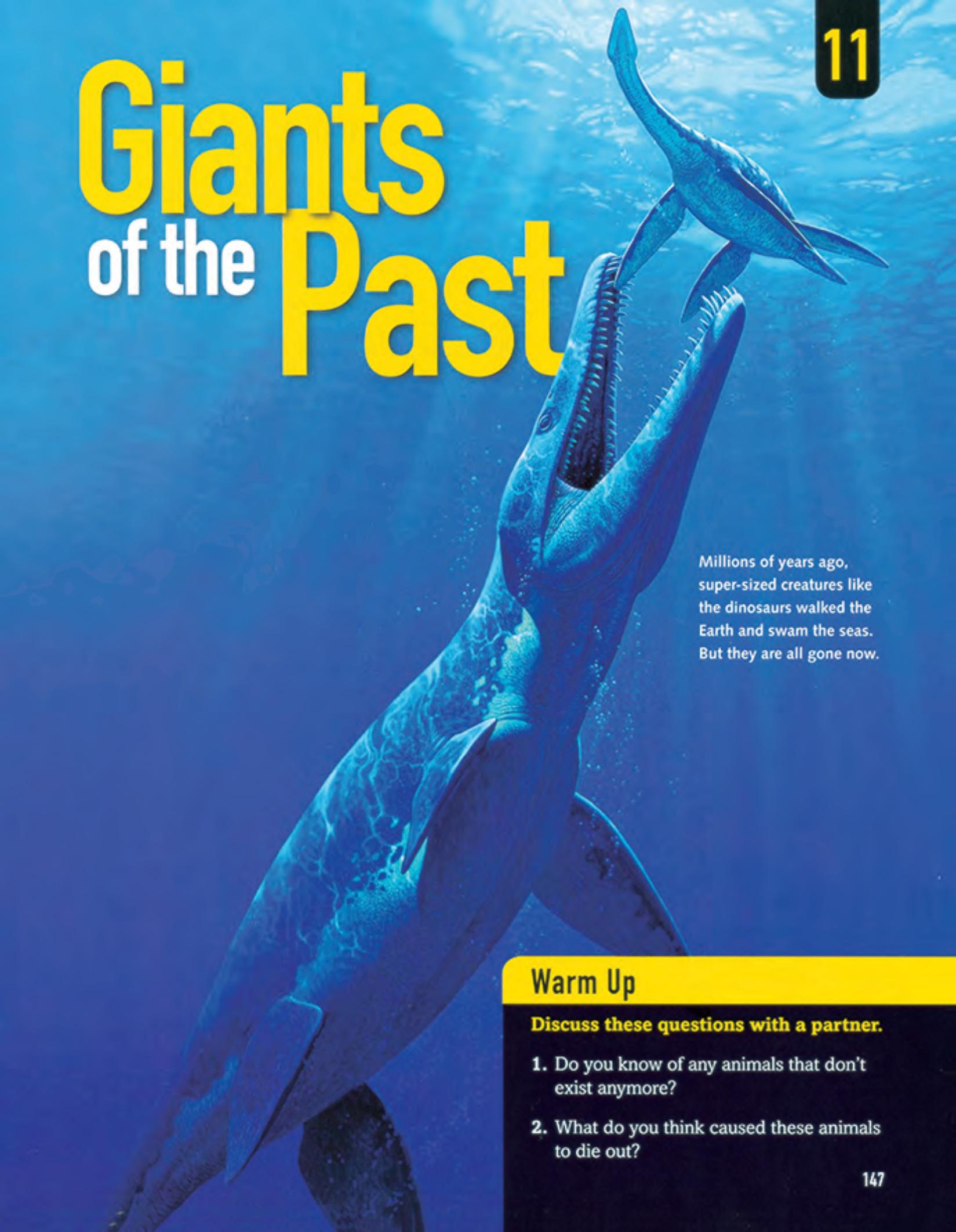
B. Discuss. Discuss these questions with a partner.

1. The video says that after Katrina, "for many, things will never be the same." What do you think this means?
2. Why do you think some tropical storms are given names? Do you think it's a good idea?



◀ Rescue workers in a boat help a woman leave her flooded home.

Giants of the Past

A detailed illustration of a plesiosaur, a marine reptile from the Mesozoic era, swimming gracefully through the deep blue ocean. The plesiosaur has a long neck, a small head with a wide mouth full of sharp teeth, and four powerful flippers. Sunlight filters down from the surface in bright rays, illuminating the creature's skin and creating a sense of depth.

Millions of years ago,
super-sized creatures like
the dinosaurs walked the
Earth and swam the seas.
But they are all gone now.

Warm Up

Discuss these questions with a partner.

1. Do you know of any animals that don't exist anymore?
2. What do you think caused these animals to die out?



The MAMMOTH'S Tale

Before You Read

A. Matching. Tens of thousands of years ago, woolly mammoths walked the Earth. These creatures were related to today's elephants. Read the information below. Then match the words in **bold** to their definitions.

MAMMOTH

- Long, thick hair
- Long, curved **tusks**
- Lived during the **Ice Age** in Siberia and North America
- Became **extinct** 4,000 years ago



ELEPHANT

- Thick skin but very little hair
- Short, straight tusks
- 470,000 elephants living today, mainly in hot places like India and Africa

1. _____: no longer existing or living
2. _____: a time when ice covered much of the Earth
3. _____: long, pointed teeth used to fight or to find food

B. Predict. Look at the pictures and captions on this page and the next. What do you think happened to the mammoth after it was found? Discuss with a partner. Then read the passage to check your ideas.

▲ Lyuba is the best-preserved mammoth mummy in the world.



1 **Imagine** finding a body that had been lost for 40,000 years . . .

The strange animal in the ice looked like it was sleeping. Ten-year-old Kostia Khudi and his brother had never seen anything like it before. But they had heard stories of the 5 **mamont**. It was an imaginary animal that lived in the ice-filled blackness of the Siberian underworld.¹ Their father, a reindeer herder² named Yuri Khudi, went to ask a friend for advice.³ But when he returned, the body had **vanished**.

Yuri soon found the animal's body **leaning against** a store in 10 a nearby town. While he was away, his cousin had sold it to the store owner. Dogs had eaten part of the tail and ear, but it was still in "as close to **perfect** condition as you can imagine," says scientist Daniel Fisher. The police came to help. The body 15 was taken by helicopter to a museum.⁴ The animal was a baby mammoth from the Ice Age. It was female, so the scientists named it after Yuri's wife.

From Siberia, the mammoth was sent to the Netherlands and Japan. Scientists there studied it more closely. **Detailed** studies 20 of her teeth and tusks showed she was just one month old when she died. **Ongoing** research has also shown us the **sequence** of events that led to her death. Lyuba fell and died near a muddy river. The mud helped keep her body frozen until she was found, 40,000 years later. Scientists hope that **further** studies will help explain how mammoths, like Lyuba lived. They also want to 25 know why mammoths became extinct.



▲ Lyuba died when she fell into wet mud near a river.



▲ The ground froze. It kept Lyuba's body whole.



▲ In 2006, melting caused Lyuba's body to wash free.

¹ The **underworld** is an underground world, where some people believe the dead go.

² A **herder** looks after a large group of animals.

³ If you ask someone for **advice**, you ask them what they think you should do in a particular situation.

⁴ A **museum** is a place where old things are kept on display.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. The passage is mainly about _____.
 - a. animals that are now extinct
 - b. an important discovery
 - c. what life was like for a mammoth named Lyuba

Sequence

2. Which of the following happened first?
 - a. Yuri's cousin sold the mammoth to a store owner.
 - b. Lyuba's body was taken to a museum.
 - c. The police arrived to take Lyuba's body away.

Purpose

3. What is the purpose of the second paragraph (from line 9)?
 - a. to describe the condition of Lyuba when she was found
 - b. to describe the difficulties of studying a mammoth's body
 - c. to describe how Lyuba was found again and taken to a safe place

Reference

4. The word *it* (line 11) refers to the mammoth's _____.
 - a. ear
 - b. tail
 - c. body

Inference

5. Which of the following can be inferred from the passage?
 - a. Yuri's wife's name was Lyuba.
 - b. The mammoth died when the Ice Age ended.
 - c. Yuri's cousin didn't know what the mammoth was like when he sold it.

Detail

6. How did Lyuba die?
 - a. Dogs killed her.
 - b. Hunters killed her.
 - c. She died when she fell.

Did You Know?

Some scientists think mammoths died out because the Earth became too warm and they couldn't find enough food. Others think humans hunted them to extinction.



Reading Skill

Recognizing Active and Passive Sentences

Reading passages often include a mix of active and passive sentences. In active sentences, *the subject* is the **doer** of the action (the verb). In passive sentences, *the subject* is the **receiver** of the action. Look at these examples and notice how passive sentences are formed.

Active

- The boys* found a mammoth.
The man's cousin had sold it.
Scientists will study it.

Passive (*be* + past participle)

- A mammoth* was found (by the boys).
It had been sold (by the man's cousin).
It will be studied (by scientists).

A. Analyzing. Read the sentences below. Circle the subject of each sentence. Then mark each as active (A) or passive (P).

Example: People found 158 paintings in a cave in France.

(A) P

- These pictures were painted by early humans. A P
- The paintings show early man and mammoths. A P
- Mammoth tusks were used to make tools. A P
- These tools were used by early man to hunt. A P
- People today search for more mammoth tusks. A P

B. Completion. Are these sentences active or passive? Choose the correct word or phrase to complete each sentence. Then check your answers on page 149.

- Dogs (**had eaten / had been eaten**) part of the tail.
- The body (**took / was taken**) by helicopter to a museum.
- The mammoth (**sent / was sent**) to the Netherlands.
- Further studies (**will explain / will be explained**) how mammoths lived and died.

Critical Thinking Discuss with a partner. Some scientists want to bring extinct animals, like mammoths, back to life. Do you think they should? Why or why not?



The tusk of a full-grown mammoth could grow as long as 5.2 meters (17 feet).

Vocabulary Practice

A. Completion.

Complete the information below using the correct word or phrase.

Close your eyes. Can you 1. (**lean against** / **imagine**) a crocodile so big that it eats dinosaurs? Scientists say such a crocodile really did live 110 million years ago in Africa, but it 2. (**vanished** / **imagined**) from Earth even before the dinosaurs became extinct. They call it "SuperCroc."

In 2000, Paul Sereno and his team found some SuperCroc bones in the Sahara Desert. After some 3. (**perfect** / **further**) searching, they had enough bones to make up 50 percent of SuperCroc's skeleton.

From their work, the scientists learned many 4. (**sequences** / **details**) about SuperCroc's life.

For example, they now know it grew to about 8,000 kilograms (17,600 pounds) and that its strong jaws and strong teeth were 5. (**ongoing** / **perfect**) for catching and holding prey. The bones are now in museums, so people can learn about this amazing animal.

B. Words in Context.

Complete each sentence with the correct answer.

1. If something is **ongoing**, it is _____.
a. finished b. not finished
2. When you **lean against** a wall, you bend your body ____ it.
a. toward b. away from
3. If something is **perfect**, you probably want to _____.
a. keep it the way it is b. change it
4. A **sequence** of events refers to a number of events that come _____.
a. one after another b. at the same time

Usage

The word **further** means "more" or "additional." The word **farther**, however, usually refers to a greater distance.



▲ Paleontologist Paul Sereno studies dinosaurs and other creatures of the past. The SuperCroc fossils he discovered belong to a crocodile skeleton measuring 12 meters (40 feet) in length.



Sea Monsters

Before You Read

- A. Labeling.** Read the information below. Then label the picture above with the numbers in **bold**. Write 1–5 in the circles.

At 14 meters (45 feet) long, *Tylosaurus* was one of the biggest sea monsters¹ of all time. By looking at fossils,² scientists know that *Tylosaurus* had great **1. jaws** and big **2. teeth**. Studies of its **3. stomach** contents show it ate fish, seabirds, and even sharks. It used its long **4. tail** to push itself through the water and its two shorter **5. fins** to change direction. *Tylosaurus* was not related to the dinosaurs, but it lived and became extinct around the same time.

▲ A *Tylosaurus* reaches for a shark with its great jaws.

- B. Predict.** Look quickly at the headings, pictures, and captions on pages 154–155. Answer the questions below. Then read the passage to check your answers.

1. How many “giants of the sea” does the passage mention?
2. What do you think was unusual about each creature?

¹ The word **monster** usually refers to a large, frightening creature.

² **Fossils** are the hard remains of animals or plants that lived millions of years ago.

1 Monsters of the Deep

Sea monsters are not just imaginary creatures. Millions of years ago, real monsters did actually live on Earth.

Today, scientists use fossils to help them **figure out** what these monsters were like. The fossils can help us understand some of the animals' unusual **characteristics**. After studying the fossils, the scientists can make very detailed pictures of these animals. So now, we can all see what they looked like.



10 Eyes in the Dark

Temnodontosaurus was **definitely** an unusual animal. Its name means "cutting-tooth lizard," and with good reason—it had very big teeth. It also had some of the largest eyes in nature. They were over 25 centimeters (10 inches) across! With such big eyes, *Temnodontosaurus* could easily find its food in the dark water.

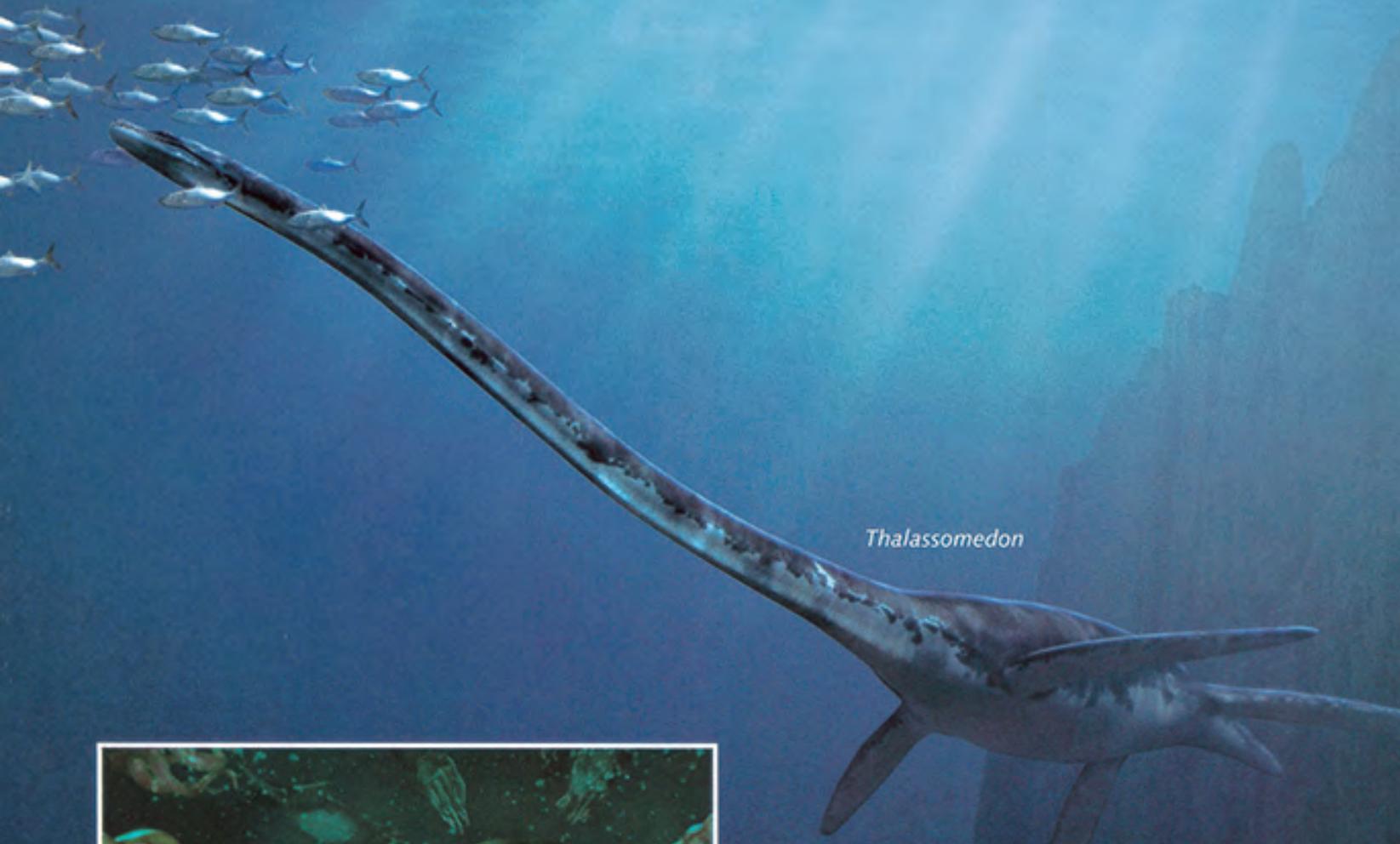
| Terror of the Deep

Kronosaurus—the "Kronos lizard"—lived in the seas that covered Australia. But it probably used its fins to climb out of the water and lay its eggs on land. Its head was two meters (seven feet) long. Its teeth were as big as bananas! The main **function** of strong jaws and teeth like these was to catch smaller animals. In fact, *Kronosaurus* was one of the most dangerous **predators** of all time.

25 | The Stalker¹

Known as the "lord of the seas," *Thalassomedon* was a large sea monster with a very long neck. It also had a special **means** of catching fish: It carried stones in its stomach! These helped keep the largest part of its body and tail down in the dark water. Meanwhile, its long neck slowly **rose** up toward the fish. The fish didn't have a **chance** to get away from *Thalassomedon*. They didn't see the sea monster until it was too late!

¹ To **stalk** someone or something is to follow slowly and quietly.



Thalassomedon



Temnodontosaurus



Kronosaurus

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Purpose

1. What is the purpose of the reading passage?
 - a. to describe the three most dangerous predators of all time
 - b. to describe how the fossils of three sea animals were found
 - c. to describe three sea animals from the past with unusual characteristics

Vocabulary

2. The phrase *with good reason* (lines 12–13) could be replaced with _____.
 - a. and it was smart
 - b. as will be explained
 - c. this was useful because

Detail

3. Which of these sentences about *Kronosaurus* is NOT true?
 - a. Its teeth were very large.
 - b. It stayed in the water all the time.
 - c. It was a very dangerous predator.

Reference

4. The word *these* in line 29 refers to _____.
 - a. fish
 - b. stones
 - c. ways to catch fish

Detail

5. What is unusual about *Thalassomedon*?
 - a. It laid its eggs on land.
 - b. It had very large eyes.
 - c. It had a very long neck.

Inference

6. Why did the fish not have a chance to get away from *Thalassomedon*?
 - a. The fish were very slow swimmers.
 - b. The fish thought *Thalassomedon* was friendly.
 - c. The fish didn't see *Thalassomedon* as it came near.



Did You Know?

Kronosaurus was the largest sea reptile that ever lived.

Reading Skill

Organizing Information in a Chart

One useful way to organize information is to write out important details in a chart. A chart can be a good way to "see" the information we want to compare or remember.

- A. Completion.** What do you know about these animals? How are they the same or different? Complete the chart with the animal names from the box.

crocodile elephant *Kronosaurus* mammoth shark *Temnodontosaurus* whale

	lives on land	lives in water
Living now		
Extinct		

- B. Completion.** Complete the chart below using information from the passage on page 154. Write one word in each space.

	<i>Temnodontosaurus</i>	<i>Kronosaurus</i>	<i>Thalassomedon</i>
Meaning of name	"cutting-lizard"	"Kronos"	"lord of the"
Unusual characteristics	had very large _____ and _____	had teeth the size of _____	had a very long _____ and _____ in its stomach
Special abilities	could easily see its _____ in the dark water	could _____ smaller animals with its strong _____	was able to get close to _____ without being seen

Critical Thinking Discuss with a partner. In what ways are the three creatures in **B** the same? How are they different?

Vocabulary Practice

A. Completion. Complete the information using the correct form of words from the box. One word is extra.

chance characteristic definitely figure out function means predator rise

For hundreds of years, people have heard reports of monsters that 1. _____ out of the sea to attack ships. Many people now think these "monsters" were probably giant squid.

Giant squid share many of the same 2. _____ as other squid. But they are much larger—up to 13 meters (43 feet) in length. They also have the largest eyes of any animal in the world. This helps them catch deep-sea fish.

Their only 3. _____ are some kinds of whales.

When it is attacked, the giant squid has a very clever 4. _____ of getting away. It shoots dark ink into the water. The whale can't see, so the squid has a 5. _____ to swim away.

For years, scientists were unable to catch a giant squid on film. But they did find squid body parts in the stomachs of whales. The scientists were able to use these to 6. _____ how big the squid was. The first photos of a live giant squid were taken in 2004. It is 7. _____ as monstrous as people believed!

B. Definitions. Use words from the box in A to complete the definitions below.

- Features that are usual for someone or something are called _____.
- Your _____ of doing something are your ways of doing it.
- If there is a _____ of something, there is a possibility it will happen.
- The _____ of an object is how it is meant to be used.



Squid have ten long sticky arms that they use to catch food.

Usage

Use **probably** to say something is likely. Use **definitely** if you are sure about something, and **possibly** if there is just a chance something is true or will happen.

VIEWING Days of the Dinosaurs

Before You Watch

Discuss. Look at the picture and read the caption.

Can you name any other dinosaurs? What do you know about them?

Discuss the questions below with a partner.



◀ The word *dinosaur* means “great lizard”—it was once believed that all dinosaurs were simply giant lizards. Scientists have since found that many dinosaurs also had characteristics similar to those of other animals.

For example, *sauropods* (the long-necked creatures pictured here) walked on four legs but were able to stand on two, like elephants. They also traveled in family groups just like elephants. They had claws¹ and hollow² bones like birds.

¹ Claws are sharp, curved structures at the end of animals’ toes.

² If something is **hollow**, it is empty inside.

1. What did dinosaurs look like? Describe some dinosaurs.
2. What do you think *sauropods* ate? What did other dinosaurs eat?
3. Did dinosaurs lay eggs?
4. What modern animal do you think dinosaurs are like?
5. How did the dinosaurs die out?
6. How do you think scientists today learn about dinosaurs?

While You Watch

- A. **Checking.** As you watch the video, check your answers in **Before You Watch**. Were your ideas correct?

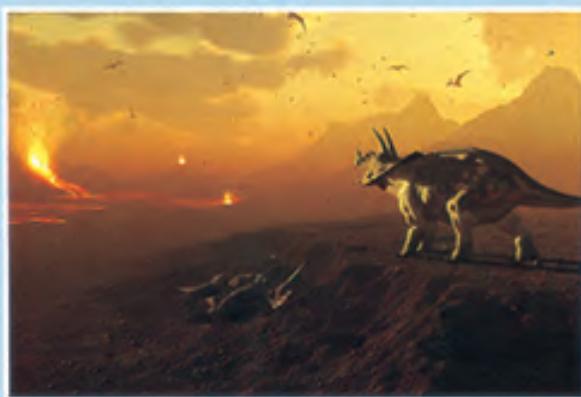
B. Completion. As you watch, choose the correct word or phrase from the video to complete each sentence.



1. The scientists dig for
(fossilized bones / dinosaur eggs).



2. The smallest dinosaur was less than
(one meter long / one kilogram).



3. Dinosaurs likely died out because the planet
was too **(hot and wet / cold and dark).**



4. Scientists believe dinosaurs may be related to
the **(birds / snakes) living today.**

After You Watch

A. True or False. Read the sentences below. Then mark each sentence as true (T) or false (F).

1. *Jobaria* ate meat.
2. *Jobaria* was longer than a city bus.
3. Most dinosaurs laid eggs.
4. Some dinosaurs lived in groups.
5. Scientists now know why dinosaurs went extinct.

T	F
T	F
T	F
T	F
T	F

B. Discuss. Discuss these questions with a partner.

1. In the video, the narrator compares the time since the moment dinosaurs first appeared to a single day. What is he trying to say?
2. Why do you think people like to watch movies and read stories about creatures from the past, like dinosaurs and mammoths?





TECHNOLOGY

As we mix more technology into our everyday activities, many believe that robots like this one will become part of our daily lives.

Warm Up

Discuss these questions with a partner.

1. What kinds of technology do you often use?
2. What kind of things do you think people will do differently 100 years from now?



Robot helpers for the home
and mini-soccer players are
just some examples of the
robots being built today.

Before You Read

A. Discuss. What can robots do that humans can't? What can humans do that robots can't? Use the words and phrases from the box, and add your own ideas.

climb stairs

jump

take care of people

walk up walls

feel emotions

play soccer

drive cars

work in space

fight fires

run

walk on water

write poems

B. Scan. Look quickly at the reading. Which of the things above are mentioned in the reading? Do you think today's robots can do them? Read the passage to check your ideas.

The Robots ARE COMING!

- 1 The year is 2045. A goal is scored at the soccer World Cup. Not by a human player, but by a robot. *A robot? Is that possible?* Many scientists believe it is. In fact, there are already robots that can play soccer. Of course, today's robots don't just play **sports**. Today's
- 5 scientists are working on robots with various skills. For example, it is very possible that robots will soon help take care of children or the elderly,¹ or do dangerous jobs such as fighting fires.

When people started making robots, they were made to do just **simple** things, mainly in **factories**. Since then, however, robots have changed a lot. Early robots were **operated** by humans. Today's robots function on their own. Some can only move around a little, like robot vacuum cleaners,² but others, such as Honda's ASIMO, can do much more. He can run, climb stairs, dance, and yes, even play soccer.

- 10 Then there are robots designed to be like humans. These robots have faces and can show emotions. Such robots can learn new things, and show us how they "feel." Actroid-DER—a social robot—looks so human, she sometimes makes people feel **uncomfortable**.

¹ Someone who is **elderly** is old.

² A **vacuum cleaner** is a machine that cleans the floor by sucking up dirt.

Animal-bots

20 Scientists aren't just building humanlike robots. They are also making robots that look and act like animals.

At NASA, scientists are making a robot snake. They think it's a good alternative to vehicles with wheels. These snake-bots can enter holes and move over rough ground. They might one day help scientists look for signs of life on Mars. Other animal robots include the frog-bot, which can jump over objects, and the sticky-bot, which can walk up walls. There's even a robot called Water Runner that can walk on water.

25 But can a robot soccer team ever operate all on their own, or play as well as a human team? Many robot scientists definitely think so.
30 Anything is possible. One day, they may even be world champions!



▼ Among the robots of today are Honda's ASIMO (top left), the NASA snake-bot (bottom left), and Actroid-DER—the social robot (right).



Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. The passage is mainly about _____.

- a. things robots can do
- b. why people need robots
- c. how to make your own robot

Purpose

2. What is the purpose of the second paragraph (from line 8)?

- a. to describe how the earliest robots were used in factories
- b. to explain how today's robots are different from early robots
- c. to explain why early robots could not do things by themselves

Detail

3. Which robot is able to show its feelings?

- a. ASIMO
- b. Actroid-DER
- c. Water Runner

Reference

4. The word *they* (line 23) refers to _____.

- a. vehicles
- b. wheels
- c. snake-bots

Detail

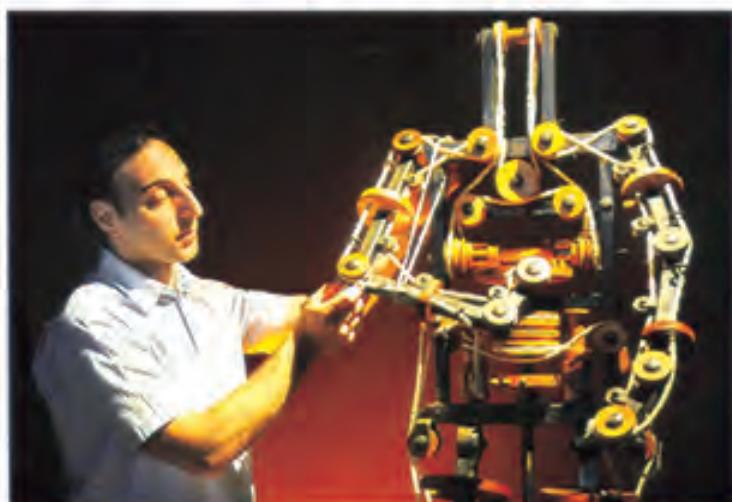
5. Which of the following robots would best be able to move over a large rock in its path?

- a. A frog-bot
- b. Actroid-DER
- c. Water Runner

Inference

6. Which statement would the author probably agree with?

- a. A frog-bot can do more things than a sticky-bot.
- b. Robots should not have to do difficult jobs for humans.
- c. There could be robot soccer players that think for themselves in the World Cup by 2045.



Did You Know?

Leonardo da Vinci drew up plans for a humanlike machine in 1495. In 2009, artists made this model of Leonardo's design.

Reading Skill

Supporting Ideas with Examples

Writers often use examples to support their ideas or help explain difficult concepts. Words that show where examples are in a text include *for instance, for example, like, and such as*.

A. Completion. Look back at paragraphs 1 and 2 of the passage on pages 163–164. Find and write the example of each thing below. (Look out for words that show where the examples are.)

1. a sport that robots can play _____
2. a skill other than a sport _____
3. a dangerous job _____
4. a type of robot that moves around a little _____
5. a robot that does more than move around _____

B. Completion. Choose examples from the box to complete the information below.

- a. he could be seen at the Henry Ford Museum
- b. "I am Elektro" and "My brain is bigger than yours."
- c. sitting, barking, and begging for food
- d. he could walk, talk, and move his arms and legs

One of the first humanlike robots was Elektro. Built between 1937 and 1939, he could do many basic human actions.

For example, 1. _____. He was first seen at the New York World's Fair in 1939, with Sparko, a robot dog that could do tricks, such as 2. _____. In 1992, a dance band recorded a song that used some things Elektro once said, like, 3. _____.

Elektro's usual home is at the Mansfield Memorial Museum in Ohio, U.S.A., but he often travels to other museums.

For instance, in 2013, 4. _____.

Critical Thinking Discuss with a partner. Some people fear that one day robots will completely replace other human beings in our lives. Do you think this could happen? What jobs do you think robots could do better than humans? Are there things only humans can do?



▲ Elektro is 2.1 meters (7 feet) tall and weighs 120 kilograms (265 pounds).

Vocabulary Practice

A. Completion. Complete the information using words from the box.

One word is extra.

alternative operate rough simple uncomfortable

Some robots today are learning to walk. Putting one foot in front of the other is usually so 1. _____ that a child can do it. But walking is difficult for robots, and nearly impossible over 2. _____ ground. Researchers are working to help robots walk better by giving them machine parts that act like human bones and muscles.

A robot pet provides a(n) 3. _____ to keeping a real animal. It moves, cries, senses your movements, and can even learn basic words. But some people are 4. _____ with robot pets. They worry that robot pets could replace contact with real animals or even other humans.

B. Words in Context. Complete each sentence with the correct answer.

1. _____ are examples of **sports**.
a. Basketball and tennis b. Balls and nets
2. A **factory** is a place where products are _____.
a. made b. sold
3. A **sign** of something _____.
a. is a picture in your mind b. shows that it exists
4. If you **operate** a machine, you _____ it.
a. use b. fix

Word Partnership

Use **operate** with: (n.) operate a **machine**, operate a **business**, operate a **company**.



▲ A robot seal named Paro helps elderly people feel better. Paro can play with people and even learn from them.



Before You Read

▲ An artist's idea of what a home in the future might look like

A. Predict. Look at the pictures on this page and the next, and read the captions. Then answer the questions below.

1. What do you think the passage will say about the future?
2. What other things do you think will be different in the future?

B. Skim. Skim the passage on page 169. Check (✓) the topics the author makes predictions about. Then read the whole passage to check your answers. Were your ideas in **A** correct?

- | | | |
|---------------------------------|---|-----------------------------------|
| <input type="checkbox"/> health | <input type="checkbox"/> entertainment | <input type="checkbox"/> clothing |
| <input type="checkbox"/> food | <input type="checkbox"/> transportation | <input type="checkbox"/> work |

How Will We Live in 2035?

1 Welcome to life in the **future**!

You get up in the morning and look into the **mirror**. You've just had an anti-aging **treatment**, so your face looks youthful. In 2035, many people your age could live to be 150, so at 60, you're not old at all.

Science has also found amazing ways to keep people healthy. There are nanotechnology¹ treatments for many illnesses, including cancer. And if any part of your body is not healthy, you can "grow" a new one in a **laboratory**.

10 As you get dressed, you say to your shirt, "Turn red." It becomes red. In 2035, "smart clothes" contain nanoparticles that carry **electricity**. So you can **program** clothes to change colors or patterns.

15 On the way to the kitchen, you want to call a friend. Your cell phone is by the window because the material it's made of takes in energy from the sun. But you don't need to pick up the phone. You can just touch your jacket sleeve² to make the call.

These are just some examples of nanotechnology all around you. "Your whole body and **surroundings** [will] become part of 20 the same network,"³ says scientist Ampy Buchholz.

It's breakfast time. You reach for the milk, but a voice says, "Don't drink that!" Your fridge is reading a computer chip⁴ on the milk. Every item from the **grocery** has a chip. Your fridge knows the milk is old, and tells the store you need new milk.

25 Finally, it's time to go to work. In 2035, cars drive themselves. Just tell your "smart car" where to go, and soon you will be there.

So, will all these predictions come true? Perhaps the future is much closer than we think.



With pieces of wearable technology like Google's smart contact lens on the way to becoming part of people's daily lives, perhaps the future is not so far away.

1 Nanotechnology is the science of very small things that are measured in nanometers (one billionth of a meter).

2 The sleeves of a shirt or jacket are the parts that cover your arms.

3 A network is a set of computers that send information to each other.

4 A computer chip is a very small piece of electronic equipment.

Reading Comprehension

Multiple Choice. Choose the best answer for each question.

Gist

1. The passage is mainly about _____.
 - a. medical treatments of the future
 - b. how future technology may affect our lives
 - c. how people will work and have fun in the future

Detail

2. What does the writer say about aging in the future?
 - a. Age 60 will not be thought of as old.
 - b. People who are 150 will look like they are 60.
 - c. People who are 60 can expect to live 150 more years.

Vocabulary

3. In line 11, the word *smart* means _____.
 - a. nice-looking
 - b. good at learning
 - c. with a computer

Reference

4. The word *it's* (line 15) refers to _____.
 - a. the window
 - b. the cell phone
 - c. the sun

Detail

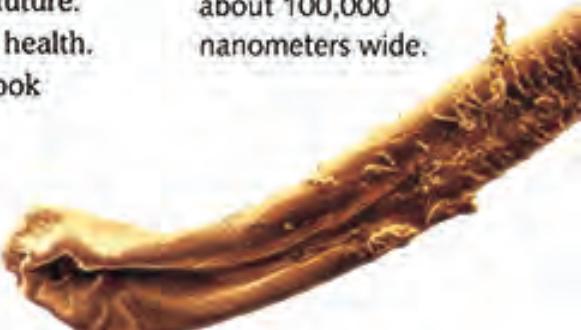
5. Which of the following predictions is NOT mentioned in the passage?
 - a. You will be able to grow new body parts.
 - b. Clothes will be able to change their patterns.
 - c. There will be no more cell phones.

Inference

6. Which statement would Ampy Buchholz probably agree with?
 - a. Nanotechnology will become very common in the future.
 - b. Nano-sized particles may be dangerous to people's health.
 - c. Life will be less interesting because everyone will look the same.

Did You Know?

A human hair is about 100,000 nanometers wide.



Reading Skill

Understanding Prefixes and Suffixes

Prefixes (e.g., *un-*, *dis-*, *mis-*) are found at the beginning of words, and suffixes (e.g., *-al*, *-ly*, *-istic*) at the end of words. Knowing the meaning of prefixes and suffixes can help you understand new words and help build your vocabulary.

A. Completion. Look at the prefixes, meanings, and examples. Write a new word for each prefix using words from the box.

act paid national

Prefix	Meanings	Examples	Your ideas:
1. re-	again/back to	return	_____
2. inter-	between/among	Internet	_____
3. pre-	before	predict	_____

B. Completion. Look at the suffixes, meanings, and examples. Write a new word for each suffix using words from the box.

pain assess invent

Suffix	Meanings	Examples	Your ideas:
1. -ful	full of	careful	_____
2. -ment	act or manner	enjoyment	_____
3. -ion	act or process	action	_____

C. Definitions. Find words in the first two paragraphs of the passage on page 169 containing these words. Write the word with its prefix or suffix. Then write a definition.

Word	Word + prefix or suffix	Definition
1. aging	_____	_____
2. treat	_____	_____
3. youth	_____	_____

Critical Thinking Discuss with a partner. Which of the predictions in the reading do you think will happen? Make a prediction about future technology. Does your partner agree?



▲ This pacemaker, a little machine that is put in a person's chest to help control their heart rhythms, is another example of how technology has changed our lives.

Vocabulary Practice

A. Definitions. Use the words in the box to complete the definitions.

electricity	future	grocery	laboratory
mirror	program	surroundings	treatment

1. If you look into a(n) _____, you see yourself.
2. A(n) _____ store sells different kinds of food.
3. Your _____ are the places, conditions, and things around you.
4. A(n) _____ is a room full of equipment where scientists work.
5. After you receive _____ for an illness, you usually look or feel better.
6. You _____ a machine by giving it instructions so it performs an action.
7. The _____ is the period of time that will happen after the present time.
8. _____ is energy that travels through wires and is used to operate machines.

B. Completion. Complete the information using words from the box in A.

Science fiction writers have long dreamed of cyborgs—people who have machines as body parts. Now that dream is a reality. Scientists have discovered ways to 1. _____ machines to pick up signals from the brain, so people can operate them just by thinking.

After she lost her arm in a car accident, it was difficult for Amanda Kitts to do the 2. _____ shopping and other everyday activities. Now Amanda has a robotic arm.

This technology is still very new. Though it has been tested many times in a 3. _____, it needs to be tested with real people. It may not work for everyone. However, many believe it won't be too far into the 4. _____ before scientists succeed in fully joining humans and machines.

✓ Amanda
Kitts with her
robotic arm



Word Partnership

Use **future** with: (adj.) **near future**, **distant future**, **bright future**; (v.) **predict** the future, **shape** the future, **face** the future.

VIEWING Deep-sea Robot

Before You Watch

Predict. Look at the picture and read the caption.

Then check (✓) the things below that you think ROPOS can do.



◀ The ocean covers more than 70 percent of the Earth's surface, but only about 5 percent of the world's oceans have been explored, and we know even less about the creatures that live in its depths.¹

In 2010, scientists from more than 80 countries started a project called the Census² of Marine³ Life. They want to find out more about life in the ocean. It's a difficult project, but the scientists have help from a very special robot called ROPOS.

¹ The **depths** of something refers to its deep places.

² During a **census**, someone counts the number of people or animals in a place and gets information about them.

³ The term **marine** refers to anything to do with the ocean.

- | | | |
|---|--|---|
| <input type="checkbox"/> record videos | <input type="checkbox"/> record sound | <input type="checkbox"/> pick up small animals |
| <input type="checkbox"/> walk on land | <input type="checkbox"/> take photos | <input type="checkbox"/> suck up things |
| <input type="checkbox"/> measure things | <input type="checkbox"/> identify species | <input type="checkbox"/> think for itself |
| <input type="checkbox"/> cut things | <input type="checkbox"/> help divers breathe | <input type="checkbox"/> dig in the ocean floor |

While You Watch

Checking. As you watch the video, check your answers in **Before You Watch**. Were your ideas correct?

After You Watch

A. Multiple Choice. Choose the correct answer for each question below.

1. Why do the scientists use ROPOS to help them study deep-sea life?
 - a. It is too dark in the deep water for humans to see.
 - b. There are places too deep in the sea for humans to breathe.
 - c. Sea animals are scared of people but not of ROPOS.
2. ROPOS can go _____ meters down into the ocean.
 - a. 260
 - b. 2,600
 - c. 26,000
3. The video says ROPOS is the scientists' _____.
 - a. eyes and ears
 - b. arms and legs
 - c. hands and feet
4. What does ROPOS stand for?
 - a. Research Organism for Placement Of Sea Life
 - b. Robotic Ocean Performance for Optical Study
 - c. Remotely Operated Platform for Ocean Science

B. Matching. Match each of the following ideas from the video with their supporting details.

- | | |
|--|---|
| 1. ____ We don't know much about our oceans. | a. Many marine species are not known. |
| 2. ____ Scientists want to know more. | b. ROPOS has tools to cut, suck up, and dig. |
| 3. ____ A scientist says he can do things with ROPOS that he couldn't do before. | c. Researchers have started the Census of Marine Life. |
| 4. ____ ROPOS is a very well-equipped robot. | d. ROPOS helps the scientists see animals in their natural homes. |
| 5. ____ ROPOS helps us understand more about deep-ocean life. | e. He can study animals in deep water as he could if they were found on land. |

C. Discuss. Discuss these questions with a partner.

1. Do you think it's possible for humans to explore the whole ocean? Why or why not?
2. Do you think it's more important for humans to know about plants and animals in the ocean or on land?



Subarctic sunflower stars



A yeti crab

These sunflower stars and the yeti crab are some examples of species discovered by the Marine Census.

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