

# READING EXPLORER



THIRD EDITION





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# SCOPE AND SEQUENCE

UNIT	THEME	READING	VIDEO
1	Food and Health	A: Sweet Love B: Food for the Future	Space Food
2	Call of the Wild	A: Song of the Humpback B: The 1,000-Year Bird Song	The Lion's Roar
3	History Detectives	A: Was King Tut Murdered? B: Who Killed the Iceman?	Walking with Giants
4	Traditions and Rituals	A: Living Treasures B: The Changing Face of Kung Fu	Dragon Boat Festival
5	Finding Wonders	A: The Secrets in the Sand B: The Stories in the Rocks	Digging into the Past
6	Reef Encounters	A: Cities Beneath the Sea B: The Truth about Great Whites	Ocean Megabuilders
7	Dollars and Scents	A: The Flower Trade B: The Power of Perfume	Flowers from Ecuador
8	Great Explorers	A: An Incredible Journey B: The Travels of Ibn Battuta	The Legend of Marco Polo
9	Identity	A: The Teenage Brain B: Seeing Double	The Global Village
10	Facing Change	A: The Big Thaw B: Life on the Edge	The Sled Dogs of Greenland
11	Fact or Fake?	A: The Knowledge Illusion B: The Limits of Lying	Smile Trial
12	Going to Extremes	A: The Dream of Flight B: Dark Descent	Sea Caves



## ACADEMIC SKILLS

READING SKILL	VOCABULARY BUILDING	CRITICAL THINKING
A: Skimming for the Main Idea of Paragraphs B: Identifying the Purpose of Paragraphs	A: Phrasal verbs with <i>cut</i> B: Collocations for size adjectives	A: Applying Ideas B: Evaluating Items
A: Understanding Pronoun Reference B: Scanning for Details	A: Prefix <i>inter-</i> B: Suffix <i>-tion</i>	A: Identifying Reasons B: Applying Concepts; Synthesizing Information
A: Creating a Timeline of Events B: Distinguishing Facts from Speculation	A: Words acting as nouns and verbs (1) B: Collocations with <i>cruel</i>	A: Justifying Opinions B: Evaluating Evidence
A: Dealing with Unfamiliar Vocabulary (1)—Using Context B: Differentiating Between Main Ideas and Supporting Details	A: Prefix <i>pro-</i> B: Prefix <i>en-</i>	A: Applying Ideas B: Relating Information; Applying Ideas
A: Interpreting Infographics B: Dealing with Unfamiliar Vocabulary (2)—Affixes	A: Words acting as nouns and verbs (2) B: Collocations with <i>access</i>	A: Analyzing Claims B: Ranking Items
A: Understanding Cause-and-Effect Relationships B: Recognizing Contrastive Relationships	A: Collocations with <i>negative</i> B: Prefix <i>in-</i>	A: Evaluating Ideas B: Analyzing Reasons; Evaluating Sources
A: Summarizing Using a Venn Diagram B: Recognizing and Understanding Synonyms	A: Suffix <i>-able</i> B: Collocations with <i>distinctive</i>	B: Applying Ideas; Evaluating Pros and Cons
A: Taking Notes on a Reading (1) B: Taking Notes on a Reading (2)—Using a Concept Map	A: Word forms of <i>admire</i> and <i>observe</i> B: Prefix <i>mis-</i>	A: Inferring Information B: Applying Ideas; Evaluating Arguments
A: Understanding Claims B: Making Inferences	A: Phrasal verbs with <i>go</i> B: Collocations with <i>severe</i>	A: Reflecting B: Justifying Opinions; Reflecting
A: Identifying Supporting Information B: Identifying Arguments For and Against an Issue	A: Collocations with <i>shift</i> B: Phrasal verbs with <i>up</i>	A: Evaluating Claims B: Analyzing Arguments; Inferring Information
A: Dealing with Unfamiliar Vocabulary (3)—Using a Dictionary B: Understanding a Research Summary	A: Collocations with <i>average</i> B: Word forms of <i>honest</i>	B: Evaluating a Claim; Applying Ideas
A: Understanding Definitions in a Text B: Taking Notes on a Reading (3)—Creating a Visual Summary	A: Synonyms for <i>fantastic</i> B: Collocations with <i>out of</i>	A: Ranking Activities B: Synthesizing Information



# READING EXPLORER brings the world to your classroom.

With *Reading Explorer* you learn about real people and places, experience the world, and explore topics that matter.

What you'll see in the Third Edition:

**Real-world stories** give you a better understanding of the world and your place in it.

**11A**

**BEFORE YOU READ**

**PREVIEWING** A. Read the question below and quickly note your answer.  
A hat and a ball cost \$1.10 in total. The hat costs \$1.00 more than the ball. How much does the ball cost?

**SCANNING** B. Compare your answer with a partner. Then scan the reading passage to check if you were correct.

**DISCUSSING** C. Skim the rest of the reading. What answer do most people give? Why?

## THE KNOWLEDGE ILLUSION

A hat and a ball cost \$1.10 in total. The hat costs \$1.00 more than the ball. How much does the ball cost?

If you presented 100 people with the above puzzle, you'd give the correct answer (a 10-cent ball) to only 5 percent. It's an example of how we often **rely on intuitive responses**—answers we feel are true. People give answers that "just feel right," says cognitive scientist Daniel Kahneman. We don't spend much time "reflecting and checking whether the answer is right or wrong."

The hat and ball question helps explain why we often believe in false stories. It is part of human nature to believe, says Kahneman. But "the truth with false news is to know to verify"—in other words, to stop and question what you know.

In one **experiment**, Kahneman and a colleague presented a discovery about halibut eggs. They told a group of **volunteers** about it, but alerted they could not fully explain what it was. They then asked the volunteers to rate their own understanding of halibut eggs. Most volunteers rated themselves 1 out of 2, meaning they did not understand the **concept**.

The **researchers** then told another group of volunteers about the discovery. This time, they said that scientists could fully explain how it works. When asked to rate their understanding, the volunteers gave an **average** answer of 2. The scientists' confidence gave the volunteers the incorrect sense of their own understanding, **distorted** again.

A 3-D model pointing in three directions, instead of just one, is called a **vector**.

A **negative exponent** means the power is the base raised to the negative.

**Halibut** is a very large fish.

**VIDEO**

## DIGGING INTO THE PAST

Archaeologist Aubrey Roberts uncovers a 350-million-year-old marine reptile in Norway.

**BEFORE YOU WATCH**

**DEFINITIONS** A. The words in **bold** appear in the video. Complete the definitions by circling the correct options.

- A **marine** reptile is an animal such as a snake or lizard that lives in the sea / on land.
- If you have a **passion** for something, you really don't like / like it.
- Backbreaking** work involves a lot of / very little physical effort.

**PREVIEWING** B. Look at the information about Aubrey Roberts below that appears in the video. What words do you think complete the text? Discuss your ideas with a partner.

Name: Aubrey Jane Roberts Job:

Location: Spitsbergen, Norway

Objective: Uncover 350-million-year-old marine reptile in

Qualifications: Ability to dig  40 tons of earth.

Requirements: Love of  digging, and demolition.

Video 81

**National Geographic Videos** expand on the unit topic and give you a chance to apply your language skills.

**Reading Skill** and **Reading Comprehension** sections provide the tools you need to become an effective reader.

### READING SKILL

#### Creating a Timeline of Events

When you read a text that describes a series of events, it can be useful to place the events on a timeline. This provides you with a clear picture of the important events in the order they happened. A timeline can be used for events that occurred on specific dates, as well as for events that cover a period of time.

**SCANNING** A. Find and underline these events in Reading A.

- King Tut's DNA is analyzed.
- King Tut begins his rule of Egypt.
- King Tut is placed in a gold-filled tomb.
- Howard Carter discovers King Tut's tomb.
- Outer rooms of King Tut's tomb are robbed.
- King Tut's family, a series of powerful kings, ruled Egypt.
- More effective X-ray technology is applied to the mummies.
- Images of King Tut's mummy are taken with simple X-ray technology.

**CREATING A TIMELINE** B. Add the events (a–e) to complete the timeline.

- An X-ray showed a dark shape beneath Ötzi's left shoulder.
- A scientist discovered the blood of other people on Ötzi's clothes.
- Scientists found that Ötzi had eaten deer before he died.
- Scientists learned that Ötzi had eaten bread and goat before he died.
- The police investigation of Ötzi became a scientific investigation.

#### CRITICAL THINKING Evaluating a Claim

► Arieli says, "Cheating is easier when we can justify our behavior." Look at the situations below. How might each person justify their behavior? Discuss your ideas with a partner.

- A soccer player pretends to be injured even though he is fine.
- A worker takes home some office stationery to use at home.
- A salesperson sells a product that he knows isn't very good.

► List some other examples of common dishonest behavior. For each example, do you think the behavior can be justified? Discuss with a partner.

#### WORD WEB

C. **Go through** is one of many phrasal verbs formed using the verb go. Complete the word web using the words in the box. Use a dictionary to help you.

ahead
for
on
over
through

= review

= choose

= continue

= start

go through  
= experience

**Expanded Vocabulary Practice** sections teach you the most useful words and phrases needed for academic reading.



# FOOD AND HEALTH

^ A group of friends enjoy a traditional meal in Cappadocia, Turkey.

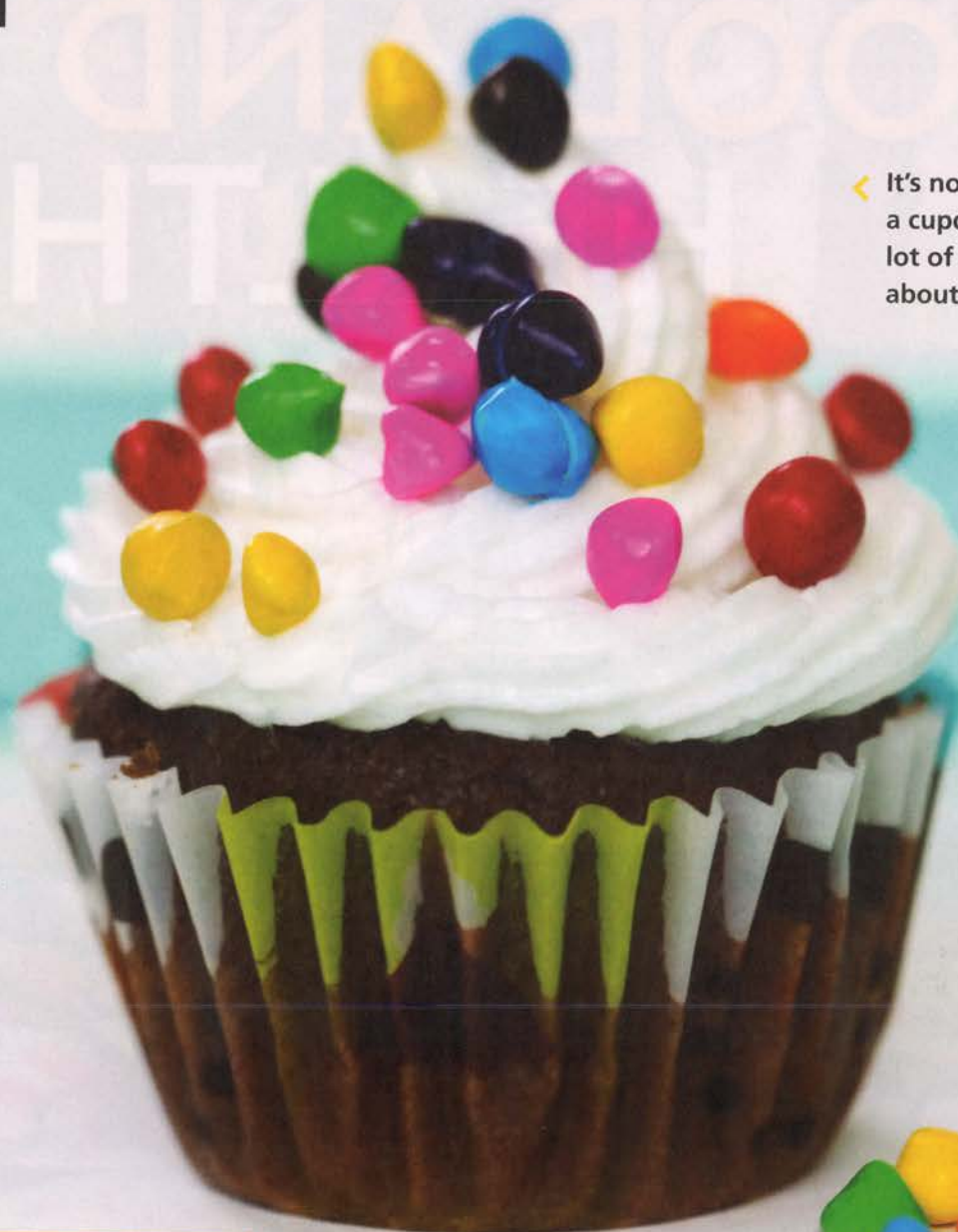
## WARM UP

Discuss these questions with a partner.

1. What are some healthy foods you like? What unhealthy foods do you enjoy?
2. Do you think the foods people eat today are healthier than those in the past?



# FOOD AND HEALTH



◀ It's not surprising that a cupcake contains a lot of sugar. But what about other foods?

## BEFORE YOU READ

**QUIZ A.** How much sugar do you think is in these foods? Match the items below. Check your answers at the bottom of page 10.

- |                                  |   |   |             |
|----------------------------------|---|---|-------------|
| 1. 100 g of low-fat fruit yogurt | • | • | a. 3 grams  |
| 2. 2 small chocolate cookies     | • | • | b. 7 grams  |
| 3. 100 g of tomato ketchup       | • | • | c. 11 grams |
| 4. 1 cupcake with frosting       | • | • | d. 15 grams |
| 5. 2 slices of wheat bread       | • | • | e. 25 grams |

**SCANNING B.** Why do you think people love sugar so much? Discuss with a partner. Then scan the first paragraph of the reading to check your ideas.



# SWEET LOVE



- A Many scientists believe our love of sugar may actually be an **addiction**. When we eat or drink sugary foods, the sugar enters our blood and affects the parts of our brain that make us feel good. Then the good feeling goes away, leaving us wanting more. All tasty foods do this, but sugar has a particularly strong effect. In this way, it is in fact an addictive **drug**, one that doctors **recommend** we all **cut down on**.
- B "It seems like every time I study an illness and trace a path to the first cause, I find my way back to sugar," says scientist Richard Johnson. One-third of adults worldwide have high blood pressure,<sup>1</sup> and up to 347 million have diabetes.<sup>2</sup> Why? "Sugar, we believe, is one of the culprits, if not the major culprit," says Johnson.
- C Our bodies are designed to survive on very little sugar. Early humans often had very little food, so our bodies learned to be very **efficient** in **storing** sugar as fat. In this way, we had energy stored for when there was no food. But today, most people have more than enough. So the very thing that once saved us may now be killing us.
- D So what is the solution? It's **obvious** that we need to eat less sugar. The trouble is, in today's world, it's extremely difficult to avoid. From breakfast cereals to after-dinner desserts, our foods are increasingly filled with it. Some manufacturers even use sugar to replace taste in foods that are **advertised** as low in fat. So while the foods appear to be healthier, large amounts of sugar are often added.
- E But some people are fighting back against sugar and trying to create a healthier environment. Many schools are replacing sugary desserts with healthier options, like fruit. Other schools are trying to encourage exercise by building **facilities** like walking tracks so students and others in the community can exercise. The **battle** has not yet been lost.

<sup>1</sup> If you have **high blood pressure**, your heart needs to work harder to pump blood around your body.

<sup>2</sup> **Diabetes** is a medical condition in which someone has too much sugar in his or her blood.



## READING COMPREHENSION

### A. Choose the best answer for each question.

#### GIST

1. What is the reading mainly about?
  - a. our addiction to sugar
  - b. illnesses caused by sugar
  - c. ways to avoid sugar

#### VOCABULARY

2. In paragraph B, the word *culprit* is closest in meaning to \_\_\_\_\_.
  - a. disease
  - b. sweet food
  - c. cause of the problem

#### REFERENCE

3. In paragraph C, what does the phrase *the very thing* refer to?
  - a. the amount of sugar in our food
  - b. having enough food to survive
  - c. our ability to store sugar as fat

#### DETAIL

4. According to the passage, why is it so hard to avoid sugar?
  - a. It gives us needed energy.
  - b. It's in so many foods and drinks.
  - c. We get used to eating it at school.

#### DETAIL

5. Which of the following statements about sugar is NOT true?
  - a. Our bodies are able to store sugar as fat.
  - b. We need very little sugar to survive.
  - c. Early humans ate more sugar than we do today.



Macarons are colorful sugary cookies.

#### SCANNING

### B. Write short answers to the questions below. Use one to three words from the passage for each answer.

1. What disease do a third of adults in the world suffer from?  
\_\_\_\_\_
2. Why do some manufacturers add sugar to low-fat foods?  
\_\_\_\_\_
3. What are many schools replacing sugary desserts with?  
\_\_\_\_\_

Answers to Before You Read A:  
1. 11 g, 2. 7 g, 3. 15 g, 4. 25 g, 5. 3 g



## Skimming for the Main Idea of Paragraphs

Skimming a text can help you quickly understand its main ideas. When you skim, you don't read every word. Instead, read the first sentence of each paragraph, and then run your eyes quickly over the rest, focusing on the main nouns and verbs. If you understand the main idea of each paragraph, you will have a good understanding of the passage as a whole.

✓ Even fresh fruits like strawberries contain small amounts of sugar.



### DETERMINING MAIN IDEAS

**A.** Look back at Reading A. Circle the main idea of each paragraph A–C.

**1. Paragraph A**

- a. Sugar is addictive.
- b. All tasty foods contain sugar.

**2. Paragraph B**

- a. Sugar can cause illnesses.
- b. The number of people with diabetes and high blood pressure is rising.

**3. Paragraph C**

- a. Sugar gives us energy when we don't eat for a long time.
- b. Our bodies need very little sugar to survive, and we now eat too much of it.

### DETERMINING MAIN IDEAS

**B.** Complete the sentences to summarize the main ideas of paragraphs D and E.

**1. Paragraph D:** These days, it is very difficult to \_\_\_\_\_.

**2. Paragraph E:** There are some people who \_\_\_\_\_.

### CRITICAL THINKING Applying Ideas

► In the space below, list some foods and drinks that you regularly consume.

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► Look back at your list. If you want to reduce your intake of sugar, which of these items should you cut down on? If necessary, research online to find out how much sugar is in each item.

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## VOCABULARY PRACTICE

**COMPLETION** A. Complete the information using the correct form of the words in the box. Two words are extra.

**addiction battle drug recommend store**

The story of sugar began in New Guinea about 10,000 years ago. People there picked sugarcane and ate it raw. Because it made people feel good, they saw it as a(n) <sup>1</sup> \_\_\_\_\_ that could cure illnesses. Doctors in India <sup>2</sup> \_\_\_\_\_ that people eat it to stop headaches. But soon people began to eat it for pleasure. Demand for sugar rose as people started to develop a(n) <sup>3</sup> \_\_\_\_\_ to the taste. By 1900, it was recorded that the average British person ate 45 kilograms of sugar each year.

**DEFINITIONS** B. Complete the sentences. Circle the correct options.

1. When a company **advertises** something, they want you to *buy* / *return* it.
2. Someone who is **efficient** at a task does it without *planning carefully* / *wasting time or energy*.
3. Two groups that have a **battle** are likely to be *angry at* / *friendly with* each other.
4. The **facilities** of a school include the *classrooms* / *teachers*.
5. If something is **obvious**, it is *difficult* / *easy* to see or understand.
6. When you **store** something, you *keep it* / *throw it away*.
7. When you **cut down on** sugar, you eat *less* / *more* of it.



^ A market seller in Myanmar makes fresh sugarcane juice.

**WORD PARTS** C. **Cut down on** is one of many phrasal verbs formed using the verb *cut*. Complete the definitions below using the correct preposition in the box. One preposition is extra.

**across in off up**

1. If you cut \_\_\_\_\_ a supply of something, you stop providing it.
2. If you cut something \_\_\_\_\_, you cut it into many pieces.
3. If you cut \_\_\_\_\_ while someone is talking, you interrupt them.



## BEFORE YOU READ

**MATCHING** A. Look at the photo and read the caption. Match each word in **bold** with its definition.

- |             |   |  |
|-------------|---|--|
| 1. found    | • | • a. to keep safe for future use       |
| 2. preserve | • | • b. to start an organization          |
| 3. species  | • | • c. type (usually of plant or animal) |

**PREDICTING** B. Why do you think people like Cary Fowler want to protect certain plant species? Discuss your ideas with a partner. Then skim the passage to check your ideas.

- ✓ Conservationist Cary Fowler holds two containers of peas outside the Svalbard Global Seed Vault, Norway. Fowler **founded** the vault in 2008 with the aim of **preserving** various **species** of plants.





# FOOD FOR THE FUTURE

- A In 1845, a deadly disease struck the farms of Ireland, killing all the Lumper potato plants. The death of a single **crop** species might not seem so important. But in Ireland, in 1845, people depended almost solely on the potato for food. The death of one species caused a terrible famine.<sup>1</sup> Now, some scientists are worried that such a famine could happen again—but on a much wider **scale**.
- B Over the centuries, farmers have discovered thousands of different species of food crops. Each species has special **qualities**. Some can be grown in very hot or cold climates. Others are not affected by certain diseases. However, you won't find many of these species in your local supermarket. To feed the seven billion people on Earth, most farmers today are growing only species of plants that are easy to **produce** in large numbers. Meanwhile, thousands of other species are becoming extinct.<sup>2</sup>
- C For example, in the Philippines, there were once thousands of **varieties** of rice; now fewer than 100 are grown there. In China, 90 percent of the wheat varieties grown just a century ago have disappeared. Experts believe that over the past century, we have allowed more than half of the world's food varieties to disappear.

## Saving the Seeds

- D One solution to this problem is to collect and preserve the **seeds** of as many different plant varieties as we can before they disappear. This idea was first **suggested** by Russian scientist Nikolay Vavilov. In the 1920s and 1930s, he collected around 400,000 seeds from five **continents**. More recently, others have continued the work he began. There are now around 1,700 seed banks in countries around the world. The Svalbard Global Seed Vault—which preserves almost one million seed samples—has one of the largest collections.
- E In the U.S. state of Iowa, Diane Ott Whealy and her husband founded Heritage Farm—a place where people can store and trade seeds. Initially, Ott Whealy wanted to preserve **historic** plant varieties, like the seeds her great-grandfather brought to the United States more than 100 years ago from Germany. But the people at Heritage Farm don't just store the seeds; they plant them. By doing this, they are reintroducing foods into the marketplace that haven't been grown for years. These food species are not just special in terms of appearance or **flavor**. They also offer farmers food solutions for the future, from the past.

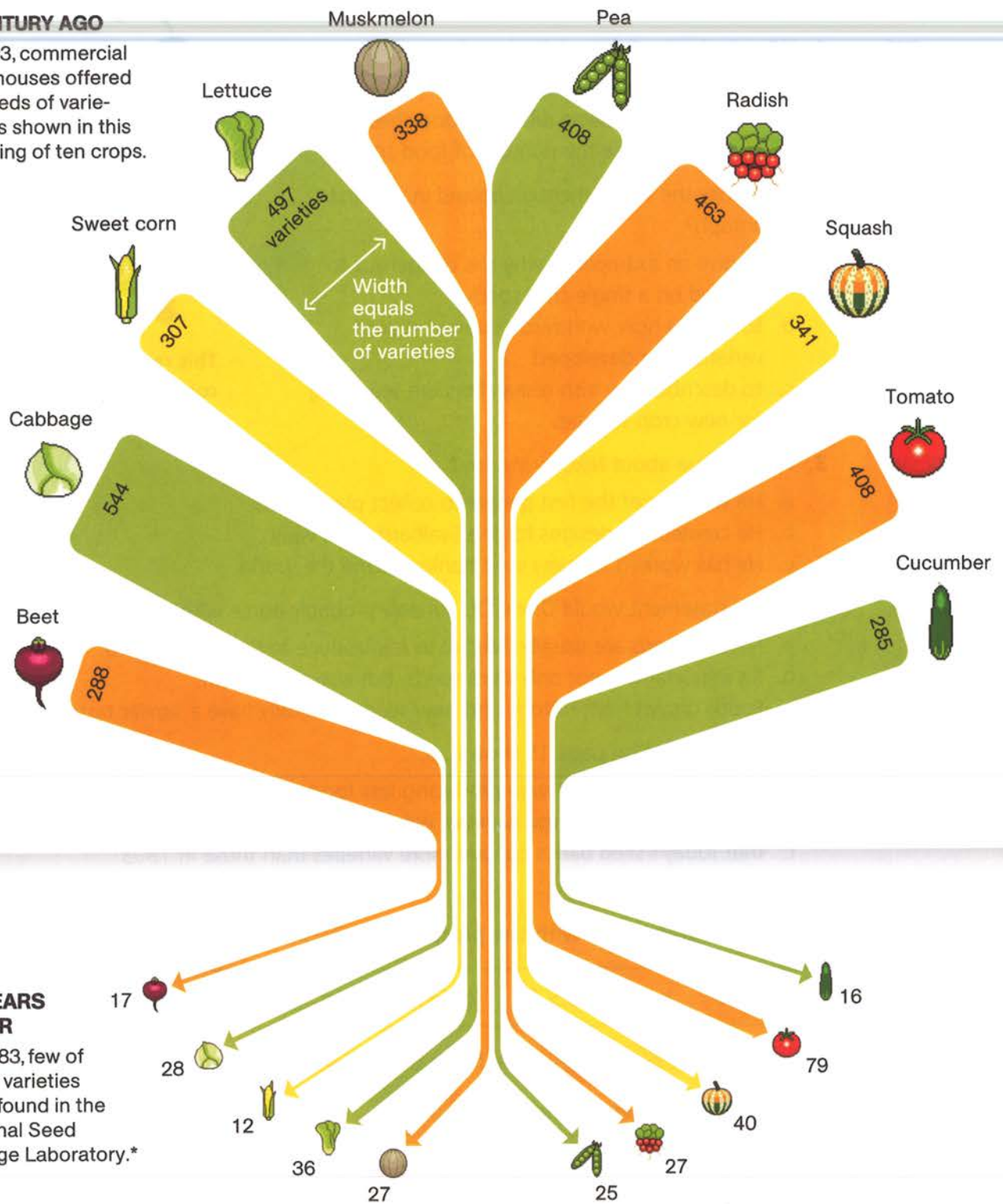
<sup>1</sup> A **famine** is a situation in which large numbers of people have little or no food.

<sup>2</sup> If a species becomes **extinct**, it no longer exists.



## A CENTURY AGO

In 1903, commercial seed houses offered hundreds of varieties, as shown in this sampling of ten crops.



## 80 YEARS LATER

By 1983, few of those varieties were found in the National Seed Storage Laboratory.\*

\*CHANGED ITS NAME IN 2001 TO THE NATIONAL CENTER FOR GENETIC RESOURCES PRESERVATION.

JOHN TOMANIO, NGM STAFF. FOOD ICONS: QUICKHONEY  
SOURCE: RURAL ADVANCEMENT FOUNDATION INTERNATIONAL



## READING COMPREHENSION

### A. Choose the best answer for each question.

GIST

1. What is the reading mainly about?
  - a. how food species disappear
  - b. the need to preserve different food species
  - c. ways to increase the number of food species

PURPOSE

2. Why does the writer mention Ireland in the first paragraph?
  - a. to give an example of why it is dangerous to depend on a single crop species
  - b. to explain how worldwide interest in crop varieties first developed
  - c. to describe how Irish researchers are searching for new crop varieties

DETAIL

3. What is true about Nikolay Vavilov?
  - a. He was one of the first people to collect plant seeds.
  - b. He created the designs for the Svalbard Seed Vault.
  - c. He has worked in many seed banks around the world.

INFERENCE

4. Which statement would Diane Ott Whealy probably agree with?
  - a. Historic seeds are usually difficult to reintroduce to the marketplace.
  - b. It's important to not only store seeds, but also plant them.
  - c. Foods grown from historic and new seeds generally have a similar taste.

INFERENCE

5. The infographic on page 15 shows \_\_\_\_\_.
  - a. that farmers in 1903 were producing less food than farmers today
  - b. that many different crop varieties were lost between 1903 and 1983
  - c. that today's seed banks contain more varieties than those in 1903



^ This rare variety of wild corn now exists only in seed banks.

MATCHING

### B. Match each statement with the place it describes.

a. China    b. Iowa, U.S.A.    c. Ireland    d. the Philippines    e. Svalbard

1. \_\_\_\_ Historic plant varieties are being planted and sold here.
2. \_\_\_\_ Many people died here because of a serious lack of food.
3. \_\_\_\_ Only 10 percent of past wheat varieties now remain here.
4. \_\_\_\_ There are now far fewer varieties of rice here than in the past.
5. \_\_\_\_ One of the biggest seed banks in the world can be found here.



## Identifying the Purpose of Paragraphs

Different paragraphs may perform different functions. Identifying their purpose can help you better understand the organization of a text. Some paragraphs may have more than one function. Common purposes include:

- to provide background information
- to introduce a topic
- to present an argument
- to offer or describe a solution
- to offer another side of an issue
- to describe a situation or problem
- to report data as figures or statistics
- to summarize key ideas
- to provide examples or explanations
- to present a conclusion

### IDENTIFYING PURPOSE

A. Look back at Reading B. Choose the correct purpose of each paragraph.

**1. Paragraph A**

- a. to provide some historical background
- b. to summarize the key ideas

**2. Paragraph B**

- a. to offer another side of the issue
- b. to describe a situation or problem

**3. Paragraph C**

- a. to summarize some key ideas
- b. to report data as supporting evidence

**4. Paragraph D**

- a. to present a conclusion
- b. to offer or describe a solution

**5. Paragraph E**

- a. to present an argument
- b. to provide an additional example



As well as seeds, some farmers are working to preserve species of farm animals, such as this rare variety of chicken.

### IDENTIFYING PURPOSE

B. Now look back at Reading A. Note the purpose of each paragraph.

- 1. Paragraph A: \_\_\_\_\_
- 2. Paragraph B: \_\_\_\_\_
- 3. Paragraph C: \_\_\_\_\_
- 4. Paragraph D: \_\_\_\_\_
- 5. Paragraph E: \_\_\_\_\_



## VOCABULARY PRACTICE

### COMPLETION A. Complete the information. Circle the correct words.

Over 1,700 seed banks around the world keep seed <sup>1</sup>**varieties** / **flavors** from all <sup>2</sup>**qualities** / **continents** safe in the event of a large-<sup>3</sup>**scale** / **produced** global crisis, such as a famine. The Svalbard Global Seed Vault is one of the world's largest. Director Cary Fowler commented that the opening of the seed bank "marks a <sup>4</sup>**seed** / **historic** turning point in safeguarding the world's <sup>5</sup>**crop** / **flavor** diversity." The seeds are stored in a permanently chilled, earthquake-free zone 120 meters above sea level, allowing them to remain high and dry.



▲ Cary Fowler inside the Svalbard Global Seed Vault on Spitsbergen island

### DEFINITIONS B. Match each word in **red** with its definition.

- |                           |   |
|---------------------------|---|
| 1. ____ <b>crop</b>       | a. features or characteristics                  |
| 2. ____ <b>scale</b>      | b. how something tastes                         |
| 3. ____ <b>seed</b>       | c. to put forward an idea                       |
| 4. ____ <b>produce</b>    | d. important to the past                        |
| 5. ____ <b>flavor</b>     | e. a range of different types                   |
| 6. ____ <b>variety</b>    | f. to make or create                            |
| 7. ____ <b>suggest</b>    | g. the size or extent of something              |
| 8. ____ <b>historic</b>   | h. part of a plant from which a new plant grows |
| 9. ____ <b>continent</b>  | i. land consisting of countries (e.g., Asia)    |
| 10. ____ <b>qualities</b> | j. a plant grown in large amounts, like wheat   |

### COLLOCATIONS C. The adjectives in the box are used with certain nouns to mean "big" or "large." Complete the sentences using the words in the box.

**high**      **strong**      **wide**

1. Buffets often have a \_\_\_\_\_ **variety** of dishes that you can try.
2. This coffee has a rather \_\_\_\_\_ **flavor**.
3. The restaurant offers a range of \_\_\_\_\_ **-quality** vegetarian options.



^ Astronauts have a pizza party on board the International Space Station.

# SPACE FOOD

## BEFORE YOU WATCH

**PREVIEWING** A. Read the information. The words and phrases in **bold** appear in the video. Complete the definitions by circling the correct options.

In 1962, astronaut John Glenn became the first man to eat anything in the **zero gravity** environment of Earth orbit. He found the task of eating fairly easy, but wasn't so impressed with the menu—apple sauce packed in a tube, sugar tablets, and water. The food eaten by astronauts has improved a lot since these early days of space travel. Modern astronauts stay in space for longer **durations**, so a tasty and **balanced diet** is essential.

1. If you have a **balanced diet**, you eat *many* / *very few* different types of food.
2. The **duration** of something is how *heavy it is* / *long it lasts*.
3. In **zero gravity**, objects *do not fall* / *fall* to the ground.

**PREDICTING** B. What do you think are the most important things to consider when creating food for astronauts? Discuss with a partner and note your ideas.

Space food needs to be ...

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## WHILE YOU WATCH

**GIST** A. Watch the video. Which of your ideas in Before You Watch B are mentioned?

**SHORT ANSWER** B. Watch the video again. Note answers to the questions.

1. What are two benefits of freeze-dried food?

\_\_\_\_\_

2. How often do astronauts make their own food while in space?

\_\_\_\_\_

3. What was the reason for the pizza party?

\_\_\_\_\_

**CRITICAL THINKING** Evaluating Items Look at the list of food items below and consider what you learned about space food in the video. Rate the items 1–5 (5 = great space food; 1 = terrible space food). Share the reasons for your choices with a partner.

\_\_\_ breakfast cereal

\_\_\_ dried fruit

\_\_\_ potato chips

\_\_\_ cheese

\_\_\_ instant noodles

\_\_\_ sashimi

\_\_\_ chicken legs

\_\_\_ nuts

\_\_\_ soup

## VOCABULARY REVIEW

Do you remember the meanings of these words? Check (✓) the ones you know. Look back at the unit and review any words you're not sure of.

### Reading A

☐ addiction

☐ advertise

☐ battle

☐ cut down on

☐ drug

☐ efficient

☐ facilities\*

☐ obvious\*

☐ recommend

☐ store

### Reading B

☐ continent

☐ crop

☐ flavor

☐ historic

☐ produce

☐ quality

☐ scale

☐ seed

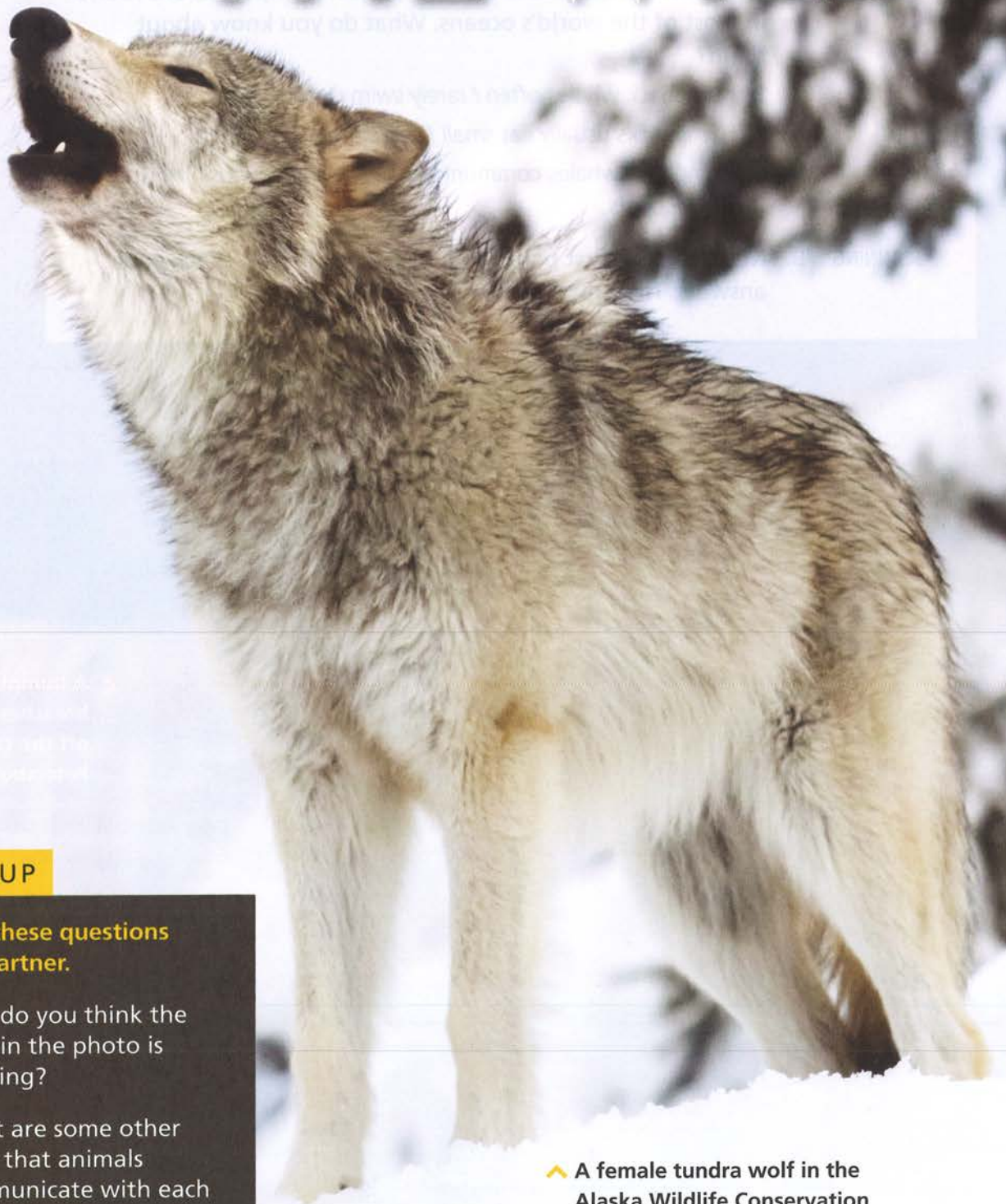
☐ suggest

☐ variety

\* Academic Word List



# CALL OF THE WILD



## WARM UP

**Discuss these questions with a partner.**

1. Why do you think the wolf in the photo is howling?
2. What are some other ways that animals communicate with each other?

▲ A female tundra wolf in the Alaska Wildlife Conservation Center, United States



## BEFORE YOU READ

**QUIZ** A. The whale in the photo is a humpback. Humpbacks are found in most of the world's oceans. What do you know about them?

1. Humpback whales *often / rarely* swim close to land.
2. Humpbacks usually eat *small fish / penguins*.
3. Humpback whales communicate by *making sounds / moving their flippers*.

**SCANNING** B. Now scan the first paragraph of the reading to check your answers. Then read the entire passage.

◀ A humpback whale breaches at sunrise off the coast of Petersburg, Alaska.

# SONG OF THE HUMPBACK

A Herman Melville, the writer of the famous whale story *Moby Dick*, once wrote that humpback whales were “the most lighthearted<sup>1</sup> of all the whales.” A favorite of whale watchers everywhere, they often swim in ocean areas close to land and are active at the surface. They can often be seen breaching, or rising out of the water, and then coming down with a great splash. Humpbacks are intelligent animals, and can be seen working together to hunt schools of small fish. And, if you listen closely, you might even hear one singing.

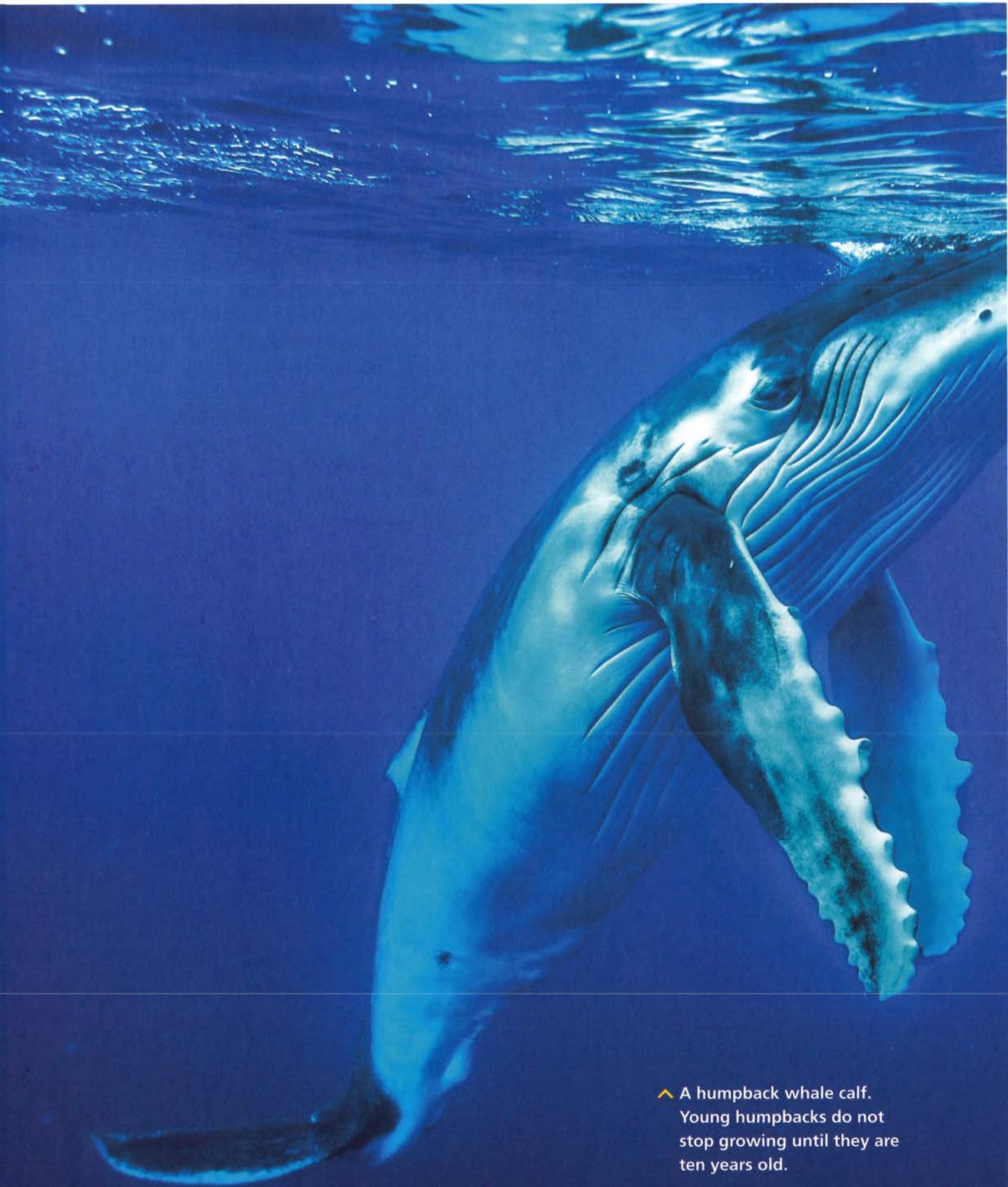
## Recording Gentle Giants

B Marine biologist<sup>2</sup> Jim Darling has studied the songs of humpback whales for more than 25 years. While **recording** whale songs on a boat near Hawaii, he invited author Douglas Chadwick to **experience** diving with a humpback. In the water, Chadwick heard the whale’s songs in a way he had never heard them before. “Suddenly, I no longer heard the whale’s voice in my ears,” he said. “I felt it inside my head and bones.”

<sup>1</sup> Someone or something that is **lighthearted** is cheerful and happy.

<sup>2</sup> A **marine biologist** is a scientist who studies ocean life.





^ A humpback whale calf. Young humpbacks do not stop growing until they are ten years old.





- C When swimming with the whale, Chadwick could see that it was **aware** of him, but not worried by his presence. The 13-meter-long giant looked him over<sup>3</sup> **curiously**, but never harmed him. The whale then swam under the boat. It pointed its head down to the ocean floor and, with flippers<sup>4</sup> extended out to its sides, began to sing. Up in the boat, Darling recorded the whale's song. Humpback whale songs can be long and **complex**, sometimes lasting for 30 minutes or more. They are perhaps the longest songs sung by any animal.

### Why Do They Sing?

- D Darling says that only male humpbacks sing, but for **unknown** reasons. One idea is that they sing to attract females. However, when a group of scientists played recordings of whale songs in the ocean, female whales did not respond. Another idea is that male humpbacks use their songs to let other males know they are in the area.
- E Researchers have also found that humpback whale songs are different in different parts of the world, perhaps like whale national anthems.<sup>5</sup> They may also be like hit tunes on the radio, changing over time—from one year to the next, or even over a **single breeding season**.
- F There is still so much the scientists don't know, and years of study lie ahead for whale researchers like Jim Darling. "Why do I do it?" he wonders aloud. "Human beings like puzzles. I want to know."
- G Another member of the research team, photographer Flip Nicklin, recalls a special moment he had while **interacting** with a humpback. While he was snorkeling some distance from the huge animal, it approached him until it was just a few meters away. It then gently carried Nicklin toward its eye with a flipper, as if examining him. **Apparently**, the desire to understand a different species goes both ways.

<sup>3</sup> If you **look** something **over**, you examine it for a short period of time.

<sup>4</sup> **Flippers** are the two flat body parts that stick out from the side of a whale, seal, etc.

<sup>5</sup> A **national anthem** is a country's song, chosen to represent its people.



## READING COMPREHENSION

### A. Choose the best answer for each question.

- GIST** 1. What is the reading mainly about?
- how humpbacks communicate with people
  - research into how and why humpbacks sing
  - the career of a man who is interested in humpbacks

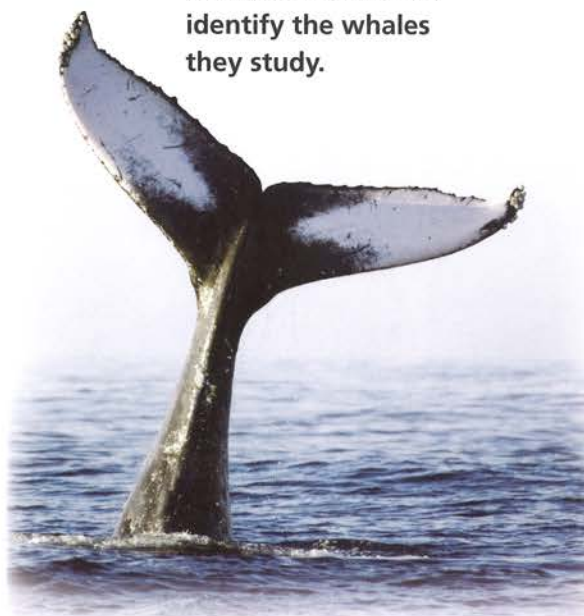
- DETAIL** 2. When the scientists played whale songs in the ocean, \_\_\_\_.
- no female whales came
  - male whales became angry
  - male and female whales sang together

- DETAIL** 3. What is NOT true about humpback whales?
- Their songs are short and simple.
  - Only male humpback whales sing.
  - Their songs differ from place to place.

- DETAIL** 4. The passage compares humpback songs to *hit tunes on the radio* because \_\_\_\_.
- the whales' songs are beautiful
  - the whales sing songs very often
  - the whales change their songs often

- VOCABULARY** 5. In the last paragraph, what does *goes both ways* mean?
- moves in many directions
  - is similar for both
  - increases quickly in size

✓ The tail of each humpback has a different shape and pattern. Researchers use these differences to identify the whales they study.



### IDENTIFYING PURPOSE

Review this reading skill in Unit 1B

### B. Match each paragraph with its purpose.

- |                  |  |
|------------------|--|
| 1. Paragraph C • | • a. to describe something researchers do not know about humpbacks   |
| 2. Paragraph D • | • b. to explain a difference between humpbacks from different places |
| 3. Paragraph E • | • c. to tell the personal story of a humpback researcher             |
| 4. Paragraph F • | • d. to give a reason why researchers continue to study humpbacks    |

## Understanding Pronoun Reference

A pronoun usually, but not always, refers to something earlier in the sentence or in a previous sentence. In the example below, the subject of the second sentence (*they*) refers to a noun in the first sentence (*humpback whales*).

*Herman Melville ... wrote that humpback whales were "the most lighthearted of all the whales." A favorite of whale watchers everywhere, they swim in ocean areas ...*

The context should help you understand what the pronoun is referring to.

**REFERENCE A.** What does each underlined word refer to? Circle a, b, or c.

1. Humpbacks are intelligent animals, and can be seen working together to hunt schools of small fish. And, if you listen closely, you might even hear one singing.  
a. a humpback whale      b. a group of intelligent animals      c. a school of small fish
2. Marine biologist Jim Darling has studied the songs of humpback whales for more than 25 years. While recording whale songs on a boat near Hawaii, he invited author Douglas Chadwick to experience diving with a humpback.  
a. Jim Darling      b. Douglas Chadwick      c. the author
3. Humpback whale songs can be long and complex, sometimes lasting for 30 minutes or more. They are perhaps the longest songs sung by any animal.  
a. the researchers      b. humpback songs      c. male humpbacks

**REFERENCE B.** What does each **pronoun** from the reading refer to?

1. I felt **it** inside my head and bones. (paragraph B) \_\_\_\_\_
2. The 13-meter-long giant looked **him** over ... (paragraph C) \_\_\_\_\_
3. **It** pointed its head down ... (paragraph C) \_\_\_\_\_
4. **It** then gently carried Nicklin ... (paragraph G) \_\_\_\_\_

### CRITICAL THINKING Identifying Reasons

Discuss the questions with a partner and note your ideas.

- What possible reasons does the author give for the humpback whales' singing?

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- What other possible reasons can you think of?

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## VOCABULARY PRACTICE

COMPLETION A. Complete the sentences using the words in the box. One word is extra.

**apparently aware experience (n) interact record single**

1. Whales generally come up to breathe every 15 minutes, but some can hold their breath for up to an hour on a(n) \_\_\_\_\_ dive.
2. Some people are not \_\_\_\_\_ that many of the whales they see on whale-watching tours are later killed in areas where whaling is still allowed.
3. \_\_\_\_\_, there are some whale species that do not seem to migrate at all. They spend the entire year in one place.
4. Many of those who have swum with whales have described the \_\_\_\_\_ as life-changing.
5. Scientists who study whales use special technology to \_\_\_\_\_ the sounds they make underwater.

DEFINITIONS B. Read the information. Then complete the definitions using the words in **red**.

Like humpbacks, blue whales sing **complex** songs. And like humpbacks, they are endangered. Fortunately, there are now laws that protect them. Today, although their exact number is **unknown**, the blue whale population is growing. Scientists are **curious** to know more about blue whale behavior, so they have placed cameras on them. Through these cameras, it is possible to watch the whales as they swim, eat, and **interact** with each other. Scientists have discovered that during breeding **season**, the females migrate to food-rich areas to have their babies.

1. If something is \_\_\_\_\_, it has many parts and is difficult to understand.
2. A(n) \_\_\_\_\_ refers to a particular period of time during the year.
3. If something is \_\_\_\_\_, you have no information about it.
4. When people or animals \_\_\_\_\_, they spend time together and communicate.
5. Someone who is \_\_\_\_\_ about something wants to learn or know more about it.

WORD PARTS C. The prefix **inter-** means "between" or "together," as in the word **interact**. Complete the sentences using the words in the box.

**action national view**

1. She was offered an **inter**\_\_\_\_\_ for a job as a member of a whale research team.
2. Saving endangered whales is going to require **inter**\_\_\_\_\_ cooperation.
3. Many studies focus on the **inter**\_\_\_\_\_ between male and female humpbacks.

## BEFORE YOU READ

- PREVIEWING** A. Read the paragraph below. What is special about the great horned owl and the lyrebird?

Many species of birds communicate using different calls. The great horned owl, for example, can make a great variety of sounds, each with a different purpose. Other birds are able to mimic sounds they hear. The lyrebird, for example, is not only able to copy the calls of other birds, but also to reproduce man-made noises like car alarms and chainsaws.

**SKIMMING**

Review this  
reading skill  
in Unit 1A

- B. Skim the reading passage. Answer the questions.

What bird is the passage about? \_\_\_\_\_

What is special about this bird's call? \_\_\_\_\_

◀ A great horned owl





# THE 1,000-YEAR BIRD SONG



◀ A swamp sparrow in Delaware, United States, sings its traditional song.

- A Every summer, the calls of thousands of swamp sparrows can be heard across North America's wetlands. These little brown birds know only a few songs, but they know them very well. In fact, their musical set list<sup>1</sup> probably hasn't changed much for centuries.
- B Like **humans**, baby swamp sparrows learn to communicate by copying adults. From a young age, they learn to copy, or mimic, songs sung by their elders. "Swamp sparrows very rarely make mistakes when they learn their songs," says biologist Robert Lachlan. In fact, their mimicry is so **accurate** that the music changes little between generations.
- C Just like children, the sparrows don't remember every song they hear, Lachlan says. "They don't just learn songs at random; they pick up commoner songs rather than rarer songs." In other words, they learn songs they hear most often. It's an example of a strategy that scientists call *conformist bias*.<sup>2</sup> Until recently, this learning ability was thought to be special only to humans.
- D Between 2008 and 2009, Lachlan's research team recorded the calls of 615 male swamp sparrows across the northeastern United States. The researchers used computer software to break each song into a collection of notes, or syllables. They then measured the differences between the tunes.
- E The research revealed that only 2 percent of male sparrows sung a different song from the **standard** tune. The **combination** of accurate mimicry and conformist bias allows the birds to **create** traditions that last for centuries. "With those two ingredients together, you end up with traditions that are really stable," says Lachlan. "The song-types that you hear in the marshes<sup>3</sup> of North America today may well have been there 1,000 years ago."
- F Lachlan's study is among the first to measure the longevity of song traditions within a bird species. Another **aspect** scientists are now exploring is the **impact** of habitat loss on songbirds. Man-made barriers—such as cities, roads, and plantations—can break up a bird population into a number of isolated groups. These barriers may prevent **cultural** interaction between songbird populations, such as the **exchange** of song types.
- G The findings are really exciting, says scientist Andrew Farnsworth. He hopes that future research will **evolve** from these studies. For example, scientists may be able to identify how other animals are able to preserve their cultural traditions. "Seeing the potential for it in other organisms<sup>4</sup> is super cool," says Farnsworth.

<sup>1</sup> A **set list** is the list of songs a musician will play during a performance.

<sup>2</sup> **Conformist bias** is the way humans or animals tend to follow common behavior.

<sup>3</sup> **Marshes** are wet, muddy areas of land.

<sup>4</sup> **Organisms** are animals or plants, especially ones that are very small.



## READING COMPREHENSION

### A. Choose the best answer for each question.

GIST

1. What would be the best alternative title for the passage?

- a. The Amazing Lifespan of Swamp Sparrows
- b. How Swamp Sparrows Evolved in North America
- c. The Swamp Sparrows' Traditional Set List

VOCABULARY

2. In paragraph B, the word *elders* means \_\_\_\_.

- a. older swamp sparrows
- b. adult humans
- c. birds of another species

DETAIL

3. In Lachlan's study, about how many swamp sparrows did NOT sing traditional songs?

- a. 12
- b. 600
- c. 615

INFERENCE

4. Hundreds of years ago, the songs of swamp sparrows were probably \_\_\_\_.

- a. completely different from today's songs
- b. slightly different from today's songs
- c. exactly the same as today's songs

INFERENCE

5. Which of the following is an example of *conformist bias*?

- a. A student memorizes dates for a history exam.
- b. A pet learns to do a trick because its owner rewards it regularly.
- c. A new slang word becomes popular with a group of teenagers.



Swamp sparrows can be identified by their brown wings, gray faces, and a dark line close to the eye.

EVALUATING STATEMENTS

B. Are the following statements true or false according to the reading passage, or is the information not given? Circle T (true), F (false), or NG (not given).

- |   |   |   |    |
|---|---|---|----|
| 1. Swamp sparrows learn to sing when they are young.                      | T | F | NG |
| 2. Conformist bias was only recently noticed in animals.                  | T | F | NG |
| 3. The swamp sparrow research was carried out all over the United States. | T | F | NG |
| 4. Each sparrow song consists of more than ten notes, or syllables.       | T | F | NG |
| 5. Scientists are studying how habitat loss might affect bird songs.      | T | F | NG |

## Scanning for Details

Scanning a text can help you to quickly find specific information, such as a name, a date, a place, a number, or a reason. Decide what exactly you need to look for, and then quickly look only for that information. Do not read every word.

### SCANNING

**A.** Read the questions below. For each question, decide what information you need to look for. Then scan Reading B quickly to find the answers.

1. Where do swamp sparrows live?

(name / place / date / number / reason) **Answer:** \_\_\_\_\_

2. Who are the two scientists mentioned in the passage?

(name / place / date / number / reason) **Answer:** \_\_\_\_\_

3. When did the research team carry out the swamp sparrow study?

(name / place / date / number / reason) **Answer:** \_\_\_\_\_

4. How many male swamp sparrows were recorded?

(name / place / date / number / reason) **Answer:** \_\_\_\_\_

5. Why did the researchers use computer software?

(name / place / date / number / reason) **Answer:** \_\_\_\_\_

### SCANNING

**B.** Scan the reading passage again and underline each piece of information below. Note the paragraph in which the information appears.

1. examples of man-made barriers paragraph \_\_\_\_\_

2. the main findings of the swamp sparrow study paragraph \_\_\_\_\_

3. an example of future research that may evolve from the study paragraph \_\_\_\_\_

4. how both children and swamp sparrows learn to communicate paragraph \_\_\_\_\_

### CRITICAL THINKING Applying Concepts

Look again at the definition of *conformist bias* in the footnotes for Reading B. What are some examples of conformist bias in human society? Discuss with a partner and note your ideas.

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## VOCABULARY PRACTICE

**COMPLETION** A. Complete the information using the correct form of the words in the box.

**aspect evolve exchange human standard**



^ A yellow-naped Amazon parrot

Parrots and <sup>1</sup>\_\_\_\_\_ learn to vocalize similarly: Both listen and then repeat back what they hear. Now scientists have found another <sup>2</sup>\_\_\_\_\_ of their behavior that is similar. Parrots do not speak a single, <sup>3</sup>\_\_\_\_\_ language; they speak in regional dialects.

A team from New Mexico State University has studied the vocal <sup>4</sup>\_\_\_\_\_ among Amazon parrots living in Costa Rica. All the birds use a specific call to communicate. However, the call varies by region. When one bird hears the local dialect of another, it changes its own call to match the new tune.

Only a few animals have <sup>5</sup>\_\_\_\_\_ to communicate in this way. "Learning how to sound like others is very important to parrots," says researcher Timothy Wright. "When you sound like another, that means you are a member of their group."

**DEFINITIONS** B. Match the two parts of each definition.

- |   |   |  |
|---|---|--|
| 1. If you <b>create</b> something,        | • | • a. two or more things are joined together.                     |
| 2. If something is a <b>combination</b> , | • | • b. you make something new.                                     |
| 3. If something is <b>cultural</b> ,      | • | • c. it causes a change.   |
| 4. If something has an <b>impact</b> ,    | • | • d. it is correct.  |
| 5. If information is <b>accurate</b> ,    | • | • e. it relates to the ideas or customs of a particular society. |

**WORD FORMS** C. Many nouns, such as **combination**, are formed from verbs by adding the suffix **-tion**.

1. Complete the chart below. Use a dictionary to help.

Verb		Noun
_____	→	<b>combination</b>
<b>create</b>	→	_____
<b>evolve</b>	→	_____

2. Complete these sentences using the correct form of the words above.

- To communicate, bees use a(n) \_\_\_\_\_ of body movements and chemical signals.
- The development of language has played an important role in human \_\_\_\_\_.
- Like bees, ants can \_\_\_\_\_ chemicals called "pheromones."
- As a language \_\_\_\_\_, the meaning of certain words can change.



# THE LION'S ROAR

VIDEO

< A lioness roars as her cubs play in Kenya's Maasai Mara National Reserve.

## BEFORE YOU WATCH

**PREVIEWING** A. Read the information. The words and phrases in **bold** appear in the video. Match each word with its definition.

The lion is known for its power and strength, as well as its famously fierce roar. In fact, a lion's roar can be as loud as 114 decibels—about as loud as **thunder**. These sounds are made by both lions and lionesses, though lionesses do not roar as often, or as loudly. Male lions—especially the **dominant** lion in the pride (the lion family group)—roar to warn others to leave their **territory**. They also roar to communicate their location to their family; this is called *social roaring*.

- |              |   |   |  |
|--------------|---|---|--|
| 1. thunder   | • | • | a. the loud sound you hear after lightning                   |
| 2. dominant  | • | • | b. an area of land belonging to a particular person or group |
| 3. territory | • | • | c. more important or powerful than most or all others        |

**QUIZ** B. What do you know about lions? Discuss the questions below with a partner.

1. Which is bigger, a lion or a tiger?
2. What is the name given to a group of lions?
3. Which usually hunts for food—the male or the female lion?
4. In which two continents do lions live today?



## WHILE YOU WATCH

**GIST** A. Watch the video. Check your ideas in Before You Watch B.

**COMPLETION** B. Watch the video again. Complete the sentences by circling the correct options.

1. Lions are able to roar *as soon as they are born* / *when they are one year old*.
2. There are usually more adult *males* / *females* in a pride of lions.
3. American lions and cave lions became extinct around *1,000* / *10,000* years ago.
4. *African* / *Asiatic* lions are the most endangered lion species today.

### CRITICAL THINKING Synthesizing Information

- Consider what you have learned about animal communication in this unit. What do you remember about each animal listed below? Discuss with a partner.

**humpback whale**

**lyrebird**

**swamp sparrow**

**parrot**

**lion**

- Imagine you are a scientist who studies animal communication. Which animal would you most like to study? What would you like to find out about it? Why? Note your ideas below. Then discuss with a partner.

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## VOCABULARY REVIEW

Do you remember the meanings of these words? Check (✓) the ones you know. Look back at the unit and review any words you're not sure of.

### Reading A

- |                                      |                                 |                                   |                                    |                                     |
|--------------------------------------|---------------------------------|-----------------------------------|------------------------------------|-------------------------------------|
| <input type="checkbox"/> apparently* | <input type="checkbox"/> aware* | <input type="checkbox"/> complex* | <input type="checkbox"/> curiously | <input type="checkbox"/> experience |
| <input type="checkbox"/> interact*   | <input type="checkbox"/> record | <input type="checkbox"/> season   | <input type="checkbox"/> single    | <input type="checkbox"/> unknown    |

### Reading B

- |                                    |                                   |                                      |                                  |                                    |
|------------------------------------|-----------------------------------|--------------------------------------|----------------------------------|------------------------------------|
| <input type="checkbox"/> accurate* | <input type="checkbox"/> aspect*  | <input type="checkbox"/> combination | <input type="checkbox"/> create* | <input type="checkbox"/> cultural* |
| <input type="checkbox"/> evolve*   | <input type="checkbox"/> exchange | <input type="checkbox"/> human       | <input type="checkbox"/> impact* | <input type="checkbox"/> standard  |

\* Academic Word List

# HISTORY DETECTIVES

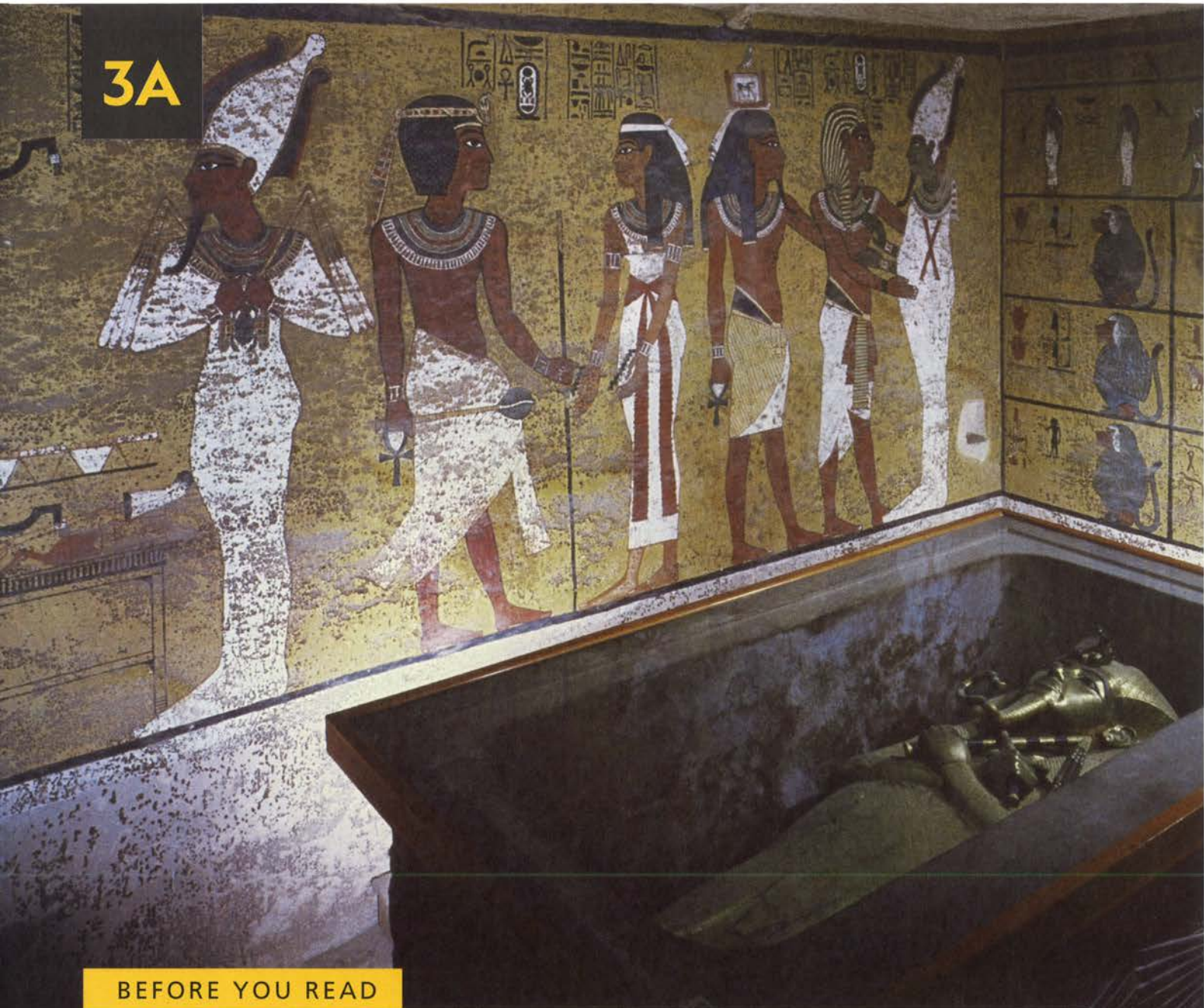
## WARM UP

Discuss these questions with a partner.

1. How do scientists learn about the past?
2. What famous historical sites have you visited? What did you see there?

▲ An archeologist examines the inside of a cave in Mallorca, Spain.





## BEFORE YOU READ

**DEFINITIONS** A. Look at the photo and read the information below. Match each word in **bold** with its definition.

On November 4, 1922, a British **archeologist** named Howard Carter discovered the **tomb** of King Tutankhamen. Inside, he found a beautiful solid gold **coffin** containing a **mummy**. It was the body of the young Egyptian king who had died over 3,200 years before.

- |                 |   |  |
|-----------------|---|--|
| 1. archeologist | • | a. a preserved body  |
| 2. tomb         | • | b. a room used to bury the dead                            |
| 3. coffin       | • | c. a box in which a dead body is kept                      |
| 4. mummy        | • | d. a scientist who studies things and people from the past |

**SKIMMING** B. What are some theories about how King Tutankhamen died? Quickly skim the passage. Then compare your ideas with a partner.





# WAS KING TUT MURDERED?

- A King Tutankhamen was still a teenager when he died around 1322 B.C. He ruled Egypt for ten years, the last king of a powerful family that had ruled the country for centuries. After his death, the body of King Tut (as Tutankhamen is usually known today) was placed in a gold-filled tomb. There, he lay forgotten until the tomb's discovery in 1922. Although we know a lot about his life, the reason for King Tut's death at such a young age has remained a mystery, with **murder** the most extreme possibility. Now, improved X-ray technology<sup>1</sup> and DNA<sup>2</sup> testing are **offering** new clues into the life and death of the boy-king.

## Discovered and Damaged

- B When British archeologist Howard Carter opened King Tut's tomb, it was full of gold and other amazing items. Carter spent months carefully recording the treasures. When he and his team attempted to remove King Tut's mummy, they found that it had become **attached** to its solid gold coffin. Unfortunately, they **caused** a great deal of damage to the mummy while removing it.

## Theories about Tut's Death

- C In 1968, archeologists **conducted** an examination of King Tut's mummy using simple X-ray technology. Three important discoveries led to various theories about his death.
- The X-rays showed that bones in Tut's chest<sup>3</sup> were missing. Some guessed the damage was caused by a war **injury** or an accident.
  - There was a small hole in the back of the skull, and pieces of bone inside it, causing many to believe that Tut was killed by a blow to the back of the head. Was he murdered by people wanting to **take control of** Egypt?
  - A serious fracture was discovered on Tut's left leg. Tut had been hurt a few hours before his death. Could an **infection** from the injury have killed Tut?

▲ Tutankhamen's tomb was decorated with colorful paintings of gods and goddesses.

<sup>1</sup> **X-ray technology** is a special way of taking pictures of the inside of something.

<sup>2</sup> **DNA** (deoxyribonucleic acid) is the material that carries information on how a living thing will look or function.

<sup>3</sup> Your **chest** is the top part of the front of your body.



## A Closer Look

- D In 2005, scientists under the direction of Egyptian archeologist Zahi Hawass used new and more **effective** X-ray technology to study the mummy. They discovered that the damage to Tut's chest was caused by Howard Carter, and the hole in Tut's skull was made when embalmers<sup>4</sup> were preparing the body for burial. While this ruled out one theory—that of murder—it still doesn't tell us exactly how he died.
- E Then, in 2008, Hawass and his team **analyzed** Tut's DNA. They found that he suffered from flat feet as well as a bone disease: This would have made it difficult for him to walk. When they analyzed the DNA of the mummies in other tombs nearby, they made some shocking discoveries. They found Tut's father and mother, who had similar DNA, were actually brother and sister. The DNA they passed on to Tut may have left him highly vulnerable to disease, such as malaria.<sup>5</sup> Did an infection that started in his fractured leg—added to the bone disease—cause his death? No one knows for sure. But Hawass and his team hope they will someday have an answer to this age-old mystery.

<sup>4</sup> **Embalmers** are people who prepare a body for burial.

<sup>5</sup> **Malaria** is a serious disease that is carried by mosquitoes.



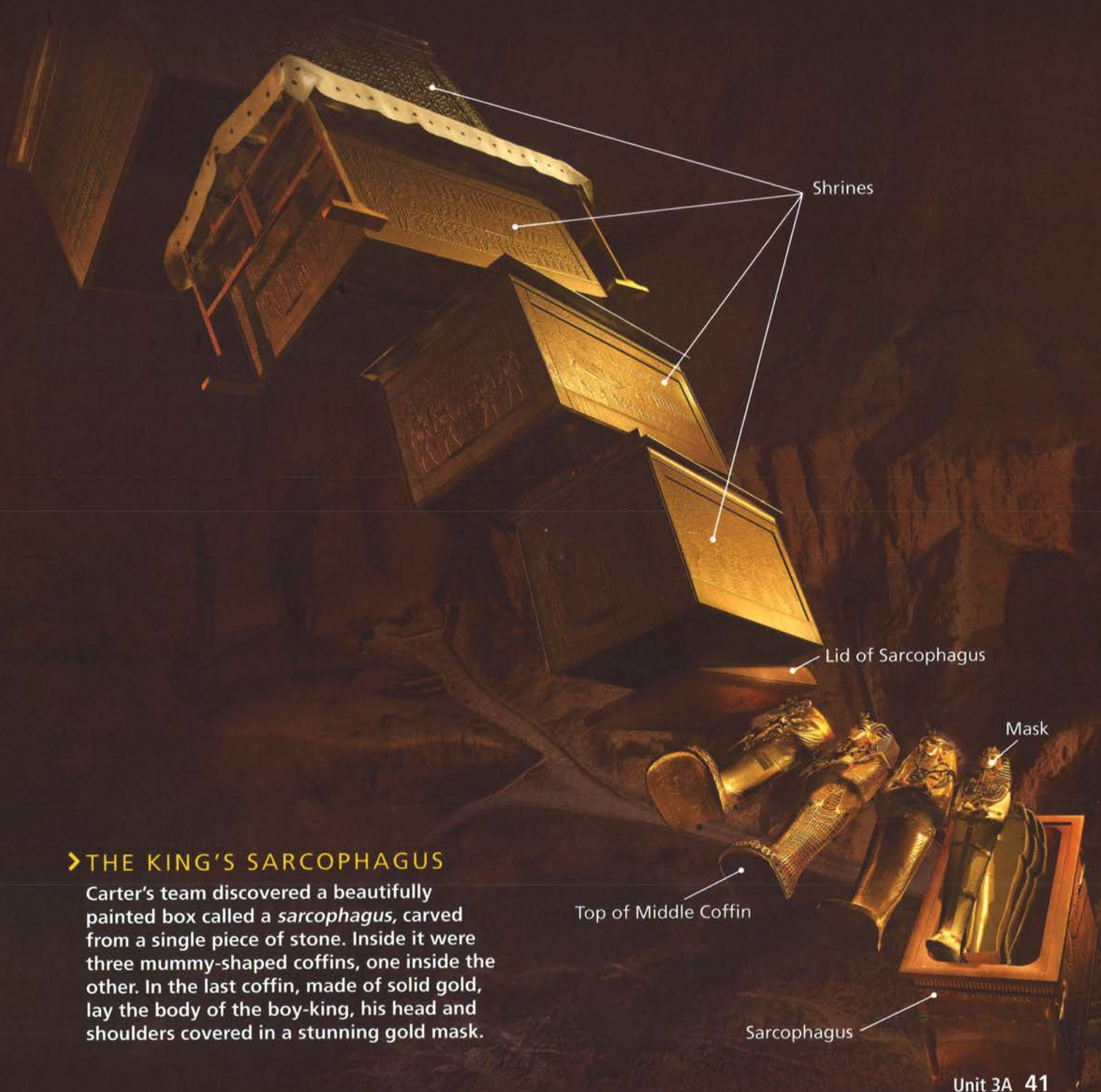
- Through CT scans of King Tut's mummy, scientists are learning more and more about how the boy-king lived, and how he might have died.



## INSIDE KING TUT'S TOMB

The tomb of Tutankhamen was found hidden in the Valley of the Kings. Although some of its outer rooms were robbed in ancient times, the tomb itself was not opened. Inside were walls decorated with colorful paintings and nine layers of wood, stone, and gold, protecting the body of the king.

To reach King Tut's mummy, Carter and his team had to remove four huge boxes, or shrines. Each shrine was made from heavy wood and covered with golden pictures of Egyptian gods.



## THE KING'S SARCOPHAGUS

Carter's team discovered a beautifully painted box called a *sarcophagus*, carved from a single piece of stone. Inside it were three mummy-shaped coffins, one inside the other. In the last coffin, made of solid gold, lay the body of the boy-king, his head and shoulders covered in a stunning gold mask.



## READING COMPREHENSION

### A. Choose the best answer for each question.

GIST

1. How does the passage answer the question, "Was King Tut murdered?"
  - a. He was probably murdered.
  - b. He almost certainly died in an accident.
  - c. How he died is still not known.

DETAIL

2. King Tut's skull was damaged \_\_\_\_\_.
  - a. by the new X-ray technology
  - b. when it was removed from the coffin
  - c. when the mummy was prepared for burial

VOCABULARY

3. In paragraph D, the phrase *ruled out* is closest in meaning to \_\_\_\_\_.
  - a. suggested
  - b. confirmed
  - c. rejected

DETAIL

4. Which of the following did Carter NOT find in Tut's tomb?
  - a. colorful paintings
  - b. King Tut's parents
  - c. a golden mask

DETAIL

5. What did scientists discover by analyzing King Tut's DNA?
  - a. He suffered from a bone disease.
  - b. He had an infection in his leg.
  - c. He had a brother and a sister.



More than 130 canes and walking sticks were found inside King Tut's tomb. Many showed signs of use. This suggests that Tut was unable to walk properly.

REFERENCE

### B. Find these pronouns in the passage. What does each one refer to? Note your answers.

Review this reading skill in Unit 2A

1. *it* (paragraph B, line 2) \_\_\_\_\_
2. *it* (paragraph B, line 6) \_\_\_\_\_
3. *it* (paragraph C, line 8) \_\_\_\_\_
4. *he* (paragraph D, line 6) \_\_\_\_\_
5. *they* (paragraph E, line 6) \_\_\_\_\_
6. *they* (paragraph E, line 9) \_\_\_\_\_

## Creating a Timeline of Events

When you read a text that describes a series of events, it can be useful to place the events on a timeline. This provides you with a clear picture of the important events in the order they happened. A timeline can be used for events that occurred on specific dates, as well as for events that cover a period of time.

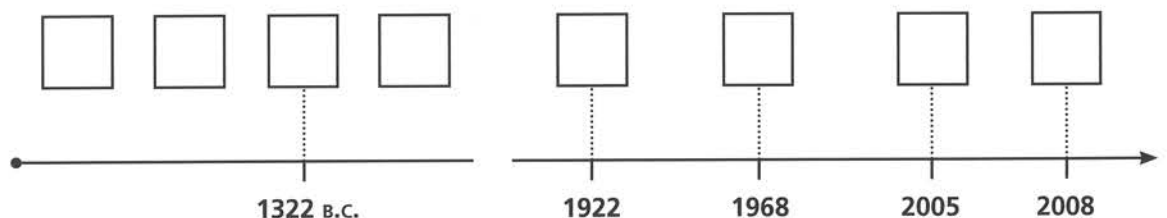
**SCANNING** A. Find and underline these events in Reading A.

- King Tut's DNA is analyzed.
- King Tut begins his rule of Egypt.
- King Tut is placed in a gold-filled tomb.
- Howard Carter discovers King Tut's tomb.
- Outer rooms of King Tut's tomb are robbed.
- King Tut's family, a series of powerful kings, ruled Egypt.
- More effective X-ray technology is applied to the mummies.
- Images of King Tut's mummy are taken with simple X-ray technology.



^ The golden mask of Tutankhamen

**UNDERSTANDING SEQUENCE** B. Label the timeline with the events above.



### CRITICAL THINKING Justifying Opinions

Do you think it is important that we find out how King Tut died? Why or why not? Note your ideas below. Then discuss with a partner.

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## VOCABULARY PRACTICE

**COMPLETION** A. Complete the information using the words in the box. Two words are extra.

<b>analyze</b>	<b>attached</b>	<b>cause</b>	<b>conduct</b>
<b>effective</b>	<b>infection</b>	<b>murder</b>	<b>offer</b>

A group of 700-year-old mummies unearthed in Handong, South Korea, has provided researchers with some interesting findings. The mummies may  
<sup>1</sup> \_\_\_\_\_ hope for treating a deadly modern-day illness, and they also tell of an ancient love story.

One of the bodies found showed signs of  
<sup>2</sup> \_\_\_\_\_ with the hepatitis B virus. Scientists hope that after they <sup>3</sup> \_\_\_\_\_ the body, they will better understand the disease, and find more  
<sup>4</sup> \_\_\_\_\_ ways to treat it.

Another mummy was a young man who may have been involved in a plan to <sup>5</sup> \_\_\_\_\_ the emperor. He was found buried with poems written by his wife. The 500-year-old poems show how strongly  
<sup>6</sup> \_\_\_\_\_ she was to her husband, even beyond his death.



^ A mummy found in South Korea in 2007 had a poem buried with him that reads:

*I cannot live without you anymore. I wish I could be with you. Please let me go with you. My love to you, it is unforgettable in this world, and my sorrow, it is without end.*

**DEFINITIONS** B. Complete the sentences. Circle the correct words.

1. She suffered a(n) **injury** / **murder** to her ankle as she stepped out of the car.
2. The archeologists **conducted** / **caused** a series of tests on the mummy.
3. Thousands of years ago, the Roman Empire **took control of** / **offered** many parts of Europe.
4. The **cause** / **murder** of the accident remains under investigation.

**WORD FORMS** C. Some words, like **cause**, can act as both a noun and a verb.

What exactly was the **cause** of death? Did the infection **cause** this death?

Write two sentences for each word, first as a noun and then as a verb.

1. offer

\_\_\_\_\_

\_\_\_\_\_

2. murder

\_\_\_\_\_

\_\_\_\_\_



## BEFORE YOU READ

**DISCUSSION** A. A mummy, known as the "Iceman," was found high in the Alps in Italy in 1991. Look at the picture and read the caption. Then discuss the questions with a partner.

1. What kind of man do you think the "Iceman" was?
2. Where and when did he die? What do you think happened to him?

**SCANNING**

Review this  
reading skill  
in Unit 2B

B. Scan the reading passage to see if your predictions in activity A were correct.

**DESCRIPTION OF BODY:**

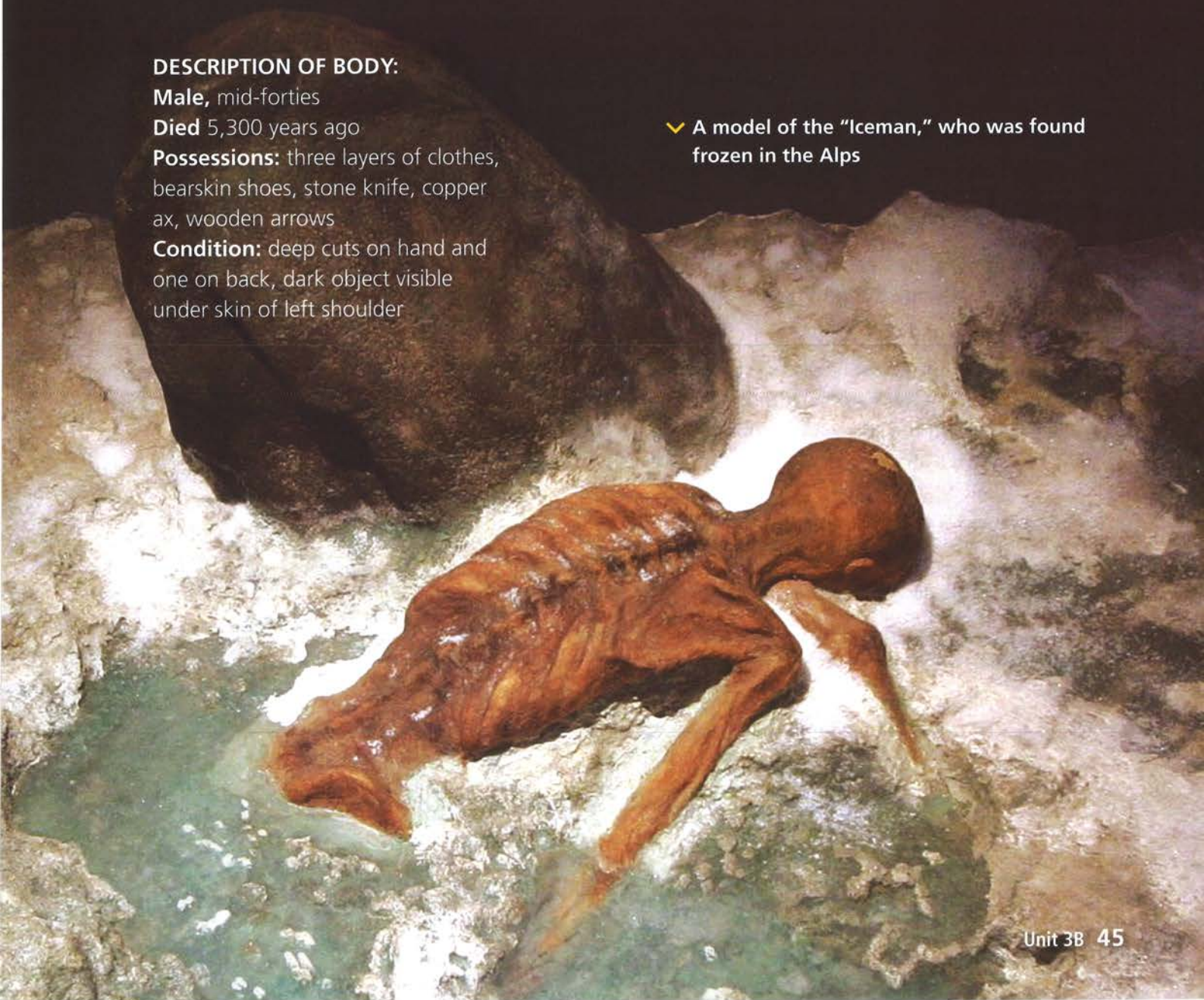
**Male**, mid-forties

**Died** 5,300 years ago

**Possessions:** three layers of clothes, bearskin shoes, stone knife, copper ax, wooden arrows

**Condition:** deep cuts on hand and one on back, dark object visible under skin of left shoulder

✓ A model of the "Iceman," who was found frozen in the Alps





# WHO KILLED THE ICEMAN?

- A In 1991, high in the mountains of Europe, hikers made a shocking discovery: a dead man partly **frozen** in the ice. The police investigation soon became a scientific one. Carbon dating<sup>1</sup> **indicated** that the man died over 5,300 years ago. Today, he is known as the Iceman and nicknamed "Ötzi" for the Ötztal Alps where he was found. Kept in perfect condition by the ice, he is the oldest complete human body found on Earth.

## Who Was the Iceman?

- B Scientists believe Ötzi was an important person in his village. Examinations of his teeth and skull tell us he was in his mid-forties when he died. The things he carried also tell us about who he was. His knife was made of stone, but he carried a copper<sup>2</sup> ax. This was a valuable tool in Ötzi's time and suggests that he may have been a local **leader**. A fire-starting kit was discovered with him, so we know he could make fire. And the food he ate and carried **enabled** scientists to know exactly where in Italy he lived—a village down in the valley.

## Clues to an Ancient Murder

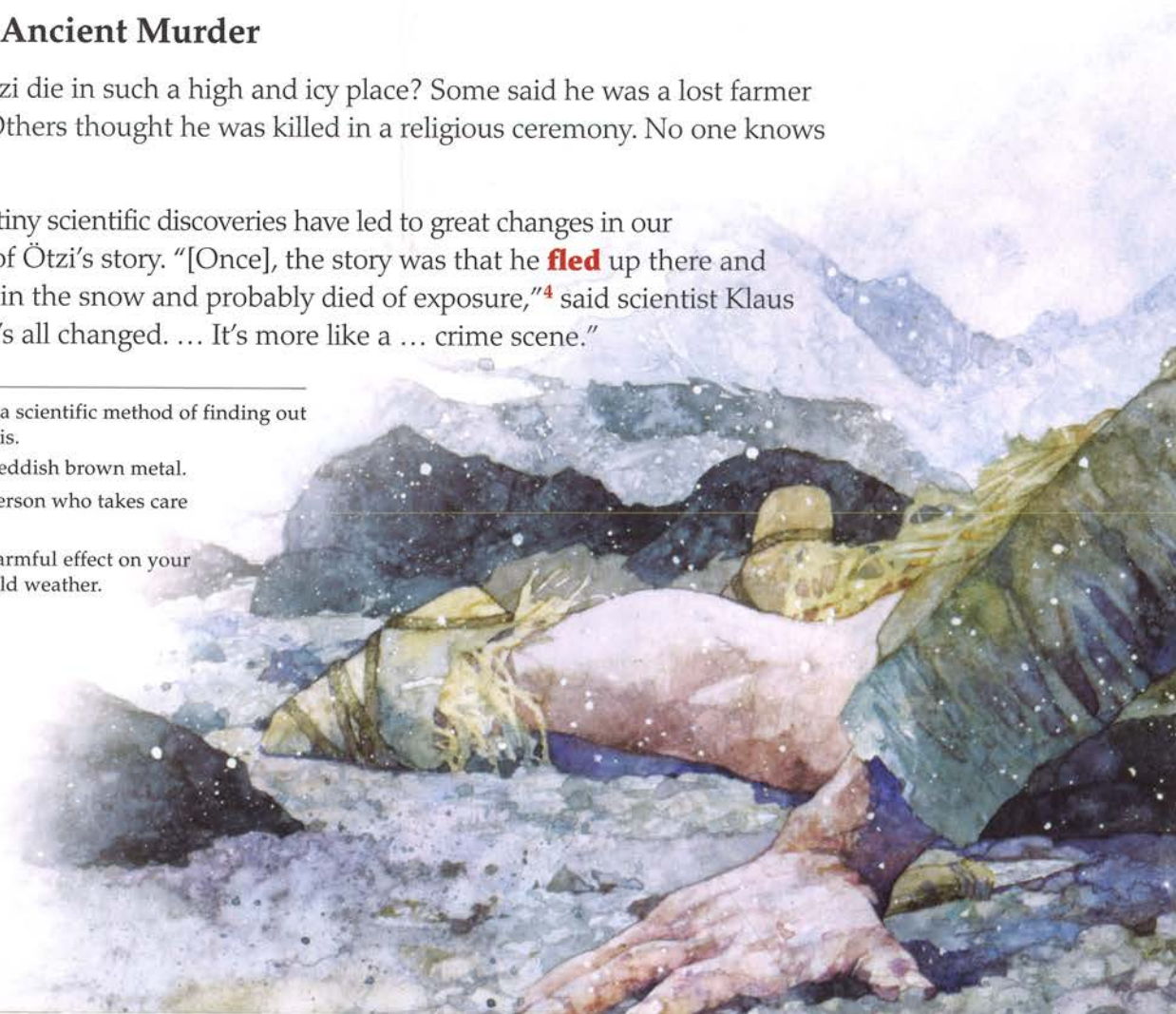
- C But why did Ötzi die in such a high and icy place? Some said he was a lost farmer or shepherd.<sup>3</sup> Others thought he was killed in a religious ceremony. No one knows for sure.
- D Over the years, tiny scientific discoveries have led to great changes in our understanding of Ötzi's story. "[Once], the story was that he **fled** up there and walked around in the snow and probably died of exposure,"<sup>4</sup> said scientist Klaus Oeggl. "Now it's all changed. ... It's more like a ... crime scene."

<sup>1</sup> **Carbon dating** is a scientific method of finding out how old an object is.

<sup>2</sup> **Copper** is a soft, reddish brown metal.

<sup>3</sup> A **shepherd** is a person who takes care of sheep.

<sup>4</sup> **Exposure** is the harmful effect on your body from very cold weather.





## A Bloody Discovery

- E In fact, the newest scientific information indicates Ötzi was **cruelly** murdered. In June 2001, an X-ray of the body showed a small dark shape **beneath** Ötzi's left shoulder. It was the stone head of an arrow that had hit him from behind. CT scans showed that this caused an injury that killed him very quickly.
- F Then, in 2003, an Australian scientist discovered the blood of four other people on Ötzi's clothes. Was Ötzi killed in a fight? It isn't **likely**, as Ötzi's other injuries, on his hand and head, had already started to close. This means there probably was a fight, but it happened much earlier.
- G Perhaps Ötzi was being **chased** when he died? In 2010, scientists took the mummy out of the cold and examined him again. They discovered that just before his death, he had a big meal of bread and goat meat. In 2018, further analysis of his stomach showed Ötzi had also eaten deer meat. Would someone being chased stop to eat a large meal? The scientists don't think so. More likely, he was **attacked** while resting. He may have thought he had escaped and was safe. Today, the research continues, proving some of these ideas as false while opening the door to others. Ötzi, it seems, has more to tell us about his life and the time in which he lived.

✓ In his last moments, the Iceman, Ötzi, lay in the cold, alone. There his body stayed for thousands of years.





## READING COMPREHENSION

### A. Choose the best answer for each question.

- GIST** 1. What was the most likely cause of Ötzi's death?
- He was killed in a religious ceremony.
  - He was chased and killed during a fight.
  - He was attacked from behind while resting.

- DETAIL** 2. Which is the best description of Ötzi?
- an important man from a village in Italy
  - a poor farmer who lived in the mountains
  - a young man who made weapons

- DETAIL** 3. What caused the death of the Iceman?
- a knife
  - an arrow
  - the cold

- DETAIL** 4. Why is it believed that a fight took place long before Ötzi's death?
- No weapons were found on his body.
  - He was bleeding from his shoulder.
  - Injuries on his hand and head had begun to close.

- VOCABULARY** 5. In paragraph G, what does *opening the door to* mean?
- allowing for the possibility of
  - disproving the idea of
  - providing a reason for



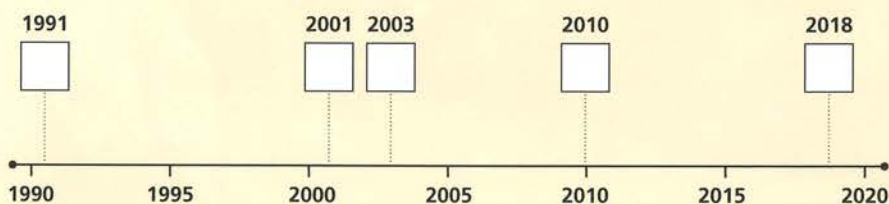
^ A life-size model of the Iceman at the South Tyrol Museum of Archeology in Bolzano, Italy

### CREATING A TIMELINE

Review this reading skill in Unit 3A

### B. Add the events (a–e) to complete the timeline.

- An X-ray showed a dark shape beneath Ötzi's left shoulder.
- A scientist discovered the blood of other people on Ötzi's clothes.
- Scientists found that Ötzi had eaten deer before he died.
- Scientists learned that Ötzi had eaten bread and goat before he died.
- The police investigation of Ötzi became a scientific investigation.



## Distinguishing Facts from Speculation

Scientific and historical texts often contain a mix of both facts and speculation.

Facts are ideas that are known to be true, or that can be proven. For example, the idea that Ötzi died over 5,300 years ago (paragraph A) is considered a fact because it can be proven by carbon dating.

Speculation refers to ideas that have not been proven to be true or false. Words that indicate speculation include *think, believe, may, might, could, possibly, probably, perhaps, and (un)likely*.

**SCANNING** A. Look back at Reading B. Find this information about Ötzi and underline it in the text.

- \_\_\_ 1. He was found in the mountains.
- \_\_\_ 2. He died over 5,300 years ago.
- \_\_\_ 3. He was an important person in his village.
- \_\_\_ 4. Blood from four people was found on his clothes.
- \_\_\_ 5. He had injuries on his hand and head.
- \_\_\_ 6. A bloody fight took place before his murder.
- \_\_\_ 7. He was being chased following a fight.
- \_\_\_ 8. He ate meat and bread before he died.
- \_\_\_ 9. He was resting when he was attacked.
- \_\_\_ 10. He thought he was safe when he was attacked.



**DISTINGUISHING  
FACTS FROM  
SPECULATION**

B. Which of the statements above are facts (F), and which are speculation (S)? Write F or S next to each statement. Then circle the words and phrases in the reading that indicate speculation.

^ The Iceman is hit in the shoulder by a stone arrow. Scientists believe this is what killed him.

### CRITICAL THINKING Evaluating Evidence

- For each piece of speculation mentioned above, what supporting evidence does the author give? Look back at Reading B and circle any supporting evidence.
- Discuss with a partner. How well supported is each claim? Are there any other possible explanations?



## VOCABULARY PRACTICE

- DEFINITIONS** A. Read the information below. Then complete the definitions using the correct form of the words in **red**.

What **enabled** the Iceman's body to survive for over 5,000 years? Scientists thought Ötzi's body may have dried out, like mummies in Egypt. However, Egyptian mummies still have hair, and Ötzi's did not. This difference **indicates** that the body had been preserved by a different process. Bodies that stay in water for a long time lose their hair. So it is **likely** that Ötzi's body was underwater before it was **frozen** in the ice.

1. If something is \_\_\_\_\_ to happen, it will probably happen.
2. To \_\_\_\_\_ something means to suggest or show it to be true.
3. If something is \_\_\_\_\_, it has become very hard because of the cold.
4. If you \_\_\_\_\_ something to happen, you help make it possible.

- COMPLETION** B. Complete the information with the correct form of the words in the box.

**attack    beneath    chase    cruel    flee    leader**

1. Ötzi's killers probably \_\_\_\_\_ him while he was resting.
2. In Ötzi's time, a \_\_\_\_\_ carried better equipment than ordinary men.
3. Ötzi's mummy was buried \_\_\_\_\_ the ice and snow for thousands of years.
4. It is unlikely that someone \_\_\_\_\_ the Iceman up the mountain. Evidence suggests Ötzi had stopped to eat a meal.
5. It is possible that Ötzi \_\_\_\_\_ to the mountain because of something that happened earlier.
6. Ötzi's attackers were \_\_\_\_\_ to leave him to die in the cold.

- COLLOCATIONS** C. The nouns in the box are frequently used with the adjective **cruel**. Complete the sentences using the correct words.

**act    comment    death    trick**

1. The murder of Ötzi was a really cruel \_\_\_\_\_.
2. The Iceman suffered a cruel \_\_\_\_\_ out in the cold.
3. The children played a cruel \_\_\_\_\_ on their parents.
4. In the morning, he was sorry for the cruel \_\_\_\_\_ he'd posted online.

# WALKING WITH GIANTS

✓ Moai statues on the Pacific island of Rapa Nui

## BEFORE YOU WATCH

- PREVIEWING** A. Read the information. The words in **bold** appear in the video. Match each word with its definition.

Rapa Nui (also known as Easter Island) is home to over 900 *moai* statues. Around 1,000 years ago, these huge figures were **carved** from stone that came from many kilometers away. No one knows for sure how the ancient Rapa Nui moved them. Over the years, many different theories have been suggested. Some believe that **aliens** moved them; the traditional Rapa Nui story is that the statues came alive and walked across the island. In recent years, however, more scientific **approaches** have been taken in an attempt to solve the mystery.

- |             |   |   |
|-------------|---|---|
| 1. carve    | • | • a. a method or way of doing something                         |
| 2. aliens   | • | • b. creatures or people not from Earth                         |
| 3. approach | • | • c. to make something by cutting a material like wood or stone |

- DISCUSSION** B. What are some possible ways the ancient Rapa Nui could have moved the moai statues? Discuss your ideas with a partner.