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5

READING EXPLORER

THIRD EDITION

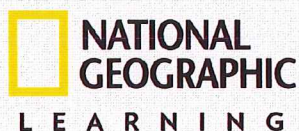
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READING EXPLORER

THIRD EDITION

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SCOPE AND SEQUENCE

UNIT	THEME	READING	VIDEO
1	Rise and Fall	A: Secrets of the Maya B: The Collapse of Angkor	Legacies of the Maya
2	High Achievers	A: The Sky Runner B: The Free Soloist	Soloing Safely
3	Science and Progress	A: The Age of Disbelief B: Goalkeepers for the Planet	Energy Entrepreneur
4	Saving Cities	A: City Under Siege B: Rising Seas	Hurricanes
5	Energy Choices	A: Our Energy Diet B: Plugging into the Sun	Eco-Detectives
6	Survival and Protection	A: Quicksilver B: Building the Ark	Life on Ice
7	Human Body	A: Secrets of the Brain B: Human Bionics	A Giant Step
8	Social Behavior	A: The Genius of Swarms B: Of Ants and Humans	Crane Migration
9	Creativity	A: Decoding Leonardo B: The Power of Writing	Infinity Artist
10	New Discoveries	A: Cosmic Dawn B: Element Hunters	Black Holes
11	Cultural Encounters	A: The World of Süleyman the Magnificent B: When the Moors Ruled Spain	Crossroads of the World
12	Precious Resources	A: Gold Fever B: The Rush for White Gold	The Lure of Lithium

ACADEMIC SKILLS

READING SKILL	VOCABULARY BUILDING	CRITICAL THINKING
A: Understanding Complex Infographics (1) B: Evaluating Arguments (1)	A: Collocations with <i>grueling</i> B: Word root: <i>reg</i>	A: Analyzing Evidence B: Applying Ideas; Reflecting
A: Guessing Meaning from Context—Idioms and Colloquial Language B: Understanding Rhetorical Purpose	A: Word usage: <i>merely</i> B: Collocations with <i>plummet</i>	A: Applying Ideas B: Inferring Reasons; Reflecting
A: Identifying Figurative Language B: Making Inferences (1)	A: Word usage: <i>bias</i> , <i>prejudice</i> , <i>discrimination</i> B: Collocations with <i>initiative</i>	A: Applying Ideas B: Evaluating Ideas; Evaluating Problems
A: Recognizing Literal versus Figurative Language B: Evaluating Arguments (2)—Reading Critically	A: Word usage: <i>complement</i> and <i>compliment</i> B: Expressions with <i>take</i>	A: Analyzing Arguments B: Evaluating Solutions; Applying Ideas
A: Distinguishing Main Ideas and Supporting Information B: Determining Similarities and Differences	A: Collocations with <i>obstacle</i> B: Prefixes and Suffixes	A: Evaluating Solutions B: Analyzing Arguments; Applying Ideas
A: Understanding Words with Multiple Meanings B: Determining the Meaning of Root Words	A: Word root: <i>turb</i> B: Synonyms for <i>imminent</i>	A: Identifying Evidence B: Analyzing Arguments; Synthesizing Information
A: Understanding the Use of the Passive Voice B: Distinguishing Fact from Opinion	A: Collocations with <i>unprecedented</i> B: Collocations with <i>valid</i>	A: Reflecting B: Justifying Opinions; Applying Ideas
A: Making Inferences (2) B: Identifying Multiple Answers to Questions	A: Collocations with <i>coherent</i> B: Collocations with <i>fatal</i>	A: Identifying Pros and Cons B: Analyzing Arguments; Applying Ideas
A: Understanding Complex Infographics (2) B: Using Graphic Organizers to Organize Key Ideas	A: Collocations with <i>deny</i> B: Word root: <i>man</i>	A: Justifying Opinions B: Identifying Pros and Cons; Synthesizing Information
A: Increasing Your Reading Speed B: Understanding Long Sentences	A: Word root: <i>mit</i> B: Collocations with <i>quest</i>	A: Justifying Opinions B: Identifying Pros and Cons; Inferring Information
A: Creating a Mental Map of a Text B: Inferring an Author's Attitude	A: Word usage <i>bias</i> and <i>biased</i> B: Collocations with <i>violate</i>	A: Identifying Evidence B: Reflecting; Personalizing
A: Identifying Coherence Devices B: Synthesizing Ideas Across Readings	A: Suffix: <i>-ship</i> B: Word root: <i>vers</i>	A: Evaluating Pros and Cons B: Evaluating Arguments; Synthesizing Ideas

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.

2A

BEFORE YOU READ

DISCUSS A. Look at the photo and read the caption. What kind of physical and personal characteristics might make a person successful at this sport? Discuss with a partner.

PREDICT B. Read the first paragraph of the reading. What challenges do you think Mira Rai had to overcome in order to become a trail runner? Discuss your ideas with a partner. Then read and check your answer.

THE SKY RUNNER

4. Growing up in a village in eastern Nepal's Hindu Mountains, Mira Rai had dreams that went far beyond the conventional expectations for Nepali women. The eldest daughter of five children, she was expected to help with household and farm work, and help out at home. By age 12, she no longer regularly attended school, and instead helped her mother with the daily tasks of the household—often working as a trader at the market. From Rai's childhood, she had a strong desire to become a trail runner.

"As a girl," Rai recalls, "I would constantly be told to 'behave my place'—to keep my voice down, and act in a certain manner. For me, breaking free from these traditions still was a big dream."

Several years ago, Rai's dream became reality. She was running when Kathmandu's school teacher and mountain guide began to enter her first trail race, the Kathmandu West Valley Run 50K. She had never run 50 kilometers before, had no special gear, no training for such a distance, and was also the only woman in the competition. But against all odds, she had surprised—even the men. From there, a community of supporters came together to give her a chance to compete in international trail running competitions.

Mira Rai—a trail and ultramarathon runner—trains on mountain trails in Nepal. Ultramarathons can be up to 100 kilometers long and are often held in remote places—such as deserts—and on tough terrain—such as steep mountains.

30 1000 2A

1000 2A 31

VIDEO

SOLOING SAFELY

Free soloing is a dangerous sport, but there are ways to make it safer.

BEFORE YOU WATCH

DEFINITION A. Read the information below. The words in bold appear in the video. Match each word with its definition.

There are many different types of rock climbing, such as mountaineering, sport climbing, and free solo climbing. Free soloing is considered to be a **ledge** sport, often among professional climbers. Some climbers consider it to be **dangerous** and **reckless**. During free soloing, climbers do not use any equipment at all, including ropes, even when scaling difficult **terrain**. However, those who do it often enjoy the added **adrenaline** rush it brings.

1. reckless • a chemical produced by the body that makes your heart beat faster
2. terrain • having or showing no regard for danger
3. ledge • an area of land
4. adrenaline • a not widely popular

DISCUSS B. How could free solo climbers make rope-free climbing safer? Note your ideas below, then discuss with a partner.

Video 49

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

Understanding Complex Infographics (1)

A complex infographic often includes textual and graphical information. While this lets the reader quickly grasp essential information, it can be challenging to know where to look first. Follow these steps to interpret complex infographics:

1. Identify the main sections—look for larger title fonts and placement of main images.
2. Note which captions or text boxes connect to which images. Locate references to images in the text or captions.
3. Look for keys or legends and see how they relate to the images and text.

UNDERSTANDING INFOGRAPHICS A. Look back at the infographic on pages 12–13. Match the descriptions (a–d) to the relevant sections on the infographic.



UNDERSTANDING INFOGRAPHICS B. Look back at the Super Fish infographic. Note answers to the questions below.

1. Why would a bluefin tuna die if it stopped swimming?
2. In which three areas of its body does a bluefin tuna have heat-exchange systems?
3. What are three factors that help a bluefin tuna swim fast?
4. What are two ways in which a mackerel is different to a tuna?

CRITICAL THINKING Evaluating Statements

- The writer claims that the bluefin tuna is in danger. Note down evidence from the reading passage that supports this. Include any sources.

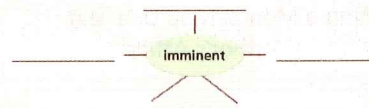
- What do you think can be done to reverse the decline in populations of bluefin tuna? Discuss your ideas with a partner. Consider the pros and cons of the following solutions.



WORD WEB

C. Complete the diagram with synonyms for **imminent**. Three words are extra.

about to happen approaching dangerous forthcoming
impending looming identical unusual



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

RISE AND FALL

1

A statue of a Maya warrior at the ruins of Chichén Itzá, Mexico

WARM UP

Discuss these questions with a partner.

1. What powerful ancient civilizations no longer exist today?
2. Why do you think these civilizations did not last?

BEFORE YOU READ

DISCUSSION A. Look at the photo and read the caption. What do you know about the Maya civilization? Share your ideas with a partner.

PREDICTING B. Why do you think cenotes were important to the ancient Maya? Discuss your ideas with a partner. Then read the passage to check your answer.

- Archeologist Guillermo de Anda descends into the Holtún cenote in Mexico's Yucatán Peninsula. Experts believe that cenotes—deep holes formed in limestone—were important to the ancient Maya, which ruled this part of the world from around 250 to 900 A.D.



SECRETS OF THE MAYA

The study of caves and wells in Mexico's Yucatán Peninsula is shining new light on the beliefs of the ancient and modern Maya.

- A From deep in a well near the ruins of the Maya city of Chichén Itzá, archaeoastronomer¹ Arturo Montero shouts to his colleague on the surface, "I saw it, I saw it! Yes, it's true!" Leaning over the mouth of the well, archaeologist Guillermo de Anda hopes to hear what he has suspected for many months. "What is true, Arturo?" he shouts. And Montero yells up again, "The zenith² light, it really works! Get down here!"
- B The two archaeologists are anxious to confirm whether this cenote could have acted as a sacred sundial³ and timekeeper for the ancient Maya. On two days every year—May 23 and July 19—the sun reaches its zenith over this part of Mexico. At those moments, the sun is vertically overhead and there is no shadow. On the morning of their descent, on May 24, Montero and de Anda see that the sun's rays are nearly vertical. The day before, they realized, a beam of light would have **plunged** straight down into the water.
- C Beneath its narrow mouth, the walls of the cenote open up to become a giant dome. It looks like a cathedral, except for the roots of trees that **penetrate** the rock. The beam of sunlight dances like fire on the surrounding stalactites,⁴ and it turns the water a beautiful transparent blue. The archaeologists were probably the first people in centuries to watch the sun move slowly across the cenote's water.

¹ An **archeoastronomer** is someone who studies archeological artifacts to determine what ancient people believed and understood about astronomy.

² The **zenith** is a point directly above a particular location.

³ A **sundial** is a device used for telling the time when the sun is shining. The shadow of a pointer falls onto a surface marked with the hours.

⁴ **Stalactites** are rock formations hanging from cave ceilings, slowly formed by dripping water.

D Did Maya priests wait in this well—known as the Holtún cenote—to observe and correct their measurements of the sun's angle when it reached the zenith? Did they come here during times of drought to make offerings to their water god, and at other times to give thanks for a good harvest? These and other questions involving the Maya religion and its extraordinarily accurate calendar are what the two explorers were investigating.

E In recent years, archeologists have been paying more attention to the meaning of caves, the zenith sun, and cenotes in the beliefs of the ancient and modern Maya. Archeologists already knew that the ancient Maya believed cenotes to be doors to a world inhabited by Chaak, the god of life-giving rain, but the significance of this fact has only recently started to become clear.

F De Anda began exploring Holtún in 2010. One day, **inspecting** the walls of the cenote a few meters below the surface, he felt something above his head. He was astonished to find a

✓ Chichén Itzá is located in Yucatán—a harsh region of Mexico with no rivers. Cenotes are the only permanent sources of fresh water.



natural rock shelf holding human and animal bones, pottery, and a knife—probably used for **sacrifices**—all neatly placed there centuries earlier. Below the water, he saw a number of columns and Maya stone carvings—the well was clearly a sacred site.

Key to Survival

- G Three years later, in the cornfield on the surface above the cenote, a crew of Maya farmers is working hard in the **grueling** Yucatán heat to pull the explorers out of the well. “There was a good rain the other day,” says the crew’s leader, Louis Un Ken, as he wipes the sweat off his face. “The Chaak moved.”
- H For men like Un Ken, the old gods are still very much alive, and Chaak is among the most important. For the benefit of living things, he pours from the skies the water he keeps in jars. Thunder is the sound of Chaak breaking a jar open and letting the rain fall. The Chaak had moved, Un Ken said, and that meant the planting season would soon arrive.
- I Chaak’s absence can cause disasters for the Yucatán Maya, possibly the **demise** of the ancient Maya civilization itself. Their land is an endless limestone shelf. Rain sinks through the porous⁵ limestone down to groundwater levels, and consequently no river runs through the land. From the air, one sees a green sea of dense jungle, but at ground level, the tropical forest appears very thin. Wherever there is enough **soil**, the Maya plant corn or a *milpa*, a crop-growing system including the corn, beans, and squash that **constitutes** their basic source of protein. But corn is a hungry crop; it sucks lots of nutrients from the soil. For thousands of years, milpa farmers have kept their small fields productive by burning a different area of trees every year and planting in the corn-friendly ashes.
- J As for water for the fields, that’s where Chaak comes in. Only seasonal rains can make the corn grow, and they must arrive in an exact

pattern: no rain in winter so that the fields and forest will be dry enough to burn by March; some rain in early May to soften up the soil for planting; then very gentle rain to allow the seeds to begin to grow; and finally, plenty of rain so the corn can **flourish**.

Pleasing the Rain God

- K In the village of Yaxuná, many people still depend on milpa, and an annual ceremony is held there to please the rain god. They walk a long way through the forest to a sacred cave and climb down to its center to bring up the water the ceremony requires. They raise the altar, dig a large cooking pit, and provide 13 fat chickens for the ritual meal. They cook them in the pit so the steam can rise directly to the rain god as an offering.
- L One recent such ceremony in Yaxuná was guided by Hipólito Puuc Tamay, a Maya holy man called a *hmem*. He stood in front of an altar praying for the holy **blessing** of rain. On instructions from the hmem, one of the villagers sat on a rock near the altar, blowing from time to time into one of the gourds⁶ in which Chaak stores the wind. He was just one of the neighbors, but he was also the rain god, and he sat with his eyes closed so as not to harm the ceremony with his terrible glance. Two other participants brought him to the altar, facing backward, to receive a blessing from the hmem.
- M Out of nowhere, a wind came up, and thunder could be heard in the distance. As the ceremonial meal was being distributed, the rain started—a sign, the hmem said, that Chaak had received his offering and was pleased with his people’s prayer. Soon, perhaps, the earth would be ready for planting.

⁵ Something that is **porous** has many small holes in it, which water and air can pass through.

⁶ A **gourd** is a container made from the hard, dry skin of a gourd fruit. Gourds are often used for carrying water or for decoration.

HOLTÚN CENOTE

Chichén Itzá, Mexico

70 meters (220 feet)

Sun's zenith
May 23, July 19

Before and after the sun's zenith, and on many other days, the rays slant into the cenote and are reflected onto the ceiling.

Current water level

Shelf with offerings

Holtún cenote

Additional artifacts

2.5 kilometers (1.6 miles)

LINKS TO THE COSMOS

For the Maya, astronomy was a sacred activity, as were architecture and city planning. De Anda and Montero now think that the Holtún and nearby cenotes may have played an important role in determining where to site buildings.

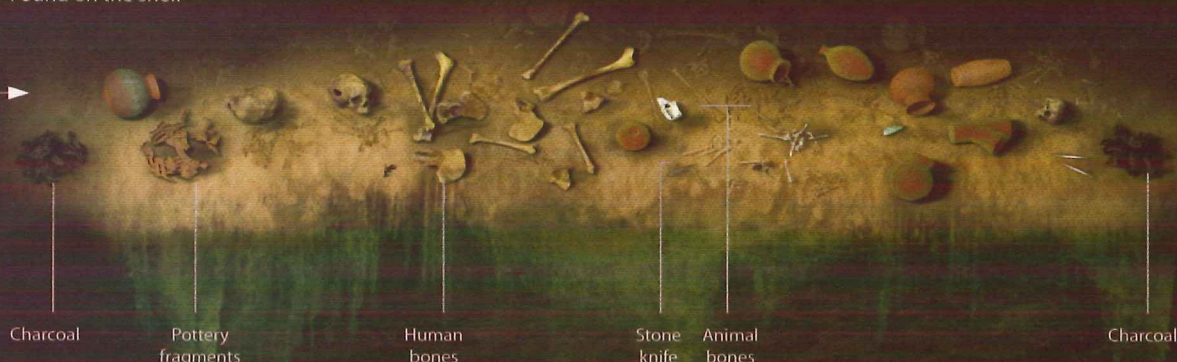
The El Castillo pyramid at Chichén Itzá is aligned to the March and September equinoxes⁷ when the sun's passage makes a snakelike shadow slither down its side. The structure also stands in the middle of four cenotes (where the white lines cross, right), probably symbolizing the sacred mountain at the center of the Maya universe. It was also oriented to the moments when the sun reaches its highest point in the sky (far right), further connecting the cycles of the heavens.

⁷ The **equinoxes** are the two days of the year when the day and night are equal length.

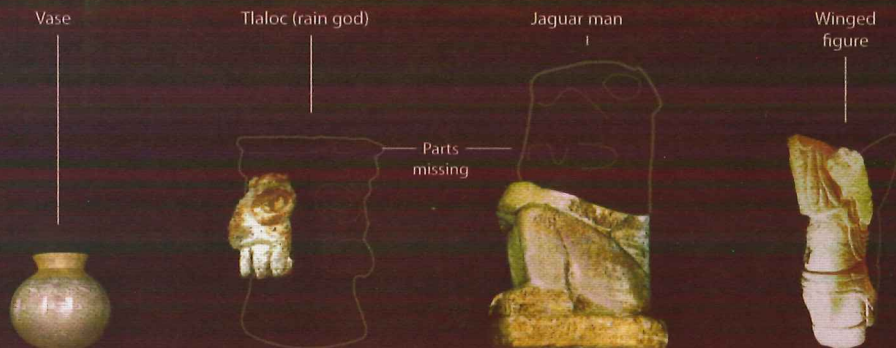
A PLACE OF PRAYER

Desperate for water for their crops, the Maya prayed to the rain god Chaak from deep inside the cenote. They laid out offerings and performed rituals, which may have included human and animal sacrifices. Pots and sculptures found on the cenote's floor suggest that the Maya may have sacrificed objects by breaking them.

Found on the shelf

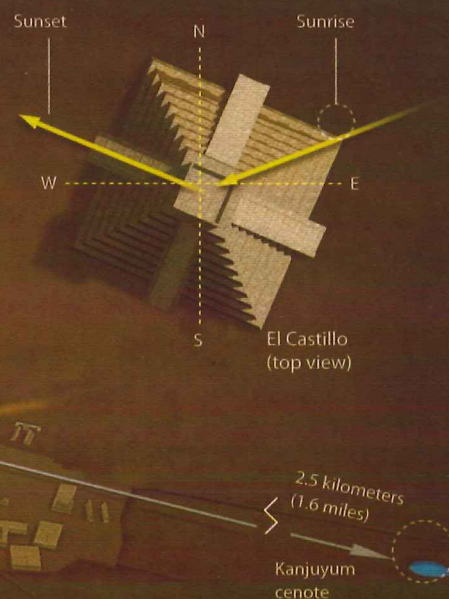


Found on the floor



IN LINE WITH THE SUN

Montero and de Anda speculate that Maya astronomers waited inside the Holtún well for the two days in the year when a vertical pillar of sunlight pierces the water without reflecting onto the dome. On these two days, the sun rises directly to the northeast of El Castillo and travels over its peak (right). It then moves in an arc to the northwest (yellow line below), where it passes over the Holtún cenote before sinking to the horizon.



Chichén Itzá

El Castillo

Xtoloc cenote

Sun's zenith
May 23, July 19

When the sun reaches its highest point in the sky—the solar zenith—its rays fall vertically to the ground.

A. Choose the best answer for each question.

MAIN IDEA

1. Why were Guillermo de Anda and Arturo Montero's excited?
 - a. They had found the Holtún cenote.
 - b. They had revealed evidence of an unknown Maya rain god.
 - c. They had discovered that sunlight enters the cenote at special times.
 - d. They had seen the cenote's water turn blue.

REFERENCE

2. In paragraph A, what does *it* refer to in *I saw it, I saw it!?*
 - a. the cenote
 - b. the zenith light
 - c. the stone sundial
 - d. the mouth of the well

DETAIL

3. What are Arturo Montero and Guillermo de Anda NOT investigating in the cenote?
 - a. whether the ancient Maya had depleted the cenote's water from overuse
 - b. whether the ancient Maya went there to give thanks and offer sacrifices
 - c. whether the ancient Maya used the cenote as a sundial and timekeeper
 - d. whether ancient Maya priests used the cenote to correct their measurements of the sun's angle when it reached the zenith

INFERENCE

4. In paragraph G, what did Luis Un Ken mean when he said, "*The Chaak moved*"?
 - a. It had rained.
 - b. It was very hot.
 - c. Chaak had prayed.
 - d. Chaak was important.

DETAIL

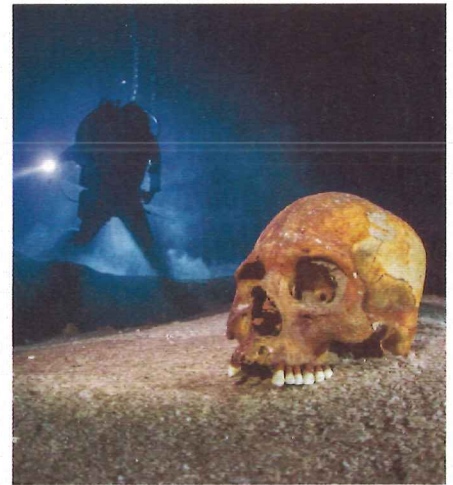
5. Why is farming particularly difficult for the Maya?
 - a. Rivers flood regularly.
 - b. Rain does not sink into the ground.
 - c. Most of the region's land is made of limestone.
 - d. There are not enough farmers during harvest time.

SEQUENCE

6. To get the best crops, what must happen immediately after the fields are burned?
 - a. Seeds are planted.
 - b. The fields dry out.
 - c. Heavy rain soaks the fields.
 - d. Some rain softens the ground.

COHESION

7. Where would be the best place to insert this sentence in paragraph K?
The villagers work without rest or sleep to persuade Chaak to come to them.
 - a. after the first sentence
 - b. after the second sentence
 - c. after the third sentence
 - d. after the last sentence



^ A diver finds a Maya skull in a sacred cenote in Yucatán, Mexico.

MATCHING

B. Match each paragraph of the reading with the information it contains (a–g).
Two pieces of information are extra.

- | | |
|---------------------|--|
| 1. Paragraph A ____ | a. what the inside of the cenote looks like |
| 2. Paragraph C ____ | b. a dramatic introduction to the work of the archeologists |
| 3. Paragraph D ____ | c. the reason why archeologists are investigating the cenote |
| 4. Paragraph E ____ | d. the writer's opinion about the importance of the cenote |
| 5. Paragraph F ____ | e. the artifacts found in the cenote |
| | f. a comparison of ancient and modern Mayans |
| | g. something archeologists already knew about cenotes |

CRITICAL THINKING Analyzing Evidence

The author suggests that cenotes were of great importance to the ancient Maya. Look back at the reading and infographic and note 5 pieces of evidence the author uses to support this claim.

> The El Castillo pyramid dominates the center of Chichén Itzá.



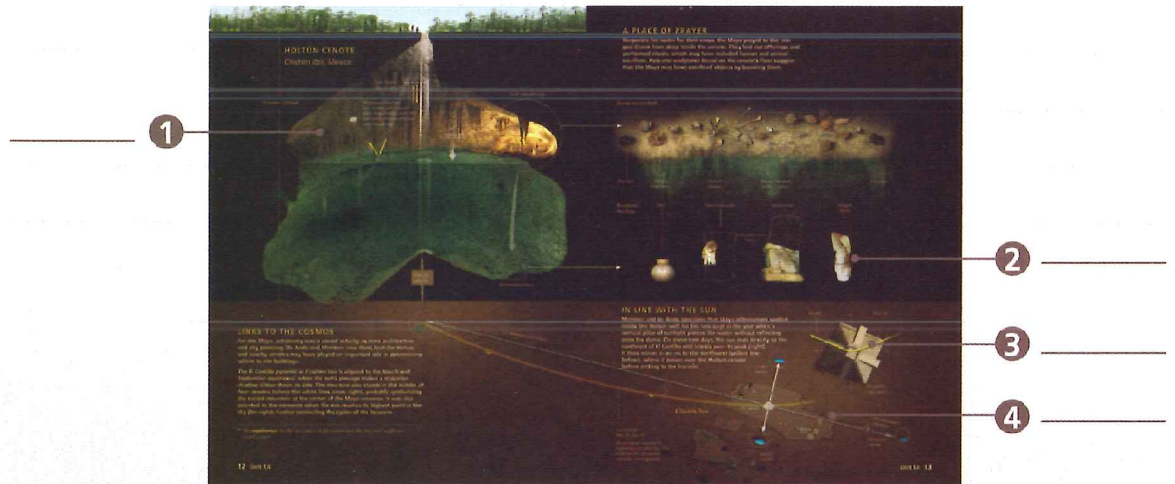
Understanding Complex Infographics (1)

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1. Identify the main sections—look for larger title fonts and placement of main images.
2. Note which captions or text boxes connect to which images. Locate references to images in the text or captions.
3. Look for keys or legends and see how they relate to the images and text.

UNDERSTANDING INFOGRAPHICS

A. Look back at the infographic on pages 12–13. Match the descriptions (a–d) to the relevant sections on the infographic.



- There are four cenotes surrounding El Castillo: Holtún cenote, Xtoloc cenote, Sacred cenote, and Kanjuyum cenote.
- On days other than the sun's zenith, the sun rays reflect onto the cenote's walls.
- The pyramid at Chichén Itzá is oriented to the moments when the sun reaches its highest point in the sky.
- A vase and a winged figure were some of the artifacts discovered on the floor of the cenote.

UNDERSTANDING INFOGRAPHICS

B. Are the following statements true or false according to the infographic? Circle **T** (true) or **F** (false).

- | | | |
|---|----------|----------|
| 1. The Holtún cenote and the Kanjuyum cenote are the same distance from Chichén Itzá. | T | F |
| 2. During the sun's zenith, its rays are reflected onto the cave walls. | T | F |
| 3. The water surface is 70 meters below the mouth of the Holtún cenote. | T | F |
| 4. During droughts, the Maya put offerings on an exposed rock shelf. | T | F |
| 5. A broken Jaguar man was found on the rock shelf. | T | F |

- COMPLETION** A. Complete the information using the correct form of the words in the box. One word is extra.

demise flourish grueling inspect plunge soil

At its peak in the ninth century, the Maya civilization totaled 15 million people and ranged from present-day Mexico to Honduras. Then, the civilization collapsed: People abandoned their homes and left cities in ruins. What caused this society that once ¹_____ to suddenly collapse?

According to one study, three ²_____ droughts led to the ³_____ of the Maya. Researchers who ⁴_____ sediment from the Yucatán Peninsula found that these droughts corresponded with declines in Maya culture. The Maya were particularly at risk because they only had enough supplies of fresh water for 18 months. Without rain, the ⁵_____ couldn't support crops, leading to mass starvation. While the Maya people survived, they continued to suffer from the effects of periodic extreme drought over the next few centuries.



▲ The ancient Maya kept a remarkably complex and accurate calendar.

WORDS IN CONTEXT

- B. Complete the sentences. Circle the correct options.

- If someone **plunges** into a lake, they *enter slowly* / *jump in suddenly*.
- A *religious leader* / *young child* is likely to give a **blessing** to someone else.
- The **sacrifice** of an animal involves *killing* / *decorating* it.
- If several people **constitute** something, they are the *parts that form it* / *ones who reject it*.
- If water **penetrates** a surface, it *enters it* / *stays on top of it*.

COLLOCATIONS

- C. The nouns in the box are commonly used with the adjective **grueling**. Complete the sentences using the words in the box.

journey schedule training

- After a grueling _____ through rough terrain, we finally reached our destination.
- Running a marathon requires months of grueling _____.
- I have a grueling _____ next week. Eight exams in seven days!

BEFORE YOU READ

- PREVIEWING** A. Look at the timeline and read the caption. Complete the notes about the Khmer Empire.

Empire founded by: _____

Location of capital city: _____

Start of empire's decline: _____

**SKIMMING AND
PREDICTING**

- B. Skim paragraphs A and B. What reasons for the decline of Angkor are mentioned? What other things might cause a civilization to decline? Discuss with a partner.

BRIEF TIMELINE OF THE KHMER EMPIRE

A.D. 802–850

Jayavarman II unifies rival groups and becomes the first king of the Khmer Empire.

889–900

Angkor—in what is now northern Cambodia—is established as the empire's capital city.

1200s

At its peak, the Khmer Empire controls land throughout Southeast Asia.

1300s–1400s

The Khmer Empire begins to collapse, ending with the fall of Angkor.



THE COLLAPSE OF ANGKOR

After rising to sublime¹ heights, the sacred city may have engineered its own downfall.

An Empire's Fall

- A Almost hidden amid the forests of northern Cambodia is the scene of one of the greatest vanishing acts of all time. This was once the heart of the Khmer kingdom. At its height, the Khmer Empire dominated much of Southeast Asia, from Myanmar (Burma) in the west to Vietnam in the east. As many as 750,000 people lived in Angkor, its magnificent capital. The most extensive urban complex of the preindustrial world, Angkor stretched across an area the size of New York City. Its greatest temple, Angkor Wat, is the world's largest religious monument even today.
- B Yet when the first Europeans arrived in Angkor in the late 16th century, they found a city that was already dying. Scholars have come up with a list of suspected causes for Angkor's decline, including foreign **invaders**, a religious change of heart, and a shift to maritime trade. But it's mostly guesswork: Roughly 1,300 inscriptions survive on temple doors and monuments, but the people of Angkor left not a single word explaining their kingdom's collapse.
- C Some scholars assume that Angkor died the way it lived: by the sword. The historical records of Ayutthaya, a neighboring state, claim that warriors from that kingdom "took" Angkor in 1431. No doubt Angkor would have been a rich prize—inscriptions boast that its temple towers were covered with gold. After its rediscovery by Western travelers just over a century ago, historians deduced from Angkor's ruins that the city had been looted² by invaders from Ayutthaya.

◀ Ruins of more than one thousand temples can be found in the Angkor area. Ta Prohm is one of the best preserved.

¹ If you say something is **sublime**, you mean it has a wonderful quality.

² If a store or house is **looted**, people have stolen things from it, for example, during a war or riot.

D Roland Fletcher, co-director of a research effort called the Greater Angkor Project, is not convinced. Some early scholars, he says, viewed Angkor according to the sieges³ and conquests of European history. “The ruler of Ayutthaya, indeed, says he took Angkor, and he may have taken some formal regalia⁴ back to Ayutthaya with him,” says Fletcher. But after Angkor was captured, Ayutthaya’s ruler placed his son on the throne. “He’s not likely to have smashed the place up before giving it to his son.”

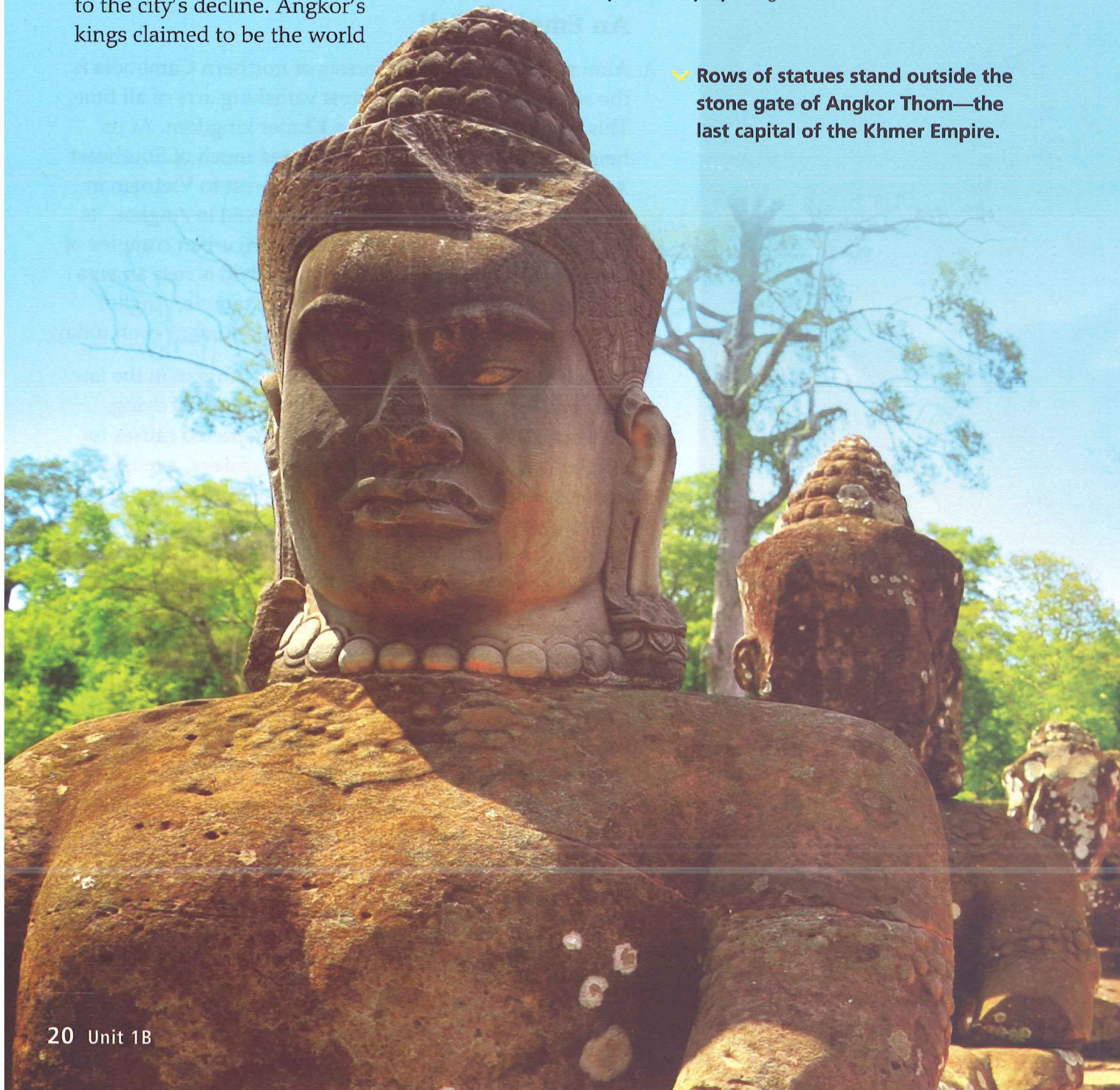
E A religious shift may also have contributed to the city’s decline. Angkor’s kings claimed to be the world

emperors of Hindu mythology and erected temples to themselves. But in the 13th and 14th centuries, Theravada Buddhism gradually took over from Hinduism, and its principles of social equality may have threatened Angkor’s elite. “It was very **subversive**, just like Christianity was subversive to the Roman Empire,” says Fletcher.

³ A **siege** is a military or police operation in which soldiers or police surround a place in order to force the people there to come out.

⁴ **Regalia** is the ceremonial jewelry, objects, or clothes that symbolize royalty or high office.

✓ Rows of statues stand outside the stone gate of Angkor Thom—the last capital of the Khmer Empire.



- F A new religion that promoted ideas of social equality might have led to a worker rebellion. The city operated on a moneyless economy, relying on tribute⁵ and taxation, and the kingdom's main currency was rice. For one temple complex, Ta Prohm, more than 66,000 farmers produced nearly 3,000 tons of rice a year, which was then used to feed the temple's priests, dancers, and workers. Scholars estimate that farm laborers comprised nearly half of Greater Angkor's population.
- G Or maybe the royal court simply turned its back on Angkor. Angkor's rulers often erected new temple complexes and let older ones decay. This may have **doomed** the city when sea trade began to develop between Southeast Asia and China. Maybe it was simple economic opportunism that had caused the Khmer center of power to shift: The move to a location closer to the Mekong River, near Cambodia's present-day capital, Phnom Penh, allowed it easier access to the sea.
- H Economic and religious changes may have contributed to Angkor's downfall, but its rulers faced another foe. Angkor was powerful largely thanks to an advanced system of canals and **reservoirs**, which enabled the city to keep scarce water in dry months and **disperse** excess water during the rainy season. But forces beyond Angkor's control would eventually bring an end to this carefully constructed system.
- I Few ancient sites in southern Asia could compare to Angkor in its ability to guarantee a steady water supply. The first scholar to appreciate the scale of Angkor's waterworks was French archeologist Bernard-Philippe Groslier. In 1979, he argued that the great reservoirs served two purposes: to symbolize the Hindu cosmos⁶ and to irrigate the rice fields. Unfortunately, Groslier could not pursue his ideas further. Cambodia's civil war,⁷ the brutal **regime** of the Khmer Rouge,⁸ and the **subsequent** arrival of Vietnamese forces in 1979 turned Angkor into a no-go zone for two decades.
-
- 5 A **tribute** is something you give, say, do, or make to show your admiration and respect for someone.
- 6 The **cosmos** is the universe.
- 7 A **civil war** is a war fought between different groups of people who live in the same country.
- 8 The **Khmer Rouge** was a radical communist movement that ruled Cambodia from 1975 to 1979 after winning power through a guerrilla war.



J In the 1990s, Christophe Pottier followed up on Groslier's ideas and discovered that the south part of Angkor was a vast landscape of housing, water tanks, shrines, roads, and canals. Then, in 2000, Roland Fletcher and his colleague Damian Evans—as part of a collaborative study with Pottier—viewed some NASA radar images of Angkor. The researchers marveled at the sophistication of Angkor's infrastructure. "We realized that the entire landscape of Greater Angkor is artificial," Fletcher says. Teams of laborers constructed hundreds of kilometers of canals and dikes⁹ that diverted water from the rivers to the reservoirs. Overflow **channels** bled off excess water that accumulated during the summer monsoon months, and after the monsoon, irrigation channels dispensed the stored water. "It was an incredibly clever system," says Fletcher.

K Fletcher was therefore baffled when his team made a surprising discovery. An extraordinary piece of Angkorian workmanship—a vast structure in the waterworks—had been destroyed, apparently by Angkor's own engineers. "The most logical explanation is that the dam failed," Fletcher says. The river may have begun to erode the dam, or perhaps it was washed away by a flood. The Khmer broke apart the remaining stonework and modified the blocks for other purposes.

L Any weakening of the waterworks would have left the city vulnerable to a natural phenomenon that none of Angkor's engineers could have predicted. Starting in the 1300s, it appears that Southeast Asia experienced a period of extreme climate change, which also affected other parts of the world. In Europe, which endured centuries of harsh winters and cool summers, it was known as the Little Ice Age.

M To an already weakened kingdom, extreme weather would have been the final blow. "We don't know why the water system was operating below capacity," says Daniel Penny,

co-director of the Greater Angkor Project.

"But what it means is that Angkor... was more exposed to the threat of drought than at any other time in its history." If inhabitants of parts of Angkor were starving while other parts of the city were hoarding a finite quantity of rice, the most likely result was social instability.

"When populations in tropical countries exceed the carrying capacity of the land, real trouble begins," says Yale University anthropologist Michael Coe, "and this inevitably leads to cultural collapse." A hungry army weakened by internal problems would have exposed the city to attack. Indeed, Ayutthaya's invasion happened near the end of a long period of drought.

N Add to the climate chaos the political and religious changes already affecting the kingdom, and Angkor's prospects were bleak, says Fletcher. "The world around Angkor was changing; society was moving on. It would have been a surprise if Angkor persisted."

O The Khmer Empire was not the first civilization brought down by climate catastrophe. Centuries earlier, loss of environmental stability likewise brought down another powerful kingdom halfway around the world. Many scholars now believe that the fall of the Maya followed a series of droughts in the ninth century. "Essentially, the same thing happened to Angkor," says Coe.

P In the end, the tale of Angkor is a lesson in the limits of human **ingenuity**. "Angkor's hydraulic¹⁰ system was an amazing machine, a wonderful **mechanism** for regulating the world," Fletcher says. Its engineers managed to keep the civilization's achievement running for six centuries—until a greater force overwhelmed them.

⁹ A **dike** is a wall built to prevent flooding.

¹⁰ Something that is **hydraulic** involves the movement or the control of water.

A. Choose the best answer for each question.

MAIN IDEAS

1. What information does the passage NOT include?
 - a. The Khmer Empire's conflicts with foreign powers
 - b. the history of Angkor before the ninth century
 - c. inscriptions left in the temples by the people of Angkor
 - d. the purpose of Angkor's irrigation system

DETAIL

2. According to the information in paragraphs A and B, which of the following is NOT true about Angkor?
 - a. It once ruled a large part of Southeast Asia.
 - b. It was at one time the largest urban center in the world.
 - c. It once held as many people as New York City does today.
 - d. It was in decline when Europeans arrived in the 16th century.

VOCABULARY

3. In the first sentence of paragraph C, the phrase *by the sword* is closest in meaning to _____.
 - a. suddenly
 - b. unexpectedly
 - c. violently
 - d. secretly

REFERENCE

4. In the last sentence of paragraph D, the word *it* refers to _____.
 - a. the kingdom of Ayutthaya
 - b. the destruction of Angkor
 - c. the formal regalia
 - d. the city of Angkor

INFERENCE

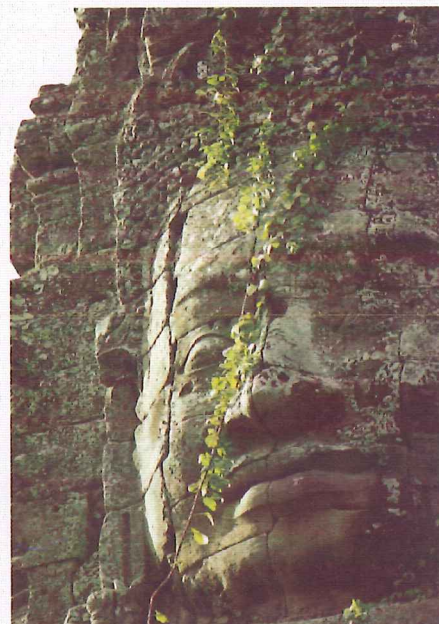
5. We can infer from information in paragraph F that the greatest number of people in Angkor worked as _____.
 - a. construction workers
 - b. dancers
 - c. priests
 - d. agricultural workers

DETAIL

6. How did the climate in Angkor change in the 1300s?
 - a. Winters became too cool to grow rice.
 - b. Rising temperatures caused great discomfort.
 - c. There were terrible storms and constant flooding.
 - d. Weather conditions became more extreme.

**RHETORICAL
PURPOSE**

7. Why does the author mention the Little Ice Age in paragraph L?
 - a. to show that climate change caused more cultures to fail in Europe than in Asia
 - b. to emphasize the extent and significance of climate change in the 1300s
 - c. to explain why European cities were not as advanced as Angkor
 - d. to show how Angkor's climate in the 1300s was different to Europe's



▲ A Buddhist head sculpture at Angkor Thom

**EVALUATING
STATEMENTS**

B. What are Roland Fletcher's views about Angkor? Check (✓) the statements that Fletcher would probably with based on information in the reading. Underline the information in the passage that helped you.

1. ☐ The main cause of Angkor's collapse was its conflict with Ayutthaya.
2. ☐ The ruler of Ayutthaya likely destroyed the palace at Angkor.
3. ☐ Theravada Buddhism's principles of social equality threatened Angkor's elite.
4. ☐ Angkor's infrastructure was not very sophisticated.
5. ☐ The dam at Angkor probably failed.
6. ☐ There was little Angkor's rulers could do to avoid its eventual demise.

CRITICAL THINKING Applying Ideas

► The reading passage mentions the challenges that Angkor faced. List three of them.

► Which of these challenges continue to threaten modern civilizations today? Discuss your ideas with a partner.

✓ The temple complex Angkor Wat has become a symbol of Cambodia and appears on the country's national flag.



Evaluating Arguments (1)

An argument is a statement put forward by a writer that is supported by reasons or evidence. A writer may present one or more arguments in a text. As a reader, you need to evaluate the arguments to decide which are the strongest. One way to do this is to ask yourself questions as you read.

- Is the evidence a fact, an unproven theory, or an opinion?
- Is the evidence supported by relevant and up-to-date data?
- Are the sources that are cited credible?
- Does the writer provide enough evidence to support the argument?

Pay particular attention to the language the author uses to support any arguments. For instance, an author who uses hedging language (*seems, appears that, may, could, possibly, likely*) may be less confident in their claims.

ANALYZING A. Why did Angkor decline? Match each argument (1–6) with the evidence from the reading passage (a–f).

1. ____ Invaders conquered Angkor.
 2. ____ A religious shift contributed to the city's decline.
 3. ____ The royal court turned its back on Angkor.
 4. ____ The water management system broke down.
 5. ____ A weakened Angkor was affected by climate change.
 6. ____ Angkor began to suffer from social instability.
- a. Beginning in the 1300s, Southeast Asia experienced a period of severe drought.
 - b. A shift to Theravada Buddhism diminished the kings' royal authority.
 - c. Angkor's own engineers seem to have destroyed a dam.
 - d. Angkor's army grew hungry from a lack of rice.
 - e. Angkor's rulers often built new temple complexes and let older ones decay.
 - f. Historical records of Ayutthaya claim their warriors took Angkor.

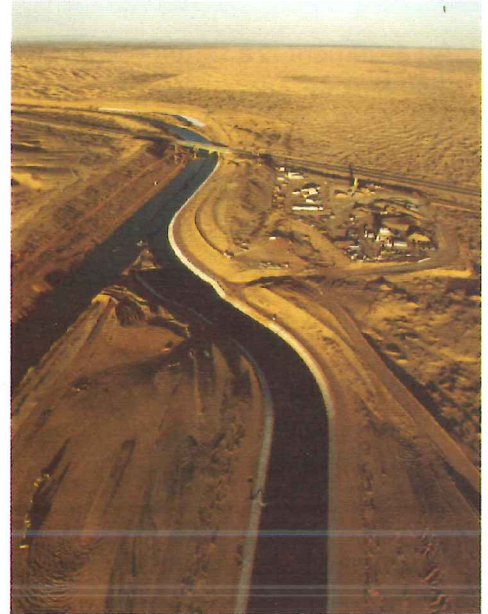
ANALYZING B. Find the evidence from activity A in the reading passage. Circle any hedging language used to support each argument.

EVALUATING C. Which do you think is the strongest argument for why Angkor declined? Note your ideas below, then discuss with a partner.

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

During the past century, California has built a sophisticated ¹**mechanism** / **regime** for delivering water to its citizens. Thousands of kilometers of pipes and ²**invaders** / **channels** now crisscross the state, ³**dispersing** / **subsequent** water. However, the state's water resources are now severely stretched—droughts have drained most of the state's ⁴**ingenuity** / **reservoirs** to low levels.

Recently, laws have been introduced to promote water conservation in major cities. However, water experts say that to solve their water problems, Californians should learn to live within the water resources of a dry landscape.



WORDS IN CONTEXT

B. Complete the sentences by circling the correct options.

- Someone who shows **ingenuity** shows *cleverness* / *a lack of creativity*.
- An event that **doomed** a civilization *helped* / *destroyed* it.
- If you ate **subsequent** to your arrival, you ate *before* / *after* arriving.
- A **regime** is a system of government, especially one that is *lenient* / *harsh*.
- Something **subversive** can *weaken* / *strengthen* a political system.
- An **invader** is someone who enters another country *by force* / *peacefully*.

^ Californian communities are dependent on water pumped in from the Colorado River.

WORD LINK

C. The word **regime** includes the root **reg** which means "rule" or "guide of." Complete the sentences using the words in the box. Use a dictionary to help.

regalia regimented regularity regulations

- During official ceremonies, kings and queens usually dress in full _____.
- The life of a prisoner is usually strictly _____.
- Driving _____ differ throughout the world.
- In recent years, there has been an increase in the _____ of extreme weather events.

- ✓ An archeologist inspects a Mayan carving in a cave in Quintana Roo, Mexico.

LEGACIES OF THE MAYA

BEFORE YOU WATCH

DEFINITIONS A. Read the excerpts from the video. Match each word in **bold** with its definition.

"Much of what we now know about ancient Maya civilization comes from **deciphering** hieroglyphic characters **inscribed** on pottery, stone slabs, and other ruins."

"Despite the Maya's ingenuity and **agrarian** lifestyle, conflict was **prevalent**."

- | | |
|----------------|--|
| 1. decipher • | • a. (adj) relating to farming and the use of land |
| 2. inscribe • | • b. (adj) common |
| 3. agrarian • | • c. (v) to work out the meaning of something |
| 4. prevalent • | • d. (v) to write or carve words on an object |

QUIZ B. What do you remember about the ancient Maya from the information in Reading A? Discuss the questions below with a partner.

1. In which part of the world did the Maya civilization develop?
2. Around when was the Maya civilization at its peak?
3. Which crop did the Maya mainly depend on?
4. What do many believe to be the most likely reason for the collapse of the Maya civilization?

WHILE YOU WATCH

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

DETAILS B. Watch the video again. Complete the notes.

The Maya

Cities

- Civilization consisted of around ¹_____ cities during Classic Period, some with populations of ²_____
- Built magnificent urban centers which included ³_____ central to religious practices

Achievements

- Math: invented the concept of ⁴_____
- Astronomy: developed ⁵_____ based on observations of sun and sky
- Writing: invented a system of writing using hieroglyphs, which can be found today inscribed on ⁶_____, stone slabs, and buildings

Decline

- Most cities collapsed by around ⁷_____ A.D.
- Theories: warfare, ⁸_____, drought

Today

- More than ⁹_____ Maya around the world
- Follow many ¹⁰_____ and ceremonial practices of ancestors

CRITICAL THINKING Reflecting

According to the video, many Maya people today follow some of the "ceremonial practices" of their ancestors. What traditions or practices do you follow that have been passed down from your ancestors? Discuss with a partner.

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"/> blessing | <input type="checkbox"/> constitute* | <input type="checkbox"/> demise | <input type="checkbox"/> flourish | <input type="checkbox"/> grueling |
| <input type="checkbox"/> inspect* | <input type="checkbox"/> penetrate | <input type="checkbox"/> plunge | <input type="checkbox"/> sacrifice | <input type="checkbox"/> soil |


Reading B

- | | | | | |
|-------------------------------------|-----------------------------------|------------------------------------|--------------------------------------|-------------------------------------|
| <input type="checkbox"/> channel* | <input type="checkbox"/> disperse | <input type="checkbox"/> doomed | <input type="checkbox"/> ingenuity | <input type="checkbox"/> invader |
| <input type="checkbox"/> mechanism* | <input type="checkbox"/> regime* | <input type="checkbox"/> reservoir | <input type="checkbox"/> subsequent* | <input type="checkbox"/> subversive |

*Academic word list

HIGH ACHIEVERS

2

A full-page background photograph of Alex Honnold climbing the sheer rock face of El Capitan in California's Yosemite Valley. He is wearing a red shirt and black pants, and is positioned in the lower-left quadrant of the frame. The rock face is a mix of light and dark grey, with visible cracks and textures. To the right of the rock face, a dense forest of green trees covers a steep slope, leading down to a valley floor. The lighting suggests a bright, sunny day.

With no ropes or climbing equipment, Alex Honnold scales the sheer rock face of El Capitan in California's Yosemite Valley.

WARM UP

Discuss these questions with a partner.

1. What are some sporting activities people mainly do on or near mountains?
2. Why are some of these activities difficult to do?

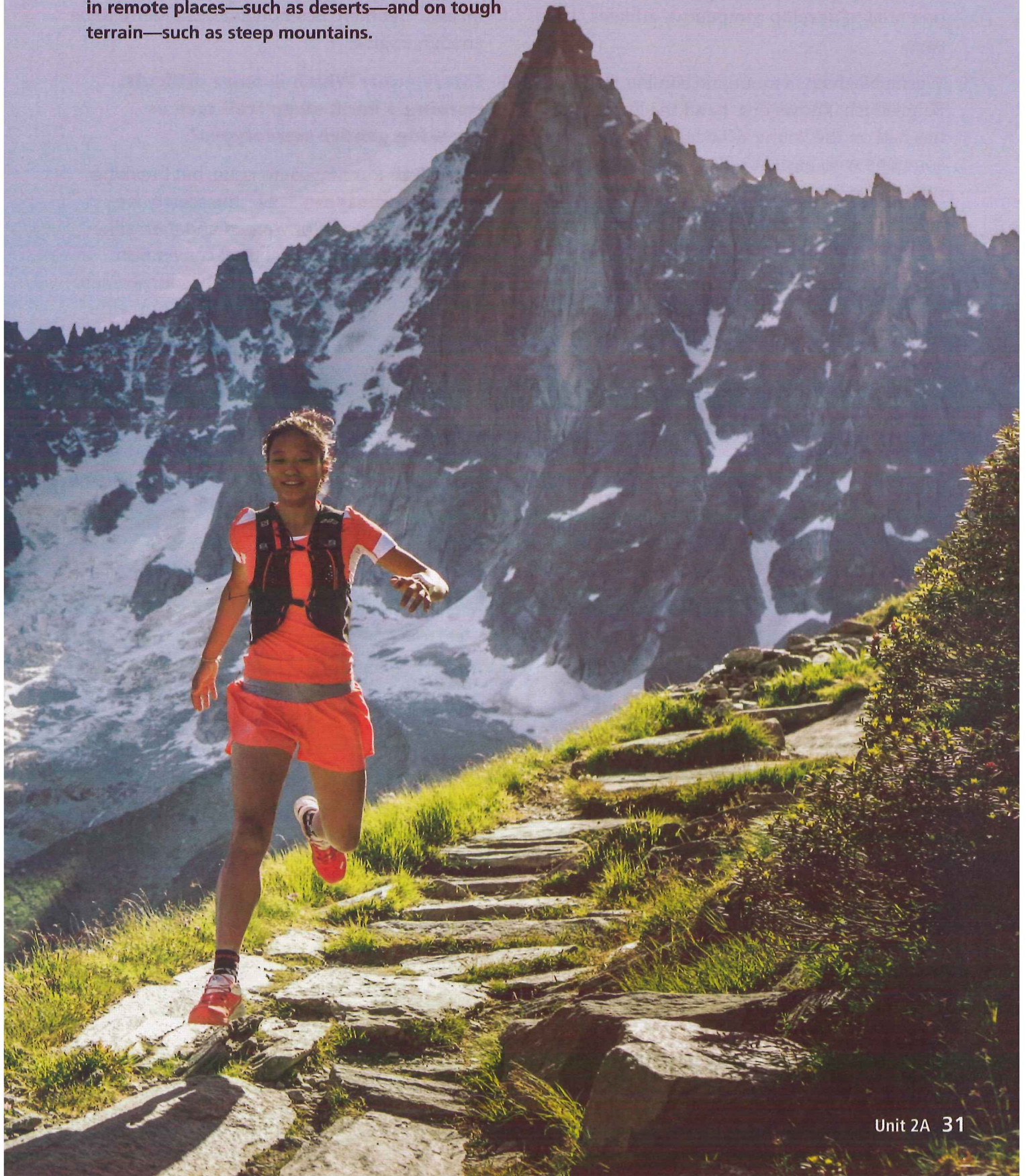
BEFORE YOU READ

- DISCUSSION** A. Look at the photo and read the caption. What kind of physical and personal characteristics might make a person successful at this sport? Discuss with a partner.
- PREDICTING** B. Read the first paragraph of the reading. What challenges do you think Mira Rai had to overcome in order to become a trail runner? Discuss your ideas with a partner. Then read and check your answers.

THE SKY RUNNER

- A Growing up in a village in eastern Nepal's Bhojpur Mountains, Mira Rai had dreams that went far beyond the conventional expectations for Nepali women. The eldest daughter of five children, she was expected to fetch water, tend crops and livestock, and help out at home. By age 12, she no longer regularly attended school, and instead hauled heavy bags of rice up and down steep trails—often barefoot—to trade at the market. It was hard work—but great training for a future trail runner.
- B “As a girl,” Rai recalls, “I would constantly be told to know my place, suppress my voice, and act in a certain manner. For me, breaking free from these traditions itself was a big dream.”
- C Several years ago, Rai's dream became reality. She was running outside Kathmandu when two male trail runners invited her to enter her first trail race, the Kathmandu West Valley Rim 50K. She had never run 50 kilometers before, had no special **gear** or training for such a distance, and was also the only woman in the competition. But against all **odds**, she beat everyone—even the men. From there, a community of supporters came together to give her a chance to compete in international trail running competitions.

✓ Mira Rai—a trail and ultramarathon runner—trains on mountain paths in Nepal. Ultramarathons can be up to 160 kilometers long and are often held in remote places—such as deserts—and on tough terrain—such as steep mountains.



D Today, the running world recognizes Rai as a high-elevation trail racing phenomenon. Now she is on a mission to help both women and men of Nepal through sports. Rai believes her work to empower others has just begun. “We have realized that Nepal has tremendous potential to develop competitive athletes,” she says.

E Wasfia Nazreen, a mountain climber from Bangladesh, knows first-hand the impact Rai has had on the young women of Nepal. “For someone who has left school so early and missed the learning we take for granted, Mira has been able to turn back time and set a rare example by being the change herself,” she says.

F “It’s hard to find good role models¹ for young women in our region, especially one coming from the same **rural** village background as most of the young generation,” Nazreen says. Mira is blazing a trail, not just in terms of being able to speak nationally on gender equality, but also by getting young people into running through the new Kathmandu Trail Race Series. “The grit² and joy she embodies **throughout** all her hardships and victories is an inspiration to all of us!”

G Rai, however, remains **humble**. “I have been able to do the things I did because so many people believed in me and took chances, and I want to give back so others can have a chance just the way I did,” she says. “We have a saying in Nepal, ‘*Khana pugyos, dina pugos*,’ which means, ‘Let there be enough to eat, let there be enough to give.’”

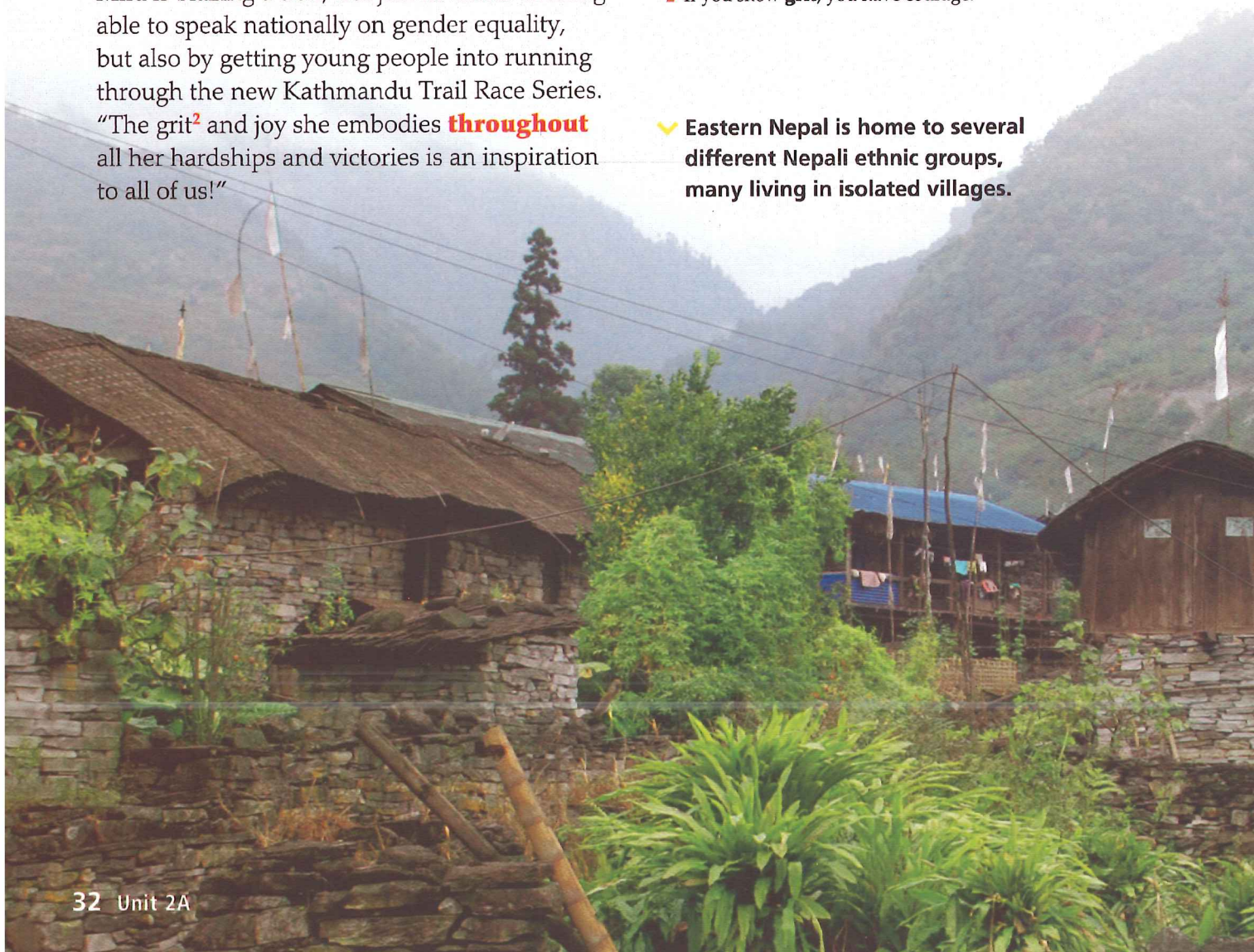
H **Interviewer: Which is more difficult: running a hard, steep trail race or breaking gender stereotypes?**

Mira Rai: Running is no issue, but breaking gender **stereotypes** is. For the society we live in, it’s difficult for women and men alike because doing anything out of convention means a lot of struggle—especially for women. As women, we are expected to help out with

1 A **role model** is someone who is a good example for young people to follow.

2 If you show **grit**, you have courage.

✓ **Eastern Nepal is home to several different Nepali ethnic groups, many living in isolated villages.**



chores at home from childhood and then get married and raise a family, so it becomes a struggle, not **merely** a challenge. You get called a rebel, and for an adventure sport that involves risks, nobody encourages you. “You’ll end up breaking your bones!” they’d say. Though the mindset³ seems to be changing, it’s still at a snail’s **pace** and has a long way to go before women are seen as equivalent to men.

I What advice do you have for someone who wants to be a stronger runner like you?

MR: It was a matter of chance and luck that I became a runner. Back in the village we had to walk hours on end—up and down grueling terrain, often barefoot, with a heavy weight on our backs—and this definitely contributed. I started running, I got professional training that taught me techniques, and gradually I became more determined, motivated, and **persistent** to chase my dreams. However, I’ve also learned that proper diet, enough rest, confidence, yoga, and mental well-being—as well as having good

support from my mentor Richard Bull and my coach Dhruba Bikram Malla—are just as important as being in shape.

J You stopped going to school regularly when you were 12. Do you wish you’d had more school?

MR: I feel that if I’d finished more school, I would have been able to communicate with more confidence and have a better insight into world affairs. In many cases when I first started racing abroad, I couldn’t even be a part of conversations because of my poor English skills. I used to just sit there and listen, but I didn’t feel uncomfortable being there as everybody was very supportive. However, with media and sponsors, it would’ve definitely been more helpful had I obtained more education back home. Even today when I try to read newspapers, I fail to understand quite a few words, so I am taking English classes these days, and it’s certainly helping.

³ Your **mindset** is your way of thinking.



K Running has helped you see the world. What is it like to return to your village now that you have been to Hong Kong, Italy, and other places?

MR: I return once a year during the Dashain, the largest festival of the year, and the people there are living the same sort of lives as I saw when I was a kid. We used to have kerosene lanterns, but now there are bulbs that run on solar power. The village had no access by road back in the day; now there are dirt tracks that connect to big towns. But the mud houses are the same. There's phone connection, but it doesn't work well. When I go back, I meet a lot of youngsters that ask me how they can live differently. They definitely seem motivated, but sadly their folks do not agree with such ambition. While the physical infrastructure in my village has improved, the mindset has not. I remain hopeful that the future generation will break the mold.

L What work are you doing now with communities in Nepal?

MR: While recovering from knee surgery, I have been providing guidance to men and

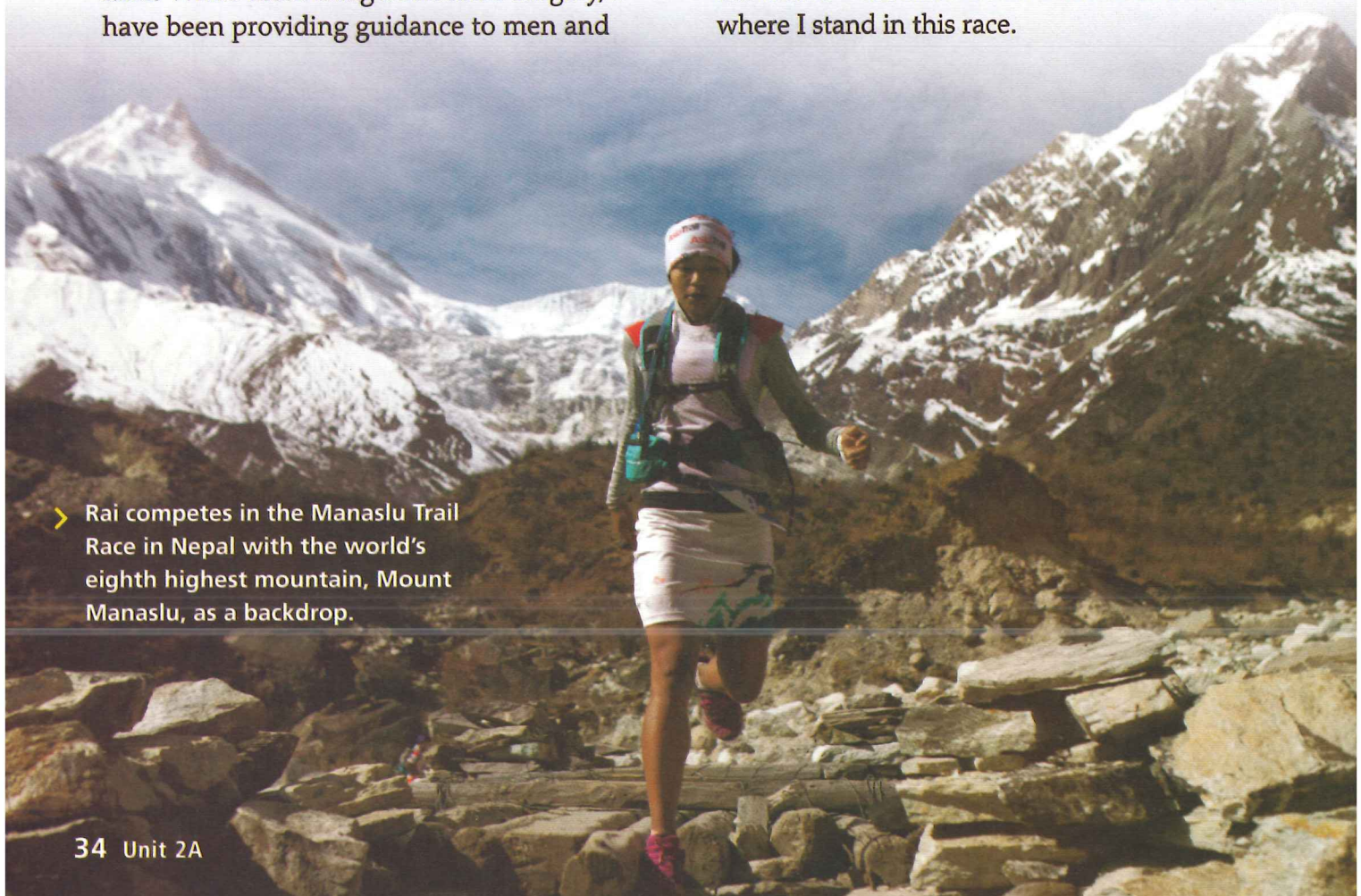
women alike in running and encouraging them to **pursue** a career as professional athletes. Every so often, I visit schools and children's homes to share my knowledge about running, particularly training, diet, and more importantly, an active lifestyle.

M We have realized that Nepal has tremendous potential to develop competitive athletes, so we're organizing a series of trail races in Kathmandu. These are short races aimed for both beginners and experienced runners. I also organized a small race back in my hometown of Sano Dumma last October, to introduce the sport to the young crowd and get them interested in running. In the coming days, I plan to organize races that aim to identify and promote promising runners.

N Is there a personal challenge that you still want to achieve?

MR: I have always dreamed of running in the Ultra-Trail du Mont Blanc in France. It's a challenging race for elite runners from all over the world—166 kilometers! I would love to see where I stand in this race.

➤ Rai competes in the Manaslu Trail Race in Nepal with the world's eighth highest mountain, Mount Manaslu, as a backdrop.



A. Choose the best answer for each question.

GIST

1. Which of the following would be the best alternative title for the passage?

- a. The World's Most Difficult Race
- b. The Village Girl Who Took On the World
- c. Trail Running: A Growing Phenomenon
- d. Changing Attitudes Toward Gender in Nepal

DETAIL

2. Which of the following is NOT true about Mira Rai's life as a child?

- a. She had to work on a farm.
- b. She only started school when she was 12.
- c. She didn't like being told how to behave.
- d. She had four younger siblings.

DETAIL

3. In paragraph F, what is NOT given as a reason that Rai is a good role model?

- a. She works to promote gender equality in her country.
- b. She encourages youngsters to take up running.
- c. She has worked to improve housing in her village.
- d. Her determination to overcome hardships inspires others.

REFERENCE

4. In paragraph H, what is Rai referring to when she says, "it becomes a struggle, not merely a challenge"?

- a. doing anything unconventional
- b. running a trail race
- c. raising a family
- d. going to school

VOCABULARY

5. The word *grueling* in paragraph I is closest in meaning to ____.

- a. unknown
- b. risky
- c. endless
- d. tiring

COHESION

6. Where would be the best place in paragraph I to insert this sentence?

It wasn't much fun, but it definitely helped me develop my stamina.

- a. after the first sentence
- b. after the second sentence
- c. before the last sentence
- d. after the last sentence

DETAIL

7. Which of these questions about Rai's home village cannot be answered by information in the passage?

- a. How did people light their homes there in the past?
- b. When does Mira Rai make her annual visit there?
- c. Has education in the village improved?
- d. How can people living there now get to other towns?

SUMMARIZING

B. Complete the summary of paragraphs A–G. Use no more than three words from the reading passage for each answer.

Born and raised in Nepal, Mira Rai was expected to be a ¹ _____ Nepalese woman. As a child, she had to fetch water for her family and carry large ² _____ to market. But these challenging tasks provided good ³ _____ for her future career.

Rai got her big break when she participated in her ⁴ _____—the Kathmandu West Valley Rim 50K. Incredibly, she beat everyone. Her victory propelled her to international fame.

One of Rai's goals is to help both male and female athletes in her native country. She believes that Nepal has a lot of ⁵ _____ to produce world-class athletes. A famous climber from Bangladesh said that Rai has had a very positive influence on young female athletes. She said that it was not easy for young women from the countryside to find good ⁶ _____. She said that Rai also gives talks to promote ⁷ _____ in her home country.

CRITICAL THINKING Applying Ideas

Think of someone who, like Mira Rai, became successful after overcoming hardships in their life. Note your ideas below, then describe the person to your partner.

➤ A trail runner in Chugach State Park, Alaska, United States



Guessing Meaning from Context—Idioms and Colloquial Language

The language found in interviews often contains colloquial language and idiomatic expressions. As with other vocabulary, the context can be helpful in determining meaning. If the context doesn't help and you have no idea what an idiom means, consult a dictionary.

**INFERRING
MEANING**

A. Find the expressions in **bold in the reading passage. Choose the correct meaning.**

1. **breaking free** (paragraph B)
 - a. escaping
 - b. learning
2. **against all odds** (paragraph C)
 - a. in opposition to others
 - b. despite the challenges
3. **take for granted** (paragraph E)
 - a. need to work hard for
 - b. fail to properly appreciate
4. **blazing a trail** (paragraph F)
 - a. running at a very fast speed
 - b. being the first to do something new
5. **break the mold** (paragraph K)
 - a. follow old traditions
 - b. do something in a new way

**INFERRING
MEANING**

B. Find and note expressions in the reading passage that have the same meaning as the definitions below.

1. accept one's position in society (paragraph B) _____
2. involved in an important task (paragraph D) _____
3. extremely slowly (paragraph H) _____

RELATING

C. Choose three of the expressions in Activity A or B. Write sentences about yourself or people you know using each one.

1. _____

2. _____

3. _____

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

gear	humble	merely	odds	pace
persistent	pursue	rural	stereotype	throughout

The Ultra-Trail du Mont Blanc isn't
¹_____ a trail race through a pretty
 part of the Alps: It's also a grueling test of
 endurance. Each summer around 10,000
 athletes run through ²_____
 countryside, up steep hills, and down
 deep valleys.

Some ultramarathons are broken up into
 stages, allowing runners to take rests
³_____ the race. But the Ultra-Trail
 du Mont Blanc is non-stop—and lasts through
 the night. Runners are required to bring appropriate ⁴_____ for such a long
 race, including flashlights and a security blanket. The best runners aim to keep a steady
⁵_____ in order to finish the race in 20 to 24 hours. In recent years, more than
 a third of participants did not cross the finish line.



French ultra trailer Xavier Thevenard competes in the 170 km Ultra-Trail of Mont-Blanc.

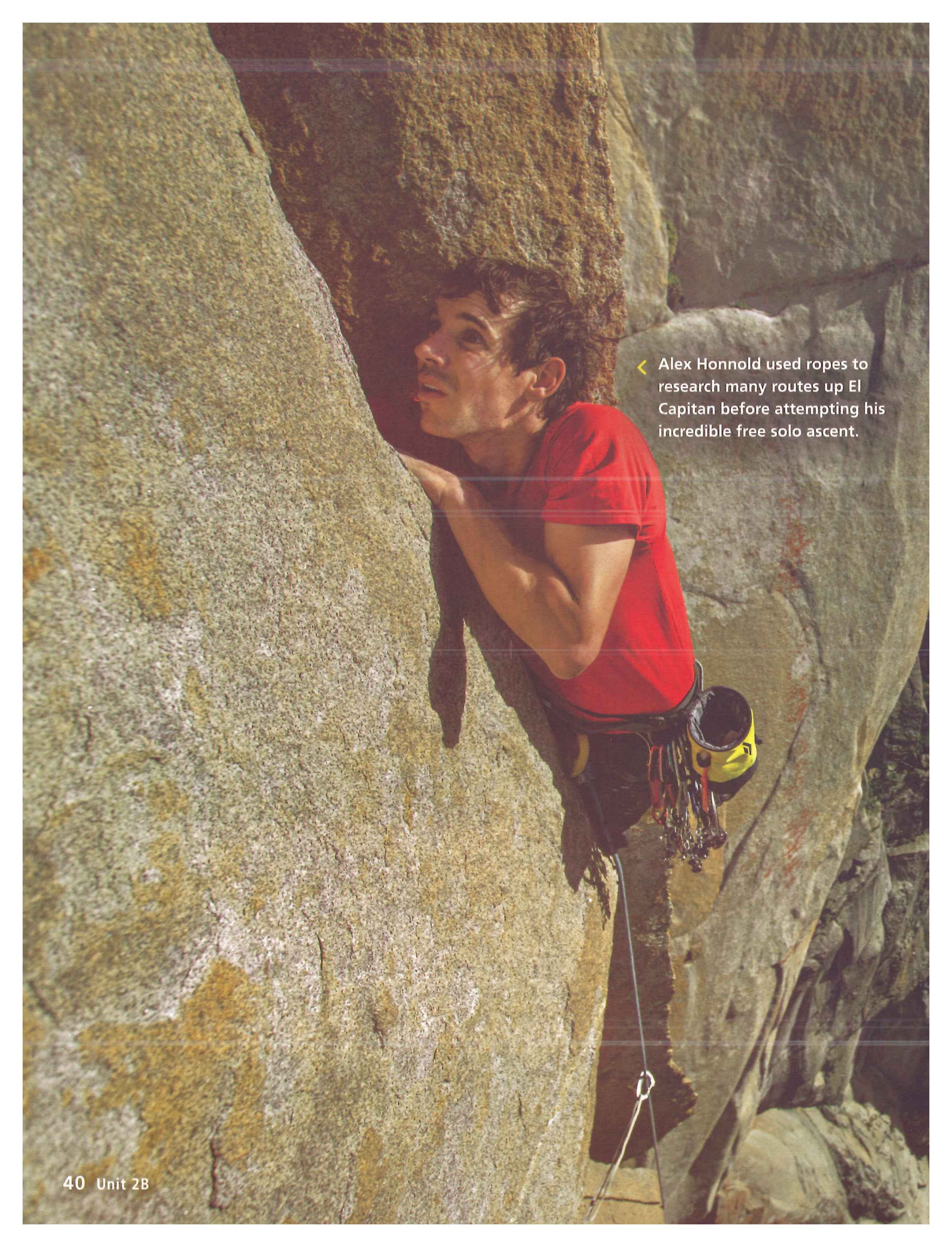
- DEFINITIONS** B. Complete the definitions using the unused words from the box in Activity A.
1. If you are _____, you are quiet about your accomplishments.
 2. If you _____ something, you try and get it.
 3. The _____ of something happening refers to how likely it is.
 4. A _____ is a fixed, but often mistaken, idea about what a group of people are typically like.
 5. If you are _____ at something, you continue to do it.

- WORD USAGE** C. The adverb **merely** can be used to emphasize that you mean exactly what you are saying and nothing more. Mark where it should be placed in each sentence.
1. He didn't quit the ultramarathon; he stopped to take a rest.
 2. They didn't mean to cause a problem—they were trying to help.
 3. He didn't talk much about his motivation, mentioning that he did it for his family.

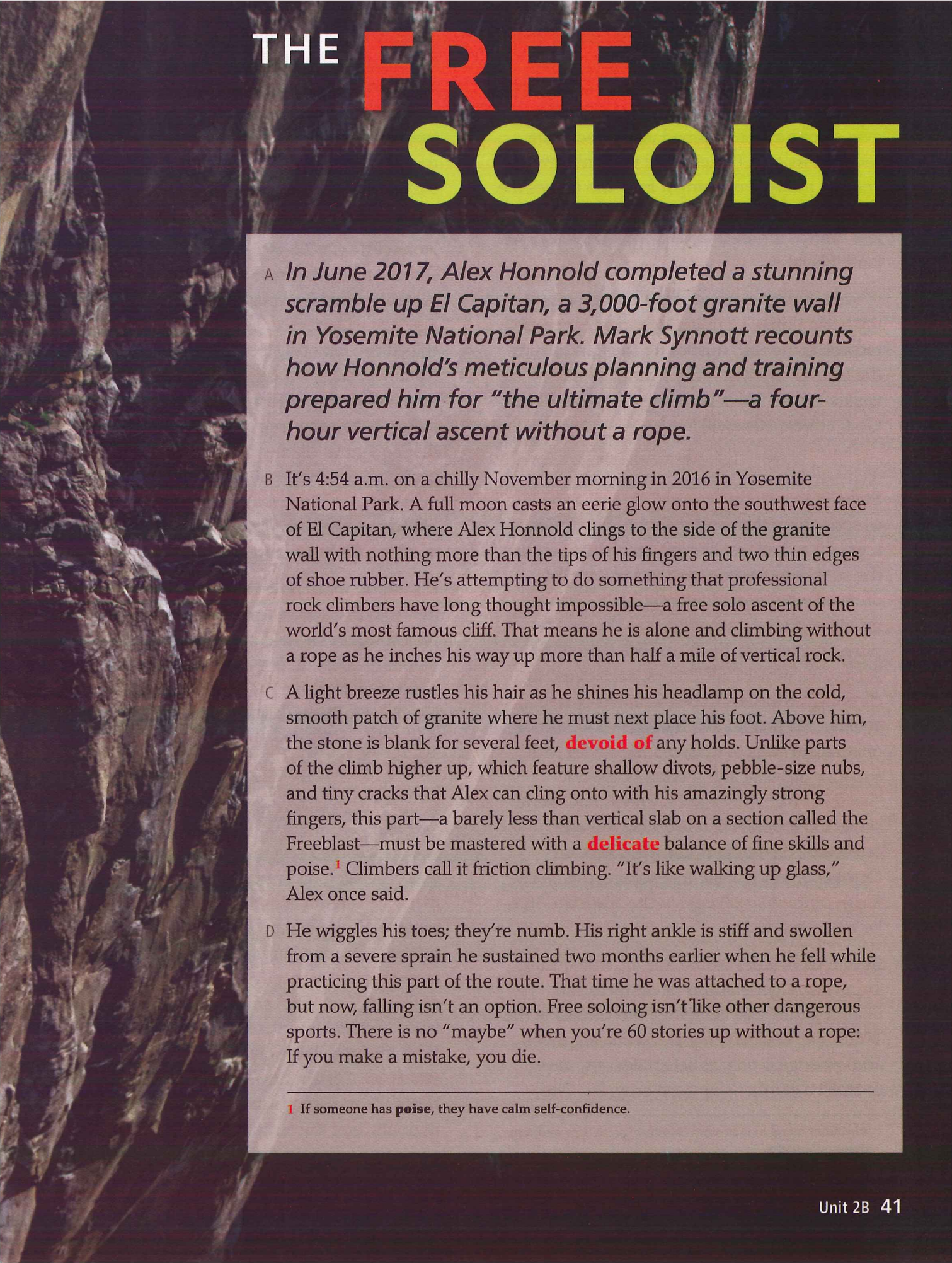
- Experienced climbers using ropes normally take several days to ascend El Capitan, a steep vertical rock face in California's Yosemite Valley.

BEFORE YOU READ

- DISCUSSION** A. Look at the photo and read the caption. Then read the first paragraph of the reading passage. What challenges might Alex Honnold face making this climb? Discuss your ideas with a partner.
- PREDICTING** B. What kind of physical and mental characteristics do you think someone would need to successfully complete this climb? Note some ideas and then compare with a partner.

A full-page photograph of Alex Honnold climbing a massive, light-colored rock face. He is wearing a red t-shirt and a yellow climbing harness. He is positioned vertically, with his body pressed against the rock. A rope is visible at the bottom of the frame, attached to a metal carabiner. The rock surface is textured with various shades of tan and brown.

< Alex Honnold used ropes to research many routes up El Capitan before attempting his incredible free solo ascent.



THE **FREE** **SOLOIST**

- A *In June 2017, Alex Honnold completed a stunning scramble up El Capitan, a 3,000-foot granite wall in Yosemite National Park. Mark Synnott recounts how Honnold's meticulous planning and training prepared him for "the ultimate climb"—a four-hour vertical ascent without a rope.*
- B It's 4:54 a.m. on a chilly November morning in 2016 in Yosemite National Park. A full moon casts an eerie glow onto the southwest face of El Capitan, where Alex Honnold clings to the side of the granite wall with nothing more than the tips of his fingers and two thin edges of shoe rubber. He's attempting to do something that professional rock climbers have long thought impossible—a free solo ascent of the world's most famous cliff. That means he is alone and climbing without a rope as he inches his way up more than half a mile of vertical rock.
- C A light breeze rustles his hair as he shines his headlamp on the cold, smooth patch of granite where he must next place his foot. Above him, the stone is blank for several feet, **devoid of** any holds. Unlike parts of the climb higher up, which feature shallow divots, pebble-size nubs, and tiny cracks that Alex can cling onto with his amazingly strong fingers, this part—a barely less than vertical slab on a section called the Freeblast—must be mastered with a **delicate** balance of fine skills and poise.¹ Climbers call it friction climbing. "It's like walking up glass," Alex once said.
- D He wiggles his toes; they're numb. His right ankle is stiff and swollen from a severe sprain he sustained two months earlier when he fell while practicing this part of the route. That time he was attached to a rope, but now, falling isn't an option. Free soloing isn't like other dangerous sports. There is no "maybe" when you're 60 stories up without a rope: If you make a mistake, you die.

¹ If someone has **poise**, they have calm self-confidence.

E Six hundred feet below, I sit on a fallen tree watching the tiny circle of Alex's light. It hasn't moved in what feels like an eternity, but is probably less than a minute. And I know why: he's facing the move that has haunted him ever since he first dreamed up this **scheme** seven years ago. I've climbed this slab myself, and the thought of doing it free solo makes me nauseated. The log on which I'm sitting lies less than a hundred yards from where Alex will land if he slips.

F A sudden noise jolts me back to the present; my heart skips. A cameraman, part of the crew recording the feat, hustles up the trail toward the base of the wall. I can hear the static of his walkie-talkie. "Alex is bailing," he says. Thank God, I think, Alex will live.

* * *

G Some in the climbing world view free soloing as something that isn't meant to be. Critics regard it as reckless showmanship that gives the sport a bad name, noting the long list of those who've died attempting it. Others, myself included, recognize it as the sport's purest expression. Such was the attitude of Austrian alpinist Paul Preuss, considered by climbing historians to be the father of free soloing. He proclaimed that the very essence of alpinism² was to master a mountain with superior physical and mental skill—not "**artificial** aid." By age 27, Preuss had made some 150 ropeless first ascents, and was celebrated throughout Europe. Then, on October 3, 1913, while free soloing the North Ridge of the Mandlkogel in the Austrian Alps, he fell to his death.

H But Preuss's ideas would live on, influencing **successive** generations of climbers and inspiring the "free climbing" movement of the 1960s and '70s, which espoused using ropes and other gear only as safety devices, never to assist a climber's upward progress. The

next serious free soloist of note appeared in 1973, when "Hot" Henry Barber shocked the climbing community by scaling the 1,500-foot north face of Yosemite's Sentinel Rock without a rope. In 1987, Canadian Peter Croft free soloed two of Yosemite's most celebrated routes—Astroman and Rostrum—back-to-back in the same day.

I Croft's achievement stood until 2007, when Alex Honnold, a shy 22-year-old from Sacramento, showed up in Yosemite Valley. He stunned the climbing world by repeating Croft's Astroman-Rostrum masterpiece. The next year he free soloed two famously tough routes—Zion National Park's Moonlight Buttress and the Regular Northwest Face of Yosemite's Half Dome—climbs so long and technically difficult that no serious climber had imagined they could be scaled without a rope. As sponsorship offers poured in and journalists and fans hailed his achievements, Alex was secretly **contemplating** a much bigger goal.

J It's important to note that Alex's quest to free solo El Capitan wasn't some adrenaline-fueled stunt that he'd come up with on a whim. In 2009, during our first climbing expedition together, he had mentioned the idea to me. There was something about his supreme confidence, though, and the way he effortlessly moved up incredibly difficult rock faces that made the comment seem like more than just an idle boast.

K Alex researched several El Capitan routes, finally settling on Freerider, a popular test piece for veteran climbers and one that usually requires multiple days to **ascend**. Its 30 or so pitches—or rope lengths—challenge a climber in practically every possible way: the strength of fingers, forearms, shoulders, calves, toes, back, and abdomen, not to mention balance, flexibility, problem solving, and emotional **stamina**. Certain times of the day the sun heats the rock so much that it burns to touch it; hours later the temperature can **plummet**

² **Alpinism** refers to mountain climbing in the Alps and also other mountains.

The Five Most Challenging Sections

Enduro Corner

Honnold pulled on the edge of a narrow crack while pushing his feet against a wall.

Boulder Problem

The most difficult section; Honnold had to cling to a tiny nub of rock.

Monster Offwidth

Honnold had to wedge his body into a narrow crack.

Hollow Flake

Honnold climbed down 90 feet to reach a large crack.

Freeblast Slabs

With few footholds, Honnold needed to rely on the friction between the smooth rock and his climbing shoes.

End elevation: 7,173 ft
Completes climb at 9:28 a.m.
(total: 3 hrs, 56 mins)

Level of difficulty of each section

Elite
Expert
Moderate

Round Table Ledge
The Traverse

8:55 a.m.
Enduro Corner

The Block

Honnold to scale

Teflon Corner

8:24 a.m.

Boulder Problem

Honnold chooses this option to avoid the glass-slick faces along Teflon Corner.

El Cap Spire

7:36 a.m.
Monster Offwidth

The Ear

Instead of looping up around the Ear, he traverses left to avoid a tricky down climb.

The Heart

EL CAPITAN
Southwest Face

6:49 a.m.

Hollow Flake

While crossing this ledge, he passes by another climber.

Lung Ledge

Mammoth Terraces

Heart Ledges

Half Dollar

Triangle Ledge

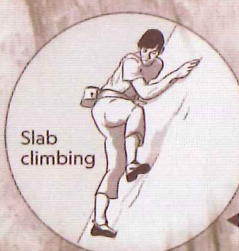
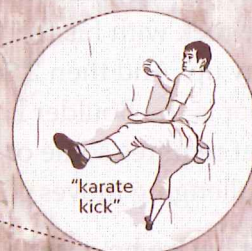
6:04 a.m.
Freeblast slabs

Dots mark pitches, which are sections measured by one rope length during a typical climb.

Base elevation: 4,208 ft

Starts Freerider route at 5:32 a.m.

YOSEMITE NATIONAL PARK
CALIFORNIA



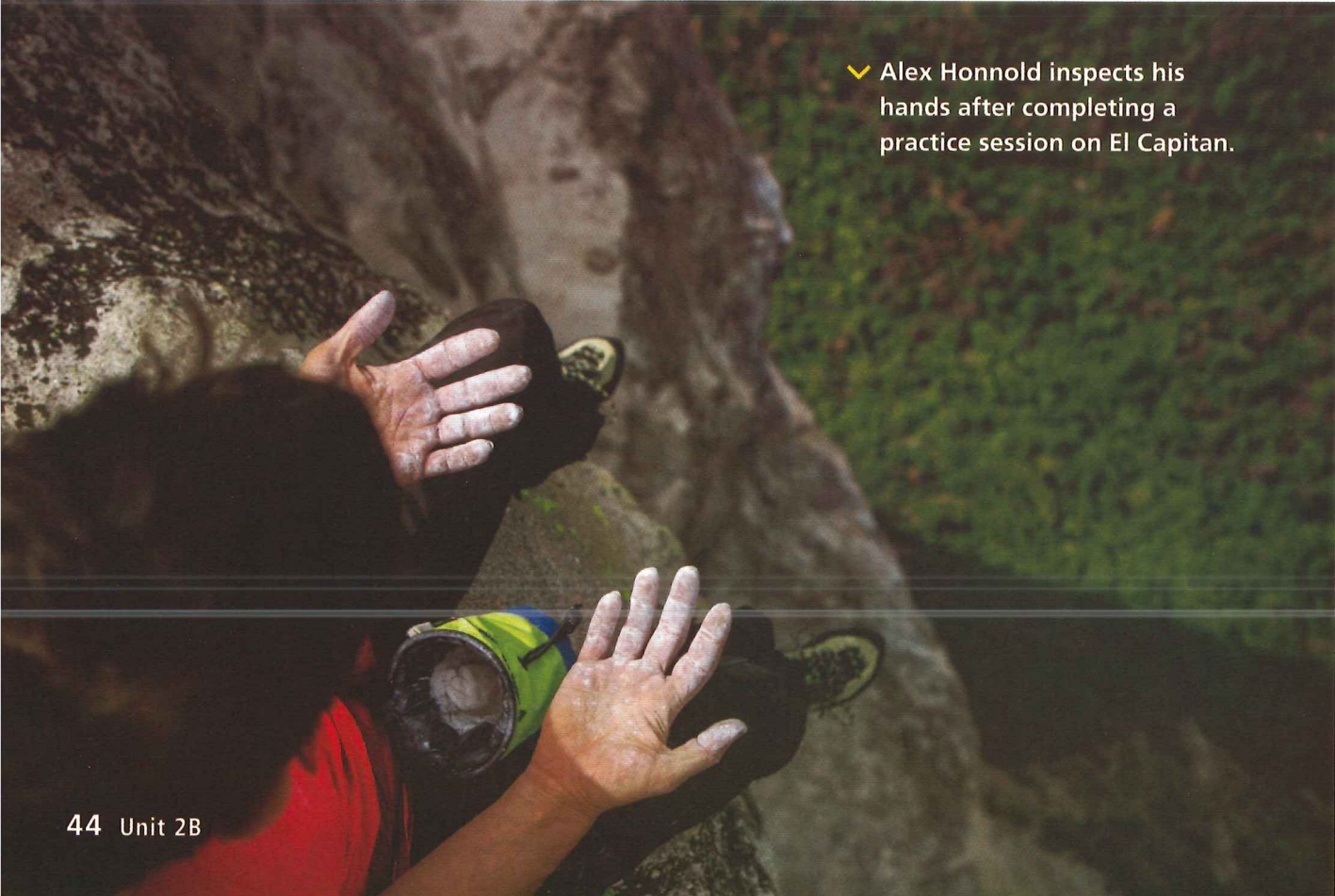
below freezing. Storms blow in, powerful winds lash the wall, water leaks out of cracks. Bees, frogs, and birds can burst from crevices during crucial moves. Rocks of all sizes can suddenly give way and tumble down.

- L The Freeblast may be the scariest part, but more physically demanding sections await higher up: a chimney-like crack he'll have to climb through; a wide gap where he'll have to perform almost a full split, pressing the rock with his feet and hands to inch his way up. And then 2,300 feet above the valley floor is the Boulder Problem—a blank face that requires some of the most technically challenging moves of the climb.
- M But before he could **tackle** the Boulder Problem, he would have to get over the Freeblast. In 2016, the vertical slab proved to be an insurmountable³ obstacle and he was forced to give up his attempt. But Alex knew he would try again.

³ If something is **insurmountable**, it is a problem too great to be overcome.

* * *

- N **Saturday morning, June 3, 2017.** Seven months after Alex's failed attempt, I am in a meadow near the foot of El Capitan. The tall grass is covered with dew, and the sky is gray, as it always is just before dawn. I squint through a telescope, and there is Alex, 600 feet above the valley floor, moving up onto the Freeblast, the glassy slab that has frustrated him for nearly a decade.
- O Alex's movements, normally so smooth, are worryingly jerky. His foot tap-tap-taps against the wall as if he's feeling his way tentatively into the slab. And then, just like that, he's standing on a ledge several feet above the move that has been hanging over his head for years.
- P I realize I've been holding my breath, so I consciously exhale. Thousands of moves are still to come, and the Boulder Problem looms far above, but he won't be turning back this time. Alex Honnold is on his way to completing the greatest rock climb in history.



✓ Alex Honnold inspects his hands after completing a practice session on El Capitan.

A. Choose the best answer for each question.

INFERENCE

1. The divots, nubs, and cracks mentioned in paragraph C _____.
 a. are dangerous features of the mountain
 b. occur in all parts of the mountain
 c. occur only in the lowest part of the mountain
 d. are helpful to a free solo climber

AUTHOR TONE

2. In paragraph E, the author's tone is _____.
 a. optimistic
 b. technical
 c. anxious
 d. humorous

VOCABULARY

3. When the cameraman says, "Alex is bailing" in paragraph F, he means that Honnold _____.
 a. nearly fell
 b. is climbing slowly
 c. has reached the summit
 d. is giving up for now

**AUTHOR
ATTITUDE**

4. According to the information in paragraph G, the author _____.
 a. feels free soloing is too dangerous
 b. agrees with the ideas of Paul Preuss
 c. believes climbers need artificial aids
 d. disapproves of Honnold's plans

DETAIL

5. Who was the second free soloist to become well known?
 a. Paul Preuss
 b. Henry Barber
 c. Peter Croft
 d. Alex Honnold

COHESION

6. Where would be the best place in paragraph J to insert this sentence?
At first, I thought he was totally crazy.
 a. before the first sentence
 b. after the first sentence
 c. after the second sentence
 d. after the last sentence

DETAIL

7. Which of the following was NOT given as one of the challenges involved in climbing the Freerider route?
 a. ice
 b. heat
 c. animals
 d. wind

INFERRING MEANING

Review this
reading skill
in Unit 2A

B. Scan the reading passage for the words in **bold** below. Study the context around each word or phrase and then match it to its definition.

- | | |
|--|--------------------------------------|
| _____ 1. meticulous (paragraph A) | a. feeling sick |
| _____ 2. cling (paragraph B) | b. based on a sudden decision |
| _____ 3. slab (paragraph C) | c. a large flat piece of stone |
| _____ 4. eternity (paragraph E) | d. adopted or supported |
| _____ 5. nauseated (paragraph E) | e. infinite or never ending time |
| _____ 6. reckless (paragraph G) | f. to hold on tightly to |
| _____ 7. espoused (paragraph H) | g. careless of risks or consequences |
| _____ 8. on a whim (paragraph J) | h. careful and detailed |

INFERRING MEANING

C. Find and underline the words or phrases in the reading passage that mean the same as the definitions below.

1. to praise and show approval (paragraph I)
2. to hit with a lot of force (paragraph K)
3. to partly close eyes when looking (paragraph N)
4. quick and sudden (paragraph O)

CRITICAL THINKING Inferring Reasons

What do you think Honnold's main motivation was for doing the climb? Is it an example of "reckless showmanship" or could there be other reasons? Note your ideas below, then discuss with a partner.

Alex Honnold strengthens his fingers by hangboarding for 90 minutes every day.



Understanding Rhetorical Purpose

An author's rhetorical purpose refers to either their overall reason for writing a text, or their reason for including certain information in it. Identifying an author's purpose is a key part of engaging critically with any reading passage. It is also an important skill for taking exams. Examples of this type of question might include:

What is the author's purpose in mentioning ...?

Why does the author mention/include ...?

The author includes the information ... in order to ...

The author uses ... as an example of ...

The author mentions ... for which of the following reasons?

RHETORICAL PURPOSE

- A. 1.** What is the main purpose of the passage?
 - a. to persuade the reader to take up rock climbing
 - b. to describe Alex Honnold's personality
 - c. to give an account of Honnold's most difficult climb
 - d. to give an overview of the sport of free soloing
- 2.** Why does the author include the quote "It's like walking up glass" in paragraph C?
 - a. to help the reader visualize how shiny the wall as
 - b. to show how confident Honnold was in this part of the climb
 - c. to emphasize how challenging this part of the climb was
 - d. to explain why this part of the climb was relatively easy
- 3.** Why does the author mention Paul Preuss's exploits in paragraph G?
 - a. to explain why he was a better climber than Honnold
 - b. to warn of the dangers of climbing for the untrained
 - c. to refute the idea that climbing is still dangerous
 - d. to show how influential his free solo climbs were
- 4.** Why does the author include information about the temperature, weather, and animals in paragraph K?
 - a. to illustrate how challenging this climbing route is
 - b. to explain why Honnold nearly ended his climb there
 - c. to show how dangerous a climb can be if you are unprepared
 - d. to support the idea that free solo climbing is the purest form

RHETORICAL PURPOSE

- B.** Why do you think the author mentions that Honnold completed his climb successfully in the first paragraph rather than leaving this for the final paragraph? Discuss your ideas with a partner.

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

artificial	ascend	contemplate	delicate	devoid of
plummet	scheme	stamina	successive	tackle

When Honnold first began to seriously ¹_____ a free solo climb of El Capitan, he spoke with friend and fellow climber Jimmy Chin to discuss filming the event. This eventually resulted in the movie *Free Solo*—which won the 2018 Academy Award for best documentary film.

To film the event, Chin hired a team of climbers who would climb an easy route up El Capitan ahead of Honnold, lugging up cameras, ropes, and supplies. Then they'd rappel down on ropes to keep pace with Honnold as he ²_____ the near vertical cliff. Honnold of course used no ³_____ aids.

Filming was ⁴_____ work. No one was allowed to make any noise that might distract Honnold—distractions that could cause him to ⁵_____ to his death.

Chin wanted his film to be about Honnold's process. The final movie showcases Honnold's incredible focus, ⁶_____, and determination. "Whether it ended with him summitting El Cap or deciding not to go for it didn't matter," Chin says.

- DEFINITIONS** B. Match each unused word from the box in Activity A with its definition.

1. _____: an organized plan for doing something
2. _____: entirely lacking or free from
3. _____: happening one after another
4. _____: to try and deal with something or someone

- COLLOCATIONS** C. The nouns in the box are frequently used with the word **plummet**. Complete the sentences with the correct words.

popularity	price	temperatures
-------------------	--------------	---------------------

1. The _____ of oil plummets when there's too much supply.
2. Typically, a politician's _____ plummets after a scandal.
3. In the middle of winter, _____ can plummet to record lows at night.

^ Free soloing is a dangerous sport, but there are ways to make it safer.

SOLOING SAFELY

BEFORE YOU WATCH

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

There are many different forms of rock climbing, such as mountaineering, sport climbing, and free soloing. Free soloing is considered to be a **fringe** sport, even among professional climbers. Some climbers consider it to be dangerous and **reckless**. During free soloing, climbers do not use any equipment at all, including ropes, even when scaling difficult **terrain**. However, those who do it often enjoy the added **adrenaline** rush it brings.

- | | | |
|---------------|---|--|
| 1. reckless | • | • a. a chemical produced by the body that makes your heart beat faster |
| 2. terrain | • | • b. having or showing no regard for danger |
| 3. fringe | • | • c. an area of land |
| 4. adrenaline | • | • d. not widely popular |

DISCUSSION B. How could free solo climbers make rope-free climbing safer? Note your ideas below, then discuss with a partner.
