

UNIT 1 SPORTS AND FITNESS

WARM UP

Possible answer(s):

1. Student's own answers. 2. I think the fittest athletes are the ones who work out all of their muscle groups and train for endurance, such as runners and swimmers.

READING 1A THE WORLD'S GAME

Before You Read

A. 1. T; 2. F (Britain); 3. T; 4. T

B. Possible answer(s): camaraderie, international appeal, promise of wealth, simplicity, keeping children out of trouble

Reading Comprehension

A. 1. b; 2. c; 3. b; 4. a (line 10); 5. d

B. 1. e; 2. b; 3. a; 4. C

Reading Skill

A. a, b

B. 1. d; 2. e; 3. b; 4. c; 5. a

C. 1. F (Brazil has); 2. T; 3. T; 4. F (two players)

Critical Thinking

Possible answer(s): Soccer clubs now have fans all over the world. Many soccer players come from poor families. It's a simple game. Anyone can play it. It unifies people.

Vocabulary Practice

A. 1. established; 2. victory; 3. defeated; 4. competitors; 5. passion; 6. responsible

B. 1. a; 2. b; 3. b; 4. a

C. 1. uniform; 2. unite; 3. unique; 4. universal

READING 1B WHAT MAKES AN OLYMPIC CHAMPION?

Before You Read

A. 1. athletes; 2. competition; Olympics; 3. Medals

B. Possible answer(s): strength, determination, endurance, money, talent

Reading Comprehension

A. 1. b; 2. a (Para C); 3. c (Para C); 4. d; 5. b (Para G)

B. **Marathon runners:** b, f; **Gymnasts:** c, d; **Both:** a, e

Reading Skill

A. 1. number (180 cm or taller); 2. place (Kenya, Ethiopia, Morocco); 3. name (oxygen); 4. person (Greg Louganis); 5. place (the Olympic Training Center in the United States)

B. 1. T; 2. T; 3. F (She's won several marathons.); 4. F (They take less than three seconds.)

Critical Thinking

Possible answer(s): **diet:** athletes that eat a lot of protein might build more muscles; **education:** athletes who train and study might have more balanced lives. Perhaps this may help them to improve their performance; **family:** athletes with a close family might get more support and help; **gender roles:** male athletes might have more opportunities than female athletes in some sports; **religion:** some religions might focus more on a healthy lifestyle by not drinking alcohol or participating in certain activities.

Vocabulary Practice

A. 1. elite; 2. required; 3. enhanced; 4. differentiated; 5. adjustments; 6. psychological

B. 1. champion; 2. generate; 3. genetic; 4. adjust; 5. automatic

C. 1. anthropology; 2. biology; 3. Geology

VIDEO SPORT CLIMBING

Before You Watch

A. 1. d; 2. a; 3. b; 4. c

While You Watch

A. b, c

B. 1. a; 2. c; 3. b

Critical Thinking

- Possible answer(s): I think people enjoy extreme sports because it's challenging and they like taking risks. The main challenge is the cost of expensive equipment such as parachutes and harnesses. The reward is the feeling of exhilaration, as though you're on top of the world!
- Possible answer(s): I think a rock climber needs to be brave, strong-willed, determined, and very energetic because some rocks are very steep and high. A rock climber can't give up in the middle of a climb.

UNIT 2 SKIN DEEP

WARM UP

Possible answer(s):

1. I think long, thick hair and gold jewelry are beautiful.
2. I think the expression means that a person can look beautiful on the outside but their personality might not be very nice.

READING 2A WHAT IS BEAUTY?

Before You Read

- A.** Possible answer(s): I think good-looking people have easier lives than other people because they are more confident, which leads to them getting better jobs and making more money.
- B.** Possible answer(s): **1.** I don't think people around the world have similar ideas about beauty because different cultural groups have their own individual and unique features. **2.** I think society influences how we perceive beauty because fashion magazines and popular culture set the standard for what is considered beautiful.

Reading Comprehension

A. **1.** a; **2.** c (Para A); **3.** d; **4.** b; **5.** b (Para F)

B. **1.** E; **2.** D; **3.** C; **4.** B; **5.** F; **6.** A

Reading Skill

A. **1.** nails; **2.** wigs; **3.** three; **4.** Billions; **5.** Six

B. Possible answer(s): The writer supports the claims by giving expert opinions (Victor Johnston at New Mexico State University ...) and examples (the women in Western magazines are thin, but native people in southeast Peru prefer a larger shape).

Critical Thinking

- Possible answer(s): I think the expression means option "a," because every person sees things differently. The "eye of the beholder" means the eye of the person who is looking, and everybody sees things in a different way.
- Possible answer(s): One example is that I really like short hair, and so when Allison cut her long hair short, I thought it looked great. But Maria thought it looked awful. We all have our own opinions about what is beautiful.

Vocabulary Practice

A. **1.** conform; **2.** notion; **3.** devoted; **4.** consumers; **5.** associated with

B. **1.** uniform; **2.** genders; **3.** features; **4.** subjective; **5.** desire

C. **1.** uniform; **2.** conform; **3.** transformed; **4.** formatted

READING 2B SKIN: THE BODY'S CANVAS

Before You Read

A. Possible answer(s): tattooing, painting, piercing, scarring

B. Possible answer(s): People think tattoos make them look more beautiful; In some cultures, tattoos are part of a ritual.

Reading Comprehension

A. **1.** b; **2.** b (Para C); **3.** a (Para D); **4.** a; **5.** c (Para F)

B. **1.** 1.9 square meters (Para A); **2.** any one of the following: extremes of temperature / damaging sunlight / harmful chemicals / dangerous infections; **3.** Chris Rainier (Para G)

Reading Skill

A. **1.** a; **2.** a; **3.** b

B. Possible answer(s): Paragraph D: negative connotations of tattooing; Paragraph E: reasons for scarring; Paragraph F: nonpermanent markings

Critical Thinking

- Possible answer(s): wear particular styles of clothes; wear heavy makeup; wear jewelry; grow their fingernails; change their hairstyle; get piercings; shave their eyebrows
- I've expressed my identity by dyeing my hair different colors—sometimes red, green, or blue.

Vocabulary Practice

A. 1. crucial; 2. protective; 3. permanent; 5. fade; 6. sector

B. 1. b; 2. b; 3. b; 4. b; 5. a

C. 1. damage; 2. address; 3. resident; 4. basis

VIDEO THE BEAUTY OF UGLY FOOD

Before You Watch

A. 1. appearance; 2. fruit and vegetables; 3. customers; 4. refuse; 5. mark on it

B. Possible answer(s): I like to buy round oranges and long thin carrots. I don't think I would be happy to buy fruit or vegetables that look wrong!

While You Watch

A. a

B. 1. b; 2. a; 3. b; 4. b

Critical Thinking

Applying:

- Possible answer(s): I think I would shop at a store that only sells imperfect produce because the cost is probably cheaper and the fruit won't go to waste.
- Maybe "ugly food" could be donated to people who can't afford to buy fresh fruit and vegetables.

UNIT 3 ANIMALS IN DANGER

WARM UP

Possible answer(s):

1. some big cats, pandas, wolves, some whales, and elephants
2. Habitats become changed by human activity or by environmental factors.

READING 3A RACING TO RESCUE KOALAS

Before You Read

A. 1. tree leaves; 2. in their mother's pouch; 3. 80,000

B. Possible answer(s): they might be losing their natural habitats to development; humans might be polluting their environment.

Reading Comprehension

A. 1. d; 2. b (Para C); 3. b (Para E); 4. c (Para G); 5. c (Para K)

B. 1. b; 2. e; 3. d; 4. a; 5. c

Reading Skill

A. 1. a; 2. c; 3. a; 4. c; 5. c

B. Possible answer(s): The word *discover* has the prefix *dis-*, which means "not." *Discover* must mean "not cover," or to find something out.

Critical Thinking

loss of eucalyptus trees and disease

Possible answer(s): I think it might be easier to solve the problem of disease by giving more koalas treatment. Also, there might be a vaccination that female koalas could be given before they show signs of the illness. / I think it would be easier to improve the koalas' environment by reducing speed limits on streets and creating more green areas for koalas to live in. Perhaps then they will become healthier and less prone to disease.

Vocabulary Practice

A. 1. extinction; 2. tend to; 3. suburbs; 4. capture; 5. threatens; 6. primary

B. 1. b; 2. b; 3. b; 4. a

C. 1. appearance; 2. exercise; 3. condition; 4. contact

READING 3B TRACKING THE SNOW LEOPARD

Before You Read

A. 1. Possible answer(s): It might be difficult to find food, and the weather gets very cold high up in the mountains. 2. Possible answer(s): I think the snow leopard has adapted to the cold by growing a thick coat, and it can see well at night to hunt nocturnal animals.

B. the number of snow leopards left in the wild (Para D); methods of protecting snow leopards (Para G); disagreements between snow leopards and herders (Para E)

Reading Comprehension

A. 1. d; 2. a; 3. d (Para D); 4. d (Para G); 5. c

B. 1. a; 2. b; 3. b; 4. a; 5. b

Reading Skill

A/B. Possible answer(s):

The Value of Preservation

Financial ^{money}incentives are also helping to slow snow leopard killings. The organization Snow Leopard Conservancy India Trust has ^{set up}established Himalayan Homestays, a program that sends visitors to herders' houses. For a clean room and bed, meals with the family, and an introduction to their culture, visitors pay ^{is this a lot of money?}about ten U.S. dollars a night. If guests come once every two weeks through the tourist season, the herders will earn enough income to replace the animals lost to snow leopards. In addition, the organization helps herders build protective fences that keep out snow leopards. It also conducts environmental classes at village schools, and trains the organization's members as nature guides, available for hire. In exchange, the herders agree not to kill snow leopards.

Critical Thinking

Possible answer(s):

- The main purpose is to encourage people not to kill snow leopards by providing financial incentives.
- Himalayan Homestays gives herders the tools to educate others about their culture and learn more about their environment. They also build fences around their property to keep the snow leopards out. SLE buys products that the herders make.
- I think Himalayan Homestays might be more effective because the herders learn why it's important to protect the snow leopards, and they have the opportunity to meet foreigners who might have different opinions than they do.

Vocabulary Practice

A. 1. officially; 2. drag; 3. reverse; 4. enforce; 5. landscape; 6. status

B. 1. financially; 2. disagreement; 3. Extra money; 4. different from

C. 1. conflict; 2. signal; 3. contact; 4. capture

VIDEO PROTECTING PANDAS

Before You Watch

A. 1. to process food in the stomach; 2. A substance found in some food (such as meat or fish); 3. food that one regularly eats; 4. To trust in or depend on

B. 1. T; 2. T; 3. F (they are no longer endangered); 4. F (an increase of 17 percent over the past decade)

While You Watch

A. See **Before You Watch B.**

B. 1. a; 2. c; 3. b

Critical Thinking

Possible answer(s): A giant panda and a koala are similar because they both eat plants. Koalas are losing their eucalyptus trees and pandas are losing their bamboo due to habitat loss caused by human activity. Their habitats are very different though: Pandas travel on land and koalas mostly live in trees. Also the intervention is different for each animal. The koalas are being monitored in the wild and looked after if they are found to be injured. Giant pandas are being breed in captivity to try to boost the numbers of pandas in the wild.

UNIT 4 VIOLENT EARTH

WARM UP

Possible answer(s):

1. Natural disasters include extreme weather such as tornadoes, floods, hurricanes/ typhoons, as well as seismic events such as earthquakes, volcanic eruptions, and tsunamis.
2. Yes, in Mexico, there are volcanoes and earthquakes.

READING 4A SACRED SUMMITS

Before You Read

- A. 1. erupted; 2. active; 3. sacred; 4. ash
B. religious beliefs, why scientists are concerned, threats to locals

Reading Comprehension

- A. 1. c; 2. c (Para D); 3. b; 4. a (Para F); 5. c (Para E and I)
B. 1. F; 2. H; 3. F; 4. G; 5. I; 6. G

Reading Skill

- A. Possible answer(s): More people today are living near active volcanoes than ever before. The Decade Volcano Project helps set up "defenses" against a volcanic eruption. In 1992, they diverted a flow of lava from Mount Etna, Sicily which was threatening a nearby town.
B. Possible answer(s): Although volcanoes can cause great destruction, many people live near them. Scientists are continuing to look for ways they can predict these devastating eruptions before they happen.

Critical Thinking

- Possible answer(s): People risk their lives to live near active volcanoes because the soil is very fertile and they can grow healthy fruits and vegetables. Also, I think it would be very difficult to move away from your home when a volcano hasn't been active in centuries.
- Possible answer(s): I think local authorities should work with scientists and innovative organizations to build volcano defenses and find ways to predict eruptions so people can evacuate.

Vocabulary Practice

- A. 1. ancestors; 2. disastrous; 3. summit; 4. dawn
B. 1. witness; 2. displaced; 3. expands; 4. destructive; 5. monitored
C. 1. expanded; 2. exports; 3. exceeds; 4. explosion

READING 4B IS PREDICTION POSSIBLE?

Before You Read

- A. 1. T; 2. F (west coasts); 3. T
B. The author is generally optimistic that scientists may be able to predict earthquakes in the future.

Reading Comprehension

- A. 1. c; 2. d; 3. b; 4. d (Para F); 5. a
B. a, c, e

Reading Skill

- A. 1, 3
B. 1. d; 2. f; 3. c; 4. a; 5. e; 6. b
C. P-wave = yellow vertical arrow; S-wave = red wavy arrow; surface wave = red horizontal arrows

Critical Thinking

Possible answer(s): I think the safest place to be in an earthquake is under a very heavy structure that cannot move, or inside a very strong building frame, such as underneath a doorway on a lower level, away from any glass.

Vocabulary Practice

- A. 1. schedule, random; 2. track, massive; 3. zone
B. 1. laboratory; 2. detect; 3. data; 4. precise
C. 1. on; 2. busy; 3. behind

VIDEO EARTHQUAKES 101

Before You Watch

A. 1. shallow; 2. magnitude; 3. devastating; 4. rattled

B. Possible answer(s): The Earth's crust sits on top of tectonic plates, which move. As the plates push together, they can slip or fall beneath one another. This is what causes an earthquake—and the movement of the Earth sends shockwaves through the rock.

While You Watch

A. how earthquakes happen; how earthquakes are measured; examples of strong earthquakes

B. 1. b; 2. b; 3. a

Critical Thinking

Possible answer(s): I would prioritize ensuring that new buildings are earthquake-proof because that seems like a realistic way to help save lives now. Engineers have already designed proven methods, so I would want to use that technology in my city.

UNIT 5 ISLANDS AND BEACHES

WARM UP

Possible answer(s):

1. The natural landscape of beaches has a positive effect on our health and wellbeing.
2. The Canary Islands are off the west coast of Africa and are volcanic; Jamaica is in the Caribbean and is the birthplace of reggae; the Seychelles are in the Indian Ocean, and snorkeling is very popular there.

READING 5A LAND OF FIRE AND ICE

Before You Read

- A. 1. attraction; 2. lively; 3. impressive
B. 1. 340,000; 2. 100,000; 3. 22; 4. more than 1.3 million

Reading Comprehension

- A. 1. d; 2. c (Para D); 3. a; 4. c (Para I); 5. b (Para I)
B. 1. NG; 2. F (a huge lake of bright blue sea water); 3. T; 4. NG; 5. T; 6. F (usually above freezing); 7. F (Most of the inner part is uninhabited and relatively inaccessible.); 8. NG

Reading Skill

- A. 1. Greenland; 2. Reykjavík; 3. Atlantic
B. Starting with the label pointing to Reykjavík in a clockwise circle: d, b, c, a, e, f

Critical Thinking

- Possible answer(s): I think the most interesting activity would be caving. I'd love to go to a glacier, especially one just above an active volcano! I am not scared of small spaces and like to hike and do adventurous activities, so caving would be my first choice. I'm not very interested in art and like to have an active vacation, so I'd choose caving, viewing the mid-Atlantic fault, seeing a large waterfall, and visiting a black-sand beach.
- Possible answer(s): I would spend Day 1 in Reykjavík and visit museums and look at art. On Day 2, I would see the mid-Atlantic fault and waterfalls, then continue on to Vík. On Day 3, I would go caving.

Vocabulary Practice

- A. 1. spectacular; 2. architectural; 3. tension; 4. awarded; 5. converted; 6. literally
B. a. cures; b. monster; c. naturally; d. migrate
C. breathtaking, impressive, stunning

READING 5B THE PERFECT BEACH

Before You Read

- A. 1. c; 2. f; 3. b; 4. d; 5. a; 6. e
B. Possible answer(s): 1. a travel writer looking for "the perfect beach"; 2. My perfect beach would be isolated. There would be lush, green cliffs leading down to the blue green water. There would be a lot of marine life and the sun would be shining.

Reading Comprehension

- A. 1. c; 2. d; 3. d (Para G and H); 4. b (Para G); 5. b
B. 1. Maceió; 2. Prainha; 3. Praia do Leão; 4. Copacabana; 5. Jericoacoara

Reading Skill

- A. 1. c; 2. b; 3. a; 4. f; 5. e
B. 2. The beach I'm searching for needs to be a little wilder. 3. It hasn't been spoiled by tourists. 4. a fisherman's beach; 5. more than a dozen beautiful beaches

Critical Thinking

Possible answer(s):

- It was beautiful and looked perfect.
- The phrase *too perfect* is used to describe a negative point of view. The word *too* means excessive, or more than necessary. Stewart is looking for something more unusual that is *wild* in the sense of being more remote and distinctive.
- There is a park near my house that I think is too perfect. It has manicured trees and bushes and the paths are paved in straight lines. I would prefer wildflowers and a more natural-looking rocky path.

Vocabulary Practice

A. 1. isolated; **2.** ultimate; **3.** eager; **4.** destination

B. 1. prohibited; **2.** state; **3.** balance; **4.** spoiled; **5.** ranked; **6.** magnificent

C. 1. of shock; **2.** of mind; **3.** of emergency; **4.** of repair

VIDEO HA LONG BAY

Before You Watch

A. 1. a rich green color like the jewel; **2.** a narrow section of sea between two pieces of land; **3.** without any people living there

While You Watch

A. a, b, d

B. 1. T; **2.** F (Most remain uninhabited.); **3.** F (A dragon flew down from heaven to protect them.); **4.** T; **5.** NG

Critical Thinking

- Students' own answers
- Possible answer(s): There is a beautiful national park in my country with some important wildlife habitats. There are a variety of birds, insects, and mammals that are native to the area, and many of them are endangered. I think this national park should be included on UNESCO's Natural Heritage list because the wildlife needs protection.

UNIT 6 GLOBAL ADDICTIONS

WARM UP

Possible answer(s):

1. People can become addicted to drugs, foods, and computers.
2. I think it's okay to be addicted to things that are healthy for you, such as exercise. Some people I know spend hours at the gym each day and they are in great shape.

READING 6A THE WORLD'S FAVORITE DRUG

Before You Read

A. 1. b; 2. a; 3. c; 4. e; 5. g; 6. d; 7. h; 8. f

B. Possible answer(s): I don't think caffeine in moderation is bad for you, but too much of it might make you jittery and nervous.

Reading Comprehension

A. 1. c; 2. d; 3. b (Para C); 4. a; 5. a

B. 1. b, c; 2. d, e; 3. a, f

Reading Skill

A. 1. ease; 2. illnesses; 3. reaction; 4. sleep; 5. drug; 6. sad; 7. pressure

B. Possible answer(s): 1. I think it's a good idea if you consume caffeine in moderation. / I don't think it is a good idea because although caffeine's behavioral effects might be mild they are still there, and I would rather eat healthily and exercise regularly rather than rely on a stimulant. 2. I agree with the writer, I think it's good to drink coffee or tea—the benefits outweigh the negatives. / I disagree with the writer. I think the negatives outweigh the positives as regular loss of sleep can affect your health.

Critical Thinking

➤ C; b. C; c. C; d. P; e. P; f. P / C

➤ Possible answer(s): I think chocolate is generally negative, but I would like to find out more about its health benefits. I would also like to know how much sugar it has.

Vocabulary Practice

A. 1. abusing; 2. reaction; 3. Furthermore; 4. exhibit

B. 1. a; 2. b; 3. a; 4. a; 5. b; 6. a

C. Possible answer(s): moreover, also, additionally, what's more

READING 6B ADDICTED TO DISTRACTION

Before You Read

A. Possible answer(s): I spend about: 30 minutes reading articles; two hours chatting with friends; one hour posting on social media; two hours watching videos; three hours playing video games.

B. Possible answer(s): Some positive effects of using digital technology are that you don't need to be stuck in an office all day because you can work from home or when you're out and about; you can always get in touch with people; Some negative effects are that you're always "connected" and so it's more difficult to take a break from work; you can easily become addicted to your device.

Reading Comprehension

A. 1. a; 2. d; 3. c; 4. c (Para F); 5. a

B. 1. Chiba University; 2. 15; 3. city centers; 4. blood; 5. forests; 6. 16; 7. (stress) hormone; 8. blood pressure; 9. relaxes; 10. evolved

Reading Skill

A. **To add information:** moreover; **To contrast ideas:** yet; **To show another similar idea:** likewise; **To emphasize a point:** above all; **To show a consequence:** therefore; **To make a conclusion:** in short

B. Possible answer(s) (from passage): 1. In fact, Indeed; Consequently, As a result, Therefore; 2. In addition, Furthermore, Moreover

Critical Thinking

➤ Possible answer(s): Someone who lives in the city could go to a quiet building, such as a library, and read a book to relax, or they could go to a coffee shop with friends.

➤ Possible answer(s): A fitness app could be used to help reduce stress by helping motivate people to exercise.

Vocabulary Practice

- A.** 1. concentration; 2. Consequently; 3. surroundings; 4. therapies
B. 1. in turn; 2. visual; 3. focus; 4. excessive; 5. switch; 6. constantly
C. 1. vision; 2. revise; 3. invisible; 4. visualize

VIDEO WORLD OF CAFFEINE

Before You Watch

Before You Watch

- A.** 1. d ; 2. a; 3. c; 4. b

B. Possible answer(s): I usually drink two cups of coffee a day and eat chocolate once every three days. I sometimes have a cup of tea or cola, but I never have energy drinks.

While You Watch

- A.** 1. b, c; 2. a, b

- B.** c, b, a, d

Critical Thinking

Possible answer(s): Some pros of gathering in coffee and tea establishments are that people can socialize and communicate about current events. They also contribute to the local economy by keeping the shop owners in business. Some cons might be that people may drink too much caffeine and may spend too much time away from their families. Students may not devote enough time to studying.

UNIT 7 ENERGY SOLUTIONS

WARM UP

Possible answer(s):

1. Using fossil fuels, getting energy from solar power, water power, wind power; **2.** I think solar and wind power are becoming more common, but people also use fossil fuels.

READING 7A POWERING THE PLANET

Before You Read

A. Possible answer(s): **1.** Advantages: it's clean, renewable energy; Disadvantages: you need to receive a lot of sunlight, solar panels don't always look nice; **2.** Possible answer(s): wind power, wave power

B. Solar: India; **Wind:** England; **Nuclear:** France, China, India, Japan

Reading Comprehension

A. 1. a; **2.** c (Para D); **3.** b (Para G and H); **4.** a (Para K); **5.** a

B. 1. c, d; **2.** f; **3.** a, e

Reading Skill

A. 1. nuclear energy; **2.** solar energy, wind energy, nuclear energy; **3.** solar energy, wind energy

B. 1. solar energy, wind energy; **2.** Nuclear energy; **3.** solar energy, nuclear energy

Critical Thinking

- Possible answer(s): I think solar energy has the most significant advantages because people can have their own solar panels and the energy is clean and readily available, especially if you live in a sunny climate; I think nuclear has the most significant disadvantages because of its safety record.
- Possible answer(s): I think the disadvantages of wind energy are the easiest to solve because people need to understand that we have to find an alternative to fossil fuels so they will have to accept wind farms on the landscape. Maybe the design of the wind turbines can be changed to better fit into the landscape.
- Possible answer(s): I think solar power is the best option to replace fossil fuels because if every home has solar panels, the energy from the sun can be collected in great quantities and shared throughout communities.

Vocabulary Practice

A. 1. eliminate; **2.** substitute; **3.** equivalent; **4.** utilize

B. 1. b; **2.** b; **3.** a; **4.** a; **5.** a; **6.** a

C. climb ↑; decline ↓; dive ↓; drop ↓; increase ↑; reduction ↓

READING 7B CITY OF THE FUTURE?

Before You Read

A. 1. ecological footprint; **2.** take action; **3.** metropolis

B. Possible answer(s): A modern city like Dubai could find alternative ways to produce energy, such as solar power. There is a lot of sunlight in the Middle East so that might be a good choice.

Reading Comprehension

A. 1. d; **2.** c; **3.** a; **4.** b; **5.** a

B. 1. c; **2.** f; **3.** g; **4.** b; **5.** d; **6.** a

Reading Skill

A. Positive words: carbon-rich, vital, abundant, inexpensive; Negative words: dirty, dangerous, grave risks, deadly diseases, recklessly, toxic, polluting, foolhardy, irresponsible; Possible answer(s): I think the author's tone is negative because there are many more negative words. The author thinks coal is dangerous to human health and that it should be replaced now.

B. Possible answer(s): I think the author's tone is positive because he or she has given examples of good things Dubai is doing to reduce its emissions.

Critical Thinking

- Possible answer(s): Dubai has invested in solar energy, green buildings, and public transportation. All new buildings must meet strict energy regulations and use solar panels.
- Possible answer(s): My country gives a discount to people who have solar panels on their roofs, and provides tax incentives to people who buy energy-efficient appliances and cars that use less gasoline.

Vocabulary Practice

A. 1. sustainable; 2. residents; 3. emissions; 4. efficiency; 5. wealthy; 6. unrealistic

B. 1. cooling; 2. comprehensive; 3. distributed; 4. unrealistic; 5. regulation; 6. efficiency; 7. emissions; 8. sustainable

C. ecology; emit; distribution; efficient; sustain; residential

VIDEO WAVE POWER

Before You Watch

A. Upper left: 1; Middle: 2; Right: 4; Bottom left: 3

B. 1. pipes; 2. pumps; 3. turbines; 4. tides

While You Watch

A. 1

B. 1. sea snake; 2. high pressure; 3. Weather conditions; 4. Scotland; 5. Portugal

Critical Thinking

Possible answer(s):

- Although tides are predictable in any one location, the weather is not, so the equipment needs to be very sturdy to withstand ocean storms. In some places, it could interfere with navigation or fishing.
- I think it depends on the location of the place, its weather, and the attitudes of local people toward new sources of energy.

UNIT 8 EPIC ENGINEERING

WARM UP

Possible answer(s):

1. The Three Gorges Dam, the International Space Station, the Large Hadron Collider, Dubai's Palm Islands;
2. Students' answers will vary.

READING 8A CHINA'S GRAND CANAL

Before You Read

A. 1. 1368–1855; 2. it was used to transport everything from food to wood to textiles; 3. Beijing in the north and Hangzhou in the south; 4. 1,770 kilometers

B. Possible answer(s): I think the canal has been important because it helped move people, goods, and ideas from one part of China to another.

Reading Comprehension

A. 1. b (Para B); 2. d (Para D); 3. b; 4. d; 5. c

B. c, f, b, e, a, d

Reading Skill

A. 1. best-known; 2. waterway; 3. trademarks; 4. lifeline

B. 1. well-known; 2. man-made; 3. Without; 4. lifetime; 5. day trip; 6. highlight

Critical Thinking

- Possible answer(s): Each city was special because the traditional cultures were different, which made the buildings unique.
- Possible answer(s): Today, the cities all look exactly the same.

Vocabulary Practice

A. 1. proposals; 2. acquired; 3. monument; 4. renovation; 5. transported

B. 1. b; 2. a; 3. a; 4. b; 5. a

C. 1. innovate; 2. renovated; 3. novelty

READING 8B HIGHWAY OF DREAMS

Before You Read

A. 1. Possible answer(s): The highway would provide easier and more affordable transportation for people and goods. 2. Possible answer(s): The pristine environment in the Amazon will be threatened.

B. Paragraphs E and F address the advantages for the Peruvians. Paragraphs G and H address the disadvantages for the environmentalists.

Reading Comprehension

A. 1. a; 2. b (Para C); 3. b; 4. c (Para G); 5. a

B. 1. faster; 2. live; 3. jobs; 4. biodiversity; 5. pristine; 6. farming

Reading Skill

A. 1. No; 2. Yes; 3. Yes; 4. No; 5. Yes

B. 1. Possible answer(s): I think Mary feels negative about the old highway because she says that it was a long and uncomfortable journey. She couldn't wait for the new highway to be built. 2. I think the author feels neutral about the new highway right now because the passage is organized into the positive and negative aspects of the highway. The writer ends the passage saying that only time will tell if it will bring good or bad changes.

Critical Thinking

- Possible answer(s): The Grand Canal and the Transoceanic Highway are similar because they were both built to help people transport goods and travel more easily across vast distances.
- Possible answer(s): I think the Transoceanic Highway will be as successful as the Grand Canal because it serves as a way to transport people and goods across difficult terrain. Now that the highway is open, people will not want to go back to being as isolated as they were before.

Vocabulary Practice

A. 1. enormous; 2. border; 3. impact; 4. practical; 5. ruining

B. 1. dense; 2. occurs; 3. partially; 4. accessible; 5. illustrates

C. 1. network; 2. fog; 3. layers; 4. crowds

VIDEO BUILDING A RAIN FOREST

Before You Watch

A. 1. dome; 2. aquarium; 3. canopy; 4. tunnel; 5. ramp

While You Watch

A. 1, 3, 4

B. 1. b; 2. c; 3. a

Critical Thinking

Applying Ideas: Possible answer(s): There are several famous soccer players that come from my city, so I would create a sports museum. The building would be shaped like a soccer ball and there would be turf inside for visitors to use. I would invite the famous players to come on opening day, which would draw a big crowd.

UNIT 9 HIGH-TECH SOLUTIONS

WARM UP

Possible answer(s):

1. smartphones, GPS, Wi-Fi, tablets, digital cameras, hybrid cars
2. My smartphone is helpful to me because I can stay connected wherever I am.

READING 9A THE POWER OF VIRTUAL REALITY

Before You Read

A. Possible answer(s): It could be used to treat medical conditions like poor eyesight; people could experience different places and different cultures.

B. Possible answer(s): Athletes could do drills with a virtual “trainer”; People could have virtual meetings where they’re all sitting in the same room; Organizations could create educational material where people virtually visit endangered places.

Reading Comprehension

A. 1. c; 2. a (Para B); 3. c (Para H and I); 4. a; 5. b

B. 1. by doing / embodied cognition; 2. Reducing reaction times; 3. eye contact; 4. scientists; 5. it’s a tool

Reading Skill

A. 1. b, f; 2. a; 3. c, d

B. 1. Possible answer(s): Teachers could use VR in the classroom to give their students a more enriching experience. For example, students could go “back in time” and “walk around” an ancient town with other people from that time period. In architecture, architects could let their clients see their designs through VR to help the client visualize what it would look like in real life. 2. Possible answer(s): the shrinking Amazonian Rain Forest; endangered wildlife habitats: VR could allow people to experience firsthand the logging and see how vulnerable the wildlife is.

Critical Thinking

- The interviewer mentions creating violent video games.
- Possible answer(s): People might get addicted to VR and think that it’s reality. That could lead to a decrease in social interaction and an increase in health problems, including depression.

Vocabulary Practice

A. 1. treat; 2. passive; 3. get to; 4. actual; 5. going over

B. 1. b; 2. a; 3. a; 4. b

C. 1. downpour; 2. downside; 3. downturn; 4. downsize

READING 9B HIGH-FLYING HELPERS

Before You Read

A. Possible answer(s): They can get to hard-to-reach places such as oceans and mountain tops; drones could be used to look for people in danger; they could survey damage done by wildfires or hurricanes; they could deliver medicine and clothing.

B. surveying natural disasters; delivering medicines; locating threats to wildlife

Reading Comprehension

A. 1. c; 2. d (Para B); 3. a (Para C); 4. b (Para D); 5. b

B. 1. blood and vaccines; 2. 30 minutes; 3. weapons; 4. uploading drone footage

Reading Skill

A. 1. medical supplies, life-saving supplies/medicine, blood, health clinics, healthcare products/service, medicine, vaccines, treatable illnesses; 2. hard-to-reach, remote; 3. Thanks to; 4. aid

B. 1. c; 2. c; 3. c; 4. b; 5. d

Critical Thinking

Possible answer(s): Drones could be used to drop supplies to remote locations; for example, they could be used to deliver vaccines and medical testing kits to remote islands. They could be used to monitor wildlife populations in remote locations. They could be used to map remote areas and help locate areas of deforestation.

Vocabulary Practice

A. 1. packages; 2. assess; 3. affordable; 4. ambitious; 5. rapidly

B. 1. help; 2. succeed; 3. in detail; 4. enough; 5. armed; 6. health

C. 1. receive; 2. depend on; 3. suspend; 4. appealed for

VIDEO DRONE DELIVERY

Before You Watch

A. 1. startup; 2. head start; 3. autonomously; 4. Over-the-counter; 5. at a premium

B. Possible answer(s): lightweight, small packages like clothing

While You Watch

A. 6, 2, 7, 1, 3, 4, 5

B. 1. F (They are the first to get U.S. government approval.); 2. NG; 3. T; 4. T; 5. F (They are powered by batteries.)

Critical Thinking

Possible answer(s): If drone deliveries become common, it might cause a safety issue with other planes flying in the area, and a drone could crash and hurt many people on the ground. Also, it will put delivery people out of business. However, it could be a quick and easy way to receive a package.

UNIT 10 ALL IN THE MIND

WARM UP

Possible answer(s):

1. I think I have a good memory. I remember riding in a car as a child with my dad on a windy country road with the windows open.
2. I think chimps are very intelligent because they can understand commands and find ways to solve problems.

READING 10A WHAT'S ON YOUR MIND?

Before You Read

A. Possible answer(s): remember complicated facts; solve complex problems; speak multiple languages; feel a range of emotions

B. ability to store memories

Reading Comprehension

A. 1. c; 2. a (Para C and D); 3. c (Para F); 4. d (Para I); 5. a (Para J)

B. 1. hippocampus; 2. amygdala; 3. temporal lobe; 4. prefrontal cortex

Reading Skill

A. 1. a; 2. c; 3. b; 4. d

B. 1. Self-awareness; 2. human; 3. two; 4. identity; 5. Long-term; 6. responses; 7. reverse; 8. meditation

Critical Thinking

- (Para H) The smell of freshly cut grass, for example, will generate happy feelings in someone who spent enjoyable childhood summers in the countryside, but not in someone who was forced to work long hours on a farm.
- Possible answer(s): I feel happy when I hear seagulls because it reminds me of my childhood at the beach. I also like the smell of rain on hot earth because that reminds me of how we would wait excitedly for the rain to come in the middle of the summer.

Vocabulary Practice

A. 1. perspective; 2. transform; 3. vast; 4. reinforce

B. 1. flexible; 2. structure; 3. functions; 4. welfare; 5. conscious; 6. emotions

C. 1. number; 2. areas; 3. majority; 4. network; 5. assortment

READING 10B INSIDE ANIMAL MINDS

Before You Read

A. Possible answer(s): I think animals can be called intelligent, especially when they understand commands and use tools to solve problems. A common definition of *intelligence* is "a highly developed ability to think logically, to understand the world around you, and to learn things quickly."

B. 1. and 2. gray parrot (words, imitation, counting, zero concept), sheep and elephants (face recognition), chimpanzees (making and using tools), octopuses (emotions), dog (linking vocabulary to photographs)

Reading Comprehension

A. 1. b; 2. b; 3. c (Para D); 4. a; 5. a (Para E)

B. 1. No; 2. Yes; 3. Yes; 4. No; 5. Yes

Reading Skill

A. 1. actions = behaviors; 2. basic = elementary; 3. communicate = talk; 4. create = invent; 5. exhibit = show

B. (general term first, then specific examples) 1. abilities, recognize faces; 2. primates, humans and apes; 3. species, humans; 4. forms of intelligence, creativity and language

Critical Thinking

- The five skills that show an animal has intelligence are: a good memory, an understanding of symbols, self awareness, understanding of others' motives, and creativity. (Para C)
- Possible answer(s): I think Alex the parrot is very intelligent based on these five skills. He used his voice to imitate words which shows he had a good memory. He had an understanding of the abstract concept of zero, which shows an understanding of symbols. His ability to understand language and changing relationships shows self-awareness, as well as the ability to understand others' motives.

Vocabulary Practice

A. 1. mastered; 2. primitive; 3. dismiss; 4. acknowledges

B. 1. possess; 2. imitate; 3. pronounce; 4. motive; 5. abstract; 6. theory

C. 1. announced; 2. denounce; 3. pronounce

VIDEO BRAIN POWER

Before You Watch

A. 1. consists of; 2. to control the speed or performance of something; 3. related to touch, sight, hearing, etc.; 4. an action that sends a message; 5. to bring different parts together so they work well

B. Possible answer(s): The brain regulates body temperature, swallowing, heart rate, blood flow, balance, and muscle movement.

While You Watch

A. a. diencephalon; b. cerebellum; c. brain stem; d. cerebrum

B. 1. F (three-quarters); 2. T; 3. F (three parts); 4. T

Critical Thinking

Possible answer(s): I think cognition research is important because by understanding our brain and how we use it, we can find ways to treat medical conditions. When we understand how the brain is meant to function, it is more likely we can find ways to simulate that process when things are not functioning as they should.

UNIT 11 VISUAL PIONEERS

WARM UP

Possible answer(s):

1. Leonardo da Vinci was a great artist as his paintings are still admired hundreds of years after his death.
2. You can represent the world visually through sculptures, photography, or even art forms such as theater.

READING 11A VAN GOGH'S WORLD

Before You Read

A. 1. Dutch; 2. 1853; 3. 26; 4. yellow sunflowers

Reading Comprehension

A. 1. c (Para B); 2. b; 3. b; 4. a; 5. d

B. 1, 4, 6, 3, 2, 5

Reading Skill

A. 1. Instead, his father thought he should take a "sensible" job—something like a salesclerk or carpenter.
2. ... receiving financial help from his brother Theo. 4. Following an argument with fellow artist Paul Gauguin, van Gogh took a razor and cut off his own earlobe. 5. Following his release from the hospital in May 1890, ... he ... shot himself ... What caused him to take his own life ... mental illness ... ? 6. In the spring of 1889, he was sent to a mental hospital ... But during his periods of calm, he was able to complete more than a hundred masterpieces, including the classic *Starry Night*.

B. 1. He realized he was meant to be a painter, and he got financial help from his brother. 2. People there didn't appreciate his work. 3. his argument with Gauguin

Critical Thinking

- Possible answer(s): Lack of financial success: until his death, he wasn't able to sell a single painting; Mental illness: his mental health started to decline, he could not eat or sleep, he heard strange sounds and thought people wanted to hurt him; his illness inhibited his creativity; Loneliness: days passed and he spoke to no one.
- Possible answer(s): I think the most important factor was probably mental illness, because extreme depression leaves a person feeling hopeless.

Vocabulary Practice

A. 1. innovative; 2. appreciated; 3. wandering; 4. resisted; 5. classic

B. 1. original; 2. well again; 3. reason; 4. aware; 5. buy; 6. great

C. 1. sensible; 2. sensation; 3. senseless; 4. sensitive

READING 11B SEEING THE LIGHT

Before You Read

A. Possible answer(s): I think *Operarios* is a political statement about the diversity of an urban landscape. It's important for all people to have jobs and feel valued in the society.

B. Possible answer(s): I think the work of Tarsila do Amaral is important because it looks very different from other paintings of that time. The work of Vivian Maier shows real people doing real things in photographs, which might not have been popular at the time but is now considered to be an important work of visual storytelling.

Reading Comprehension

A. 1. b; 2. d (Para C); 3. b (Para D); 4. c; 5. a (Para J)

B. 1. c; 2. d; 3. g; 4. h; 5. f; 6. b

Reading Skill

A. 1. works, artwork; 2. celebrated, appreciated; 3. distinctly, uniquely

B. 1. regular, everyday, normal; 2. remarkable; 3. show; 4. hidden in darkness

Critical Thinking

- Possible answer(s): Maybe they are afraid of rejection and criticism; they might feel that they are creating something for themselves only.
- Possible answer(s): Pros: the artist's family feels proud and they get money, the artist's hometown becomes famous; Cons: the artist doesn't get the recognition they deserve in their lifetime; the subject of the work may be disappointed not to have his or her image shown and possibly made famous.

Vocabulary Practice

A. 1. urban; **2.** selection; **3.** settled; **4.** reflects; **5.** immigrant

B. 1. b; **2.** b; **3.** a; **4.** a; **5.** a

C. 1. innate; **2.** nations; **3.** native; **4.** natural

VIDEO THE GENIUS OF PICASSO

Before You Watch

A. 1. someone with exceptional ability; **2.** to go beyond the limits; **3.** to change something so that it appears to be new; **4.** to resist or oppose

B. a strong drive or passion to succeed

While You Watch

A. See answer to **Before You Watch B.**

B. 1. a; **2.** a; **3.** b

Critical Thinking

- Possible answer(s): I think van Gogh was the most talented because he had to overcome so many obstacles that forced him to be more determined and engrossed in his work when he was well enough. He had a different way of seeing the world, and expressed that through his use of color and technique.
- Possible answer(s): I think there are so many people who have a lot of artistic talent that are not great artists now but might become famous in the future through social media. It's not easy to become famous, though!

UNIT 12 FAR OUT

WARM UP

Possible answer(s):

1. People explore space because they want to know more about what's beyond our planet. They might be looking for things in space that might help cure disease or give inspiration for new inventions on Earth. Also, I think exploration is a basic human trait.
2. I think walking on the moon was a huge achievement in space exploration, which then led to efforts to go further. We now have photographs of faraway planets and have even sent rovers to Mars.

READING 12A DEFYING GRAVITY

Before You Read

A. 1. Possible answer(s): I think the station is used as a laboratory to research and test what happens when people live in space. 2. Possible answer(s): I think the best part of working at the ISS is being a part of such important research. I think the biggest challenges would be living in such a small space without gravity, missing your family, and worrying about all the things that might go wrong.

B. possible dangers of spacewalking, how astronauts prepare for a spacewalk, one astronaut's experience in space

Reading Comprehension

A. 1. d (Para C); 2. c (Para D); 3. c (Para D); 4. b; 5. a (Para F)

B. 1. floating; 2. weightlessness; 3. route / path; 4. monitor; 5. overheat; 6. jetpack

Reading Skill

A. 1. took off; 2. found out; 3. carried out; 4. deal with; 5. go over; 6. pass out; 7. grew up

B. 1. in; 2. with; 3. off; 4. on; 5. up; 6. up

Critical Thinking

Possible answer(s): I think the most difficult aspect of space travel would be living in an enclosed space because that would make me feel very claustrophobic. I like wide open spaces, and this would make me feel trapped.

Vocabulary Practice

A. 1. venture; 2. demanding; 3. internal; 4. familiarize; 5. accumulated

B. 1. impressive; 2. pioneer; 3. detached; 4. concerns; 5. Consciousness

C. 1. socialize; 2. hospitalized; 3. modernize; 4. popularize

READING 12B THE ULTIMATE TRIP

Before You Read

A. 1. e; 2. b; 3. c; 4. d; 5. a

B. Possible answer(s): I think some important events in space travel will be colonizing Mars and traveling to other planets.

Reading Comprehension

A. 1. b (Para A); 2. c; 3. b; 4. a; 5. d (Para F)

B. 1. F (There were missions in the 1970s.); 2. F (It was during the Apollo program.); 3. NG; 4. T; 5. T; 6. T

Reading Skill

A. 1, 2

B. 1. c; 2. a; 3. b

Critical Thinking

Possible answer(s):

- I think it is likely that humans will build a Mars space colony one day, especially as technology advances and more research is done about how to survive on the planet.
- I wouldn't be interested in going there because it's so far away from Earth. Also, the landscape looks barren, and there wouldn't be anything to do there!

Vocabulary Practice

A. 1. decades; 2. precious; 3. sustain; 4. resources; 5. extremely; 6. backing

B. 1. c; 2. c; 3. b; 4. c

C. 1. stones; 2. metal; 3. moment

VIDEO MYSTERIES OF PLUTO

Before You Watch

- A.** **1.** pieces of useless or leftover material; **2.** to travel completely around something in space; **3.** extremely cold; **4.** the center of something
B. dwarf planet; two-thirds; 248; -226°C; ice, nitrogen

While You Watch

A. See answer to **Before You Watch B.**

B. **1.** b; **2.** b; **3.** a; **4.** b

Critical Thinking

- Possible answer(s): I don't think so because Pluto is so far away from Earth.
- Possible answer(s): I think humans would have a hard time traveling through space for as long as it would take to get to Pluto. I think they would struggle with the freezing temperatures and darkness.