

## PART 1 | Fundamental Reading Skills

### SOCIOLOGY

#### Active Reading

##### SUPPORTING SKILL 1

###### SKIMMING FOR GIST

###### Exercise 1C page 6

Possible answers:

1. Singer is part of a team that has created a method for measuring self-defining memories and a system that categorizes these memories into three areas: specificity, meaning, and emotions.
2. Older adults are more positive, less specific, and more likely to have integrative memories than younger adults. Brain scans of older people differ, too, when reflecting memories based on personal experience.

##### SUPPORTING SKILL 2

###### SCANNING FOR DETAILS

###### Exercise 2A page 8

1. a - the Olympic Games
2. b - Britain
3. a - 1978–1987

###### Exercise 2C page 10

Categories of Information:

- ✓ name of a person, place, event, or organization
- name of a book, movie, game, song
- ✓ year, date, amount, proportion

Possible answers:

**Circled:**

Paragraph 1: South Korea; North Korea; Canada; Britain

Paragraph 2: Circled: World War II

Paragraph 3: South Korea; Olympic Games; South Korea; North Korea; Berlin Wall; the two Germanys

Paragraph 4: The Canadian government; English Canadians; French Canadians; Canada; Wayne Gretzky; Los Angeles; Gretzky

Paragraph 5: Britain; South Korea; Germany; Canada; Britain; United Kingdom; English sports; Britain; Department of National Heritage; Department for Culture, Media, and Sport; Sports Councils

**Boxed:**

Paragraph 2: Since World War II

Paragraph 3: 1988; 1990

Paragraph 4: between 1978 and 1987; in the mid-20th century; in the late 1980s

Paragraph 5: from 1990 to 1997; in 1992; in 1997

###### Exercise 2D page 10

1. c    2. b    3. b
4. the fortification of the boundary between South Korea and North Korea
5. d    6. a

#### READING-WRITING CONNECTION

##### ANNOTATING AND TAKING NOTES

###### Exercise 3B page 14

Possible answers:

1. Similar meanings
2. The main difference is that in Greece, sports highlighted competition, but in Rome, they were related to war.
3. It's underlined because the annotator wants to look the word up.
4. The circle shows the location of the Plain of Olympia.  
Possible annotation: Arrow pointing to modern-day Olympic cities, such as London, to show that sports of classical times have spread around the world.

###### Exercise 4A page 14

Underlined and parenthetical information indicates possible annotations for Paragraphs 2–6:

Athletics in Classical Times

###### PARAGRAPH 2

Greek culture, which was at its peak from the 8<sup>th</sup> to the 6<sup>th</sup> centuries BCE, and the Roman Republic / Empire (*Why call it "Republic / Empire?" Look up.*), which existed from 509 BCE to 476 CE, are considered the cradles of Western civilization. Though many features are common between Greek and Roman cultures, especially in the area of sports, there are major differences between them, most notably who participated in athletics. Free Greek citizens took part in sporting events and earned honor for their participation. Roman citizens, on the other hand, were exclusively spectators; lower-class residents, foreigners, and slaves engaged in the games. The gladiators of the Roman playing arenas almost never joined the ranks of the army.

While the Greeks extended their competitive spirit to nearly all areas of society and viewed athletics as character-building, the Romans wrote that the Greeks placed too heavy an emphasis on athletics (*Greeks healthier than Romans?*) and not enough on the practice of arms (*weapons*); they believed this led to the downfall of Greek society.

###### PARAGRAPH 4

The most popular Greek athletics were often individualistic and combat-based. They included races, wrestling, fencing, jousting,

archery, spear throwing, discus, and boxing. Many of these sports were also popular in Rome, especially boxing, which featured two competitors fighting until one boxer either ceded or was knocked out. Boxers in Greece wore leather on their knuckles to protect their own hands and increase the effects of their hits on the opponent, à la modern brass knuckles. The Romans similarly enjoyed boxing, and it was a favored sport of the Emperor Augustus. They held both Greek-style boxing matches and Roman-style, in which the boxers wore heavier gloves. The purpose of the heavier gloves was not to protect either the hitter or the opponent, however.

Rather, iron and lead were sewn into the gloves (*What about modern gloves?*), and unsurprisingly, bouts often concluded with the death of a player. Another sport that was even rougher and also occasionally led to death was *pankration*, a Greek game consisting of an unarmed fight between two men, with scarcely any rules.

#### PARAGRAPH 5

Not all ancient Greek city-states participated in the bloodiest of the traditional athletic sports. Legendary Greek generals, including Alexander the Great, discouraged or even forbade soldiers from taking part in popular games. Similarly, Sparta, the most militaristic state in ancient Greece, discouraged boxing and pankration. Instead, games that promoted even more military efficacy were encouraged. Spartans regularly held team-based combative contests in which groups of young men fought each other on an island until one of the teams pushed the other into the water.

Spartans also played team sports that centered on a ball. These Spartan sports are the only known occurrence of ball-oriented games (*Surprising. Not like modern sports.*) in either ancient Greek or Roman cultures. In his book *Combat Sports in the Ancient World: Competition, Violence, and Culture*, Michael B. Poliakoff says, “It of course makes perfect sense that if play is to be at all useful for war, it should include corporate activity like that of a battle squadron.” His argument is that Sparta’s team sports had the underlying purpose of offering military training.

## LANGUAGE SKILL

### USING DICTIONARIES TO STRENGTHEN VOCABULARY

#### Exercise 5A page 17

1. deep / strong / firm
2. for
3. with
4. religious
5. Public / Popular
6. anti-war

#### Exercise 5B page 18

Possible answers:

1. put (me) in
2. dangerous
3. present / current
4. handle / deal with
5. explain / describe
6. economic
7. social
8. came about / arose

#### Exercise 6A page 19

2. have in common, life-threatening events
3. dual effect, gain recognition, in the world
4. common among, at war with, national character
5. industrialized nations, developing nations, at a rate, express purpose, globalized world
6. shortly after, line of demarcation, sporting event
7. social scientists, value system, social structure
8. stood upon a ledge, world wars, war and peace, fill the ... void, leave behind
9. fall on (ADJ) times, nuclear deterrent, international trade, digital age

## APPLY YOUR SKILLS

### Before You Read B page 20

Possible answers:

1. Both are competitive. Both cause participants and spectators / civilians and soldiers to feel intense emotions. Stamina, courage, discipline, and team spirit are important in both. Both war heroes and athletes are publicly honored. Participants in both have traditionally been men.
2. Sports commentators talk about injury, loss, defeat, victory, and transformation, using war-like terms such as *tragedy*, *massacre*, *punishment*, *defeat*, *tactics*, and *defense*.
3. Korean soccer player Park Jongwoo held up a sign during a game against Japan that asserted that a disputed island territory belonged to South Korea. Ireland formed the Gaelic Athletic Association in an effort to promote the Irish resistance movement and set itself apart from England.
4. An increase in sporting events is often correlated with a decrease in and / or prevention of violence.
5. Sports fans

### Thinking Critically page 22

Sample answer:

Political expression in sports is taboo because it is the antithesis of the spirit of the event. Sports provides athletes and spectators alike with an escape from reality, including the frustrations of politics. By displaying his or her political position, an athlete ceases being an athlete and begins being a politician, or a proctor of a political entity. Some nationalistic symbols, such as flags and anthems, are universally accepted as innocuous symbols of representation. However even they can be used jingoistically. For example, the chant “USA, USA” is perceived by some to signal something more heavy-handed than just support for the athlete or team. Intention, though a gray guideline, is where the division should be set between what is permitted and what isn’t. An expression that is displayed in a positive, sportsmanship-like manner should be allowed; one that offends or is meant to intimidate or serve as a mouthpiece for larger political positions, should not.

### Thinking Visually page 23

Possible answer:

The map depicts the countries that boycotted the 1976 Summer Olympics in Montreal (in yellow), the 1980 Summer Olympics in Moscow (in purple), and the 1984 Summer Olympics in Los Angeles (in red). The basis for each boycott was political. Many African countries refused to attend the Montreal Olympics because they objected to New Zealand having played rugby earlier that year in South African, which still practiced apartheid at that time. In 1980, a great number of countries, including the United State, boycotted the games in Moscow to protest the Soviets’ invasion of Afghanistan in 1979. And in 1984, Russia and its neighbors returned the favor, saying that there was anti-Soviet sentiment and therefore security concerns for the athletes.

## Thinking About Language *page 24*

### Possible answers:

1. vacuum - a situation in which someone or something is missing or lacking
2. curb - to control or limit something in order to prevent it from having a harmful effect
3. match - an organized sports event between two teams or people
4. discipline - the ability to control your own behavior and way of working
5. civil - relating to the people who live in a country
6. parallel - a relationship or similarity between two things
7. shape - to influence something, such as a belief, opinion, etc., and make it develop in a particular way
8. nature - a particular combination of qualities that makes something what it is and makes it different from other things
9. matter - a subject or situation that you have to think about or deal with

# PART 1 | Fundamental Reading Skills

## ECONOMICS

### Main Ideas and Supporting Details

#### SUPPORTING SKILL 1

##### IDENTIFYING SENTENCE FUNCTIONS

###### Exercise 1A page 26

Possible answer:

That comparative advantage is important in international trade

###### Exercise 1B page 26

- |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 14. BC | 15. TS | 16. SD | 17. SD | 18. SD | 19. SD |
| 20. SD | 21. SU | 22. TS | 23. SD | 24. EC |        |

###### Exercise 1C page 27

1. Ineffective government action
2. Government action with better results
3. It's specific, relating the ideas of free trade and growth.
4. No, because the reading continues

#### SUPPORTING SKILL 2

##### IDENTIFYING TOPICS AND MAIN IDEAS

###### Exercise 2B page 29

Paragraph 1: Topic: Buying domestically Main idea: Ordinary people are often attracted to the idea of buying only domestically produced things, not imports.

Paragraph 2: Topic: Impact on businesses Main idea: "Buy domestic product" movements may help some companies temporarily; they are not good for the economy as a whole.

Paragraph 3: Topic: Impact on workers Main idea: "Buy domestically" movements don't help workers in the long term.

Paragraph 4: Topic: Net impact Main idea: Consumers who want to help strengthen their national economies over the long term should not limit their buying to domestic products.

###### Exercise 2C page 30

1. c
2. a
3. It may be beneficial to some businesses in the short term to convince citizens to purchase goods produced in their own country. However, that nation's *economy* does not always benefit in the same manner.
4. b
5. b
6. Whether consumers' purchase of goods that are manufactured in their country has real impact

#### SUPPORTING SKILL 3

##### IDENTIFYING SUPPORTING DETAILS

###### Exercise 3A page 32

Possible answers:

1. fact, opinion
2. opinion, explanation
3. cause / effect
4. example
5. explanation; cause / effect
6. example; explanation

### READING-WRITING CONNECTION

#### SUMMARIZING

###### Exercise 4A page 34

The main idea is that some economies are said to be based upon the exchange of gifts.

###### Exercise 4B page 35

The best summary is Summary 3.

###### Exercise 4C page 35

2. About 170; about 55
3. Underlined text = information in the original that is in the best summary:

##### GIFT EXCHANGES AS AN ECONOMIC SYSTEM

Economies come in many shapes and sizes, not all of them involving money-based trading. Some theorists, such as the French sociologist and anthropologist Marcel Mauss, have concentrated on "gift economies." These involve exchange, just as money-oriented economies do, but the interaction is less direct. The basic idea is that I help you meet your needs even though you don't have anything to give me in return—not yet, anyway. I trust that at some point in the future, you or your relatives will give something to me to balance things out. Although such a system sounds simple and friendly, it is very hard to maintain. Over time, the pattern of obligations gets so complicated that it's nearly impossible to outline, and balance becomes unachievable. In fact, there is some question about whether "gift economies" exist at all. Skeptics say that the gift-giving is a strong cultural trait in such systems, but it is not the basis of the real daily economy whereby people obtain food, shelter, and other necessities.

The summary writer used almost all of the techniques, especially:

- Use your own words.
- The best summaries are no more than about one-third the length of the original.
- Avoid words or phrases that don't contain important information.
- Avoid repeated words, phrases, and ideas.
- Use pronouns to replace repeated or long sequences of words.
- Shorten or leave out most examples and minor supporting details.
- Shorten or avoid stylistic expressions.
- Shorten or leave out parenthetical expressions.

###### Exercise 5B page 37

Possible answers:

1. Paragraph 2: A job hunter needs to consider opportunity cost (OC). If he or she spends too much time looking for inappropriate jobs, there is no time to apply for more appropriate work. You can even invent a system to rate job possibilities according to some desirability measure, like a "fruitfulness factor." (50 words)
2. Paragraph 4: Comparative advantage theory implies that a job hunter should pay less attention to qualifications that are common and more attention to those that are unusual. Then

he or she is not competing with everyone on the same terms. Instead, unusual skills that might ensure a better job fit come into play. (51 words)

- Paragraph 5: David Ricardo's original theory concentrated on what countries should do. He said that a country should focus on the area where it has the greatest lead over its competitors. It should make those high-lead products and buy the rest. (39 words)

## LANGUAGE SKILL

### ANALYZING MEANING USING WORD PARTS

#### Exercise 7A page 40

Word (that corresponds with definition)	Possible answers for "New Word"
2. concentrate	centralize
3. dispute	undisputed
4. import	insupportable
5. extend	intend
6. indirectly	direction
7. decrease	increasingly
8. exploration	exploratory

## APPLY YOUR SKILLS

### Before You Read B page 41

- To help find a solution to problems between countries attempting to come to an agreement in trade talks
- To force other countries to refrain from doing something that they strongly disagree with or that is not in their best interests
- Not very. Sanctions were successful with South Africa, but that was an unusual case.
- Powerful, wealthy nations gain, and less powerful nations suffer because they often have no other option than to acquiesce.
- It favors the former mainly because such countries have the upper hand when it comes to negotiations. This is because they have the power to threaten to cease trading if they do not get what they want.

### Thinking Critically page 44

Possible answer:

Not always. The United States throwing its weight around to get Japan to voluntarily enact restraints on the export of Japanese vehicles to the United States is an example.

### Thinking Visually page 44

Possible answers:

- The United States, the world's largest economy, is involved in by far the most disputes. However, other very large economies, like China's, are near the bottom of the list. Also, Canada, which doesn't have a huge economy, is near the top of the list. So, there is probably some relationship between an economy's size and the number of its disputes, but it's not a strict, one-to-one correlation.
- Economies that are large trading partners with the United States seem to have a lot of disputes, even though they are not exceptionally large economies. In particular, Mexico and Canada, both neighbors of the United States, are involved in a lot of disputes even though their economies are not exceptionally large.

### Thinking About Language page 44

- ex cep tions

**Possible definition:** someone or something that is not included in a rule, does not follow the expected pattern, etc.

con tinuously

**Possible definition:** continuing to happen or exist without stopping or without being interrupted

in terna tion al

**Possible definition:** relating to more than one country, or involving people from more than one country

- con nected

**Possible definition:** joined together; affecting or related to one another

- dis pro por tionately

**Possible definition:** too much or too little in relation to something else

- uni ting

**Possible definition:** to join together with other people or organizations to achieve something

- sanc tion s

**Possible definition:** official orders or laws stopping trade, communication, etc., with another country, as a way of forcing its leaders to make political changes

politic al

**Possible definition:** relating to the government, politics, and public affairs of a country

- automot ive

**Possible definition:** relating to cars

# PART 1 | Fundamental Reading Skills

## BIOLOGY

### Cohesion

#### FUNDAMENTAL SKILL

##### UNDERSTANDING COHESION

#### Noticing Activity B page 49

1. c 2. a 3. b 4. a 5. b 6. a

#### SUPPORTING SKILL 1

##### RECOGNIZING PATTERNS OF COHESION:

##### CAUSE / EFFECT, COMPARE / CONTRAST,

##### PROBLEM / SOLUTION

#### Exercise 1A page 53

Possible answers:

	Examples of cause / effect, compare / contrast, problem / solution cohesion
Paragraph 1	both, While both, more effective than
Paragraph 2	In contrast, more complex; A challenge ... ; For this reason; Unlike; in contrast
Paragraph 3	stronger; which causes; Whereas; As a result;
Paragraph 4	While; better; a problem with; when compared with; cause; For this reason; Because, safer, because; However; solve the problem

#### Exercise 1B page 54

Cause / Effect	Compare / Contrast	Problem / Solution
5, 6	1, 2, 4	3

#### Exercise 1C page 54

Possible answers:

- These primary forms are **each** used regularly for protection against dangerous diseases like polio, measles, and influenza, and **both forms have benefits and drawbacks**.
- Whereas** the method of producing an attenuated vaccine is antiquated, the second method is a step more complex, involving physicians weakening the virus in a laboratory, purifying the vaccination solution, and administering the vaccine orally or by injection.
- One difficulty** associated with these lab-produced live attenuated vaccines is that they must be refrigerated or they are rendered unstable.
- Inactivated vaccines are **dissimilar to** live attenuated vaccines, as they are not produced with a living virus.
- Consequently**, they require several additional doses, known as boosters, to ensure that an individual's immune system is able to fight off the actual infection.
- A consequence of** a vaccine's virus being alive is that it can, on rare occasions, mutate back to its original, virulent form and **result in** a true infection.

#### Exercise 1D page 55

- For this reason, they [unfortunately] are not easy to provide to lower-income nations where refrigeration devices are not abundant.
- Live attenuated virus vaccines also **create a (stronger)** immunity to a disease **(than)** inactivated vaccines **because** the attenuated

virus triggers a strong response of lymphocytes, which **causes** the body to produce more memory T and B cells that circulate in the blood and fight against the virus if it ever appears in the body again.

- (Whereas)** live attenuated vaccines are quite potent, inactivated vaccines **deliver** a much weaker immune system response.
- (While)** live attenuated vaccines typically provide better protection against illnesses, [a problem with these vaccines] is that their strength tends to **lead to a (lower)** level of safety **(when compared with)** fixed-virus vaccines.
- Because** attenuated vaccines can, though rarely do, mutate into virulence, inactivated vaccines are considered **(safer)** **because** the dead viruses cannot mutate.
- (However)**, in the case of the polio vaccine, which comes in both forms, medical officials in parts of the world where polio is still endemic recommend using the live attenuated virus to inoculate against polio **because** it offers a stronger defense for both the individual and the region.
- The inactivated vaccine is typically used by health officials in the United States to attempt [to solve the problem of] accidental contraction of polio from the vaccine.

#### SUPPORTING SKILL 2

##### UNDERSTANDING COHESION IN DESCRIPTIONS

#### Exercise 2A page 56

Possible answers:

Paragraph	Spatially Cohesive Physical Descriptions	Temporally Cohesive Process Descriptions
1	housed inside ...; Along the surface ...; enters ...; on the face and hairline ... feet	After about a week ...; is followed by ...; starts; then; Finally ...
2	vertically, with its tip pointing upward ...; On the inside ...; the outside surface ...; At the tip ...; The long body ...; the base ...; Inside the hub ...; ends; within the tube; terminates at the bottom	
3		the first; the second; (description of the injection process); After pressing ...
6		In 2000 ...; In 2014 ...; in early 2015 ...

#### Exercise 2B page 57

1. a 2. c 3. b 4. b and d 5. b 6. d

#### Exercise 2C page 57

1. d 2. a 3. f 4. c 5. g 6. b 7. e



## READING-WRITING CONNECTION

### USING OUTLINES AND GRAPHIC ORGANIZERS

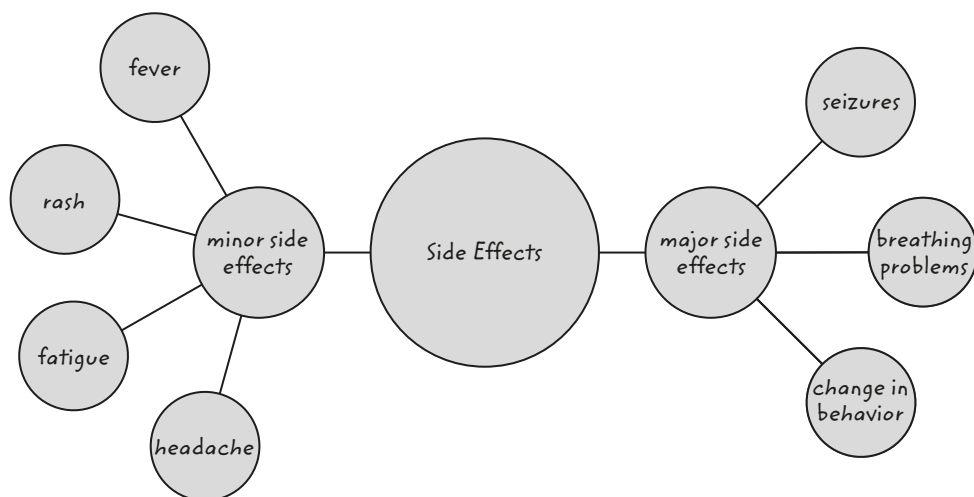
#### Exercise 3A page 62

Possible answer:

- I. Chickenpox vaccine
  - A. Contains small amount of actual virus
  - B. Designed to build immunity / prevents contraction
  - C. Can't protect unvaccinated populations
    1. For healthy subjects symptoms are not severe, recovery in 10 days or <
    2. For susceptible subjects (those w/weakened immune systems, very young children, older adults) disease is much worse

#### Exercise 3B page 62

Possible answer:



#### Exercise 3D page 65

Answers will vary.

## LANGUAGE SKILL

### RECOGNIZING COLLOCATIONS

#### Exercise 4A page 68

1. a (found in reading), b, d
2. a, c (found in reading), d
3. b, c (found in reading), d
4. a, b, d
5. a, b, c
6. a, b, c

## APPLY YOUR SKILLS

#### Before You Read B page 71

1. DNA vaccines began in the 1990s, but they are not widely available today because virtually all still remain in clinical trials.
2. In general, genetic material from the virus or bacteria is used to elicit an immune response. Scientists first isolate the gene from a target pathogen and then splice it into a double-stranded DNA vector.

3. They prompt helper T cells and B cells to multiply and create memory cells and activate cytotoxic “killer” T cells, which builds long-lasting immunity
4. DNA vaccines do not contain a live virus, so one cannot get sick from them, whereas other vaccines pose that risk.
5. They may disrupt cellular processes and produce anti-DNA antibodies, resulting in too-low levels of immunogenicity.

#### Thinking Critically page 73

Answers will vary.

#### Thinking Visually page 73

The projects in the graph indicate that the global market for DNA vaccines will explode in the coming years. This is likely based on the early promise and success that DNA vaccines in trials have shown in combination with the relatively low-impact side effects and the large number of individuals interested in and searching for preventions or cures to a range of maladies.

#### Thinking About Language page 74

Answers will vary.

# PART 1 | Fundamental Reading Skills

## HUMANITIES

### Fluency and Accuracy

#### FUNDAMENTAL SKILL

##### DEVELOPING READING FLUENCY

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#### Noticing Activity B page 78

1. T 2. F 3. T 4. T 5. F 6. F 7. T 8. T

#### SUPPORTING SKILL 1

##### INCREASING FLUENCY

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#### Exercise 1B page 82

1. F 2. F 3. F 4. T 5. F 6. T

#### Exercise 1D page 82

Possible answers:

##### List A

1. infamous - well known for being bad or morally evil
2. ruthlessly - in a manner of such determination that one doesn't care if other people have been hurt in the process
3. displacement - the act of forcing a group of people to leave the place where they usually live
4. renounced - to no longer believe in or support something
5. adherence - a firm commitment to a particular rule, belief, or principle

##### List B

1. infused - to fill someone or something with a particular feeling or quality
2. unequivocally - clear and without an possibility of doubt
3. lofty - with an attitude that suggests superiority
4. bolstered - made stronger
5. unwaveringly - in a manner that is strong and steadfast

#### SUPPORTING SKILL 2

##### TOLERATING AMBIGUITY

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#### Exercise 2B page 85

These statements should be checked (✓): 1, 2, 4, 5, 12

#### Exercise 2D page 86

1. a 2. b 3. b 4. b 5. b 6. a  
7. b 8. a 9. a 10. b 11. b 12. b

#### READING-WRITING CONNECTION

##### RECOGNIZING AND USING RHETORICAL TECHNIQUES

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#### Exercise 3A page 91

1. illustration by anecdote
2. appeal to authority
3. allusion
4. rhetorical question
5. illustration by anecdote
6. appeal to authority
7. acknowledgement of opposition
8. understatement
9. allusion
10. appeal to authority

11. appeal to authority / illustration by anecdote
12. understatement
13. appeal to authority

#### Exercise 3B page 94

Answers will vary.

#### LANGUAGE SKILLS

##### UNDERSTANDING NOMINALIZATION

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#### Exercise 5A page 96

Suggested answers:

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

#### Exercise 6 page 97

Answers will vary.

#### APPLY YOUR SKILLS

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#### Before You Read B page 99

1. It stresses goodness and compassion, which are achieved by following precepts of humility and benevolence. It also emphasizes the seeking of harmony in relationships both in society and in the family through filial piety and obedience to elders.
2. The *Analects* is the most extensive source for information on the philosopher and deals with Confucius's moral code; the *Mencius* focuses on his political influence; and the *Zuozhuan* presents a narrative history of the warring states at the time of his life.
3. Both societies were being rocked by savage wars, coups, and power struggles.
4. He advocated differentiated instruction and believed that teachers should teach according to the student's ability.
5. Socrates believed that his teaching was fulfilling the will of the gods, and Confucius maintained that he knew the will of heaven.

#### Thinking Critically page 102

Answers will vary.

#### Thinking Visually page 102

Answers will vary.

#### Thinking About Language page 102

Possible answers:

1. The impact the ancient Chinese philosopher Confucius had on education systems and cultural values throughout China and East Asia was remarkable.
2. Instruction to pursue harmony in social and familial relationships by means of respect and obedience toward elders is the foundation of Confucian doctrines.
3. Still-existing texts on his teachings were written and shared by his followers and pupils after his death, at times hundreds of years after his passing.
4. The emergence of a multitude of other important philosophers and theological figures was coincidentally a theme of the period between 800 and 200 BCE.
5. The search and discovery of truth-revealing archeological artifacts about Confucius's life continues, irrespective of the minimal existing documentation.



6. In accordance with the norm of Confucius's time, the receipt of education was reserved for upper-class children; however, Confucius exhibited a lack of adherence to this trend.
7. Confucius's leaning toward a time-efficient and participatory method of espousing his doctrinal principles to his students stood in contrast to lengthy, didactic lectures that could otherwise have been given.
8. Confucius valued societal order and strongly believed in the need for a husband-to-wife, parent-to-child, or teacher-to-student hierarchy—all examples of his ideal relationship between an authority figure and their subordinate.

# PART 1 | Fundamental Reading Skills

## ENVIRONMENTAL ENGINEERING

### Visuals

#### FUNDAMENTAL SKILL

##### INTERPRETING VISUALS

###### Noticing Activity B page 108

1. c    2. b    3. a    4. c    5. a and c

#### SUPPORTING SKILL 1

##### UNDERSTANDING TEXT REFERENCES TO VISUALS

###### Exercise 1A page 109

Highlighted phrases:

Paragraph 1 - shown in Figure 1, illustrated in the diagram, presented in the diagram

Paragraph 4 - shown in Figure 2, illustrated in the diagram, illustrated in the figure

###### Exercise 1B page 111

1. The internal combustion engine compresses the mixture of air and fuel.
2. The valve opens, resulting in the release of exhaust gases into the air through the vehicle's tailpipe.
3. It converts energy from the wheels to electricity by using the kinetic energy of the spinning wheels. The energy generated by the wheels when the car's brakes are applied is then stored in the battery of the vehicle.
4. The electric motor

#### SUPPORTING SKILL 2

##### INTERPRETING THE INFORMATION IN VISUALS

###### Exercise 2C page 115

1. c    2. c    3. d    4. b    5. b    6. a

#### READING-WRITING CONNECTION

##### REFERRING TO VISUAL DATA WITHIN AND BEYOND A READING

###### Exercise 3A page 119

Possible answers:

be attributed to, the net result being, is shown in Figures 1 and 2  
it can be noted that, indicate that

###### Exercise 3B page 119

Slide 1: diagram of the; In this design

Slide 2: is shown in; can be observed; indicates that, is limited by;  
With respect to; a significant effect on; can be expected to; It should  
be noted; a function of

Slide 3: For a given; can be determined by; can be obtained by

###### Exercise 4B page 124

Possible answers:

1. The improvement of air quality in the United States
2. The reduction of ground-level pollution
3. long-lived greenhouse gases
4. at hazardous levels in many urban areas
5. harmful levels of either particulate matter or ground-level ozone
6. an increase in ground-level ozone and particle pollution

### LANGUAGE SKILL

#### RECOGNIZING AND LEARNING MULTIWORD

##### VOCABULARY ITEMS

###### Exercise 5 page 126

2. forge
3. put, rest
4. pros, cons
5. faint, idea
6. cut
7. pave
8. function

###### Exercise 6 page 127

Possible answers:

2. According to the graph,
3. As indicated by the bar graph
4. are illustrated in Figure 2
5. as can be seen in Figure 2
6. Figure 2 indicates that
7. as indicated by the bar graph

### APPLY YOUR SKILLS

#### Before You Read B page 128

1. Nanofibers are fibers with a diameter of less than 1 micron made from a polymer solution. Applications include use in respirator masks, water filtration, vehicular air filters, air purification systems, indoor air purification machines, and window screens.
2. Coal-fired power plants, increases in the fleet of personal vehicles, inefficient heating systems, and the burning of biomass for heat and cooking
3. To protect against mold spores, dust, and fumes from toxic weapons and mining operations; in protective gas masks and single-use particulate respirators
4. That developed by US-based researchers filters out more than 95 percent of all fine particulate matter, whereas that developed by Hong Kong-based researchers blocks 80 percent of the smallest particles.
5. A polymer solution is jetted out of a syringe by a high voltage electric field and directed toward a grounded collector, where the solution then dries and forms a polymeric net that resembles a spider web.

#### Thinking Critically page 131

Answers will vary.

#### Thinking Visually page 131

Possible answers:

1. Stationary fuel combustion accounted for more than 35 percent of direct PM2.5 in the United States in 2010.
2. Highway vehicles produced just over 40 percent of all carbon (CO) emissions in 2010.
3. In 2010, nearly all sulfur dioxide (SO2) emissions fell into the source category of stationary fuel combustion.
4. In 2008, over half of the nation's total lead emissions came from non-road mobile machinery, or combustion engines in machines.
5. Of all the air pollutants listed, NH3 (ammonia) had the highest percentage of industry-and-process-generated emissions.

**Thinking About Language page 132**

1. due to
2. power plants
3. cause for concern
4. a wide range of
5. are in great demand
6. posing problems
7. at the prospect

# PART 2 | Critical Thinking Skills

## SOCIOLOGY

### Fact and Opinion

#### SUPPORTING SKILL 1

##### RECOGNIZING AND INTERPRETING STATEMENTS OF OPINION

###### Exercise 1A page 138

Possible answers:

1. tyrannical
2. violate
3. dump
4. mutinously
5. impose
6. barbaric

###### Exercise 1B page 138

Answers will vary.

###### Exercise 1C page 139

Possible answers:

1. exemplar, so-called
2. the most humble of tasks, *hoi polloi*, constructive
3. rabble-rouser, discarded, casting off
4. inhumane; unjust; unconscionable
5. ingenious; ripples
6. brutally; crackdown

### SUPPORTING SKILL 2

#### RECOGNIZING AND INTERPRETING STATEMENTS OF FACT

###### Exercise 2A page 141

Possible answers:

Neutral vocabulary: leader, strategies, civil rights leader, Decades, Salt March, to the United States, political leader, author and activist, published, the black community

Possible paraphrased facts:

1. Martin Luther King Jr. used Gandhi's tactics in his fight against inequality.
2. Other civil rights leaders before King saw similarities between the experiences of black Americans and Indians.
3. Gandhi's Salt March was the inspiration for King's march from Selma to Montgomery.
4. Marcus M. Garvey called attention to Gandhi in the 1920s.
5. W.E.B. Du Bois had one of Gandhi's letters published in an NAACP magazine.

###### Exercise 2C page 142

1. **Possible answer:** Gandhi worked to combat a variety of social problems. (3 examples given) Lots of black Americans were interested in Gandhi's efforts to integrate the "untouchables." The "untouchables" were isolated in India. The *Atlanta Daily World* published an article in 1932 comparing the situation of the "untouchables" to that of black Americans in the South.
2. Neutral: asked; adopted; Verb with connotation: stressing
3. King himself visited India in 1959, and later used many of Gandhi's strategies in the US civil rights movement.

### READING-WRITING CONNECTION

#### UNDERSTANDING AND PRODUCING CRITIQUES

###### Exercise 3 page 144

1. d
2. a
3. a
4. c
5. a
6. b and c

###### Exercise 4B page 147

1. c
2. **Possible answer:** What were the intellectual foundations of each branch?
3. b
4. **Possible answer:** How well did each branch communicate without alienating whites?
5. a
6. **Possible answer:** What was each branch's relationship with religion?
7. c
8. d

### LANGUAGE SKILL

#### UNDERSTANDING SIGNPOST EXPRESSIONS THAT LIMIT OR DEFINE

###### Exercise 5A page 150

	Signpost Expression	Topic or Area Introduced
2	<i>When it comes to</i>	<i>future political influence</i>
3	<i>When we consider</i>	<i>future elections</i>
4	<i>If we define</i>	<i>political progress means greater participation in legislative bodies</i>
5	<i>in terms of</i>	<i>the political power of black people</i>

###### Exercise 5B page 151

Possible answers:

1. in terms of
2. As far as
3. when we consider
4. when it came to
5. when we consider
6. In the realm of
7. in terms of
8. Speaking of
9. in the area of
10. in terms of

### APPLY YOUR SKILLS

#### Before You Read B page 153

1. The Transcendentalist movement
2. A church tax and a poll tax. For the former, he did not belong to the church that the tax funded and questioned the church's right to levy the tax. For the latter, he did not want to support his country because he perceived it to be endorsing slavery and the invasion of nations.

3. He believed a greater good could have been accomplished if his stay in jail had been longer.
4. Because he felt that the state was punishing him in the only way it knew how—physically
5. He felt as if they were shunning and isolating him.

**Thinking Critically page 155**

*Answers will vary.*

**Thinking Visually page 156**

*Answers will vary.*

**Thinking About Language A page 157**

1. When it comes to
2. defining these as
3. by way of
4. in the sense that
5. In terms of
6. by way of

# PART 2 | Critical Thinking Skills

## ECONOMICS

### Implication and Inference

#### CRITICAL THINKING SKILL

##### UNDERSTANDING IMPLICATION AND INFERENCE

###### Noticing Activity A page 158

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

###### Noticing Activity B page 159

Possible answers:

- (4) The influence of the British Empire caused its accounting system to be more widely used than it otherwise would have been.
- (5) In common law accounting, a company that doesn't follow the rules is punished by peer pressure.
- (6) At present, India's economy is not as strong as it could be.
- (7) After World War II, Japan considered American accounting practices to be somewhat useful but not good enough to warrant discarding all their practices.
- (8) The Japanese tendency toward some secrecy in the credit system had its origins in German accounting practices.

#### SUPPORTING SKILL 1

##### MAKING STRONG INFERENCES AND AVOIDING WEAK ONES

###### Exercise 1B page 163

Suggested answers:

- |                      |                     |           |
|----------------------|---------------------|-----------|
| 1. Strong            | 2. Weak             | 3. Weak   |
| 4. Strong            | 5. Medium or Weak   | 6. Strong |
| 7. Weak              | 8. Strong or Medium | 9. Weak   |
| 10. Strong or Medium |                     |           |

#### SUPPORTING SKILL 2

##### DISTINGUISHING BETWEEN DELIBERATE IMPLICATIONS AND DIRECT STATEMENTS

###### Exercise 2A page 164

Suggested answers:

Situation 1

- The miner doesn't express an opinion of the company. He implies that his future ability to stay in his home area depends on the company.
- The miner avoids giving a direct answer because he is afraid he might lose his job because of what he says.
- Some similar situations would be being asked whether you like your boss, being asked whether you like the owner of your apartment building, and so on.

Situation 2

- The politician wants to avoid embarrassing her American counterparts. Unlike the miner in Situation 1, the politician is not avoiding direct statements because she is afraid. Instead she wants to be diplomatic, to get her points across without having to say anything openly negative.
- She implies that the American government is being unfair by keeping British engines from being imported.
- The US government may be trying to allow American companies to outdo the British company.

- The British official is trying to be diplomatic and imply a close relationship between the British and Americans.
- The politician is calling it a mistake so that she doesn't directly say that the Americans tried to do something wrong.
- A similar case would be when you suspect a colleague of doing something wrong but you pretend it was a mistake so you don't anger the colleague.

###### Exercise 2C page 166

1. c    2. a    3. d    4. c    5. b    6. d

#### READING-WRITING CONNECTION

##### PARAPHRASING

###### Exercise 3B page 171

1. b    2. a    3. c    4. b    5. b    6. c

###### Exercise 3C page 172

Answers will vary.

#### LANGUAGE SKILL

##### IDENTIFYING AND USING EQUIVALENT AND NEAR-EQUIVALENT EXPRESSIONS

###### Exercise 4 page 173

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

###### Exercise 5 page 174

- you're afraid to invest it or put it in a bank
- the home of someone who has died
- where the government insures deposits up to a quarter million dollars
- that was found by a cleanup crew getting the house ready to be sold
- about \$1 million in US and Israeli currency
- You probably won't find any money

#### APPLY YOUR SKILLS

##### Before You Read B page 175

- A good that is both nonexcludable and nonrivalrous
- A nonexcludable good is readily available to all. A nonrivalrous good is one that cannot be depleted through use. *Examples will vary.*
- The degree to which a good is either nonexcludable or nonrivalrous depends on the nature of the good as well as the parties involved in discussions about public spending. *Examples will vary.*
- Because the land is a culturally significant public good that was made into a tradable commodity
- Possible answer:** Politicians and legislators sometimes focus more on profit than on preserving public goods. Certain issues—like healthcare—are considered by some to be too huge of a topic to attempt to attack.

##### Thinking Critically page 178

Sample answer:

Las Setas. This is a giant wooden mushroom-shaped structure in Seville, Spain. Roman ruins were found underground when the city was digging in the process of building underground parking and a market on the site. Because the structure contains ruins dating back to ancient times, many consider it to be a public good. However,



those who constructed it decided to charge a small price for visitors to view the underground ruins, demonstrating that they saw the opportunity for it to become a private good.

### Thinking Visually page 178

Possible answers:

	Nonexcludable	Excludable
	Public Goods	Partially Public Goods
Nonrivalrous	<i>The smell of spring</i>	<i>Fire and rescue services</i>
	Shared Resources	Private Goods
Rivalrous	<i>Free parking spaces downtown</i>	<i>Dinner reservations at a popular restaurant</i>

### Thinking About Language page 178

1. b    2. a    3. a    4. b    5. c    6. d    7. b

# PART 2 | Critical Thinking Skills

## BIOLOGY

### Evidence and Argumentation

#### CRITICAL THINKING

#### EVALUATING EVIDENCE AND ARGUMENTATION

##### Noticing Activity A page 181

Possible answers:

Evidence:

Sentence	Claim	Evidence
1	one in two individuals in America will be diagnosed with cancer	Statistics
2	cancer is a disease caused by a glitch in one's own cellular replication system	past studies
2	cancer has taken the stage as a disease of epidemic proportions	an analysis
3	humans die less from infectious illnesses and more often from cancer)	research
6	cancer is not worsening, nor is its incidence rate increasing	data
7	the rate of the incidence of cancer has remained relatively stable	scientific report
8	the mortality rate of cancer since 2009 has fallen	statistics
9	decreases in mortality rates are due to medical advances in cancer detection and treatment	findings
12	cancer is statistically more likely to be) what befalls many individuals	evidence

Faulty rhetoric:

Sentence 2: for this reason, scientists encounter insurmountable difficulty in finding a cure

Sentence 5: ... skewed studies ... erroneous warnings put forth by companies that probably have a vested financial interest in alarming the public

Sentence 10: This fact was also ... cancer researcher.

##### Noticing Activity B page 182

1. Fifty percent of Americans will receive a cancer diagnosis.
2. Insurmountable difficulty; It's an exaggeration
3. A second reason why cancer is a disease of epidemic proportions and on everyone's minds (other than the fact that scientists have a tough time finding a cure) is longer human lifespans. People now die more from cancer than from the infectious illnesses that used to cause most deaths in the past.
4. "... skewed studies ... erroneous warnings put forth by companies that probably have a vested financial interest in alarming the public" This is author speculation / conspiracy theory.
5. Yes, because it cites what sounds like a reputable journal and doesn't contain any misleading or faulty rhetoric.
6. Because you should not reason through the use of an anecdote, especially one that uses someone who is not a strong source. The fact that the woman's husband is a prominent cancer researcher does not mean that she will provide trustworthy evidence.

#### SUPPORTING SKILL 1

#### IDENTIFYING AND EVALUATING EVIDENCE

##### Exercise 1A page 185

Paragraph 1: research shows that

Paragraph 1: (is) evidence of

Paragraph 2: revealed that

Paragraph 2: Similar studies have established that

Paragraph 2: research on cancer has uncovered

Paragraph 3: This analysis of

Paragraph 3: According to clinical studies

Paragraph 4: can reveal

Paragraph 4: They found that

Paragraph 4: demonstrating that

#### SUPPORTING SKILL 2

#### RECOGNIZING AND DEALING WITH FAULTY RHETORIC

##### Exercise 2B page 191

1. false certainty / exaggeration
2. conspiracy
3. false dilemma
4. reasoning by question
5. exaggeration
6. false dilemma
7. ad hominem
8. reasoning by anecdote
9. irrelevant quotation

##### Exercise 2C page 191

Possible answers:

- 2 false dilemma
- 3 ad hominem
- 4 false certainty, false dilemma
5. conspiracy

#### READING-WRITING CONNECTION

#### UNDERSTANDING EXTENDED METAPHOR

##### Exercise 3 page 193

1. d
2. b
3. a
4. a
5. b
6. d

##### Exercise 4B page 196

1. d
2. c
3. a
4. b
5. c
6. d
7. a
8. c

#### LANGUAGE SKILL

#### IDENTIFYING AND USING EXPRESSIONS OF FUNCTION AND PURPOSE

##### Exercise 5A page 198

Possible answers:

1. Subsequent studies in the early 1900s proved that external sources such as carcinogens and viruses **act to** cause cancer.
2. From experiments in 1914 at Tokyo University, researchers concluded that cell mutation was the reason why, after **using** coal tar on the skin of rabbits, the animals developed cancer.
3. Today, physicians understand that a number of risk factors **play a role** in a person's likelihood of developing cancer.

4. A progressively clearer understanding of cancer has **served to** introduce an age of increasingly advanced research.
5. Today's concept of cancer is that it is a large group of related diseases, all of which begin with a basic disorder of cellular function but **function** quite differently.
6. For example, "individualized chemotherapy" treatments are becoming the norm for chemical treatments; **the objective is to** use a therapeutic chemical chosen to fit the genes expressed by an individual tumor.

## APPLY YOUR SKILLS

### Before You Read B page 200

1. Because HPV is very common and widespread
2. They both demonstrated that cancers could be caused by infectious agents.
3. It was the first vaccine against a virus that has a known role in cancer development and the first subunit vaccine.
4. They are both currently under development and not yet in use.
5. A prophylactic vaccine can provide protection that might keep one from contracting a disease; a therapeutic vaccine can treat a disease after one has already contracted it.

### Thinking Critically page 202

#### Sample answer:

Increasingly we've come to understand that results from experimentation on animals do not translate well to humans and their diseases. This miscalculation has come at high cost not only to animal life but also to us as humans in our perception of certain animals—including mice, rats, and even dogs and monkeys—as expendable. People have grown immune to the suffering these animals endure "in the name of medical progress." What most people don't realize is that these are all thinking, sentient beings, who feel fear and pain as acutely as we do, and also experience happiness and pleasure as well. One study found that mice, for example,

laugh when tickled. Dogs' tails have long been understood to be a barometer of their happiness—and more recently, it turns out, fear. Given the variety of non-animal models available to scientists today, there is no reason why live animals should be subjected to the torturous practices involved in medical testing.

### Thinking Visually page 203

#### Possible answers:

1. After spiking briefly in 1996, the number of new cases of cervical cancer has been on a steady downward trend. The number of deaths has decreased as well. The drop in new cases has been sharper than the drop in deaths per 100,000 women.
2. I expect declines to continue but at a slower rate than in the period from 2000 to 2012. I actually expect the death rate to remain almost steady, with only small declines.
3. I was surprised that there wasn't a sharp drop after the approval dates. The decline in incidence pretty much just continued at a rate it had already reached, and the decline in deaths continued to be steady but slight. I wonder if that was because the clinical trials before their release were helping reduce the occurrence.

### Thinking About Language page 203

Language that conveys function and purpose:

2. aim to
3. functions
4. operate by
5. plays a role
6. seeking to
7. The goal of
8. play a role; focused on
9. works to
10. the use of
11. the purpose of it is to
12. using

# PART 2 | Critical Thinking Skills

## HUMANITIES

### Synthesis of Information

#### CRITICAL THINKING SKILL

#### SYNTHESIZING INFORMATION FROM SEVERAL SOURCES

##### Noticing Activity B page 210

1. F    2. F    3. T    4. F    5. T    6. T

#### SUPPORTING SKILL 1

#### UNDERSTANDING MULTIPLE PERSPECTIVES

##### Exercise 1B page 215

1. d    2. a    3. b    4. b  
5. c    6. b    7. c    8. b

#### SUPPORTING SKILL 2

#### EVALUATING THE CREDIBILITY AND MOTIVES OF SOURCES

##### Exercise 2B page 218

Possible answers:

- (a) She's a Barnard professor. (b) She personally conducted an archaeological expedition.
- He's a poet, not an archaeologist.
- He's a linguist who can read ancient Greek.
- He is not a field archaeologist.
- He is not an expert, just an unqualified person with an interest in Greek history.
- They are both scholars.
- dilettante* and *amateur*
- He says that "even serious scholars have come to the same conclusion," meaning scholars agree with him.

#### READING-WRITING CONNECTION

#### UNDERSTANDING AND USING DIRECT AND INDIRECT QUOTATIONS

##### Exercise 3A page 221

1. b    2. c    3. c    4. a    5. a and d    6. d

##### Exercise 3C page 225

1. b    2. c    3. a and c    4. b    5. a    6. b and c

#### LANGUAGE SKILL

#### APPRECIATING HEDGING

##### Exercise 4A page 228

- |             |                    |            |
|-------------|--------------------|------------|
| 1. may      | 2. speculated, may | 3. likely  |
| 4. possible | 5. according to    | 6. largely |
| 7. should   | 8. can, somewhat   |            |

##### Exercise 4B page 229

Excessively confident language:

- |              |                |                  |
|--------------|----------------|------------------|
| 1. certainly | 2. undoubtedly | 3. It is obvious |
| 4. clearly   | 5. Every       | 6. absolutely    |

### APPLY YOUR SKILLS

#### Before You Read B page 230

Possible answers:

- The typical storyline or pattern that many stories about heroes follow on their journey: 1) Call to a journey or quest 2) A reluctant hero 3) Hero is persuaded and finds a mentor 4) Tests / trials / enemies 5) Internal or external struggle 6) A sacrifice to complete the journey 7) Victory
- Hero journeys are about growth in personal knowledge, which is a universally recognized theme that people experience in their own lives. They also involve developing one's personal character, and many readers / viewers can relate to such feelings of self-esteem issues or other personal difficulties.
- Collective unconscious: mental representations of a particular theme or archetype that most people share. In relation to a hero story, many of the metaphors and tropes used to depict typical themes in the tale are familiar to a wide variety of people.
- They follow many of the same themes and archetypes to which readers / viewers can relate.
- No. Hero stories from various eras don't often depict settings based on reality or fact, but their themes are still relatable to audiences around the world.

#### Thinking Critically page 233

Answers will vary.

#### Thinking Visually page 233

Answers will vary.

#### Thinking About Language page 234

- Words / Phrases: may seem; *Possible replacement*: might
- Words / Phrases: argue; *Possible replacement*: speculate
- Words / Phrases: generally; *Possible replacement*: usually
- Words / Phrases: postulates; *Possible replacement*: suggests
- Words / Phrases: according to; *Possible replacement*: in the words of
- Words / Phrases: argues; *Possible replacement*: proposes
- Words / Phrases: may; necessarily; *Possible replacement*: might; presumably
- Words / Phrases: claims; *Possible replacement*: argues
- Words / Phrases: likely; *Possible replacement*: probably

# PART 2 | Critical Thinking Skills

## ENVIRONMENTAL ENGINEERING

### Definitions and Classifications

#### CRITICAL THINKING SKILL

#### UNDERSTANDING DEFINITIONS

#### AND CLASSIFICATIONS

##### Noticing Activity A and B page 237

Possible answers:

allergens - agents, like dust-mite droppings, that cause allergic reactions

asbestos - a naturally occurring compound

off-gas - evaporate

##### Noticing Activity C page 237

organic - containing carbon bonded to hydrogen

volatile - tending to evaporate at room temperature

### SUPPORTING SKILL 1

#### RECOGNIZING AND UNDERSTANDING

#### DEFINITIONS WITHIN A TEXT

##### Exercise 1A page 239

Possible answers:

Paragraph 1: aqueducts, **which were**; *windcatchers*, **which refers to**

Paragraph 2: **consisting of** three main parts (a compressor, a condenser, and an evaporator); **known as** phase transition; **Essentially**, ...

Paragraph 3: heat exhaustion, **which is characterized by**

Paragraph 4: **greenhouse gases** (which cause the atmosphere to retain heat)

##### Exercise 1B page 240

1. Channels that carried water
2. Tunnel-like devices that funneled wind into buildings and ventilated out hot indoor air
3. They are made up of a compressor, a condenser, and an evaporator. They use refrigerants.
4. They convert a liquid to a gas and back to liquid again. They help absorb and expel heat to the outdoors while evaporating and cooling air to release indoors.
5. Dizziness, heavy sweating, and a rapid pulse rate
6. They cause the atmosphere to retain heat.

### SUPPORTING SKILL 2

#### WORKING WITH CLASSIFICATIONS

##### Exercise 2B page 244

Things Being Classified	molds that grow inside structures		
Basis of Classification	<i>how harmful they are to humans</i>		
Names of Classes	<i>Hazard Class A</i>	<i>Hazard Class B</i>	<i>Hazard Class C</i>
Criterion for Inclusion in the Class	<i>The mold causes severe and immediate harm</i>	<i>The mold may cause some harm to allergic persons after long exposure</i>	The mold does not cause any human health problems
Example	<i>Stachybotrys atra</i>	<i>Aureobasidium</i>	<i>Ulocladium botrytis</i>

##### Exercise 2D page 246

1. a
2. b and e
3. a
4. b
5. d
6. c

### READING-WRITING CONNECTION

#### UNDERSTANDING AND PRODUCING REFERENCES TO OTHER SOURCES

##### Exercise 3B page 250

1. et al.
2. DeLuria and Fulton
3. This was the first in a flurry of reports that debated the nature and even the very existence of the syndrome.
4. The illness arose because of poor air circulation in offices and other workplaces that were built in the 1970s.
5. (Leow, Burns, and VerHage 1991)
6. (e.g., Castleman 1992, Devlin and O'Meara 1996, DeVilliers 2001)
7. Princeton University's John Matheson

##### Exercise 3C page 251

1. d
2. b
3. c
4. a
5. b
6. b

##### Exercise 3D page 252

Possible answers:

2. (The American Air Quality Associate 2007)
3. 2015, *Air and Health*, biological substances (or substances produced by biological agents) that remain suspended in air and are easily spread via wind, ventilation system currents, and other air movements.
4. (customcare.biz Summer 2013)
5. (Marisol V. Ortega and Frances Gardette November 2001; James DeHaan 2009; Jamie Wilson 2011)
6. by John F. P. Kolenda, Marian Corzine, and Colin Gretsches, researchers at Dane University; were "erroneous in that the reported substance was not, in fact, any species of *Stachybotrys*."
7. Taro Harada (1998)

## LANGUAGE SKILL

### UNDERSTANDING AND USING CLARIFIERS

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#### Exercise 4 page 255

Possible answers:

1. To put it another way, ; To further explain, ; This means that; In other words,
2. This becomes readily apparent
3. to further explain
4. that is to say; to put it another way, ; to further explain, ; this means that; in other words,
5. To put it another way, ; To further explain, ; This means that; In other words,
6. That is to say, ; To put it another way, ; To further explain, ; This means that; In other words,

#### Exercise 5 page 255

Answers will vary.

## APPLY YOUR SKILLS

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#### Before You Read B page 256

1. Mold, airborne chemicals, and dangerous gases like radon
2. Because they are not components of a building's complex and energy-consuming HVAC system, and the reading focuses solely on HVAC systems
3. Adjust the volume of air based on how many people are in the building
4. It was equipped with an energy recovery ventilation system, which exchanges heat between the outgoing air and the air being ventilated into a building. A demand-controlled ventilation system was also installed. The building saved \$48,000 annually on energy.
5. Because net-zero energy homes and buildings are typically airtight

#### Thinking Critically page 259

Sample answer:

Though in theory installing energy-saving devices in educational buildings sounds like a win-win, in fact there are literal and figurative hidden costs in enforced building modifications and codes.

The benefits of such a system are known and valid. The costliness of installing and maintaining such a system are known, too: They're expensive. And so we must ask, at what cost would we be willing to adopt such a requirement? For example, what would retrofitting old buildings would mean? A loss of classroom space, and possibly exposure to dangerous materials. For new buildings, the requirement would possibly mean an additional layer of expertise and bureaucracy in terms of planning and approving the plan. In literal terms, the thousands of dollars spent on the system would mean an equal sum not spent on things such as staff salaries, student health care, and cultural and sports events. Only once these kinds of trade-offs are considered can an informed decision about supporting such a law be reached.

#### Thinking Visually page 259

Possible answer:

Due to changes in understanding about environmental health, people have made changes in their energy consumption choices, albeit sometimes because of changes in law or policy. For example, coal in the past ten years has become the deserved whipping boy of the energy source family, for its contribution to global warming. In turn, usage has been decreasing. On the flipside, so-called "renewables," such as solar, water, and wind energy, have grown in popularity, though the growth has been sluggish in part due to the political prowess of those entities threatened by a shift to new energy sources. One of the more interesting trends is that in natural gas, which is extracted via a controversial practice known as fracking. While many people in areas negatively impacted by fracking—a practice that can contaminate groundwater—despise the method and therefore refuse to use natural gas, vast numbers of consumers are seemingly indifferent to or unaware of the drawbacks and instead embrace the fossil fuel's "clean energy" reputation its relatively low price.

#### Thinking About Language page 260

1. in clearer terms - restates the subject
2. that is - gives a fuller understanding of "leaking"
3. should be clear that - acknowledges an argument
4. To further explain - elaborates
5. that is - gives fuller understanding of "retrofitted"
6. To put it another way - rephrases the idea
7. In other words - rephrases the idea



# PART 3 | Extended Reading

## SOCIOLOGY

### The Art of Strategy

#### Check What You've Learned

##### (Paragraphs 1–10) page 265

1. He means that strategy is deeply related to an individual's morals and values. These impact an individual's choices and decisions when creating a strategy and putting that strategy into action.
2. Objective of soccer player: be excellent in your own position; Objective of soccer team: win the game by scoring one more goal than the other team; Objectives of soccer coach: get your team to win enough games in a season to be highest ranked in the league; sustain highest ranking year after year; build comradeship; encourage players' development in regards to their skills, competence, and commitment; mobilize the community to support your team emotionally and financially  
They differ in that the team's objectives are related only to playing the game and the coach's objectives involve more than that.
3. He uses this example to demonstrate how intrinsic values are to goal-setting.
4. **Possible answer:** "Nurturing and encouraging" carry very positive connotations. The tone of the sentence would change to be more disapproving with the alternative words.
5. **Possible answer:** informative, informal, persuasive

#### Check What You've Learned

##### (Paragraphs 11–22) page 268

6. **Possible answer:** Mission is your overall goal, and strategy is your plan for achieving it.
7. **Possible answer:** Effectiveness. It's tricky because given the uncertainty of the future and possible obstacles you may confront, you cannot predict whether one plan will be more effective than another.
8. **Possible answer:** Upside potential: the positive possibilities for gain in investments; Downside risk: the negative possibilities for loss in investments
9. Internal organizational capacity and human resources; financial assets, fundraising capability, and comparative investment choices; competitive pressures; external partners and alliances that might facilitate increased performance; likelihood of success
10. **Possible answer:** They all involve the notion of using a tool to apply minimal effort to achieve maximum results.

#### Check What You've Learned

##### (Paragraphs 23–34) page 272

11. **Possible answer:** Because the general has to look at the big picture of the strategy and consider all possible approaches and outcomes, whereas the commander makes quick decisions without having to spend a significant amount of time considering possible outcomes
12. Only the final objective—the intermediate achievements are meaningless if the final identified strategic goal is not achieved.
13. **Possible answer:** He agrees with that opinion, because he goes on to connect this idea with the fact that organizations

mistakenly report victory all the time, when really they have only been successful with a tactic, not an entire strategy.

14. **Possible answer:** The author's allusion to a famous historical figure who held the belief that strategy should be based on method and discipline serves to further convince the reader of the validity of this belief

15. **Possible answer:**

Fact: that designing and implementing a strategy is a process

Opinion: that designing and implementing a strategy is a creative process, where creativity can lead to fulfillment as well as success or failure

Fact: that Lawrence Freedman emphasizes that reaching out to partners and allies to solve problems is a strategy whose odds of success can only be bolstered by creative thinking

The author wanted to bring together his arguments by alluding to the credentials of a very reliable individual.

#### Thinking Critically page 273

Answers will vary.

#### Thinking Visually page 273

Answers will vary.

#### Thinking About Language A page 274

##### Using Dictionaries to Strengthen Vocabulary

1. take (an) approach; solve (a) problem
2. think about = consider; opens up = allows entry to
3. turning (that vision) into reality; definition: making the goal / dream come true
4. opposing team
5. c
6. of course, wide variety
7. as a matter of (values)
8. to do or provide the things that you are expected to or that you have promised to
9. on the other hand
10. pry (something) open

#### Thinking About Language B page 275

##### Understanding Signpost Expressions That Limit or Define

1. Speaking of; let's talk about; specifically
2. As a player; (excellence) is defined by; the extent to which
3. when it comes to
4. when we consider; it is defined
5. in the sense of; given (the team's assets)
6. in terms of
7. considering; the extent to which
8. If we define; using (this framework); all that matters
9. in the area of (strategy)
10. By any standard

## PART 3 | Extended Reading

### ECONOMICS

#### Supply and Demand in the Marketplace

##### Check What You've Learned (Paragraphs 1–12) page 284

1. One of the problems would be that, since most people cannot make most of what they need, people would have to live without many basic comforts or maybe even without enough food, medicine, or other necessities.
2. **Possible answer:** A study of the behavioral patterns of consumers and suppliers prior to the market crash of 2008–2009 would have been useful, pointing up dangerous trading practices, predatory loan practices, overinflated housing prices, and other factors that contributed to the crash.
3. At that point, consumers feel they are getting a product at a good price and producers feel they are making a good return on their investment in production and marketing.
4. The seller benefits from a producer surplus. The surplus is the amount of extra money, beyond the minimum price that the producer considers acceptable, that the producer makes by selling goods or services.
5. **Possible answer:** Several things could pull an economy out of equilibrium. Bad weather or natural disasters could reduce production. Wars or civil unrest could reduce the amount of raw materials available for production or discourage consumers from spending. Sometimes, one producer might find a way to sell a product cheaper than all other producers, and that will affect the price structure in the market.

##### Check What You've Learned (Paragraphs 13–19) page 286

6. The consumer needs to know his / her willingness to buy in order to decide whether to purchase something at the market price. A consumer is not likely to enter the market unless he or she has considered whether the market price represents a satisfactory deal. Similarly, a producer needs to know his or her willingness to sell in order to decide whether to engage in trade at the market price.
7. It would hurt consumers because very few of them would have a chance to buy a car. Many prospective consumers would be kept out of the market. Probably—unless the dictator controlled the price as well—such a restriction would probably cause cars to become very expensive. Producers would be hurt because they would be prevented from using their productive capacity to the maximum. Their sales would be so limited that most of their factories would stand idle most of the year. Even if scarcity caused the price of cars to get extremely high, the producers probably would not make as much money as they would if the market were free and they could sell as many cars as they liked.

8. It is important because it indicates that the market should remain free. Governments (and individuals) should not try to artificially set market prices or to create equilibrium through intrusive policies. They will just distort the system and prevent it from maximizing the welfare of consumers and producers.
9. In this case, *efficient* means “creating the greatest benefits for the largest number of market participants.” When the market is efficient, it spreads benefits around.
10. Some markets are not competitive because an essential good or service—such as the supply of electricity to all the homes in an area—requires enormously expensive equipment. The government may designate a single producer to take on that service and even help cover that producer's costs because there would never be enough profit in the market to encourage the supply of this essential service.

##### Check What You've Learned (Paragraphs 20–30) page 289

11. Price controls are applied to designated goods based on the economic and political climate in a given place at a given time.
12. The producer bears the brunt in that they aren't able to sell to their full potential—they do not enjoy the full producer surplus that they would have at equilibrium. Consumers may also bear some of the burden in the form of uncertainties and hardship related to acquiring the price-controlled product, and reduced quality of the product.
13. For producers, the low price limited profits. This discouraged the producers from producing enough toilet paper and from maintaining high standards of quality. Because the supply was so limited, consumers had the problem of perhaps not being able to find enough toilet paper on the market. In order to get a share of the limited supply, consumers had to spend a lot of time waiting in line and sometimes had to go without what they needed.
14. The author says that governments may want to give subsidies to poor people for essentials—that is, money that can be used to purchase essential goods at the market price. He also mentions a wider goal of educating people so they can get better jobs, but that's not a very immediate form of economic aid.
15. Price ceilings, despite not being good for an economy, are often politically popular. Also, government officials may mistakenly feel that price ceilings are a necessary form of help for the poor.

##### Thinking Critically page 290

Answers will vary.

##### Thinking Visually page 291

Answers will vary.

## Thinking About Language A page 292

### Analyzing Meaning Using Word Parts

	Vocabulary Item	Word Parts: Prefix, Root, Suffix / Prefix, Root, Suffix Meaning	Word Meaning
2	proficient (adj)	Prefix: pro- "forward" Root: fic – "make or do" (from Latin) Suffix: -ent (to form an adjective)	skilled enough to do something well
3	potential (adj)	Prefix: None Root: potent – "power" or "ability" (from Latin) Suffix: -ial (to form an adjective)	able to happen
4	outcome (n)	Prefix: out- "out" Root: come – "happening" (from German) Suffix: None	result
5	transaction (n)	Prefix: trans- "across" Root: act – "do" Suffix: -ion (to form a noun)	an exchange
6	fluctuate (v)	Prefix: None Root: fluct – "flow" (from Latin) Suffix: -ate (to form a verb)	to change frequently, going often between various positions
7	superimpose (v)	Prefix 1: super- "above" or "on top" Prefix 2: im- "on" Root: pose – "put" (from Latin) Suffix: None	to put on top of something else
8	welfare (n)	Prefix: wel- "good" or "well" Root: fare – "go" or "be in a condition" (from German) Suffix: None	a condition of doing well
9	intervention (n)	Prefix: inter- "between" Root: ven – "come" (from Latin) Suffix: -tion (to form a noun)	stepping into a situation in order to influence its outcome
10	ambiguous (adj)	Prefix ambi- "two" or "both" Root: agere – "act" (from Latin) Suffix: -ous (to form an adjective)	having more than one possible meaning

## Thinking About Language B page 293

### Identifying and Using Equivalent and Near-Equivalent Expressions

Possible answers:

	Expression	Equivalent or Near-Equivalent Expression
1	the vast majority of	almost all of
2	a modern phenomenon	a recent development
3	from scratch	from the very beginning
4	real life	actual
5	self-interested behavior	selfish acts
6	in turn	as things develop
7	in the absence of	without
8	get their hands on	gain possession of

# PART 3 | Extended Reading

## BIOLOGY

### A Study of Deadly Diseases

#### Check What You've Learned (Paragraphs 1–14) page 298

Possible answers:

1. d
2. He showed that animals could contract prion diseases from humans. Earlier in his career, he had worked in Papua New Guinea where he recognized a connection between cannibalistic rituals and kuru. His observations eventually led to abandonment of the dangerous practice.
3. Prusiner discovered and named prions, showed they were “proteinaceous,” and established research methods for investigating them.
4. Like other proteins, PrP is produced according to genetic instructions in mammals.
5. One similarity is that in both kinds of disease, a naturally occurring element of the body turns against the body. Another similarity is that both prion diseases and cancers can be genetic, can be infectious, and can develop spontaneously in the body.

#### Check What You've Learned (Paragraphs 15–25) page 301

6. a
7. If two PrP-Sc molecules—the unsafe form—combine with each other into a polymer, they won't flip back to their safe PrP-C form. They then can go on to recruit other PrP-Scs, thereby growing the crystal.
8. c
9. It is a diseased condition of the brain in which the tissue has a spongy appearance, riddled with holes and hollow spaces.
10. a

#### Check What You've Learned (Paragraphs 26–37) page 304

11. To emphasize that the various types of PrP-Sc seen with different diseases in humans are still all the same chemical, just in different physical configurations—like crystals of ice.
12. b
13. Possible answers:

How Prion Diseases Develop	
genetically	By <i>inheritance of a mutation</i>
infectiously	By <i>eating or otherwise taking in a “seed” molecule from another animal</i>
spontaneously	By “bad luck” when two <i>PrP molecules in their “SC” form join together</i>

14. Experiments with mice suggest it might be possible to breed cows that lack the gene for forming any PrP.
15. c

#### Thinking Critically page 304

Answers will vary.

#### Thinking Visually page 305

Answers will vary.

#### Thinking About Language A page 306

##### Recognizing Collocations

Possible answers:

1. the fact that; passed from
2. Over the years; a great deal
3. way in which
4. Referred to as
5. at any given time, depending on, the function of, type of
6. turns against
7. the normal form; exists as; a series of
8. under debate; is clear that
9. two or more; in close proximity; happen to; switch to
10. make use of

#### Thinking About Language B page 306

##### Identifying and Using Expressions of Function and Purpose

1. proteins from our body act to; Possible replacement: work to
2. essay will focus on; Possible replacement: The objective of this essay is to discuss structures form; Possible replacement: take shape
3. PrP contributes to pathogenesis by forming; Possible replacement: in that it makes lead to the death; Possible replacement: results in
4. this served to speed up; Possible replacement: this played a role in greatly speeding up
5. Each gene's job is to; Possible replacement: The purpose of each gene is to
6. using standard methods; Possible replacement: through the use of
7. The use of this hormone is to; Possible replacement: This hormone's job is to
8. through the use of; Possible replacement: by using
9. the goal of this was to; Possible replacement: the purpose of which was to
10. plays a critical role; Possible replacement: serves an important function.

## PART 3 | Extended Reading

### HUMANITIES

#### Cultivation of the Educated Person

##### Check What You've Learned (Paragraphs 1–8) page 311

Possible answers:

1. The natural settings are actual physical gardens that mirror the metaphorical “gardening” that occurs when an educational institution prepares its students.
2. Education is unnatural because, unlike the physical development of the body, it won’t naturally occur. Someone has to go beyond nature to acquire the development that occurs in education.
3. The soil could be the overall personal and cognitive abilities of the students. They have to be tilled, fertilized, and otherwise tended so that the flower of education can thrive.
4. The author mentions these to emphasize the natural setting, with lots of trees, in which education at Plato’s Academy took place.
5. A garden of Adonis is a potted plant, one that has not yet yielded a seed. It is symbolically smashed in memory of Adonis’s early death. Socrates mentions them as a symbol of unfruitful methods of education. Does a gardener waste time cultivating only gardens of Adonis? No. The gardener goes for something viable over a longer term and which yields greater fruit.

##### Check What You've Learned (Paragraphs 9–16) page 314

6. The Greek and Latin expressions help give a sense of long-term importance and seriousness to the concepts. They also suggest some connections among concepts that the reader might not otherwise sense. For example *cura sui* suggests not just the care of the self but also the concept of “a cure.”
7. The author gives a sentence to each philosophical / religious tradition to show that, as different as they were, they shared an emphasis. The author describes the manner in which each one thought happiness could be achieved.
8. The attitude was *ataraxia*. It was important because it freed the person from fear of death and pain. Escaping such fears allowed a person to experience the pleasures that brought happiness.
9. A virtuous person could be a better friend by cultivating skills and habits that made him or her more pleasant to be around, namely being a good conversationalist. Other qualities include being fluent in poetry, having a pleasant speaking voice, cultivating a graceful demeanor and appearance. The three supreme social virtues include courtesy (*epikeia*), honesty (*parresia*), and agreeableness (*suavitas*). Prudence, moderation, and justice are other virtues he advocated.
10. In self-actualization, as in the classically valued processes, the person is able to tap into the deeper reserves of personal ability and strength to create a more satisfactory life.

##### Check What You've Learned (Paragraphs 17–23) page 317

11. **Possible answer:** Science is clearly based on philosophical foundations. Science puts forth a set of values—such as objectivity, self-examination, and the primacy of empirical evidence—that conform to this philosophy.
12. The governmental or religious authorities are outsiders because they don’t operate according to the principles that are central to science. In fact, there can be great conflict between the findings of science and the claims of a political or religious belief system.
13. The subject is the person who is acquiring knowledge. The object is the thing or situation that the subject is learning about.
14. The college environment is like the nursery in which a baby (or a young plant) is cared for. It offers experiences and facilities that nurture young people. In fact, the college environment is so special and nurturing that it creates an atmosphere that’s almost unrealistic in its protections.
15. The author’s dream is to give every incoming freshman a small plot of land to take care of during his or her college career. He thinks it would be good because it would create a greater sense of care, nurturing, and responsibility among the students assigned such plots, at any institution.

##### Thinking Critically page 318

Answers will vary.

##### Thinking Visually page 318

Answers will vary.

##### Thinking About Language A page 319

Understanding Nominalization

Possible answers:

Either paraphrase is acceptable as long as the student has good reasons for choosing it.

##### Thinking About Language B page 320

Appreciating Hedging

1. suggests
2. in every respect
3. In my view
4. or so taught Epicurus
5. most

# PART 3 | Extended Reading

## ENVIRONMENTAL ENGINEERING

### In Pursuit of Clean Air

#### Check What You've Learned

##### (Paragraphs 1–8) page 325

1. b
2. d
3. c and d
4. b
5. **Possible answer:** To stress the relative “danger” of indoor carpeting by comparing it with a well-known danger

#### Check What You've Learned

##### (Paragraphs 8–19) page 327

6. Smaller buildings: They are ventilated naturally, through the opening of windows and doors and through small openings found in door and window frames and other small cracks and openings present in the exterior of the building. Larger buildings: They are ventilated with a mechanical ventilation system, where a large fan or blower delivers air via ductwork into individual rooms. **Possible answer:** The natural amount of airflow is sufficient to ventilate smaller structures whereas larger structures need mechanical ventilation system because of volume.
7. Air exchange rate is the volume of air per time flowing through the indoors, divided by the volume of the room. Definition: how many “roomfuls” of air per unit time leave (or enter) a room because of ventilation.
8. Penetration factor quantifies what fraction of an outdoor pollutant is carried indoors via ventilation. A structure having 0.95 penetration factor would more like be an old factory.
9. Something that reacts with or takes up a pollutant
10. You can figure out the total amount of pollutants removed from a room by adding the amount of air intentionally removed and the amount of air lost inside the building envelope.

#### Check What You've Learned

##### (Paragraphs 20–30) page 331

11. The lower the air exchange rate (I) is, the longer this pollutant spends indoors.
12. **Possible answers:** The pollutant, the temperature, the materials present indoors, the concentrations of other indoor air pollutants, the penetration rate, the available removal pathways, the ventilation rate, the building design
13. The flow or emission rate from the indoor pollution source
14. If the rate of removal is faster than or roughly comparable to the rate of air exchange, then indoor pollutant levels will be significantly reduced.
15. It is the phenomenon of a pollutant being most concentrated at and near the source for the first 10–20 minutes after the pollutant is released. The author includes it to explain that the calculations and explanations earlier in the reading were based on the pollutants in a room being well mixed, which is not always the case.

### Thinking Critically page 331

#### Possible answers:

Situation 1: Answers may include any of the following: keeping all pets in a separate area of the house; evaluating and replacing the home's paint, wallpaper, flooring, and furniture; evaluating what cleaning products and cosmetics are used; installing / updating the home's ventilation system; installing a hood with exhaust fan above the cooking stove in the kitchen.

Situation 2: Answers may include any of the following: wearing a nanofilter mask while outside the home, including during construction; installing nanofilter screens on the windows; building the structure so that there are virtually no openings or cracks; installing a mechanical ventilation system that captures fine particles; having a portable indoor filter

### Thinking Visually page 332

1. There must be some removal pathway indoors—such as a surface on which the pollutants can settle or a chemical indoors that can degrade the pollutant level.
2. **Possible answer:** A barn with all its windows and doors open

### Thinking About Language A page 332

#### Recognizing and Learning Multiword Vocabulary Items

1. air pollutants; air pollution levels; air pollutants
2. presented in (Table 1)
3. flushes out
4. listed in
5. major categories; air pollution; the first of which
6. emission rates
7. represented in; shown in
8. settle on, bind to, react with
9. can be seen in; shown as
10. ventilation rate; removal processes; pollutant levels

### Thinking About Language B page 333

#### Understanding and Using Clarifiers

1. To clarify
2. To be perfectly clear
3. This means that
4. This bears some explanation
5. This becomes readily apparent