

A. Recognizing Inferences

All the skills you have been practicing in this unit are a basis for making critical judgments. You have been learning to recognize an author's attitude, intent, tone, and bias. Here's another important aspect of reading critically: recognizing **inferences**. An inference is a conclusion or an opinion drawn from reasoning based on known facts or events. For instance, when people smile we infer that they are happy. We base our inference on the fact that most smiles are from happiness or pleasure. A frown, we know from experience, generally means displeasure or pain. Thus, when someone frowns, we infer that the person is displeased. Our inferences are based on experience and/or knowledge. In his famous book *Language in Thought and Action*, S. I. Hayakawa defines an inference as "a statement about the unknown made on the basis of the known."

Drawing inferences is something we do every day. For instance, if you met a woman wearing a large diamond necklace and three platinum rings with rubies and pearls, you would no doubt infer that she is wealthy. You may not be right; the jewelry could belong to someone else or it could be fake. But because we know from experience that the type of jewelry she is wearing is expensive, it is natural to assume she is wealthy. It's a good educated guess based on experience and knowledge. Without experience or knowledge, however, any inferences we make are based on shaky ground.

Complete the following statements by drawing inferences from what is known in each case:

1. We may infer from a boy's crying and a melting ice cream cone on the ground that the boy _____

2. We may infer from a woman's grease-stained hands and fingernails that she probably has been _____

3. We may infer from the many whitecaps on the ocean that sailing would be _____

4. We may infer from the way a man threw his food on the floor and refused to pay the restaurant bill that he was _____

5. We may infer from an F grade on a test that we _____

Let's look now at some of the possible inferences. In item 1, we can assume that the boy dropped his ice cream cone; however, we don't know for a fact that this is what happened. Someone may have knocked it out of his hands, or even thrown it at him. But based on the circumstances described, a good inference to draw is that he dropped it and is unhappy.

In item 2, we can infer that the woman has been working on something mechanical, such as an oily engine. Because we know that our hands and fingernails get greasy from such work, it's a good inference to make.

The circumstances in item 3 lead us to believe that sailing conditions might be rough, because whitecaps are caused by strong winds. However, a good sailor

might like the conditions and think of it as a challenge. Of course, if you have never been around the sea, whitecaps might provide no information for drawing any kind of inference.

The man in item 4 might be angry, drunk, or "high" on something. We might further infer that he didn't like the food, didn't get what he ordered, or hated the service. Most of us don't make a habit of throwing our food on the floor and making a scene, so we can infer that something is greatly upsetting him to act this way.

In item 5, we probably infer that we failed. But is that technically an inference? The F grade is a symbol for failure. No inference need be drawn. But *why* did we fail? Maybe we didn't study hard enough, misunderstood the directions, or studied the wrong material; the test was a poor one; or the instructor made a mistake.

Drawing inferences while we read critically is no different from the kind of thinking done in the preceding examples. For example, read the following passage and then answer the questions that follow.

If we compare college textbooks of just two decades ago with those of today, we see a dramatic decrease in the number of words, vocabulary level, and specificity of detail, but a sharp increase of graphics and, particularly, illustrations. Such textbook pictures can scarcely convey as well as words the subtle distinctions that emerge from scholarly or scientific work.

1. What is being compared in this paragraph? _____

2. What inference can be drawn about the author's attitude toward college textbooks today? _____

3. What inference can be drawn about today's college students? _____

Notice that the first question has nothing to do with inference, but it reminds you that in order to read critically you also have to use literal comprehension skills. The paragraph contrasts college textbooks of today with those published twenty years ago. In order to draw inferences, you have to understand that first. The answer to question 2 is that the author's attitude is negative. We can infer that because of the last sentence of the paragraph. The answer to question 3 is that today's college students' reading levels are probably lower than they were twenty years ago. Because of the decrease in words, lower vocabulary level, and more pictures, we can infer that today's students don't read as well. However, we could also infer that publishers are merely changing their way of publishing, but chances are that's not the author's intent here.

Here's a passage taken from a short story. Read it and answer the questions that follow.

In walks these three girls in nothing but bathing suits. I'm in the third check-out slot, with my back to the door, so I don't see them until they're over by the bread. The one that caught my eye first was the one in the plaid green two-piece. She was a chunky kid, with a good tan and a sweet broad soft-looking

can with those two crescents of white just under it, where the sun never seems to hit, at the top of the back of her legs. I stood there with my hand on a box of HiHo crackers trying to remember if I rang it up or not. I ring it up again and the customer starts giving me hell. She's one of those cash-register-watchers, a witch about fifty with rouge on her cheekbones and no eyebrows, and I know it made her day to trip me up. She'd been watching cash registers for fifty years and probably never seen a mistake before. (From John Updike, "A & P" from *Pigeon Feathers and Other Stories*, Knopf, 1962. Reprinted by permission of the author and Alfred A. Knopf, a Division of Random House, Inc., Copyright © 1962.)

Based on the information provided, answer the following questions by drawing inferences:

1. How old and what sex is the narrator or person telling the story? What makes you think so? _____

2. Where is the story taking place? _____

3. People in bathing suits coming into the place where the narrator is working is not an everyday occurrence.
 - a. True, because _____

 - b. False, because _____

4. The narrator is not distracted by the girls.
 - a. True, because _____

 - b. False, because _____

5. The narrator is very observant.
 - a. True, because _____

 - b. False, because _____

As we find out later in the story, the answer to question 1 is "a nineteen-year-old male." But we can guess from the passage that the narrator is male because of his reaction to the girls, because of the language he uses, and because of his comments about the "witch about fifty" who catches his mistake. The tone has a youthful, informal quality about it.

In question 2, it's not too difficult to infer that the story is taking place in a supermarket of some type, probably a grocery store. He is working at a checkout slot ringing up HiHo crackers, and he comments that the girls were "over by the bread" before he saw them. These are clues to us.

The statement in question 3 is probably true, making the statement in question 4 false. He is distracted by the girls. No doubt girls come into the store all the time, but in this case they are wearing “nothing but bathing suits,” making this an unusual event. It causes him to forget whether he has already rung up the crackers.

The statement in question 5 is true; he is very observant. His description of the one girl and the “cash-register-watcher” are full of details, reflecting an observant person.

The word *critical* often connotes finding fault with something. But making valid critical judgments, in its strictest sense, implies an attempt at objective judging so as to determine both merits and faults. Critical reading is thoughtful reading because it requires that the reader not only recognize what is being said at the literal level but also distinguish facts from opinions; recognize an author’s intent, attitude, and biases; and draw inferences. A reader who is not actively involved is not reading critically.

PRACTICE A-1: Drawing Inferences

Part A

Directions: An inference, remember, is “a statement about the unknown made on the basis of the known.” Complete the following statements, drawing inferences from what is known.

1. We may infer from the smile on the professor’s face as he passed back the exams that _____
2. We may infer from the large turnout at our college orientation session that _____
3. We may infer from the fact that a student in a college English class is consistently late for class that _____
4. We may infer from the number of Academy Awards a movie won that _____
5. We may infer from the extreme thinness of some current models and actresses that _____

Part B

Directions: Read the following passages and answer the questions that follow.

1. The word *concerto* originally meant a group of performers playing or singing together, as “in concert” or making a “concerted effort” of entertaining. The Gabriellis of sixteenth-century Venice called their motets, scored for choir and organ,

concerti ecclesiastici. Heinrich Schultz, a seventeenth-century German composer, titled his similar works *Kleine geistliche Konzerte*.

- a. What is the intent of this paragraph? _____

 - b. T/F The German word *Konzerte* probably means "concerto."
 - c. T/F We can infer that the author probably knows some history of music.
2. He had a direct and unassuming manner and a candid way of speaking in a soft Minnesota voice. The interviewer rushed right in with questions, but he turned all the questions around and wanted first to know some things about the interviewer. She had a hard time getting the conversation centered on him until he was ready. He was a bright, insightful man who seemed oblivious to his genius.
 - a. What words best describe the man in the preceding passage? _____

 - b. T/F The man is important or famous.
 - c. T/F The interviewer was impressed with this man.
 - d. T/F We can infer that the man is talkative and open.
3. Infer as much as you can from each of the following statements:
 - a. The evening has proved to be most entertaining. I extend my deepest appreciation. _____

 - b. Tonight's been a real blast! Thanks a bunch. _____

 - c. Like, I mean, funwise, this night has blown me away, babe. _____

4. There are all kinds of rumors about Ed Cantrell. Some say he can ride a horse for days without eating and still bring down a man at a thousand yards with a rifle. Some say he is almost deaf from practicing every day with a .38. Others say he can quote long passages from Hemingway's novels. And still others claim he has the eyes of a rattlesnake and faster hands. Most all who know him claim he is the last of the hired guns.
 - a. What is Ed Cantrell's occupation? _____

 - b. T/F Based on the rumors, most people seem to admire him.
 - c. T/F Cantrell probably lives somewhere in the Western states.
 - d. What can we infer about Cantrell if it is true that he can quote long passages from Hemingway's works? _____

 - e. Why would a man such as Cantrell be interested in Hemingway's works? _____

5. During the Middle Ages, many scholars regarded printed books with apprehension. They felt that books would destroy the monopoly on knowledge. Books

would permit the masses to learn to improve their lives and to realize that no man is better than another. And not too long ago, slaves were strictly forbidden to learn to read and had to pretend that they were illiterate if they had learned how. Societies based on ignorance or repression cannot tolerate general education.

- a. T/F The first sentence is fact.
- b. What is the author's attitude toward education? _____

- c. What is the intent of the statement? _____

PRACTICE A-2: Recognizing Inferences

Directions: Read the following passages and answer the questions that follow.

1. "Social science" in cold print gives rise to images of some robot in a statistics laboratory reducing human activity to bloodless digits and simplified formulas. Research reports filled with mechanical sounding words like "empirical," "quantitative," "operational," "inverse," and "correlative" aren't very poetic. Yet the stereotypes of social science created by these images are, I will try to show, wrong.
Like any other mode of knowing, social science can be used for perverse ends; however, it can also be used for humane personal understanding. By testing thoughts against reality, science helps liberate inquiry from bias, prejudice, and just plain muddleheadedness. So it is unwise to be put off by simple stereotypes—too many people accept these stereotypes and deny themselves the power of social scientific understanding. (From Rodney Stark, *Sociology*, 2nd edition, Wadsworth, 1987, p. 28.)
 - a. The author's intent in this passage is to _____

 - b. T/F We can infer that the author feels that some of his readers have a negative attitude toward social science.
 - c. T/F The author believes strongly in the scientific method of inquiry.
 - d. T/F The author is probably a social science teacher.
2. On July 10, 1985, the following events worth reporting occurred around the world:
 - An Israeli court convicted fifteen Jewish terrorists of murder and violence against the Arabs.
 - Bishop Desmond Tutu, Nobel laureate, pushed himself through an angry mob to save an alleged police informer from being burned alive.
 - An Iraqi missile struck and heavily damaged a Turkish supertanker.
 - A ship photographer was killed when a Greenpeace protest ship was blown up in New Zealand.
 - The Nuclear Regulatory Commission (NRC) was accused of not properly considering earthquake hazards at the Diablo Canyon, California, atomic energy plant.
 - Numerous major fires in Northern California burned more than 300,000 acres of forests and destroyed many homes.

Yet the lead story of the day on two of the three major American television news broadcasts that evening had to do with the Coca-Cola Company's decision to return to its original formula after experimenting with a new taste that few seemed to like. Even the country's major newspapers featured the Coke story on their front pages at the expense of more newsworthy events. The headline of the *Denver Post*, for example, stated, "The Real Thing' Is Back." In addition, a six-square-inch picture of a can of Coke in two colors appeared next to the column.

- a. The intent of the passage is to _____

- b. T/F The passage is mostly opinion.
- c. T/F The author feels that the type of news reporting described reflects an erosion of values in our society.
- d. T/F The author of the passage would probably agree with this statement: Coca-Cola has become a national institution of sorts and what it does is of interest to almost all Americans.
- e. State the author's attitude toward the reporting he describes. _____

3. The United States Atomic Energy Commission, created by Congress in 1946, grew into a uniquely powerful, mission-oriented bureaucracy. One of its main goals, which it pursued with exceptional zeal, was the creation of a flourishing commercial nuclear power program.

By the late 1950s, the AEC began to acquire frightening data about the potential hazards of nuclear technology. It decided, nevertheless, to push ahead with ambitious plans to make nuclear energy the dominant source of the nation's electric power by the end of the century. The AEC proceeded to authorize the construction of larger and larger nuclear reactors all around the country, the dangers notwithstanding.

The AEC gambled that its scientists would, in time, find deft solutions to all the complex safety difficulties. The answers were slow in coming, however. According to the AEC secret files [obtained through the Freedom of Information Act], government experts continued to find additional problems rather than the safety assurances the agency wanted. There were potential flaws in the plants being built, AEC experts said, that could lead to "catastrophic" nuclear-radiation accidents—peacetime disasters that could dwarf any the nation had ever experienced.

Senior officials at the AEC responded to the warnings from their own scientists by suppressing the alarming reports and pressuring the authors to keep quiet. Meanwhile, the agency continued to license mammoth nuclear power stations and to offer the public soothing reassurances about safety. (From Daniel Ford, *The Cult of the Atom: The Secret Papers of the Atomic Energy Commission*. New York: Simon & Schuster, 1982). Copyright © 1982, 1984 by Daniel Ford. Reprinted by permission of Simon & Schuster, Inc.)

- a. The intent of the passage is to _____

- b. Describe the author's attitude toward the AEC. _____

- c. T/F The passage is mostly opinion rather than factual.
- d. T/F We can infer from the passage that the author is probably not worried about the number of atomic energy plants that have been built and are being built.
- e. T/F The author implies that the AEC placed its own commercial desires over the safety of the American people.
- f. What is your reaction to this passage and why? _____

4. Futurists generally assume that twenty-first-century medicine will include new and more powerful drugs and technologies to fight diseases. They tend to forget, however, the serious problems presently arising from conventional medication prescribed by the average doctor. According to 1987 statistics, the average American receives 7.5 prescriptions per year. This is even more frightening when we realize that many people have not been prescribed any medication at all. This means that someone else is getting *their* 7.5 medications.

Most drugs have serious side effects, some quite serious. Since the sick person is often prescribed several drugs at the same time, there is often unfavorable reaction or illness from the drugs themselves. Studies also show that 25 to 90 percent of the time, patients make errors when taking their prescribed drug dosage. Despite the respect that people generally have for present-day doctors, there doesn't seem to be equal confidence in the treatments they prescribe because 50 percent of the time people do not even get their prescriptions filled.

Homeopathic medicine (using natural means to help the body build immune systems) offers an alternative. Instead of giving a person one medicine for headache, one for constipation, one for irritability, and so on, the homeopathic physician prescribes one medicine at a time to stimulate the person's immune system and defense capacity to bring about overall improvement in health. The procedure by which the homeopath finds the precise substance is the very science and art of homeopathy. (From Dana Ullman, "Royal Medicine," *New Age Journal*, September/October 1987, p. 46.)

- a. The intent of the passage is to _____
- b. T/F The author's attitude toward conventional doctors and homeopathic doctors is equal.
- c. T/F The passage is mostly opinion.
- d. T/F We can infer from the passage that the author is biased against homeopathic medicine.
- e. T/F The author implies that many patients do not trust or want to take the medications prescribed by their doctors.
- f. Would you be willing to go to a homeopathic doctor rather than a conventionally trained physician? _____

Explain. _____

B. Recognizing Inferences and Facts

When inferences are based on facts, much useful information can be obtained. Scientists and historians, to name a few, have been able to infer from facts and observation most of the knowledge we have today. The following passage is based on fact, with many inferences that are probably true. As you read, note the inferences and the facts.

- 1 Nine hundred years ago, in what is now north-central Arizona, a volcano erupted and spewed fine cinders and ash over an area of about 800 square miles. The porous cinder layer formed a moisture-retaining agent that transformed the marginal farmland into a country of rich farmland.
- 2 Word of this new oasis spread among the Indians of the Southwest, setting off a prehistoric land rush that brought together the Pueblo dry farmers from the east and north, the Hohokam irrigation farmers from the south, and probably Mogollon groups from the south and east and Cohonino groups from the west. Focal points of the immigrants were the stretches of land lying some 15 miles northeast and southeast of the volcano, bordering territory already occupied by the Sinagua Indians.
- 3 Nudged out of their now-crowded corner by the newcomers, some of the Sinagua moved to the south of the volcano to a canyon that offered building sites and a means of livelihood. Here they made their homes.
- 4 Remains of the Sinagua's new homes, built in the early 1100s, are now preserved in Walnut Canyon National Monument; the cone of the benevolent volcano, in Sunset Crater National Monument; and part of the focal points of the immigrants, in Wupatki National Monument. (From the brochure *Walnut Canyon*, 1968-306-122/97, revised 1982, Superintendent of Documents, Washington, D.C.)

Now answer these questions.

1. T/F Paragraph 1 is mainly fact rather than inference.
2. T/F The first sentence of paragraph 2 is inference.
3. T/F The information in the last sentence of paragraph 2 is based on inference.
4. T/F Paragraph 3 is mostly inference.
5. T/F Paragraph 4 is mostly inference.
6. T/F Chances are that someday this information will prove to be in error.

The answer to question 1 is false; it's mainly inference based on facts or evidence that when put together leads scientists to believe that the events described happened eight hundred years ago. We have no way to prove that the eruption occurred as stated, yet scientists basically agree that this is what did happen.

The statements in questions 2 and 3 are true. Again, no one was around to verify these statements, but the inference that it happened can be made from present-day evidence.

While the statement in question 4 is basically true, at least the first part, the last part is fact because the remains are still there to see. The statement in question 5 is false, because all statements can be verified by visiting the places mentioned.

The statement in question 6 is false; it's possible, but highly unlikely because of present-day facts and remains. However, in the future, this might be a "slippery fact," like the atom's being thought of as the smallest particle at one time. But based on all the known facts we have at present, the best answer is false.

You can see that much of what we call “fact” today is based on inferences. When scientists agree on inferences that are drawn from what is known, we tend to accept as fact their conclusions until more evidence shows that the inferences drawn were wrong.

The following practices will help you recognize the difference between facts and inferences.

PRACTICE B-1: Drawing Inferences from Facts

Directions: Read the following passages and answer the questions that follow.

1. The unit that is used to measure the absorption of energy from radiation in biological materials is the rem, usually abbreviated R. It stands for “roentgen equivalent in man.” There is a unit called the rad, which corresponds to an amount of radiation that deposits 100 ergs of energy in one gram of material. The rem is defined as the radiation dose to biological tissue that will cause the same amount of energy to be deposited as would one rad of X-rays.

A millirem (abbreviated mrem) is one thousandth of a rem. To give some idea of the size of the things we are discussing, you get about 1 mrem of radiation from a dental X-ray, about 25 mrem of radiation from a chest X-ray. Since the average dose of radiation to the average American is about 360 mrem, it is not hard to see that it would be very easy to absorb in medical and dental X-rays more radiation than one absorbs from natural causes.

The “average” dose of radiation, of course, varies as much as 150 or so mrem per year depending on where one lives. For example, in Colorado and Wyoming the average mrem dose is about 250 per year, while in Texas the average dose is 100 mrem. It is higher in the mountains because there is less air to shield us from cosmic rays and because there are more radioactive elements in the soil.

According to federal requirements in effect, the radiation dose at the fence of a nuclear plant can be no more than 5 mrem per year. We can see that based on the average dose most of us receive, living near a nuclear plant offers relatively little dosage risk.

- a. The intent of this passage is to _____

- b. T/F The first paragraph is mostly factual.
- c. T/F Living in higher altitudes is safer from radiation doses than living at sea level, based on the information in the passage.
- d. T/F We can infer that the author is opposed to nuclear power plants.
- e. T/F The last sentence in the passage is factual.

2. In the 1980s, in an ebullient bid to curtail drunk driving by teenagers, the government imposed a nationwide minimum drinking age of 21. It was a kind of second Prohibition, albeit for young adults only. The law’s goal, of course, was to make young people happier, healthier, and safer.

By now it is obvious that the law has not succeeded in preventing the under-21 group from drinking. The popular press and higher-education media are filled

with reports of high-visibility, alcohol-related troubles on our campuses. Serious riots by students who want to do their boozing unhindered have broken out at many institutions. Some of the melees, such as those at Ohio University, the University of Colorado, and Pennsylvania State University, have involved significant injuries and many arrests.

Reports of binge drinking come from all types of campuses across the country. In 1992, researchers reported that more college students were drinking to get drunk than their counterparts a decade earlier, and one recent study reported an increase, just since 1994, in the number of students who drink deliberately to get drunk. Of particular pertinence, in another national study, Ruth Engs and Beth Diebold of Indiana University and David Hanson of the State University of New York at Potsdam reported in 1996 in the *Journal of Alcohol and Drug Education* that, compared with those of legal age, a significantly higher percentage of students under age 21 were heavy drinkers.

Worst of all are the reports of drinking-related deaths. In 1997, at least two fraternity pledges died of alcohol poisoning, and in 1995 a third choked to death on his own vomit, all after initiation-night parties. One informal survey of alcohol-related deaths among college students during 1997 turned up 11 more fatalities: Three students fell from dormitory windows, one darted into the path of a motorcycle, one fell through a greenhouse roof, another was asphyxiated, and five died in highway crashes. At Frostburg State University, seven students were charged with manslaughter in 1997 in connection with the death of a freshman who guzzled beer and 12 to 14 shots of vodka in two hours at a fraternity party.

America's second experiment with Prohibition seems to have been no more effective than the first one. (From Document X3010 2152230, *Opposing Viewpoints Resource Center*, Gale Group, 2003. <http://www.galenet.com/servlet/OVRC>.)

- a. The intent of this passage is to _____
 - b. T/F The passage is mostly factual.
 - c. T/F We can infer that the author believes the legal drinking age should be lowered from 21.
 - d. T/F We can infer that the author believes the drinking age of 21 has driven college students to partying less in public and into more dangerous places.
3. To understand the debate over global warming, it is important to understand the scientific concept known as the greenhouse effect. The greenhouse effect is a natural phenomenon involving the interaction of the sun's energy with atmospheric gases. After the sun's energy, or solar radiation, enters the atmosphere, the earth absorbs most of it while the rest is reflected back into space. Atmospheric gases, known as greenhouse gases, absorb a portion of this reflected energy. The energy trapped by these gases warms the planet's surface, creating the greenhouse effect. This natural process keeps Earth's atmosphere warm enough to support life. However, as the amount of greenhouse gases in the atmosphere increases, so too does the amount of heat they absorb: Global warming is the result.
The atmospheric concentrations of greenhouse gases have increased dramatically in the past century. Concentrations of carbon dioxide (CO₂), the primary greenhouse gas, have increased 30 percent, according to the Intergovernmental Panel on Climate Change (IPCC), a group of about 2,000 scientists from

116 countries assembled to address the problem of climate change. Concentrations of the other main culprits, methane and nitrous oxide, have risen 145 percent and 15 percent, respectively. At the same time, the average atmospheric temperature has also risen between 0.3 and 0.6 degrees Celsius. Most scientists agree that human activity is the cause of the rise in greenhouse gases, which are in turn responsible for global warming. Thus, in its definitive 1995 report, the IPCC concluded, "The balance of evidence suggests that there is a discernible human influence on global climate." (From Document X3010101223, Opposing Viewpoints Resource Center, Gale Group, 2003. <http://www.galenet.com/servlet/OVRC>.)

- a. The intent of this passage is to _____
 - b. T/F The passage is mostly factual.
 - c. T/F We can infer that the author is concerned with the increase of greenhouse gases in the atmosphere.
 - d. T/F We can infer that the author agrees with scientists who claim that human activity is the cause for the increase of global warming.
4. From the seller's viewpoint advertising is persuasion; from the buyer's viewpoint it is education. No single group of people spends as much time or money per lesson to educate the masses as do the creators of ads.

Ads participate in a feedback loop. They reflect a society they have helped to educate, and part of the advertising reflection is the effect of the advertising itself. Every ad that exploits a personality hole educates the audience toward using a particular product to fill that hole. Just as drug ads teach a crude and sometimes dangerous form of self-medication, psychosell ads teach a form of self-analysis and cure for psychological problems.

An ad that stirs a hidden doubt, that causes a person to ask, "Why does no one love me?"; "Why don't I have more friends?"; "Why am I lonely?" invariably goes on to suggest a partial cure—use our product. If an announcer for Pepsi would appear on screen and say:

Are you lonely? Do you feel left out? Do you sometimes feel that everybody else has all the fun in life? Are you bored and isolated? Well, if you are, drink Pepsi and find yourself instantly a part of all those energetic, joyful, young-at-heart people who also drink Pepsi.

Such an ad would be greeted as either laughable or insulting by the viewing audience. Yet the old "Pepsi generation" campaign used pictures and a jingle to make exactly such a point.

The danger in psychosell techniques is not that people might switch from Coke to Pepsi in soft-drink loyalties or abandon Scope for Listerine. The danger is that millions learn (especially if the message is repeated often enough, as ads are) that problems in self-acceptance and boredom can be alleviated by corporate products. Which brand to buy is secondary to ads as education; the primary lesson is that the product itself satisfies psychological needs. (From Jeffrey Schrank, *Snap, Crackle and Popular Taste: The Illusion of Free Choice in America*, Delacorte, 1977.)

- a. What is the intent of the author? _____

- b. Is the passage primarily fact or opinion? _____
Explain. _____

- c. T/F The author thinks ads may be silly and repetitive, but basically harmless.
Explain. _____

- d. T/F The author believes that some advertising is a dangerous form of education because it brainwashes us into thinking we can solve many of our personal problems by buying corporate products.
Explain. _____

- e. T/F The author's bias is easy to identify.
Explain. _____

PRACTICE B-2: Drawing Inferences from Descriptive Passages

Directions: Read the following passages and answer the questions that follow.

1. Daddy's genial voice sometimes traveled slowly through sentences, shaping each syllable correctly. He was polishing the skin of a second language. He would come to speak it much more eloquently than most people who grew up speaking only English. Sometimes he slipped Arabic words into our days like secret gift coins into a pocket, but we didn't learn his first language because we were too busy learning our own. I regret that now.
When someone else who spoke Arabic came to visit us, their language ignited the air of our living room, dancing, dipping and whirling. I would realize: all those sounds had been waiting inside our father! He carried a whole different world of sounds—only now did they get to come out! (From Naomi Shihab Nye, "Wealthy with Words," *The Most Wonderful Books*, Milkweed Editions, 1997, p. 193.)
 - a. T/F We can infer that the author's father's first language was Arabic.
 - b. T/F We can infer that her father learned to speak English well.
 - c. T/F We can infer that the author did not like the sound of Arabic being spoken.
 - d. T/F The author is bilingual.
 - e. What do you infer about the author's view of language? _____
2. My van (and the passage of nearly 200 years) had made my journey both faster and easier than theirs. For much of their journey west—as they fought the Missouri's relentless current for its entire 2,400-mile length, then trudged through the snowy Bitterroot Range—Lewis and Clark would have defined substantial progress as making 12 miles a day. Shooting down the Snake and Columbia Rivers in their

dugout canoes for the final stretch must have seemed like hyperdrive, although in fact it only increased their speed to 30 or 40 miles per day. No wonder it took them a year and a half to reach Cape Disappointment. Allowing plenty of time for unhurried stops and side trips, my camper covered the same distance in 60 days.

Needless to say, I also hadn't suffered the hardships the Corps of Discovery routinely faced: backbreaking toil, loss of a comrade to illness, encounters with enraged grizzlies, near-starvation in the ordeal across the Bitterroots, demoralizing coastal rains that rotted the clothes on their backs, and so much more. They had been making history; I was merely retracing it. (From Dayton Duncan, "American Odyssey," *Land's End Catalog*, July/August 2003.)

- a. T/F We can infer that the author followed the same route as the Lewis and Clark expedition in the early 1800s.
- b. T/F We can infer that the author admires what the Corps of Discovery went through.
- c. T/F The author feels proud of himself for having retraced the Corps of Discovery's route in only sixty days.
- d. What do you infer about the author, based on this passage? _____

3. With that thought in mind, I raised my head, squared my shoulders, and set off in the direction of my dorm, glancing twice (and then ever so discreetly) at the campus map clutched in my hand. It took everything I had not to stare when I caught my first glimpse of a real live football player. What confidence, what reserve, what muscles! I only hoped his attention was drawn to my air of assurance rather than to my shaking knees. I spent the afternoon seeking out each of my classrooms so that I could make a perfectly timed entrance before each lecture without having to ask dumb questions about its whereabouts.

The next morning I found my first class and marched in. Once I was in the room, however, another problem awaited me. Where to sit? ... After much deliberation I chose a seat in the first row and to the side. I was in the foreground (as advised), but out of the professor's direct line of vision.

I cracked my anthology of American literature and scribbled the date on the top of the crisp ruled page. "Welcome to Biology 101," the professor began. A cold sweat broke out at the back of my neck. (From Evelyn Herald, "Fresh Start," *Nutshell* magazine, 1989.)

- a. Where can we infer that the event described in the passage is taking place?

How can you tell? _____

- b. T/F The narrator telling the story is female. Explain. _____
- c. T/F We can infer from the author's tone that the author has a sense of humor. Explain. _____

- d. Why did the author break out in a cold sweat when the professor greeted the class? _____

- e. T/F We can infer that the author is not trying to conceal her true feelings. Explain. _____

C. Drawing Conclusions Using Induction and Deduction

A big part of critical reading is being able to draw conclusions based on the information authors provide. Once you understand the thesis or main idea of a reading selection, recognize fact from opinion, and understand intent, attitude, and inference, you almost automatically draw conclusions of your own. In fact, some of the questions you have been answering in the preceding practices require drawing conclusions based on the evidence provided.

Drawing conclusions is based on making **reasoned judgments**. Reasoned judgments usually come from two basic methods of reasoning: **deductive reasoning** and **inductive reasoning**. Deductive reasoning occurs when you begin with a general statement of truth and infer a conclusion about a particular specific. For instance, the old standby definition of deductive reasoning is shown through a **syllogism**, a three-step statement that begins with a general statement recognized as a truth and moves to a specific statement:

All humans are mortal.
 Britney Spears is a human.
 Therefore, Britney Spears is mortal.

Deductive reasoning is the subject of formal logic courses and involves a process of stating a series of carefully worded statements, such as the example just given, each related to the other statements. Deductive reasoning begins with a generalization:

All dogs are animals. or Athletes are physically strong.

The next statement identifies something as belonging (or not belonging) to that class:

_____ is a dog.

What would be a second statement for the athlete generalization?

For the first example, you should have given the name of a dog you know or a famous dog. For example, Lassie is a dog. For the second statement, you should have named an athlete. "Lance Armstrong is an athlete" would be one example.

The third statement of deductive reasoning is the inference you arrive at if the first two statements are true:

All dogs are animals.	Athletes are physically strong.
Lassie is a dog.	Lance Armstrong is an athlete.
Lassie is an animal.	Lance Armstrong is physically strong.

Fully understanding deductive reasoning takes a lot of study but, for the purpose of this introduction, you should be aware that you start with a generalization and use a careful reasoning process to arrive at a conclusion.

You can make errors with deductive reasoning if you start with faulty generalizations or premises. If you started with the generalization that “all college students have high IQs,” you would be starting with a false premise. Some college students have high IQs; others may be conscientious workers with average IQs.

Inductive reasoning works in the opposite way of deductive reasoning. With inductive reasoning, you begin with observing specifics and draw a general conclusion. You might move to a new town and notice that every time you see police officers they are wearing bright green uniforms. After seeing no police officer wearing anything other than this color, you might inductively reason that in this particular town the official police uniform is bright green.

Inductive reasoning is often used when you can't examine all the data but need to come to conclusions based on what you know. Political polls do this when they look at some voters and base conclusions on what “the people” want by that sample. You may come to inductive conclusions based on sensory observations (what you see or hear), lists or groups, cause-effect thinking, or pattern recognition.

Sensory observation: Using your eyes, ears, taste, touch, or smell involves sensory observation. The police uniform example in the previous paragraph is an example of sensory observation.

Lists or enumeration: Often we look at lists of items and come to conclusions based on those lists. You may look at lists of what prevents heart problems and conclude that you will not smoke and will exercise every day.

Cause-effect: When two events happen, we may decide that the first one was the cause of the second one (effect). Historians use this kind of reasoning. Cause-effect thinking means you notice that every time you run a red light, you are almost in an accident. The cause (running the red light) has a certain effect (near accident).

Pattern recognition: Pattern recognition involves looking at parts and drawing conclusions. A professor may notice one student who is rarely in class, doesn't turn in work, and flunks the midterm. That professor is likely to conclude that the student is a poor college student.

The conclusion you draw in inductive reasoning is usually called a hypothesis. Scientists use this method all the time.

As with deductive reasoning, you can make many errors with inductive reasoning. Some of these are listed in Practice C-3 of this chapter and include such obvious errors as oversimplification and using the wrong facts to come to your conclusion.

Perhaps the best way to explain these two types of reasoning is to quote Robert M. Pirsig in a passage from his book *Zen and the Art of Motorcycle Maintenance*:

If the cycle goes over a bump and the engine misfires, and then goes over another bump and the engine misfires, and then goes over another bump and the engine misfires, and then goes over a long smooth stretch of road and there is no misfiring, and then goes over a fourth bump and the engine misfires again, one can logically conclude that the misfiring is caused by the bumps. That is induction: reasoning from particular experiences to general truths.

Deductive inferences do the reverse. They start with general knowledge and predict a specific observation. For example if, from reading the hierarchy of facts about the machine, the mechanic knows the horn on the cycle is powered exclusively by electricity from the battery, then he can logically infer that if the battery is dead the horn will not work. That is deduction. (From Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance*, Morrow, 1974, p. 107.)

We use these two types of reasoning every day, often without even knowing it.

To look more closely at how we draw conclusions, read the following passage and then answer the questions that follow.

In 1832, a twenty-four-old Englishman named Charles Darwin, aboard the HMS Beagle on a surveying expedition around the world, was collecting beetles in a rain forest near Rio de Janeiro. In one day, in one small area, he found over sixty-eight different species of small beetles. That there could be such a variety of species of one kind of creature astounded him. In his journal he wrote that such a find "... is sufficient to disturb the composure of an entomologist's mind..." The conventional view of his day was that all species were unchangeable and that each had been individually and separately created by God. Far from being an atheist, Darwin had taken a degree in divinity in Cambridge. But he was deeply puzzled by his find. (Adapted from James Burke, *The Day the Universe Changed*, Little, Brown, 1985, p. 267.)

1. T/F We can draw the conclusion that Darwin was not actually out searching for what he found.
2. T/F The evidence provided for our conclusion is based partly on Darwin's journal.
3. T/F What Darwin discovered was contrary to the beliefs of his day.
4. T/F Darwin's later "theory of evolution," that species were not fixed forever, probably began with his discovery about the beetle.

All of the answers to these questions are true. Based on his journal statement that the find was "sufficient to disturb" his composure, the statement that he was "deeply puzzled," and the fact that what he found was contrary to what he had been taught to believe all provide evidence to support our conclusions that he was not looking for what he found.

Even though no one living today was with Darwin in 1832, his journal notes leave evidence to help answer question 2 as true. As to question 3, if Darwin had a degree in divinity from Cambridge, he would have been taught to believe what was accepted as "fact" in his day: that God individually and separately created all species. The fact that he found sixty-eight different species is contrary to such a belief.

The statement in question 4 is true, but unless you know what Charles Darwin's "theory of evolution" is, you might have difficulty drawing such a conclusion. If you know that he continued to pursue the suspicion in his mind that all species were not fixed forever, and that he eventually wrote *On the Origin of Species by Means of Natural Selection*, then there's no problem in answering this question as true.

The following practices are designed to help you develop your ability to draw conclusions from what you read.

PRACTICE C-1: Drawing Conclusions from Paragraphs

Directions: Read the following paragraphs and answer the questions that follow.

1. Look for a moment at the situation in those nations that most of us prefer to label with the euphemism “underdeveloped,” but which might just as accurately be described as “hungry.” In general, underdeveloped countries (UDCs) differ from developed countries (DCs) in a number of ways. UDCs are not industrialized. They tend to have inefficient, usually subsistence agricultural systems, extremely low gross national products and per capita incomes, high illiteracy rates, and incredibly high rates of population growth. . . . Most of these countries will never, under conceivable circumstance, be “developed” in the sense in which the United States is today. They could accurately be called “never-to-be-developed” countries. (From Paul Ehrlich and Anne Ehrlich, *Ecoscience: Population, Resources and Environment*, Freeman, 1977.)
 - a. The intent of the passage is to _____
 - b. T/F The authors of the passage have drawn the conclusion that UDCs exist because they are not industrialized and have poor agricultural systems, high illiteracy rates, low incomes, and too much population growth.
 - c. T/F If a UDC has a population growth that is too high for its agricultural system, we can draw the conclusion that it will never become a DC.
 - d. T/F We can draw the conclusion from the information in the passage that the authors feel UDCs can eventually become DCs.
 - e. Identify what kind of reasoning (inductive or deductive) is required to answer question 1 (d). _____
2. Science is sometimes confused with technology, which is the application of science to various tasks. Grade-school texts that caption pictures of rockets on the moon with the title, “Science Marches On!” aid such confusion. The technology that makes landing on the moon possible emerged from the use of scientific strategies in the study of propulsion, electronics, and numerous other fields. It is the mode of inquiry that is scientific; the rocket is a piece of technology.

Just as science is not technology, neither is it some specific body of knowledge. The popular phrase “Science tells us that smoking is bad for your health” really misleads. “Science” doesn’t tell us anything; people tell us things, in this case people who have used scientific strategies to investigate the relationship of smoking to health. Science, as a way of thought and investigation, is best conceived of as existing not in books, or in machinery, or in reports containing numbers, but rather in that invisible world of the mind. Science has to do with the way questions are formulated and answered; it is a set of rules and forms for inquiry created by people who want reliable answers. (From Kenneth R. Hoover, *The Elements of Social Scientific Thinking*, 3rd edition, St. Martin’s, 1984, pp. 4–5.)

 - a. The intent of the passage is to _____

- b. T/F According to the author, some grade-school textbooks contribute to the confusion between science and technology.
 - c. T/F The author does not think there is much difference between the terms *science* and *technology*.
 - d. T/F The author does not believe that science is something that cannot be written down.
 - e. T/F The author would agree with the statement, "Science has proven that too much sun causes skin cancer."
 - f. T/F The author has respect for scientific thinking.
 - g. What kind of reasoning (inductive or deductive) did you use to answer question 2 (f)? _____
-

3. Some years ago, I ran into an economist friend at the University of Michigan in Ann Arbor who told me, with concern bordering on shock, that assembly-line workers at the nearby Ford plant in Dearborn were making more money than an assistant professor at the University. It occurred to me that quite a few at Ford might prefer the more leisured life of a young professor: Certainly there seemed no need to fear any major movement of academic talent from Ann Arbor to the noisome shops in Dearborn. (From John Kenneth Galbraith, "When Work Isn't Work," *Parade*, February 10, 1985.)
- a. T/F The author's economist friend believes that a university professor should be paid more than an assembly-line worker.
 - b. T/F The author agrees with his friend.
 - c. T/F The author feels that a university professor's work is easier than factory work.
 - d. T/F Because the pay is better for factory work, many professors will probably leave the university to seek factory jobs.
 - e. T/F The author probably believes that the usual definition of *work* can be misleading when comparing various types of jobs.
4. Almost everyone in the middle class has a college degree, and most have an advanced degree of some kind. Those of us who can look back to the humble stations of our parents or grandparents, who never saw the inside of an institution of higher learning, can have cause for self-congratulation. But—inevitably but—the impression that our general populace is better educated depends on an ambiguity in the meaning of the word education, or fudging of the distinction between liberal and technical education. A highly trained computer specialist need not have any more learning about morals, politics or religion than the most ignorant of persons.... It is not evident to me that someone whose regular reading consists of *Time*, *Playboy* and *Scientific American* has any profounder wisdom about the world than the rural schoolboy of yore with his McGuffey's reader. (From Allan Bloom, *The Closing of the American Mind*, Simon and Schuster, 1987, p. 59.)
- a. T/F The author believes that the general public today is better educated than before.
 - b. T/F The "McGuffey's reader" must have been a widely used textbook in schools at one time.
 - c. T/F The author believes that learning about morals, politics, and religion is not the function of institutions of higher learning.

- d. T/F The author favors a technical education over a liberal one.
- e. T/F The passage suggests that the author is pleased with the direction education is taking and thinks it is much better than it was in his grandparents' day.
- f. Identify the type of reasoning (*inductive* or *deductive*) the author uses to come to his conclusion. _____

PRACTICE C-2: Arguments and Responses

Directions: The legal drinking age in the United States is 21. Some people want to lower the age, in most cases to age 18. Presented here are some argumentative statements or claims as reasons for lowering the legal age to 21. Responses to those arguments follow. Read each argument and response, then answer the questions that follow.

Statement 1

Argument

Lowering the drinking age will reduce the allure of alcohol as a "forbidden fruit" for minors.

Response

Lowering the drinking age will make alcohol more available to an even younger population, replacing "forbidden fruit" with "low-hanging fruit."

The practices and behaviors of 18-year-olds are particularly influential on 15–17-year-olds. If 18-year-olds get the OK to drink, they will be modeling drinking for younger teens. Legal access to alcohol for 18-year-olds will provide more opportunities for younger teens to obtain it illegally from older peers.

Age-21 has resulted in decreases, not increases in youth drinking, an outcome inconsistent with an increased allure of alcohol. In 1983, one year before the National Minimum Purchase Age Act was passed, 88% of high school seniors reported any alcohol use in the past year and 41% reported binge drinking. By 1997, alcohol use by seniors had dropped to 75% and the percentage of binge drinkers had fallen to 31%. (From Opposing Viewpoints Resource Center, document X3010084223, <http://www.galenet.galegroup.com/servlet/OVRC>.)

- a. The argument for lowering the drinking age uses the term "forbidden fruit." Explain what is meant. _____
- b. T/F The argument is based mostly on fact.
- c. T/F The response to the argument is based mostly on facts.
- d. Draw your own reasoned conclusion on the argument. If you support the argument, what reasons do you have? _____

Statement 2

Argument

At 18, kids can vote, join the military, sign contracts, and even smoke. Why shouldn't they be able to drink?

Response

Ages of initiation vary—one may vote at 18, drink at 21, rent a car at 25, and run for president at 35. These ages may appear arbitrary, but they take into account the requirements, risks, and benefits of each act.

When age-21 was challenged in Louisiana's State Supreme Court, the Court upheld the law, ruling that "statutes establishing the minimum drinking age at a higher level than the age of majority are not arbitrary because they substantially further the appropriate governmental purpose of improving highway safety, and thus are constitutional."

Age-21 laws help keep kids healthy by postponing the onset of alcohol use. Deferred drinking reduces the risks of:

- developing alcohol dependence or abuse later in life.
- harming the developing brain.
- engaging in current and adult drug use.
- suffering alcohol-related problems, such as trouble at work, with friends, family, and police. (From Opposing Viewpoints Resource Center, document X3010084223, <http://www.galenet.galegroup.com/servlet/OVRC>.)

- a. T/F As stated, the argument is mostly opinion.
- b. Explain why you agree or disagree with the argument. _____

- c. T/F The response uses more facts than opinions.
- d. State your own conclusion regarding the argument and what reasoning you used. _____

Statement 3**Argument**

Minors still drink, so age-21 laws clearly don't work.

Response

Age-21 laws work. Young people drink less in response. The laws have saved an estimated 17,000 lives since states began implementing them in 1975, and they've decreased the number of alcohol-related youth fatalities among drivers by 63% since 1982.

Stricter enforcement of age-21 laws against commercial sellers would make those laws even more effective at reducing youth access to alcohol. The ease with which young people acquire alcohol—three-quarters of 8th graders say that it is "fairly easy" or "very easy" to get—indicates that more must be done. Current laws against sales to minors need stiff penalties to deter violations. Better education and prevention-oriented laws are needed to reduce the commercial pressures on kids to drink. (From Opposing Viewpoints Resource Center, document X3010084223, <http://www.galenet.galegroup.com/servlet/OVRC>.)

- a. T/F As stated, the argument is mostly opinion, but true.
- b. Explain why you agree or disagree with the argument. _____

- c. T/F The response uses more facts than opinions.
 - d. State your own conclusion regarding the argument and what reasoning you used.
-

Questions for Group Discussion

1. As a group, discuss your views on lowering the drinking age. Are your views and conclusions based on reasoned judgment? Review pages 274–276 on reasoning.
2. Of late, “binge drinking” on college campuses has received widespread coverage. Does this occur on your campus? Why does drinking seem to attract many students?
3. If your group has access to the online Opposing Viewpoints Research Center, go there and read the article “The Drinking Age Should Be Lowered” by Michael Clay Smith and compare it with what you just read. Is it mostly facts or opinions? Is the argument based on reasoned judgments?

Logical Fallacies

Of course, we can make mistakes in our reasoning. Sometimes we make statements that draw the wrong conclusions. These are called **logical fallacies**. Here are some of the more common fallacies that you should avoid making and that you should look for when you are reading:

1. *Either-or thinking* or *oversimplification* occurs when a simplistic answer is given to a large problem: “You want to get rid of abortion clinics? Let’s blow them up.” Either-or thinking is also oversimplifying issues: “Let’s either get rid of all the nuclear weapons in the world, or learn to live with the bomb.” Such thinking ignores or covers up other possible answers to a problem.
 2. *Stereotyping* ignores individuality. There are stereotypes about political parties (Republicans are pro-rich people; Democrats are pro-poor people), stereotypes about Jews (they always look for bargains), stereotypes about blacks (they are better athletes), and so on. Stereotyping disallows looking at people, groups, or ideas on individual merit.
 3. *Attacking a person’s character* (the Latin term for this reasoning is *ad hominem*) to discredit someone’s views is also a faulty way to reason: “Sure, Senator Nicely favors a bill to stop acid rain from being carried to Canada. Why shouldn’t he? He owns a big farm in Canada and probably plans to retire there.”
 4. *Non sequiturs* (just a fancy Latin name for “it does not follow”) occur when a logical reason is not provided for the argument being made. It’s a contradiction when a person says, “Clint Eastwood would make a good president; his Dirty Harry movies show you how tough he’d be on crime.” The two assertions don’t logically follow, since one has nothing to do with the other.
 5. *Arguments because of doubtful sources* occur when an unknown source or a source lacking authority is cited: “The government doesn’t want us to know about UFOs, but the *National Enquirer* has been providing a lot of evidence that proves contrary.” While it might be true that the government is hiding something, the *National Enquirer’s* reputation for sensationalism does not make it a good source to use as a convincing argument. Also, be careful when you read that a story comes from an unnamed “high-level official.”
-

6. *Begging the question* occurs when an argument uses circular reasoning. An argument is circular if its premise assumes that its central point is already proven and uses this in support of itself. Arguing that drunken drivers are a menace is begging the question since it's already been proven that they are.
7. *Irrational appeal* occurs when appeals to our emotions, to our religious faith, or to authority are made rather than appeals or reasons based on logic. "Of course you'll vote Republican; our family always has." "I'll get even. The Bible says 'an eye for an eye.'" "My country, right or wrong."
8. *Mistaking the reason for an occurrence* happens when we fail to see there may be other causes or we are misled. "John is a naturally brilliant student." (Is John brilliant, or does he do well in school because his parents make him study more than others? Maybe he's trying to impress a girl in his class.) "Karla is absent from class again. She must not be a serious student." (Maybe Karla has a health problem, or a small child to attend, or lacks transportation to campus on certain days.)

There are many kinds of faulty reasoning, but the ones described in this chapter are some of the more common ones you should begin to look for and avoid using when you draw conclusions or make inferences.

PRACTICE C-3: Identifying Logical Fallacies

Directions: Read the following dialogues and determine which of the following logical fallacies or errors in reasoning appear in the argument. There may be more than one type in a dialogue.

- | | |
|--|---|
| <ol style="list-style-type: none"> a. either-or thinking (oversimplification) b. stereotyping c. attacking character d. non sequitur (contradiction) | <ol style="list-style-type: none"> e. doubtful sources f. begging the question g. irrational appeal h. mistaking the reason |
|--|---|
1. **SAM:** There's only one real aim of education—to learn all you can while going to school.
GEORGE: Nonsense. Today, the only real reason to go to college is to get the skills necessary for a good job.
 Error in reasoning: _____
 Explain: _____
 2. **PAULA:** Let's go hear the Nicaraguan ambassador at Fraley Hall tonight. It should be interesting to hear his views.
SUE: There's nothing that little commie's got to say that I want to hear.
 Error in reasoning: _____
 Explain: _____
 3. **HARRY:** George is forming an organization to protest the dumping of toxic waste near the bird wildlife sanctuary. He really seems concerned about this. Quite a few people I know are joining with him. I think I will, too.

SALLY: Don't be a sucker: George's just doing it to bring attention to himself. He plans to run for president of the student body next term and wants to look good. Anyway, I dated him once and he came on too strong for me.

Error in reasoning: _____

Explain: _____

4. KIP: You going to vote for Sally? She'd make a good school representative on the board of education. She gets As in all her classes.

PIP: You kidding? What does she know about politics? Anyway, a female's place is in the home, not running for office.

Error in reasoning: _____

Explain: _____

5. DALE: Did you hear that Sue is moving to the Midwest? She's convinced a major earthquake is going to hit us any day now.

FRED: She may be right. Have you been reading that series on natural disasters in the local newspaper? They predict an 8.8 earthquake will occur here in the next two years. The Midwest is a lot safer, that's for sure.

Error in reasoning: _____

Explain: _____

6. RAUL: Did you read about the junior high kid who stabbed and killed his friend after they watched the movie *Friday the 13th* on TV?

PAM: Isn't that terrible? Maybe now they'll stop showing that worthless junk on television. Everybody knows what a big influence TV viewing has on kids.

RAUL: But how will this incident change anything?

PAM: Now there's proof of the harm.

Error in reasoning: _____

Explain: _____

PRACTICE C-4: Evaluating Pros and Cons of an Argument

Directions: Disagreements on what type of sex education should be provided in public schools continues. One camp believes that teenagers should be taught abstinence only. Another camp believes teaching abstinence only does not work alone and that teaching comprehensive safe sex and contraception methods should be part of a sex education program for teens. One of the following selections advocates abstinence-only programs, the other argues for comprehensive sex education programs. Apply all the reading skills you have learned as you read each one. How well is each opinion supported?

Pro Argument

At the time she wrote the following selection, Kathleen Tsubata was codirector of the Washington AIDS International Foundation and taught HIV/AIDS prevention.

ABSTINENCE-ONLY PROGRAMS BENEFIT YOUTHS

KATHLEEN TSUBATA

- 1 The current tug-of-war between "abstinence-only" and "comprehensive" sexual-education advocates is distracting us from the real issue. We are in a war against forces far more unforgiving than we ever have encountered. We must look at what works to save lives. My work brings me to deal with teens every day, in public schools, churches and community organizations, teaching HIV/AIDS prevention. I train teens to teach others about this genocidal plague that is sweeping nations around the world and depleting continents of their most-productive population. I can tell you that most teens have a very superficial understanding of HIV and that many are putting themselves at risk in a wide variety of ways.
- 2 While teen pregnancy is serious, it is still, in one sense, the lesser evil. It's a difficult thing to bear a child out of wedlock, with the accompanying loss of education, financial stability and freedom. However, compared to HIV, it's a walk in the park. Make no mistake about it: The choice of sexual activity is a life-and-death matter, as Third World nations are finding out in stark terms.

THE PROBLEM WITH CONDOMS

- 3 Having multiple sexual partners is the No. 1 risk factor for contracting HIV and 19 percent of teens have had four or more sexual partners.
- 4 "So teach them to use condoms!" we are told. Studies indicate that condoms, if used correctly and consistently, may lower the transmission rate to 15 to 25 percent. That's not a fail-safe guarantee, as any condom manufacturer under litigation quickly would point out.
- 5 But there are two additional problems with condoms being the central pillar of HIV prevention. First, correct usage of condoms is hard to achieve in the dimly lit, cramped back seat of a car. Second, and more importantly, kids simply make decisions differently than adults. Janet St. Lawrence, of the Centers for Disease Control and Prevention (CDC), related the results of one behavioral study to me in a phone conversation [in 2002]. In that study, teens reported using a condom for their first sexual contact with someone, and subsequent contacts, "until they felt the relationship was permanent," St. Lawrence said. Then they stopped using condoms. These teens were asked what defines a "permanent" relationship. "Lasting 21 days or longer," was their response. In other words, such a teen could start a relationship, initiate sex using a condom, decide after three weeks that it is "safe" to stop using a condom, break up and replay the whole cycle, convinced that this was responsible sexual behavior.
- 6 Teens are not realistic because they are young and not fully developed in key mental and emotional areas. They tend to imbue love with magical properties, as if the emotion is a sanitizing force, and that their trust can be shown by the willingness to take risks. Kids process information differently than adults. Parents know this. Saying "It's best not to have sex, but if you do, use a condom" is translated in their minds to "It's okay to have sex if you use a condom." Then, if they feel "this is true love," they convince themselves that even that is unnecessary. That's why during four decades of sex education we witnessed steep increases in sexual activity and the consequential increases in teen pregnancy, sexually transmitted diseases and poverty.

From "Insight in the News." Used with permission.

THE BENEFITS OF ABSTINENCE EDUCATION

- 7 Only when abstinence education began in recent years did the numbers of sexually active teens go down a full 8 percentage points from 54 percent of teens to 46 percent, according to the 2001 *Youth Risk Behavior Surveillance*, published by the CDC. Simultaneously, teen pregnancies went down, abortions went down and condom use went up among those who were sexually active. Raising the bar to establish abstinence as the best method indirectly resulted in more-responsible behavior in general.
- 8 You would think such good news would have people dancing in the aisles. Instead, the safe-sex gurus grimly predict that increased abstinence education will result in teens giving in to natural urges without the benefit of latex. Or, the critics of abstinence-until-marriage education insisted that their programs (which pay lip service to abstinence) somehow reached teens more effectively than the programs that focused on abstinence. A third interpretation is that contraception, not abstinence, has lowered the numbers.
- 9 However, a study of lowered teen-pregnancy rates between 1991 and 1995 (published in *Adolescent and Family Health* by Mohn, Tingle et al., April 2003) showed that abstinence, not contraceptives, was the major cause of the lowered pregnancy rate. Another 1996 study, by John Vessey, of Northwestern University Medical School, followed up on 2,541 teens, ages 13 to 16, who completed an abstinence-education program. He reported that one year after completing the program, 54 percent of formerly sexually active teens no longer were sexually active. This puts to rest the idea that "once a teen has sex, they will continue to be sexually active."
- 10 It often is claimed that most parents want pro-contraceptive education for their kids. In fact, a nationwide Zogby International poll of 1,245 parents in February [2003] (see poll results at www.whatparentsthink.com) commissioned by the pro-abstinence Coalition for Adolescent Sexual Health found that when shown the actual content of both comprehensive and abstinence-only sex-education programs, 73 percent of parents supported abstinence education and 75 percent opposed the condom-based education, with 61 percent opposing the comprehensive sex-ed programs.
- 11 But what do teens themselves think? In a 2000 study by the National Campaign to Prevent Teen Pregnancy, 93 percent of the teens surveyed said there should be a strong message from society not to engage in sex at least until graduation from high school. Will abstinence education cause sexually active teens to be unable to find out about contraception? The small amount in abstinence-education funding requested by Congress (\$135 million among three programs) is miniscule compared with the \$379 million funding of only six of the 25 federal programs teaching contraceptive-based education. This is Goliath complaining that David is using up all the rocks.
- 12 But, in all good conscience, can we teach something that would put kids in danger of contracting HIV, even if at a somewhat-reduced risk? Can we glibly decide, "Oh, only 15 percent of users will die?" That's acceptable? The stakes simply are too high. Even one life is too important to lose. When we're talking about life and death, we can't settle for the soggy argument of "Kids are going to do it anyway." That's what used to be said about racial discrimination, drunk driving and cigarette smoking, but when people became serious about countering these behaviors, they receded. If we realize the necessity of saving every teen's life, we can't help but teach them that because sex is wonderful, powerful and life-changing, it must be treated with great care.

THE NEED TO LIMIT SEXUALITY

- 13 Sex is most pleasurable and joyful when there is no fear of disease, when both partners feel absolute trust in the other, when the possibility of a pregnancy is not a destructive

one and when each person truly wants the best for the other. This takes self-development, investment, emotional growth, responsibility and a whole host of other elements a typical teen doesn't possess, unless they are guided. In reality, every person already is aware of the need to limit sexuality to certain times and places, like many activities. Sexuality is far more complex than the physical mechanics of orgasm. That stuff is pretty much automatic. It's far more important to know that orgasm is the perfectly engineered system for creating life, and for experiencing the fulfillment of love.

- 14 Abstinence isn't a vague ideal but a practical, feasible life skill. Studies show that kids who are able to say no to sex also can say no to drugs, alcohol and tobacco. The skills in one area automatically transfer to other areas of health. Learning to delay gratification can have positive impacts on academic goals and athletic accomplishments.
- 15 Without the soap-opera distractions of sex, kids feel more confident and free to enjoy the process of making friends, developing their own individuality and working on their dreams. That's why virtually no one looks back on the decision to be sexually abstinent and says "I wish I had never done that," But 63 percent of teen respondents who have had sex regretted it and said they wish they had waited, according to an International Communications Research of Media survey in June 2000 commissioned by the National Campaign to Prevent Teen Pregnancy. Further, 78 percent of the 12- to 17-year-old respondents said teens should not be sexually active, and only 21 percent thought sex for teens was okay if they used birth control.

YOUTHS WANT SUPPORT

- 16 Teens are telling us that they need support to resist the pressure to have sex. Even just making an abstinence pledge was found to delay sexual debut by 18 months on average, according to the National Longitudinal Study on Adolescent Health in 1997. And teens who know their parents have a strong belief and expectation of abstinence are far more likely to abstain, as shown in two 2002 studies released by the University of Minnesota Center for Adolescent Health and Development in which more than 80 percent of teens stayed abstinent when they knew their mothers strongly disapproved of premarital sex.
- 17 Even if it were only to end the spread of HIV/AIDS, that would be a valid reason to support abstinence education.
- 18 But teaching abstinence goes beyond preventing disease and unwanted pregnancy. It helps kids improve in the areas of self-esteem, academic attainments and future careers. It increases refusal skills toward drugs, alcohol and smoking. It equips teens with tools that they will use successfully through-out life, especially in their eventual marriage and family life. In other words, it has a positive ripple effect both in terms of their current and future life courses.
- 19 In my estimation, that definitely is worth funding.

Now answer the following questions. You may need to skim the selection for the answers.

1. What does Tsubata believe has helped lower teen pregnancy rates and can help protect youths from life-threatening diseases? _____
 2. What two reasons does the author see as a problem with teaching the use of condoms? _____
-

3. What proof does the author provide for her statement that abstinence, not contraception, has lowered teen pregnancy rates? _____
4. Besides health benefits, the author feels that by practicing sexual abstinence, teens improve in self-esteem and academic attainments; learn refusal toward drugs, alcohol and smoking; and acquire tools used successfully throughout life. What factual evidence does the author give to support the benefits? _____
5. Why does Tsubata mention that she works with teens everyday in public schools, churches, and community organizations, teaching HIV prevention? _____
6. Is the author's argument logical and balanced? _____

Con Argument

The following essay was published by the American Civil Liberties Union (ACLU), a civil rights and individual liberties advocacy group.

As you read, look for the arguments used to counter the previous selection on sex education.

ABSTINENCE-ONLY PROGRAMS DO NOT WORK

American Civil Liberties Union

- 1
 - Nearly two-thirds of all high school seniors in the U.S. have had sexual intercourse.
 - Each year, approximately 9.1 million 15–24 year olds are infected with sexually transmitted diseases (STDs), accounting for almost one-half of the total new STDs occurring annually in the U.S.
 - The Centers for Disease Control and Prevention estimate that one-half of all new HIV infections occur among people under age 25, with the majority contracted through sexual intercourse.
 - An estimated 757,000 pregnancies occurred among 15–19 year olds in 2002.
- 2 These statistics demonstrate a high level of sexual activity and risk taking among U.S. teens. Indeed, the U.S. has one of the highest teen pregnancy rates in the developed world. The good news is that in recent years this rate dropped. From 1995–2002, the pregnancy rate among 15–19 years olds declined by nearly 24 percent. Researchers attribute 86 percent of this decline to improved contraceptive use and only 14 percent to teens choosing not to have sexual intercourse. Despite this reality, Congress has allocated more than a billion dollars since 1996 for programs that focus exclusively on abstinence until marriage and censor vital health care information about contraceptives.
- 3 The ACLU supports programs that give teens the information they need to make healthy and responsible decisions about sex. Evidence shows that stressing

American Civil Liberties Union, "Abstinence-Only-Until-Marriage Programs Censor Vital Health Care Information," August 2007, <http://www.aclu.org/reproductiverights/sexed/12670res20070319.html>.

the importance of waiting to have sex while providing accurate, age-appropriate, and complete information about how to use contraceptives can help teens delay sex and reduce sexual risk taking. In addition to censoring vital health care information, abstinence-only-until-marriage programs raise other serious civil liberties concerns: They create a hostile environment for gay and lesbian teens; reinforce gender stereotypes; and in some instances use taxpayer dollars to promote one religious perspective.

Abstinence-Only-Until-Marriage Programs Censor Vital Health Information

4 Currently, there are three federal programs dedicated to funding abstinence-only-until-marriage programs. Each requires eligible programs to censor critical information that teens need to make healthy and responsible life decisions.

5 To receive funds under any of the federal programs, grantees must offer curricula that have as their "exclusive purpose" teaching the benefits of abstinence. In addition, recipients of abstinence-only-until-marriage dollars may not advocate contraceptive use or teach contraceptive methods except to emphasize their failure rates.

6 Thus, recipients of federal abstinence-only-until-marriage funds operate under a gag order that censors vitally needed information. Grantees are forced either to omit any mention of topics such as contraception, abortion, homosexuality, and AIDS or to present these subjects in an incomplete and thus inaccurate fashion.

7 **Research Shows that Abstinence-Only-Until-Marriage Programs Don't Work**
A rigorous, multi-year, scientific evaluation authorized by Congress and released in April 2007 presents clear evidence that abstinence-only-until-marriage programs don't work. The study by Mathematica Policy Research, Inc., which looked at four federally funded programs and studied more than 2,000 students, found that abstinence-only program participants were just as likely to have sex before marriage as teens who did not participate. Furthermore, program participants had first intercourse at the same mean age and the same number of sexual partners as teens who did not participate in the federally funded programs.

8 In addition, an academic study of virginity pledge programs—which encourage students to make a pledge to abstain from sex until marriage and are often a component of abstinence-only-until-marriage curricula—found that while in limited circumstances virginity-pledgers may delay first intercourse, they still have sex before marriage and are less likely than non-pledgers to use contraception at first intercourse and to get tested for STDs when they become sexually active.

9 On the other hand, there is ample evidence that programs that include information about both abstinence and how to use contraceptives effectively delay sex and reduce sexual risk taking among teens. Many of these programs have been shown to "delay the onset of sex, reduce the frequency of sex, reduce the number of sexual partners among teens, or increase the use of condoms and other forms of contraception" among sexually active teens. Research also shows that sex education curricula that discuss contraception—by presenting accurate information about contraceptive options, effectiveness, and use—do not increase sexual activity.

Abstinence-Only-Until-Marriage Programs Withhold Information Teens Need to Make Healthy and Responsible Life Decision

10 Abstinence-only-until-marriage programs are increasingly replacing other forms of sex education in high schools. Between 1995 and 2002, "[t]he proportion of adolescents who had received any formal instruction about methods of birth control declined significantly," and by 2002, one-third of adolescents had not received any instruction on contraception. At the same time, in 1999, 23 percent of secondary school sexuality

education teachers taught abstinence as the only way of avoiding STDs and pregnancy, up from 2 percent in 1988. When abstinence-only-until-marriage programs do present information about pregnancy prevention and testing and treatment of STDs, they do so incompletely and/or inaccurately. For example, a 2004 congressional report concluded that many federally funded abstinence-only-until-marriage curricula "misrepresent the effectiveness of condoms in preventing sexually transmitted diseases and pregnancy" by exaggerating their failure rates.

- 11 We need to help teenagers make healthy and responsible life decisions by giving them full and accurate information about the transmission and treatment of STDs, and how to use contraception effectively. Abstinence-only-until-marriage programs jeopardize the health of sexually active teens and leave those who become sexually active unprepared.

Abstinence-Only-Until-Marriage Programs Create a Hostile Environment for Lesbian and Gay Teens

- 12 Many abstinence-only-until-marriage programs use curricula that discriminate against gay and lesbian students and stigmatize homosexuality. The federal guidelines governing these programs state that they must teach that a "mutually faithful monogamous relationship in [the] context of marriage is the expected standard of human sexual activity." In a society that generally prohibits gays and lesbians from marrying, such a message rejects the idea of sexual intimacy for lesbians and gays and ignores their need for critical information about protecting themselves from STDs in same-sex relationships.
- 13 A review of the leading abstinence-only-until-marriage curricula found that most address same-sex sexual behavior only within the context of promiscuity and disease, and several are overtly hostile to lesbians and gay men. For example, materials from an abstinence-only-until-marriage program used recently in Alabama state, "[S]ame sex 'unions' cannot provide an adequate means of achieving a genuine physical relationship with another human being because this type of 'union' is contrary to the laws of nature."
- 14 By talking only about sex within marriage and teaching about STDs as a form of moral punishment for homosexuality, abstinence-only-until-marriage programs not only undermine efforts to educate teens about protecting their health, but create a hostile learning environment for lesbian and gay students and the children of lesbian and gay and/or single parents.

Many Abstinence-Only-Until-Marriage Programs Feature Harmful Gender Stereotypes

- 15 In addition to false and misleading information, many abstinence-only-until-marriage programs present stereotypes about men and women as scientific facts. In an attempt to demonstrate differences between men and women, one popular program, WAIT Training, instructs teachers to "[b]ring to class frozen waffles and a bowl of spaghetti noodles without sauce. Using these as visual aids, explain how research has found that men's brains are more like the waffle, in that their design enables them to more easily compartmentalize information. Women's minds, on the other hand, are interrelated due to increased brain connectors." Similarly, the teacher's manual for Why Know Abstinence Education Programs suggests that girls are responsible for boys' inability to control their sexual urges: "One subtle form of pressure can be the way in which a girl acts toward her boyfriend. If the girlfriend is constantly touching him and pressing against him, or wearing clothing which is tight or revealing of her body, this will cause the guy to think more about her body than her person, and he may be incited toward more sexual thoughts."

- 16 Many abstinence-only-until-marriage programs are riddled with similarly troubling discussions of gender. Such stereotypes and false information undermine women's equality and promote an outmoded and discredited view of women's and men's roles and abilities.

Some Abstinence-Only-Until-Marriage Programs Use Taxpayer Dollars to Promote One Religious Perspective

- 17 Although the U.S. Constitution guarantees that the government will neither promote nor interfere with religious belief, some abstinence-only-until-marriage grantees violate this core freedom by using public dollars to convey overt religious messages or to impose religious viewpoints. The ACLU has successfully challenged this misuse of taxpayer dollars:
- In May 2005, the ACLU filed a lawsuit challenging the federally funded promotion of religion by a nationwide abstinence-only-until-marriage program called the Silver Ring Thing. The program was rife with religion. In its own words, "The mission of Silver Ring is to saturate the United States with a generation of young people who have taken a vow of sexual abstinence until marriage.... This mission can only be achieved by offering a personal relationship with Jesus Christ as the best way to live a sexually pure life." The lawsuit, *ACLU of Massachusetts v. Leavitt*, brought swift results: In August 2005, the U.S. Department of Health and Human Services (HHS) suspended the Silver Ring Thing's funding, pending corrective or other action. And in February 2006, the parties reached a settlement in which HHS agreed that any future funding would be contingent on the Silver Ring Thing's compliance with federal law prohibiting the use of federal funds to support religious activities. Soon after, HHS released new guidelines for all abstinence-only-until-marriage grantees to ensure that government funds will not be used to promote religion. These guidelines were modeled after the settlement agreement in *ACLU of Massachusetts v. Leavitt*.
 - In 2002, the ACLU challenged the use of taxpayer dollars to support religious activities in the Louisiana Governor's Program on Abstinence (GPA), a program run on federal and state funds. Over the course of several years, the GPA had funded programs that, among other things, presented "Christ-centered" theater skits, held a religious youth revival, and produced radio shows that "share abstinence as part of the gospel message." In violation of the Constitution, a federal district court found that GPA funds were being used to convey religious messages and advance religion. The court ordered Louisiana officials to stop this misuse of taxpayer dollars. The case was on appeal when the parties settled. The GPA agreed to closely monitor the activities of the programs it funds and to stop using GPA dollars to "convey religious messages or otherwise advance religion in any way."

Parents, Teachers, and Major Medical Groups Support Comprehensive Sexuality Education

- 18 The vast majority of U.S. parents, teachers, and leading medical groups believe that teens should receive complete and accurate information about abstinence and contraception.
- In a nationwide poll conducted in 2004 for the Kaiser Family Foundation, National Public Radio, and the Kennedy School of Government, researchers found that an overwhelming majority of parents want sex education curricula to cover topics such as abortion and sexual orientation, as well as how to use and where to get contraceptives, including condoms.

- A 1999 nationally representative survey of 7th-12th grade teachers in the five specialties most often responsible for sex education found that a strong majority believed that sexuality education courses should cover birth control methods (93.4%), factual information about abortion (89%), where to go for birth control (88.8%), the correct way to use a condom (82%), and sexual orientation (77.8%), among other topics.
- Similarly, major medical organizations have advocated for and/or endorsed comprehensive sexuality education, including the American Medical Association, the American Academy of Pediatrics, the American College of Obstetrics and Gynecology, and the Society for Adolescent Medicine.

Now answer the following questions.

1. What position does the ACLU take regarding abstinence-only education programs?

2. T/F The ACLU believes that federal funds should support comprehensive sex education in high school courses which includes teaching contraceptive methods.
3. On what sources does the ACLU base its information stating there is no link between abstinence-only education with a downward trend in teens reporting they have had sex? _____

4. Does the ACLU provide sources for their statement that parents, teachers, and medical groups believe students should receive comprehensive sex education?

5. Is the ACLU's argument well balanced and logical? _____

Considering the Pros and Cons of Both Arguments

1. Whether or not you are for or against comprehensive sex education, which argument is most persuasive? Why? _____

 2. Even if you agree with her, what might Tsubata have done to be more convincing?

 3. Even if you agree with the ACLU, what might have made their argument more convincing? _____

 4. How much do your own attitudes and bias on the subject have to do with which argument you think is most convincing? _____

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