

2 *CHAPTER 1 Critical Thinking?*

- k. Whenever Spot barks, Zoe gets mad.
 - l. The Dodgers aren't going to win a World Series for at least another ten years.
 - m. If you don't pay your taxes on time, you'll have to pay more to the government.
 - n. $2 + 2 = 5$
 - o. I feel cold today.
 - p. There are an odd number of stars in the universe.
5. Write down five sentences, four of which are claims and one of which is not. Exchange with a classmate and see if he or she can spot which are the claims.
6. What is an argument?
7. What is the point of making of an argument?
8. What is a premise? What is a conclusion?
9. Why isn't every attempt to convince an argument? Give an example.
10. Bring in an example of an argument you heard or read in the last two days.

11. Bring in a short article from a news website or a newspaper. Are all the sentences used in it claims? Is it an argument?

12. Your friend goes outside, looks up at the sky, and sees it's cloudy. She goes back inside and gets her raincoat and umbrella. Is she making an argument? Explain.

13. Bring an advertisement to class that uses an argument and attach it. State the premises and the conclusion here.

Answer each of Exercises 14–28 in the same way as in the text, pp. 8–9.

14. You shouldn't eat at Zee-Zee Frap's restaurant. I heard they did really badly on their health inspection last week.

Argument? (yes/no)

Conclusion:

Premises:

15. You liked that movie? Boy, are you dumb. I guess you just can't distinguish bad acting from good. And the photography was lousy. What a stupid ending, too.

Argument? (yes/no)

Conclusion:

Premises:

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16. If it's O.K. to buy white mice to feed a pet boa constrictor, why isn't it O.K. to buy white mice for your cat to play with?

Argument? (yes/no)

Conclusion:

Premises:

17. Let's not fix the car now. The oil leak is slow, and it would cost a lot of money to fix.

Argument? (yes/no)

Conclusion:

Premises:

18. Flo: She pulled my hair and stepped on my hand and wrecked my toy. I hate her.

Argument? (yes/no)

Conclusion:

Premises:

19. (Advertisement) The bigger the burgers, the better the burgers, the burgers are bigger at Burger King.

Argument? (yes/no)

Conclusion:

Premises:

20. I would not live forever, because we should not live forever, because if we were supposed to live forever, then we would live forever, but we cannot live forever, which is why I would not live forever.

(A contestant's response to the question "If you could live forever, would you and why?" in the 1994 Miss USA contest.)

Argument? (yes/no)

Conclusion:

Premises:

21. Flo has always wanted a dog, but she's never been very responsible. She had a fish once, but it died after a week. She forgot to water her mother's plants, and they died. She stepped on a neighbor's turtle and killed it.

Argument? (yes/no)

Conclusion:

Premises:

22. Maria: Ah-choo.
Lee: Bless you.
Maria: I'm just miserable. Stuffy head and trouble breathing.
Lee: Sounds like the allergies I get.
Maria: No, it's the flu. I'm running a fever.
Argument? (yes/no)
Conclusion:

Premises:

23. Look Dick! Look Zoe! See Spot. See Spot run.
Argument? (yes/no)
Conclusion:

Premises:

24. If you don't take a course on critical thinking, you'll always end up being conned, a dupe for any fast-talker, an easy mark for politicians. So you should take a course on critical thinking. You'd be especially wise to take one from the instructor you've got now — he [she] is a great teacher.
Argument? (yes/no)
Conclusion:

Premises:

25. Whatever you do, you should drop the critical thinking course from the instructor you've got now. He [she] is a really tough grader, much more demanding than the other professors who teach that course. You could end up getting a bad grade.
Argument? (yes/no)
Conclusion:

Premises:

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26. [A review on Netflix of *Fifty Shades of Grey*—1 star out of 5] This movie plodded along like getting a root canal . . . painfully slow. Perhaps more insight into Christian Grey’s psychological workings would have made the movie more interesting and engaging. I didn’t read any of the books but I am wondering why all the fascination with an abusive physical relationship? It seemed to border on domestic violence and the papers are full of it with real people. Say “no” to this movie and do something better with your time . . . like bake cookies or shovel snow.

Argument? (yes/no)

Conclusion:

Premises:

27. Dick: The gas pump stopped pumping by itself.

Zoe: I can’t get it to pump any more gas.

Dick: So the gas tank must be full.

Argument? (yes/no)

Conclusion:

Premises:

28. Dick: You shouldn’t dock your dog’s tail because it will hurt her, it’ll make her insecure, and she won’t be able to express her feelings.

Argument? (yes/no)

Conclusion:

Premises:

29. In order to choose good courses of action in our lives, we need not only knowledge of the world and the ability to reason well, but what else?

CHAPTER 2

Exercises for Section A

1. Give an example of a vague sentence that someone tried to pass off to you as a claim.

2. Which of the following are too vague to be considered claims?
(You may have to suggest a context in which the sentence is spoken.)
 - a. Manuel: Maria is a better cook than Lee.

 - b. Lee: Manuel looks like he has a cold today.

 - c. Public animal shelters should be allowed to sell unclaimed animals to laboratories for experimentation.

 - d. Tuition at state universities does not cover the entire cost to the university of a student's education.

 - e. All unnatural sex acts should be prohibited by law.

 - f. All citizens should have equal rights.

 - g. People with disabilities are just as good as people who are not disabled.

 - h. Boy, are you lucky to get a date with Jane—on a scale of 1 to 10, she's at least a 9.

 - i. Zoe has beautiful eyes.

 - j. Dog food is cheaper at Furr's grocery store than at Smith's grocery.

 - k. Alpo in cans is cheaper at Furr's grocery store than at Smith's grocery.

 - l. Spot is a big dog.

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- m. Cholesterol is bad for you.
 - n. Parents should be held responsible for crimes their children commit.
 - o. “Pasadena City College: a global community college for the 21st century” (radio ad)
 - p. We offer no-hassle loans.
 - q. “Each one of us has an important contribution to make in terms of shaping our collective vision and helping us create a welcoming and positive environment that truly serves the needs of our students and community.”
(memo to faculty from Kathleen F. Burke, Ed.D., Pierce College president, 2016)
 - r. “Coaching people to unleash their aspirations, move beyond what they already think and know, and maximize their results fulfills one of our highest aspirations of what it is to be a human being.”
Robert Hargrove, *The Masterful Coaching Fieldbook*, 2007
3. Find an advertisement that treats a vague sentence as if it were a claim and attach it here.
4. What’s wrong with the following attempt to convince?
Look, officer, if I were going 36 in this 35 m.p.h. zone, you wouldn’t have given me a ticket, right? What about 37? But at 45 you would? Well, isn’t that saying that the posted speed limit is just a suggestion? Or do you write the law on what’s speeding?
5. a. Can a claim be ambiguous?
- b. Can a claim be vague?
6. How much ambiguity can we tolerate in an argument?

7. Decide whether each of the following sentences is a claim. If it is ambiguous, give at least two sentences corresponding to the ways it could be understood.
- a. Zoe saw the waiter with the glasses.
 - b. Americans bicycle thousands of miles every year.
 - c. If someone is under 18 years old, then he cannot vote in this country.
 - d. I am over 6 feet tall.
 - e. Zoe is cold.
 - f. The players on the basketball team had a B average in their courses.
 - g. All men are created equal.
 - h. It is better to be rich than famous.
 - i. "VA Reaches Out To Blind Vets"
Albuquerque Journal, headline, August 18, 2009
 - j. Cats are a species of reptile.
 - k. "I remember meeting a mother of a child who was abducted by the North Koreans right here in the Oval Office."
George W. Bush, June 26, 2008
 - l. Public education in California is on the decline.
 - m. He gave her cat food.
8. Give an example of an ambiguous sentence you've heard recently.

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9. The following argument depends on ambiguity or vagueness to sound convincing. *Rewrite* at least one of the sentences to eliminate the ambiguity.

Dick to Zoe: Anything that's valuable should be protected. Good abdominal muscles are valuable—you can tell because everyone is trying to get them. A layer of fat will protect my abs. So I should continue to be 11 pounds overweight.

10. A special kind of ambiguity occurs all the time when we're talking about what we say. For example, suppose I say:

The Taj Mahal has eleven letters.

I don't mean that the building has eleven letters, but that the name of it does. In speech we use a different tone of voice or make quote marks in the air with our fingers. In writing we use quotation marks around a word or phrase to show that we're talking about that word or phrase. I should indicate that as:

"The Taj Mahal" has eleven letters.

We also use quotation marks as an equivalent of a wink or a nod in conversation, a nudge in the ribs indicating that we're not to be taken literally, or that we don't really subscribe to what we're saying. We call these "scare quotes," and when used this way they allow us to get away with "murder."

For each of the following, indicate if any quotation marks should be inserted.

- a. Suzy can't understand what argument means.
- b. Suzy can't understand the argument Dr. E gave in class.
- c. The judge let him get away with murder.
- d. O'Brien says that there are seven legal ways to never pay taxes.

Exercises for Section B

1.
 - a. What is a subjective claim?
 - b. What is an objective claim?
 - c. Are there any claims that are neither objective nor subjective?
2.
 - a. Give an example of a true objective claim.
 - b. Give an example of a false objective claim.
 - c. Give an example of a true subjective claim.
 - d. Give an example of a false subjective claim.
3. Explain why a sentence that is too vague to be taken as an objective claim might be acceptable as a subjective claim.
4. Make up a list of five claims for your classmates to classify as objective or subjective.
5. State whether each of the following is objective, or subjective, or not a claim at all. In some cases you'll have to imagine who's saying it and the context. Where possible, explain your answer in terms of the standards being used.
 - a. Wool insulates better than rayon.
 - b. Silk feels better on your skin than rayon.
 - c. Pablo Picasso painted more oil paintings than Norman Rockwell.

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- d. Bald men are more handsome.
- e. You intend to do your very best work in this course.
- f. He's sick! How could someone say something like that?
- g. He's sick; he's got the flu.
- h. Cats enjoy killing birds.
- i. Murder is wrong.
- j. Your answer to Exercise 3 in Chapter 1 of this book is wrong.
- k. Demons caused me to kill my brother.
- l. (In a court of law, said by the defense attorney) The defendant is insane.
- m. Zoe is more intelligent than Dick.
- n. Zoe gets better grades in all her courses than Dick.
- o. Suzy believes that the moon does not rise and set.
- p. Dick's dog Spot ran to his bowl and drooled when Dick got his dog food.
- q. Dick's dog Spot is hungry.

- r. Fifty-four percent of women responding to a recent Gallup Poll said they do not think that women have equal employment opportunities with men.
 - s. Fifty-four percent of women think that women have equal employment opportunities with men.
 - t. God exists.
6. Bring to class two advertisements, one that uses only subjective claims and another that uses only objective claims.
7. a. Give an example of someone treating a subjective claim as if it were objective.
- b. Give an example of someone treating an objective claim as if it were subjective.
8. What, if anything, is wrong with these?
- a. Tom: It is more likely for a teenage girl to get into an automobile accident than a boy.
Zoe: That's a sexist remark!

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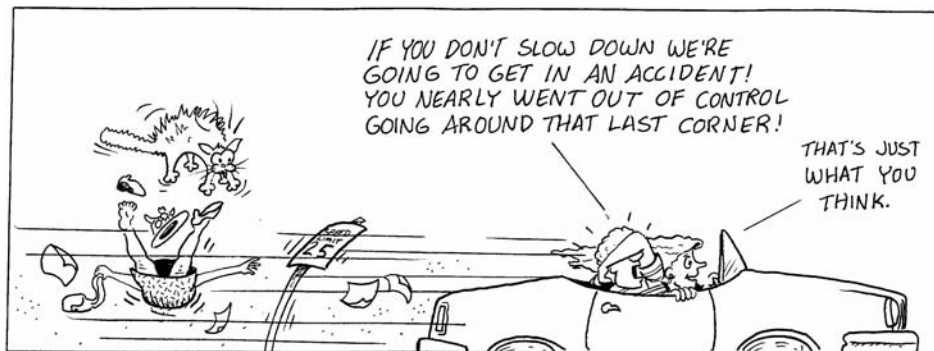
b. Zoe: I'm so tired.

Dick: C'mon. You can't be tired, you just got 12 hours of sleep.

c. Dick: You're going for a run now? That's crazy. It's way too hot for a run.

Tom: No it isn't. It's just right.

9.



Is Zoe right? How should Dick respond?

10. Go back to some of the essays you've written for other courses and find where you used a phrase like "I think" or "It seems to me that". Did you really mean your words to be taken as just your personal opinion?

11. Give an example of a claim that you thought was intersubjective but later you found out that you were wrong.

Exercises for Section C

1. What is a prescriptive claim?

For each of the following, explain why you understand it as prescriptive or descriptive, providing a standard to make it clear enough to be a claim if necessary. Then say whether you think it is true or whether you think it's false.

2. Dissecting monkeys without anesthetic is cruel and immoral.

Prescriptive or descriptive?

Standard needed?

3. Dissecting monkeys without anesthetic is prohibited by the National Science Foundation funding guidelines.

Prescriptive or descriptive?

Standard needed?

4. Larry shouldn't marry his sister.

Prescriptive or descriptive?

Standard needed?

5. Employees must wash hands before returning to work.

Prescriptive or descriptive?

Standard needed?

6. Downloading a pirated copy of this textbook is wrong.

Prescriptive or descriptive?

Standard needed?

7. It's better to conserve energy than to heat a room above 68°.

Prescriptive or descriptive?

Standard needed?

8. It's about time that the government stop bailing out the bankers.

Prescriptive or descriptive?

Standard needed?

9. Dick and Zoe have a dog named "Spot."

Prescriptive or descriptive?

Standard needed?

10. The government should raise the tax rate for the upper 1% of all taxpayers.

Prescriptive or descriptive?

Standard needed?

11. This school should require students to take critical thinking their first year so that they can improve their comprehension in all their other courses.

Prescriptive or descriptive?

Standard needed?

12. Dogs are good and cats are bad.

Prescriptive or descriptive?

Standard needed?

Exercises for Section D

1. What is required of a good definition?

2. Why should we avoid persuasive definitions?

3. Classify the following as a definition, a persuasive definition, or neither. If it is a definition, state why you think it is good or bad.
 - a. “Dog” means “a canine creature that brings love and warmth to a human family.”

 - b. Domestic violence is any violent act by a spouse or lover directed against his or her partner within the confines of the home of both.

 - c. A feminist is someone who thinks that women are better than men.

 - d. A conservative, in politics, is one who believes that we should conserve the political structure and laws as they are as much as possible, avoiding change.

 - e. A liberal is someone who wants to use your taxes to pay for what he thinks will do others the most good.

 - f. Love is blind.

- g. Sexual intercourse is when a man and a woman couple sexually with the intent of producing offspring.

 - h. *Less-developed countries* (LDCs) The economies of Asia, Africa, and Latin America. (From an economics textbook)

 - i. A killer whale has a sleek, streamlined, fusiform (tapered at both ends) body shape.

 - j. A real fan has season tickets.

 - k. Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion. Association of American Colleges and Universities
4. For each of the following, give both a definition and a persuasive definition:
- a. Homeless person

 - b. Spouse

 - c. School bus

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- 5 For each of the following *replace* “believes in” with other words that mean the same:
 - a. Zoe believes in free love.
 - b. Dick believes in God.
 - c. Zoe believes in the Constitution.
 - d. Zoe believes in herself.
6. Bring in an example of a definition used in one of your other courses. Is it good?
7. Sometimes we can make an apparently subjective claim objective by making a definition. For example, “Harry is intelligent” can be objective if we define “intelligent” to mean “has a B average or better in university courses.” Give definitions that make the following subjective claims objective.
 - a. It’s hot outside.
 - b. Eating a lot of fat every day is unhealthy.
8. Go to one of your other textbooks and find a definition that is made in passing, not explicitly stated as a definition.
9. Verify whether the presentation of the definition of “claim” in Chapter 1 follows the steps in making a good definition.

Exercises for Chapter 2

1. State which of the following can together apply to a single sentence and give an example:

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

For each of the following, indicate which of the terms from Exercise 1 apply. If you think your instructor might disagree, provide an explanation.

2. Donkeys can breed with other equines.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

3. The manifest content of a dream is what a dream appears to be about to the dreamer.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

4. A grade of A in this course means you know how to parrot what the professor said.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

5. Public Health Is the Greatest Good for the Most Numbers
(on the logo of the New Mexico Department of Health)

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

6. Too much TV is bad for children.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

7. China has the largest land mass of any single country.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

8. I've already see the new *Star Wars* movie.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

9. There are five countries in North America.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

10. I'm going to throw up.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

11. "We [the United States] are the leader of the free world."

Senator J. Rockefeller on "Day to Day," National Public Radio, July 23, 2004

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

12. Science, when well digested, is nothing but good sense and reason.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

13. Remember loved ones lost through Christmas concert.

Headline, *The Spectrum*, December 4, 1998

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

14. If America shows uncertainty and weakness in this decade, the world will drift toward tragedy.

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

15. Buying low cost property and renting it out is a great way to create wealth and constant cash flow. (from an extension course description)

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

16. I can't take any more of these exercises!

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

17. That test was easy. (Tom to Suzy after Dr. E's last critical thinking exam)

claim	subjective	ambiguous or too vague	
not claim	objective	definition	persuasive definition

CHAPTER 3

Exercises for Sections A–D

1. What is an argument?
2. What does it mean to say an argument is valid?
3. What does it mean to say an argument is strong?
4. Can an argument be both valid and strong?
5. If an argument is valid or strong, does that mean it's a good argument? Explain.
6. If an argument is valid and its premises are true, is its conclusion true, too? Explain.
7. If an argument is strong and its premises are true, is its conclusion true, too? Explain.
8. Does whether an argument is good depend on whether it convinced anyone?
9. If an argument is good, what does that show about its conclusion?
10. If an argument is bad, what does that show about its conclusion?
11. To be classified as good, an argument must pass three tests. What are they?

15. Every Yangakuchi monitor I've had either was defective and had to be returned or else burned out in less than a year. So you'd be foolish to buy a Yangakuchi monitor.
- You should do what I tell you to do.
 - Every Yangakuchi monitor will be defective or go bad.
 - All monitors that are reliable are not Yangakuchi.
 - None of the above.
16. Puff is a cat. So Puff meows.
- Anything that meows is a cat.
 - Dogs don't meow.
 - All cats meow.
 - Most cats meow.
 - None of the above.
17. Suzy is a cheerleader. So Suzy goes to all the football games.
- Cheerleaders get in free to the football games.
 - Cheerleaders are expected to attend all football games.
 - Suzy is dating Tom, who is the football captain.
 - All cheerleaders attend all football games.
 - None of the above.
18. If Spot gets into the garbage, Dick will hit him with a newspaper. So Dick will hit Spot.
- The garbage is a bad thing for Spot to get into.
 - Whenever Spot gets into the garbage, Dick hits him.
 - Whenever Dick hits Spot, Spot was in the garbage.
 - Spot got into the garbage.
 - None of the above.
19. The president is on every channel on television. So he must be making an important speech.
- Only presidents make important speeches on television.
 - When the president makes an important speech on television, he's on every channel.
 - When the president is on every channel on TV, he's making an important speech.
 - Presidents only make important speeches.
 - None of the above.

Exercises for Chapter 3

1.
 - a. How can you show that an argument is not valid?

 - b. How can you show that an argument is weak?

2.
 - a. What is an indicator word?

 - b. List at least five words or phrases not in the chart that indicate a conclusion.

 - c. List at least five words or phrases not in the chart that indicate premises.

 - d. List five more words or phrases that show an attitude toward a claim or argument.

 - e. Bring in an argument from some source that uses indicator words.

3. Mark which of the blanks below would normally be filled with a premise (P) and which with a conclusion (C).
 - a. (i)____, (ii)____, (iii)____, therefore (iv)_____.
 - b. (i)____, since (ii)____, (iii)____, and (iv) _____.
 - c. Because (i)____, it follows that (ii)____ and (iii)_____.
 - d. Since (i)____ and (ii)____, it follows that (iii)____, because (iv)_____.
 - e. (i)____ and (ii)____, and that's why (iii)_____.
 - f. Due to (i)____ and (ii)____, we have (iii)_____.
 - g. In view of (i)____, (ii)____, and (iii)____ we get (iv)_____.
 - h. From (i)____ and (ii)____, we can derive (iii)_____.
 - i. If (i)____, then it follows that (ii)____, for (iii)____ and (iv)_____.

4. If an argument is bad, what does that tell us about the conclusion?
5. If we want to give a good argument with a subjective claim as its conclusion, would it be better for it to be valid or strong? Explain.
6. To prove an objective claim, should we always give an argument that is valid? Explain or give an example.
7. Which subjects in your school would employ only valid arguments? Which would employ primarily strong arguments? Which would rely on a mix of the two?
valid only

primarily strong

mixture

For the following exercises answer the questions listed below each one.

8. Flo's hair was long. Now it's short. So Flo must have gotten a haircut.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

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9. Intelligent students study hard. Zoe studies hard. So Zoe is intelligent.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

10. Dr. E is a bachelor. So Dr. E is not married.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

11. All cats meow. Puff is a cat. So Puff meows.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

12. All licensed drivers in California have taken a driver's test. Dick has taken a driver's test in California. So Dick is a licensed driver in California.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

13. No dog meows. Puff meows. So Puff is not a dog.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

14. Flo's mother to Flo: We have to go because we are leaving. End of conversation!

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

15. Lee: I can't get wifi reception in the house. There must be something wrong with the router.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

16. This book teaches how to reason. So this book costs less than \$70.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

17. Lee: My friend Judy manages a local bookstore. She drives a new Jaguar. So bookstore managers must make good money.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

18. No cat barks. Spot is not a cat. So Spot barks.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

10 CHAPTER 3 What Is a Good Argument?

19. What do you want to eat for dinner? Well, we had fish yesterday and pasta the other day. We haven't eaten chicken for a while. How about some chicken with potatoes?

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

20. Maria: Almost all the professors I've met at this school are liberals.
Manuel: So to get a teaching job here, it must help to be a liberal.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

21. Suzy: Every student who has ever taken a course from Professor Zzzzyzx has passed.
So if I take his composition course, I'll pass, too.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

22. Dick missed almost every basket he shot in the game. He couldn't run, he couldn't jump. He should give up basketball.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.



Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

12 CHAPTER 3 What Is a Good Argument?

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

24. Some students don't have enough money for college. Anyone who wants an education but can't afford it should be given financial aid. So some students should receive financial aid.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

25. Tom: If Louie bought a new car, he must have had more money than I thought.

Harry: Well, look, there's the new hatchback he bought.

Tom: So Louie must have had more money than I thought.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

26. Zoe: Spot got out of the yard somehow.
Dick: He must have got out under the fence.
Zoe: No way he got out under the fence. There's no sign of new digging.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

27. Zoe: Spot got out of the yard somehow.
Dick: He must have got out under the fence.
Zoe: No way he got out under the fence. There's no sign of new digging. And we blocked all the old ways he used to get out under the fence.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

28. Zoe: Spot got out of the yard somehow.
Dick: He must have got out under the fence.
Zoe: No way he got out under the fence. There's no sign of new digging. And we blocked all the old ways he used to get out under the fence.
Dick: But he pulled down that chicken wire last week.
Zoe: (*later*) I checked—all the wire and rocks we put up are still there, and there's no sign that the fence has been disturbed at the bottom.
Dick: I hope he hasn't learned how to jump over the fence.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

29. Dick: Whenever the garbage gets picked up, the trash bins end up away from the curb.
Lee: The bins haven't been moved away from the curb. So the garbage hasn't been picked up.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.



Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

31. All cats shed fur. There's fur on Suzy's couch. So a cat's been on Suzy's couch.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong _____ weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

32. Suzy: Tom hasn't called in a week. So he doesn't want to see me anymore.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

33. There are 30 seconds left in the football game. The 49ers have 35 points. The Dolphins have 7 points. So the 49ers will win.

Argument? (yes or no)

Conclusion:

Premises:

Classify: valid strong ————— weak

If not valid, show why:

Good argument? (choose one)

- It's good (passes the three tests).
- It's bad because a premise is false.
- It's bad because it's weak.
- It's bad because it begs the question.
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.

CHAPTER 4

Exercises for Sections A and B.1

1. Why can't we require that every claim be backed up?

2. What three choices can we make about whether to believe a claim?

3. If the conclusion of a valid argument is false, why must one of the premises be false?

4. Give an example of a rumor or gossip you heard in your personal life recently that you believed. Did you have good reason to believe it? Why?

5. We can tell that a rumor or gossip is coming up when someone says, "Guess what I heard." Give five other phrases that alert us similarly.
 -
 -
 -
 -
 -

6. Should you trust an encyclopedia over your own experience? Explain.

7. Give an example of a claim that someone made this week that you knew from your own experience was false.

2 CHAPTER 4 *Is That True?*

8. Give an example of time when you accepted or rejected a claim, but you should have suspended judgment.

9. Give an example of a claim that you believed was true from memory but really you were making a deduction from your experience.

10. When is it reasonable for us to accept a claim that disagrees with our own experience? Give an example (not from the text) of a claim that it is reasonable for you to accept even though it seems false from your own experience.

11. Remember the last time this class met? Answer the following about your instructor.
 - a. Male _____ or Female _____
 - b. Hair color _____
 - c. Eye color _____
 - d. Approximate height _____
 - e. Approximate weight _____
 - f. Did he/she bring a backpack to class? _____ If so, describe it.
 - g. Did he/she use notes? _____
 - h. Did he/she get to class early? _____
 - i. Did he/she wear a jacket? _____
 - j. Is he/she left-handed or right-handed? _____

12. Remember the last time this class met? Answer the following about the room:
 - a. How many windows? _____
 - b. How many doors? _____
 - c. How many walls? _____
 - d. Any pictures? _____
 - e. Lectern? _____
 - f. How high is the ceiling? _____
 - g. How many light fixtures? _____
 - h. How many chairs? _____

- i. How many students showed up for class? _____
- j. Wastebasket? _____
- k. What kind of floor (concrete, tile, linoleum, carpet)? _____
- m. Did you get out of class early? _____

13. Which of your answers to Exercises 11 and 12 were from actual memory, and which were inferences?

14 List five ways that the physical conditions around us can affect our observations.

-
-
-
-
-

15. List five ways that your mental state could affect your observations.

-
-
-
-
-

16. Our personal observations are no better than _____ ?

17. What does a bad argument tell us about its conclusion?

5. List three *categories* of experts you feel you can trust. State for which kind of claims those kinds of people would be experts.

category of expert

kinds of claims they're experts on

•

•

•

6. Give a recent example from some media outlet of an expert being quoted whose claims you accepted as true.

7. Give an example from some media outlet of an expert being quoted whose expertise does not bear on the claim being put forward, so you have no reason to accept the claim.

8. Give an example of an expert who made a claim recently that turned out to be false. Do you think it was a lie? Or did the person just not know it was false?

9. Find a story that the *New York Times* retracted. Does that show that we can't trust it any more than the website TMZ?

10. Give an example of a claim you've heard repeated so often you think it's true but which you really have no reason to believe.

16. Find an article that has quotes from some “think tank” or “institute” and attach it here. Find out what bias that group might have.

17. Choose one of the large national news broadcasting outlets and find out who owns the company and what companies it owns.

Broadcasting outlet:

Owned by:

Owns (or also owned by the same company):

18. Attach here an article that that praises some business or type of business that comes from a magazine that has lots of advertising from that business or type of business.

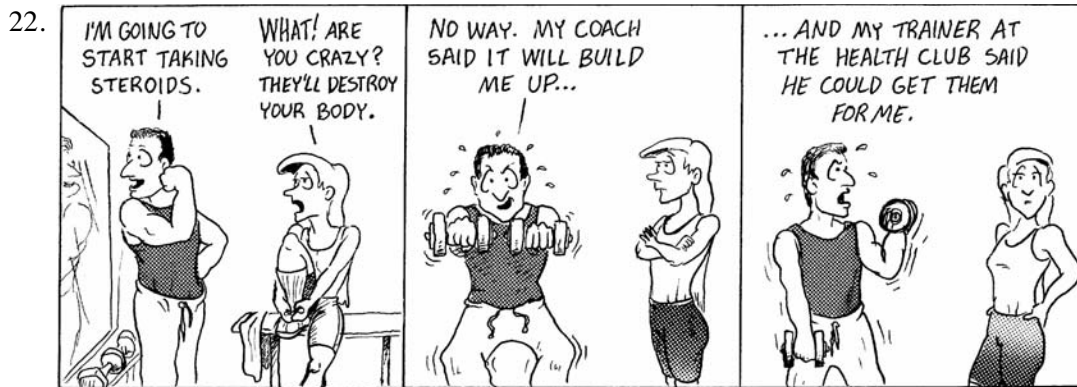
19.



How should he respond?

20. Your friend who's an avid fan tells you that the baseball game on Saturday has been cancelled. Five minutes later you hear on the radio that tickets are on sale for the game on Saturday. Whom do you believe? Why?

21. Your doctor tells you that the pain in your back can't be fixed without surgery. You go to the health-food store, and the clerk tells you they have a root extract that's been made especially for back pain that'll fix your back. Whom do you believe? Why?



Comment on Tom's reasons for believing that steroids won't harm him.

23. Evaluate the following claims by saying whether you accept, reject, or suspend judgment, citing the criteria you are using to make that decision.

a. Toads give you warts. (said by your mother)

accept reject suspend judgment

criteria:

b. Toads give you warts. (said by your doctor)

accept reject suspend judgment

criteria:

c. The moon rises in the west.

accept reject suspend judgment

criteria:

d. The Pacers beat the Knicks 92–84 last night. (heard on your local news)

accept reject suspend judgment

criteria:

e. They're marketing a new liposuction machine you can attach to your vacuum cleaner. (in the weekly supplement to your Sunday paper)

accept reject suspend judgment

criteria:

f. You were speeding. (said by a police officer)

10 CHAPTER 4 Is That True?

accept reject suspend judgment
criteria:

- g. Boise-Cascade has plans to log all old-growth forests in California.
(said by a Sierra Club representative)
accept reject suspend judgment
criteria:
- h. The United States government was not involved in the recent coup attempt in Venezuela. (unnamed sources in the Defense Department, by the Associated Press)
accept reject suspend judgment
criteria:
- i. Cats are the greatest threat to public health of any common pet.
(said by the author of this book)
accept reject suspend judgment
criteria:
- j. Cats are the greatest threat to public health of any common pet.
(said by the Surgeon General)
accept reject suspend judgment
criteria:
- k. Crocodiles weep after eating their victims, hence the term “crocodile tears.”
(in the travel section of your local newspaper)
accept reject suspend judgment
criteria:
- l. Blood is blue without oxygen.
accept reject suspend judgment
criteria:
- m. It is very unlikely that anyone could get infected with avian flu by eating thoroughly cooked chicken. *New York Times*, Science and Health section, citing Professor William K. Hallman of Rutgers University
accept reject suspend judgment
criteria:

- n. Earlier this year, 56-year-old Spanish fisherman Luigi Marquez went through a nightmarish experience as he was swallowed whole by a whale, presumed dead by all who knew him. SpiritScience website, September 2, 2016

accept reject suspend judgment
criteria:

- o. A DePauw University computer study sometime back turned up a remarkable finding. Coeds were asked to submit their grade point averages plus their bust, waist, and hip measurements. No significance was found in the upper-body measurements. But the larger the hips, the better the grades. *The Pantagraph*, Bloomington, IN, Dec. 9, 1981

accept reject suspend judgment
criteria:

- p. The 54-study review of 3,000 asthma patients finds that no chemical or physical intervention to reduce exposure to house dust mites is effective.

“Dust Mites Outlast Heroic Efforts to Help Asthma Patients,”
Science Daily, April 16, 2008

accept reject suspend judgment
criteria:

Exercises for Section C

1. What difference is there between how we evaluate an advertisement and how we evaluate any other (implicit) argument?

2. Find an advertisement and evaluate the claims in it.

3. Identify a website whose claims you believe, and explain why you consider it to be a reliable source. (Don't use a personal website of friends or family—or yourself.)

4. Print out a page of a website devoted to UFOs and attach it here.
 - a. Are any sentences too vague to be claims?

 - b. Are the claims plausible?

 - c. Contradictory?

 - d. Is there an argument?

 - e. Is the argument good?

Trade with a classmate to comment on each other's evaluation.

Evaluate the following in terms of the criteria in this chapter.

5. Maxell media—offers 100 years of archival life! Delivers quality you can trust!
(MacMall catalogue, 2003)

6. Professor Rooney placed 11th out of 145 in the *Jeopardy!* Ultimate Tournament of Champions. (“Jeopardy! Ultimate Tournament of Champions”, Wikipedia)

7. *Pet Healer* Pet Healer with psychic abilities to communicate with pets that have left this earthly plane. Contact 292–xxxx. Suggested donation: \$25–\$100.
(*Crosswinds Weekly*, Albuquerque)

8. “I’m Katy Perry. I love being a free spirit onstage and off, but when you suffer with acne blemishes, you don’t feel very free. I tried everything to get rid of my acne but nothing worked. So one day, I ordered Proactiv solution. Within a couple of weeks, my skin cleared up fast.”
(Proactiv commercial)

9. Evaluate the website of The BARK of DOG Foundation at <www.BARKofDOG.org>.

10. Evaluate the website of McWhortle Enterprises at <www.McWhortle.com>.

11. Dick: My uncle's doctor told him that he's got prostate trouble.

Zoe: What does that mean? I don't even know what a prostate is.

Dick: Beats me.

Can you help Dick and Zoe? Search on the web for "prostate" and check out five of the sites on the first page of results. Which do you trust? Why? Do you now know what a prostate is and what kinds of problems there can be with them? Compare those sites to the printed version of the Encyclopedia Britannica in your school library.

Exercises for Section D

1. a. What is an appeal to authority?
 - b. Give an example of a bad appeal to authority you heard recently.
 - c. Give an example of a good appeal to authority you heard recently.

2. When are we justified in rejecting a claim because of who said it?

3. Give an example of a bad appeal to common belief you heard recently.

4. Why should you never mistake the person for the argument?

5. What does it mean to say that a person has made a phony refutation?

6. Find a conspiracy theory presented on the web. Explain why you do or do not believe it.

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For each of the exercises below answer the questions below it.

7. Suzy: I played doubles on my team for four years. It is definitely a more intense game than playing singles.

Zoe: Yesterday on the news Maria Sharapova said that doubles in tennis is much easier because there are two people covering almost the same playing area.

Suzy: I guess she must be right then.

What, if any, classifications of this section does this fit?

Is this a bad argument?

8. Mom: You shouldn't stay out so late. It's dangerous, so I want you home early.

Son: But none of my friends have curfews, and they stay out as long as they want.

What, if any, classifications of this section does this fit?

Is this a bad argument?

9. Manuel: Barbara said divorce'll hurt her kids' emotions.

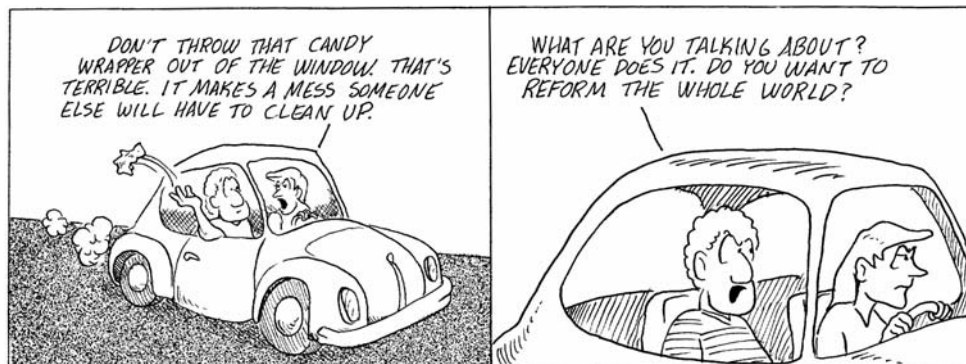
Maria: But she goes out with her boyfriend every night leaving the kids and her husband at home. She won't divorce, but she's already hurt her kids.

So it doesn't matter if she gets divorced or not.

What, if any, classifications of this section does this fit?

Is this a bad argument?

- 10.



What, if any, classifications of this section does this fit?

Is this a bad argument?

11. Zoe: You should be more sensitive to the comments you make around people.
Dick: Of course you'd think that—you're a woman.

What, if any, classifications of this section does this fit?

Is this a bad argument?

12. Zoe: The author of this book said that bad people always make wrong decisions.
You need to have virtue to make good use of critical thinking.

Suzy: What does he know about virtue?

What, if any, classifications of this section does this fit?

Is this a bad argument?

13. Zoe: That program to build a new homeless shelter is a great idea. We need to help
get poor people off the streets so they can eventually fend for themselves.

Suzy: How could you say that? You don't even give money to the homeless guy who
was begging on the street corner there.

What, if any, classifications of this section does this fit?

Is this a bad argument?

14. Zoe: That new law against panhandling is terrible. People have a right to ask for
money so long as they aren't really bothering anyone.

Tom: Sure. And I suppose you believe everything else the ACLU says.

What, if any, classifications of this section does this fit?

Is this a bad argument?

18 CHAPTER 4 *Is That True?*

15. Prof. Zzzzyzx: Mine doctor told me cigarettes I should be ceasing. He said bad lungs they will give me and mine skin wrinkle and mine blood pressure to increase. But I do not listen to his talk because he is always smoking like the chimney.

What, if any, classifications of this section does this fit?

Is this a bad argument?

16. Zoe: You're going to explode our water bill the way you're watering the lawn?
Dick: I'm going to increase the water bill? What about those 30-minute showers you take every day?

What, if any, classifications of this section does this fit?

Is this a bad argument?

17. Tom: What do you think about requiring kids at school to wear uniforms?
Lee: My mom said it was great, so I'm behind it.

a. *What, if any, classifications of this section does this fit?*

b. *Is this a bad argument?*

18. Doctor: Well, your test results show you have very high cholesterol. You need to cut back on fatty foods and get more exercise, or else you're likely to develop heart disease.

Prof. Zzzzyzx: Vat are you talking? I am very good feeling. Eating meat gives me strength!

What, if any, classifications of this section does this fit?

Is this a bad argument?

19. Doctor: You are morbidly obese. If you don't lose some weight, you'll develop serious health problems.

Wanda: You're just prejudiced against fat people.

What, if any, classifications of this section does this fit?

Is this a bad argument?

20. Maria: What do you think about the new book on financial independence?

Lee: It must be good; it's on the New York Times Best Seller list.

a. *What, if any, classifications of this section does this fit?*

b. *Is this a bad argument?*

22. Suzy: Did you notice that only beautiful women advertise in the personal columns here?

Zoe: How do you know?

Suzy: Duh, they say so in their ads.

What, if any, classifications of this section does this fit?

Is this a bad argument?

CHAPTER 5

Exercises for Sections A and B

1. Why add premises or a conclusion? Why not take arguments as they are?
2. State the Principle of Rational Discussion and explain why we are justified in adopting it when we reason with others.
3. What should you do if you find that the Principle of Rational Discussion does not apply in a discussion you're having?
4. You find that a close friend is an alcoholic. You want to help her. You want to convince her to stop drinking. Which is more appropriate, to reason with her or take her to an Alcoholics Anonymous meeting? Explain.
5. Since often people don't satisfy the Principle of Rational Discussion, why not just use bad arguments to fit the circumstances?

6. Dr. E is a teacher. All teachers are men. So Dr. E is a man.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

7. George walks like a duck. George looks like a duck. George quacks like a duck.
So George is a duck.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

8. If you're so smart, why aren't you rich?

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

4 CHAPTER 5 Repairing Arguments

9. You caught the flu from me? Impossible! I haven't seen you for two months.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

10. You caught the flu from me? Impossible! You got sick first.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

11. Suzy: I just got 23 new Twitter followers! I must be really popular.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

12. Mary Ellen just bought a Mercedes. So Mary Ellen must be rich.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

13. All great teachers are tough graders. So Dr. E is a great teacher.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

14. No cat barks. So Ralph is not a cat.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

6 CHAPTER 5 Repairing Arguments

15. You're blue-eyed. So your parents must be blue-eyed.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

16. Dick: When you're out can you stop at the grocery and buy a big bag of dog food?

Zoe: You know I'm riding my bike today.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

17. Cheap horses are rare. Rare things are expensive. Therefore, cheap horses are expensive.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

18. Flo is taller than when I saw her three months ago. So she's grown.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

19. Suzy is taller than when I saw her yesterday. So she's grown.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).



Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

8 CHAPTER 5 Repairing Arguments

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

21. Dick: Harry got into college because of affirmative action.

Suzy: Gee, I didn't know that. So Harry isn't very bright.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

22. These exercises are impossible. How do they expect us to get them right? There are no right answers! They're driving me crazy.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

23. These exercises are difficult but not impossible. Though there may not be a unique right answer, there are definitely wrong answers. There are generally not unique best ways to analyze arguments you encounter in your daily life. The best this course can hope to do is make you think and develop your judgment through these exercises.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

24. —That masked man saved us.

—Did you see he has silver bullets in his gunbelt?

—And he called his horse Silver.

—Didn't he call his friend Tonto?

—He must be the Lone Ranger.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

25. What!? Me sexually harass her? You've got to be kidding! I never would have asked her out for a date. Look at her—she's too fat, and, besides, she smokes. I'm the boss here, and I could go out with anyone I want.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

10 CHAPTER 5 Repairing Arguments

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

26. Tom: Suzy was diagnosed with strep throat. I've been around her for weeks. My throat feels sore in the same way it did the last time I had strep. So I have strep too.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

27. (From the Associated Press, July 8, 1999, about a suit against tobacco companies for making "a defective product that causes emphysema, lung cancer, and other illnesses.") The industry claimed there is no scientific proof that smoking causes any illness and that the public is well aware that smoking is risky.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

28. This book will be concerned exclusively with abstract decision theory and will focus on its logical and philosophical foundations. This does not mean that readers will find nothing here of practical value. Some of the concepts and methods I will expound are also found in business school textbooks. Michael Resnik, *Choices*

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

29. Lee: Boring professors make students fall asleep in class.
Tom: So Professor Zzzzyzx is boring.

Argument? (yes or no)

Conclusion (if unstated, add it):

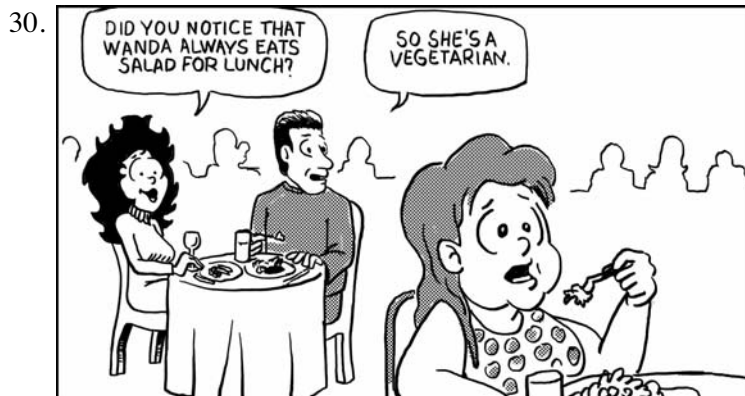
Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).



Argument? (yes or no)

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Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

31. This happened in broad daylight and that means that somebody saw something that can help catch the person responsible for this killing before there is any more violence.

Pasadena Interim Deputy Police Chief Mike Korpala, March 11, 2010

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

32. a. Make up an argument against the idea that lying is a good way to convince people.
b. Convert your argument in (a) to show that reasoning badly on purpose is not effective or ethical.

Exercises for Section D

1. What do we mean when we say that you can't get "ought" from "is"?

Analyze the following exercises by answering the question below each.

2. Flo has always wanted a dog, but she's never been very responsible. She had a fish once, but it died after a week. She forgot to water her mother's plants, and they died. She stepped on a neighbor's turtle and killed it.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

3. They shouldn't execute that guy tomorrow, even if he is a murderer. It's wrong to kill anyone.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

4. Zoe: I want to make a lot of money.
Zoe's mother: So you should go to law school.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

5. Capital punishment executes innocent people, and it disproportionately affects minorities. States with capital punishment do not have lower murder rates than states without capital punishment. So capital punishment should be abolished.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

6. Dick: We shouldn't leave the lights on when we're away.

Zoe: Why?

Dick: Because we should do all we can to conserve energy.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

7. Zoe: We should go to Suzy's dinner party tonight.

Dick: Why?

Zoe: She invited us and she'll be very unhappy if we don't come.

Dick: But I always have a miserable time at her dinner parties.

Zoe: Look, we should go because she's our friend, and we shouldn't make our friends unhappy.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

Good argument? (Choose one and give an explanation.)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

Exercises for Section E

1. Suzy says, "I find fat men unattractive, so I won't date you."
 - a. What has Suzy implied?

 - b. What can the fellow she's talking to infer?

2. The following conversation is ascribed to W. C. Fields at a formal dinner party. What can we say he implied?
W. C. Fields: Madame, you are horribly ugly.
Lady: Your behavior is inexcusable. You're drunk.
W. C. Fields: I may be drunk, but tomorrow I'll be sober.

3. Dr. E: I always keep about 10 pounds extra on me because I heard that women are intimidated by a man with a perfect body.
What can we infer that Dr. E believes?

4. (Advertisement on a billboard) Wendy's. Our beef is fresh. Never frozen.
What's implied here?

5. In July 2002, the famous race-car driver Al Unser was arrested on allegations by his girlfriend that very late one night he hit her and forced her out of the car in a deserted area. His uncle, Bobby Unser, was quoted in the *Albuquerque Journal* as saying:
What Little Al and Gina Sota did that night was the most nothing thing I've ever heard of He didn't use a gun or a knife or a stick. What's the big deal about that? This girl is a topless dancer. She's been down that road 100 times.
What can we infer that Bobby Unser believes?

6. [State Senator Manny Aragon] has complained that New Mexico's population is 42 percent Hispanic but the state has no Hispanic representative in Congress.

That sentiment was echoed Thursday by State House Majority Whip James Taylor, an Albuquerque Democrat, who, like Aragon, represents the South Valley in Bernalillo County. "It's embarrassing that New Mexico currently has no Hispanic representative in Congress, especially being a majority-minority state," Taylor said in an interview, meaning that the sum of all non-Anglo residents is larger than the Anglo population. "We need to make sure all people of the state are represented."

Associated Press, June 1, 2001

What has James Taylor implied?

7. Michael Hauptman is a civil libertarian, period. . . . Hauptman defends those he wants to defend, no matter what anyone else thinks. He has been the lawyer for witch doctors, the homeless, the outspoken civil rights loner Hosea Williams, and, as described by the *Atlanta Constitution*, "a parade of candidates for the electric chair."

Hauptman puts it this way: "I've represented all kinds of bad people I even once represented an insurance company and a bank."

Nat Hentoff, *Free Speech for Me—But Not for Thee*, 1992, p. 267

What can we infer from Hauptman's remarks?

8. Give a recent example where you inferred a claim. Were you justified?

2 *CHAPTER 6 Counterarguments*

7. Find an article where a comment posted after it is an attempt to refute the conclusion.

8. Explain the role of each claim in the following discussion.

Zoe: I think sex is the answer to almost everyone's problems.

Dick: How can you say that?

Zoe: It takes away your tension, right?

Dick: Not if you're involved with someone you don't like.

Zoe: Well, anyway, it makes you feel better.

Dick: Not if it's against your morals. Anyway, heroin makes you feel good, too.

Zoe: But it's healthy and natural, just like eating and drinking.

Dick: Sure, and you can catch terrible diseases. Sex should be confined to marriage.

Zoe: Is that a proposal?

9. Write a short argument against drinking alcohol that acknowledges why some people want to drink alcohol.

10. If you can start with a collection of claims and can make a valid or strong argument with a false conclusion, what does that tell you? Explain.

11. What is reducing an argument to the absurd?

12. Which of the ways of refuting an argument is best? Why?

13. What's the difference between ridicule and reducing to the absurd?

14. Why isn't a phony refutation really a refutation of an argument?

15. a. What is a strawman?

b. Bring in an example and attach it or write it down here.

4 CHAPTER 6 Counterarguments

Evaluate the attempts to refute arguments in Exercises 16–31 by answering the italicized questions.

16. Lee: I'm going to vote for that initiative to eliminate discrimination against transgender people in hiring and getting places to live. They should be treated like everyone else. They deserve a chance to get jobs and homes.

Tom: Are you kidding? I'm voting against it. You should, too. They don't deserve any preference over the rest of us.

What is the method of refutation?

Is the refutation a good argument? (Explain)

17. Some say government health care would compete unfairly with private companies and amount to socialism. But the same people who object passionately to "socialized health care" don't block their 911 service, or disconnect themselves from socialized sewers, or avoid interstate highways, or reject Medicare when they're old.

What is the method of refutation?

Is the refutation a good argument? (Explain)

18. Zoe: You should eat less red meat. Red meat has lots of cholesterol, which blocks up the arteries and leads to an increased risk of heart disease.

Dick: Mankind has been eating red meat since the dawn of time, and we have still survived as a species. If we stopped eating everything that was bad for us, we would be left with nothing to consume but small, white, tasteless pills, which would later be discovered to cause a new type of deadly cancer.

What is the method of refutation?

Is the refutation a good argument? (Explain)

19. Look, I agree with you. We have too much violence in the streets, too many drug pushers, too little respect for the law. But our prisons are overflowing, and that's costing us a fortune. So we've got to reduce our prison population. Yet you say we should be even tougher on crime. The answer is simple: Institute a lottery among all convicted felons in jail and execute one of them every month—no appeals. That'll instill a real fear of being arrested. And it'd be fair, too.

What is the method of refutation?

Is the refutation a good argument? (Explain)

20. Mary Ellen: Yes, yes, Dr. E. Raw food is best for you. I eat only raw food.
Cooking destroys all the goodness in the food.

Dr. E: There goes 2,000,000 years of evolution.

What is the method of refutation?

Is the refutation a good argument? (Explain)

21. Zoe: I can't believe you're eating all those spicy almonds. I thought you were trying to lose weight. They're really fattening.

Dick: Not if you don't chew them.

What is the method of refutation?

Is the refutation a good argument? (Explain)

22. (Complete letter to the editor from Vern Raburn, CEO, Eclipse Aviation, in *Crosswinds Weekly*, July 11, 2002, in response to an article "Eclipse Aviation's Money Troubles".)

Should you decide you are interested in supplying your readers with something other than lies and bullshit, I suggest you spend more time fact checking for yourself. This will help prevent you from the embarrassment of propagating others' inaccuracies.

What is the method of refutation?

Is the refutation a good argument? (Explain)

23. Columnist George Will wrote in *Newsweek* last year that a dime placed on the edge of a 4-foot by 6-foot dinner table would represent the relative portion of the refuge that would be opened for drilling.

I could use Will's analogy to compare the size of a bullet through your heart with the size of your body and draw the mistaken conclusion that very little damage would result. Unfortunately for the refuge, the area proposed for drilling has been described (by the Republican Reagan administration, no less) as its "biological heart."

America's Arctic National Wildlife Refuge by N. K. Whiton
Albuquerque Tribune, 5/7/2003

What is the method of refutation?

Is the refutation a good argument? (Explain)

6 CHAPTER 6 Counterarguments

24. Maria: You say that life begins at conception, right?
Tom: Yes. Suzy and I believe that.
Maria: So a person conceived in the US should be a citizen—that's where his or her life began. So an Iranian mullah whose mother was in the US from the whole time between 11 and 7 months before he was born should be able to claim citizenship in the US, since he was surely conceived while she was here. But you're dead set against letting more people who were born and raised outside the U.S. into the country. So the solution is that we should make sure that all women coming to the US don't have sex while they're here.

What is the method of refutation?

Is the refutation a good argument? (Explain)

25. Maria: Really it was Einstein's wife who was the great genius. She was the one who had the ideas that went into those early papers "he" wrote about relativity. They were working together. But he got the honors because he was a man. And she had the child and had to keep the house.
Harry: Look, there weren't two geniuses like Einstein. That's beyond probability. And after those earlier papers, he continued to make incredible scientific breakthroughs. He would have been considered one of the greatest minds of all time for just the work that came after those early papers., while his wife never did anything scientifically important again.
Maria: That was because she was keeping house, till that chauvinist pig divorced her.
Harry: I don't doubt that she had some input into those early works, maybe even did equal work with him at the beginning. But it was Einstein who saw the ideas through and made them real to people and who continued to do great work. It wasn't his wife.

What is the method of refutation?

Is the refutation a good argument? (Explain)

26. I have heard people talk of the "scientific" extermination of the Jews in Germany. There was nothing scientific about it. It was only thorough. There was no question of making observations and then checking them in order to determine something.

Richard Feynman, *The Meaning of It All*

What is the method of refutation?

Is the refutation a good argument? (Explain)

27. Tom: I'm going to to the animal shelter to adopt a big dog, like a German shepherd.
Maria: But your place is too small.
Tom: I don't like small dogs. You can get more exercise with a big dog.
Maria: Why don't you get a pony then? I'm sure you'd get into great shape with that.

What is the method of refutation?

Is the refutation a good argument? (Explain)

28. Lee: Sure Tom gets it wrong sometimes and he can be really hardheaded. But you've got to admire how he's consistent in his opinions.
Maria: So was Hitler.

What is the method of refutation?

Is the refutation a good argument? (Explain)

29. Harry: There's no reason to think the Nazca lines were made by aliens. The art is similar to Nazca pottery. Wooden posts have been found next to the lines, showing they used ground-based techniques to draw them.
Wanda: Since no one knows for sure whether aliens exist, it's really up to the individual to decide whether they do or not.

What is the method of refutation?

Is the refutation a good argument? (Explain)

30. Suzy: Suicide and euthanasia are wrong because no person should play God. That's taking over the right to decide life and death, which belongs only to God.
Manuel: But then I shouldn't get out of the way if a car is coming fast at me—
I'd be taking over the right to decide life and death, playing God like you say.

What is the method of refutation?

Is the refutation a good argument? (Explain)

8 CHAPTER 6 Counterarguments

31. Wanda: I want to have a baby. They're so cute, so small and cuddly. And I could dress it up with those adorable outfits they have. And they love you totally, without complaining.

Maria: Get a chihuahua instead. It'll be cheaper and you won't have to save for its college education.

What is the method of refutation?

Is the refutation a good argument? (Explain)

Refute the following arguments. Say whether you are showing a premise is dubious, attacking an unstated premise, showing the argument is weak, or reducing to the absurd.

32. Mrs. Wang is a great marriage therapist. She really cares about her clients.

33. Multiple-choice examinations are the best way to examine students. The grading is completely objective. Students know how to prepare for them. And professors don't have to spend a lot of time grading them.

34. You should keep a gun in your home. This is a dangerous neighborhood, and a gun is the best protection you can get. Think of what could happen if someone broke in.

35. Single parents should get special assistance from the government. After all, a two-parent family has two paychecks and twice the attention to give to their children. Some single-parent families end up having to use the welfare system because they can't afford child care. Therefore, the government should give free child care to single-parent families.

36. There should be more extra credit available in this course, because it's a hard course.

37. Evaluate the following argument. Indicate what argument is being refuted, and how each part of it is challenged. Say whether the refutation is good or not.

The State's primary claim is that death is a necessary punishment because it prevents the commission of capital crimes more effectively than any less severe punishment. The first part of this claim is that the infliction of death is necessary to stop the individuals executed from committing further crimes. The sufficient answer to this is that if a criminal convicted of a capital crime poses a danger to society, effective administration of the State's pardon and parole laws can delay or deny his release from prison, and techniques of isolation can eliminate or minimize the danger while he remains confined. The more significant argument is that the threat of death prevents the commission of capital crimes because it deters potential criminals who would not be deterred by the threat of imprisonment. The argument is not based upon evidence that the threat of death is a superior deterrent. Indeed, as my Brother [Justice] Marshall establishes, the available evidence uniformly indicates, although it does not conclusively prove, that the threat of death has no greater deterrent effect than the threat of imprisonment.

From Justice Brennan's opinion in *Furman v. Georgia*, 408 U.S. (1972)

REVIEW EXERCISES for CHAPTERS 1–6

1. What is an argument?

2. What is a claim?

3. a. What is an objective claim?

b. Give an example of an objective claim.

c. Give an example of a subjective claim.

4. Can a vague sentence be a claim? Explain.

5. a. What is a prescriptive claim?

b. Give an example.

c. What standard, if any, is presupposed by your example?

6. Is a definition a claim? Explain.

7. a. What is a persuasive definition?

b. Give an example.

8. What is the drawing the line fallacy?

9. What three tests must an argument pass for it to be good?

10. a. What is a valid argument?
 - b. Give an example of a valid argument that is good.
 - c. Give an example of a valid argument that is bad.
11. a. What does it mean to say an argument is strong?
 - b. Give an example of a strong argument that is good.
 - c. Give an example of a strong argument that is bad.
12. Is every weak argument bad? Give an explanation or example.
13. How do you show an argument is weak?
14. If a strong argument has eight true premises and one false premise, should we accept the conclusion? Explain.
15. If an argument is bad, what does that tell us about its conclusion?
16. Is every valid or strong argument with true premises good? Give an explanation or example.
17. Should we always prefer valid arguments to strong arguments? Give an explanation or example.

12 *REVIEW EXERCISES for Chapters 1–6*

18. What is our most reliable source of information about the world?

19. What three choices can we make about whether to believe a claim?

20. Give five criteria for accepting an unsupported claim.

21. Give two criteria for rejecting an unsupported claim.

22. When should we suspend judgment on a claim?

23. What does it mean to say that someone is arguing backwards?

24. What does it mean to say that someone is mistaking the person for the argument?

25. When are we justified in rejecting a claim because of who said it?

26. When are we justified in rejecting an argument because of who said it?

27. What is a phony refutation?

28. State the Principle of Rational Discussion.

29. What is the Mark of Irrationality?

30. State the Guide to Repairing Arguments.

CHAPTER 7

Exercises for Sections A.1 and A.2

1. What is a compound claim?
2. What do we call the parts of an “or” claim?
3. What is the contradictory of a claim?
4. How do you say the contradictory of “A or B”?
5. How do you say the contradictory of “A and B”?
6. Why can we take both A and B to be premises when someone says “A and B”?

For each of the following, write the contradictory of the claim. If it is an “or” claim, identify the alternatives.

7. Inflation will go up, or interest rates will go up.
8. Maria or Lee will pick up Manuel after classes.
9. Neither Maria nor Lee has a bicycle.
10. You’re either for me or against me.
11. You’d better stop smoking in here or else!
12. AIDS cannot be contracted by touching or by breathing air in the same room as a person infected with AIDS.

2 *CHAPTER 7 Compound Claims*

13. Maria will go shopping, but Manuel will cook.

14. Zoe (to Dick): Will you take the trash out, or do I have to?

15. Inflation will be less than 3% this year.

Exercises for Section A

1. Give an “or” claim that you know is true, though you don’t know which of the alternatives is true.
2. a. State the form of valid arguments called “excluding possibilities.”

b. Give two other forms of valid arguments that use “or” claims.
3. What is a false dilemma?
4. Give three examples of *either-or* sayings that if stated as claims would be false dilemmas. (Example: You’re either part of the solution or you’re part of the problem.)
5. Why is using a false dilemma so good at making people do what you want them to do? Is it a good way to convince?
6. Show that the argument about Manuel going to the dance on p. 136 is a false dilemma.
7. Sometimes a false dilemma is stated using an “if . . . then . . .” claim:
If you don’t stop smoking, you’re going to die.
(Either you stop smoking or you will die.)
Mommy, if you don’t take me to the circus, then you don’t really love me.
(Either you take me to the circus or you don’t love me.)
If you can’t remember what you wanted to say, it’s not important.
(Either you remember what you want to say or it’s not important.)
Give two examples of false dilemmas stated using “if . . . then . . .”.
Trade with a classmate to rewrite them as “or” claims.
 -
 -

4 CHAPTER 7 Compound Claims

8. A particular form of false dilemma is the *perfectionist dilemma*, which assumes:
Either the situation will be perfect if we do this, or we shouldn't do it.
(*All or nothing at all.*)
- I'm voting for raising property taxes to pay for improvements to the schools.
 - Don't be a fool. No matter how much money they pour into the schools, they'll never be first-rate.
- a. Give the unstated premise that shows that this argument is a false dilemma.
- b. Give an example of a perfectionist dilemma you've heard or read.

For the exercises below fill in the italicized parts.

9. Tom: Look, either you'll vote for the Republican or the Democratic candidate for president.
Lee: No way I'll vote for the Democrat.
Tom: So you'll vote for the Republican.
- Argument?* (yes or no)
Conclusion (if unstated, add it):

Premises:

Additional premises needed (if none, say so):

Classify (with the additional premises): valid strong ————— weak

Good argument? (choose one—if it's a false dilemma, say so)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

10. Lee: Manuel and Tom went to the basketball game if they didn't go to the library.
Maria: I know they're not at the library because I was just there.
Lee: So they must have gone to the basketball game.
- Argument?* (yes or no)
Conclusion (if unstated, add it):

Premises:

Additional premises needed (if none, say so):

Classify (with the additional premises): valid strong _____ weak

Good argument? (choose one—if it's a false dilemma, say so)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

11. Tom: Both Lee and I think they should allow logging on Cedar Mountain. You do, too—don't you, Dick?

Dick: Actually, no, . . .

Tom: I didn't know you were one of those environmentalist freaks.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed (if none, say so):

Classify (with the additional premises): valid strong _____ weak

Good argument? (choose one—if it's a false dilemma, say so)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

12. Dick: Somebody knocked over our neighbor's trash can last night. Either our neighbor hit it with her car when she backed out again, or a raccoon got into it, or Spot knocked it over.

Zoe: Our neighbor didn't hit it with her car because she hasn't been out of her house since last Tuesday.

Dick: It wasn't a raccoon, because Spot didn't bark last night.

Zoe: Spot! Bad dog! Stay out of the trash!

6 CHAPTER 7 Compound Claims

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed (if none, say so):

Classify (with the additional premises): valid strong ————— weak

Good argument? (choose one—if it's a false dilemma, say so)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

13. Zoe: We should get rid of Spot. He keeps chewing on everything in the house.
Dick: But why does that mean we should get rid of him?
Zoe: Because either we train him to stop chewing or we get rid of him. And we haven't been able to train him.
Dick: But I love Spot. We can just make him live outdoors.
(Evaluate what Zoe says as an argument. Consider Dick's answer in doing so.)

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed (if none, say so):

Classify (with the additional premises): valid strong ————— weak

Good argument? (choose one—if it's a false dilemma, say so)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

Exercises for Section B.1

1. a. What is a conditional?
b. Is a conditional a compound claim?
2. Make a conditional promise to your instructor that you believe you can keep.
3. What is the antecedent of a conditional?
4. Make up five examples of conditional claims that don't use the word "if" or don't use the word "then." At least one should have the consequent first and antecedent last. Exchange with a classmate to identify the antecedents and consequents.
 -
 -
 -
 -
 -
5. What is a contradictory of a claim?
6. How do you say the contradictory of "If A, then B"?

8 CHAPTER 7 Compound Claims

7. a. Give a contradictory of:

(*) If Suzy studies hard, then she'll pass Dr. E's class.

Show that each of (b)–(d) is not a contradictory of (*) by giving a possibility where both it and (*) could be true or both of them could be false at the same time.

- b. If Suzy doesn't study hard, then she'll pass Dr. E's class.
- c. If Suzy doesn't study hard, then she won't pass Dr. E's class.
- d. If Suzy studies hard, then she won't pass Dr. E's class.
8. Make up two conditionals and two "or" claims. Exchange them with a classmate to write the contradictories.

For the following exercises, answer the italicized parts. Remember that even though it might not be a conditional, it could still have a contradictory.

9. If Spot barks, then Puff will run away.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

10. Lee will take care of Spot next weekend if Dick will help him with his English exam.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

11. If you don't apologize, I'll never talk to you again.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

12. Flo's mother won't go to the movie if she can't get someone to watch Flo.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

13. Loving someone means you never throw dishes at them.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

14. Since 2 times 2 is 4, and 2 times 4 is 8, I should be ahead \$8, not \$7.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

15. Get me some cake mix at the store, and I'll bake a cake.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

16. Tuna is good for you even though they say you shouldn't eat it more than once per week.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

17. Tom: Being late for football practice will make the coach really mad.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

10 CHAPTER 7 Compound Claims

18. If it's really true that if Dick takes Spot for a walk Dick will do the dishes, then Dick won't take Spot for a walk.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

19. If Manuel went to the basketball game, then he either got a ride with Maria or he left early to wheel himself over there.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

20. Drop the gun and no one will get hurt.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

21. When there's a raccoon in the yard, you can be sure that Spot will bark.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

22. Lee didn't go to the lecture because he knew Maria would take notes.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

23. With good ratings, the series will be renewed.

Conditional? (yes or no)

Antecedent:

Consequent:

Contradictory:

Exercises for Section B.2

1. State the contrapositive of:
 - a. If Flo plays with Spot, then she has to take a bath.
 - b. If Manuel doesn't get his wheelchair fixed by Wednesday, he can't attend class Thursday.
 - c. If Maria goes with Manuel to the dance, then Lee will be home alone on Saturday.

2. State which of the following hold:
 - (i) is necessary for (ii) (i) is both necessary and sufficient for (ii)
 - (i) is sufficient for (ii) (i) is neither necessary nor sufficient for (ii)
 - a. (i) Dr. E had his annual physical examination.
(ii) Dr. E had an appointment with his physician.
 - b. (i) Manuel opened a checking account. (ii) Manuel wrote his first check.
 - c. (i) Zoe won \$47 at blackjack. (ii) Zoe was gambling.
 - d. (i) Maria is divorced. (ii) Maria has an ex-husband.
 - e. (i) Suzy is over 21. (ii) Suzy can legally drink in this state.

3. We often say that one condition is necessary or sufficient for another, as in "Being over 16 is necessary for getting a driver's license." That means that the general conditional is true: "If you can get a driver's license, then you're over 16."
State which of the following hold:
 - (i) is necessary for (ii) (i) is both necessary and sufficient for (ii)
 - (i) is sufficient for (ii) (i) is neither necessary nor sufficient for (ii)
 - a. (i) visiting City Hall (ii) leaving home
 - b. (i) having the ability to fly (ii) being a bird

- c. (i) being a U.S. citizen (ii) being allowed to vote in the U.S.
- d. (i) losing at the lottery (ii) buying a lottery ticket
- e. (i) being hired (ii) being fired
4. What is a necessary condition for there to be a fire?
5. What is a sufficient condition for you to be happy? Is it necessary?
6. We know that the following are equivalent claims:
- If Dick went to the movies, then he got home before 6 p.m.
 - If Dick didn't get home before 6 p.m., then he didn't go to the movies.
 - For Dick to go to the movies, it's necessary for him to get home before 6 p.m.
- Rewrite each of (a)–(c) in two ways (using “necessary” or “sufficient” as appropriate)
- a. Suzy will go with Tom to the library if he gets out of practice by 6.
- b. For Dick to take Spot for a walk, it's necessary that it not be raining.
- c. If Spot got out of the yard, then the gate was unlatched.
7. Rewrite each of the following as an “if . . . then . . .” claim if that is possible. If it is not possible, say so.
- a. Paying her library fines is required in order for Zoe to get a copy of her transcript.
- b. Dick: Since I'm on the way to the store anyway, I'll pick up some dog food.
- c. Suzy loves Puff even though he isn't housetrained.
- d. Of course, Suzy loves Tom despite the coach suspending him for a game.
- e. For Tom to get back on the team, he has to do 200 push-ups.

8. Rewrite each of the following as a conditional and as a statement of a necessary or sufficient condition.
- Maria will buy a new dress only if she gets a bonus this month.
 - Flo will go over to play with Spot only if her mother lets her.
 - Lee: Only if Tom is back on the team can we win this weekend.

9. We know that “A only if B” is equivalent to “if A then B.” So we have:

A if and only if B means if A, then B; and if B, then A.

We use “if and only if” to show that two claims are *equivalent*: Each is necessary and sufficient for the other. For example,

Suzy will marry Tom if and only if he remains faithful to her until graduation.

This means that it is necessary for Tom to stay faithful to Suzy for her to marry him.

But it is also sufficient for Tom to stay faithful to Suzy to ensure that she will marry him.

Give an example of an “if and only if” claim from your own life you know is true.

c. Give two examples of affirming the consequent. Explain why each is weak in terms of other possibilities.

d. Give two examples of denying the antecedent. Explain why each is weak in terms of other possibilities.

2. Give an example (not from the text) of the direct way of reasoning with conditionals.

3. Give an example (not from the text) of the indirect way of reasoning with conditionals.

4. Give an example (not from the text) of affirming the consequent. Show that it is weak.

5. Give an example (not from the text) of denying the antecedent. Show that it is weak.

For Exercises 6–11, if there's a claim you can add to make the argument valid according to one of the forms we've studied, add it. If the argument is unrepairable, say so.

6. If Flo comes over early to play, then Spot will bark. So Spot barked.

7. Whenever Flo comes over to play, Spot barks. So Flo didn't come over to play.

8. Tom: Suzy will fail Dr. E's class for sure if she doesn't study hard.

Harry: So she'll have to repeat that class, right?

9. Zoe will wash the dishes if Dick cooks. So Dick didn't cook.

10. Suzy: Dr. E won't give an exam today if he doesn't finish grading by this afternoon.

Maria: So Dr. E will give an exam today.

11. If Flo does her homework, then she can watch TV. So Flo did her homework.

12. Here's another valid form of reasoning with conditionals:

<i>No matter what</i>	
If A, then B	<u><i>If A, then B</i> + <i>If not A, then B</i></u>
If not A, then B	↓
So B	<i>B</i>

Dick: If I study for my math exam this weekend, we won't be able to have a good time at the beach.

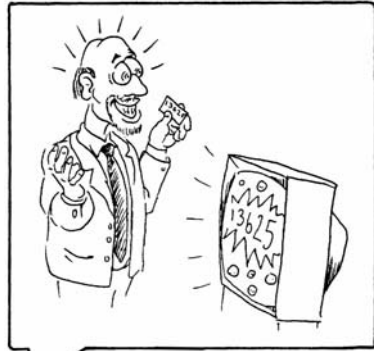
Zoe: But if you don't study for your exam, you'll worry about it like you always do, and we won't be able to have a good time at the beach. So it looks like this weekend is shot.

Give another example of a no-matter-what argument.

Exercises for Chapter 7

1. What does it mean to say someone is reasoning in a chain with conditionals?
2. What is a slippery slope argument?
3. Make a list of the valid argument forms we studied in this chapter.
4. Make a list of the weak argument forms we studied in this chapter.
5. Make a list of the bad argument types we studied in this chapter.
6. Why won't a slippery slope argument do as a way to reduce to the absurd?

9.



If Dr. E wins the lottery,



If Dr. E marries a rich woman,



Then Dr. E will be rich.



If Dr. E's book sells a million copies,

Assume that all of the conditionals represented in the picture are true. Using them:

- a. Write a contrapositive for each.

For Exercises 10–36 answer the italicized parts. Identify any of the argument forms we've studied.

10. If Suzy breaks up with Tom, then she'll have to return his letter jacket. But there is no way she'll give up that jacket. So she won't break up with Tom.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

11. Steve Pearce is a congressman who meets with his constituents regularly. If someone is a good congressman, he meets with his constituents regularly. So Rep. Pearce is a good congressman.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

12. To take issue with current Israeli policy is to criticize Israel. To criticize Israel is to be anti-Israel. To be anti-Israel is to be anti-Semitic. So if you take issue with current Israeli policy, you're an anti-Semite.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

13. When Johnny comes marching home again, the girls will all laugh and shout. Johnny died in the war. So the girls didn't laugh and shout.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

14. Dr. E (on an exam day): If students don't like me, they won't show up. But all of them showed up today. So they must really like me.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

15. Manuel: Look here in the paper. People in Uganda are dying of some fever where they hemorrhage a lot.

Maria: If people in Uganda are dying of hemorrhagic fever, it must be the ebola virus.

Manuel: So it's the ebola virus!

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

16. Maria: Professor, professor, why wouldn't you answer my question in class?
Professor Zzyzzx: Questions in my class I do not allow. If one student I am allowing to ask a question, then others I must allow. Und then I will have lots and lots of questions to answer. Und time I won't have for my lecture.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

17. Maria: Lee will take care of Spot Tuesday if Dick will help him with his English paper.
Manuel: (*later*) Dick didn't help Lee with his English paper, so I guess Lee didn't take care of Spot on Tuesday.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

18. Dick: If Freud was right, then the only things that matter to a man are fame, riches, and the love of beautiful women.

Zoe: But Ralph is poor, single, never married, and uninterested in women. And certainly not famous. Yet he's happy. So Freud was wrong.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

19. Only if Columbus landed in a place with no people in it could you say that he discovered it. But the Americas, especially where he landed, were populated. He even met natives. So Columbus didn't discover America. He just discovered a route to America.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

20. Tom: If Dick loves Zoe, he'll give her an engagement ring.
Harry: But Dick loves Spot a lot more than Zoe.
Suzy: So Dick won't give Zoe an engagement ring.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

21. Zoe's mother to Zoe: Don't get a credit card! If you do, you'll be tempted to spend money you don't have. Then you'll max out on your card. Then you'll be in real debt. And you'll have to drop out of school to pay your bills. You'll end up a failure in life.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

22. Every criminal either is already a hardened repeat offender or will become one because of what he'll learn in jail. We don't want any hardened criminals running free on our streets. So if you lock up someone, he should be locked up forever.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

23. Mary Ellen: If I go on this workout and diet plan from this magazine, I'll lose weight.

Suzy: (*later*) Did you see how much weight Mary Ellen lost?

Zoe: She must have gone on that workout and diet plan.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

24. Zoe: Don't go out with a football player.

Suzy: Why not?

Zoe: You're crazy about football players, and if you go out with one you're sure to sleep with him.

Suzy: So?

Zoe: Then you'll get pregnant. And you'll marry the guy. But those guys are such jerks. You'll end up cooking and cleaning for him while he and his buddies watch football on TV. In twenty years you'll have five kids, no life, and a lot of regrets.

Suzy: Gosh. I guess you're right. I'll go out with a basketball player instead.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unreparable (state which of the reasons apply).

25. Dick: If the car's bumper isn't crumpled, Lee wasn't speeding.

Tom: So Lee didn't get a ticket.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong _____ weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

26. Dick: I heard that Tom's going to get a pet. I wonder what he'll get?

Zoe: The only pets you're allowed in this town are dogs or cats or fish.

Dick: Well, I know he can't stand cats.

Zoe: So he'll get a dog or fish.

Dick: Not fish. He isn't the kind to get a pet you just contemplate.

Zoe: So let's surprise him and get him a leash.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

27. Mom: For a marriage to work, people have to have a lot in common.

Zoe: Wrong! I know lots of miserable marriages where the people had a lot in common.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

28. Lee: If Maria's paycheck comes in on time, she can pay the rent this month.

Manuel: I saw Maria at the bank this afternoon. She said she was depositing her paycheck.

Lee: Great! So the rent will be paid!

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

29. You say you want to raise tuition again? Why not raise the parking fees, too? And the dorm contracts. And raise prices at the cafeteria, while you're at it. Or maybe even charge students for using the library. You could balance the school's budget for sure that way.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

30. Aid to third-world countries? Why should we care more about starving children there than here?

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

31. Zoe: You look depressed.

Dick: I feel really low.

Zoe: You should eat some chocolate—that always makes me feel better.

Dick: (looking into the cupboard) Hey! There's no chocolate bars here.
You must have been really depressed last week.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

32. Zoe: I can't believe you let Spot run away on your walk.

Dick: We'll just have to wait for him to come home. I searched everywhere for him.

Zoe: (*later*) Did you let Spot back in the yard?

Dick: No.

Zoe: So someone else must have let him in. The gate's latched.

Dick: Maybe he got back in by himself.

Zoe: No. If he could get in, he could get out. And if he could get out, he would because he loves to run around the neighborhood. But he never gets out anymore when the gate is latched.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

33. Gun control should not be allowed. If laws requiring registration of all guns are passed, then they'll start investigating people who have guns. They'll tap our phones. They'll look at what we check out of the library. They'll tap our internet records. They'll come gunning for us. It'll be a police state.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

34. I'm suspicious of this theory that thirteen year old kids are intrinsically messed up. If it's physiological, it should be universal. Are Mongol nomads all nihilists at thirteen? I've read a lot of history, and I don't think I've seen a single reference to this supposedly universal fact before the twentieth century. Teenage apprentices in the Renaissance seem to have been cheerful and eager. They got in fights and played tricks on one another of course (Michelangelo had his nose broken by a bully), but they weren't crazy.
Paul Graham, "Why Are Nerds Unpopular?"

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

35. To take issue with the assumptions of evolution is to be a creationist. To be a creationist is to be a theist and to reject science. To reject science is to be irrational. So to take issue with the assumptions of evolution is to be irrational.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

36. Maria: Listen to this argument I read in Steen's *Practical Philosophy for the Life Sciences*, "If the population density of a species is high in some area, then the species will not reproduce in that area. If a species doesn't reproduce in some area, it will go extinct in that area. Therefore, if the population density of a species is very high in some area, it will go extinct in that area."

Lee: Gosh, that explains why there aren't any alligators in New York: there used to be too many of them.

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

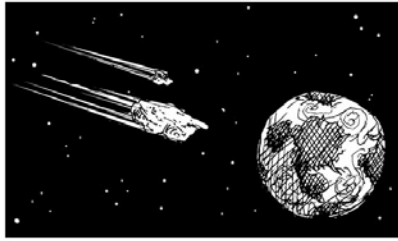
Classify: valid strong ————— weak

One of the forms we studied in this chapter? (state which one)

Good argument? (check one)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

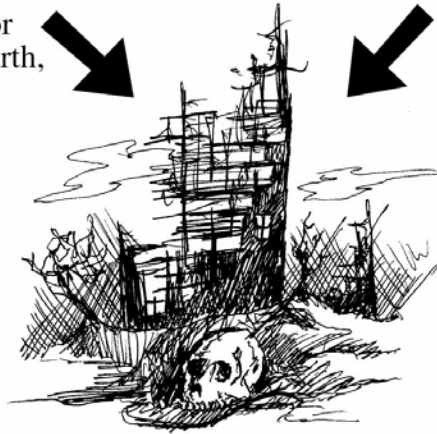
37.



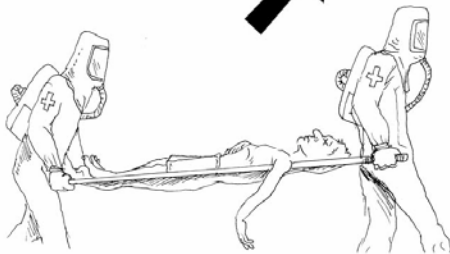
If a 250 ton meteor crashes into the earth,



If scientists are put in charge of nuclear weapons,



Then mankind will become extinct.



If the ebola virus breaks out in Africa,



If an ice age freezes all the seas,

Assume that all the conditionals represented in this picture are true. Using them:

a. Write a contradictory of each “if . . . then . . .” claim.

b. Write the contrapositive of each “if . . . then . . .” claim.

c. Give an example of each of the valid and weak forms of arguments using conditionals, except for reasoning in a chain.

d. State which claims are sufficient for which others.

e. State which claims are necessary for which others.

38. You've worked hard enough. Take some time off. Go to a bar or a party or a church social. Listen. And bring back examples of the valid and weak forms of reasoning we studied in this chapter.

Example 1:

Example 2:

Example 3:

Example 4:

CHAPTER 8

Exercises for Section A

1. Give two other ways to say “All dogs eat meat.”

2. Give two other ways to say “Some cats can swim.”

3. Give two other ways to say “All computers are powered by electricity.”

4. Give two other ways to say “Some state governors are women.”

5. Give another way to say “Only birds fly.”

6. Give two other ways to say “No police officer is under 18 years old.”

7. Give another way to say “Everything that’s a dog is a domestic canine, and everything that’s a domestic canine is a dog.”

8. Give two other ways to say “No pig can fly.”

9. Judging from your experience, which of the following are true? Be prepared to defend your answer.
 - a. Only dogs bark.

2 *CHAPTER 8 General Claims*

- b. All blondes are dumb.
 - c. Some textbooks are designed to fall apart after one semester.
 - d. Crest toothpaste is not for sale in all stores.
 - e. Some English professors are women.
 - f. Dictionaries are the only way to learn the meaning of new words.
 - g. No student can register for this course after the first week of classes.
10. For each of the following, give a contradictory claim.
- a. All students like to study.
 - b. No women are construction workers.
 - c. Every CEO of a Fortune 500 company is a man.
 - d. This book is used in all sections of critical thinking.
 - e. No exam is suitable for all students.
 - f. Not all drunk drivers get into accidents.
 - g. Donkeys eat carrots.
 - h. Only the good die young.
 - i. All teachers and only teachers are allowed to grade exams.
 - j. Nothing both barks and meows.

- k. Tom will start every football game if he's not injured.
 - l. If some football player is a vegetarian, his coach will hate him.
 - m. All decisions about abortion should be left to the woman and her doctor.
 - n. The Lone Ranger was the only cowboy to have a friend called "Tonto."
11. There are general claims about time, too. Give a contradictory for each of the following:
- a. Dr. Wallace always gives an exam when he is irritated with his students.
 - b. It never rains in Seattle in July.
 - c. Sometimes Spot will not chase Puff.
 - d. Only during the winter are there flocks of birds along the river.

Exercises for Section B

Which of the argument forms in Exercises 1–6 are valid? Justify your answer. Then give an argument of that form.

1. All S are P.
No Q is S.
So some Q aren't P.

2. All S are P.
a is S.
So *a* is P.

3. Some S are P.
All P are Q.
So some S are Q.

4. Only S are P.
a is S.
So *a* is P.

5. Some S aren't P.
So no P are S.

6. All S are P.
No Q is P.
So no Q is S.

Exercises 7–14 are simple examples for you to develop some skill in analyzing general claims. For each, select the claim that makes the argument valid—you're not asked to judge whether the claim is plausible, just whether it makes the argument valid.

7. All turtles can swim. So turtles eat fish.
- Anything that eats fish swims.
 - Fish swim and are eaten by things that swim.
 - Anything that swims eats fish.
 - None of the above.
8. Anyone who plagiarizes is cheating. So Ralph plagiarizes.
- Ralph wrote three critical thinking essays in two days.
 - Ralph cheated last week.
 - Both (a) and (b).
 - None of the above.

6 CHAPTER 8 *General Claims*

9. Pigs are mammals. So pigs eat apples.
- Anything that eats apples is a mammal.
 - Pigs don't eat meat.
 - Anything that is a mammal eats apples.
 - None of the above.
10. All professional dancers cannot hold a day job. So no lawyer is a professional dancer.
- Lawyers don't usually like to dance.
 - Dancers aren't interested in making money.
 - Being a lawyer is a day job.
 - Professional dancers can't write essays.
 - None of the above.
11. Every voter must have a legal residence. So no sex-offender has a legal residence.
- No sex-offender is a voter.
 - No sex-offender can register to vote.
 - If you're a sex-offender, then no one will want to live near you.
 - None of the above.
12. Some cats chase song birds. So some song birds are eaten by cats.
- Some cats catch song birds.
 - Some things that chase song birds eat them.
 - Some song birds attack cats.
 - None of the above.
13. Every dog chases cats. So Spot chases Puff.
- Spot is a dog.
 - Puff is a cat.
 - Puff irritates Spot.
 - Both (a) and (b).
 - None of the above.
14. Manuel is sweating. So he must be hot.
- Manuel sweats when he is hot.
 - Anyone who is hot sweats.
 - Only Manuel sweats when he is hot.
 - Only people who are hot sweat.
 - None of the above.

Which of Exercises 15–32 are valid arguments? You're not asked to determine whether the argument is good, only whether it is valid. Check by doing *one* of the following:

- Give a possible way in which the premises could be true and the conclusion false to show it's invalid.
- Draw a diagram.
- Point out that the argument is in one of the forms we have studied.
- Explain why it's valid.

15. Not every student attends lectures. Lee is a student. So Lee doesn't attend lectures.

16. No professor subscribes to *Rolling Stone* magazine. Maria is not a professor.
So Maria subscribes to *Rolling Stone* magazine.

17. No professor subscribes to *Rolling Stone* magazine. Lou subscribes to *Rolling Stone* magazine. So Lou is not a professor.

22. No student who cheats is honest. Some dishonest people are found out. So some students who cheat are found out.

23. Only ducks quack. George is a duck. So George quacks.

24. Everyone who likes ducks likes quackers. Dick likes ducks. Dick likes cheese.
So Dick likes cheese and quackers.

25. No dogcatcher is kind. Anyone who is kind loves dogs. So no dogcatcher loves dogs.

26. Some things that grunt are hogs. Some hogs are good to eat. So some things that grunt are good to eat.



28. All dogs chase cats. All cats chase songbirds. So all dogs chase songbirds.

29. Some paraplegics can't play basketball. Belinda is a paraplegic. So Belinda can't play basketball.

30. Every dog loves its master. Dr. E has a dog. So Dr. E is loved.

31. Only managers can close out the cash register. Juan is a manager. So Juan can close out the cash register.

32. Dogs are mammals. Cats are mammals. Some dogs hate cats. Therefore, some dogs hate mammals.

33. Everything made with chocolate is delicious. No liquor is delicious. So no liquor is made with chocolate.

34. The argument forms for conditionals and the argument forms for general claims are related. For example, we can rewrite:

All dogs bark.		If anything is a dog, then it barks.
Ralph barks.	as	Ralph barks.
So Ralph is a dog.		So Ralph is a dog.

Rewrite the following claims as *conditionals*:

- a. All cats cough hair balls.
- b. Every donkey eats hay.
- c. Everything that's made of chocolate is good to eat.
- d. Ducks like water.

Exercises for Section C

1. Give two other ways to say “Almost all teenagers listen to pop music.”

2. Give two other ways to say “Only a few adults listen to classical music.”

Which of the argument forms in Exercises 3–6 are strong? Justify your answer, and give an example.

3. Very few S are P.
 a is S.
So a is not P.

4. Very few S are P.
 a is P.
So a is not S.

5. Most S are P.
Most P are Q.
So most S are Q.

6. Almost all S are P.
Every P is Q.
So almost all S are Q.

Which of the following arguments are strong? Check by doing one of the following:

- Give a not unlikely possible way in which the premises are true and the conclusion false to show the argument is weak.
 - Point out that the argument is in one of the forms we have studied.
 - Explain why it's strong or weak.
7. Very few college students use heroin. Zoe is a college student. So Zoe doesn't use heroin.

8. Almost no students read *The New York Review of Books*. Martha reads *The New York Review of Books*. So Martha is not a student.

9. Only a very few dogs like cats. Almost no cats like dogs. So virtually no dogs and cats like each other.

10. No student who cheats is honest. Almost all dishonest people are found out.
So almost all students who cheat are found out.

11. Almost all people who are vegetarians like pizza. Almost all vegetarians will not eat eggs. So all but a few people who like pizza will not eat eggs.

12. Most newspaper columnists have a college degree. Almost everyone who has a college degree is not self-employed. So most newspaper columnists are not self-employed.

13. Very few paraplegics can play basketball. Belinda is a paraplegic. So Belinda can't play basketball.

14. All but a few members of Congress have a college degree. Mr. Ensign is a member of Congress. So Mr. Ensign has a college degree.

15. Almost every dog loves its master. Dr. E has a dog. So Dr. E is loved.

Review Exercises for Chapters 7 and 8

1. What is an argument?
2. What are the tests for an argument to be good?
3. What is a valid argument?
4. What does it mean to say an argument is strong?
5. Is every valid argument good? Explain.
6. How do you show an argument is weak?
7. Is every valid or strong argument with true premises good? Explain.
8. What is a compound claim?

20 *REVIEW EXERCISES for Chapters 7 and 8*

22. Give an example of a “no” claim and a contradictory of it.

23. Give an example of arguing backwards with “all.” Is it valid?

24. Give an “only” claim, and then rewrite it as an “all” claim.

25. Give an example of a strong method of reasoning with vague generalities.

26. Give an example of a weak method of reasoning with vague generalities.

27. List the valid forms of arguments we studied in Chapters 7 and 8.

Name _____ Section _____

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28. List the weak forms of argument in Chapters 7 and 8 that we said indicated that an argument is unrepairable.

CHAPTER 9

Exercises for Chapter 9

1. Come up with a loaded question you might pose to an instructor to try to make him or her give you a better grade.

2. Give a loaded question you might ask a police officer who stops you.

3. Give an example of “politically correct” language and rephrase it in neutral language.

4. Give a euphemism and a dysphemism for each of the following. Be sure your word or phrase can be used in a sentence in place of the original.
 - a. Used car.

 - b. Sexually explicit books.

 - c. Mentally handicapped person.

 - d. Unemployed person.

5. Find an example of a euphemism from a news broadcast.

6. Find an example of a dysphemism from a news broadcast.

7. Find an example of a downplayer. Say what the hidden claim is.

13. Write a neutral description of someone you know well, one that a third party could use to recognize him or her. Now write a slanted version by replacing the neutral terms with euphemisms or dysphemisms, adding downplayers or up-players.

Neutral

Slanted

14. Bring to class a letter to the editor or an article from a respected website. Read it to the class. Then replace all the slanters and read it again.

Say what, if anything, is wrong in the following and make any concealed claim explicit.

15. When are you going to start studying in this course?

16. New Mexico surveys show 60 percent of high schoolers have had sex before graduating, and only 12 percent remain abstinent until marriage.

Albuquerque Journal, January 13, 2005

17. Scientists have discovered a cure for baldness.

18. E-mail us and we'll do our best to get back to you within 12 hours.

Ticketmaster's "contact us" web page

4 *CHAPTER 9 Concealed Claims*

19. New Mexico had fewer than one in five—about 18 percent—of its total population living in poverty last year, while the United States remained level at about 12.5 percent.
Sean Olson, *Albuquerque Journal*, August 27, 2008
20. Dick: That was really rotten, making me wait for an hour.
Zoe: I'm sorry you feel that way.
21. The study of history is not expected to yield any framework in which successful predictions can be made. From time to time, schools of thought arise which claim this ability, but their record makes even economists seem like skilled clairvoyants.
Paul Ormerod, *The Death of Economics*
22. “Knowing the law, and being perhaps a respectable, religious person, he is anxious to abstain from all appearance of evil.”
The Shepherd's Life, W. H. Hudson, 1921
23. The Army Corps of Engineers will begin its work on swamp reclamation next month.
24. Thousands of words from U.S. officials, it appears, have proved no match for the last week's news, which produced a barrage of pictures of wounded Afghan children and of Israeli tanks rolling into Palestinian villages.
“Talking heads just can't compete,” a Western diplomat in Cairo said. “The images touch emotions, and people in this part of the world react according to their emotions.”
New York Times News Service, October 19, 2001

25. (from the front of a Simple Truth Almond Milk carton)
Free from 101+ artificial preservatives
& ingredients* [there is no note for the asterisk]
(from the back of Simple Truth Almond Milk)
INGREDIENTS: Almond milk (filtered water, almonds), Evaporated Sugar Cane,
Tricalcium Phosphate, Sea Salt, Gellan Gum, Dipotassium Phosphate, Xanthan
Gum, Sunflower Lecithin, Vitamin A Palmitate, Vitamin D2, D-Alpha-Tocopherol
26. “In a way, we’re a kind of a Peace Corps.”
A training director of the Fort Bragg Green Beret Center, 1969
27. Tom: This book *Esperanza’s Box of Saints* by Maria Escandón is great. It’s so good
that if I didn’t know better I would have thought it was written by a man.
28. Though France is one of the most atheistic nations on earth—surpassed only by Japan,
China, and, oddly, the Czech Republic—it has always revered political messiahs:
Napoleon, Boulanger, Pétain, De Gaulle, Mitterand.
Mark Lilla, “The Strangely Conservative French”, *New York Review of Books*, 2015
29. [In the Business Outlook section of the *Albuquerque Journal*, July 18, 2011, there was
an article by Jerry Pacheco about businesses in northern Mexico exporting to the U.S.]
Only 18 percent of the companies surveyed that had operations in Mexico said that they
had experienced supply chain disruption due to security issues.
30. How many years in prison should someone get for sending a virus out on the internet
that infects thousands of machines?

6 CHAPTER 9 *Concealed Claims*

31. It seems fairly safe to assume that foreign-exchange dealers are human and hence more intelligent than ants. We may occasionally have our doubts, but broadly speaking this is true.
Paul Ormerod, *Butterfly Economics*

32. U.S. Air Force Colonel David Opfer, air attaché in Cambodia, complained to reporters about their coverage of the Vietnam War, “You always write bombing, bombing, bombing. It’s not bombing; it’s air support.”

33. Students should be required to wear uniforms in high schools. It has been well documented that wearing uniforms reduces gang violence.

34. Despite the fact that [Benjamin] Franklin was out of touch with the centers of European thought, his ideas on electricity were truly original and fundamental.
Gordon S. Wood, *The New York Review of Books*, September 26, 2003

35. Maria: Wanda’s so sad. She doesn’t even want to get out of bed anymore. It looks like she’s in another bout of blues.

36. The gaming industry in Nevada recorded another record year of profits.

37. (In a review of a book that contains descriptions of leaders of the Soviet Union)
Even for politicians, they spend a disproportionate amount of their time drinking, plotting, lying, swearing, and insulting one another.
Robert Cottrell, *The New York Review of Books*, May 1, 2003

38. Manuel: Hey, Dr. E, I read in the *New Scientist* that in Queensland, Australia, you can buy free-range eggs endorsed by the Australian humane society, where the egg boxes say, "These eggs come from hens that are: Free from hunger and thirst; Free from pain, injury and disease; Free from fear and distress; Free from discomfort; Free to express themselves."

Dr. E: Great. I should apply for a job as a free-range hen.

39. The U.S. economy shed 1.4 million jobs over the 12 months ended in March.

USA Today, March 24, 2002

40. "We didn't turn him down. We didn't accept him." President of Springdale Country Club (Princeton, N.J.), concerning an African-American applicant for membership.

41. That corporation wants to erect a hotel in an unspoiled wilderness area.

42. The proposed ban on bulk shipments [of tequila to the United States] would not take place until January 2005, and Greisser said the year's delay was to provide Mexican companies time to expand their bottling plants.

"This proposal could have a grave effect on consumers worldwide through higher prices, fewer choices and the significant potential for serious product shortages," said Peter Cressy, president of the Distilled Spirits Council of the United States.

Albuquerque Journal, Sept. 26, 2003

43. [Malcolm] Sharbutt [co-star of the current production and two-year veteran] attributes the staying power [of the Vortex theater] to the plays on the program. "It's because we offer a different venue than the other places in town," he says. "You can see 'Arsenic and Old Lace' or a play by Neil Simon anywhere in town, but we're going to do plays about junkies and rape and bad families. We try to keep it real."

Albuquerque Tribune, January 10, 2003

44. (from the front of a bottle of Equate Clear Hand Soap in large type)

Washes away germs and bacteria**

(from the back in small type)

** Washing hands helps wash away bacteria and germs.

45. At last our government has decided to give compensation to the Japanese who were resettled in internment camps during World War II.

46. *Blondes aren't dumb—they're just slow*

Berlin—Blonde women are not dumber than brunettes or redheads, a reassuring study shows—they are just slower at processing information, take longer to react to stimuli and tend to retain less information for a shorter period of time than other women.

“This should put an end to the insulting view that blondes are airheads,” said Dr. Andrea Stenner, a blonde sociologist who studied more than 3,000 women for her doctoral research project.

Weekly World News, October 15, 1996

47. Dr. Rajendra K. Pachauri, the chairman of the United Nations Intergovernmental Panel on Climate Change (IPCC), compared Bjørn Lomborg, Danish statistician and author of *The Skeptical Environmentalist*, to Adolf Hitler in an interview with *Jyllandsposten*, a leading Danish newspaper (April 21). Pachauri said, “What is the difference between Lomborg’s view of humanity and Hitler’s? You cannot treat people like cattle. You must respect the diversity of cultures on earth. Lomborg thinks of people like numbers. He thinks it would be cheaper just to evacuate people from the Maldives, rather than trying to prevent world sea levels from rising so that island groups like the Maldives or Tuvalu just disappear into the sea. But where’s the respect for people in that? People have a right to live and die in the place where their forefathers have lived and died. If you were to accept Lomborg’s way of thinking, then maybe what Hitler did was the right thing.”

Cooler Heads Coalition, April 28, 2004

<<http://www.globalwarming.org/article.php?uid=637>>

48. (in large type from the front of a package of Purina Dog Chow Complete)
50 lb. BONUS SIZE 4 lbs. free

49. *Viviscal Man*

Scientifically formulated for men who want to nourish thinning hair and promotes existing hair growth* from within

[there is no note for the asterisk]

Clinically Researched Formula

Viviscal is grounded in 25 years of continuous research and development. The efficacy of Viviscal is supported by 7 clinical studies.

50. Wages for the same kind of labor are lower in the South than in the North. Also, wages are lower in Puerto Rico than in the United States. How can a northern employee protect his wage level from the competition of lower-wage southern labor? And how can a laborer in the United States protect his job (and higher wage rate) from Puerto Rican labor? One device would be to advocate “equal pay for equal work” in the United States, including Puerto Rico, by legislating minimum wages higher than the prevailing level in the South and Puerto Rico. It should come as no surprise to learn that in the United States support for minimum-wage laws comes primarily from northerners who profess to be trying to help the poorer southern laborers.

A. Alchian and W. Allen, *University Economics*

CHAPTER 10

Exercises for Chapter 10

1. Write a *bad* argument in favor of affirmative action whose only premises appeal to pity.
2. Find an advertisement that uses apple polishing. Attach it here. Is it a good argument?
3. Find an advertisement that uses an appeal to fear. Attach it here. Is it a good argument?
4. Make up an appeal to some emotion for the next time a traffic officer stops you.
5. Report to the class on a “calling in your debts” argument you’ve heard.

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6. Give an example of an appeal to spite that invokes what someone believes. (Hint: Look at political speeches.) Is it a good argument?

7. Give an example of an *appeal to patriotism*. Is it a good argument?
(Samuel Johnson: “Patriotism is the last refuge of a scoundrel.”)
(Ambrose Bierce: “Patriotism is the first refuge of a scoundrel.”)

For each of the following, decide if it is an argument. If it is, decide if it is an appeal to an emotion and, if so, which emotion(s). Then decide whether it’s a good argument.

8. Zoe: We should stop all experimentation on animals right now. Imagine, hurting those poor doggies.

Dick: But there’s no reason why we shouldn’t continue experimenting with cats. You know how they make me sneeze.

9. Vote for Senator Wong. He knows how important your concerns are.

10. Before you buy that Japanese car, ask whether you want to see some Japanese tycoon get rich at your expense or whether you’d prefer to see an American kid get a meal on his plate next week.

11. Dear Dr. E,

I was very disappointed with my grade in your critical thinking course, but I'm sure that it was just a mistake in calculating my marks. Can I speak with you this Tuesday, right before I have lunch with my uncle, Dr. Jones, the Dean of Liberal Arts, where we plan to discuss sexual harassment on this campus?

Sincerely, Elizabeth Burnstile

12. Mom: Go ahead, Zoe. Live with your boyfriend, Dick. Who am I to say no?
I'm just your mother. Break my heart.

13. Sunbathing does not cause skin cancer. If it did, how could I enjoy the beach?

14. Democracy is the best form of government, otherwise this wouldn't be the greatest country in the world.

15. Smoking can't cause cancer, or I would have been dead a long time ago.

16. Dear Senator:

Before you make up your mind on how to vote on the abortion bill, I'd like to remind you that those who support abortion rights usually have small families. A few years from now, all my six children, and the many children of my friends, all of whom believe abortion is morally wrong, will be voting.

17. You mean that after we flew you here to Florida, paid for your lodging, showed you a wonderful time, all for free, you aren't going to buy a lot from us?

4 *CHAPTER 10 Too Much Emotion*

18. You shouldn't vote for gun control. It'll just make it easier for violent criminals to take advantage of us.
19. Wanda: I know this diet's going to work because I have to lose 20 pounds by the end of this month.
20. In Dr. E's class, if a student has to miss an exam, then the student has to petition to be excused. If the petition is granted for a midterm, then the final counts that much more. If the petition is denied, the student fails the exam. Here's an excuse petition from one of his students, written before the exam. Is it a good argument? Should Dr. E grant the petition?

October seventeenth through the twenty-first I will be out of town due to a family function. I am aware that my philosophy midterm falls on the 17th and, unfortunately, my flight leaves at 7 a.m. that morning. I am asking to please be excused from the midterm.

My boyfriend of two and a half years is standing as the best man in his brother's wedding. Being together for two years, I have become as much a part of his family as he is. This wedding is a once in a lifetime event and I want to be there to share it with him.

I am a 100% devoted student and would never intentionally miss an exam. However, this is something beyond my control. I understand that if my request is granted I will have to put forth extra effort and prepare myself for the final.

Name _____ Section _____

5

With the only other alternative being to drop the course, I am fully prepared to do whatever it takes.

I have attached a copy of my flight reservation as well as a copy of the wedding invitation for verification. I am aware that many teachers would not even give me the opportunity to petition to be excused when the midterm is the case, but I would more than appreciate it if you would grant my request.

CHAPTER 11

Exercises for Chapter 11

The exercises here are a review of this chapter and some of the basic parts of earlier ones. Your real practice in using this material will come in evaluating the arguments for analysis that follow in the next section.

1. What are the three tests an argument must pass to be good?
2. State the Guide to Repairing Arguments.
3. State the conditions under which an argument is unrepairable.
4. Is every valid or strong argument with true premises good? Give an explanation and/or counterexample.
5. If a very strong argument has twelve true premises and one dubious one, should we accept the conclusion?
6. What does a bad argument tell us about its conclusion?
7. What is our most reliable source of information about the world?

17. Give an example of confusing objective and subjective. Is it a bad argument?

18. Give an example of drawing the line. Is it a bad argument?

19. Give an example of mistaking the person for the claim. Is it a bad argument?

20. Give an example of mistaking the person for the argument. Is it a bad argument?

21. Give an example of an appeal to authority that is *not* a bad argument.

22. Give an example of a phony refutation. Is it a bad argument?

23. Give an example of a false dilemma. Is it a bad argument?

24. Give an example of an appeal to pity. Is it a bad argument?

Short Arguments for Analysis

For the passages below fill in the italicized parts.

1. Wanda: I'm going to go on that paleo diet. It's got to be safe and effective, with so many people doing it now.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

2. Suzy: I know that there is ESP.

Dick: How?

Suzy: If there wasn't, there'd be too much left unexplained.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

3. Suzy: I can't believe Dr. E got so angry about Ralph getting his essay from the internet. Next thing you know, he's going to tell us we can't work on our homework together.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

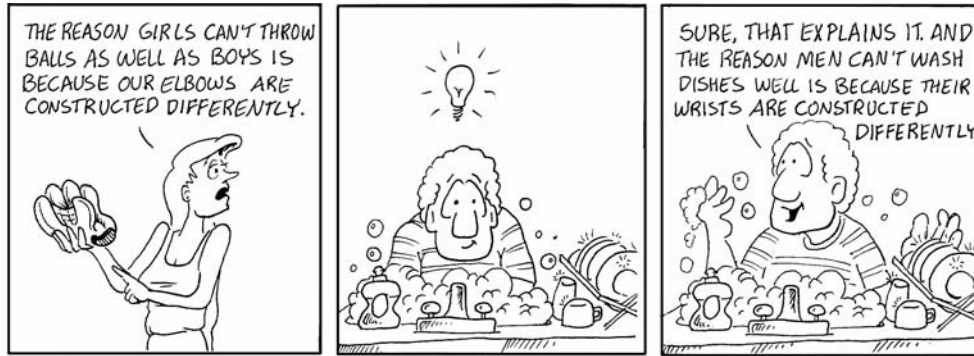
Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

2 *SHORT ARGUMENTS for ANALYSIS*

4.



Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

5. Dan was clever, but he couldn't go to college. His father disappeared, leaving lots of debt, and his mother was ill. So Dan had to take care of his mother and work full time.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

6. Of course it's good for you—it's got all natural ingredients.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

7. Lee: Maria and Manuel and I are thinking about getting a pet. What do you think?
Dick: Get a dog.
Tom: Get one of those small pigs. They're very intelligent animals. They make great pets. They learn to do tricks as well as any dog can. They can be housetrained too. And they're affectionate since they like to cuddle. Pigs are known as one of the smartest animals there are. And if you get bored with it or it becomes unruly, you can eat it.
Dick: Don't listen to him. The only pet he ever had was a turtle, and it died after two weeks. Kaput. Unless you call Suzy a pet.
Tom: Geez, Dick, you're harsh. Zoe get on you about the dishes again?

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

8. Mom: Your profile picture on Facebook is just not proper. Your Aunt Alice and everyone else in the family think it's inappropriate.
Zoe: You and Aunt Alice are just jealous that you can't wear clothes like that anymore.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

4 *SHORT ARGUMENTS for ANALYSIS*

9. Manuel: Where is Maria? I'm counting on her for a ride to my early class.
Lee: She must be asleep.
Manuel: Then her alarm didn't go off.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

10. Unprotected sex is O.K. I know lots of people who do it, and what's the worst that can happen? You get pregnant.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

11. From an interview with Vladimir Putin, president of Russia, on Russian national television, as reported in *The New York Review of Books*, May 25, 2000:

Putin: We had a dog, true it was a different one . . . unfortunately, it died, run over by a car. . . . But the kids wanted a little dog, and they finally convinced me. Now it's not clear whose dog it is more—mine, my wife's, the kids' The dog just sort of lives here on its own.

Interviewer (*jokingly*): Like a cat.

Putin: (*not laughing at the joke, coldly*) No, no, don't insult our dog. It doesn't work as a cat. A dog is a dog. We really love it.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

12. Candidate for the Senate: My opponent doesn't even believe that inflation is a serious risk in this country. So how is he going to protect you from it?

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

13. Why am I preaching that we should become nudists? We could all zip through airport security. Nudists don't know how rich someone is because everyone is dressed the same. Nudists listen to each other because at a clothing-optional beach, everyone makes eye contact. A final thought: nudity is truly our most natural state.

Robert Denker, *Newsweek* letter, June 17, 2007

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

6 *SHORT ARGUMENTS for ANALYSIS*

14. Where do correct ideas come from? Do they drop from the skies? No. Are they innate in the mind? No. They come from social practice, and from it alone; they come from three kinds of social practice, the struggle for production, the class struggle and scientific experiment. It is man's social being that determines his thinking. Once the correct ideas of the advanced class are grasped by the masses, these ideas turn into a material force which changes society and changes the world. In their social practice, men engage in various kinds of struggle and gain rich experience.

Mao Tse-Tung, "Where do correct ideas come from?" 1963

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

15. Zoe: We shouldn't go to the fair this year. You always get sick and I never have any fun. So what if it is a tradition?

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

16. Zoe: Dick, I can't believe you got goldfish at the fair. No goldfish from the fair will live longer than two weeks. So don't bother to buy a bowl for them.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

17. Maria: Some of these cookies were baked by Mary Ellen.

Zoe: And I know that some of the stuff Mary Ellen bakes is awful. So, thanks, but I won't eat any.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

18. Dick: I've got to find a lawyer about that accident where the lady rear-ended me.

Tom: Check out Mr. Abkhazian. He's been doing accident cases for 20 years.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

8 *SHORT ARGUMENTS for ANALYSIS*

19. I'd rather believe in God than that I developed from a rock and am without a soul and my life (and everyone's) is without meaning or consequence.

Comment on a 2011 *Baltimore Sun* article

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

20. Suzy: Why don't you do something about Dick's smoking?

Zoe: I don't want to give him a hard time.

Suzy: The difference between you and me is that I care about people.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

21. Reggie: Look, I deserve at least a C in this course. Here, I did all my homework and contributed in class, just like you said. I know I only got a D+ on the final, but our other work was supposed to be able to outweigh that.

Ms. F: Perhaps I did say that, but I can't go back and change your grade. I'd have to change a lot of grades.

Reggie: That's unfair and unethical. I'll take it to the department head.

(Later in the head of department's office)

Ms. F: So this student is going to come in and see you to complain about his grade. He thinks that just because he showed up regularly and handed in some homework he should get a good grade.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

22. Psychiatrist: You are suffering from delusions of grandeur.
 Dr. E: What? What? There's nothing wrong with me.
 Psychiatrist: It is not normal to think that you are the smartest man in the world.
 Dr. E: But I am.
 Psychiatrist: Certainly you think so.
 Dr. E: Look, if Arnold Schwarzenegger came in and said he was the strongest man in the world, would you think he's crazy?
 Psychiatrist: Crazy? I did not say you were crazy. You are suffering from delusions of grandeur.
 Dr. E: O.K. Would Arnold Schwarzenegger be suffering from delusions of grandeur?
 Psychiatrist: Possibly not.
 Dr. E: So someone has to be the smartest person in the world.
 Psychiatrist: That's true.
 Dr. E: Why not me?
 Psychiatrist: Because you are not.
 Dr. E: How do you know?
 Psychiatrist: Trust me.
 Dr. E: You can't even define "delusions of grandeur," can you?
 Psychiatrist: I am trained to spot it when it occurs.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

10 *SHORT ARGUMENTS for ANALYSIS*

23. Dick: Now you're in for it. I told you the police would stop you if you didn't slow down.

Zoe: Oh, no. If that police officer gives me a ticket, I'll get three points taken off my driver's license. And I'll lose my license if I get more than two points taken off.

Dick: So let's hope you get off with a warning. Because if that police officer gives you a ticket, I'll have to drive you everywhere.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

24. Lee: Hey! Our neighbors have a kid! I just saw Mrs. Goldenstone with a brand new baby, really tiny. She says its name is Louis.

Maria: What? I never saw her pregnant. They must have adopted the child.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

25. Tom: Everyone I know who's passed the critical thinking course has really liked it.

Dick: Suzy liked that course.

Harry: So she must have passed it. Amazing.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

26. Israeli troops used Palestinian civilians as human shields and forced them to participate in dangerous military operations during the Israeli sweep through a refugee camp in Jenin last month, according to a report released Friday by Human Rights Watch. . . .

“When the Israeli army decided to go into this densely populated refugee camp, they had an obligation under international law to take all possible precautions to protect the civilian population,” said [Peter] Bouckaert [senior researcher for HRW]. “Clearly the Israeli army failed to take the necessary precautions during its attack.”

Israel disputes that conclusion, noting that 23 of its own soldiers died in the fiercest urban warfare the [Israeli Defense Forces] has experienced in 30 years. “The extent of Israeli casualties and the duration of the combat are proof of the great efforts made by the IDF to conduct the operation carefully in an effort to bring to an absolute minimum the number of Palestinian civilian casualties,” said an IDF statement. CNN, May 4, 2002

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

12 *SHORT ARGUMENTS for ANALYSIS*

27. Manuel: Did you hear? Larry just got back from the Dead Kittens concert in Buffalo.
Maria: Buffalo? Last month he went to Florida to hear them. And Wanda says he's planning to go to Atlanta next week for their big show there.
Manuel: He must really like their music.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

28. Lee: My calculus course is killing me. There's so much homework.
Maria: Everyone who takes calculus complains about too much homework.
Manuel: So Wanda must be taking calculus.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

29. You should take your cousin to the dance because she's shy and doesn't go out much, and she's really sad since her dog died. It would make her feel good.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

30. The U. S. attorney general said that there was no need to investigate the president's business deals. So the president didn't do anything wrong.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

31. *Saudi official blames Jews for Sept. 11 attack*

The Saudi police minister [Nayef] has claimed Jews were behind the Sept. 11 attacks on the United States because they have benefited from subsequent criticism of Islam and Arabs, according to media reports.

Interior Minister Prince Nayef made the remarks in the Arabic-language Kuwaiti daily *Assyarah* last month. The latest edition of *Ain al-Yaqeen*, a weekly internet magazine devoted to Saudi issues, posted the *Assyarah* interview and its own English translation.

In the interview, Nayef said he could not believe that Osama bin Laden and his network, including Saudi participants, worked alone.

He was quoted as saying he believed terrorist networks have links to "foreign intelligence agencies that work against Arab and Muslim interests, chief among them is the Israeli Mossad [intelligence agency]."

Albuquerque Tribune, November 5, 2002

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

14 SHORT ARGUMENTS for ANALYSIS

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

32. You're good at numbers. You sort of like business. You should major in accounting—
accountants make really good money.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

33. Said by the CEO of a tobacco company at a U.S. Senate hearing questioning whether
tobacco is a drug: "Would you prefer to be in a plane with a pilot who just drank or one
who just smoked?"

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

34. Lee: Amazing. Did you see that Maria got a tattoo?
Manuel: You're kidding. Well, if she did, then she must have gone to a professional.
She's railed at the crazy kids who do it to each other.
Lee: I've got to get the name of the guy she went to.
Argument? (yes or no)
Conclusion (if unstated, add it):
Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

35. Dick: If Suzy doesn't pass her critical thinking class, she can't be a cheerleader unless she goes to summer school.
Zoe: She's going to fail that course for sure.
Dick: Looks like she'll be going to summer school.
Argument? (yes or no)
Conclusion (if unstated, add it):
Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

36. Dick: Is this plate clean?
Zoe: It's been through the dishwasher, so yes, it's clean.
Argument? (yes or no)
Conclusion (if unstated, add it):
Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

37. BART [San Francisco Bay Area Rapid Transit] spokesman Linton Johnson, an African-American who said his own aunt had been roughed up by a Los Angeles cop years ago, defended the agency's police force. "They care about the public and they've done a wonderful job keeping BART safe for everyone," he said. "There have been only five officer-involved shootings resulting in injury or death in BART's 36 years. The officers do a hell of a job protecting the public."

Patrick May, *The Mercury News*, January 8, 2009

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

38. Tom: Either Suzy shows up in 10 minutes, or I'll have to go to the game alone.
Lee: I just saw her sit down with Zoe at the Dog & Duck coffeehouse on Third Street.
Tom: Guess I'm going to the game alone, then.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

39. Wanda: There is no life on other planets. If there were, then there'd be some evidence.
Suzy: Many people have evidence of UFOs—pictures, videos, all that stuff.
Wanda: Then I was wrong. There must be life on other planets.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

40. Lee: Our kids should be allowed to pray in schools.
 Maria: What? If they're not allowed to pray, maybe God won't exist?

Argument? (yes or no)
Conclusion (if unstated, add it):
Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)



Argument? (yes or no)
Conclusion (if unstated, add it):
Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

42. Dick: The stupid ball went over the fence, Spot. Let's ask Harry to let us in. He's a tenant here, and I know that only tenants have a key to that gate.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

43. Suzy: Either Dr. E doesn't like me or he misgraded my test, because I got a D.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

44. Maria: I read that some of the cheerleaders were invited to try out for a movie they're going to film in that little town north of here.

Lee: Tom said that some of the people at the auditions are going to get a real contract. Big money—like \$900 a week.

Maria: So maybe Suzy can finally pay me that \$50 she's owed me since October. She'll get a part, or she can borrow it from one of her friends on the squad.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

45. Maria: Dr. E's course is just great.

Suzy: It's easy for you to say—you just got an A on the midterm.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

46. Sixty-two of Utah's 134 credit unions—46 percent—are led by women CEOs, many of whom began their careers in entry-level positions and lack formal business education. . . .

By comparison, none of the three-dozen banking companies operating in Utah have women CEOs, although women do hold numerous high-level positions within those organizations. . . .

"Diversity is a priority for banks as it is with credit unions," said Howard Headlee, president of the Utah Bankers association. "But too few women meet the stringent qualifications boards of directors and banking regulators demand in top-level banking executives at publicly held companies," he said.

"The regulatory environment does not allow a bank to look past safety and soundness issues for the sole purposes of achieving diversity," Headlee said.

Salt Lake Tribune, August 12, 2001

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak
Good argument? (yes or no, and give an explanation)

47. Adolescents who are emotionally unprepared engage in sex with serious consequences for their ability to form normal attachments later in life. Young people who are ignorant of sexually transmitted diseases risk not only their immediate health but their lives by engaging in sexual intercourse. Over half of young women in America become pregnant before they are 20. For these reasons we should not only teach the mechanics of sexuality but also encourage young people to refrain from sexual intercourse.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

48. How can you doubt Dan's advice about getting a Jeep? He's only 25, and he already has an income over \$150,000 a year.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

49. (Contributed by a student)

Student athletes should not be given special leniency in assigning course marks. Student athletes who do receive special leniency turn out to be failures. They are not given the mental challenge that regular students are given. All student athletes that I have ever met or seen that have received special leniency have not graduated from college. In order to make something of yourself, you must first graduate from college. Everyone

that I have ever met or seen wants to make a good living and make something of themselves. On the other hand, all of the student athletes I know that do not receive special leniency have graduated and have been successful in life. Therefore, student athletes that want to be successful in life must not receive special leniency.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

50. Smoking is disgusting. It makes your breath smell horrid. If you've ever kissed someone after they smoked a cigarette you feel as though you're going to vomit. Besides, it will kill you.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

51. Lee: Every computer science major is a nerd.
 Maria: None of the cheerleaders are majoring in computer science.
 Lee: Exactly—none of them are nerds.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

52. I resent that. Our company is not racist. We give a donation to the NAACP every year.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

53. Suppose this patient really does have hepatitis. Well, anyone who has hepatitis will, after a week, begin to appear jaundiced. Yellowing of the eyeballs and skin will proceed dramatically after two weeks. So if he has hepatitis now, since he's been feeling sick for two weeks, he should be jaundiced. But he isn't. So he doesn't have hepatitis.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

54. (Summarizing a discussion heard on National Public Radio)

An experiment is being conducted to study temperature changes in the ocean using very low-frequency sound waves that will be generated in the South Pacific and picked up near the Arctic Circle. The sound waves will be generated two times a day for ten years.

The interviewer, speaking to one of the people involved in the experiment, said that perhaps we shouldn't do this since we don't know the effect of the sound on whales. The experimenter replied that the ocean is already so full of sound, if you count all the acousticians versus all the supertankers, the supertankers would win hands down.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

55. Zoe: (*Monday*) If you eat that candy bar, then you'll gain weight.

Dick: (*Friday*) I gained weight again this week.

Zoe: So you ate that candy bar on Monday.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

56. Lee: It's odd. None of the bartenders here have ever been women.

Zoe: But this is a union shop—all of them have been union members. So it looks like the union won't accept women.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

57. Zoe: If you don't start helping around the house, doing the dishes and cleaning up, then you don't really understand what it means to be a part of a couple.

Dick: O.K., O.K., look, I'm vacuuming. I'll do the dishes tonight.

Zoe: So you do understand what it means to be part of a couple.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

58. Zoe: Boy, is Suzy down about her fight with Tom. If she goes out tonight, she'll get drunk. Why not call her and invite her for dinner.

Dick: Too late. Manuel told me on the phone that she's already blotto.

Zoe: So she did go out.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

59. Professor Zzyzzx: A dentist I am needing. My teeth they are killing me. That Dr. Bears, he is O.K., no? I read his advertising all the time.

Dr. E: Don't go to him. I went to get a chipped front tooth fixed, and he kept me waiting an hour in the chair, and then he wanted to sell me teeth whitening and a very expensive cap for the tooth. I got up and left. I ended up going to Dr. Hay, and he just filed the tooth down and it cost \$60. It's been just fine.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

60. Lee: Every cat sheds hair on its master's clothes. No question about it.
Suzy: Dr. E doesn't have a cat. So he doesn't have cat hair shed on his clothes.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

61. Lee: All felines cough up hairballs.
Manuel: But ferrets don't cough up hairballs.
Lee: Which is just what I thought. Ferrets aren't felines. They're more like dogs.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

62. Manuel: There's Sam. Let's ask him to get us a drink.
Maria: Only bartenders and managers are allowed behind the bar in this restaurant.
Manuel: But Sam's a manager, so he's allowed behind the bar.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

63. Tom: I can't believe you're an hour late!
Suzy: What are you talking about?
Tom: You said you'd meet me here at 7 to work on the English assignment.
Suzy: I am not late.
Tom: It's almost 8.
Suzy: I said I'd be here a little after 7.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

64. Maria: That's awful. How can you eat a steak?
Suzy: Huh?
Maria: You should be a vegetarian. I've been to those factory farms where they "raise" cattle and pigs. They're awful.
Suzy: But I like steak. I just won't visit any factory farms.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

65. You should not take illegal drugs. They can kill you. If you overdose, you can die. If you share a needle, you could get AIDS and then die. If you don't die, you could end up a vegetable or otherwise permanently incapacitated. By using drugs you run the risk of getting arrested and possibly going to jail. Or at least having a hefty fine against you. Although some think the "high" from drugs is worth all the risks, the truth is that they are addicted and are only trying to justify supporting their habit.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

66. Beer has lots of vitamins and protein, so it can't be bad for my liver.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

67. Lee: I read that almost all people who graduate from college end up earning more than \$38,000 per year.

Tom: So the guy in charge of maintenance who gets such a great salary must have graduated from college.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

68. To some Afghan commanders, the recent U.S. offensive against the Al-Qaida fighters in eastern Afghanistan failed because most of them got away. . . .

“Operation Anaconda . . . is an incredible success,” said Maj. Bryan Hilferty, spokesman of the 10th Mountain Division. “It took only 20 terrorists to kill 3,000 of the world’s citizens in the World Trade Towers. We’ve killed hundreds and that means we’ve saved hundreds of thousands of lives. This is a great success.”

Kathy Gannon, Associated Press, March 17, 2003

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

69. Mom: Well, what do you think? Did man evolve from cells and apes, or did God create man?

Zoe: I don’t know.

Mom: Come on. You’ve got to have thought about it.

Zoe: Oh, I guess I have, just never very hard. Beats me.

Mom: You’ve got to believe one side or the other. Which is it?

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (yes or no, and give an explanation)

70. *Proof that God does not exist*

(Several philosophers have become famous for their proofs that God exists. All those proofs have been theoretical. Here is a practical proof supplied by Dr. E that God does not exist. It can be repeated—try it yourself!)

I go into the Sahara Hotel and Casino in Las Vegas, Nevada. I go up to the Megabucks slot machine at which you can win at least five million dollars on a \$3 bet if you hit the jackpot. I put in three \$1 coins. I pull the handle. I win nothing, or just a little, and when I continue, I lose that, too. Therefore, God does not exist.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Classify (with the additional premises): valid very strong _____ weak

Good argument? (yes or no, and give an explanation)

Exercises for Complex Arguments for Analysis

1. My neighbor should be forced to get rid of all the cars in his yard. People do not like living next door to such a mess. He never drives any of them. They all look old and beat up and leak oil all over the place. It is bad for the neighborhood, and it will decrease property values.

Argument? (yes or no) *If an argument, number each part that might be a claim.*

Conclusion:

Additional premises needed?

Identify any subargument:

Good argument?

2. I'm on my way to school. I left five minutes late. Traffic is heavy. Therefore, I'll be late for class. So I might as well stop and get breakfast.

Argument? (yes or no) *If an argument, number each part that might be a claim.*

Conclusion:

Additional premises needed?

Identify any subargument:

Good argument?

2 *COMPLEX ARGUMENTS for ANALYSIS*

3. Las Vegas has too many people. There's not enough water in the desert to support more than a million people. And the infrastructure of the city can't handle more than a million: The streets are overcrowded, and traffic is always congested; the schools are overcrowded, and new ones can't be built fast enough. We should stop migration to the city by tough zoning laws in the city and county.

Argument? (yes or no) *If an argument, number each part that might be a claim.*

Conclusion:

Additional premises needed?

Identify any subargument:

Good argument?

4. Dr. E: I took my dogs for a walk last night in the fields behind my house. It was very dark. They started to chase something—I could hear it running in front of them. It seemed like it was big because of the way the bushes were rustling, and they came back towards where I was in a U-turn, which suggests it wasn't a rabbit. Rabbits almost always run in more or less one direction. I think they killed it, because I heard a funny squeaky "awk" sound. It didn't sound like a cat, but it didn't sound like a big animal either. And I don't think rabbits make that kind of sound. I'm puzzled what it was, but one thing I am sure of after the dogs returned: It wasn't a skunk.

Argument? (yes or no) *If an argument, number each part that might be a claim.*

Conclusion:

Additional premises needed?

Identify any subargument:

Good argument?

Exercises for Chapter 12

1. Some words and phrases that suggest an analogy is being used are “like,” “just as,” and “for the same reason.” List three more.
2. What do you need to make a comparison into reasoning by analogy?
3. Are analogies typically complete arguments? Explain.
4. What should you do first in evaluating an analogy?

Second?

Exercises 5–27 are comparisons for you to evaluate. There may be more than one argument in an exercise.

5. You wouldn't buy a kitten at a pet store to give to your dog. Why, then, do you consider it acceptable to buy white rats for your boa constrictor?

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

2 CHAPTER 12 Reasoning by Analogy

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

6. All the world's a stage, and all the men and women merely players.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

7. Zoe: (*while driving*) Don't throw that banana peel out the window.

Dick: Don't worry, it's biodegradable.

Zoe: So is a newspaper.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid very strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

8. Dick: Zoe, let's get married.

Zoe: I've told you before, Dick, I won't get married until we sleep together.

Dick: But that would be wrong. I won't sleep with you before we get married.

Zoe: Would you buy a car without a test drive?

Dick: Why buy the cow when the milk's free?

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

9. Dick: Congratulations on getting away with the shoplifting.

Zoe: What are you talking about?

Dick: Didn't you just install Adobe Acrobat on your computer from Tom's copy?

Argument? (yes or no)

Conclusion (if unstated, add it):

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Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

10. If killing is wrong, why do you punish murderers by killing them?

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

11. [Concerning the suggestion that the government should do nothing to rescue the big automakers Chrysler and General Motors from going bankrupt in 2008.]
It's easy to demonize the American auto industry. It has behaved with the foresight of a crack addict for years. But even when people set their own house on fire, we still dial 9-1-1, hoping to save lives, salvage what we can and protect the rest of the neighborhood. Bob Herbert, *The New York Times*, November 15, 2008

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

12. From an article in *Smithsonian*, vol. 32, no. 11, 2002, about irrigation of small farms in New Mexico:

The practice of trading in water as a commodity, observes one activist, is like "selling sunshine."

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

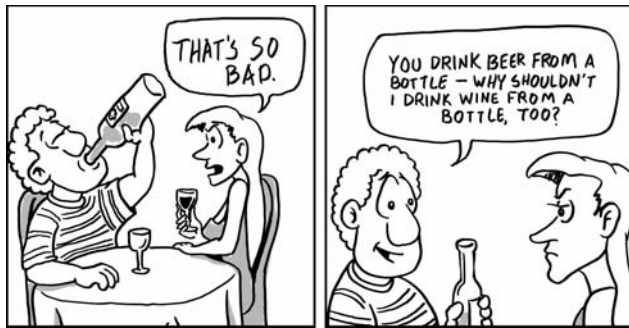
Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

13.



Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

14. Tom: Colleges should be run like businesses. Then they'd be more efficient, would cost less, and the education would be better because competition would be rewarded and bad teaching would be penalized.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

15. Downloading computer software from someone you don't know is like accepting candy from a stranger.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

16. Maria: Suppose someone came up to you and offered you a sure-fire method for finding \$100 bills on the street, for which he'd charge you only \$5.95. You'd be crazy to buy it from him. After all, he could just as easily pick up the \$100 bills himself. Besides, we know there aren't any \$100 bills lying around the street, since any time there's a \$100 bill floating free you can be sure that someone will pick it up immediately. So why pay money to a stock analyst?

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

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17. Flo's mother: It's just so hard raising Flo.

Dick: How hard can it be to raise a kid? After all, I've trained two dogs.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

18. When it emerged that the Salahis had managed to get through security [to a party with the Obamas at the White House] without being on the guest list, blame fell on the Secret Service, which has admitted failures, but also on the social office, which didn't have staff stationed at the checkpoints—a departure from past administrations.

"I mean, come on, even Wal-Mart has a greeter," Rep. Loretta Sanchez, D-Calif., told Politico.com. Associated Press, 2010

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

19. Tom: I can't believe you're out demonstrating against the U.S. fighting in Afghanistan.

Dick: I'm against war—all wars. I'm a pacifist.

Tom: So, if someone came up to you on the street and hit you from behind, you wouldn't turn and hit him back?

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

20. When a trout rising to a fly gets hooked on a line and finds himself unable to swim about freely, he begins with a fight which results in struggles and splashes and sometimes an escape. Often, of course, the situation is too tough for him.

In the same way the human being struggles with his environment and with the hooks that catch him. Sometimes he masters his difficulties; sometimes they are too much for him. His struggles are all that the world sees and it naturally misunderstands them. It is hard for a free fish to understand what is happening to a hooked one.

Karl A. Menninger, *The Human Mind*

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

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Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

21. “Violent video games are like peanut butter,” said Christopher J. Ferguson, of Texas A&M International University. “They are harmless for the vast majority of kids but are harmful to a small minority with pre-existing personality or mental health problems.”
“More Studies Show that Violent Video Games Aren’t a Problem for Kids”,
Reuters, June 9, 2010

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

22. Tom: Seat belts cause accidents.
Dick: Are you crazy? Seat belts save lives. Everyone knows that.
Tom: No, they cause accidents. They may prevent serious injury in some accidents, but there are more accidents now because people use seat belts.
Dick: Why’s that?
Tom: The threat of getting killed or seriously injured in an accident is much less if you’re wearing a seat belt. Because people reckon they are safer, they’re less careful and drive faster. So they get into more accidents. Some guy at the University of Chicago looked at the numbers in the 1970s and found that there were fewer deaths per accident, but more accidents, so that the actual number of people getting killed remained about the same after seat belts were required.
Dick: Well, if that’s the case, we better not make any more improvements on cars. And we certainly shouldn’t require motorcycle riders to wear helmets.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

23. We should take claims about extra-sensory perception seriously. Look, suppose no one in the world had a sense of smell except one person. He would walk along a country road where there is a high stone wall and tell his friend, "There are roses there." Or he would walk into a home and say, "Someone cooked onions here yesterday." These would seem extraordinary extra-sensory perceptions to his friends and acquaintances. Similarly, just because we don't understand and can't imagine a mechanism that would explain extra-sensory perception, we shouldn't stop the investigation.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

12 CHAPTER 12 Reasoning by Analogy

24. Zeke: Boy, did you screw up.

Dick: That is so unnecessary.

Zeke: So is ice cream. But if it gives you pleasure, why not do it?

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

25. Dick: Our diet should be similar to that of cavemen—that's what our genes are programmed for.

Zoe: You're nuts. Besides, it's *cave dwellers*, not "cavemen."

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

26. I know I can't really feel a pain you have. But because we're so much alike in so many ways, I'm sure that you feel physical pain in roughly the same way I do.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

27. God must exist. The way everything works together in nature—the adaptation of means to ends, the beauty—resembles but far exceeds what humans do. Everything works together as a fine piece of machinery, like a watch. So there must be some maker with intelligence behind all of nature. That is, God exists and is similar to human mind and intelligence.

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

14 CHAPTER 12 Reasoning by Analogy

28. a. Suppose that tomorrow good, highly reliable research is announced showing that oil derived from tails removed without anesthetic from healthy cats when applied to human skin reduces wrinkles significantly. Would it be justifiable to do further research and manufacture this oil?
- b. Same as (a) except that the oil is drunk with orange juice and significantly reduces the chance of lung cancer for smokers.
- c. Same as (a) except the oil is mixed with potatoes and eaten and significantly reduces the chance of heart disease and lengthens the lives of women.
- d. Same as (a) except that when drunk, the oil kills off all viruses harmful to humans.
29. Do Exercise 28 reading “dogs” for “cats.”

2 CHAPTER 13 Numbers

5. Find the average, mean, median, and mode of the scores of Dr. E's students who took his critical thinking final exam: 92, 54, 60, 86, 62, 76, 88, 88, 62, 68, 81.

Average:

Mean:

Median:

Mode:

6. Estimate the average age of students in your class.

Do you think it's the same as the median?

Do you think it is the same as the mode?

7. Wanda's grandfather listened to all those experts who say that over the long term the stock market is the best place to invest. So he put most of his retirement money in stocks. He just turned 70 and needs cash to retire. But the market went down 8% last week and 15% since the beginning of the year. How should he evaluate those experts' advice now?

For Exercises 8–22, point out any use of numbers that is vague, misleading, or wrong.

8. [Advertisement] Our employees have a combined 52 years of experience!

9. [Advertisement for 3 Musketeers[®] candy bars]

The sweetest part is finding out how little fat it has.

(45% less fat than the average of the 25 leading chocolate brands, to be exact.)*

*Not a low-fat food. 8 fat grams per serving for single bar vs. 15 gram average for leading chocolate brands.

10. [On a box of Texmati® rice]	Amount per serving	
Serving size 1/4 cup (45g)	Calories 150	%DV*
Servings Per Package about 22	Total Fat 0.5g	1%
	Sodium 0mg	0%
	Total Carb. 34g	11%
	Protein 3g	

* Percent Daily Values are based on a 2,000 calorie diet.

11. Dick: Gee, cars are really expensive now. My uncle said he bought a new Ford Mustang in 1968 for only \$2,000.

12. [On the box of a fan made by Lasco™]
NEW WIND RING™ 30% MORE Air Velocity

13. [Concerning the way the U.S. Census Bureau operates] In 1990, 65% of the questionnaires that were mailed were filled out and returned. Census counters went back to every household that didn't mail back a form. Even then, the bureau was able to count only 98.4% of the U.S. population. *USA Today*, April 15, 1998

14. Less than 10% of women who get breast cancer have the gene for breast cancer. Therefore, if you have the gene, there's only a 10% chance you'll get breast cancer.

4 CHAPTER 13 Numbers

15. The two-year study by the Pathways to Prosperity Project at the Harvard University Graduate School of Education notes that while much emphasis is placed in high school on going on to a four-year college, only 30 percent of young adults in the United States successfully complete a bachelor's degree. Huffington Post, February 2, 2011



17. *Cattle herds shrivel in face of drought*

A widespread drought that's forcing ranchers in New Mexico and across the country to sell off animals has helped shrink the nation's cattle herd to its smallest in at least four decades.

The National Agricultural Statistics Service reports that the number of cattle and calves in the United States totaled 97.8 million head as of July. That's 2 percent less than a year ago. Beef cattle numbers were down 3 percent at 30.5 million head counted, while dairy cows remained unchanged at 9.2 million.

Albuquerque Journal, July 24, 2012

18. Dick: Which section of English Lit should I take, Zoe, Professor Zzyzzx's or Professor Øllebød's?
Zoe: It doesn't really matter. You can't understand either, and the department info on the sections said the average mark in both their classes was a C.

19. [Advertisement] Mitsubishi is the fastest growing Japanese car company in America.
20. “According to Camille Scielzi, who coordinates the program, out of approximately 17,000 people who live in this county, 33 percent must exist solely on Social Security benefits that average \$600 a month and 19 percent of the county residents live at or below the poverty level” Scott Turner, “Socorro Storehouse seeks volunteers, donors”, *El Defensor Chieftain*, November 12, 2015
21. *S. Korea declares war on leftovers*
Because of the feeling of bounty and plenty that it gives, Koreans routinely cook more at home than they can eat, and restaurants serve more than any customer could reasonably consume. . . . “Koreans are used to thinking ‘the more, the better,’” said Koh, the restaurant manager. It’s a philosophy the government is battling to change. In the latest round, the government announced Dec. 6 that it will make a major push in 1997 to cut food waste by half. Many Koreans say they are careful at home to eat leftovers the next day. But restaurant waste, which the government says accounts for 42 percent of food garbage, is a tougher problem. . . .
The government says the country’s 45 million people throw away nearly 48,000 metric tons of garbage a day. Pauline Jelinek, Associated Press, November 23, 1996

Which of the following should be trusted to give you a good idea of the population as a whole? For which would you prefer to know the median or mode? Explain.

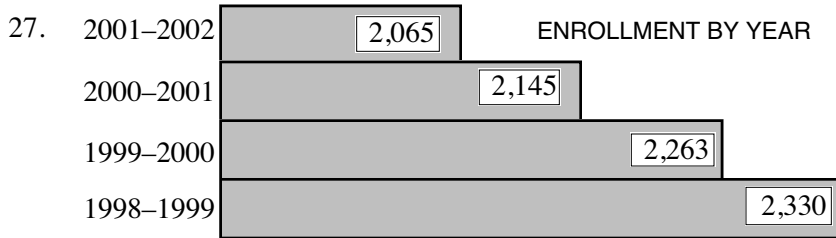
22. The average wage in the U.S. is \$28,912.
23. The average wage in one rural county of Utah was \$14,117.
24. The average wage of concert pianists in the U.S. is less than the average wage of university professors.

6 CHAPTER 13 Numbers

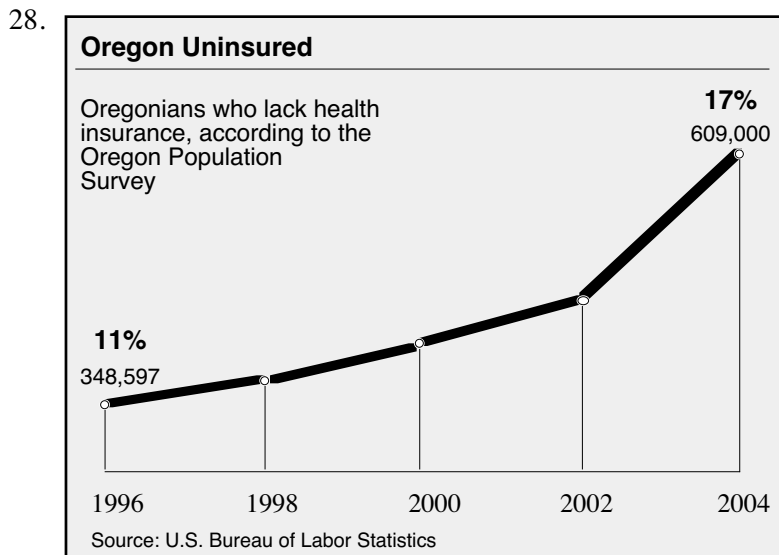
25. The average number of people in a household in Las Vegas is 2.1.

26. The average income of a woman in the U.S. was only 82% that of a man.

For exercises 27–31 point out what is misleading, or if the graph is good, say so.



Socorro, N.M. Consolidated Schools Accountability Report, 2000–2001

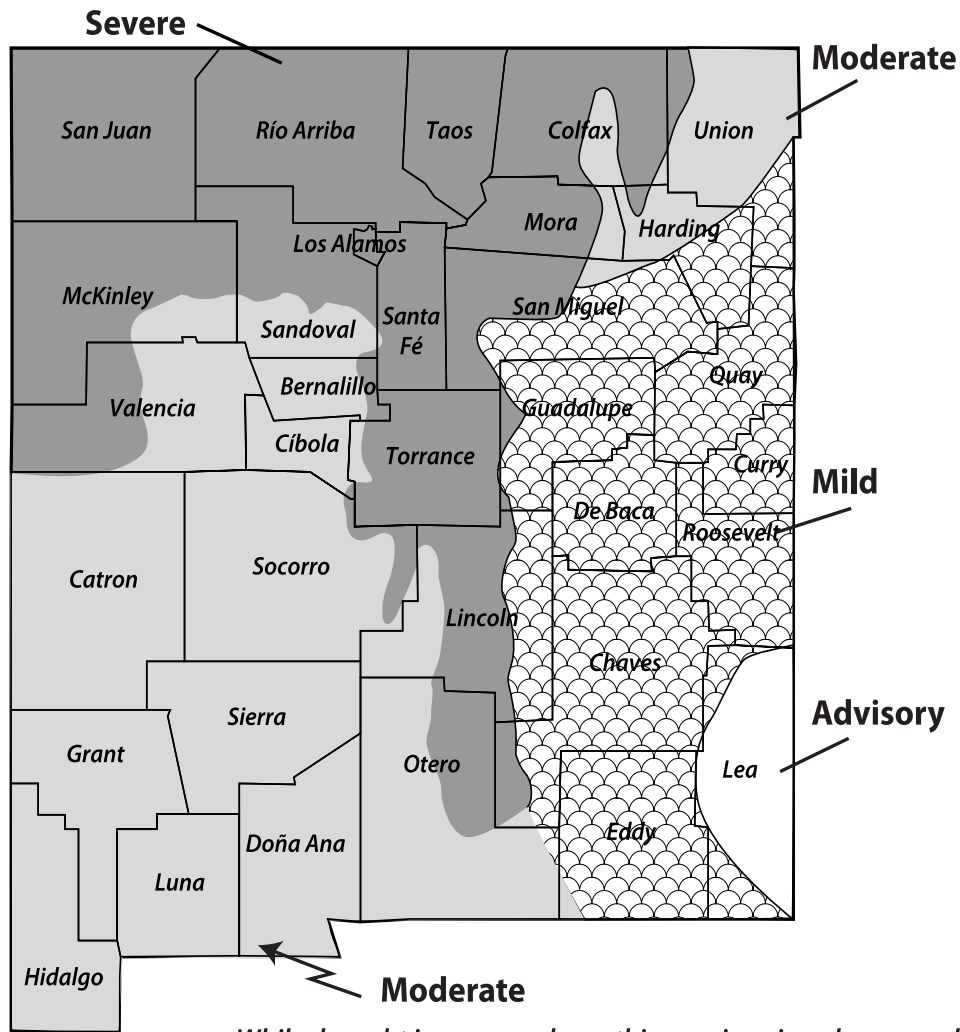


ERIC BAKER/THE OREGONIAN

August 15, 2005

29.

All of New Mexico Is in Some Stage of Drought.



While drought is common here, this year is unique because all of the state is dry and almost one-third is in a severe drought stage.

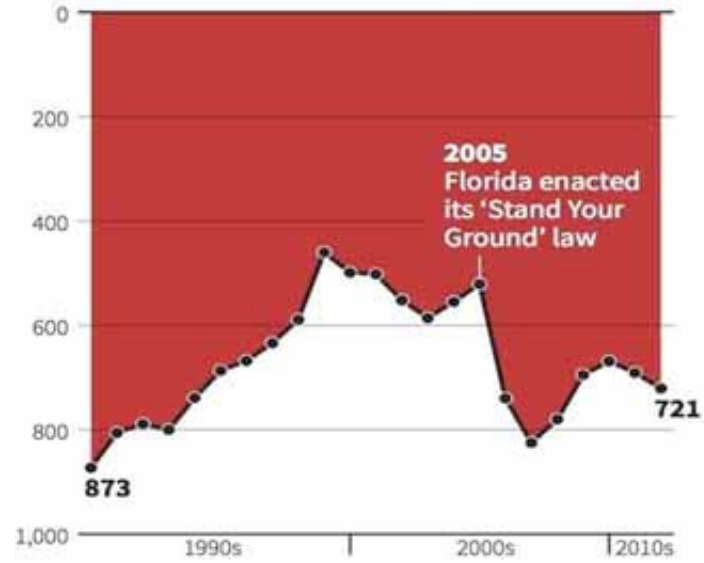
Source: National Resources Conservation Service, <http://www.nm.nrcs.usda.gov/drought/drought.htm>

Ted Sammis in *Enchantment Magazine*, published by rural electric cooperatives, 2005

30.

Gun deaths in Florida

Number of murders committed using firearms

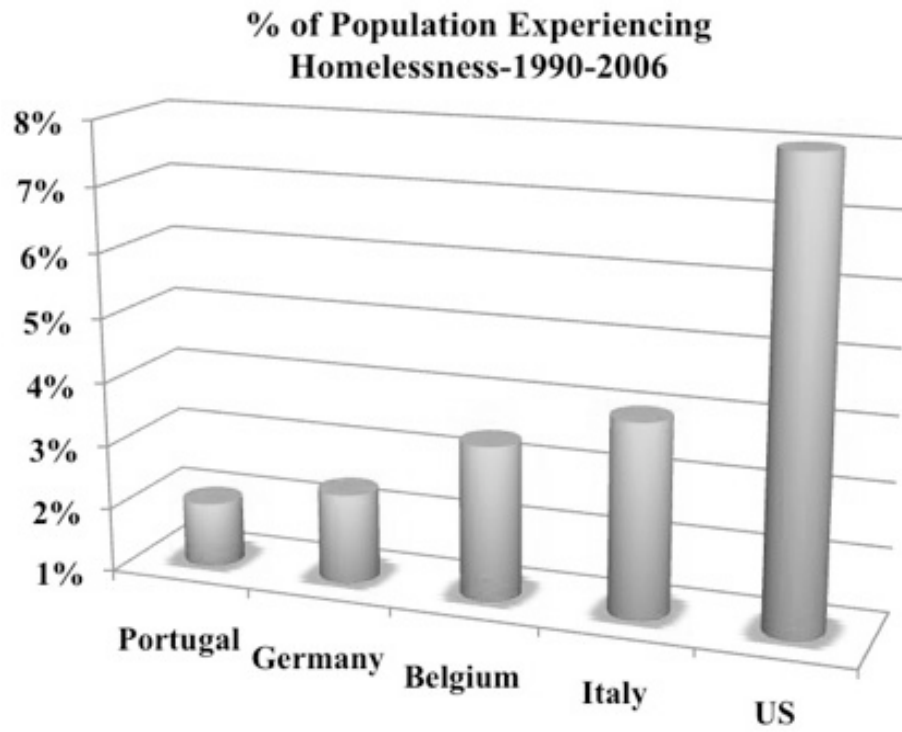


Source: Florida Department of Law Enforcement

C. Chan 16/02/2014

REUTERS

31. List all the claims that are summarized in this graph.



David Morris, at <<http://www.ilsr.org/the-real-american-exceptionalism/>>

CHAPTER 14

Exercises for Section A

Fill in after the italics for Exercises 1–13.

1. German shepherds have a really good temperament. I know because lots of my friends and my sister have one.

Generalization? (yes/no)

Sample:

Population:

2. Maria: Look! That dry cleaner broke a button on my blouse again. I'm going to go over there and complain.

Generalization? (yes/no)

Sample:

Population:

3. Suzy: I hear you got one of those cell phones from Hirangi.
Maria: Yeah, and I wish I'd never gotten one. It's always breaking down.
Suzy: Well, I won't get one then, since they're probably all the same.

Generalization? (yes/no)

Sample:

Population:

4. Maria to Suzy: Don't bother to ask Tom to do the dishes. My brother's a football player and no football player will do the dishes.

Generalization? (yes/no)

Sample:

Population:

5. Suzy: Guys are such nitwits.
Zoe: What do you mean?
Suzy: Like, they can't even tell when you're down. Emotionally, they're clods.
Besides, they just want a girl for her body.

Zoe: How do you know?

Suzy: Duh, it's like a cheerleader like me isn't going to have a lot of dates?

Generalization? (yes/no)

Sample:

Population:

2 *CHAPTER 14 Generalizing*

6. Lee: Are you taking Spot for a walk?
Dick: No. I'm getting the leash because I have to take him to the vet, and it will be hard to get him to go. Every time I take him to the vet he seems to know it before we get in the car.

Generalization? (yes/no)

Sample:

Population:

7. Manuel: Are those refried beans?
Maria: Yes.
Manuel: I can't believe you'd cook those for dinner. Don't you remember I had terrible indigestion the last time you made them?

Generalization? (yes/no)

Sample:

Population:

8. Maria: Do you know of a good dry cleaner other than Ricardo's?
Zoe: The one in the plaza north of campus is pretty good. They've always done O.K. with the stuff I take them.

Generalization? (yes/no)

Sample:

Population:

9. Don't go to Seattle in December. It rains there all the time then.

Generalization? (yes/no)

Sample:

Population:

10. Dogs can be trained to retrieve a newspaper.

Generalization? (yes/no)

Sample:

Population:

11. I want to marry a Japanese guy. They're hard-working and really family-oriented.

Generalization? (yes/no)

Sample:

Population:

12. You don't have to worry about getting the women's gymnastic team in your van—I saw them at the last meet, and they're small enough to fit in.

Generalization? (yes/no)

Sample:

Population:

13. From our study it appears that bald men are better husbands.

Generalization? (yes/no)

Sample:

Population:

14. Write down three examples of generalizations you have heard or made in the last week and one example of a claim that sounds like a generalization and isn't. See if your classmates can pick out the one that isn't. For the generalizations, ask a classmate to identify the sample and the population.

Exercises for Section B

1. What is a representative sample?

2. Explain why a good generalization is unlikely to be valid.

3.
 - a. What is the law of large numbers?

 - b. How does it justify random sampling as giving unbiased samples?

4. Which of the following seem too biased to be reliable, and why?
 - a. To determine the average number of people in your city who played tennis last week, interview women only.

 - b. To determine what kind of cat food is purchased most often, interview only people who are listed in the telephone directory.

 - c. To determine what percentage of women think that more women should be doctors, poll female students as they leave their classes at your school.

 - d. To determine whether to buy grapes at the supermarket, pick a grape from the bunch you're interested in and taste it.

5. a. Suppose you want to find out whether people in your city believe that there are enough police officers. Give four characteristics of people that could bias the survey. That is, list four subgroups of the population that you would not want to have represented out of proportion to their actual percentages in the population.
- b. Now list four characteristics that you feel would not matter for giving bias.
6. A professor suggested the best way to get a sample is to make sure that for the relevant characteristics—for example, gender, age, ethnicity, income—we know that the sample has the same proportion as in the population as a whole. Why won't that work?
7. One of Dr. E's students was a blackjack dealer at a casino and heard a player say, "I ran a computer simulation of this system 1000 times and made money. So why didn't I win today playing for real?" Can you explain it?
8. Is every randomly chosen sample representative? Explain.

Exercises for Chapter 14

1. Your candidate is favored by 56% to 44%, with a margin of error of 5% and a confidence level of 94%. What does that mean?

2. You read a poll that says the confidence level is 71%. Is the generalization reliable?

3. a. What do we call a weak generalization from a sample that is obviously too small?
b. Can a sample of one ever be enough for a strong generalization?

4. The larger the _____ in the population, the larger the sample size must be.

5. What premises do we need for a good generalization?

6. a. You're at the supermarket trying to decide which package of strawberries to buy. Describe and evaluate your procedure as a sampling and generalizing process (of course, you're not allowed to actually taste one).

b. Now do the same supposing the package is covered everywhere but on top.

7. Why does the phone ring more often when you're in the shower?

8. Suppose you're on the city council and have to decide whether to put a bond issue for a new school on the next ballot. You don't want to do it if there's a good chance it will fail. You decide to do a survey, but haven't time to get a polling agency to do it. There are 7,200 people in your town. How would you go about picking a sample?
9. The president of your college would like to know how many students approve of the way she is handling her job. Explain why no survey is going to give her any useful ideas about how to improve her work.
10. The mayor of a town of 8,000 has to decide whether to spend town funds on renovating the park or hiring a part-time animal control officer. She gets a reputable polling organization to do a survey.
- a. The results of the survey are 52% in favor of hiring an animal control officer and 47% in favor of renovating the park, with 1% undecided, and a margin of error of 3%. The confidence level is 98%. Which choice will make the most people happy?
- Should she bet on that?
- b. The results are 61% in favor of hiring an animal control officer and 31% in favor of renovating the park, with 8% undecided, and a margin of error of 9%. The confidence level is 94%. Which choice will make the most people happy?
- Should she bet on that?
11. A "Quality of Education Survey" was sent out to all parents of students at Socorro High School (Socorro, NM) for the school year 2000–2001. Of 598 forms sent out, 166 were returned. For one of the issues the results were:
- My child is safe at school* 6% (10 forms) strongly agreed, 42.8% (71) agreed, 28.9% (48) disagreed, 13.9% (23) strongly disagreed, 7.8% (13) did not know, and 0.6% (1) left the question blank.
- What can you conclude?

8 CHAPTER 14 Generalizing

12. I TALKED TO ALL THE PEOPLE WHO LIVE ON THIS STREET AND EVERYONE WHO HAS A DOG IS REALLY HAPPY. SO IF I GET MY MOM A DOG, SHE'LL BE HAPPY, TOO.



How should Dick explain to Flo that she's not reasoning well?

Evaluate Exercises 13–31 by filling in after the italics.

13. Socialized medicine in Canada isn't working. I heard of a man who had colon cancer and needed surgery. By the time doctors operated six months later, the man was nearly dead and died two days later.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

14. Lee: Every rich person I've met invested heavily in the stock market. So I'll invest in the stock market, too.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

15. Don't take a course from Dr. E. I know three people who failed his course last term.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

16. In a test of 5,000 cattle from Manitoba, none of them were found to be infected with mad cow disease. So it's pretty likely that no cattle in Canada have mad cow disease.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization

10 CHAPTER 14 *Generalizing*

17. Everyone I've met at this school is either on one of the athletic teams or has a boyfriend or girlfriend on one of the athletic teams. Gosh, I guess just about everyone at this school is involved in sports.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

18. Dick: Hold the steering wheel.
Zoe: What are you doing? Stop! Are you crazy?
Dick: I'm just taking my sweater off.
Zoe: I can't believe you did that. It's *so* dangerous.
Dick: Don't be silly. I've done it a thousand times before.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

19. According to the National Pork Producers Council (www.nppc.org), average hog market weight is 250 pounds, and it takes about 3.5 pounds of feed to produce one pound of live hog weight.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

20. In 2015, Public Policy Polling asked 532 Republican primary voters across the U.S. if they supported or opposed bombing Agrabah. 30% supported bombing, 13% opposed bombing, and 57% said they were not sure.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

12 CHAPTER 14 Generalizing

21. Manuel to Maria: Lanolin is great for your hands—you ought to try it. It's what's on sheep wool naturally. How many shepherds have you seen with dry, chapped hands?

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

22. Lee: When I went in to the health service, I read some women's magazine that had the results of a survey they'd done on women's attitudes towards men with beards. They said that they received over 10,000 responses from their readers to the question in their last issue, and 78% saying that they think that men with beards are really sexy! I'm definitely going to grow a beard now.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

23. My grandmother was diagnosed with cancer seven years ago. She refused any treatment that was offered to her over the years. She's perfectly healthy and doing great. The treatments for cancer are just a scam to get people's money.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

24. Tom: Can you pick up that pro basketball player who's coming to the rally today?
Dick: I can't. Zoe's got the car. Why not ask Suzy?
Tom: She's got a Yoda hatchback. They're too small for someone over 6 foot tall.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

25. (Overheard at a doctor's office) I won't have high blood pressure today because I got enough sleep last night. The last two times you've taken my blood pressure I've rested well the night before and both times it was normal.

14 CHAPTER 14 *Generalizing*

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

26. We recruited participants at six busy locations in Zurich, Switzerland. Eligible participants were randomly approached and asked whether they would agree to take part in the study. We approached 272 pedestrians, and 185 (68%) were willing to take part. . . .

In this sample, Swiss citizens did not know more than a third of MMK [minimum medical knowledge]. We found little improvement from this low level within groups with medical experience (personal or professional), suggesting that there is a consistent and dramatic lack of knowledge in the general public about the typical signs of and risk factors for important clinical conditions.

“Do citizens have a minimum medical knowledge? A survey”
L. Bachmann, F. Gutzwiller, M. Puhan, J. Steurer, C. Steurer-Stey,
and G. Gigerenzer, *BMC Medicine*, vol. 5, no. 14, 2007

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

27. Give the baby his pacifier so he'll stop crying. Every time I give him the pacifier he stops crying.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

28. We will be late for church because we have to wait for Gina. She's always late. She's been late seven Sundays in a row.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

29. Every time I or anyone else has looked into my refrigerator, the light is on. Therefore, the light is always on in my refrigerator.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

16 CHAPTER 14 Generalizing

Additional premises needed:

Good generalization?

30. Every time I or anyone I know has seen a tree fall in the forest, it makes a sound.
Therefore, anytime a tree falls in the forest it makes a sound.

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

31. *Biology breeds grumpy old men*

Men lose brain tissue at almost three times the rate of women, curbing their memory, concentration and reasoning power—and perhaps turning them into “grumpy old men”—a researcher said Wednesday.

“Even in the age range of 18 to 45, you can see a steady decline in the ability to perform such (attention-oriented) tasks in men,” said Ruben C. Gur, a professor of psychology at the University of Pennsylvania.

Gur said shrinking brains may make men grumpier because some of the tissue loss is in the left frontal region of the brain, which seems to be connected to depression.

“Grumpy old men may be biological,” said Gur, who is continuing to study whether there is a connection.

However, one researcher not affiliated with the study said Wednesday that other recent studies contradict Gur’s findings on shrinkage.

The findings, which augment earlier research published by Gur and colleagues, are the result of his studies of the brain functions of 24 women and 37 men over the past decade. He measured the brain volume with an MRI machine and studied metabolism rates. From young adulthood to middle age, men lose 15% of their frontal lobe volume, 8.5% of their temporal lobe, he said. Women, while they have “very mild” shrinkage, lose tissue in neither lobe. For the brain overall, men lose tissue three times faster.

Gur found that the most dramatic loss was in men’s frontal lobes, which control attention, abstract reasoning, mental flexibility and inhibition of impulses, and the temporal lobe [which] governs memory.

Associated Press, April, 1996

Generalization (state it; if none, say so)

Sample:

Sample is representative? (yes or no)

Sample is big enough? (yes or no)

Sample is studied well? (yes or no)

Additional premises needed:

Good generalization?

32. How would you explain to the author of this letter what's wrong with his reasoning?

This letter is in response to "Bugman's" letter from Corrales (*El Defensor Chieftain*, Sept. 29).

First of all, the recent poll that stated that 66 percent of New Mexicans oppose cockfighting is misleading because I am a New Mexican and no one polled me. So that statement in itself is misleading. In a recent gathering—of 175 people who do not oppose cockfighting and are New Mexicans—not one was polled.

I would like to know, of the 66 percent who opposed cockfighting, how many are native New Mexicans, and not transplants from other states, and in which counties the poll was gathered from.

I would guess that the poll was taken in a large city in New Mexico and in one or two counties. The people that oppose this are people who take it upon themselves to tell other people what traditions to follow and, basically, try to control another group of people. Rural New Mexicans should not be dictated to by big-city people who think that only their way is best. . . .

I hope that Gov. Richardson will see that New Mexico has bigger issues and problems than cockfighting. We have major water issues, economic and job problems, alcohol and drug abuse, education for our children, threats from terrorists and medical coverage for our people.

Cockfighting does not seem that important in comparison to these issues. Why pick on a group of people who mind their own business and who think of cockfighting as their heritage? Why is it that when we go to Santa Fe [the capital of New Mexico], the gallery is full of people who want to protect their sport and their heritage and only a handful show up to ban it.

The agenda of this group of people is to eliminate all sports involving animals and to control all aspects of our lives and our traditions. What will be next? Matanzas [a Hispanic tradition of slaughtering a pig and roasting it for a party]? Other traditions that embarrass them because it is not in their culture? This is New Mexico, the last state they can screw up. I, for one, am not going down without a fight. If you don't like New Mexico with its traditions and its culture, then either leave or learn to live with them. Do not try to ram your ideas or try to make the native rural people conform to your way of thinking just because you think it is right. I, for one, will not put up with it.

Richard Lopez, *El Defensor Chieftain*, October 16, 2004

For the following exercises, identify the analogy and explain how a generalization is required.

33. Dick: What do you think about getting one of those Blauspot rice cookers?

Zoe: It's not a good idea. Remember, Maria got one and she had to return it twice to get it fixed.

34. Of chimpanzees fed 1 pound of chocolate per day in addition to their usual diet, 72% became obese within two months. Therefore, it is likely that most humans who eat 2% of their body weight in chocolate daily will become obese within two months.



CHAPTER 15

Exercises for Sections A.1–A.3

For each exercise here, if appropriate rewrite the sentence as a *causal claim*—that is, one that uses the word “causes” or “caused.” If it’s a particular causal claim, describe the purported cause and the purported effect with claims.

1. The police car’s siren got me to pull over.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

2. The speeding ticket Dick got made his auto insurance rate go up.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

3. Speeding tickets make people’s auto insurance rates go up.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

4. Because you were late, we missed the beginning of the movie.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

5. The onion’s smell made me cry.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

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6. Dogs make great pets.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

7. I better not get the pizza with anchovies, because every time I do, I get heartburn.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

8. Someone ringing the doorbell made Spot bark.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

9. Coffee keeps me from getting a headache in the afternoon.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

10. Penicillin prevents serious infection.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

11. If it weren't for my boyfriend, I'd have no problems.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

12. My hair looked nice today until I walked outside and the wind messed it up.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

13. Our airplane took off from gate number 13. No wonder we're experiencing so much turbulence.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

14. Tom: Hey, you want to be a ballplayer, you have to do better than that.

Lee: It was the sun that made me drop the ball.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

15. The cold makes people shiver.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

16. Zeke abuses animals because his parents abused him.

Causal claim:

Particular or general?

Cause (stated as a claim):

Effect (stated as a claim):

Exercises for Section A

1. What criteria are necessary for there to be cause and effect?
2. Why isn't a correlation enough to justify cause and effect? Give an example.
3. Comparable to the unstated premises of an argument, what do we call the claims that must be true for a causal claim to be true?
4. What real problem in establishing cause and effect is usually stated badly as "That's not close enough in space and time to be the cause"?

Exercises for Sections A and B

For the exercises here, find the causal claim. Then evaluate it: explain why it's plausible or clearly wrong, or whether you need more information to evaluate it.

1. Maria: I had to slam on the brakes because some idiot pulled out in front of me.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

2. Suzy: My feet hurt so bad the other day when I was cheerleading. My feet have never hurt at the other cheerleading events, but I was wearing new shoes. So it must have been my new shoes.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

3. Dick: Ooh, my stomach hurts.
Zoe: Serves you right. You really pigged out on the nachos and salsa last night.
They always give you a stomachache.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

4. Marriage is the chief cause of divorce.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

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5. I've got to go to the game. The only time I wasn't in the bleachers this season, they lost.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

6. Hazards are one of the main causes of accidents. (OSHA, "Safety with Beef Cattle")

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

7. Zoe: The dark sky makes me really depressed today.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

8. Dick: Boy, are you red.
Zoe: Ouch! I got a terrible sunburn because the sun was so strong yesterday.
Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

9. The emphasis on Hollywood figures in the media causes people to use drugs because people want to emulate the stars.
Causal claim:

Cause:

Effect:

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Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

10. My mother missed the sign-up to get me into Kernberger Preparatory Academy, and that's why I've never been able to get a good job.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

11. Maria: It's awful what's happened to Zeke.

Lee: Why? What happened? I haven't seen him for ages.

Maria: He started using drugs. It's because he was hanging out with that bad bunch.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

12. Lou's college education helped him get a high-paying job the year after he graduated.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

13. Dick: Every day I run up this hill and it's no big deal. Why am I so beat today?

Zoe: It's 'cause you stayed out late and didn't get enough sleep.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

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Cause makes a difference?

Common cause?

Evaluation:

14. Zoe: My life's a mess. I've never really been happy since all those years ago in high school you told Sally that I killed Puff. She believed your stupid joke, and made sure I wasn't a cheerleader. I'll never be a cheerleader. It's your fault I'm so miserable now.

Dick: There, there.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

15. Sex, drugs, and rock 'n roll are the causes of the decline in family values.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

16. Suzy: Eating potato chips and sitting on the couch must be healthy. All the guys on the football team do it.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

17. Lee: Yesterday my neighbor said this spring has been the worst season ever for allergies, but I told her I hadn't had any bad days. Then today I started sneezing. Darn it—if only she hadn't told me.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

18. Dick: Normally my pulse rate is about 130 after exercising on this bike.

Zoe: I can't believe you actually measure your heart rate! You're so obsessive.

Dick: But for the past week or so it's been about 105. That's odd.

Zoe: You stopped drinking coffee two weeks ago, remember?

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

19. He's stupid because his mother dropped him on his head when he was young.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

20. A recent study shows that everyone who uses heroin started with marijuana. So smoking marijuana causes heroin use.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

21. Dr. E: My students don't like the material at the end of this course. That's why so many have missed class the last two weeks of the course.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

22. Flo: Salad makes you fat. I know 'cause Wanda's really fat and is always eating salad.

Causal claim:

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

23. (An advertisement by the Iowa Egg Council in the Des Moines International Airport)
Children who eat breakfast not only do better academically, but they also behave better.
Archives of Pediatric and Adolescent Medicine

Cause:

Effect:

Cause and effect each happened?

Cause precedes effect?

It's (nearly) impossible for the cause to be true and effect false?

Cause makes a difference?

Common cause?

Evaluation:

2. Dick: (*Bending over, sweating and cursing*) There's something wrong with my bike.
Zoe: What?
Dick: Something's going "click, click, click" all the time.
Zoe: Must be something that's moving.
Dick: Duh. Here, hold it up while I turn the pedals. (*click, click, click, . . .*)
Zoe: Yup, there it is.
Dick: It must be in the pedals or the wheels.
Zoe: Stop pedaling. . . . It's gone away.
Dick: It must be in the pedals, then.

Evaluate how Dick has tried to isolate the cause here.

3. 

ISN'T IT AMAZING THAT
OF ALL THE HOUSES IN THIS TOWN,
I WAS BORN IN ONE WHERE THE PEOPLE
LOOK SO MUCH LIKE ME!

What is Flo overlooking?

4. Write down a causal claim that you made recently and evaluate it. Have a classmate critique your evaluation.

5. Judge: I find that Nancy sustained serious injuries in this accident. There is sufficient evidence that the defendant ran a red light and broadsided her car, causing the injuries. But I hold that Nancy was partly responsible for the severity of her injuries in that she was not wearing a seat belt. Therefore, Nancy shall collect only 50% of the costs associated with this accident.

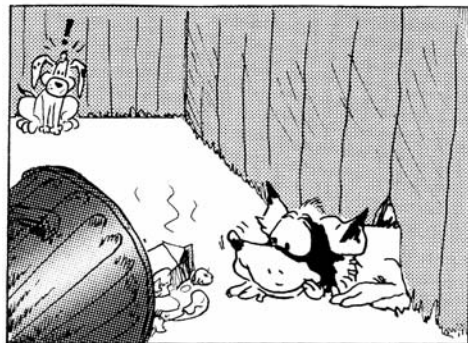
Explain the judge's decision in terms of normal conditions and foreseeable consequences.

6. Mickey has taken his four-wheel-drive Jeep out into the desert to explore on this hot sunny Sunday. But his two cousins want to see him dead. Bertha has put poison in Mickey's five-gallon canteen. Richard, not knowing of Bertha's plans, has put a very small hole in the canteen.

Mickey's car breaks down. He's getting hot and thirsty. His cellular phone doesn't work because he forgot to recharge it. He goes to get some water and finds the canteen empty. . . .

Overcome by guilt later in the year, both Bertha and Richard confess. Who should be blamed for causing Mickey's death?

7. Pick out the cause and effect(s) below. Explain your answer.



Exercises for Section D

1. Describe what evidence you have for the claims below and what experiments you would devise to try to prove or disprove them. [Don't do the experiments yourself! Some of them are dangerous without adult supervision.]

a. Universities cause students to become smarter.

b. Hedonistic lifestyles cause premature death.

c. Money brings happiness.

d. Drinking alcohol causes promiscuous behavior.

e. Unprotected sex causes disease.

2. What is the control group in the experiment proposed in Example 24?

Explain what's wrong in Exercises 3–8.

3. Tom: Don't feed those chicken bones to Spot. Don't you know that a dog can choke and die on one of those?
Dick: Don't be silly, I've been giving Spot chicken bones for years.

4. Suzy: Vegetarians get cancer much less than meat-eaters.
Manuel: Oh, yeah, so how come Linda McCartney, a well-known vegetarian, died from cancer when she was only in her 50s?

5. Dick: Hey, Zoe. Listen to this. A Roper survey said wine drinkers are more successful than those who don't drink. Frequent wine drinkers, it says, earn about \$67,000 a year, while occasional drinkers earn about \$40,000. People who don't drink at all earn a little more than \$30,000. You want to be successful, don't you?
Zoe: You're not going to get me to start drinking wine that way.

6. Maria: Wives of servicemen suffer domestic abuse at the rate of 2 to 5 times that of other women.
Suzy: Boy, I sure hope Tom doesn't join the army.
7. [Advertisement] Studies have shown that three cups of Cheerios[®] a day with a low-fat diet can help lower cholesterol.
8. The number of teenagers giving birth declined 2 percent in the United States in 2008, reversing two years of increases, as older teens may have delayed starting a family because of the recession. *Albuquerque Journal*, April 7, 2010
9. One of Dr. E's dogs gets loose. He comes back the next day. He's coughing and hacking, and he vomits a couple times. Dr. E thinks maybe he ate something bad. Three days later that dog is O.K., but his other dog, who hasn't left the yard, is coughing and hacking and vomits. Dr. E concludes that his dogs have had a flu or some illness. Explain why you think Dr. E is right or why he is wrong.

Analyze the following passages by answering the questions below each one.

10. Late nights may make teens more prone to depression and suicidal thoughts by depriving them of sleep, a Columbia University study said.

Teens whose parents let them go to bed past midnight were 24 percent more likely to be depressed and 20 percent more likely to have contemplated suicide than peers whose parents set bedtimes at or before 10 p.m., the researchers said in the journal *Sleep*. Earlier set bedtimes may be protective because they increase the likelihood of getting enough sleep, they said.

Albuquerque Journal, January 2, 2010

What causal claim is at issue?

Which type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim

How would you further test the claim?

11. *A little booze does a woman's mind good*

Women who imbibe a little wine, beer or spirits every day are less likely than teetotalers to see their memories and other thinking powers fade as they age, according to the largest study to assess alcohol's impact on the brain. The study of more than 12,000 elderly women found that those who consumed light to moderate amounts of alcohol daily had about a 20 percent lower risk of experiencing problems with their mental abilities later in life.

"Low levels of alcohol appear to have cognitive benefits," said Francine Grodstein of the Brigham and Women's Hospital in Boston, senior author of the study, which is being published in today's New England Journal of Medicine. "Women who consistently were drinking about one-half to one drink per day had both less cognitive impairment as well as less decline in their cognitive function compared to women who didn't drink at all."

While the study involved only women, the findings probably hold true for men, although previous research indicates that men seem to benefit from drinking slightly more—one to two drinks per day, researchers said.

The findings provide the latest evidence that indulging in alcohol, long vilified as part of an insalubrious lifestyle, can actually help people live longer, healthier lives. While heavy drinking clearly causes serious problems for many people, recent research has found that drinking in moderation protects the heart.

Washington Post, Jan. 15, 2005

What causal claim is at issue?

Which type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim?

12. [Bernard] Goldberg documents the steady decline in the behavioral, emotional and physical health of America's kids that has taken place as the percentage of latchkey and day-care children has increased. Some examples:
- From 1979 to 1988 (a period that coincides with a sizable increase in two-income families), the suicide rate for girls 10–14 rose 27 percent, while for boys it rose 71 percent.
 - In 1970, only one in 20 American girls under 15 had had sex; today, one in three is having sex, and 3 million teenagers are infected with sexually transmitted diseases every year.
 - A study of 5 million eighth-graders found that children who are left home alone more than 11 hours a week are three times more likely than kids with after-school adult supervision to abuse drugs, alcohol or tobacco.
 - A study by the National Institute of Child Health and Human Development published in 2001 found that toddlers in full-time day care tended to be more aggressive toward other children and defiant toward adults. This, the institute found, regardless of the quality.

Goldberg acknowledges that not all the evidence is bad. Some studies on day care have found it's not bad at all. (When one considers only studies conducted by people or groups without apparent bias, however—as is the case with the above study—the results always paint a not-so-pretty picture.) And he's clear that he's talking about parents who choose to work outside the home, not those who effectively have no choice.

John Rosemond, "Parenting," *Albuquerque Journal*, March 7, 2002

What causal claim is at issue?

Which type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim?

13. *Academy Award winning actors and actresses*

(from the transcript for National Public Radio's *All Things Considered*, May 15, 2001)
ROBERT SIEGEL, host: An article reached us today with the title Survival in Academy Award-winning Actors and Actresses. It is not about casting or contracts. It's actually in the *Annals of Internal Medicine*, and it's about survival. Dr. Donald Redelmeier and his colleague Sheldon Singh found that actors and actresses who have won Oscars live, on average, 3.9 years longer than other performers who have never won Oscars. Dr. Redelmeier is in Toronto and joins us now.

Dr. Redelmeier, how did you conduct this study?

Dr. DONALD REDELMEIER: What we did is, we identified every actor and actress who's ever been nominated for an Academy Award in either a supporting role or a leading role over the full history of the Academy Awards since 1929.

SIEGEL: What does this tell you? What do you think is the cause of the greater longevity among those actors and actresses who won Academy Awards.

Dr. REDELMEIER: One possible theory is that winning an Academy Award improves a person's self-esteem and gives them a much greater resilience to the normal stressors that confront us on a day-to-day basis. And that, in turn, causes changes in the hypothalamic, pituitary, adrenal glands of the body or the immunological systems, and so that much less damage occurs over the years.

SIEGEL: If this is true, do you think we should find then that, say, the Academy Award winners among the film editors or the special effects people would also outlive their colleagues or do you think it requires the adulation that only star actors and actresses get to add the extra 3.9 years to a life span.

Dr. REDELMEIER: Well, more research is always needed. Another possibility is that it isn't due to a person's internal biology, but it reflects their external behavior—i.e., that stars live lives under continuous scrutiny, and so because of that, they need to sleep properly every night, eat a balanced diet at every meal, exercise regularly every day in order to preserve their glamorous image. And so it's those external behaviors rather than the internal peace of mind that confers a much greater survival benefit than is generally appreciated.

What causal claim is at issue?

Which type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim?

14. *Bad hair can give self-esteem a cowlick, study says*

People's self-esteem goes awry when their hair is out of place, according to a Yale University researcher's study of the psychology of bad-hair days.

People feel less smart, less capable, more embarrassed and less sociable, researchers said in the report released Wednesday.

And contrary to popular belief, men's self-esteem may take a greater licking than women's when their hair just won't behave. Men were more likely to feel less smart and less capable when their hair stuck out, was badly cut or otherwise mussed.

"The cultural truism is men are not affected by their appearance," said Marianne LaFrance, the Yale psychology professor who conducted the study. "(But) this is not just the domain of women."

The study was paid for by Proctor & Gamble, which makes hair-care products. The Cincinnati-based company would not discuss how much the study cost or what they planned to do with their newfound knowledge about the psychology of hair.

Janet Hyde, a psychology professor at the University of Wisconsin at Madison who studies body image and self-esteem, said personal appearance can have an enormous effect on people, especially adolescents.

But Hyde said she was surprised to hear bad hair had a stronger effect on men than on women in some cases.

For the study, researchers questioned 60 men and 60 women ages 17 to 30, most of them Yale students. About half were white, 9 percent were black, 21 percent were Asian and 3 percent were Hispanic.

The people were divided into three groups. One group was questioned about times in their lives when they had bad hair. The second group was told to think about bad product packaging, like leaky containers, to get them in a negative mind-set. The third group was not asked to think about anything negative.

All three groups then underwent basic psychological tests of self-esteem and self-judgment. The people who pondered their bad-hair days showed lower self-esteem than those who thought about something else. . . .

LaFrance, who has also studied the psychology of smiles, facial expressions and body language, said she would continue to look into the effects of bad hair. "We all do research that at first pass might seem quite small," she said. "Yes, some of my colleagues said, 'That's interesting, ha, ha.' But then, when we talk about it, people are interested."

Associated Press, January 27, 2000

What causal claim is at issue?

Which type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim?

15. *Two new studies back value of high-fiber diet*

New research has revived the notion that a high-fiber diet may protect against colon cancer.

Long-standing recommendations for high-fiber diets have taken a hit over the last few years after a handful of carefully conducted studies failed to find a benefit.

But experts say two major studies published this week in *The Lancet* medical journal—one on Americans and the other on Europeans—indicate previous research may not have examined a broad enough range of fiber consumption or a wide enough variety of fiber sources to show an effect.

“These two new findings show that the fiber hypothesis is still alive,” said the leader of the American study, Ulrike Peters of the U.S. National Cancer Institute.

Figuring out the relationship between nutrition and disease has proved difficult, but experts say fiber is particularly complicated because there are various types and they all could act differently.

Fiber is found in fruits, vegetables and whole grains. Americans eat about 16 grams a day, while Europeans eat about 22 grams. The new studies indicate fiber intake needs to be about 30 grams a day to protect against colon cancer.

There are 2 grams of fiber in a slice of whole meal bread. A banana has 3 grams and an apple has 3.5 grams, the same as a cup of brown rice. Some super-high fiber breakfast cereals have as much as 14 grams per half cup.

In the American study, investigators compared the daily fiber intake of 3,600 people who had precancerous growths in the colon with that of around 34,000 people who did not. People who ate the most fiber had 27 percent lower risk of precancerous growths than those who ate the least.

In the European study, the largest one ever conducted on nutrition and cancer, scientists examined the link in more than 500,000 people in 10 countries.

Those who ate the most fiber, about 35 grams a day, had about a 40 percent lower risk of colorectal cancer compared with those who ate the least, about 15 grams a day, the study found.

“In the top quintile (group) they were eating 15 grams of cereal fiber, which is

equivalent to five or six slices of whole meal bread, plus they were eating seven portions of fruit and vegetables a day, which is basically the Mediterranean levels,” said the study’s leader, Sheila Bingham, head of the diet and cancer group at Cambridge University’s human nutrition unit. Associated Press, May 2, 2003

What causal claim is at issue?

Which type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim?

14. In the mid-1970s a team of researchers in Great Britain conducted a rigorously designed large-scale experiment to test the effectiveness of a treatment program that represented “the sort of care which today might be provided by most specialized alcoholism clinics in the Western world.” [reference supplied]

The subjects were one hundred men who had been referred for alcohol problems to a leading British outpatient program, the Alcoholism Family Clinic of Maudsley Hospital in London. The receiving psychiatrist confirmed that each of the subjects met the following criteria: he was properly referred for alcohol problems, was aged 20 to 65 and married, did not have any progressive or painful physical disease or brain damage or psychotic illness, and lived within a reasonable distance of the clinic (to allow for clinic visits and follow-up home visits by social workers). A statistical randomization procedure was used to divide the subjects into two groups comparable in the severity of their drinking and their occupational status.

For subjects in one group (the “advice group”), the only formal therapeutic activity was one session between the drinker, his wife, and the psychiatrist. The psychiatrist told the couple that the husband was suffering from alcoholism and advised him to abstain from all drink. The psychiatrist also advised the husband to stay on his job (or return to it) and encouraged the couple to attempt to keep their marriage together. There was a free-ranging discussion and advice about the personalities and particularities of the situation, but the couple was told that this one session was the only treatment the clinic would provide. They were told in sympathetic and constructive language that the “attainment of the stated goals lay in their hands and could not be taken over by others.”

Subjects in the second group (the “treatment group”) were offered a year-long program that began with a counseling session, an introduction to Alcoholics Anonymous, and prescriptions for drugs that would make alcohol unpalatable and drugs that would alleviate withdrawal suffering. Each drinker then met with a psychiatrist to work

out a continuing outpatient treatment program, while the social worker made a similar plan with the drinker's wife. The ongoing counseling was focused on practical problems in the areas of alcohol abuse, marital relations, and other social or personal difficulties. Drinkers who did not respond well were offered in-patient admissions, with full access to the hospital's wide range of services.

Twelve months after the experiment began, both groups were assessed. No significant differences were found between the two groups. Furthermore, drinkers in the treatment group who stayed with it for the full period did not fare better than those who dropped out. At the twelve-month point, only eleven of the one hundred drinkers had become abstainers. Another dozen or so still drank but in sufficient moderation to be considered "acceptable" by both husband and wife. Such rates of improvement are not significantly better than those shown in studies of the spontaneous or natural improvement of chronic drinkers not in treatment.

Herbert Fingarette, *Heavy Drinking: The Myth of Alcoholism as Disease*

What causal claim is at issue?

Which type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim?

8. Define, for a collection of numbers:
 - a. The average.
 - b. The mean.
 - c. The median.
 - d. The mode.
9. What is a “two times zero is still zero” claim? Give an example.
10. a. What is a generalization?
 - b. What do we call the group being generalized from?
 - c. What do we call the group being generalized to?
11. What is a representative sample?
12. Is every randomly chosen sample representative? Explain.
13. Is it ever possible to make a good generalization from a sample of just one? Give an explanation or example.

CHAPTER 16

Exercises for Section A

1. What is an explanation?
2. What is an inferential explanation?
3. Give an example of an explanation you reckon is good that isn't inferential.
4. What do we call a request for an explanation of a claim that is not highly plausible?
5. What do we mean when we say an explanation is circular?
6. Why is a good explanation not a good argument?
7. What are the necessary conditions we've seen for an inferential explanation to be good?
8.
 - a. What is a causal explanation?
 - b. When is a causal explanation good?
9. Why do we say that an untestable claim is a bad explanation?
10.
 - a. Give an example of an explanation you recently offered as an excuse.
 - b. What's the difference between an explanation and an excuse?

2 CHAPTER 16 Explanations

11. Bring to class examples of the following that you have encountered or heard. Exchange with a classmate to see if he or she can decide which is which.
- a. A causal explanation.
 - b. A good inferential explanation that is not causal.
 - c. A circular explanation.
 - d. An explanation that answers the wrong question.

For the exercises below fill in the blanks.

12. Zoe: How did Tom get strep throat?
Dick: Suzy had it last week.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

13. Tom: Why did the match ignite?

Harry: Because I struck it on the matchbook.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

14. (Heard on National Public Radio) Birds sing in the morning because it keeps other birds away, to announce their territory.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

15. Maria: Why can't my math teacher stick to the book?

Lee: Because he's a bad teacher.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

4 CHAPTER 16 Explanations

16. Dick: Why did Suzy just get up and leave the class?
Tom: Oh, she probably had to go to the bathroom.
Dick: But then why was she crying?

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

17. Lee: Why did Mr. Johns, the owner of that fast-food restaurant where your mom works, lower prices on all the meals?
Suzy: It's because he's got a good heart and wants poor people to be able to enjoy his food.
Zoe: I don't think so. He was the one who opposed soup kitchens in town.
Suzy: He's just covering up. He's afraid of being thought a nice guy. He can't face his unconscious wish to be loved.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

18. Zoe: I wish I could help Wanda. What's the reason for her weight problem?
Dick: Gravity.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

19. Dogs eat meat because they are carnivores.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

20. Dick: Darn. My bread landed butter-side down.

Flo: You buttered the wrong side of the bread.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Is it a good explanation?

Exercises for Section B

1.
 - a. What is an independent explanation?

 - b. What is a dependent explanation?

2.
 - a. Give an associated argument of “Puff tries to catch mice because they are smaller than Puff and move fast, and cats are genetically predisposed to chase anything that is smaller than them and moves fast.”

 - b. Give another associated argument for that explanation.

 - c. Is either a good argument?

 - d. Is the explanation independent or dependent?

3. Give to a classmate two explanations to evaluate, one that is independent, and one that is dependent.

For the exercises below fill in the blanks.

4. Flo: Why do sunflowers always point towards the sun?
Suzy: Because if they didn't, we wouldn't call them sunflowers.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Independent or dependent?

(If independent and it needs an associated argument to establish a premise, state it.
If dependent, supply additional premises if you can.)

Evaluation:

5. Dick: Why is Harry so depressed?
Zoe: Because he didn't get that summer intern job at the Adams Foundation.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Independent or dependent?

(If independent and it needs an associated argument to establish a premise, state it.
If dependent, supply additional premises if you can.)

Evaluation:

8 CHAPTER 16 Explanations

6. Zoe: Why did the lights go out?

Dick: Because my eyes were hurting from the glare.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Independent or dependent?

(If independent and it needs an associated argument to establish a premise, state it.

If dependent, supply additional premises if you can.)

Evaluation:

7. Suzy: Why do classes last only 50 minutes instead of an hour?

Maria: Because students need time to get from one class to another.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Independent or dependent?

(If independent and it needs an associated argument to establish a premise, state it.

If dependent, supply additional premises if you can.)

Evaluation:

8. Zoe: I can't understand what's happening with the garbage can.
Suzy: What's wrong?
Zoe: I put it out on Sunday for the garbageman to pick up early Monday, and every Monday I find it's been turned over and I have to pick up garbage that's been strewn all down the street.
Suzy: It's cause where you live. My grandma told me about it. There are wee little leprechauns around here, in the woods, and they like to play tricks on people.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Independent or dependent?

(If independent and it needs an associated argument to establish a premise, state it.
If dependent, supply additional premises if you can.)

Evaluation:

9. Flo: Why should there be a "g" in earth?
Dick: But there isn't a "g" in "earth."
Flo: Why not?
Dick: Why should there be a "g" in "earth"?
Flo: That's what I asked.

Inferential explanation? (yes or no)

Claim being explained:

Explanatory claims:

Causal? (yes or no)

Independent or dependent?

(If independent and it needs an associated argument to establish a premise, state it.
If dependent, supply additional premises if you can.)

Evaluation:

Exercises for Chapter 16

1. a. What is the fallacy of inference to the best explanation?

b. Give an example that you've heard or found on the internet.

2. Why do we prefer to avoid teleological explanations?

3. Go to a health food store and get a clerk to explain how some herb or medication works that's sold there. Analyze and present the explanation in class.

4. Rewrite Example 34 as an inferential explanation.

For the exercises below fill in the blanks.

5. Ellen DeGeneres is loved by more people than Jerry Springer. That's why she gets paid more.
Explanation? (yes or no)
Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

(If independent and it needs an associated argument to establish one of the explanatory claims, state it. If dependent, supply additional explanatory claims if you can.)

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

6. Why are there valves in our veins? So the blood can flow only one way in them.

Explanation? (yes or no)

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

7. Flo: What makes dogs chase cats?

Dr. E: Cats are Satan's emissaries on Earth. Dogs, the protectors of the way of righteousness, sense this and try to rid the world of them.

Flo: But then why does Fido get along with Puff?

Dr. E: Some cats have tried to redeem their souls, and dogs encourage them in the way of righteousness.

Zoe: Thank you for your deep insight, Dr. E.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

8. Flo: Why do dogs like cats so much?
Suzy: Because they're both mammals.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

9. In many states the letter "O" is not used in license plates. Why? Well, it could easily be confused with the numeral "0". By not using the letter, there is a better chance that recording and reporting of license plate numbers will be accurate.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

10. Lee: Why did your great uncle go to fight in Vietnam?

Maria: He had no choice, he was drafted.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

11. Lee: Why did your grandfather go to fight in Vietnam?

Tom: He wanted to do his duty for his country.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

12. Lee: Why did your grandfather go to fight in Vietnam?

Manuel: Because some old Anglos in power decided to send our boys over there to be killed.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

13. Lee: Why don't you support affirmative action for entry to universities?

Tom: Because the minorities in this country have it too easy already.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

14. Suzy: Why are students required to take a foreign language to get a degree here?

Prof. Zzyzzx: Because the faculty senate passed the regulation.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

16 CHAPTER 16 Explanations

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

15. Zoe: Why don't they require university professors to take courses on how to teach?
Dr. E: Because by the time someone gets a Ph.D. he already knows how to teach well.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

16. Zoe: Why don't they require university professors to take courses on how to teach?
Maria: Because they want to make our lives miserable.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

17. Zoe: Why don't they require university professors to take courses on how to teach?
Harry: Because the professors are too powerful and entrenched, and the administration can't overcome their resistance to it.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

18. Why is there so much evil in the world? The world is too complex for us to understand. Only God can see all. He has surveyed all possible ways the world could be and has chosen this one, the actual world, because in it there is the least evil. If He had made the world differently, there would be more evil, not less.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

19. —Why is Spot crouching in front of that hole?
—So he can catch a mouse.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

20. Lee: Why is the mouse trap gone?

Maria: None of us took it. And it's in a really inaccessible place here in the attic.

It must be because a mouse got trapped but not killed and dragged it away.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

21. How do we catch colds? Well, cold viruses are around us all the time, in the air, in the water, we even carry them in ourselves. Only sometimes do we get colds, and that happens when we unconsciously wish to be sick.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

22. Dr. Smyrn: Now for checking your heart. Do you feel that?
Dr. E: Ow! Sure. But what has pricking my finger got to do with heart disease?
Dr. Smyrn: The heart is on the left side of the body, and in heart attacks the victim will normally get a pain in his left arm.
Dr. E: Gee, that hurts, too.
Dr. Smyrn: I believe that we can predict heart disease by testing the little finger of the left hand for pain sensitivity. So I compare reactions to pricking the little finger of the left hand to pricking other fingers.
Dr. E: Really? Ouch. That sounds wacky.
Dr. Smyrn: I have been sending patients with unusual sensitivity in that finger to a cardiologist to follow up.
Dr. E: And? Ow!
Dr. Smyrn: So far he has found indications of heart disease in only 2 of the 32 people I have sent. But that is because my test is more sensitive than his. I can spot that there is incipient heart disease before any other known test.

Claim being explained:

Claim(s) doing the explaining:

Inferential (yes or no)?

Independent or dependent?

Causal? (yes or no)

Teleological? (yes or no)

If teleological, if possible rewrite it as inferential.

Evaluation:

2 *CHAPTER 17 Risk*

6. Give an example where it's impossible to calculate exactly a risk for yourself, but you can rank still it against other possible outcomes.

7. a. What is an act of God? Give an example.

- b. Give an example where you or someone you know has classified something bad that happened or might happen as an act of God, yet it seems clear that it was within someone's or some group's power to make it not happen.

8. Why isn't it accurate to say that the lottery is a tax on people who can't do math?

9. Give an example of a time when you evaluated a risk badly.

10. Give an example of evaluating risk in some sport.

11. Your friend is at the doctor's office and has to make a decision about having surgery versus chemotherapy for her cancer. What should she ask her doctor in to help her evaluate the risk?

12. On February 27, 2011, Melissa Jones, a senior on the Baylor women's basketball team, injured her eye in a basketball game. She hit her head on the floor, damaging her optic nerve, and she lost her sight in one eye for a while. Apparently there is a good chance she'll be able to regain her sight. But she wants to finish her basketball career. As quoted by the *Dallas Morning News* (March 24, 2011), she said:

I don't tend to live my life in a glass box. I feel like you have the same opportunity getting hurt crossing the street that you do in a skydiving accident. I feel that you want to live your life, do what you want to do and have fun with it.

Suppose you were a friend of Melissa Jones. What would you tell her about how she's evaluating risk?

15. In 1997, the *Cassini* spacecraft was scheduled to be launched from Florida for a mission to Saturn. The power for the spacecraft, once it left the Earth, was to be provided by the heat from a core of plutonium. There was an outcry about this from the public because, though the plutonium was not the type that could cause an explosion, if the launch failed and the spacecraft reentered and broke up in the atmosphere, the plutonium would be dispersed widely, causing many cases of cancer from its inhalation. In one scenario prepared by scientists, the plutonium would be spread over about 2,000 square kilometers, causing 2,300 cancer deaths over 50 years. Other scenarios were for somewhat fewer cancers. In the end, *Cassini* was launched. The mission has been a success.

Mark E. Eberhart, a professor of chemistry and an expert in materials science, in his book *Why Things Break*, discusses the risk of this mission.

When I awoke on the morning of August 15, 1997, I was confronted with many potential hazards. If I had considered these and ranked them from most probable to least probable, the list would look something like this:

1. Suffering an injury while riding my bicycle during lunch hour.
2. Being in an automobile accident while commuting either to or from work.
3. Having an accident at home—slipping in the shower or falling down stairs.
4. Daily exposure to toxins from the polluted air of Denver.
5. Exposure to second-hand smoke.
6. Exposure to radon.
7. Eating fatty foods.
8. Becoming a victim of crime.
9. Having a work-related accident.
10. Being struck by lightning.
11. Getting caught in a flash flood.
12. Being injured by a tornado or high winds.
13. Suffering an attack by a mountain lion or bear.
14. Inhaling plutonium from the reentry of *Cassini* during Earth fly-by.

I am not opposed to minimizing risk, but if I am to approach the problem of minimizing risk as a scientist, those things that pose the greatest risk to life and health should receive the greatest portion of our attention.

Explain what is wrong with Eberhart's analysis.

16. [After a chemical explosion at a plant, where one man was killed by the explosion and four were injured, a man was interviewed who worked in that section of the plant. He had been on vacation at the time.]

Powell said the idea of working every day in a plant filled with toxic chemicals hasn't worried him, and he plans to return when his vacation is over.

"There are toxic chemicals in your house under your sink," he said. "There is constant training on how to handle them, and if you follow those guidelines, you're O.K. Every job has a potential hazard." Tyson Hiatt, *The Spectrum*, July 31, 1997

Suppose you were a friend of Mr. Powell. What would you tell him about how he's evaluating risk?

17. *Pascal's wager*

(Blaise Pascal was a 17th-century mathematician and philosopher who had a religious conversion later in his life. Here, roughly, is his argument.)

We have the choice to believe in God or not to believe in God. If God does not exist, you lose nothing by believing in Him. But if He exists, and you believe in Him, you have the possibility of eternal life, joyous in the presence of God. If you don't believe in Him, you are definitely precluded from having everlasting life. Therefore, a prudent gambler will bet on God existing. That is, it is better to believe that God exists, since you lose nothing by doing so but could gain everlasting life.

- a. What risk is Pascal evaluating?

- b. What mistakes is he making that affect his evaluation of risk?

CHAPTER 1S

1. Bring in a copy of the first page of a chapter from some science textbook and mark any sentence in it that is *not* a claim.

For Exercises 2–8, identify whether it's a claim. If it is, give a contradictory for it.

2. If some laboratory rat lives longer than 4 years, then a paper will be written about it.

3. What a wonderful spectacle is the complex and highly evolved chemistry of the living world!
M. Olomucki, *The Chemistry of Life*

4. Butterflies go through the following stages in their lifetime:
egg → caterpillar → pupa → adult → butterfly.

5. (*The gas law*) $PV = kT$ where P stands for the pressure, V for the volume, and T for the absolute temperature of a fixed volume of gas, and k is a constant.

6. Given a quantity of radium, after 1,620 years, approximately half the radium atoms in the quantity will have transmuted into radon atoms.

7. When a steady current is flowing through a conductor, the strength of the current is proportional to the potential difference between its ends.

8. (Mendel) When a large number of pea plants having round, yellow seeds are crossed with a large number of pea plants having wrinkled, green seeds, the second generation of round to wrinkled and of yellow to green is approximately 3:1.

2 CHAPTER 15 Getting Started

For Exercises 9–17 fill in answers to each part.

9. An organism is composed essentially of macromolecular compounds, among which are nucleic acids and proteins. Even the smallest organism contains a few thousand different species of macromolecules. The simplest organism is therefore a relatively complex machine.

André Lwoff, *Biological Order*

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

10. Vaccination has been a practical method of protection against transmissible disease since Pasteur developed vaccines against some of the common diseases of livestock and poultry, among them some of the diseases which are most important today. No vaccine is absolutely safe or completely effective all the time; however, the practical value of vaccines has been demonstrated in many millions of protected animals.

J. H. Galloway, *Farm Animal Health and Disease Control*

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

11. The insane notoriously give way to all their emotions with little or no restraint; and I am informed by Dr. J. Crichton Browne, that nothing is more characteristic of simple melancholia, even in the male sex, than a tendency to weep on the slightest occasion, or from no cause. They also weep disproportionately on the occurrence of any real cause of grief. The length of time during which some patients weep is astonishing as well as the amount of tears which they shed.

Charles Darwin, *The Expression of Emotions in Man and Animals*

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

12. The universe began with a big bang. Therefore, there was an instant when all matter was energy.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

13. Suzy: Boy, Ralph's donkey sure likes broccoli.

Tom: Why do you say that?

Suzy: Because when Ralph went over to her just now with some broccoli, she came running to him and ate it real quickly. Then she started nuzzling the bag that Ralph has the broccoli in.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

14. So we understand the reasons for the ongoing evolution of matter toward more complex and more perfected forms. Progress is not accomplished "actively," guided by some predetermined "plan" or "goal," but by the elimination of the least well-adapted structures by what could be called an upward leveling. Natural selection applies not only to living organisms but also to molecules, even small ones: any chemical entity exists only if the conditions in its environment allow it. The chemical development of matter was easier in that Nature did not have to show a great deal of creativity in this area.

Martin Olomucki, *The Chemistry of Life*

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

4 CHAPTER 15 Getting Started

15. Our atmosphere is unique in the solar system. It is composed of 78 percent nitrogen, 21 percent oxygen, and minor amounts of other gases. The earliest atmosphere was much different and consisted largely of hydrogen, carbon dioxide, and water vapor. The present atmosphere began to form as soon as organisms evolved and through photosynthesis developed the ability to extract carbon dioxide from the air and expel oxygen. Thus, the oxygen in today's atmosphere is and was produced by life.

W. K. Hamblin, *Introduction to Physical Geology*

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

17. In eclipses the outline is always curved: and, since it is the interposition of the earth that makes the eclipse, the form of this line will be caused by the form of the earth's surface, which is therefore spherical. Again, our observations of the stars make it evident, not only that the earth is circular [spherical], but also that it is of no great size. For quite a small change of position to south or north causes a manifest alteration of the horizon. There is much change, I mean, in the stars which are overhead, and the stars seen are different, as one moves northward or southward. Indeed, there are some stars seen in Egypt and the neighborhood of Cyprus which are not seen in the northerly regions; and stars, which in the north are never beyond the range of observation, in those regions rise and set. All of which goes to show not only that the earth is circular in shape, but also that it is a sphere of no great size: for otherwise the effect of so slight a change of place would not be so quickly apparent.

Aristotle, *On the Heavens*, II.14.297, translated by Richard McKeon

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

17. The liver is not the seat of the soul, as was believed by many of the ancients. The proof is that the liver can be removed and another transplanted and the person's soul remains the same. Indeed, every part of the human body can be removed, or removed and transplanted, and, except for the degradations of suffering, the person's soul remains unchanged. All that is, save one: the brain. Damage that even a little, and you will see the person's soul in throes. Thus, the brain is the seat of the soul.

Argument? (yes or no)

Conclusion (if unstated, add it):

Premises:

Evaluation:

Evaluate the following arguments and refutations.

18. UFO enthusiasts often claim that the flying saucers they "observe" are held suspended in the air and obtain their propulsion from a self-generated magnetic field. However, it is not possible for a vehicle to hover, speed up, or change direction solely by means of its own magnetic field. The proof of this lies in the fundamental principle of physics that nothing happens except through interactions between pairs of objects. A space vehicle may generate a powerful magnetic field, but in the absence of another magnetic field to push against it, it can neither move nor support itself in midair. The earth possesses a magnetic field, but it is weak—about 1% of that generated by a compass needle. For a UFO to be levitated by reacting against the earth's magnetic field, its own field would have to be so enormously strong that it could be detected by any magnetometer in the world. . . . And, finally, as the magnetic UFO traveled about the earth, it would induce electrical currents in every power line within sight, blowing out circuit breakers and in general wreaking havoc. It would not go unnoticed.

Milton A. Rothman, *A Physicist's Guide to Skepticism*

19. Conscious states, so defined, are real and irreducible; you cannot get rid of them. But consciousness as intrinsically subjective, qualitative, unified, and intentional is an embarrassment to a certain old-fashioned, materialist conception of the world, and there have been many attempts to get rid of it by denying its existence or pretending it was something else. Behaviorism said that consciousness was nothing but publicly observable behavior; physicalism said that it was nothing but physical states of the brain; functionalism said it was just a causal mechanism mediating between input stimuli and output behavior; and Strong Artificial Intelligence said it was no more than a number of computer programs that happen to be running in the brain but could be implemented in any sufficiently complex hardware. One has only to state these views clearly for their implausibility to seem obvious. Future generations considering late-twentieth-century intellectual life will surely wonder how serious people could have believed such stuff.

John R. Searle, "Consciousness: What we still don't know"
The New York Review of Books, January 13, 2005

CHAPTER 2S

State clearly the definitions in the following passages.

1. Sterility means *incapable of reproduction*, and so, in the hygienic sense, the complete absence of any form of life. The word is sometimes used more loosely to indicate absence of pathogens, ignoring the small number of harmless microorganisms which may not be destroyed. The word *sterility* should always be used in its strict sense.

J. H. Galloway, *Farm Animal Health and Disease Control*

2. Subjective data might be described as the individual's perspective of a situation or a series of events. This information cannot be determined by the nurse independent of interaction or communication with the individual. Subjective data are frequently obtained during the nursing history and include the client's perceptions, feelings, and ideas about self and personal health status. Examples include the client's descriptions of pain, weakness, frustration, nausea, or embarrassment.

Objective data consist of observable and measurable information. This information is usually obtained through the senses—sight, smell, hearing, and touch—during the physical examination of the client. Examples of objective data include respiratory rate, blood pressure, presence of edema, and weight.

Nursing Process and Nursing Diagnosis, 3rd edition, P. Iyer, B. Taptich, D. Bernocchi-Losey

3. Metamorphic rocks are rocks that have been altered by heat, pressure, and the chemical action of pore fluids (water and early melted mineral matter) to such an extent that new minerals are formed that are stable in an environment of higher temperature and pressure.

W. K. Hamblin, *Introduction to Physical Geology*

2 CHAPTER 2 *S* Definitions

Are the following good definitions?

4. Communication is the process by which the behavior of one animal affects the behavior of others; that is, it changes the probability distribution of other animals' behavior. Claud A. Bramblett, *Patterns of Primate Behavior*, 2nd edition

5. Communication is when one animal intentionally affects the behavior of another.

6. A ghost is a translucent being that lives in abandoned houses.

7. Compare the following.
 - a. Since the time of thalidomide, it has become widely recognized that drugs consumed by a mother during pregnancy can alter the development of the fetus. Drugs that cause such malformations are called teratogens (literally, "monster makers"). William A. McKim, *Drugs and Behavior*, 5th edition
 - b. Teratogens are environmental agents (such as drugs or viruses), diseases (such as German measles), and physical conditions (such as malnutrition) that impair physical development and lead to birth defects and even death. Richard A. Griggs, *Psychology*

8. Evaluate this disagreement.

Lee: Single cell animals have a nervous system because they have a way to transmit electrical signals in the cell.

Maria: Boy, are you wrong. Nervous systems are composed of cells, so clearly single cell animals can't have a nervous system.

9. *Definitions of “nursing”*

Evaluate the following definitions from *Nursing Process and Nursing Diagnosis*, 3rd edition, P. Iyer, B. Taptich, D. Bernocchi-Losey, pp. 3–6 (the proposer of the definition is given in parentheses).

- a. Assisting the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to peaceful death) that s/he would perform unaided if s/he had the necessary strength, will or knowledge. (Virginia Henderson)
- b. A human interaction whose goal is the promotion of wholeness for all people, well or sick. (Myra Levine)
- c. A science with an organized body of abstract knowledge arrived at by scientific research and logical analysis; it is an art in the imaginative and creative use of the body of knowledge in human service. (Martha Rogers)
- d. The practice of nursing as a registered professional is defined as diagnosing and treating human responses to actual or potential physical and emotional health problems through such services as casefinding, health teaching, health counseling, and provision of care supportive or restorative of life and well being . . . and executing medical regimens as prescribed by a licensed or otherwise legally authorized physician or dentist. (New Jersey Nurse Practice Act, 1993)

10. Bring in and evaluate a definition from a science course you have taken or are taking.

CHAPTER 3S

1. What is an observational claim?

2. What counts as evidence in science?

3. a. What does it mean to say that an experiment is duplicable?

b. What does it mean to say that the results of an experiment can be reproduced?

c. What does it mean to say that an experiment is replicated?

4. You want to repeat an experiment you've read about. What do you need to duplicate?

5. What is the difference between an explanation and a prediction?

6. Give a prediction that is not about the future. How would you check whether it is true?

7. How can we show that a general claim used as an explanation is true?

11. For five minutes watch two dogs that are active. Write down what you see. Give it to a classmate to evaluate whether what you wrote were your perceptions or what you deduced from your perceptions. (Extra credit if you introduce a cat into the experiment.)

12. Harry: You have beautiful blue eyes.

Suzy: Huh? My eyes are brown.

Harry: No, they're blue.

Suzy: You're crazy, they're brown.

Harry: How do you know?

Suzy: I've look at them in the mirror every day. And eyes don't change color.

Harry: But how do you know that mirrors don't change the color of your eyes?

After all, you can't ever see them without a mirror.

Devise an experiment and an argument to convince Suzy that Harry is wrong.

13. An electron is no more (and no less) hypothetical than a star. Nowadays we count electrons one by one in a Geiger counter, as we count the stars one by one on a photographic plate. In what sense can an electron be called more unobservable than a star? I am not sure whether I ought to say that I have seen an electron; but I have just the same doubt whether I have seen a star. If I have seen one, I have seen the other. I have seen a small disc of light surrounded by diffraction rings which has not the least resemblance to what a star is supposed to be; but the name “star” is given to the object in the physical world which some hundreds of years ago started a chain of causation which has resulted in this particular light-pattern. Similarly, in a Wilson cloud chamber I have seen a trail not in the least resembling what an electron is supposed to be; but the name “electron” is given to the object in the physical world which has caused this trail to appear. How can it possibly be maintained that a hypothesis is introduced in the one case and not in the other?

Sir Arthur Eddington, *New Pathways in Science*

Argue for one (or more) of the following:

- a. An electron is not real like a star is real.
 - b. An electron is just as real as a star.
 - c. Neither a star nor an electron is as real as a dog.
14. Thus it is observed by the easy experiment of opening an artery at any time in living animals that blood is contained in the arteries naturally.
- In order that on the other hand we may be more certain that the force of pulsation does not belong to the artery or that the material contained in the arteries is not the producer of the pulsation, for in truth this force depends for its strength upon the heart. Besides, we see that an artery bound by a cord no longer beats under the cord, it will be permitted to undertake an extensive dissection of the artery of the groin or of the thigh, and to take a small tube made of reed of such thickness as is the capacity of the artery and to insert it by cutting in such a way that the upper part of the tube reaches higher into the cavity of the artery than the upper part of the dissection, and in the same manner also that the

lower portion of the tube is introduced downward farther than the lower part of the dissection, and thus the ligature of the artery which constricts its calibre above the cannula is passed by a circuit.

To be sure when this is done the blood and likewise the vital spirit run through the artery even as far as the foot; in fact the whole portion of the artery replaced by the cannula beats no longer. Moreover, when the ligature has been cut, that part of the artery which is beyond the cannula shows no less pulsation than the portion above.

Andreas Vesalius, *Fabrica*, VII.19, written in 1543, translated by S. Lambert
(also in *The Origins and Growth of Biology*, ed. Arthur Rook, p. 120)

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Method of refutation?

Classify: valid strong ————— weak

Good argument?

15. *Copernicus on whether the earth rotates*

It is claimed that the earth is at rest in the center of the universe . . . Ptolemy feared that the earth and all earthly things if set in rotation would be dissolved by the action of nature, for the functioning of nature is something entirely different from artifice, or from that which could be contrived by the human mind. But why did he not fear the same and indeed in much higher degree, for the universe, whose motion would have to be as much more rapid as the heavens are larger than the earth? Or have the heavens become infinite just because they have been removed from the center by the inexpressible force of the motion; while otherwise, if they were at rest, they would collapse? Certainly if this argument were true the extent of the heavens would become infinite. For the more they were driven aloft by the outward impulse of the motion, the more rapid would the motion become because of the ever increasing circle which it would have to describe in the space of twenty-four hours; and conversely, if the motion increased, the immensity of the heavens would also increase. Thus velocity would augment size into infinity, and size, velocity. But according to the physical law that the infinite can neither be

traversed, nor can it for any reason have motion, the heavens would, however, of necessity be at rest. Copernicus, *Dialogue on the Two Chief World Systems*, translated by Stillman Drake (also in *The Origins and Growth of Physical Science*, eds. D. L. Hurd and J. J. Kipling, pp. 106-107)

Argument? (yes or no)

Conclusion:

Premises:

Additional premises needed to make it valid or strong (if none, say so):

Method of refutation?

Classify: valid strong ————— weak

Good argument?

16. Several studies indicate that people who smoke cigarettes have an increased risk for low back pain and prolapsed disk [references given]. Individuals who have not smoked for more than a year, however, do not appear to have an increased risk, as least for prolapsed lumbar disk [reference given]. Table 6 shows that current smokers have almost twice the risk for prolapsed lumbar disk as those who have never smoked or who are former smokers. In the same study [reference given] it was estimated that the risk in current smokers is increased by about 20% for every 10 cigarettes smoked per day on the average. Possible mechanisms for the association between smoking and low back pain and prolapsed disk include decreased diffusion of nutrients into the intervertebral disk among smokers [reference given], and increased pressure on the low back from the frequent coughing experienced by many smokers.

Table 6. Estimated Relative Risk for Prolapsed Lumbar Intervertebral Disk According to Cigarette Smoking Status, Connecticut

Smoking Status	Estimated Relative Risk	95% Confidence Limits
Never smoked (referent group)	1.0	—
Current smoker (smoked in past year)	1.7	1.0–2.5
Former smoker (smoked, but not in past year)	1.0	0.6–1.7

*Relative risk = risk in those exposed to factor divided by risk in those not exposed (referent group).

Jennifer L. Kelsy, Anne L. Golden, Diane J. Mundt
Rheumatic Disease Clinics of America, vol. 16, no. 3, 1990

What causal claim is at issue?

What type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim?

17. *Sleepwalking and spontaneous parapsychological experiences: a note*

Two studies were conducted in which a questionnaire in Spanish with a true and false response format was used. It included, among other items, five questions about parapsychological experiences (waking ESP, dream ESP, apparitions, out-of-body experiences, and auras) and one question about somnambulism as follows: Some people have told me that I have sometimes walked in my sleep. The studies were conducted at the Centro Caribeno de Estudios Postgraduados, a private institute of graduate psychology studies in San Juan, Puerto Rico. In the first study, 120 questionnaires were collected by masters and doctoral students taking a graduate psychology course offered by the author. The students collected questionnaires from family, friends, and acquaintances outside the institution. In the second study, 52 questionnaires were collected by a colleague in two of his graduate courses. To measure frequency of psi [parapsychological] experiences, an index was formed from the above-mentioned five questions, assigning a score of 1 for true and a score of 0 for false answers.

The composite parapsychological experiences measure produced scores with the following characteristics: Study 1 ($N = 120$, $M = 2.03$, Range: 0–5, $SD = 1.59$); and Study 2 ($N = 52$, $M = 1.48$, Range: 0–4, $SD = 1.23$). The frequency of positive replies to the sleepwalking question was 17% for Study 1 ($N = 119$) and 24% for Study 2 ($N = 51$).

In the first study, those participants who replied affirmatively to the sleepwalking question ($N = 20$) obtained a mean of parapsychological experiences of 2.60, as compared to a mean of 1.94 for those who replied negatively, ($N = 99$), $t(117) = 1.70$, $p = .045$ (one-tailed), $r = .16$. In the second study, those with sleepwalking experiences ($N = 12$) obtained a mean of parapsychological experiences of 2.00, as compared to a mean of 1.28 for those without, $N = 39$, $t(49) = 1.80$, $p = .039$ (one-tailed), $r = .25$. The combined assessment of the p values in both studies produced a Stouffer z of 2.45, $p = .01$ (one-tailed). The combined effect size, using a Fisher z transformation [reference given] was .21. The difference between the effect sizes of Study 1 ($r = .16$) and Study 2 ($r = .25$) was not significant, $z = -.52$, $p = .603$ (two-tailed).

The results support the idea that sleepwalking is related to the frequency of parapsychological experiences. This, in turn, provides further evidence of a low-magnitude

association between parapsychological experiences and dissociation. Further work should be conducted using better measures of sleepwalking, probing for both the frequency of experiences and for the stage in the experiencer's life in which sleepwalking took place or was most frequent. Habitual sleepwalkers should also be compared to nonsleepwalkers in future studies. . . .

Carlos S. Alvarado, *Journal of Parapsychology*, vol. 62, i4, 1998

What causal claim is at issue?

What type of cause-in-population experiment, if any, was done?

Evaluate the evidence for the causal claim.

How would you further test the claim

6. a. What is positive publication bias?
 - b. Go to a recent issue of a medical journal and count how many articles report on a positive correlation and how many on a lack of a correlation. How many of the latter are responding to previously published reports of a positive correlation?

7. If an experiment has been duplicated many times and the results reproduced, why don't we accept one report of a duplication of the experiment with different results as refuting the claims of the original experiment?

8. How does the scientific community try to counter the effects of bias and mistakes?

9. a. On the internet find a definition of "confirmation bias" from a reputable source.
 - b. Is it precise enough that you could use it to determine if there is confirmation bias?

 - c. By that definition, would any of the examples in this chapter illustrate confirmation bias?

SCIENCE ARGUMENTS for ANALYSIS

1. The mass of the water of the sea presses with its weight that part of the earth which is beneath it; if it surrounded the whole earth instead of only a part, its weight would press upon the whole surface of the earth. In the same way, since the mass of the air covers the whole face of the earth, its weight presses upon the earth at every point.

Blaise Pascal, *The Physical Treatises*, (Treatise on the Weight of the Mass of Air, Chapter 1) pp. 242–3, *The Origins and Growth of Physical Science*

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

2. To make it clear how the weight of the mass of air causes the resistance encountered in opening a bellows from which the air is excluded, I will point to a similar resistance due to the weight of water. It needs only to be remembered, as I said in the *Equilibrium of Liquids*, that if a bellows with a tube twenty or more feet long is set in a tank full of water with the tip of the nozzle extending above the surface, it is hard to open; and the

greater the depth of water above it the harder it is to open. This is obviously due to the weight of the water above: for if there is no water there, it is easy to open. The more water you pour in, the greater is the resistance, which is always equal to the weight of the water sustained. The reason is that the nozzle projects above the water, and therefore excludes it, the bellows cannot be opened without raising and holding up the whole mass of water. The water that is pushed aside in the act of opening cannot enter the bellows, is forced to find room elsewhere, and thus raises the water level—a process attended with some difficulty—whereas if the bellows were so perforated that water could get in, it could be freely opened and closed because the water could enter through the perforations as fast as room was made for it, and would not, therefore, be lifted. I do not think that anyone can be tempted to ascribe this resistance to the abhorrence of a vacuum. It is absolutely certain that it is due solely to the weight of water.

Now what we say about water must be taken to apply to any other liquid; for if the bellows is set in a vessel full of wine, the same resistance to its opening will be experienced; likewise with milk, oil, quicksilver, and indeed any liquid whatsoever. Thus it is a general rule and a necessary effect of the weight of liquids, that if a bellows is so immersed in any one of them that the liquid is excluded from its interior, the weight of the liquid above makes it impossible to open the bellows without overcoming the resistance due to the fact that it has to be lifted. Applying this general rule to air in particular, it follows as a certain consequence that when a bellows is so sealed as to exclude all air, the weight of the air above prevents its opening without overcoming some resistance: since it cannot be opened without lifting the whole mass of air. But as soon as a perforation is made in the bellows, it can be freely opened and closed, because now the act of opening no longer lifts the mass of the air. All this is completely analogous to the action of the bellows immersed in water.

Whence it is evident that the difficulty in opening a sealed bellows is but a particular case of the general rule that it is hard to open a bellows in any liquid whatsoever that is prevented from entering it.

Blaise Pascal, *The Physical Treatises*, (Treatise on the Weight of the Mass of Air, Chapter II, part 2) pp. 249–250, *The Origins and Growth of Physical Science*

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

3. There is great interest in the possibility that animals may share with us psychological states such as consciousness and self-awareness, as well as the ability to perceive cause and effect relationships and to base behavior upon intentions. Coupled with this great interest, however, is controversy. To deal with these topics at the human level is not without problems, so it is understandable that to attempt definition and study of them at the animal level is certain to cause disagreement. In fact, there are respectable quarters of the fields of psychology and animal behavior that would hold these mental states to be at best epiphenomena [events or things that occur with, but are neither cause nor effect] and at worst nothing but irrational projections of subjective, anthropocentric flights of fantasy that explain nothing. But considering the degree to which animals are similar to us in so many other ways, it is reasonable to suspect that they might also have certain mental states quite similar to ours, and if this is so then it is very important that we explore them. As we attempt to do so, we might learn how to better understand these states that seem to control so much of our own lives.

All forms of life are, of course, unique—it is their uniqueness that defines their taxonomy. Nonetheless, no life form is without similarities to other forms, and it is generally acknowledged that similarity increases with relatedness. This frame of reference is broadly accepted for physical attributes—apes look more like humans than do monkeys, for example. It is less generally recognized that the same principle holds for psychological attributes. Just as evolution has brought about emergent physical characteristics, so it has surely brought about emergent psychological characteristics—both evolve together as they contribute to survival and reproductive success. And just as physical similarity increases with genetic relatedness, it is reasonable to believe that psychological processes become more similar with genetic relatedness. Therefore, whatever we believe about the important attributes of human cognitive processes, many of the same conclusions are probably true for other animals, and, in particular, they are likely to be true for animals closely related to humankind. This means that they are more likely to be true for the ape than for any other animal. Whatever we ascribe to the

dimensions of our experience—awareness, purposeful communication, perception of cause and effect relationships, the ability to formulate rules and principles from our experience, the ability to base our actions on intentions, and so on—we are most likely to find traces of these abilities in the psychological characteristics and behaviors of the animal that is most closely related to us, the chimpanzee (*Pan troglodytes* and *Pan paniscus*).

Duane M. Rumbaugh and Sue Savage-Rumbaugh,
in *Animal Intelligence*, eds. Hoage and Goldman, pp. 57–58

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

4. Every species of plant or animal is determined by a pool of germ plasma that has been most carefully selected over a period of hundreds of millions of years.

We can understand now why it is that mutations in these carefully selected organisms almost invariably are detrimental. The situation can be suggested by a statement made by Dr. J. B. S. Haldane: my clock is not keeping perfect time. It is conceivable that it will run better if I shoot a bullet through it; but it is much more probable that it will stop altogether. Professor George Beadle, in this connection, has asked: "What is the chance that a typographical error would improve *Hamlet*?"

Linus Pauling, *No More War*

Argument? (yes or no)

Conclusion (if unstated, add it):

Comparison:

Premises:

Similarities:

Additional premises (make the comparison explicit, add a general principle):

Classify (with the additional premises): valid strong ————— weak

Good argument? (look for differences or ways the general principle could be false)

- It's good (passes the three tests).
- It's valid or strong, but you don't know if the premises are true, so you can't say if it's good or bad.
- It's bad because it's unrepairable (state which of the reasons apply).

CHAPTER 5S

1. Explain how the map of Minersville, Utah, is used to reason by analogy.
2. Does the use of the kinetic theory of gases to make true predictions show that its assumptions are true? Explain.
3. Why can we use Newton's laws of motion even though we know they are false?
4. What does it mean to say that a true prediction confirms a theory?
5. Several similar predictions are made from a theory, and by experiment they are all shown to be false. Explain under what circumstances we should then abandon the theory. If we do not abandon the theory, explain how the false predictions can be used to make a better theory.

6. How could one confirm astrology?

7. Explain why theories are tools, not statements of facts.

8. Evaluate the following and explain what is meant by “animal models.”

Rats with damaged brains could help forgetful humans

Rats with amnesia have provided a new insight into the biochemical basis of forgetfulness. The finding may lead to drugs for treating memory loss associated with aging, say researchers in the US.

Researchers have known for decades that they can make rats forgetful by creating lesions in their fornix, a bundle of nerves in the brain connected to the hippocampus. When normal rats learn to avoid a dark chamber that gives them an electric shock through their feet, they remember for several days to choose the safe, bright chamber. But rats with lesions on their fornix only remember to avoid the dark chamber for a few hours, suggesting that they can form short-term memories but not long-term ones.

No one knew how the fornix consolidated long-term memories, but a new experiment suggests a biochemical explanation. Cristina Alberini and her colleagues at Brown University in Providence, Rhode Island, decided to look at how fornix lesions affect the activation of a protein called CREB in the hippocampus during learning. CREB can exist in “active” or “inactive” forms, and previous studies in sea snails and fruit flies suggested that active CREB is essential for the creation of long-term memories.

In rats with no fornix lesions trained in the light and dark chambers, hippocampal levels of CREB activation soared to around 150% of levels in control animals that had received no training. These levels remained high for as long as nine hours after training.

Rats with fornix lesions, however, showed no increase in CREB activation compared with controls (*Nature Neuroscience*, vol. 2, p. 309). “The importance of this finding is that for the first time, we now know that CREB-dependent response in the hippocampus is modulated via the fornix,” says Alberini. “This provides a possible molecular basis for amnesia associated with fornix and related structures.”

In November last year, Daniel Storm and his colleagues at the University of Washington in Seattle also showed that training rats activates CREB in their hippocampus as they lay down long-term memories. But while that study showed CREB activation in rats who could remember, this one shows that activation fails to occur in forgetful rats. “It’s the other side of the coin and it’s a good piece of work,” Storm says of Alberini’s latest research.

“What is new is the disappearance of CREB with the amnesiac mode,” agrees Jerry Yin of Cold Springs Harbor Laboratory in New York. Four years ago, Yin and a colleague Tim Tully gave fruit flies the equivalent of photographic memory by genetically engineering them to produce extra CREB.

“There’s a lot of us that believe it’s a very good drug target site,” says Storm, who advises a company called Helicon Therapeutics, founded by Yin and Tully. The company hopes to develop drugs that treat memory disorders by boosting CREB activity. After screening around 200,000 drug candidates, it recently found one promising enough to test in simple animal models. “It looks very hopeful,” says Yin.

Nell Boyce, *New Scientist*, no. 2179, March 27, 1999

9. Give a detailed description of a model used in some area of science.
 - a. State the similarities that can be used in making deductions.
 - b. State what deductions have been made and confirmed from the model.
 - c. Give at least one example of a difference between the model and what’s being modeled.
 - d. State a claim that cannot be deduced because of that difference.

Here are some models you could choose to describe.

- William Harvey’s model of the circulation of blood compared to a pump.
- The tinker-toy model of the structure of crystals.
- Blueprints used in architecture.
- The mathematical model used in economics of supply and demand.
- The wave model of light.
- The Watson-Crick double-helix model of DNA (include why Watson and Crick abandoned the triple-helix model).

CHAPTER 6S

1. Evaluate the following argument for why we should believe the law of gravitation and the laws of Galileo and Kepler.

If you accept the law of gravitation, the laws of Galileo and Kepler, the lunar motions and the tides will, as a matter of course, be systematically explained and cast into a universal mechanics.

But why should I? The empirical truth of the law is not directly obvious, nor can what it asserts be easily grasped.

Because if you accept it all these things will, as a matter of course, be systematically explained and cast into a universal mechanics. What could be a better reason?

Russell Norwood Hansen, *Patterns of Discovery*

For Exercises 2 and 3 fill in the blanks.

2. The call of a male Majorcan midwife toad keeps females ripening their eggs in anticipation of sex, a new study shows.

Jerry Lea, a postgraduate student at the Open University in Milton Keynes, has studied three groups of female Majorcan midwife toads, *Alytes muletensis*. All the toads had ripening eggs in their ovaries. To one group, Lea played a synthesized version of the male calls. A second group heard the call of a different species, while the third heard no calls.

After a month, females from the first group had many eggs that were ripe and ready for ovulation, while the females in the other two groups had hardly any ripe eggs. Lea speculates that stimulation of the female's auditory nerve fibres causes hormone release in the part of the brain that controls reproductive behavior.

The finding makes sense given the sex roles of Majorcan midwife toads, says Lea. The males are in short supply because after fertilising the eggs they are celibate for a month while they raise the brood on their own. "The males carry the eggs down the cliff faces to the pools where they develop into tadpoles," says Lea.

Meanwhile, females squabble over remaining males, who advertise their readiness to mate by calling. Some females don't find a partner for the entire breeding season.

There's no point in wasting energy ripening eggs that have no hope of being fertilised, Lea says.

Alison Motluk, *New Scientist*, May 15, 1999

Explanation? (yes or no)

Claim being explained

Claims doing the explaining

Inferential or teleological? If teleological, can it be rewritten as an inferential?

Causal? (yes or no)

Evaluation

2 *CHAPTER 6S Explanations in Science*

3. Like multiple sclerosis, poliomyelitis in its paralytic form was a disease of the more advanced nations rather than of the less advanced ones, and of economically better off people rather than of the poor. It occurred in northern Europe and North America much more frequently than in southern Europe or the countries of Africa, Asia or South America. Immigrants to South Africa from northern Europe ran twice the risk of contracting paralytic poliomyelitis than South-African-born whites ran, and the South-African-born whites ran a much greater risk than nonwhites did. Among the Bantu of South Africa paralytic poliomyelitis was rarely an adult disease. During World War II in North Africa cases of paralytic poliomyelitis were commoner among officers in the British and American forces than among men in the other ranks. At the time various wild hypotheses for the difference were proposed; it was even suggested that it arose from the fact that the officers drank whiskey whereas men in the other ranks drank beer!

We now understand very well the reason for the strange distribution of paralytic poliomyelitis. Until this century poliomyelitis was a universal infection of infancy and infants hardly ever suffered paralysis from it. The fact that they were occasionally affected is what gave the disease the name “infantile paralysis.” With the improvement of hygiene in the advancing countries of the world more and more people missed infection in early childhood and contracted the disease for the first time at a later age, when the risk that the infection will cause paralysis is much greater.

This explains why the first epidemics of poliomyelitis did not occur until this century and then only in the economically advanced countries.

G. Dean, “The multiple sclerosis problem,” *Scientific American*, 1970

Explanation? (yes or no)

Claim being explained

Claims doing the explaining

Inferential or teleological? If teleological, can it be rewritten as an inferential?

Causal? (yes or no)

Evaluation

4. “Why do birds fly? Because it was a useful trait that helped them survive.”
- This is an example of a teleological explanation. What unstated assumptions are needed?
 - How does the theory of evolution avoid invoking a guiding intelligence in its (apparently) teleological explanations?
5. In the 17th century it was believed that worms and flies were spontaneously generated from mud and rotting or putrefying material. Here is how Francisco Redi argued against that.

I began to believe that all worms found in meat were derived directly from the droppings of flies, and not from the putrefaction of meat, and I was still more confirmed in this belief by having observed that, before the meat grew wormy, flies had hovered over it, of the same kind as those that later bred in it. Belief would be in vain without the confirmation of experiment, hence in the middle of July I put a snake, some fish, some eels from the Arno and a slice of milk-fed veal in four large wide-mouthed flasks; having well closed and sealed them, I then filled the same number of flasks in the same way, only leaving these open. It was not long before the meat and fish, in these second vessels, became wormy and flies were seen entering and leaving at will; but in the closed flasks I did not see a worm though many days had passed since the dead flesh had been put in them. Outside on the paper cover there was now and then a deposit, or a maggot that eagerly sought some crevice by which to enter and obtain nourishment. Meanwhile the different things placed in the flasks had become putrid and stinking.

Francisco Redi, *Experiments in the Generation of Insects* (1688), translated by Mab Bigelow, 1909, in *The Origins and Growth of Biology*, ed. Arthur Rook

- What other explanation could there be for why there were no worms in the sealed containers?
- What other experiment(s) could you perform to show whether Redi is right? Remember that in Redi’s time reliable microscopes were not available. (See Redi’s paper for the other possibilities that Redi thought of.)

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Evaluate Marvin's response. What standards have you used? Justify the use of those standards in this context.

4. Evaluate the following argument:

If the Big Bang theory of the universe is correct, then there was a beginning to the universe. Everything that begins to exist must have a cause. So the universe must have a cause. Therefore, God exists.

5. Dick tried the following test with Spot every day for the last six weeks.

At mealtime you might put out two feedpans instead of one for your dog or cat. The feedpans should be located so that they are equally convenient to the animal. They should be placed six to eight inches apart. Both should contain the same amount of food and avoid using a feedpan the animal is familiar with. Pick the dish you wish the animal to eat from and concentrate on it. In this test, the animal has a 50% chance of choosing correctly half the time. You may want to keep a record of his responses over several weeks to determine how well your pet has done.

Martin Ebon, ed., *Test Your ESP*

Dick found that Spot chose the right dish 30 of the 42 times. Now he's sure that Spot and he can communicate telepathically. Did his experiment really confirm his explanation for why Spot choose the right dish so often?

6. Evaluate the following experiment and the criticism of it.

Strangers' prayers don't benefit health, study finds

Does praying for a sick person's recovery do any good?

In the largest scientific test of its kind, heart surgery patients showed no benefit when strangers prayed for their recovery.

And patients who were being prayed for had a slightly higher rate of complications. The researchers could only guess why.

Several scientists questioned the concept of the study. Science "is not designed to study the supernatural," said Dr. Harold G. Koenig, director of the Center for Spirituality, Theology, and Health at the Duke University Medical Center. The researchers emphasized that their \$2.4 million study could not address whether God exists or answers prayers made on another's behalf. The study could only look for an effect from the specific prayers offered as part of the research, they said.

The study "did not move us forward or backward" in understanding the effects of prayer, said Dr. Charles Bethea, a co-author and cardiologist at the Integris Baptist Medical Center in Oklahoma City. "Intercessory prayer under our restricted format had a neutral effect."

Researchers also said they didn't know why patients who knew they were being prayed for had a higher rate of complications than patients who only knew that such prayers were a possibility. Maybe they became anxious by the knowledge that they had been selected for prayers, Bethea said: "Did the patients think 'I am so sick that they had to call in the prayer team?'"

The researchers said family and friends shouldn't be discouraged from telling a patient about their plans to pray for a good recovery. The study only focused on prayers by strangers, they said.

It's the largest and best designed study ever to test the medical effects of intercessory prayers—praying on behalf of someone else. But critics said the question of God's reaction to prayer simply can't be explored by a scientific study.

The study followed about 1,800 patients at six medical centers. It was financed by the Templeton Foundation, which supports research into science and religion, and one of the participating hospitals. It will appear in Tuesday's issue of the *American Heart Journal*.

The research team tested the effect of having three Christian groups pray for particular patients, starting the night before surgery and continuing for two weeks. The volunteers prayed for "a successful surgery with quick, healthy recovery and no complications" for specific patients.

Malcolm Ritter, The Associated Press, March 31, 2006

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7. Compare:

- Latin prayers said by a priest that the people in the church don't understand.
- Hebrew prayers said by a rabbi that the people in the synagogue don't understand.
- Ritual incantations said by a magician that those attending the ceremony do not understand.