

## ANSWERS TO SELECTED EXERCISES

### CHAPTER ONE - INTRODUCTION TO CRITICAL THINKING

No answers are given for the exercises in chapter one. These exercises are best used as the focus of essays and discussions to get the class members involved in the course process and to make sure they understand what the course is about and what they can expect to gain from a course that emphasizes critical thinking.

#### Chapter One Self-test

1 T	7 T	13 F	19 F	25 F	31 T
2 T	8 T	14 T	20 T	26 F	32 T
3 F	9 F	15 F	21 T	27 F	33 F
4 T	10 F	16 F	22 F	28 T	34 T
5 F	11 F	17 F	23 F	29 T	35 F
6 T	12 F	18 F	24 F	30 T	

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### CHAPTER TWO - LANGUAGE AND CRITICAL THINKING

#### EXERCISES 2-1

A. 2. (old): ‘dilapidated’, ‘antiquated’, or ‘aged’ (more negative); and ‘patriarchal’, ‘seasoned’, or ‘antique’ (more positive). 7. (plan): ‘scheme’ or ‘plot’ (more negative); ‘organize’ or ‘devise’ (more positive). 10. (take): ‘steal’ (more negative); ‘appropriate’ (more positive).

B. 1. (stink): odorous; 4. (shy): restrained; 6. (murder): ‘termination’.

#### EXERCISES 2-6 C

1. This ad makes it sound as if ‘chemicals’ cannot be used for bad purposes, like making napalm or other chemical weapons.

6. What could it possibly mean for a cigarette to taste as good as it looks? The expression here has no cognitive meaning, but it sounds like a good thing.

11. Why should hair *shine*?

#### EXERCISES 2-7

1. ‘Brutality’ is vague because there is no clear and definite boundary separating acts of brutality from acts which do not involve brutality. The expression ‘police brutality’ might be made clearer by providing some criteria as to what constitutes police brutality. However, most criteria--such as "the use of unnecessary force causing pain or discomfort to one being arrested"--will probably lead to other vague terms--such as ‘unnecessary force’--needing clarification. Best might be a partial list of the kinds of cases which constitute brutality, such as the use of deadly force on an unarmed suspect or the breaking of a suspect’s arm while putting on handcuffs. Any criteria, however, are bound to be vague to some extent.

4. This kind of claim is frequently made by government officials. 'Near future' is the kind of expression which could be replaced with a more specific one, such as one which gives a date or range of dates (e.g., 'by next December 1st' or 'between next June and next October').

### EXERCISES 2-8

1. This is a good definition of 'cetacean'.
2. This definition is too broad. It would include in its denotation many persons who are not demagogues, namely, those with charisma who do not use their charm and powerful personality to play upon the basest fears and prejudices of people, which is what a demagogue does.
3. On one level, this definition may be good, namely, on the level of the novel: if the definition fits the character giving it, then the definition is a good one. However, as a definition considered in and of itself, this one is too narrow. It excludes from its denotation what most people would consider to be essential to free speech, namely, speech which criticized the government.
4. This definition would be both too broad and too narrow. It is too broad because it includes in its denotation people who drink two or more beers a day and are not alcoholics (such as sumo wrestlers). It is too narrow because it excludes from its definition those who drink other kinds of alcoholic beverages besides beer but are alcoholics. It also excludes those who are alcoholics and who drink no alcohol!
5. This definition is packed with theoretical assumptions and implications. It excludes human fetuses and comatose humans from its denotation. This may be acceptable to some people, but it is a consequence of the definition which might lead others to reject it.
6. This is a common, but greatly flawed definition of 'spirit'. It is too vague because it tells us what a spirit is NOT rather than what a spirit is.
7. Many students will find this definition obscure. A careful examination of it, however, reveals that it is a humorous way of saying that the word 'depression' has such great negative emotive content that economists and politicians would rather use a milder word, 'recession.' (By the way, Galbraith is aware that economists give technical definitions of the two terms and consider a recession and a depression to be distinct.)
9. This definition of 'aggression' is too narrow; it excludes *verbal* attacks, for example.
18. This definition is too vague. What is *a reasonable man in present-day Western society*?

### EXERCISE 2-9

1. stated as a fact and is a strong claim.
2. stated as a fact and is a very strong claim
4. stated as a fact and is a very strong claim.
5. stated as a fact and is a very strong claim.
6. stated as an opinion and is a strong claim.
7. stated as a fact and is a very strong claim.
9. stated as a fact and is a very strong claim.
11. stated as an opinion and is a strong claim
15. stated as an opinion is a weak claim
16. stated as facts and stated weakly. (Don't be misled by the use of *will*, which seems to indicate a strong claim. The weasel words *as much as* make the claim a weak one.)
17. stated as an opinion and is a weak claim
21. stated as a fact and stated very strongly
25. stated as an opinion and stated weakly
30. stated as a fact and stated very strongly

**EXERCISE 2-10**

1. F	9. T	17. T	25. T	33. F	41. T
2. F	10. T	18. T	26. T	34. T	42. F
3. T	11. T	19. F	27. T	35. T	43. F
4. T	12. T	20. T	28. T	36. T	44. T
5. F	13. T	21. F	29. F	37. T	45. T
6. F	14. T	22. T	30. T	38. T	
7. T	15. T	23. F	31. T	39. T	
8. T	16. T	24. T	32. F	40. F	

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**CHAPTER THREE - SOURCES****EXERCISES 3-1**

1. What president hasn't made such claims? Such claims are about as trustworthy as long range weather forecasts. The subject matter is very controversial, very complex, and what is being predicted is on shaky grounds. Most presidents are not economists (so this source is probably not an expert), but even if an economist made this prediction, it would be wise to take it with a grain of salt (i.e., suspend judgment). Note that these weakly stated empirical evaluations are couched in vague language: 'as much as' leaves room for everything from 0 to the percentages stated. Furthermore, no deadline is stated. When are these effects on inflation and unemployment supposed to be felt? Finally, the likelihood of being able to show that any change in inflation or unemployment was caused by the president's policies is slim, indeed. The claims are practically meaningless.

3. expert; biology is a non-controversial field (experts agree on fundamental facts and methodologies); she is stating her opinion and it is a weak one, a statement of *mere possibility*, so I would accept it based upon the general knowledge that environmental pollution is a common problem in our society; it seems reasonable to believe that the state of California requires that its biologists have the proper degrees and credentials; to know more about this particular state biologist's reliability I would need to know her reputation in the field.

6. No special expertise is needed for this claim. If the newspaper is reliable, there would normally be no reason to doubt this claim which are put forth as facts. (Note: there are 2 facts claimed here: (1) that there were 3 stabbings; and (2) that inmates stabbed inmates. Either of the claims could be inaccurate, of course; and, barring any special need to believe one way or the other on this issue, it might be wise to suspend judgment until there is further corroboration from other reports; if the story has a byline you can tell who authored it and you would need to know that writer's track record on accuracy to determine his or her reliability; otherwise, you must consider only the reputation and track record of the newspaper itself.

8. non-expert; stated as a fact and stated strongly; his claim is credible (it is, unfortunately within the realm of possibility that our government would do such a thing) but I would suspend judgment on it because the source should be considered unreliable due to the strong possibility that it is propaganda; I would not concern myself with this source any further but would seek out more objective parties for further information.

11. expert; controversial field; his claim is stated as a fact but it is a metaphysical claim; thus, even after determining the reputation of this philosopher, I should study other equally reputable philosophers with different views on the subject before making up my mind on this issue.

13. non-expert. It seems to me that Mr. Coleman ought to seek other means of employment if he thinks comets are causing teenage suicides and airplane crashes. Mr. Coleman's opinions about the connection between Halley's comet and teenage suicides and airline crashes are incredible and ought to be rejected. He may be an expert on suicide prevention, but his claims are well outside of that field. These tragic events also coincide with the fall from first to last place of the Chicago Cubs and with Ronald Reagan's term of office (and with many other things as well). I would not concern myself further with this source on astrological or paranormal matters.

15. you are told the source is an expert; the field of economics is controversial; the claim is clearly this person's

opinion stated as a fact, but it is stated weakly (note the weasel words "as much as"). The expert is saying that interest rates will not drop by more than ten percent in the next six months--a pretty safe claim under most conditions. I would say that if one has no knowledge of interest rates that one should suspend judgment on the claim. But anyone knowing the history of interest rates in recent years would know that the expert is asserting something about as extraordinary as claiming that the average price of a new home will not drop by more 10 % next month. That would be a very weak claim, indeed. One shouldn't reject it. To suspend judgment seems unnecessary. A knowledgeable person would not ask for proof of such a claim and would accept it because it is a pretty safe bet. To determine this person's reliability, one would have to establish that he or she is really a qualified economist. One would also want to know his or her track record in the area of predications about interest rates and other related matters.

19. Most likely a non-expert (journalist) is reporting on the claims of experts (the doctors and scientists). Both the non-expert and the experts are putting forth their claims as facts. Medicine is a mixed field; some areas are controversial and other areas are not. There would normally be no reason to doubt the report that the doctors made the claim they are said to have made about the over-use of antibiotics. The fact that the doctors issued statements in several cities around the world indicates their belief in the urgency of the message. But should one believe--solely on the basis of this report--that antibiotics are being overused throughout the world, and because of this are losing their disease-fighting power? Having no reason to doubt their claim and having some experience with antibiotics becoming ineffective because of extended use, I would accept the claim as probably true. If you have no knowledge of antibiotics, you should suspend judgment until you learn a little more. You would not likely be able to determine the reliability of each of these expert sources. See the answer to number 6 above for determining the reliability of the journalist.

23. Expert; controversial field; stated as a fact but the claim is a self-assessment of her evidence and is a strongly asserted opinion. One ought to suspend judgment, regardless of the reliability of the source, until one sees the evidence. There is no reason to suspect that the source here is unreliable. Her degrees, credentials, reputation should be considered, but opposing experts should also be considered.

25. Woodford is presented as an expert speaking in his field. The claim he makes about melanin and marijuana having a similar chemical structure is stated as a fact and is not likely to be in a controversial area of chemistry, since it involves only comparing the chemical structure of two substances. It would therefore be reasonable to accept it as probably true. Woodford is also an expert in drug abuse court cases. His conclusion that drug urinalysis *may* be inaccurate for dark-skinned people is equally reasonable, as it is a weakly stated empirical opinion by an expert. The reliability of a chemist would be determined by degrees, credentials, experience and reputation.

### EXERCISE 3-3

	10 T	20 T	30 T	39 F
1 T	11 F	21 F	31 F	40 T
2 T	12 T	22 T	32 T	41 T
3 F	13 F	23 T	33 F	42 T
4 T	14 F	24 T	34 T	43 F
5 T	15 T	25 T	35 T	44 T
6 T	16 F	26 F	36 T	45 F
7 F	17 T	27 T	37 T	46 F
8 T	18 T	28T	38 T	
9 T	19T	29 T		

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## CHAPTER FOUR - IDENTIFYING ARGUMENTS

### EXERCISE 4-1

1. This is a complete sentence which makes a statement, so it could be used as premise or a conclusion in an argument.

5. This is a fragment of a sentence; it does not make a statement, so it could not be a premise or a conclusion in an argument.

8. This sentence makes a statement. It could be used as a premise or a conclusion.

12. This is a fragment of a sentence. It does not make a statement. It cannot be used as a premise or a conclusion.

15. This sentence makes a statement. It could be used as a premise or a conclusion.

#### EXERCISE 4-2

1. premise : Justice is nothing but the way the rich protect their interests.

conclusion: Justice can't exist for the poor.

premise indicator : because

5. premise : Size is irrelevant to intelligence.

conclusion : You are wrong in stating that women must be less intelligent than men.

premise indicator : because

conclusion indicator : it is necessarily the case that

10. premise: He died before his twentieth birthday.

conclusion: King Tutankhamen was not a great king.

premise indicator: because

14. premises: Astronomy was born of superstition; eloquence of ambition, hatred, falsehood and flattery;

geometry of avarice

conclusion: The arts and sciences owe their birth to our vices.

conclusion indicator: Thus

#### EXERCISE 4-3

There are several correct formulations for each of these.

1. Since immorality has to stop somewhere and because decent people have to start standing up for their rights, nude bathing should not be allowed.

6. There is nothing in the Bible which forbids slavery. The Bible is the word of God. Therefore, slavery was ordained by God.

#### EXERCISE 4-4

1. premise : "Such a law would allow government to substitute its laws for our freedom to make individual decisions."

premise : "It didn't work with liquor prohibition"

premise : "it won't work with smoking prohibitions."

conclusion : "There should be no law which regulates when and where an individual may smoke."

6. premise : "My first four husbands were insecure babies"

conclusion : "Men are all insecure babies"

9. premise "As Superintendent of Schools, you have a vested interest in the funding bill before this legislative committee."

conclusion: "Your arguments for increased funding of the public school system may be justifiably ignored."

12. premise: No one ever did anything he or she did not want to do.

conclusion: If Smith robbed that bank, then he wanted to do it.

15. premises: If fatalism is true, then everything that happens has to happen. If no one can change what must happen, then there is no sense in worrying about what happens, whether it is good or bad.

conclusion: Fatalism should take away our worries.

**EXERCISE 4-5 A**

1. premise : It might lead to psychosomatic illness or it might result in anti-social behavior"

conclusion : "Holding in one's feelings in not healthy"

premise indicator : "since"

7. premise : "Either it will rain or it will snow."

premise : "It will not snow."

conclusion : "it will rain."

conclusion indicator : "Therefore"

11. premises: If the President is telling the truth then the Russians will not invade Poland. The Russians will invade Poland.

conclusion: The President is lying.

conclusion indicator: So

12. premises: Either the Germans not will quit the United Nations or the moon will turn to green cheese. The moon will not turn to green cheese.

conclusion: The Germans will not quit the United Nations.

conclusion indicator: it follows that

**EXERCISE 4-5 B**

1. The conclusion of this argument is 'There must be simple substances.' 'Because' and 'for' are indicators. 'There are composites' and 'a composite is nothing else than a collection or aggregate of simple substances' are premises.

2. This is not an argument.

3. This is not an argument; it is a conditional statement.

4. This is not an argument.

8. The conclusion of this argument is 'memory should not be trusted as the sole judge of the truth of any claim.' The premise is 'memory is fallible and memory sometimes is constituted by later acts.' 'Since' is a premise indicator.

13. The premise of this argument is 'She did well on the exam.' The word 'so' is a conclusion indicator. The conclusion is 'she will graduate.'

16. This is a question. It is neither an argument, nor an explanation.

19. The conclusion of this argument is '[W]e ought mutually to tolerate one another.' 'Because' is a premise indicator. 'We are all weak, irrational, and subject to change and error' is a premise.

21. This is not an argument; it is a conditional statement.

25. This is not an argument.

27. The conclusion of this argument is 'there must be life on Mars.' 'Since' is a premise indicator. The premise is 'nobody has been able to prove there isn't life there.'

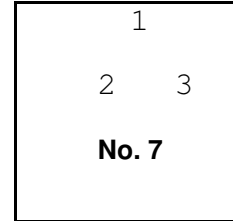
**EXERCISE 4-7**

In the answers to this set of exercises, premise indicators are *italicized*, conclusion indicators are **boldfaced**.

1. "Since [1][beauty] is no creature of our reason...[and] since [2]it strikes us without reference to use...**we must conclude that** [3] beauty is, for the greater part, some quality in bodies acting mechanically upon the human mind by the intervention of the senses."

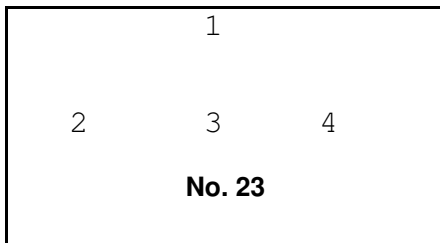
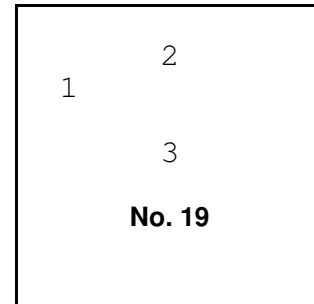
6. This is not an argument.

7. [1]Women are directly fitted for acting as the nurses and teachers of our early childhood *by the fact that* [2]they are themselves childish, frivolous and short-sighted;[3]in a word, they are big children all their life long....



12. [1]No educated man stating plainly the elementary notions that every educated man holds about the matters that principally concern government could be elected to office in a democratic state, save perhaps by a miracle. [2]His frankness would arouse fear, and those fears would run against him;[3]it is his business to arouse fears that will run in favor of him.

19.[1]I just don't see why multicultural education is so popular or why people think it is value-free. [2]Multicultural education is not value-free, despite what its proponents say. [3]It teaches children to respect and accept the evil values and practices of other cultures such as genital mutilation of young girls in Africa and handing out death sentences for blasphemy in Iran.



23. [1]Restitution, rather than imprisonment should be required in those cases where property damage is the issue; *for*, [2]sending a person to prison ought to be avoided whenever possible and [3]the victim of a property crime is likely to be much more satisfied with our criminal justice system if he or she is repaid. [4]If a criminal goes to prison, he is not going to be able to make restitution. {Note that this argument assumes that the victim of property crime is due some sort of satisfaction. }

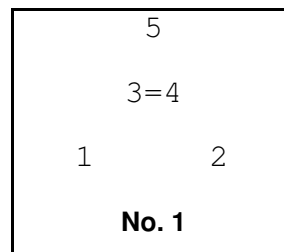
28. This is not an argument.

### EXERCISE 4-8

1.1 = a; 1.2 = a; 1.3 = c; 1.4 = c; 1.5 = b;

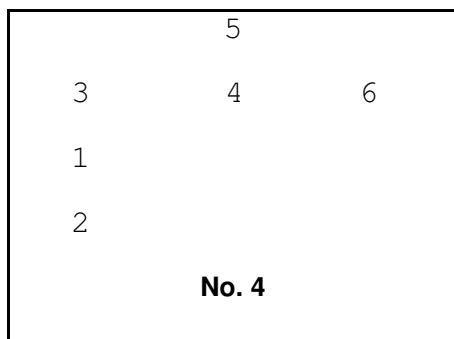
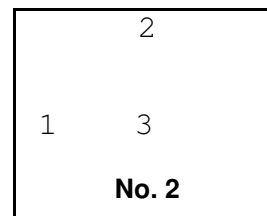
1.6 = c ('therefore' is a conclusion indicator; 'since' is a premise indicator).

Note: Statements 3 and 4 are identical. Thus, here the same statement is used as both a premise and a conclusion.

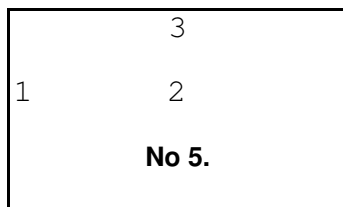


2.1 = d; 2.2 = b; 2.3 = a 2.4 = a ('for').

Note: Statement 1 is neither a premise nor a conclusion, so it is not diagrammed as being linked to statements 2 and 3.



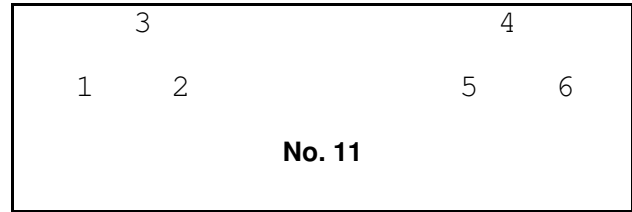
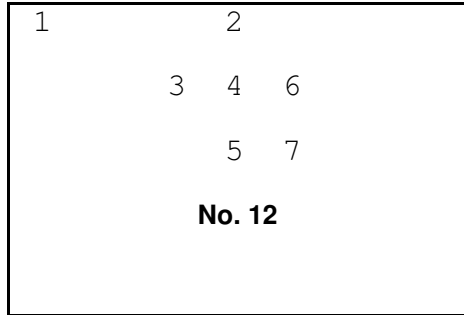
4.1 c (statement 2 supports 1 and 1 supports 3); 4.2 = a; 4.3 = c (statement 3 is supported by statement 1 and supports statement 5); 4.4 = a; 4.5 = b (this is the main conclusion); 4.6 = a; 4.7 = c ('for' is a premise indicator; 'so' is a conclusion indicator)



5.1 = d; 5.2 = a; 5.3 = b; 5.4 = b ('therefore') Note: This argument has an unstated premise (UP): "There is disagreement about the Truth in the Holy Book."



11. There are two arguments in this passage. Argument 1 consists of statements 1,2 and 3.  
 11.1 = a; 11.2 = a; 11.3 = b;



Argument 2 consists of statements 4,5 and 6. 11.4 = b; 11.5 = a; 11.6 = a; 11.7 = c ('thus' is a conclusion indicator; 'since' is a premise indicator)

12.1 d; 12.2 = b; 12.3 = a; 12.4 = c; 12.5 = a; 12.6 = c; 12.7 = a; 12.8 = a ('for').

Note that statement 1 is background information necessary for understanding the meaning of statement 2.

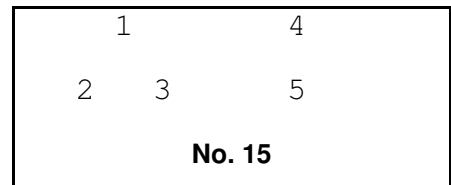
15. There are two arguments in this passage. Argument 1 consists of statements 1,2 and 3.

15.1 = b; 15.2 = a; 15.3 = a;

Argument 2 consists of statements 4,5 and 6.

15.4 = b; 15.5 = a; 15.6 = a;

15.7 = a (both arguments use 'for')



**EXERCISE 4-9**

- |         |          |          |          |          |
|---------|----------|----------|----------|----------|
| 1 true  | 8 true   | 15 true  | 22 false | 29 true  |
| 2 false | 9 true   | 16 true  | 23 true  | 30. true |
| 3 true  | 10 false | 17 true  | 24 true  | 31. true |
| 4 true  | 11 true  | 18 true  | 25 false | 32. true |
| 5 false | 12 true  | 19 true  | 26 false | 33. true |
| 6 false | 13 false | 20 false | 27 true  | 34. true |
| 7 true  | 14 true  | 21 true  | 28 false | 35. true |

**CHAPTER FIVE - EVALUATING ARGUMENTS**

**EXERCISE 5-1 A**

1. Valid by modus tollens.
3. Valid by modus ponens.
6. Invalid; affirming the consequent.
12. Invalid; denying the antecedent.
14. Valid by hypothetical syllogism.
19. Valid by disjunctive syllogism.

**EXERCISE 5-1 B**

1. 'He is responsible for the accident' is the implied conclusion, derived by applying modus ponens to the two stated claims.
4. The conclusion, "it's not going to rain," could be validly inferred by modus ponens, assuming as an unstated premise 'If she didn't bring her umbrella then it's not going to rain.' This conclusion could also be validly inferred by disjunctive syllogism, assuming as an unstated premise 'Either she brought her umbrella or it's not going to rain.'
7. 'The soul must be made up of atomic particles' is the implied conclusion, derived by applying modus ponens to the two stated claims.
10. 'If I buy a car, it means bye-bye education,' derived by applying hypothetical syllogism to the two stated claims.

**EXERCISES 5-2 A**

1. ad populum and appeal to guilt
3. argument from ignorance
5. ad hominem
8. ad hominem
10. questionable assumption
12. appeal to vanity
15. poisoning the well
18. appeal to fear
20. questionable assumptions
23. This is an irrelevant comparison. The shipyard workers were exposed to large quantities of asbestos fibers in the air. The asbestos in insulation or tile is not free floating *until one tries to remove it!*

**EXERCISE 5-2 B**

1. ad populum, poisoning the well; argument from ignorance and irrelevant appeal to authority
4. Hayakawa evades the issue by making an irrelevant comparison and an irrelevant appeal to authority.
6. ad populum
8. ad populum and appeal to authority (also, it is irrelevant to the issue to bring up what the Pentagon spends on tanks and airplanes)
11. questionable assumptions

**EXERCISE 5-4 A**

1. loaded question
2. false dilemma
5. begging the question
7. invalid by denying the antecedent
10. non sequitur; though, perhaps the arguer is making the questionable (and unstated) assumption that the government should pay for whatever medical services an individual can't afford on her own.
11. The truth of the stated premise depends upon its meaning. If it means that the average height of women is less than the average height of men, then the statement is true. If it means that every woman is smaller than every man, then it is false. There is an unstated premise here--that whoever is larger is stronger--and this is a questionable premise.
14. invalid by affirming the consequent
15. begging the question
18. begging the question
20. These premises are warranted, relevant and sufficient to support their conclusion..

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21. suppressed evidence
22. false dilemma (perhaps meanings don't reside anywhere and aren't in anything. Maybe meanings are a function of the usage of words.)
23. begging the question. The arguer has assumed that this candidate is like most politicians, in addition to assuming that most politicians can't be believed.
24. appeal to authority
27. The arguer begs the question as well as poisons the well. He assumes what should be proved, viz., that abortion is murder.
28. slippery slope

#### EXERCISE 5-4 B

1. questionable assumption; begging the question
3. questionable assumption; hasty conclusion
4. questionable assumption (that abortion is the slaughtering of children); questionable claims; slippery slope
5. The premise is a statement of *logical* possibility. It would be false only if it contained a self-contradiction (such as 'round square' or 'married bachelor'). The assumption is relevant to proving the conclusion and is sufficient as well. Thus, this is a sound argument.
8. The first premise--'either there is no afterlife or there is one'--is a tautology; it is necessarily true. The second premise--'if there is none, then it is absurd to believe in punishment after death'--follows necessarily from the tautology and its implications and is therefore also true. But the third premise--that 'an all-just and all-merciful God would not punish a creature for being too weak to resist desires instilled by the Creator'--is a metaphysical claim and is questionable. It assumes that if there is a God, God is all-just and all-merciful. It assumes, in fact, the very issue that ought to be proved, viz., that God won't punish anyone. Thus, the argument begs the question.
9. poisoning the well and straw man. To argue against giving the Contras money is not to advocate communism; so the refutation distorts the view of his opponent. And the refutation tries to associate the opponent with something considered evil.
12. Good argument, though it would be better if it were clearer what is meant by *without meaning to our minds*. I take Hocking to mean that each of the alternatives is inconceivable. The premises seem true, relevant and sufficient.
14. questionable claims; slippery slope
17. The premises seem clear enough, relevant to demonstrating that the 'liberals' are wrong about the rich paying their fair share of taxes, but the evidence isn't sufficient because Buckley suppresses relevant evidence. Buckley doesn't reveal either what amount or what percentage of the earned income the 3 percent account for. If those 3 percent account for 62 percent of the nation's earned income, then they're only paying half as much in taxes as they should. Or if 97 percent of the people account for 35 percent of all earned income but are paying 69 percent of all taxes, then the rich are paying a lot less than their share in taxes than the rest of us.
19. poisoning the well and straw man. The opponent distorts proponent's view and tries to associate it with evil.

#### EXERCISE 5-4 C

1. straw man; the letter distorts Mondale's position.
3. begging the question (Brennan assumes that executing a person denies their humanity, but that is the issue he should be proving, along with the assumption that denying a person's humanity while punishing that person constitutes cruel and unusual punishment.)
5. seems like a reasonable argument to me
6. This rambling letter in support of the candidate not in office contains some warranted claims but it also makes some questionable claims (e.g., *if we re-elect the president we'll either go bankrupt or have the highest tax rate in the world* and *nobody is better off today...* Also, even if it is true that the president's opponent is sincere and honest (which might be questionable), it wouldn't be sufficient reason to vote for him or to believe that things will be any better under his administration. Finally, the concluding claim is a bit ambiguous. If the president were re-elected, his supporters would agree that the election resulted with "what's best for the United States"!

8. The sponsors of this ad wrongly accuse the EPA of demanding an unreasonable procedure: measuring pollutants as they come out of a smoke stack. If they were measured on the ground, what would be measured? The ad seems to say that it is irrelevant what measurements are made at the top of the stack. I don't think so. What would be irrelevant would be to provide data about pollution at the bottom of the stack on the ground or on the ground in the next town over. The only way to know what the source of the pollution is would be to measure it at the source! Imagine trying to convince someone doing a smog check on your car to put the measuring device across the street instead of up your exhaust pipe!

10. This is about as good an argument as one should reasonably expect in a letter to the editor. Of course, the letter writer assumes the reader has some basic background knowledge--a reasonable assumption, since the reader of the letter is a newspaper reader.

12. questionable assumptions about what a newspaper is supposed to be doing; begs the question

15. loaded language, suppressed evidence, questionable claims, appeal to fear

### EXERCISE 5-5

1 true	7 false	13 true	18 true	23 true	28 true
2 true	8 true	14 false	19 false	24 true	29 false
3 false	9 true	15 false	20 false	25 true	30 true
4 false	10 true	16 true	21 false	26 false	31 true
5 true	11 true	17 true	22 false	27 true	
6 false	12 false				

## CHAPTER SIX - EVALUATING EXTENDED ARGUMENTS

### EXERCISE 6-1

1. Unstated: "We don't make the car payment," and "We don't want to get kicked out into the streets."
2. Unstated: "The Reds came in second."

## CHAPTER SEVEN - SAMPLING

### EXERCISE 7-1

- |           |           |
|-----------|-----------|
| 1. false  | 11. true  |
| 2. true   | 12. true  |
| 3. false  | 13. false |
| 4. false  | 14. true  |
| 5. false  | 15. true  |
| 6. true   | 16. true  |
| 7. false  | 17. false |
| 8. true   | 18. true  |
| 9. false  | 19. true  |
| 10. false |           |

### EXERCISE 7-4

1. Unrepresentative sample. The method used is not likely to give a good cross-section of the voting population.
5. Hasty generalization.

**EXERCISE 7-8**

1. This argument is based on the assumption that there are countless planets, an assumption itself based on analogical reasoning. For, these countless planets have not been observed. But, given our knowledge of the origin and nature of our own solar system, it seems reasonable to assume that of the countless stars in the countless galaxies, there are countless planets, some about the age and size of earth and in relation to a star as we are to our sun. If this assumption is granted--and it seems reasonable to assume so, otherwise we would need to justify believing that our solar system's origin and nature is unique and not likely to be representative of the rest of the universe--then the conclusion is a sound one. Note the language used to express the degree of probability of the conclusion: "there may very likely exist...." The language is appropriate for the evidence.

10. The lawyer ignores a relevant and highly significant difference between the two kinds of testing. The one is to prevent epidemics of contagious diseases; the other is to catch criminals and punish them. Thus, the fact that tuberculin testing is justifiable in no way implies that drug testing is justifiable. The defense of drug testing will have to come from other grounds. The argument is based on an irrelevant comparison.

13. This is a false analogy..

17. This is a false analogy.

22. This is a false analogy.

23. This is a good analogical argument. 4

24. These kinds of analogies often have a further point. In this case the author is trying to persuade us that Walker "has given aid and comfort to those seeking to dismantle the greatness of art by turning it into a particularly pernicious branch of advertising, the better to control it through the politics of the marketplace." I think what Link is trying to say is that art should not be seen as propaganda, as a set of commercials for ideas. He doesn't think art or society is served very well if every work of art is reduced to an offensive idea in the eyes of its interpreters. It is a dangerous practice to interpret every work of art as a "message" about every topic it touches, or can be stretched to touch, by an imaginative interpreter. Every work of art becomes just more grist for the mill for the perpetually offended. The Venus de Milo offends one feminist for its glorification of the mutilation of women; the Mona Lisa offends the cross-dresser who feels the artist is portraying in a demeaning way a man dressed as a woman; the whole Sistine chapel--nay, most of Italy--becomes an offensive commercial for religious fantasies and the evil which has come of them (according to some non-Christians); etc.

Finally, Link has one further point: Walker has no right being indignant at those who interpret her art using the same reductionist method of interpretation she used regarding the award she was given. I don't think he is calling Walker a hypocrite. I think he is suggesting she rethink her views on art and propaganda. He also, of course, takes it for granted that art shouldn't be propaganda. The state of California thinks differently. It not only lifted Walker's story from its test, it lifted another story which had a vegetarian character in it. The state's reason: it was lifted on the grounds that it might upset some meat eaters!

Link's comparison of Walker's reaction to the statuette to the Christian conservatives' reaction to her short story is relevant and a sound one. Good analogy.

**CHAPTER EIGHT - CAUSAL REASONING****EXERCISE 8-5**

1 true	6 false	11 false	16 false	21 false
2 true	7 true	12 true	17 false	22 false
3 false	8 true	13 false	18 false	23 false
4 false	9 true	14 true	19 true	24 true
5 true	10 true	15 false	20 true	25 true
				26 false

**EXERCISE 8-3**

- 1.1. This is a weaker conclusion than the original one. The argument is therefore strengthened. (Generally speaking, the weaker the conclusion, the less evidence needed to support it; and the stronger the conclusion, the more evidence needed to support it.)
- 1.2. This would eliminate being able to control for relevant causal factors. It would weaken the argument.
- 1.3. The control group and experimental group must be alike in all relevant respects except for the factor being tested. This would weaken the argument.
- 1.4. The increase in the number of cases showing the effect would increase the strength of the argument.
- 1.5. The increase in the number of rats would strengthen the argument, providing the percentages of rats showing the tumors remained the same. However, using ten times as many rats will not strengthen the argument ten times!
- 1.6. This is a weaker conclusion than the original; it strengthens the argument.
- 1.7. This introduces a loss in control over potential factors being introduced which might be causing the difference in effects. It weakens the argument.
- 1.8. Same as 1.7. Perhaps the x-rays are a significant causal factor in the development of the tumors.
- 1.9. If you did not know this, it would increase the number of significant similarities between humans and laboratory animals from your point of view and would thus strengthen the argument.
- 1.10. This conclusion actually is two conclusions. One is that saccharin may increase the risk of bladder cancer for the offspring of women who use it during pregnancy. That conclusion may appear to be weaker than the original one, but it is actually stronger, since the original study involved offspring who were fed a saccharin diet--a very unlikely parallel for humans. The other conclusion is that pregnant women should be given a warning that using saccharin during pregnancy "may increase the risk that their child will develop bladder cancer." Whether this warning is warranted or not is debatable.

**EXERCISE 8-4**

1. Post hoc fallacy. Because of the difficulty in controlling for potential causal factors, a prospective study on large numbers of people with different degrees of acne might be best.
6. False cause. Correlation does not prove causality. It probably would be more sensible to produce a counterargument than to do a scientific study to determine whether or not there is a causal connection between food additives and violent crime. Also, 'food additives' covers a wide variety of substances.
10. In testing the claim *cowpox causes an immunity to smallpox* by inoculating human beings is unimaginable today. A controlled experiment would have meant inoculating with smallpox another group of humans who had *not* been infected with cowpox. Since the test is for *immunity*, both the experimental and control groups get inoculated. The experimental group is infected with smallpox; the control group is not. Such an experiment would probably have led to the deaths of most, if not all, of those in the control group. A prospective study would have gathered a large random sample, divided the sample into two groups: one which had been infected with cowpox and one which had not. Over time, the incidence of smallpox should be significantly greater in the group not infected with cowpox, if it is true that *cowpox causes an immunity to smallpox*. Apparently, Jenner was reasoning by a retrospective analysis. A number of people don't die of smallpox but they are just as exposed to it as those who do die. Comparing those who show this effect with others like them who don't show the effect, it was common knowledge that dairymaids were all in the first group. Being a dairymaid exposes one to cowpox. So, Jenner reasoned it was the cowpox which was the causal factor in the dairymaid's not getting smallpox.
16. Why Dr. James did not study nervous drivers rather than string players is beyond me. Why introduce an analogy when you don't have to? The differences between playing a string instrument on stage and driving a car during a driving test would seem to outweigh any similarities they might have. Thus, even if the oxyphenolol helped the string players, it would be a stretch to conclude that it would help nervous drivers pass their driving test.

I must confess that I did not find the outcome very striking. For one thing, we are not told what the mean improvement for the control group was, so we do not know whether a 5 percent improvement is significant. Furthermore, since the samples were small, the one player with a 73 percent improvement and those with 30 percent

not only could account for the entire 5 percent group improvement, but they indicate that a good number of the experimental group must have deteriorated.

Note the way the conclusion is worded: "the results *suggest* that *some* people *might* benefit greatly from such medication." Sure, and some might *not* benefit greatly. In any case, the proper way to have done this study would have been to have taken two groups of people who had failed their driving tests because of nervousness. Oxyprenolol is given to the experimental group and a placebo is given to the control group. Neither the subjects nor the driving evaluators should know who has been given the oxyprenolol. Such a study is called a *double blind study*. The study should be a double blind study to eliminate any psychological effects on the part of subjects (if one *thinks* she's been given a beta-blocker, she might relax) and any bias on the part of the evaluator (if she knows the subject has been given a beta-blocker she might evaluate him differently). If oxyprenolol is a significant causal factor in reducing nervousness of drivers being tested, then we should see a significantly higher percentage of the experimental group passing their driving tests.

## CHAPTER NINE - SCIENCE AND PSEUDOSCIENCE

### EXEERCISE 9-1

1 true	9 false	17 true	25 false	33 true	41 true
2 true	10 false	18 false	26 true	34 true	42 true
3 false	11 true	19 true	27 true	35 true	43 false
4 false	12 true	20 true	28 false	36 false	44 false
5 false	13 true	21 false	29 true	37 true	45 true
6 false	14 true	22 true	30 false	38 true	46 true
7 true	15 true	23 false	31 false	39 true	47 true
8 false	16 false	24 true	32 true	40 true	