# Exercise Answers

Exercise 1.1
Part I

1. P: Titanium combines readily with oxygen, nitrogen, and hydrogen, all of which have an adverse effect on its mechanical properties.
   C: Titanium must be processed in their absence.

2. P: The good, according to Plato, is that which furthers a person's real interests.
   C: In any given case when the good is known, men will seek it.

3. P: The denial or perversion of justice by the sentences of courts, as well as in any other manner, is with reason classed among the just causes of war.
   C: The federal judiciary ought to have cognizance of all causes in which the citizens of other countries are concerned.

4. P: When individuals voluntarily abandon property, they forfeit any expectation of privacy in it that they might have had.
   C: A warrantless search and seizure of abandoned property is not unreasonable under the Fourth Amendment.

5. $P_1$: Artists and poets look at the world and seek relationships and order.
   $P_2$: But they translate their ideas to canvas, or to marble, or into poetic images.
   $P_3$ Scientists try to find relationships between different objects and events.
   $P_4$: To express the order they find, they create hypotheses and theories.
   C: The great scientific theories are easily compared to great art and great literature.

6. $P_1$: The animal species in Australia are very different from those on the mainland.
   $P_2$: Asian placental mammals and Australian marsupial mammals have not been in contact in the last several million years.
   C: There was never a land bridge between Australia and the mainland

7. $P_1$: We need sleep to think clearly, react quickly, and create memories.
   $P_2$: Studies show that people who are taught mentally challenging tasks do better after a good night's sleep.
   $P_3$: Other research suggests that sleep is needed for creative problem solving.
   C: It really does matter if you get enough sleep.

8. $P_1$: The classroom teacher is crucial to the development and academic success of the average student.
   $P_2$: Administrators simply are ancillary to this effort.
   C: Classroom teachers ought to be paid at least the equivalent of administrators at all levels, including the superintendent.

9. $P_1$: An agreement cannot bind unless both parties to the agreement know what they are doing and freely choose to do it.
   C: The seller who intends to enter a contract with a customer has a duty to disclose exactly what the customer is buying and what the terms of the sale are.

10. $P_1$: Punishment, when speedy and specific, may suppress undesirable behavior.
    $P_2$: Punishment cannot teach or encourage desirable alternatives.
    C: It is crucial to use positive techniques to model and reinforce appropriate behavior that the person can use in place of the unacceptable response that has to be suppressed.

11. $P_1$: High profits are the signal that consumers want more of the output of the industry.
    $P_2$: High profits provide the incentive for firms to to expand output and for more firms to enter the industry in the long run.
    $P_3$: For a firm of above average efficiency, profits represent the reward for greater efficiency.
    C: Profit serves a very crucial function in a free enterprise economy, such as our own.

12. $P_1$: My cat regularly used to close and lock the door to my neighbor's doghouse, trapping their sleeping Doberman inside.
    $P_2$: Try telling a cat what to do, or putting a leash on him--he'll glare at you and say, "I don't think so. You should have gotten a dog."
    C: Cats can think circles around dogs.

13. $P_1$: Private property helps people define themselves.
    $P_2$: Private property frees people from mundane cares of daily subsistence.
    $P_3$: Private property is finite.
    C: No individual should accumulate so much property that others are prevented from accumulating the necessities of life.

14. $P_1$: To every existing thing God wills some good.
    $P_2$: To love any thing is nothing else than to will good to that thing.
    C: It is manifest that God loves everything that exists.

15. $P_1$: The average working man can support no more than two children.
    $P_2$: The average working woman can take care of no more than two children in decent fashion.
    C: Women of the working class, especially wage workers, should not have more than two children at most.

16. $P_1$: The nations of planet earth have acquired nuclear weapons with an explosive power equal to more than a million Hiroshima bombs.

$P_2$: Studies suggest that explosion of only half these weapons would produce enough soot, smoke, and dust to blanket the Earth, block out the sun, and bring on a nuclear winter that would threaten the survival of the human race.
C: Radioactive fallout isn't the only concern in the aftermath of nuclear explosions.

17. $P_1$: An ant releases a chemical when it dies, and its fellows carry it away to the compost heap.
$P_2$: A healthy ant painted with the death chemical will be dragged to the funeral heap again and again.
C: Apparently the communication is highly effective.

18. P: Every art and every inquiry, and similarly every action and pursuit, is thought to aim at some good.
C: The good has been rightly declared to be that at which all things aim.

19. $P_1$: Antipoverty programs provide jobs for middle-class professionals in social work, penology and public health.
$P_2$: Such workers' future advancement is tied to the continued growth of bureaucracies dependent on the existence of poverty.
C: Poverty offers numerous benefits to the non-poor.

20. $P_1$: Corn is an annual crop.
$P_2$: Butchers meat is a crop which requires four or five years to grow.
$P_3$: An acre of land will produce a much smaller quantity of the one species of food (meat) than the other.
C: The inferiority of the quantity (of meat) must be compensated by the superiority of the price.

21. $P_1$: Loan oft loses both itself and friend.
$P_2$: Borrowing dulls the edge of husbandry.
C: Neither a borrower nor lender be.

22. $P_1$: Take the nurse who alleges that physicians enrich themselves in her hospital through unnecessary surgery.
$P_2$: Take the engineer who discloses safety defects in the braking systems of a fleet of new rapid-transit vehicles.
$P_3$: Take the Defense Department official who alerts Congress to military graft and overspending.
$P_4$: All know that they pose a threat to those whom they denounce and that their own careers may be at risk.
C: The stakes in whistleblowing are high.

23. $P_1$: If a piece of information is not "job relevant," then the employer is not entitled qua employer to know it.
$P_2$: Sexual practices, political beliefs, associational activities, etc., are not part of the description of most jobs
$P_3$: They do not directly affect one's job performance.

C: They are not legitimate information for an employer to know in the determination of the hiring of a job applicant.

24. $P_1$: One of the most noticeable effects of a dark tan is premature aging of the skin.
$P_2$: The sun also contributes to certain types of cataracts, and, what is most worrisome, it plays a role in skin cancer.
C: Too much sun can lead to health problems.

25. $P_1$: It is generally accepted that by constantly swimming with its mouth open, the shark is simply avoiding suffocation.
$P_2$: This assures a continuous flow of oxygen-laden water into their mouths, over their gills, and out through the gill slits.
C: Contrary to the tales of some scuba divers, the toothsome, gaping grin on the mouth of an approaching shark is not necessarily anticipatory.

26. P: If you place a piece of Polaroid (for example, one lens of a pair of Polaroid sunglasses) in front of your eye and rotate it as you look at the sky on a clear day, you will notice a change in light intensity with the orientation of the Polaroid.
C: Light coming from the sky is partially polarized.

27. $P_1$: The secondary light [from the moon] does not inherently belong to the moon, and is not received from any star or from the sun.
$P_2$: In the whole universe there is no other body left but the earth.
C: The lunar body (or any other dark and sunless orb) is illuminated by the earth.

28. $P_1$: Anyone familiar with our prison system knows that there are some inmates who behave little better than brute beasts.
$P_2$: If the death penalty had been truly effective as a deterrent, such prisoners would long ago have vanished.
C: The very fact that these prisoners exist is a telling argument against the efficacy of capital punishment as a deterrent.

29. $P_1$: REM (rapid eye movement) sleep studies conducted on adults indicate that REM pressure increases with deprivation.
$P_2$: This would not occur if REM sleep and dreaming were unimportant.
C: REM sleep and dreaming are necessary in the adult.

30. $P_1$: We say that an end pursued in its own right is more complete than an end pursued because of something else, and that an end that is never choiceworthy because of something else is more complete than ends that are choiceworthy both in their own right and because of this end.
C: An end that is always choiceworthy in its own right, and never because of something else, is complete without qualification.

Part II.

1. College sports are as much driven by money as professional sports.

2. The creation of a multilingual society is contrary to the best interests of all of us.

3. The competitive aspect of team sports is having a negative impact on the health and fitness of our children.

4. Business majors are robbing themselves of the true purpose of collegiate academics, a sacrifice that outweighs the future salary checks.

5. The sale and purchase of recreational drugs should be legalized.

6. Congress should not cut the National Institutes of Health budget.

7. The religious intolerance of television preachers must not be tolerated.

8. Patients should not be offered elective Cesarean section.

9. Parents who truly love their children allow them to fail once in a while.

10. Protecting the environment requires that we limit population growth.

Part III

1. Logic: The organized body of knowledge, or science, that evaluates arguments.

2. Argument: A group of statements one or more of which (the premises) are claimed to provide support for, or reasons to believe, one of the others (the conclusion).

3. Statement: A sentence that is either true or false.

4. Premise: A statement in an argument that sets forth evidence or reasons.

5. Conclusion: The statement in an argument that the premises are claimed to support or imply.

6. Conclusion indicator: A word that provides a clue in identifying the conclusion.

7. Premise indicator: A word that provides a clue in identifying the premises.

8. Inference: The reasoning process used to produce an argument.

9. Proposition: The information content of a statement.

10. Truth value: The attribute by which a statement is either true or false.

Part IV

1. True 6. False

2. False
3. False
4. False
5. True
7. True
8. True
9. True
10. True

Exercise 1.2
Part I

1. Nonargument (explanation)

2. Nonargument; conditional statement

3. Argument (conclusion: Freedom of the press is the most important of our constitutionally guaranteed freedoms.)

4. Nonargument (illustration)

5. Nonargument (piece of advice)

6. Argument (conclusion: Mosquito bites are not always the harmless little irritations most of us take them to be.)

7. Argument (conclusion: If stem-cell research is restricted, then people will die prematurely.)

8. Argument (conclusion: Fiction provides us with the opportunity to ponder how people react in uncommon situations, and to deduce moral lessons, psychological principles, and philosophical insights from their behavior.)

9. Nonargument (statement of belief)

10. Nonargument (report)

11. Argument (conclusion: Any interest of the state in protecting the woman from an inherently hazardous procedure, except when it would be equally dangerous for her to forgo it, has largely disappeared.

12. Nonargument (expository passage)

13. Nonargument (opinion and piece of advice)

14. Nonargument (report of an argument)

15. Argument (conclusion: Economics is of practical value in business.)

16. Nonargument (piece of advice)

17. Nonargument (loosely associated statements)

18. This passage could be interpreted as either an argument or an explanation (or both). If it is interpreted as an argument, the conclusion is: Most business organizations include a credit department which must reach a decision on the credit worthiness of each prospective customer.

19. Argument (conclusion: For organisms at the sea surface, sinking into deep water usually means death.)

20. Nonargument (temporal meaning of "since"; "hence" indicates an explanation.)

21. Argument (conclusion: Dachshunds are ideal dogs for small children.)

22. Argument (conclusion: Atoms can combine to form molecules, whose properties are generally very different from those of the constituent atoms.)

23. Argument (conclusion: The coarsest type of humor is the practical joke.)

24. Nonargument (conditional statement)

25. Nonargument (explanation)

26. Argument (conclusion: Words are slippery customers.)

27. Nonargument (report)

28. Argument (conclusion: A person never becomes truly self-reliant.)

29. Nonargument (opinion)

30. Nonargument (expository passage and illustration)

31. This passage could be both an argument and an explanation (conclusion: In areas where rats are a problem, it is very difficult to exterminate them with bait poison.)

32. Argument (conclusion: Population growth has not been a steady march.)

33. Argument (conclusion: Temperance and bravery, then, are ruined by excess and deficiency, but preserved by the mean.)

34. Nonargument (loosely associated statements)

35. Argument (conclusion: One form of energy can be converted to another.)

Part II

1. Nonargument

2. Argument (conclusion: Social Security is not merely a retirement program)

3. This passage is probably best considered a nonargument, but it could be rephrased to form an argument. (Possible conclusion: Something is wrong with our approach to education.)

4. Nonargument

5. Argument (conclusion: The Democratic Party is more concerned with achieving broad happiness, while the Republican Party is more concerned with fulfilling selfishness.)

6. Argument (conclusion: Treating cruelty to animals with the seriousness it deserves doesn't only protect animals, it also makes the entire community safer.)

7. Argument (conclusion: Creating a third political party—the independent party—is a good idea.)

8. Argument (conclusion: When women's voices are silenced, the institutions themselves suffer.)

9. Nonargument

10. Argument (conclusion: Strong anti-bullying programs are needed to provide a means to report bullying anonymously, to train all school personnel to take reports of bullying seriously, and to offer workshops for children on how to respond to being bullied.)

Part IV

1. Argument from example: An argument that purports to prove something by giving one or more examples of it.

2. Conditional statement: An "if ... then ..." statement

3. Antecedent: The component of a conditional statement that immediately follows the word "if."

4. Consequent: The component of a conditional statement that immediately follows the word "then"; the component of a conditional statement that is not the antecedent

5. Sufficient condition: The condition represented by the antecedent of a conditional statement

6. Necessary condition: The condition represented by the consequent of a conditional statement

7. Explanation: A statement or group of statements intended to shed light on some event

8. Explanandum: The component of an explanation that indicates the event or phenomenon to be explained

9. Explanans: The component of an explanation that explains the event indicated by the explanandum

10. Illustration: A kind of nonargument composed of statements intended to show what something means or how something is done.

11. Expository passage: A kind of Nonargument consisting of a topic sentence and one or more other sentences that expand or elaborate on the topic sentence.

Part V

1. True
2. False
3. False
4. True
5. True
6. True
7. True
8. True
9. True
10. True

Part VI

1. Sufficient: If something is a tiger, then it is an animal.

2. Necessary: If something is not an animal, then it is not a tiger. *Or*: If something is a tiger, then it is an animal.

3. Sufficient: If a person drinks a Coke, then he will quench his thirst.

4. Necessary: If a person has no racquet, then he/she cannot play tennis. *Or*: If a person plays tennis, then he/she has a racquet.

5. Necessary: If a person does not heat water, then he/she cannot brew coffee. *Or*: If a person brews coffee, then he/she has heated water.

6. Sufficient: If someone steps on a cat's tail, then the cat will yowl.

7. Sufficient: If leaves burn, then smoke is produced.

8. Necessary: If a person does not pay attention, then he/she will not understand a lecture. *Or*: If a person understands a lecture, then he/she pays attention.

9. Sufficient: If a number is exactly divisible by 4, then it is an even number.

10. Necessary: If a person does not utter a falsehood, then he/she does not tell a lie. *Or*: If a person tells a lie, then he/she utters a falsehood.

Exercise 1.3
Part I

1. Deductive (argument based on mathematics; also, the conclusion follows necessarily from the premises.)

2. Inductive (argument based on signs)

3. Inductive (prediction; also, there is an inductive indicator word and the conclusion follows only probably from the premise.)

4. Deductive (categorical syllogism; also, the conclusion follows necessarily from the premises.)

5. Inductive (generalization)

6. Deductive (the conclusion follows necessarily from the premise)

7. Inductive (causal inference; also, the conclusion follows only probably from the premise.)

8. Deductive (the conclusion follows necessarily from the premises.)

9. Inductive (causal inference)

10. Inductive (argument from analogy; also, the conclusion follows only probably from the premises.)

11. Deductive (argument from definition)

12. Deductive (disjunctive syllogism; also, the conclusion follows necessarily from the premises.)

13. Inductive (argument from authority; also, the conclusion follows only probably from the premise.)

14. Deductive (hypothetical syllogism; also, the conclusion follows necessarily from the premises.)

15. Inductive (causal inference; also, there are inductive indicator words.)

16. Deductive (the conclusion follows necessarily from the premise.)

17. Deductive (the conclusion follows necessarily from the premises.)

18. Inductive (prediction)

19. Inductive (causal inference)

20. Deductive (the conclusion follows necessarily from the premise.)

21. The use of the indicator "manifestly deduced" and the quasi-geometrical approach suggest that this argument is deductive. Nevertheless the argument could be interpreted as an inductive causal inference: Reasoning from the appearances to the reality behind the appearances.

22. Deductive (the conclusion follows necessarily from the premise; this example might also be interpreted as an argument from definition--the definition of "refraction.")

23. Inductive (prediction; also, the conclusion follows only probably from the premises.)

24. Deductive (the conclusion follows necessarily from the premises.)

25. Inductive (causal inference: the dog's familiarity with the visitor caused the dog to be silent.)

26. Deductive (the conclusion follows necessarily from the premises.)

27. Deductive (the conclusion follows necessarily from the premises.)

28. Inductive (causal inference; also, the word "may" suggests a probabilistic inference.)

29. Inductive (argument from analogy)

30. Deductive (the conclusion follows necessarily from the premise.)

Part II

1. Deductive argument: An argument in which the arguer claims that it is impossible for the conclusion to be false given that the premises are true

2. Inductive argument: An argument in which the arguer claims that it is improbable that the conclusion be false given that the premises are true

3. Argument based on mathematics: A deductive argument in which the conclusion depends on some purely arithmetic or geometric computation or measurement

4. Argument from definition: A deductive argument in which the conclusion is claimed to depend merely upon the definition of some word or phrase used in the premise or conclusion

5. Categorical syllogism: A syllogism in which all three statements are categorical propositions; a syllogism in which all three statements begin with the words "all," "no" or "some"

6. Hypothetical syllogism: A syllogism having a conditional statement for one or both of its premises

7. Disjunctive syllogism: A syllogism having a disjunctive statement for one of its premises

8. Argument from analogy: An inductive argument that depends on the existence of a similarity between two things or states of affairs

9. Generalization: An inductive argument that proceeds from the knowledge of a selected sample to some claim about the whole group

10. Prediction: An inductive argument that proceeds from our knowledge of the past to a claim about the future

11. Argument from authority: An inductive argument that concludes something is true because a presumed expert or witness has said that it is

12. Argument based on signs: An inductive argument that proceeds from the knowledge of a sign to a claim about the thing or situation that the sign symbolizes

13. Causal inference: An inductive argument that proceeds from knowledge of a cause to a claim about an effect, or from knowledge of an effect to a claim about a cause

14. Particular statement: A statement that makes a claim about one or more (but not all) members of a class

15. General statement: A statement that makes a claim about all the members of a class

Part III

| | | |
|---|---|---|
| 1. True | 6. False | 11. True |
| 2. True | 7. True | 12. False |
| 3. True | 8. False | 13. True |
| 4. True | 9. False | 14. False |
| 5. False | 10. False | 15. False |

Exercise 1.4
Part I

1. Valid, unsound; false premises, false conclusion.

2. Valid, sound; true premise, true conclusion.

3. Invalid, unsound; true premises, false conclusion.

4. Valid, sound; true premise, true conclusion.

5. Invalid, unsound; false premise, true conclusion.

6. Valid, unsound; one false premise, true conclusion.
7. Invalid, unsound; true premise, true conclusion.
8. Valid, unsound; one false premise, true conclusion.
9. Valid, sound; true premises, true conclusion.
10. Valid, unsound; one false premise, false conclusion.
11. Invalid, unsound; false premise, false conclusion.
12. Valid, sound; true premises, true conclusion.
13. Invalid, unsound; true premises, true conclusion.
14. Valid, unsound; one false premise, true conclusion.
15. Valid, sound; true premise, true conclusion.

Part II

1. Strong, cogent; true premise, probably true conclusion.
2. Weak, uncogent; true premise, probably false conclusion.
3. Strong, uncogent; false premise, probably false conclusion.
4. Weak, uncogent; true premise, probably false conclusion.
5. Strong, cogent; true premises, probably true conclusion.
6. Weak, uncogent; true premise, probably false conclusion.
7. Strong, uncogent; false premise, probably true conclusion.
8. Strong, cogent; true premises, probably true conclusion.
9. Weak, uncogent; true premise, undecided truth value of conclusion.
10. Strong, cogent; true premise, probably true conclusion.
11. Strong, uncogent; false premise, probably false conclusion.
12. Strong, uncogent; false premise, probably false conclusion.
13. Weak, uncogent; true premises, probably false conclusion.

14. Strong, cogent; true premise, probably true conclusion.

15. Strong, uncogent; false premise, probably false conclusion.

Part III

1. Deductive, valid
2. Inductive, weak
3. Inductive, strong
4. Deductive, valid, unsound
5. Deductive, valid*
6. Inductive, strong
7. Inductive, weak
8. Deductive, invalid
9. Inductive, strong
10. Deductive, invalid
11. Inductive, weak
12. Deductive, invalid
13. Inductive, weak
14. Deductive, valid, unsound
15. Inductive, strong
16. Deductive, invalid
17. Deductive, valid
18. Deductive, valid
19. Inductive, strong
20. Deductive, invalid

*To prove this, from the side between the two equal angles construct a perpendicular line through the other vertex. The resulting two right triangles are then congruent by the angle-angle-side theorem. Hence the hypotenuses of these two triangles are equal, which proves that the original triangle has two equal sides.

Part IV

1. Valid argument: An argument in which it is impossible for the conclusion to be false given that the premises are true

2. Invalid argument: A deductive argument in which it is possible for the conclusion to be false given that the premises are true

3. Sound argument: A deductive argument that is valid and has all true premises

4. Unsound argument: A deductive argument that is either invalid or has one or more false premises (or both)

5. Strong argument: An inductive argument in which it is improbable that the conclusion be false given that the premises are true

6. Weak argument: An inductive argument in which the conclusion does not follow probably from the premises

7. Cogent argument: An inductive argument that is strong and has all true premises

8. Uncogent argument: An inductive argument that is either weak or has one or more false premises (or both)

Part V

| | | |
|---|---|---|
| 1. False | 6. True | 11. False |
| 2. True | 7. False | 12. True |
| 3. False | 8. False | 13. False |
| 4. True | 9. True | 14. False |
| 5. True | 10. False | 15. False |

Exercise 1.5
Part I

1. All G are S. — All cats are animals. (T)
   All Q are S. — All dogs are animals. (T)
   All G are Q. — All cats are dogs. (F)

2. No C are E. — No cats are dogs. (T)
   Some P are not C. — Some animals are not cats. (T)
   Some E are not P. — Some dogs are not animals. (F)

3. No P are M. — No cats are dogs. (T)
   All P are R. — All cats are animals. (T)
   No M are R. — No dogs are animals. (F)

4. No I are P. — No fish are mammals. (T)
   Some I are not F. — Some fish are not cats. (T)
   Some F are not P. — Some cats are not mammals. (F)

5. Some P are W. — Some animals are dogs. (T)
   No W are T. — No dogs are fish. (T)
   No P are T. — No animals are fish. (F)

6. All S are T. — All dogs are mammals. (T)
   All S are M. — All dogs are animals. (T)
   All M are T. — All animals are mammals. (F)

7. No P are H. — No dogs are fish. (T)
   No C are H. — No mammals are fish. (T)
   No P are C. — No dogs are mammals. (F)

8. Some T are S — Some cats are animals. (T)
   Some S are U. — Some animals are dogs. (T)
   Some T are U. — Some cats are dogs. (F)

9. All A are G. — All dogs are animals. (T)
   Some A are I. — Some dogs are mammals. (T)
   Some I are not G. — Some mammals are not animals. (F)

10. Some S are not O. — Some dogs are not fish. (T)
    Some G are not O. — Some animals are not fish. (T)
    Some S are not G. — Some dogs are not animals. (F)

Part II

1. If A then E. — If George Washington was assassinated, then George Washington is dead.
   Not A. — George Washington was not assassinated.
   Not E. — George Washington is not dead.

2. If C then P. — If George Washington was assassinated, then George Washington is dead.
   P. — George Washington is dead.
   C. — George Washington was assassinated.

3. If H then C. — If Lassie is a dog, then Lassie is an animal.
   If E then C. — If Lassie is a cat, then Lassie is an animal.
   If H then E. — If Lassie is a dog, then Lassie is a cat.

4. If E, then either D or C. — If Tom Cruise is a man, then he is either a mouse or a human.
   If D, then I. — If Tom Cruise is a mouse, then he has a tail.
   If E, then I. — If Tom Cruise is a man, then he has a tail.

5. All H who are P are D. — All humans who are female are women.
   All H are D. — All humans are women.

6. Some W are C. — Some fruits are purple.
   Some W are H. — Some fruits are lemons.
   Some W are CH. — Some fruits are purple lemons.

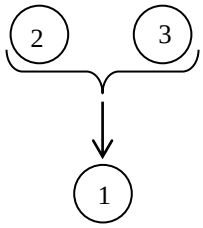
7. All C with L are either S or I. — All cats with fur are either mammals or dogs.
   All C are I. — All cats are dogs.

8. All M that are R are B that are I. — All animals that are cats are felines that are mammals.
   All M are I. — All animals are mammals.

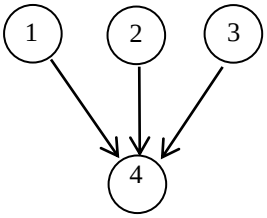
9. All D are either I or G. — All dogs are either mammals or fish.
   Some D are I. — Some dogs are mammals.
   Some D are G. — Some dogs are fish.

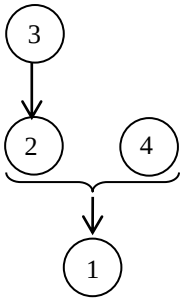
10. All R that are F are either L or H. — All cats that are mammals are either dogs or animals.
    All R are H. — All cats are animals.
    All F are L. — All animals are dogs.

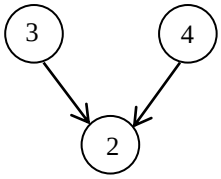
Exercise 1.6
Part I

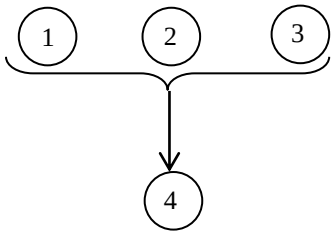
1.



2.

3.



4.



5.



6.
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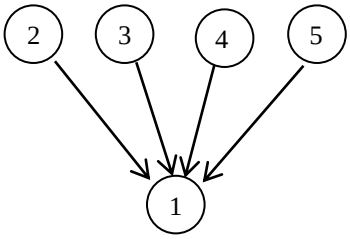


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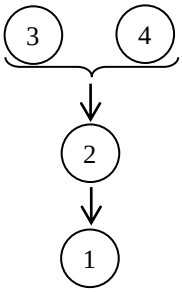


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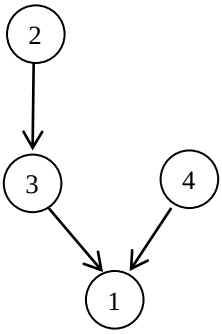


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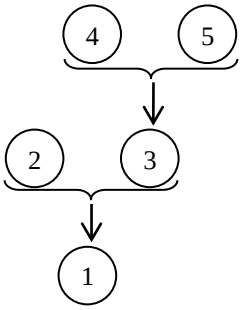

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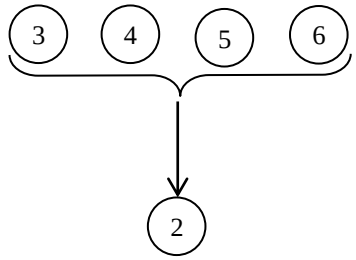


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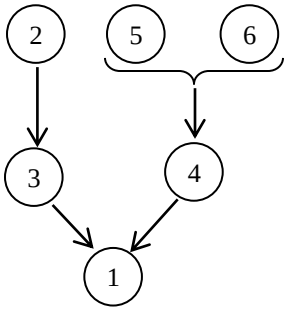


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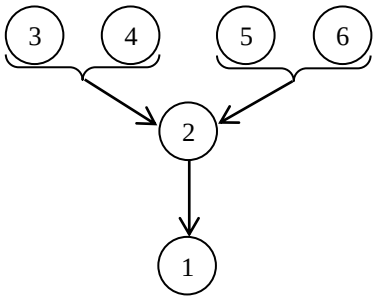


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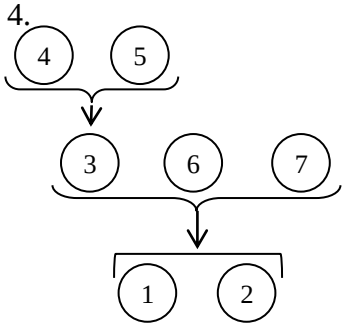


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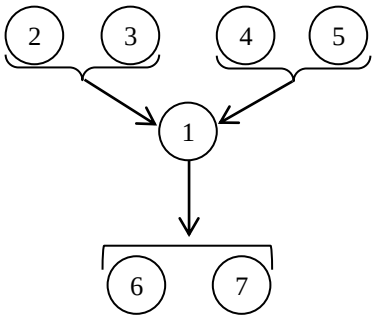


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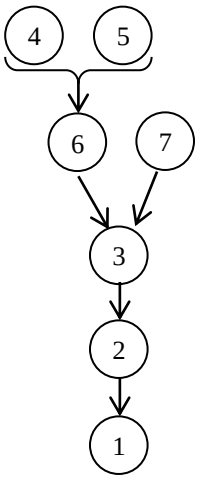


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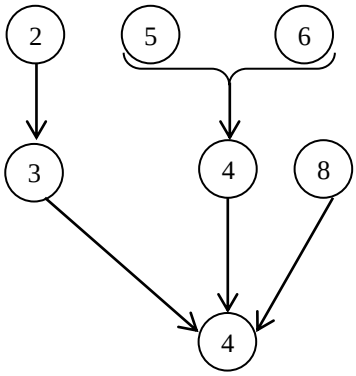


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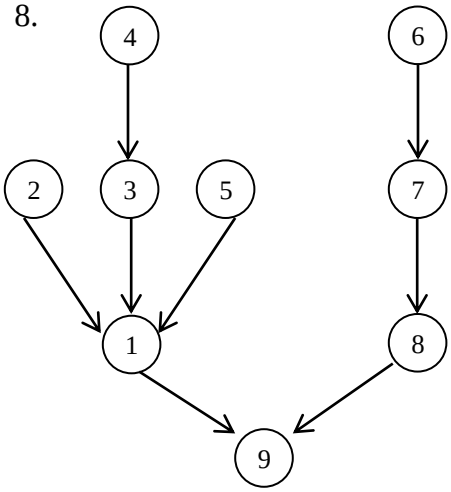


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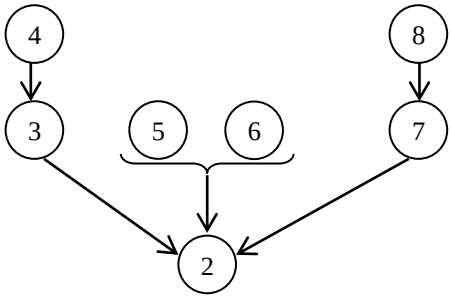


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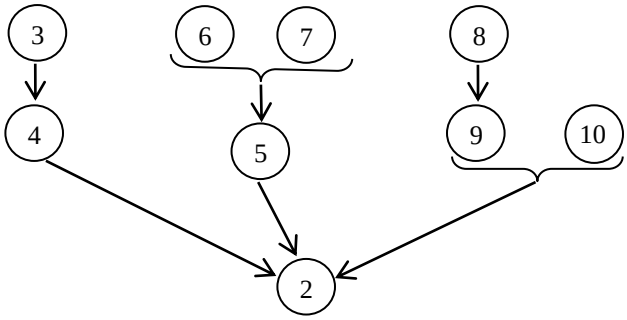

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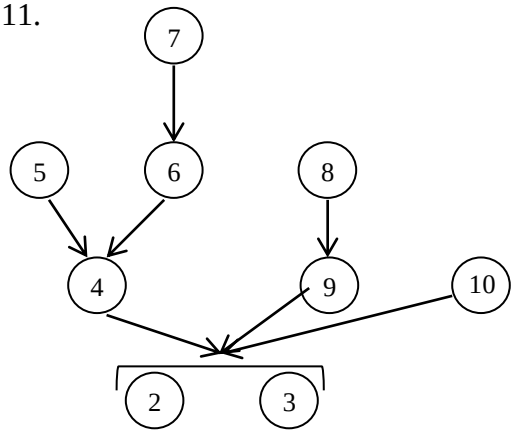
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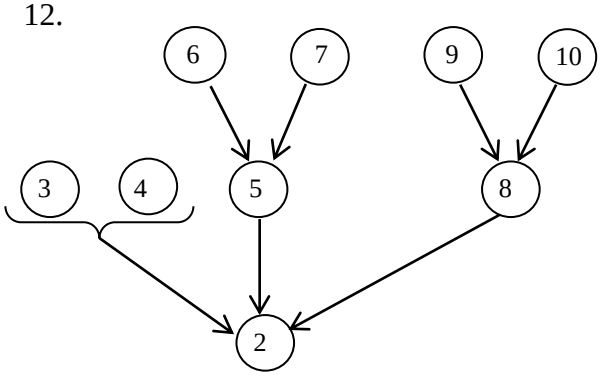
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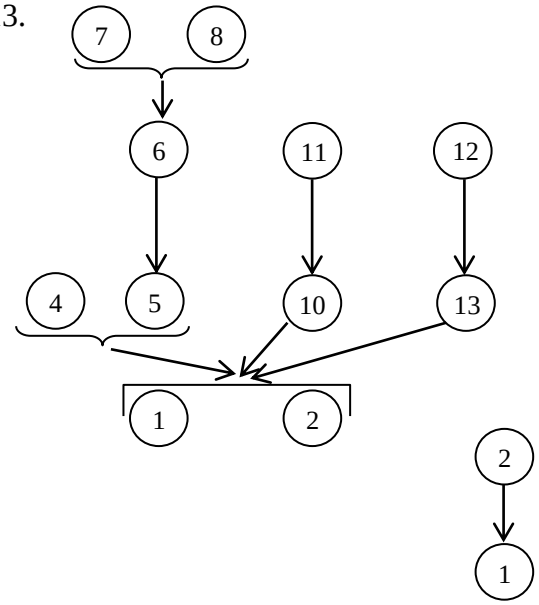
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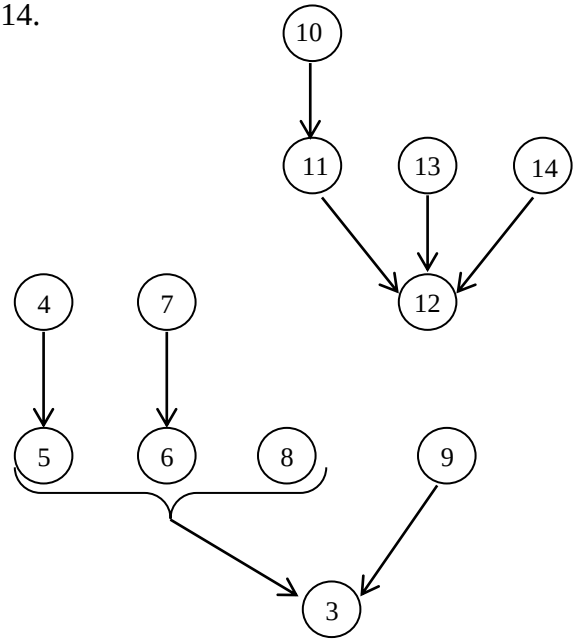
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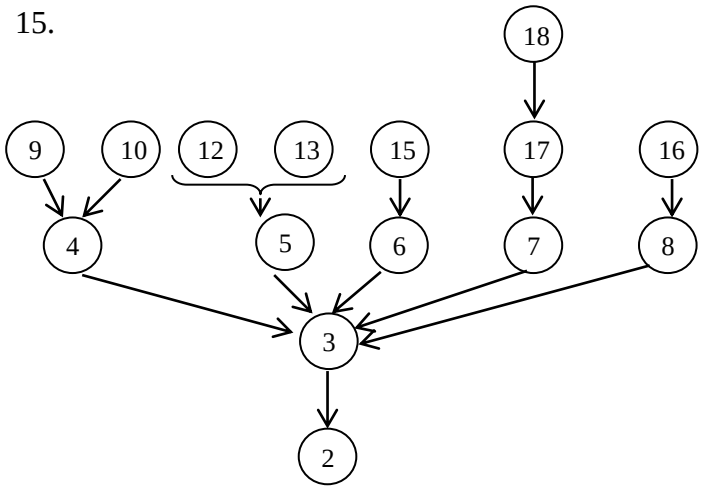
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Exercise 2.1
Part II

1. In dog sled races the dogs are tortured.
   Torturing animals is morally wrong.
   Therefore, dog sled races are morally wrong.

2. The children of Somalia are starving and covered with flies.
   Such a condition is extremely evil.
   A God that is loving would want to eliminate this evil if he is aware of it.
   A God that is ever-present is aware of this evil.
   A God that is omnipotent has the power to eliminate this evil.
   The evil in Somalia has not been eliminated by any God.
   Therefore, there is no God that is loving, ever-present, and omnipotent.

3. The beliefs of the creationists are mistaken, ignorant, and superstitious.
   No beliefs that are mistaken, ignorant, and superstitious should be taught in school.
   Evolution is a scientific truth.
   The beliefs of the creationists contradict evolution.
   Parents have a right to have their children taught the truth.
   The majority of parents favor the teaching of evolution.
   Therefore, the beliefs of the creationists should not be taught in school.

4. Free ownership of guns is as noble as belief in God and intestinal fortitude.
   Belief in God and intestinal fortitude made our country great and free.
   Continued belief in God and intestinal fortitude are necessary to keep our country the way it is.
   Free ownership of guns is no less important than God and intestinal fortitude.
   Therefore, gun control is wrong.

5. All killers should pay for their crimes by spending many years in jail.
   The insanity plea allows killers to spend as little as six months in a mental hospital and then be released.
   The insanity plea allows killers to avoid what is coming to them.
   Therefore, the insanity plea should be abolished.

6. Abortion and infanticide have produced a holocaust in our nation.
   These practices have resulted in the death of millions of innocent children.
   It is wrong to kill innocent children.
   All of us should oppose what is wrong.
   The Human Life Bill would outlaw abortion and infanticide.
   Therefore, all of us should support the Human Life Bill.

7. The celebration of cultural diversity causes social fragmentation.
   The celebration of cultural diversity is symptomatic of a split personality.
   The people who set this country up framed one nation, indivisible.
   The celebration of cultural diversity works against the intention of these people.
   The celebration of cultural diversity erodes national identity.
   Therefore, the celebration of cultural diversity is wrong.

8. A kind and loving God wants children to be happy, well-fed, cared for, and loved.
   The pro-choice attitude insures that the children who are born will be happy, well-fed, cared for, and loved.
   Therefore, God favors the pro-choice attitude.
   *and*
   The Catholic Church opposes pro-choice.
   Whatever opposes pro-choice fosters famine and disease in Third World nations.
   Anything that fosters famine and disease is wrong.
   The policies of the Catholic Church are outdated.
   Whatever is wrong and outdated should be changed.
   Therefore, the Catholic Church should change its policy in favor of pro-choice.

9. Over thousands of years, organized religion has solved no social problems.
   Organized religion has exacerbated social problems by promoting fear, superstition, and irrational mythologies.
   Organized religion recommends that we solve these problems through prayer.
   Prayer is a waste of time.
   Prayer lulls the supplicant into inactivity.
   Inactivity solves nothing.
   Therefore, organized religion takes the wrong approach to solving social problems, and the correct approach is reality based, empirical, and rational.

10. Liberalism has excessively enlarged the welfare system.
    Liberalism has made welfare recipients indolent and irresponsible.
    The liberals refuse to acknowledge or correct the defects in this system.
    Liberalism has made the criminal justice system too sensitive to the criminal and too insensitive to the victim of crime.
    Liberalism has given more rights to the criminal than to the ordinary citizen.
    Liberalism has promoted sex and violence in the school system.
    Liberals have opposed prayer in the schools.
    Therefore, liberalism is bad.

Part III

1. Probably verbal (ambiguity). Does "sound" designate a subjective perception or an objective disturbance of the air (or some other medium)?

2. Factual and verbal (vagueness). What do we mean by "art"? Also, Barbara appears committed to the idea that there is a true and eternal essence of art that excludes such things as graffiti, whereas Vickie would probably deny this.

3. Factual. Did Kobe Bryant score 37 points or 34 points?

4. Probably verbal (ambiguity). By "violence" do we mean intentional hostility exerted by one human against another, or the operation of blind physical forces? Possibly a combination of verbal and factual. Is human violence caused by the operation of physical forces just as other physical events are?

5. Probably a combination of verbal (ambiguity) and factual. Does "death" mean the point at which the soul takes leave of the body, or the point at which life terminates? Also, Kathy appears to claim that an afterlife exists, whereas Anne appears to deny this.

6. Verbal (ambiguity). Does "education" refer to formal schooling only, or to schooling plus informal study?

7. Factual. Did Paul go to Knoxville or Nashville?

8. Verbal (ambiguity). Does "euthanasia" refer to passive measures to end life or active measures?

9. A combination of verbal (vagueness) and factual. What does "music" mean? Also, Cheryl claims that Metallica makes good sounds, whereas Oliver claims it does not.

10. Factual. When was the Battle of Trafalgar fought, and when did Nelson die?

11. Verbal (ambiguity). Eric thinks "metaphysics" refers to the study of magic and ghosts, while Leah is using the word in its more proper sense as designating the branch of philosophy that deals with ultimate questions of existence.

12. Probably a combination of verbal (ambiguity) and factual. Does "intelligence refer to IQ or to practical abilities? Also, Harold claims that Steinbeck's classes are worth taking, whereas Joyce appears to deny this.

13. Probably a combination of verbal (ambiguity and vagueness) and factual. First, does "freedom" mean the absence of external constraint only, or the absence of both internal and external constraint? Second, given the former, is it appropriate to punish the perpetrator of evil acts even though those acts might be internally compelled?

14. Factual in two ways. First, is the sun's volume greater or less than the earth's, and second, is gravity proportional to a body's mass or its volume? Of course, both disputants are mistaken about the comparative mass of the sun and earth.

15. Verbal (vagueness or possibly ambiguity). What is the meaning of “sexual relations”?

16. Verbal (vagueness). How much must one earn to be overpaid?

17. Possibly a combination of verbal (vagueness and/or ambiguity) and factual. First, there may be a factual dispute about how RU-486 works (factual). Second, Brian may be claiming that human life begins with conception, and anything that prevents the continuation of such life is immoral; while Elaine appears to deny part or all of this claim (vagueness). Third, does "abortion" mean the removal of an implanted ovum only, or does it include the prevention of implantation (ambiguity)?

18. Verbal (vagueness) and possibly factual. What is required for something to be called a food? Also, Penny considers marijuana to be relevantly similar to alcohol and coffee, whereas Sam does not.

19. Verbal (vagueness). When is someone considered to be poor?

20. Verbal (ambiguity) and possibly factual. By "right" Joseph intends human right, and Stephen intends civil right. Also, Joseph may be arguing that there are no rights apart from legislative action.

Exercise 2.2
Part I

1. extortion - term
   laborious - nonterm
   cunningly - nonterm
   practitioner - term
   seriousness - term
   forever - could be a term; e.g. "Forever is a long time."
   whoever studies - term
   interestingly impassive - nonterm
   scarlet - term
   reinvestment - term
   therefore - nonterm
   Thomas Jefferson - term
   Empire State Building - term
   annoy - nonterm
   render satisfactory - nonterm
   graceful dancer - term
   wake up - nonterm
   not only - nonterm
   tallest man on the
   squad - term
   mountaintop - term
   between - nonterm
   since - nonterm

2. drum: round, loud
   politician: gregarious, double-talking, elected
   devil: crafty, evil, powerful
   wolf: carnivorous, four-legged, dangerous
   Mona Lisa: expensive, mysterious, hanging in the Louvre
   Statue of Liberty: made of copper, standing in New York harbor, given by France
   fanatic: narrow-minded, dogmatic, obsessed
   carrot: edible, crunchy, orange
   riot: destructive, irrational, uncontrollable
   piano: large, having eighty-eight keys, made of wood

3. newspaper: *Los Angeles Times*, *Chicago Tribune*, *Washington Post*
   scientist: Enrico Fermi, Paul Dirac, Werner Heisenberg
   manufacturer: Boeing, General Dynamics, Intel
   river: Rhine, Amazon, Volga
   opera: *Rigoletto*, *La Traviata*, *Aida*
   tallest mountain on earth: Everest
   prime number less than ten: two, three, five, seven
   Governor of New York: Eliot Spitzer
   language of Canada: English, French
   Scandinavian country: Sweden, Norway, Denmark, Finland, Iceland

4a. plant, tree, conifer, spruce, Sitka spruce
 b. vehicle, car, sports car, Italian sports car, Maserati
 c. person, professional person, doctor of medicine, surgeon, brain surgeon
 d. animal, mammal, marsupial, kangaroo, wallaby
 e. polygon, quadrilateral, parallelogram, rectangle, square

Part II

1. False
2. True
3. True
4. False
5. False
6. True
7. True
8. True
9. False
10. True

Exercise 2.3
Part I

1. Precising
2. Persuasive
3. Stipulative
4. Lexical
5. Theoretical
6. Lexical
7. Persuasive
8. Precising
9. Stipulative
10. Theoretical
11. Precising
12. Theoretical
13. Stipulative
14. Persuasive
15. Lexical
16. Persuasive
17. Theoretical
18. Stipulative
19. Lexical
20. Precising
21. Theoretical
22. Precising
23. Persuasive
24. Lexical
25. Stipulative

Part II

2. Capital: (1) The seat of government of a state or nation; (2) The head of a column.
   Depression: (1) A period of low economic activity; (2) Dejection or sadness.

4. Energy: A physical unit equal to the mass multiplied by the speed of light squared.
   Atom: A fundamental unit of matter consisting of a nucleus composed of protons and neutrons and an outer shell of electrons.

5. Conservative: A responsible person interested in preserving the values of the past.
   Conservative: A stodgy curmudgeon who is afraid of change.

   Socialism: An enlightened form of government that ensures that the basic human needs of all the people are met.
   Socialism: A depraved form of government that violates the God-given right to own property and dispose of it as one chooses.

Part III

1. False
2. True
3. True
4. False
5. True
6. True
7. False
8. False
9. True
10. True

Exercise 2.4
Part I

1. Subclass
2. Genus and difference
3. Operational
4 Enumerative
5. Etymological
6. Synonymous
7. Demonstrative
8. Enumerative
9. Subclass
10. Operational
11. Etymological
12. Enumerative
13. Genus and difference
14. Operational
15. Subclass
16. Etymological
17. Synonymous
18. Genus and difference
19. Enumerative
20. Demonstrative
21. Genus and difference
22. Synonymous
23. Operational
24. Enumerative
25. Subclass
26. Synonymous
27. Etymological
28. Genus and difference
29. Operational
30. Subclass

Part II

1a. "Skyscraper" means the Empire State Building, Chrysler Building, Willis Tower, etc.
   Nonsynonymous term: "Buildings"

b. Corporation: General Motors, Ford, Toyota (auto maker)

c. Island: Oahu, Maui, Kauai (Hawaiian island)

d. Composer: Bruckner, Mahler, Strauss (nineteenth century Austrian male)

e. Novel: Jane Eyre, Wuthering Heights, Oliver Twist (motion picture)

2a. Ocean: Atlantic, Pacific, Indian, Arctic

b. Continent: North America, South America, Europe, Africa, Australia, Asia, Antarctica

3a. "Animal" means a horse, bear, lion, and so on.
Nonsynonymous term: "Mammal"

b. Fish: skipjack, yellow fin, albacore (tuna)

c. Vehicle: Pontiac, Cadillac, Oldsmobile (automobile)

d. Gemstone: diamond, sapphire, ruby (very hard object)

e. Polygon: triangle, square, hexagon (figure)

4a. Quadrilateral: irregular quadrilateral, trapezoid, parallelogram, rectangle, square

b. Circulating American coin: penny, nickel, dime, quarter, half dollar, dollar

5a. "Intersection" means crossing.

b. Fabric: cloth

c. Nucleus: center

d. Abode: dwelling

e. Wedlock: marriage

f. Cellar: basement

g. Summit: top

h. Apparel: clothing

6a. A person is a "genius" if and only if that person can earn a score of 140 on an IQ test.

b. A metal is "ferromagnetic" if and only if a magnet sticks to it when placed in contact with it.

c. A substance is "fluorescent" if and only if it glows when an ultraviolet light shines on it.

d. A solution is "alkaline" if and only if litmus paper turns blue when dipped into it.

e. Light is "polarized" if and only if its intensity changes when viewed through a piece of rotating Polaroid.

7a. "Drake" means a male duck.

b. Biologist: A scientist who studies life

c. Felony: A very serious crime

d. Widow: A woman whose husband has died

e. Library: A room or building for housing books

8a. Morphology: Derived from the Greek *morphe* (form) and *logos* (reason, speech, account). The morphology of something (such as an animal or plant) gives an account or explanation of the form or structure of that thing.

b. Isomorphic: Derived from the Greek *isos* (equal, same) and *morphe* (form). Something is isomorphic to something else if it has the same form, shape, or structure.

c. Isotropic: Derived from the Greek *isos* (equal, same) and *tropos* (turn, way, manner). Something exhibits isotropic properties (such as the velocity of light) if it has the same value when measured in different directions. In other words, no matter which way you turn, the value is the same.

d. Phototropic: Derived from the Greek *phot-* from *phos* (light) and *tropos* (turn). Something (such as a plant) is phototropic if it turns toward the light.

e. Photography: Derived from the Greek *phot-* from *phos* (light) and *graphein* (to write). Photography is a process by which an image is produced by the action of light. In other words, the image is "written" by light.

f. Lithography: Derived from the Greek *lithos* (stone) and *graphein* (to write). Lithography is a printing process by which an image is transferred from an ink-embedded stone (or metal) plate to a piece of paper.

g. Lithology: Derived from the Greek *lithos* (stone) and *logos* (word, reason, speech, account). Lithology is the study of rocks. In other words, lithology gives an account or explanation of rocks.

h. Psychology: Derived from the Greek *psyche* (spirit, soul) and *logos* (word, reason, speech, account). Psychology is the study of the soul (mind) or of disorders that afflict the soul.

Part III

1. False
2. True
3. False
4. False
5. True
6. False
7. False
8. True
9. True
10. True

Exercise 2.5

1. Too narrow: The definiens excludes images made of bronze, wood, plaster, etc.
2. Circular
3. No reference is made to the context.
4. Figurative
5. Improper grammar
6. Fails to state the essential meaning: No reference is made to the purpose of an iPod.
7. Negative
8. Circular: What is an IQ test? A test that measures intelligence? Also too narrow?
9. Too broad: The definiens also includes overtures, concertos, incidental music, etc.
10. Affective terminology
11. Obscure
12. Ambiguous: What includes definitions? Is it logic or arguments?
13. Improper grammar
14. Too narrow: Houses can also be made of brick, etc.
15. Figurative language (contains a metaphor.)
16. Circular
17. Fails to indicate the context
18. Vague, possibly ambiguous
19. Vague
20. Negative

21. Figurative language (contains a metaphor.)

22. Improper grammar; vague; too broad: "Sailboat" also includes ketches, sloops, and yawls.

23. Affective terminology; perhaps also figurative language

24. Ambiguous: One player defeats another before who can remove whose men from the board?

25. Too broad: The definiens also denotes violins, violas, and string bass.

26. Affective terminology

27. Figurative language

28. Fails to state the essential meaning: The definition says nothing about the purpose of a clock, which is to tell the time. Also too narrow: the definiens excludes 24 hour clocks, digital clocks, and other clocks without numerals on their face.

29. Obscure

30. Too broad: The definiens also denotes salmon, tuna, swordfish, etc.

31. Affective terminology

32. Improper grammar

33. Negative, fails to convey the essential meaning

34. Too broad: The definiens also includes pencils, crayons, etc. Also too narrow: Pens can be used on material other than paper.

35. Too broad (brandy is also made from grapes) and too narrow (some wines are made from fruits other than grapes).

Exercise 3.1

1. Formal fallacy
2. Informal fallacy
3. Formal fallacy
4. Informal fallacy
5. Informal fallacy
6. Formal fallacy
7. Informal fallacy
8. Informal fallacy
9. Formal fallacy
10. Formal fallacy

Exercise 3.2
Part I

1. Appeal to pity

2. Argument against the person, circumstantial

3. Red herring. The issue is whether the schools are in need of repair. The arguer changes the subject to whether the students spend too much time on their computers.

4. Accident

5. Appeal to the people, indirect variety

6. Argument against the person, abusive. The exercise assumes that philosophy consists of arguments.

7. Appeal to force

8. Straw man. The arguer distorts Senator Barrow's argument (which is about Social Security benefits) by making it appear that the argument promotes socialism.

9. Missing the point. The point is that we should improve the schools—not close them.

10. *Tu quoque* (you too)

11. No fallacy. The argument is deductively valid, and probably sound.

12. Appeal to the people, direct variety

13. Red herring. The issue is whether the students watch too much TV. The arguer changes it to whether TV is entertaining.

14. Appeal to pity

15. Accident

16. Argument against the person, circumstantial

17. Argument against the person, abusive

18. No fallacy. This is not an *ad hominem*. *Ad hominem* attempts to discredit an argument. Höss has not made any argument.

19. Straw man. The arguer distorts Kudlow's argument by making it appear that it advocates the abolition of government altogether.

20. Appeal to force

21. Red herring. The issue is whether biomedical labs abuse animals. The arguer changes the issue to whether pet owners abuse their pets.

22. Appeal to the people, indirect variety

23. No fallacy. This is not an *ad hominem*. *Ad hominem* attempts to discredit an argument. MacDowel's testimonial is not an argument.

24. *Tu quoque*

25. Missing the point. The point is whether Mr. Rhodes has murdered his wife—not whether he recalls having done so.

Part II

1. False
2. True
3. False
4. True
5. False
6. False
7. True
8. True
9. True
10. True

Part III

The fallacies are noted in brackets throughout the text:

"Thanks for saving us a seat," Jodie says to her friend Frank, as she and Liz sit down with coffee cups in hand in the crowded cafeteria.

"No problem," Frank says.

"We were late getting out of Professor Conklin's social problems class," Jodie says disgustedly. "He's such a jerk! He always keeps us late, and he's the most arrogant snob I've ever met." [No fallacy. No argument of Prof. Conklin is being attacked.]

"I've heard that," Frank says. "What's he covering in class now?"

"Sexual harassment in the workplace," Jodie replies. "But that *is* a real problem these days."

"How so?"

"Well, my friend Amelia is a dispatcher for a trucking company, and she's told me about dozens of times she's been a victim of sexual harassment. The truckers have *Playboy* centerfolds tacked up all over the place, they constantly leer at her, they're always asking her for dates. One of them even pats her rear when she leans over at the drinking fountain." [No fallacy]

Frank laughs. "Well, there is such a thing as the First Amendment, which supposedly guarantees freedom of expression. You wouldn't want to deny these guys their freedom of expression, would you?" [Accident]

"Freedom of expression my eye!" explodes Jodie, looking incredulously at Frank. "Patting someone's rear isn't freedom of expression, it's abusive physical contact. So it's not protected by the First Amendment. [No fallacy] Men! The trouble with you, Frank,

is you're a typical man. If you were a woman, you'd see these things for what they are," she says, looking at Liz for support. [*Ad hominem* circumstantial]

Liz nods her head in strong agreement.

"Well, says Frank, "I think your friend is lucky to have a job, what with all the people out of work these days. I've got a friend who's spent half his retirement savings just putting food on the table for his family, after losing his job. He was in the construction business, which is dead right now. And in other parts of the country it's even worse. You should tell Amelia to quit complaining." [Red herring]

"Stop giving me the run-around," demands Jodie, offended. "The trouble with you men is, you always look at women as sex objects. That makes sexual harassment inevitable." [Red herring]

"What do you mean?" protests Frank. "It's you women who treat us men like sex objects. What about all your make-up and perfume? And the tight pants and all the see-through stuff you wear? You think men are just a pack of animals--nothing but instinct--and you think that will make us fall for you. Isn't that how you see us?" [*Tu quoque*]

"I won't dignify that with a reply," fumes Jodie. "Anyone who isn't blind can see that Amelia's being victimized by those truckers. [*Ad hominem* abusive] If you can't see it, maybe pouring this hot coffee over your thick head will wake you up!" she threatens. [Appeal to force]

"Calm down," says Frank with a startled look. "Everyone is beginning to stare at us. Okay, suppose I agree that Amelia is a victim. The question is, what do we do about it?"

"To begin with," says Jodie firmly, "the trucking company should transfer Amelia out of dispatch and give her a better job, like executive secretary in the regional office. Her husband ran out on her recently, leaving her with all five kids--and little Tommy needs braces. She could really use the extra money." [Appeal to pity]

"You're joking!" Frank laughs sarcastically. "Didn't you tell me once that Amelia never finished high school and is functionally illiterate? She could never handle a job like that." [No fallacy]

Thinking for a moment, Jodie then replies, "well, maybe you're right. But at least the company should adopt a policy forbidding all forms of sexual harassment. Maybe that would make the truckers see how abusive they are, and then they might stop acting that way. [No fallacy] Practically every company in the country has such a policy, but Amelia's bosses are dragging their feet." [Appeal to the people--indirect]

"Okay. But then how do you define sexual harassment?" Frank asks. "'Cause if you can't define it, any policy is useless."

"Well, I don't exactly know," Jodie hesitates. "I'll have to think about that."

"Aha! I knew it!" exclaims Frank, triumphantly. "You can't define it, which means you don't even know if it exists! [Missing the point] If you weren't such a radical feminist, you would see that all these claims of sexual harassment are hooey." [*Ad hominem* abusive]

"Me, radical?" Jodie explodes. "The truth is you're a radical sexist. [*Tu quoque*] What you're saying is, women are only chattel, like they were two hundred years ago, and men can use or abuse them any way they please. [Straw man] Liz, that's what he's saying, isn't it?"

"Absolutely," Liz affirms.

"What a crazy argument," says Frank scornfully. "What you're saying is, we should abolish all distinctions between men and women and create a unisex society in which everyone acts like a bunch of robots. [Straw man] Isn't that right, Liz?"

"No, not at all," insists Liz. "She's trying to--"

"You're completely insane, Frank" Jodie interrupts, rising determinedly from her chair, "and your arguments are wacko!" [*Ad hominem* abusive]--and then she throws the remains of her coffee at Frank. [No fallacy] The other students who have been listening to the heated argument rise up shouting, "Right on Jodie!" Some begin chanting, "End sex harassment! End sex harassment!" As more students join the demonstration, they surrounded Frank, gesturing crudely. [Appeal to the people--direct]

Angry and humiliated, he breaks away and dashes out the door.

Exercise 3.3
Part I

1. Hasty generalization (converse accident)

2. Weak analogy

3. Appeal to unqualified authority. The stated experts are authorities in matters related to physics—not psychic phenomena.

4. Slippery slope

5. No fallacy

6. False cause (*post hoc ergo propter hoc*)

7. Appeal to ignorance

8. No fallacy. In this case the stated authority is qualified.

9. Hasty generalization (converse accident)

10. Appeal to unqualified authority. Amadinejad is either lying or deluding himself.

11. No fallacy. This is not an appeal to ignorance. The claim is not that some nameless nobody has failed to prove something but that qualified experts have failed to find something.

12. Slippery slope

13. Weak analogy. The analogy is between trying on a pair of shoes and “trying on” one’s fiancée.

14. Appeal to ignorance

15. False cause (*non causa pro causa*)

Part II

1. False
2. True
3. False
4. False
5. True
6. True
7. True
8. False
9. True
10. True

Part III

1. Hasty generalization

2. Missing the point. The point is that something must be done about the graffiti, not about the curriculum of the schools.

3. No fallacy. This is not an *ad hominem*. *Ad hominem* attempts to discredit an argument. Obama's promise is not an argument.

4. Argument against the person, circumstantial

5. Accident. The general rule, what the farmer sows in the spring he reaps in the fall, pertains to the generic nature of what is planted (wheat, corn oats, etc.)—not to its price.

6. No fallacy. Hawking is a qualified authority.

7. False cause (gambler's fallacy)

8. Appeal to force

9. Appeal to the people, indirect variety

10. Straw man. The arguer distorts Quinn's argument by making it appear that it advocates irrationality.

11. Weak analogy

12. No fallacy. This is not an appeal to ignorance. In this cast the conclusion is supported by extensive laboratory tests.

13. Red herring. The issue is whether the arguer has blocked the plan to convert Antarctica into a park. The arguer changes the subject to the various kinds of wildlife that inhabit Antarctica.

14. Argument against the person, abusive

15. No fallacy. This is a good argument from analogy.

16. Missing the point. The point is whether Malone will be capable and efficient—not whether she will be nice to look at.

17. Appeal to unqualified authority.

18. Missing the point. The point is whether the arguer's tax return is accurate—not whether it was filed on time.

19. Weak analogy. The analogy is between an airliner and a rock concert. An airliner can be hijacked and can crash, killing hundreds of people. A rock concert cannot.

20. Argument against the person, circumstantial

21. Appeal to pity

22. No fallacy. This is not an *ad hominem*. *Ad hominem* attempts to discredit an argument. Here the arguer attempts to discredit testimony. Testimony is not argument.

23. *Tu quoque*

24. Red herring. The issue is whether the algebra test was too hard—not whether Angela flirts with the quarterback.

25. Appeal to ignorance

26. Accident

27. No fallacy? Weak analogy?

28. False cause (*post hoc ergo propter hoc*)

29. Appeal to unqualified authority

30. Slippery slope

Part IV
The fallacies are noted in brackets throughout the text:

"Hi! Glad you could make it," Ralph says to his friend Claudia, at a Friday night party. "Hey, you just missed a great discussion that Tom, Ruben, and I were having about abduction by extraterrestrials. Ruben just left, but he said he's been reading this book by Whitley Strieber--I think it's called *Transformation*--in which Strieber describes being kidnapped by creatures from outer space."

"Good grief! You don't actually believe that nonsense, do you?" Claudia asks incredulously. [Possible *ad hominem* abusive]

"Well, I don't think Strieber would lie. Also, Ruben told us an amazing personal story. He was out camping a year ago, and after he'd killed off a couple of six packs of

Moosehead, he says he saw a UFO. So, I think we have to conclude there really are UFOs." [Appeal to unqualified authority]

"What a joke!" Claudia laughs scornfully. "Ruben was probably hallucinating. [No fallacy] By the way, didn't he fail most of his classes last semester? His parents are spending a fortune for his education, and all he does is party, sleep, and ignore his studies. I think that's immoral. [Red herring] As for Strieber, does he give any evidence?"

"As a matter of fact, he does," Ralph replies smugly. "Apparently, a few years ago, he was driving with his wife on some country road, when both of them experienced an unusual blackout. When they woke up, they were thirty-five miles further down the road, and they had no recollection of how they got there. Later, both began having dreams about extraterrestrials performing experiments on them while they were on board their spacecraft. Extraterrestrials must have abducted them, then hypnotized them so they wouldn't remember what had happened." [False cause]

"Oh yeah, now I remember who Strieber is," answers Claudia, caustically. He's that weirdo who dreams up all kinds of fantastic stories just so he can write books about them and make lots of money. [*ad hominem* abusive and circumstantial] If you give that sickie one minute of your time, then you're crazier than he is." [*Ad hominem* abusive]

"I think you're prejudiced," Ralph says. "Why, recent surveys show that sixty-four percent of the American public believe in UFOs, and the number is growing every day. That alone should convince you they're real." [Appeal to the people--indirect]

"You've got to be kidding," Claudia mutters, shaking her head in disbelief.

"Well then, consider this," insists Ralph. "There are hundreds of people out there who've had similar dreams and the same unaccounted for time lapses. They can't all be fantasizing." [No fallacy]

"I know that Strieber is a kook," Claudia persists, "so all the others must be too." [Hasty generalization]

"Now, now, aren't we jumping to conclusions?" her friend asks condescendingly. [No fallacy]

"Not at all. First it was UFOs and little green men. Now those little creatures are abducting people and experimenting on them. Before long they'll be manipulating our genes and trying to infiltrate the human race. In the end, everyone will suspect everyone else of being an alien, mass terror will prevail, and civilization will collapse!" Claudia exclaims in mock horror. [Slippery slope]

"Don't be a fool!" Ralph barks, irritated. "The problem with you is, you're an agnostic. [*Ad hominem* circumstantial] Obviously, you're saying we should refuse to believe in anything we can't clearly see or touch. So, logically, God doesn't exist, and there is no immortal soul. [Straw man] Tom, that's what she's saying, isn't it?"

"More or less," Tom agrees halfheartedly.

"Again, not at all," Claudia responds. "What I'm saying is, people have to be just a little bit critical about what they believe. Apparently you believe any cockamamie story that comes your way. You're just so gullible. If you keep it up, everyone and their dog will take you for a ride." [Probably no fallacy]

"Oh yeah? If I were you, I'd take a close look at my own beliefs," Ralph gibes. "Didn't I see you reading the astrology column just the other day? [*Tu quoque*] Nobody in their right mind believes in astrology. [*Ad hominem* abusive] Maybe I should start screaming 'Claudia believes in astrology! Claudia believes in astrology!' Then everyone will gawk at you, and that sexy physics major you're dying to get a date with will think you're a nut." [Appeal to force]

"Oh, shut up!" says Claudia, blushing. "I may read the astrology column, but I certainly don't believe it. I just read it for fun. But, the fact is, during the past twenty-five years there have been thousands of alleged sightings of UFOs, and not a single one has led to any solid evidence of their existence. [No fallacy] What do you make of that?"

"I think we should look at this situation the other way around," Ralph says. Up until now, nobody has shown that UFOs don't exist, so I think we should give those people who claim they have seen them the benefit of the doubt. We should believe in UFOs and extraterrestrials until the sightings are proven false. [Appeal to ignorance]

"Well, okay, let's suppose, just for the sake of argument, that I admit the existence of UFOs and their little green drivers. How are we supposed to respond to them? What are we supposed to do?" Claudia asks.

"For starters, we should extend an open invitation to them," answers Ralph. "They may come from a dying planet where millions of their compatriots desperately struggle for survival. Their sun may be burning out, their water supply exhausted, and their soil poisoned with toxic chemicals. Surely they deserve a second chance on a new planet." [Appeal to pity]

"Maybe so," Claudia says in a patronizing tone. "And now that you mention it, we probably have a legal obligation to let them in. Our current immigration laws say that we have to admit at least ten thousand applicants annually, from every major nation. If those aliens would just sign the right papers, we'd have to give them permanent residency. [Accident] However, what worries me is, they may have the wrong intentions. After all, didn't they conduct experiments on those people they abducted?"

"Yes, but don't we experiment on animals? If the animals don't complain, why should we? [Weak analogy] Also, medical experimentation often leads to wonderful new cures. I'm certain we have nothing to worry about," says Ralph, proud of his logic. [Missing the point] "Humph! I hope you're right. Well, I've got to go now--and don't let any green men kidnap you," Claudia says with a barb.

"And you either," Ralph answers.

Exercise 3.4
Part I

1. False dichotomy

2. Composition

3. Equivocation (on "good")

4. Amphiboly. What's in the locker, the picture or the girl?

5. Complex question

6. Division

7. Begging the question. Premise and conclusion say the same thing in a slightly different way.

8. No fallacy. This is a valid, sound, argument from definition.

9. Suppressed evidence. The argument suppresses the fact that the trees are much larger today than they were twenty years ago.

10. Equivocation (on "ring")

11. Complex question

12. Division

13. Composition. The premise claims that each and every human will perish. The conclusion claims that the entire class of humans (the human race) will perish.

14. No fallacy. The carrot contains exactly the same amount of water as does its cells.

15. Amphiboly. What happened in the office, the interview or the drilling for oil?

16. Suppressed evidence The argument suppresses the fact of inflation. The monetary value of $90,000 going back fifty years is far greater than the monetary value of $200,000 going several years into the future.

17. False dichotomy

18. No fallacy. The argument is a valid, sound, disjunctive syllogism.

19. Division

20. Begging the question

21. Composition. There were only two atomic bombs dropped during World War II, but hundreds of thousands of conventional bombs.

22. Complex question

23. Amphiboly. What's in the book, the errors or the warning?

24. Equivocation (on "found"). In one sense "found" means discovered; in the other it means recovered.

25. Begging the question. Is the fetus merely a part of a woman's body?

Part II

| | | |
|---|---|---|
| 1. True | 6. False | 11. True |
| 2. True | 7. True | 12. False |
| 3. True | 8. False | 13. True |
| 4. True | 9. False | 14. False |
| 5. False | 10. True | 15. True |

Part III

1. Argument against the person, circumstantial
2. Amphiboly. Did the fireworks explode inside Wilson's pajamas?
3. Appeal to unqualified authority
4. Equivocation (on "nothing"). In one sense "nothing" means having nothing to eat; in the other it means nothing at all, or nothing in existence.
5. Composition
6. Appeal to the people (indirect variety)
7. Begging the question
8. Hasty generalization (converse accident)
9. Appeal to ignorance
10. Division. The word "disappearing" also has two senses. In one sense it means shrinking; in the other it means vanishing from sight.
11. Weak analogy
12. Composition
13. False cause (oversimplified cause)
14. Red herring. The issue is whether the administration is anti-German. The arguer changes it to Germany's artistic and literary accomplishments.
15. Complex question
16. Appeal to unqualified authority
17. Argument against the person, abusive and circumstantial
18. Appeal to pity
19. Composition
20. False dichotomy
21. Division
22. Weak analogy

23. Equivocation (on "force"). In one sense "force" means a physical force; in the other it means a psychological motivator.

24. No fallacy. In the case of colors, it is often possible to argue from parts to whole.

25. Straw man. The arguer distorts the argument of the humanitarian groups by making it appear that it favors the construction of high density housing projects.

26. Amphiboly. What did Pauline throw into the trash, the mink coat or the carton? The meaning of "it" is ambiguous.

27. Begging the question

28. Accident. The general rule, what goes up must come down, does not apply to the price of food.

29. Appeal to force

30. Suppressed evidence. The argument suppresses the fact that non-organic food often contains pesticides, herbicides, hormones, antibiotics, and genetically altered organisms—none of which are found in organic food.

31. Red herring. The issue is whether millions of Americans are without adequate health care. The arguer changes it to whether America's health care givers are qualified.

32. *Tu quoque*

33. Slippery slope

34. Amphiboly. What is it that's walking up O'Connell Street, the statue or the tourist?

35. Begging the question. The premise and the conclusion say the same thing in slightly different ways.

36. Appeal to unqualified authority

37. False cause (gambler's fallacy)

38. Weak analogy

39. Equivocation (on "rare"). In one sense "rare" means undercooked; in the other it means scarce.

40. Begging the question

41. Division

42. No fallacy

43. Missing the point or suppressed evidence. For missing the point, the point is that drivers should be careful even when driving close to home—not that it's more dangerous to drive close to home. For suppressed evidence, the argument suppresses the fact that the majority of miles driven are within twenty miles of the driver's home.

44. False dichotomy

45. Appeal to ignorance

46. Hasty generalization

47. Missing the point. The point is that we should strengthen the Endangered Species Act—not repeal it.

48. False cause (*non causa pro causa*)

49. Composition

50. Complex question

Part IV

"Thanks for giving me a lift home," Paul says to his friend Steve, as they head toward the freeway.

"No problem; it's on my way," says Steve.

"Uh oh," warns Paul suddenly, "watch out ahead. Looks like the police have pulled somebody over."

"Thanks," Steve says. "Hope they don't beat the guy up."

"Not a chance," says Paul. "Why would you say that?"

"You're an optimist," answers Steve. "Most cops are animals; they beat up on anybody they want to. You remember Rodney King, don't you? Those cops in LA put King in the hospital for no reason at all. That should prove I'm right." [Hasty generalization]

"I think you're overreacting," Paul says. "Daryl Gates, the LA Police Chief at the time, said the King incident was an aberration. Since he was chief, I think we should take him at his word." [Appeal to unqualified authority]

"But Gates was a lunatic who refused to acknowledge even our most basic rights," Steve persists. "Also, if you recall, he was forced to resign after the King incident. [No fallacy--Gates made no argument] I know we don't live in LA, but our police department is just as bad as theirs. So, you can bet that our friend back there is just as abusive as any of them." [Division]

"Wait a minute," Paul argues, "as far as I know, nobody has ever proved that our police force is the slightest bit violent. You've no right to draw such a conclusion." [Appeal to ignorance]

"Well, listen to this," Steve counters, as he changes lanes and turns onto the freeway. "About a week ago, I was with my friend Casey. When I left him, he was perfectly okay; but he was picked up for going through a stop sign on the way home. I saw him a couple

of days later, and he had a big bruise under his right eye. The cop who stopped Casey must have hit him with his baton." [False Cause--*post hoc*]

"Hold on. Did you ask Casey what happened?"

"No. I didn't have to," says Steve, a bit righteously. "I asked Casey's wife what happened between Casey and the cop, and she said he hit him. Those were her exact words, so that was good enough for me. I bet the cop's a maniac." [Amphiboly--who hit whom?]

"Good grief," answers his friend. "How long will it take you to get over your warped view of things?" [Complex question]

"My way of looking at things isn't warped," Steve insists. "The problem is, you and I are both white. If you were black, you'd see things differently. [*ad hominem* circumstantial] Police brutality toward African-Americans is way out of hand."

"Well," counters Paul, "a study done recently by an independent agency might interest you. According to that study, for every African-American whom the police use force against, there's a white person they also use force against. That proves the police treat African-Americans no worse than they do whites." [Begging the question: "Doesn't this assume that the number of blacks in the population equals the number of whites?" or possibly, composition]

"I've never heard of that study, but it seems to me there must be something wrong with it," insists Steve.

"Well, the results of that study are born out in my experience," says Paul. "I've been pulled over three or four times in the past couple of years, and the officers have always been extremely courteous. I can only conclude that the vast majority of these allegations of police brutality are the product of fertile imaginations." [Suppressed evidence or hasty generalization]

"Again, your naiveté amazes me," Steve answers, dumbfounded. "First of all, you forget that you're white and you drive a new Mercedes. Don't you think that makes a difference? [No fallacy] In fact, that's the trouble with all these arguments that downplay police brutality. They're all concocted by white people." [*Ad hominem* circumstantial]

"Well, the fact remains that we have a major crime problem in this country," Paul argues. "Combating crime requires a few concessions, and you do want to combat crime, don't you?" [Begging the question]

"Sure," Steve replies grudgingly, "but at what expense? Do innocent people have to get their heads bashed in?" [No fallacy]

"Well, I think what it comes down to is this," says Paul. "Either you allow the police to use whatever force they find necessary, or the criminals will take over this country. Now you certainly don't want that to happen, do you?" [False dichotomy]

"No, but that's the crucial question," Steve says, exiting from the freeway. "When and how much force is necessary?" [No fallacy]

"Well, you remember when the police apprehended that serial killer a few weeks ago? When the police made the arrest, the killer attacked them. So, the police can use force when attacked." [No fallacy]

"I agree," responds Steve thoughtfully. "But what about the way the police treated those peaceful right-to-lifers who were demonstrating in front of the abortion clinic the other day? Many of them were elderly and posed no physical threat. But the cops used those contraptions--what do you call them, nimchucks, nomchucks, I don't know--to squeeze the old folks' wrists, causing great pain and injury, and they hit the old people on the head with their batons. Do you think that was necessary?!" [No fallacy]

"Of course it was," answers Paul, agitatedly. "Those people attacked the police--they hurled epithets at them." [Equivocation on "attack"--verbal attack, physical attack]

"Honestly, I don't know how we've managed to stay friends all these years," Steve says with some frustration. "By the way, do you know what it says on the back of all police cars? It says 'To Protect and Serve.' Now if you hired a servant to take care of you, you'd get rid of him if he disobeyed you. Right?"

"Probably."

"Well, isn't it true," Steve asks, "that whenever a police officer disobeys one of us taxpayers, that officer should be fired?" [Weak analogy]

"That may be stretching it a bit," Paul laughs.

"But seriously," continues Steve, "I think what we need is some screening device to keep violent types from ever becoming cops."

"Well, you'll be happy to know that exactly such a device has been used for the past twenty-one years," Paul states. "Before entering the police academy, every applicant goes through a battery of psychological tests that positively eliminates all the macho types and the ones prone to violence. This ensures the individual officers are nonviolent, so we know the entire police force is nonviolent." [Composition]

"Hmm. Maybe your so-called solution is really the problem," Steve suggests, as he pulls up in front of Paul's house. We've had psychological testing for twenty-one years, and all that time, police violence has been on the rise. Perhaps we should get rid of the testing program." [False cause--*non causa pro causa*]

"Well, I don't know about the logic of that," Paul muses, stepping out of the car. "But like you said, we've been friends for a long time, so I guess we can disagree. Thanks for the ride and the discussion. See you tomorrow!"

"Sure," Steve murmurs. "Tomorrow."

Exercise 3.5
Part I

1. Missing the point, begging the question, or suppressed evidence. Is any activity justified by the mere fact that it amounts to good business? Also, the arguer ignores the moral question of exporting a product that kills its users.

2. Appeal to pity

3. Begging the question. Is it likely that every woman will enlist and that every one of those will be killed? Also possible straw man.

4. Composition

5. Missing the point; red herring; also, begging the question?

6. *Tu quoque*

7. No fallacy? Weak analogy?

8. Appeal to pity

9. Begging the question. Does money invested in the stock market actually produce jobs? Composition? The fact that some politicians are corrupt and self-serving does not mean that the whole government is. Hasty generalization? The fact that some programs are wasteful and useless does not mean that all of them are.

10. Appeal to unqualified authority. The statement "Only a fool . . . ." suggests argument against the person, abusive.

11. Complex question

12. No fallacy? Weak analogy?

13. False cause (oversimplified cause), suppressed evidence, begging the question. There is little or no evidence of any causal connection between malpractice suits and the decision of some obstetricians to leave the field. An unmentioned factor is the inconvenience of being on call twenty-four hours per day waiting for patients to deliver. There is also little or no evidence of any genuine "lawsuit crisis."

14. Argument against the person, abusive; argument against the person, circumstantial

15. Slippery slope

16. Begging the question. The argument appears to run in a circle.

17. False dichotomy

18. Two cases of weak analogy; also, argument against the person, circumstantial

19. Slippery slope

20. False dichotomy; also, begging the question and/or false cause. Will a smoking ban in restaurants actually cause smokers to stay away?

21. Appeal to pity

22. False cause? No fallacy?

23. Missing the point or red herring; also, begging the question?

24. Argument against the person, abusive

25. False cause (*post hoc ergo propter hoc*)

26. Begging the question. Just because your emotional reaction was that of losing a baby, does that mean the fetus is really a baby?

27. Missing the point. Pledging allegiance to the flag is a symbolic statement of support for the Constitution, which guarantees freedom of expression--including flag burning. Also, weak analogy (between flag burning and libel)

28. Suppressed evidence? Composition? Begging the question? No fallacy? The Commerce Clause of the U.S. Constitution and pertinent federal legislation prohibits unfair trade practices between states. No equivalent regulations exist for international trade.

29. No fallacy? Weak analogy?

30. Suppressed evidence? Men and women usually differ in physical strength. Begging the question? Is it likely that physical attraction will lead to injury or rape? No fallacy?

31. Appeal to the people, direct variety. Also, appeal to pity? Begging the question? Does the fact that former pets were once loved make any difference?

32. *Tu quoque*. Also, red herring

33. False cause (*post hoc ergo propter hoc*). But the argument is almost certainly whimsical or facetious.

34. Appeal to the people, direct variety?

35. Appeal to force

36. Hasty generalization and/or weak analogy

37. False dichotomy? No fallacy?

38. Equivocation. The advertiser makes it appear that the buyer will save 60% of the entire cost of a vacation instead of merely 60% of the cost of a plane ticket. Possibly composition

39. Begging the question. Must we all die prematurely in a nuclear holocaust? Also possibly red herring

40. Appeal to unqualified authority; also, slippery slope

41. Begging the question and/or weak analogy. Is the forced extinction of animal and plant species caused by industrial growth just another form of evolution? Is this forced extinction justified?

42. Weak analogy and/or red herring; also, begging the question. Is the fetus a child?

43. Several cases of weak analogy; also, argument against the person, abusive?

44. *Tu quoque*; also, appeal to force?

45. Complex question

46. Begging the question. Is the fetus a child? Also, straw man.

47. Hasty generalization

48. Slippery slope

49. Appeal to unqualified authority. Also, the last paragraph suggests a hasty generalization.

50. Missing the point. Whether such roadblocks are reasonable or unreasonable is a question for the courts to decide--not the general public. Also, possibly appeal to the people.

51. Argument against the person, abusive (against the ACLU). Also, missing the point or begging the question. If the mere possibility of hidden contraband justifies a search, then won't all Fourth Amendment rights be destroyed?

52. Hasty generalization. Also, argument against the person, abusive? Also, begging the question or red herring?

53. Argument against the person, circumstantial; also, begging the question. Are talk-show participants informed and unbiased spokespersons?

54. Begging the question or suppressed evidence. Individual tax payers are never consulted as to how tax revenues should be allocated.

55. Weak analogy

56. Argument against the person, abusive; *tu quoque*; also, begging the question. Does the possibility that the Japanese would have used the atomic bomb against us justify our use of it against them?

57. Weak analogy (between being overweight, too tall, or too short—which require special uniforms—and being gay)

58. Weak analogy? No fallacy?

59. Suppressed evidence. Even though assault rifles might be used in few crimes, when they are used, they often inflict tremendous damage. Begging the question. Is it likely that we will ever be justified in using assault rifles against government troops?

60. Weak analogy? No fallacy?

Exercise 4.1

1. Quantifier: some; Subject term: executive pay packages; Copula: are; Predicate term: insults to ordinary workers

2. Quantifier: no; Subject term: stressful jobs; Copula: are; Predicate term: occupations conducive to a healthy lifestyle

3. Quantifier: all; Subject term: oil-based paints; Copula: are; Predicate term: products that contribute significantly to photochemical smog

4. Quantifier: some; Subject term: preachers who are intolerant of others' beliefs; Copula: are not; Predicate term: television evangelists

5. Quantifier: all; Subject term: trials in which a coerced confession is read to the jury; Copula: are; Predicate term: trials in which a guilty verdict can be reversed

6. Quantifier: some; Subject term: artificial hearts; Copula: are; Predicate term: mechanisms that are prone to failure

7. Quantifier: no; Subject term: sex education courses that are taught competently; Copula: are; Predicate term: programs that are currently eroding public morals

8. Quantifier: some; Subject term: universities that emphasize research; Copula: are not; Predicate term: institutions that neglect undergraduate education

Exercise 4.2
Part I

1. **E** proposition, universal, negative, subject and predicate terms are distributed.

2. **A** proposition, universal affirmative, subject distributed, predicate undistributed.

3. **I** proposition, particular affirmative, subject and predicate undistributed.

4. **O** proposition, particular negative, subject undistributed, predicate distributed.

5. **A** proposition, universal affirmative, subject distributed, predicate undistributed.

6. **E** proposition, universal negative, subject and predicate distributed.

7. **I** proposition, particular affirmative, subject and predicate undistributed.

8. **O** proposition, particular negative, subject undistributed, predicate distributed.

Part II

1. No drunk drivers are threats to others on the highway.

2. All wildlife refuges are locations suitable for condominium developments.

3. Some slumlords are not people who eventually wind up in jail.
4. Some CIA operatives are champions of human rights.

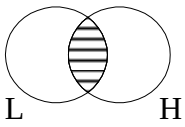
Part III.

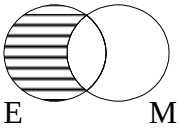
1. Some owners of pit bull terriers are people who can expect expensive lawsuits.
2. Some tax proposals that favor the rich are not fair proposals.
3. All grade school administrators are people who choke the educational process.
4. No residents of Manhattan are people who can afford to live there.

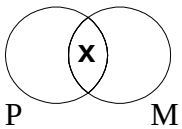
Part IV.

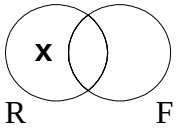
1. Some oil spills are not events catastrophic to the environment.
2. Some alcoholics are people with a healthy diet.
3. No Mexican vacations are episodes that end with gastrointestinal distress.
4. All corporate lawyers are people with a social conscience.

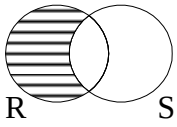
Exercise 4.3
Part I

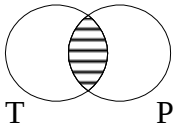
1. 

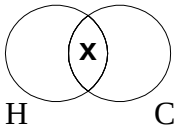

2. 

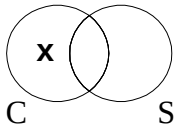

3. 


4. 


5. 


6. 


7. 

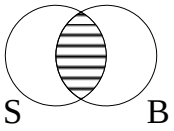

8. 

Part II

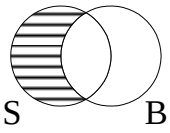
| | | | | | |
|---|---|---|---|---|---|
| 1. | Invalid | 6. | Invalid | 11. | Invalid |
| 2. | Valid | 7. | Invalid | 12. | Invalid |
| 3. | Invalid | 8. | Valid | 13. | Invalid |
| 4. | Valid | 9. | Invalid | 14. | Valid |
| 5. | Invalid | 10. | Valid | 15. | Invalid |

Part III

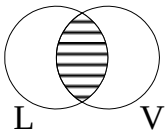
1. No S are B.



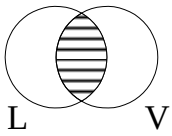

All S are B.
Invalid



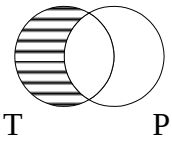

2. F: Some L are V.



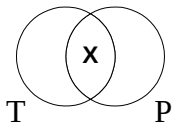

No L are V.
Valid



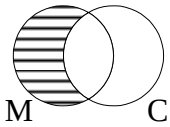

3. All T are P.



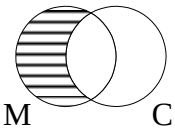

Some T are P.
Invalid;
Existential Fallacy



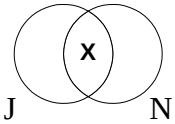

4. All M are C.



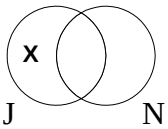

F: Some M are not C.
Valid



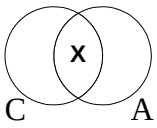

5. F: No J are N.



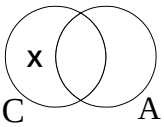

Some J are not N.
Invalid



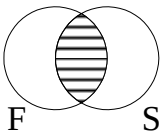
6. Some C are A.



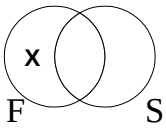

Some C are not A.
Invalid



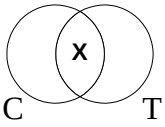

7. No F are S.



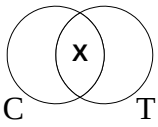

F: All F are S
Invalid;
Existential Fallacy



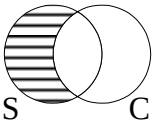

8. F: No C are T.



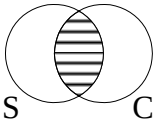

Some C are T
Valid



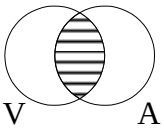

9. F: Some S are not C.



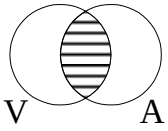

F: Some S are C.
Invalid



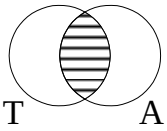

10. No V are A.



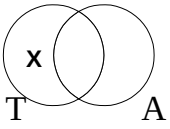

F: Some V are A.
Valid



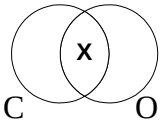
11. No T are A.



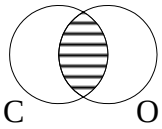

Some T are not A.
Invalid;
Existential fallacy



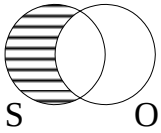

12. Some C are O.



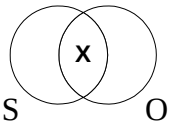

No C are O.
Invalid



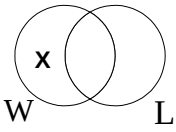

13. F: Some S are not O.



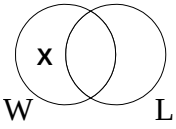

Some S are O.
Invalid;
Existential fallacy



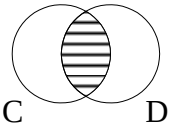

14. F: All W are L.



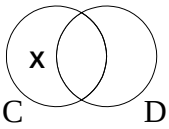

Some W are not L.
Valid




15. F: Some C are D.




F: All C are D.
Invalid;
Existential fallacy



Part IV

1. All A are B.
   Therefore, it is false that no A are B.

2. It is false that some A are B.
   Therefore, it is false that all A are B.

3. No A are B.
   Therefore, some A are not B.

4. It is false that some A are not B.
   Therefore, some A are B.

Exercise 4.4
Part I

| | | |
|---|---|---|
| 1. | No Non-B are A. | True |
| 2. | Some non-B are non-A. | Und. |
| 3. | No A are B. | False |
| 4. | All non-B are A. | False |
| 5. | Some B are not non-A. | Und. |
| 6. | Some non-A are not B. | True |
| 7. | Contraposition | Und. |
| 8. | Obversion | True |
| 9. | Conversion | Und. |
| 10. | Obversion | False |
| 11. | Contraposition | True |
| 12. | Conversion | False |

Part II

1a. All storms intensified by global warming are hurricanes. (Not logically equivalent)

b. No completely successful procedures are sex-change operations. (Logically equivalent)

c. Some works that celebrate the revolutionary spirit are murals by Diego Rivera. (Logically equivalent)

d. Some substances with a crystalline structure are not forms of carbon. (Not logically equivalent)

2a. No radically egalitarian societies are societies that preserve individual liberties. (Logically equivalent)

b. All cult leaders are people who brainwash their followers. (Logically equivalent)

c. Some college football coaches are not people who slip money to their players. (Logically equivalent)

d. Some budgetary cutbacks are actions unfair to the poor. (Logically equivalent)

3a. All physicians eligible to practice are physicians with valid licenses. (Logically equivalent)

b. No migrants refused asylum are persecuted migrants. (Not logically equivalent)

c. Some politicians who want to increase taxes are politicians who defend Social Security. (Not logically equivalent)

d. Some supporters of civil unions are not supporters of gay marriage. (Logically equivalent)

Part III

1. Invalid (illicit conversion)
2. Valid
3. Valid
4. Invalid (illicit contraposition)
5. Valid
6. Valid
7. Valid
8. Invalid (illicit conversion)
9. Invalid (illicit contraposition)
10. Valid
11. Valid
12. Invalid (illicit contraposition)
13. Invalid (illicit conversion)
14. Valid
15. Invalid (illicit conversion)

16. Invalid (illicit contraposition)
17. Valid
18. Invalid (illicit conversion)
19. Valid
20. Valid

Exercise 4.5
Part I

1. (a) false, (b) true, (c) false
2. (a) undetermined, (b) undetermined, (c) true
3. (a) false, (b) false, (c) true
4. (a) undetermined, (b) true, (c) undetermined
5. (a) undetermined, (b) false, (c) undetermined
6. (a) false, (b) true, (c) true
7. (a) false, (b) undetermined, (c) undetermined
8. (a) true, (b) false, (c) true

Part II

1. Valid
2. Invalid (illicit subalternation)
3. Valid
4. Invalid (existential fallacy)
5. Invalid (illicit subcontrary)
6. Valid
7. Invalid (illicit contrary)
8. Valid

9. Invalid (existential fallacy)
10. Invalid (illicit subcontrary)
11. Valid
12. Invalid (unnamed fallacy)
13. Invalid (existential fallacy)
14. Invalid (illicit contrary)
15. Valid

Part III

1. Valid, unsound
2. Valid, sound
3. Invalid, unsound (existential fallacy)
4. Valid, sound
5. Invalid, unsound (illicit contrary)
6. Invalid, unsound (illicit subalternation)
7. Invalid, unsound (existential fallacy)
8. Invalid, unsound (illicit contrary)
9. Valid, sound
10. Invalid, unsound (illicit subcontrary)

Part IV

1. All non-B are A. (True)
2. All A are non-B. (False)
3. All A are B. (True)
4. Some non-A are B. (Undetermined)
5. Some A are non-B. (True)

6. No non-B are non-A. (Undetermined)
7. No non-A are B. (False)
8. Some A are B. (False)
9. No non-B are A. (False)
10. Some non-A are not non-B. (True)
11. Contradictory (False)
12. Conversion (True)
13. Obversion (False)
14. Subalternation (Undetermined)
15. Conversion (Undetermined)
16. Contradictory (True)
17. Contraposition (True)
18. Subalternation (True)
19. Contrary (Undetermined)
20. Subcontrary (True)

Part V

1. Valid
2. Valid
3. Invalid (illicit subcontrary)
4. Invalid (illicit contraposition)
5. Valid
6. Invalid (existential fallacy)
7. Valid
8. Valid

9. Invalid (illicit conversion)

10. Invalid (illicit contrary)

11. Valid

12. Invalid (illicit contraposition)

13. Invalid (illicit subcontrary)

14. Valid

15. Valid

Part VI

1. All I are C.
   Some I are C. (Subalt.)
   Some C are I. (Conv.)

2. No non-G are E.
   Some non-G are not E. (Subalt.)
   Some non-E are not G. (Contrap.)

3. F: Some F are non-T.
   F: Some F are not T. (Obv.)
   All F are T. (Contradic.)

4. All E are A.
   F: No E are A. (Contrary)
   F: No A are E. (Conv.)
   F: All A are non-E. (Obv.)

5. No non-P are F.
   No F are non-P. (Conv.)
   All F are P. (Obv.)
   F: Some F are not P. (Contradic.)

6. F: Some G are non-B.
   F: Some G are not B. (Obv.)
   Some G are B. (Subcon.)
   Some B are G. (Conv.)

7. Some P are not non-S.
   Some P are S. (Obv.)
   Some S are P. (Conv.)
   F: No S are P. (Contradic.)

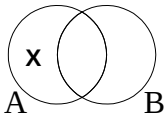
8. F: No non-H are F.
   F: No F are non-H. (Conv.)
   F: All F are H. (Obv.)
   Some F are not H. (Contradic.)

9. F: Some non-L are not S.
   Some non-L are S. (Subcon.)
   Some S are non-L. (Conv.)
   Some S are not L. (Obv.)

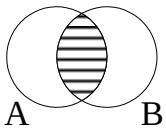
10. F: Some F are not A.
    F: No F are A. (Subalt.)
    F: No A are F. (Conv.)
    F: All A are non-F. (Obv.)

Exercise 4.6
Part I

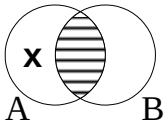
1. Some A are not B.



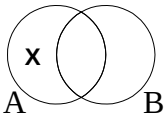

No A are B.
Invalid



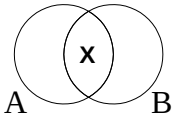

2. F: Some A are B.



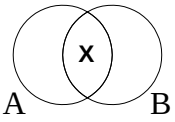

F: All A are B.
Invalid, Boolean;
Conditionally valid,
Aristotelian



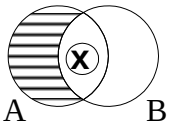

3. F: No A are B.



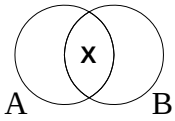

Some A are B.
Valid, Boolean



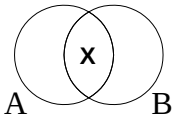
4. All A are B.



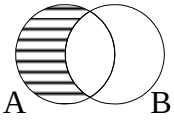

F: No A are B.
Invalid, Boolean;
Conditionally valid,
Aristotelian



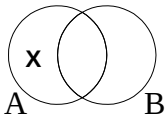

5. Some A are B.



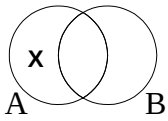

F: Some A are not B.
Invalid



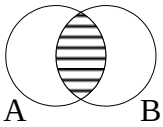

6. Some A are not B.



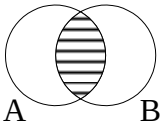

F: All A are B.
Valid, Boolean



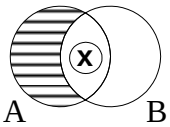

7. F: Some A are B.



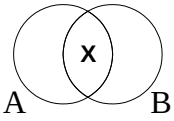

No A are B.
Valid, Boolean



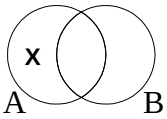

8. F: Some A are not B.



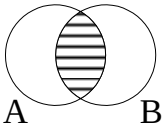

Some A are B.
Invalid, Boolean;
Conditionally valid,
Aristotelian



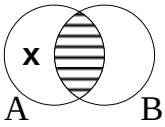
9. F: All A are B.



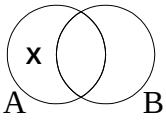

No A are B.
Invalid




10. No A are B.

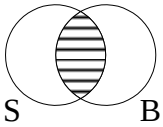



Some A are not B.
Invalid, Boolean;
Conditionally valid,
Aristotelian

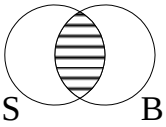



Part II

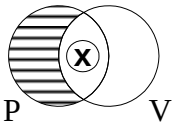
1. No S are B.



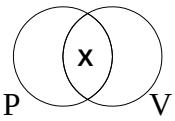

F: Some S are B.
Valid, Boolean and
Aristotelian



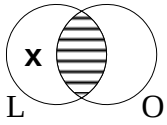

2. F: Some P are not V.



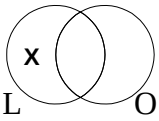

Some P are V.
Invalid, Boolean;
Valid, Aristotelian;
Existential fallacy,
Boolean



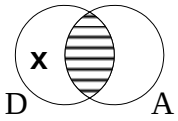

3. No L are O.



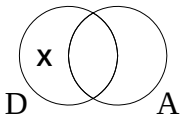

Some L are not O.
Invalid;
Existential fallacy,
Boolean and Aristotelian



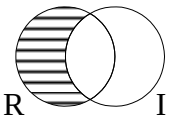
4. F: Some D are A.



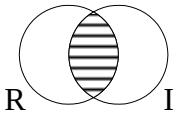

Some D are not A.
Invalid, Boolean;
Valid, Aristotelian;
Existential fallacy,
Boolean



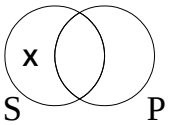

5. All R are I.



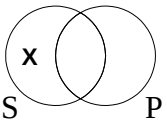

No R are I.
Invalid



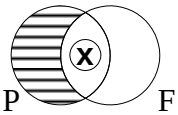

6. F: All S are P.



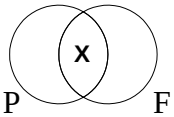

Some S are not P.
Valid, Boolean and
Aristotelian



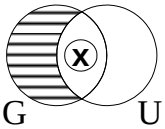

7. All P are F.



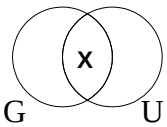

F: No P are F.
Invalid;
Existential fallacy,
Boolean and Aristotelian



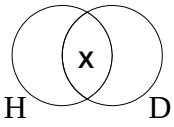

8. F: Some G are not U.



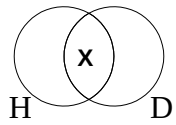

F: No G are U.
Invalid, Boolean;
Valid, Aristotelian;
Existential fallacy,
Boolean



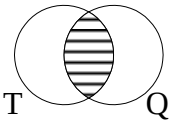
9. Some H are D.



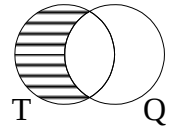

F: No H are D.
Valid, Boolean and Aristotelian



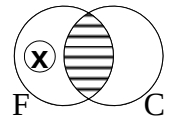

10. F: Some T are Q.



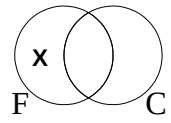

All T are Q.
Invalid



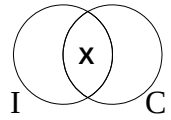

11. No F are C.



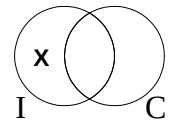

F: All F are C.
Invalid, Boolean;
Valid, Aristotelian;
Existential fallacy, Boolean



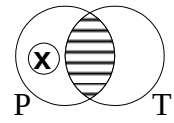

12. F: No I are C.



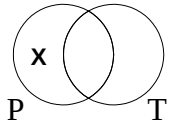

Some I are not C.
Invalid



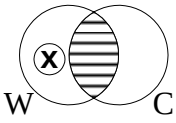

13. F: Some P are T.



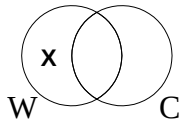

F: All P are T.
Invalid, Boolean;
Valid, Aristotelian;
Existential fallacy, Boolean



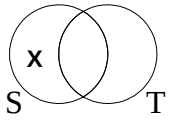
14. No W are C.



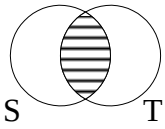

F: All W are C.
Invalid;
Existential fallacy,
Boolean and Aristotelian




15. Some S are not T.




No S are T.
Invalid




Exercise 4.7
Part I

1. All banks that make too many risky loans are banks that will fail.
2. No temporary workers are people eligible for fringe benefits.
3. All times security measures are lax are times terrorist attacks succeed.
4. All substances identical to bromine are substances extractable from seawater.
5. Some guilt feelings are not psychological aberrations.
6. All jazz fans are admirers of Duke Ellington.
7. No halogens are chemically inert elements.
8. All television shows that depict violence are shows that incite violence.
9. No manipulators are people who make good marriage partners.
10. All ships that fly the Jolly Roger are pirate ships.
11. All times she's depressed are times she gains weight.
12. All times she gains weight are times she's depressed.
13. All bachelors are unmarried men.
14. All times warmth is applied to pain are times warmth relieves pain.

15. All people identical to Joseph J. Thomson are people who discovered the electron.

16. Some organic silicones are things used as lubricants.

17. All vehicles suitable for deep space exploration are nuclear powered vehicles.

18. All heavenly bodies with tails are comets.

19. Some giant stars are things in the Tarantula Nebula.

20. All pregnant women who drink alcohol are women who risk giving birth to a deformed child.

21. All shellfish that make pearls are oysters.

22. All people who require insulin treatments are diabetics.

23. All things identical to the electroscope are devices for detecting static electricity.

24. Some times are times there are concerts in Central Park.

25. All cities identical to Berlin are cities that were the setting for the 1936 Olympic Games. *or* All events identical to the 1936 Olympic Games are events that took place in Berlin.

26. No times in January are times the Kentucky Derby is run.

27. All ways of getting rid of a temptation are ways that consist in yielding to it.

28. All places there is smoke are places there is fire.

29. All times lunar eclipses occur are times the moon is full.

30. All times sunspot activity increases are times radio transmissions are disrupted.

31. All ores identical to pitchblende are radioactive ores.

32. No rats are animals that left the sinking ship, and all non-rats are animals that left the sinking ship.

33. All pesticides that contain DDT are dangerous pesticides.

34. All novels written by John Grisham are novels about lawyers.

35. All people who hesitate are people who are lost.

36. All modern corporations are entities run in the interest of their managers.

37. All times a rainbow occurs are times the sun is shining.

38. All people who suffer allergic reactions are people with a weakened immune system.

39. No pineapples are fruits that ripen after they are picked, and all non-pineapples are fruits that ripen after they are picked.

40. Some corporate raiders are people known for their integrity, and some corporate raiders are not people known for their integrity.

41. Some monkeys are animals found in the jungles of Guatemala.

42. All monkeys are mammals.

43. All people identical to me are people who like strawberries. *or* All things identical to strawberries are things I like.

44. No passengers are people allowed to smoke on board the aircraft.

45. Some flowers are not fragrant things.

46. All places Cynthia wants to travel are places Cynthia travels.

47. All true flying mammals are bats.

48. Some rivers are not things that run to the sea.

49. No physicists are people who understand the operation of superconductors.

50. Some apartment dwellers are people victimized by noise.

51. Some forced labor camps are things in China.

52. All measures that increase efficiency are measures that improve profitability.

53. Some dolphins are animals swimming between the breakers.

54. No feathers are heavy things.

55. Some picnics are events entirely free of ants, and some picnics are not events entirely free of ants.

56. All civil rights that are human rights are unalienable rights.

57. All things she pleases to say are things she says.

58. Some contestants are people who won prizes.

59. All felines are cats.

60. All things Renee is told to do are things Renee does.

Part II.

1. Some figure skating finalists are performers who may win medals.
2. All cars that young lawyers drive are BMWs.
3. No cartilaginous fishes are vertebrates with a bony skeleton, and all vertebrates that are not cartilaginous fishes are vertebrates with a bony skeleton.
4. No downhill skiers who suffer from altitude sickness are effective competitors.
5. All substances identical to cobalt are ferromagnetic metals.
6. No nuclear pacifists are people who believe a just war is possible.
7. No matadors are people who succumb easily to fear.
8. All companies identical to Google are companies looking forward to a bright future.
9. All toxic dumps that are ecological catastrophes are toxic dumps that leak.
10. All hungry crocodiles are dangerous animals.