Test Item File

Chapter 1: Basic Logical Concepts

Multiple Choice

1. In which of the following subjects is reasoning outside the concern of logicians?
    A) science and medicine
    B) ethics
    C) politics
    D) none of the above
    Answer: D

2. In correct reasoning,
    A) all of the propositions are true.
    B) the truth of the premises guarantees the truth of the conclusion.
    C) the conclusion is never false.
    D) the conclusion supports the premises.
    Answer: B

3. The process of arriving at and affirming one proposition on the basis of one or more other propositions is called:
    A) inference
    B) hypothetical proposition
    C) soundness
    D) validity
    Answer: A

4. "If undergraduate education in the Humanities is to be successful, students must take courses in a broad range of areas including history, literature, philosophy, and art."
    This is an example of:
    A) an argument
    B) a disjunctive proposition
    C) a conditional proposition
    D) none of the above
    Answer: C

5. "Either cigarette smoking in eating establishments should be banned or these establishments should have designated smoking areas."
    This is an example of:
    A) an argument

B) a disjunctive proposition
C) a hypothetical proposition
D) none of the above
Answer: B

6. "Cigarette smoking should be banned in all public eating and drinking establishments because second-hand smoke has been shown to be detrimental to one's health."
    This is an example of:
    A) an argument
    B) a disjunctive proposition
    C) a hypothetical proposition
    D) none of the above
    Answer: A

7. "(1) If you raise prices even a little, fewer people will buy your product. (2) If fewer people buy your product, your scale of production will become smaller. (3) If your scale becomes smaller, you won't be able to get the same low bulk prices on supplies that you get now, and (4) if you pay higher prices for your supplies, your costs will go up. (5) If that happens, your profits will go down."
    What is the conclusion of this passage?
    A) (1)
    B) (2)
    C) (5)
    D) There is no stated conclusion.
    Answer: D

8. "(1) The government should enact legislation permitting euthanasia. (2) Without this legislation people are denied their autonomy. (3) People have the right to die with dignity and ought to be able to choose to live or die."
    What is the conclusion of this passage?
    A) (1)
    B) (2)
    C) (3)
    D) There is no stated conclusion.
    Answer: A

9.   "In this area, a lot of snow usually means we'll have a cool summer. We've had a lot of snow this winter (even though it wasn't very cold). I think we'll have a cool summer."
      This is:
      A) a deductive argument with an unstated conclusion.
      B) an inductive argument with the last sentence as a conclusion.
      C) neither inductive nor deductive, because its conclusion is false.
      D) not an argument at all.
      Answer: B

10.   "Women's liberation is solely the product of technological advances in the control of reproduction and the social need to have more bodies to tend to the machines produced by technology."
      This is an example of:
      A) an argument
      B) a complex proposition
      C) a simple proposition
      D) none of the above
      Answer: B

True or False

11.   An invalid deductive argument is always unsound.
      Answer: TRUE

12.   In logic, the truth of the premises must be established before any other analysis can occur.
      Answer: FALSE

13.   An argument with a false premise cannot be valid.
      Answer: FALSE

14.   No valid deductive argument can be made any stronger by adding more premises, no matter what the premises state.
      Answer: TRUE

15.   If a passage does not contain a conclusion, it cannot be an argument.
      Answer: FALSE

Pattern Match

16. A _____ proposition makes only one assertion.
    complex, simple, disjunctive
    Answer: simple

17. The _____ of an argument is the proposition that is affirmed on the basis of other propositions in the argument.
    conclusion, premise, complex proposition
    Answer: conclusion

18. An inductive argument claims to support its conclusion only with some degree of _____.
    validity, probability, soundness
    Answer: probability

19. _____ arguments are never evaluated in terms of validity.
    Deductive, Sound, Inductive
    Answer: Inductive

20. An argument is _____ when it is valid and all of its premises are true.
    sound, invalid, valid
    Answer: sound

Chapter 2: Analyzing Arguments

Multiple Choice

1. "The killing of an innocent person is immoral. Therefore, abortion is immoral."
    The unstated proposition in this argument is:
    A) Murder is illegal.
    B) Innocent people have no rights.
    C) Abortion kills innocent persons.
    D) Abortion is legal in the United States.
    Answer: C

2. "Torture treats the victim as merely a means to an end. Therefore, it is immoral."
    The unstated proposition in this argument is:
    A) Torture is useful for getting information out of people.
    B) The U.S. sanctions the use of torture.
    C) Treating a person as merely a means to an end is immoral.
    D) None of the above.
    Answer: C

3. "(1) Workers are often exposed to contamination in the workplace and are not warned of the dangers of this exposure. (2) For instance, asbestos workers were not told for many years of the dangers of contracting asbestosis. (3) And farm workers are often misled about the dangers of insecticides and fertilizers. (4) Tougher legislation should be enacted in order to insure the safety of all workers."
    Which sentence is the conclusion?
    A) Sentence (1)
    B) Sentence (2)
    C) Sentence (3)
    D) Sentence (4)
    Answer: D

4. "(1) The prince greeted a small crowd of well-wishers outside his palace yesterday. (2) He pointed out several architectural features of the building that historians have found interesting. (3) Apparently, there are several aspects of the building that are not typical of the time it was built, and (4) the prince clearly enjoyed having the opportunity to share his knowledge with such an appreciative audience."
    Which sentence presents the conclusion of the passage?
    A) Sentence (1)
    B) Sentence (2)

C) Sentence (3)
D) Sentence (4)
E) There is no conclusion.
Answer: E

5. "(1) Lawns need constant maintenance, so (2) busy people should hire someone to take care of them. (3) I like a nicely kept lawn."
Which sentence is the conclusion?
A) Sentence (1)
B) Sentence (2)
C) Sentence (3)
D) There is no conclusion.
Answer: B

6. "(1) Computer processor speeds double every 18 months, so business computers should be replaced every three years or so. (2) This amazing fact has been true since personal computers entered the marketplace. (3) So, these four-year-old computers on our desks ought to be replaced."
Which is true about this argument?
A) (1) and (2) independently support (3).
B) (1) and (2) jointly support (3).
C) (2) and (3) independently support (1).
D) (2) and (3) jointly support (1).
Answer: B

7. "(1) It has come to my attention that the staff has turned my free-meal policy into a considerable expense to the restaurant. (2) For example, though our lobster purchases have risen dramatically, our sales of lobster dinners have remained flat. (3) We are going to have to charge employees a percentage of the price of the meals they eat at work. (4) After all, who wouldn't give themselves the best of everything for free?"
How does sentence (4) function in this passage?
A) It is a conclusion in the form of a question.
B) It is a premise that works jointly with (1) and (2).
C) It is really a premise that independently provides some support for (3).
D) It is a rhetorical question with no logical force in the passage.
Answer: C

8. "(1) I'll tell you why the mayor decided to modify the city's curbs for wheelchair users. (2) First, the city has a moral obligation to do so. (3) Second, since there are more voters in wheelchairs than ever before, they will be more likely to vote for the mayor in the next election if he makes life easier for them."
What is true of this passage?
A) Sentences (2) and (3) support the truth of (1).
B) Sentences (1), (2) and (3) deductively support an unstated conclusion.
C) Sentences (2) and (3) explain (1).
D) Sentence (1) explains (2) and (3).
Answer: C

9. "(1) Skinner's utopian society ought to be rejected. (2) The sort of society Skinner proposes in *Walden Two* is a non-competitive, lifeless society that lacks creativity and imagination. (3) It also lacks the conditions that make for festivity and fantasy, two significant human traits. (4) The type of society that Skinner proposes would turn people into robots."
Which sentence expresses the conclusion of the argument?
A) (1)
B) (2)
C) (3)
D) (4)
Answer: A

10. Brainteasers are valuable activities because:
A) They develop reasoning skills.
B) They reveal the complexities of life.
C) They waste time.
D) None of the above.
Answer: A

True or False

11. Paraphrasing an argument allows us to see more clearly the logical relations between the statements in the argument.
Answer: TRUE

12. Retrograde analysis is the use of spatial relations to map the structure of an argument.
Answer: FALSE

13. In logic, the term "matrix" refers to virtual reality.
    Answer: FALSE

14. In a complex interwoven argument, "premise" and "conclusion" can be relative terms.
    Answer: TRUE

15. In analyzing an argument one must ignore authorial intent.
    Answer: FALSE

Pattern Match

16. To clarify the relations between the premises and conclusion in an argument, it is often helpful to _____ or diagram them.
    analyze, paraphrase, deduce
    Answer: paraphrase

17. Often, problems of reasoning can be solved by the use of a(n) _____.
    deduction, induction, matrix
    Answer: matrix

18. Diagramming involves laying out an argument in _____.
    one-dimensional spatial relations, two-dimensional spatial relations, three-dimensional spatial relations
    Answer: two-dimensional spatial relations

19. Retrograde analysis involves reasoning from what now exists to consider what would be the case in the _____.
    past, future, present
    Answer: past

20. Problems of reasoning are interesting and effective ways to _____.
    develop reasoning skills, pass the time, drive you crazy
    Answer: develop reasoning skills

CHAPTER 3

Chapter 3: Language and Definition

Multiple Choice

1. Which is most likely an expressive use of language?
    A) A lie to your spouse.
    B) A note in a birthday card.
    C) An evaluation of your English paper.
    D) An order in a restaurant.
    Answer: B

2. When your father says to you, "I am really sick of coming home to such a mess!" the best description of his sentence is:
    A) an exclamatory sentence used expressively.
    B) an exclamatory sentence used directively.
    C) a declarative sentence used directively.
    D) an imperative sentence used directively.
    Answer: B

3. "Hey, Jim! You about done there?"
    When Jim's carpool partner says this to him, it is an example of:
    A) an interrogative sentence used in ceremonial discourse.
    B) an interrogative sentence used in directive discourse.
    C) an exclamatory sentence used in directive discourse.
    D) an exclamatory sentence used in performative discourse.
    Answer: B

4. "The word *home* means 'that place where, when you have to go there, they have to take you in.'"
    This definition is best described as a:
    A) stipulative definition.
    B) precising definition.
    C) theoretical definition.
    D) lexical definition.
    Answer: A

5. Which type of definition is found in the dictionary?
    A) stipulative
    B) precising

117

C) theoretical

D) lexical

Answer: D

6. What is the relationship between the *definiendum* and the *definiens*?

A) The *definiendum* is that which defines the *definiens*.

B) The *definiens* is that which explains the meaning of the *definiendum*.

C) The *definiendum* applies to stipulative definitions, the *definiens* does not.

D) A *definiendum* is a definition that eliminates ambiguity; a *definiens* is a definition that eliminates vagueness.

Answer: B

7. If you are told that *pig* means "swine," what kind of definition have you been given?

A) A false one.

B) A definition by genus and species.

C) A synonymous definition.

D) A precising definition.

Answer: C

8. "I think that good food is the best thing in the world."

"Well, I think that it is more important to eat organic produce than anything else."

This exchange is:

A) an obviously genuine dispute.

B) an apparently verbal but genuine dispute.

C) a merely verbal dispute.

D) not a dispute at all.

Answer: C

9. A teacher says that *amphibian* means "frogs, newts, and salamanders." Is she giving the students a definition?

A) No. A list of objects is not a definition.

B) No. The teacher is referring to some objects, but a real definition must refer to the intension of the term.

C) Yes. This is an intensional definition.

D) Yes. This is a definition by example.

Answer: D

10. A child points at her family dog and says "doggie" to her mother. This is an:
    A) intensional definition.
    B) extensional definition.
    C) ostensive definition.
    D) operational definition.
    Answer: C

True or False

11. In attempting to motivate someone, a speaker should consider beliefs and attitudes alike, since arguments almost always involve both of these things.
    Answer: TRUE

12. Love letters are, generally, good examples of the performative function of language.
    Answer: FALSE

13. Extension refers to the collection of objects to which a term applies.
    Answer: TRUE

14. Ostensive definitions avoid some of the limitations of extensional definitions.
    Answer: FALSE

15. Directive discourse in language is used to express emotion.
    Answer: FALSE

Pattern Match

16. When a pastor says to a couple, "I now pronounce you man and wife," he/she is using _____ language.
    exclamatory, performative, imperative
    Answer: performative

17. We use _____ when we want to disguise or underplay the emotive meaning of words.
    emotively neutral language, emotionally charged language, directive discourse
    Answer: emotively neutral language

18. "Man is the only rational animal."
    In this definition by genus and difference, "rational" refers to _____.
    species, genus, difference
    Answer: species

19. Definitions should not be _____, because then the definition will only explain the term to those who already understand it.
circular, ambiguous, rude
Answer: circular

20. Pollsters influence the responses they receive unless they avoid _____ language.
emotive, offensive, stipulative
Answer: emotive

Chapter 4: Fallacies

Multiple Choice

1. Advertisements featuring famous musicians selling life insurance are examples of the fallacy of:
    A) appeal to emotion.
    B) appeal to inappropriate authority.
    C) appeal to pity.
    D) argument *ad hominem*.
    Answer: B

2. "You should buy these shoes, because everyone has them! Except ugly people, of course." This speaker is using the fallacy of:
    A) argument *ad populum*.
    B) argument *ad hominem*.
    C) appeal to inappropriate authority.
    D) argument from ignorance.
    Answer: A

3. Which fallacy occurs when we confuse temporal with causal relations?
    A) equivocation
    B) false cause
    C) amphiboly
    D) division
    Answer: B

4. Which fallacy is committed when a statement's meaning is indeterminate?
    A) equivocation
    B) division
    C) false cause
    D) amphiboly
    Answer: D

5. Which other fallacy of ambiguity is the reverse of the fallacy of division?
    A) equivocation
    B) amphiboly
    C) composition
    D) accent
    Answer: C

6. "I often see dogs in the park. You have a dog; therefore, I often see your dog in the park."
    This commits the fallacy of:
    A) equivocation.
    B) accent.
    C) false cause.
    D) none of the above
    Answer: D

7. An abusive *ad hominem* is present whenever:
    A) an insulting remark is made in place of reason in an argument.
    B) one speaker seeks to degrade another during an argument.
    C) people begin screaming epithets at each other.
    D) words that are hateful or malicious are used.
    Answer: A

8. Defense lawyers sometimes explain the actions of a client by referring to the client's own
    mistreatment as a child. What fallacy may be committed by such explanations?
    A) appeal to the populace
    B) appeal to force
    C) appeal to pity
    D) irrelevant conclusion
    Answer: C

9. "I know there are angels! There must be: no one can prove that they don't exist!"
    This commits the fallacy of:
    A) irrelevant conclusion
    B) argument from ignorance
    C) appeal to inappropriate authority
    D) appeal to emotion
    Answer: B

10. "Why is it always the case that stores run out of the sale items just before the sale paper
    arrives, so that I can't ever buy what's on sale?"
    What fallacy is committed in this example?
    A) false cause
    B) accident
    C) begging the question
    D) complex question
    Answer: D

True or False

11. Fallacies of accident arise when a generalization has exceptions.
    Answer: TRUE

12. Every circular argument commits the fallacy of begging the question.
    Answer: TRUE

13. The fallacy of amphiboly confuses the several meanings of a word.
    Answer: FALSE

14. False cause is one of the fallacies of relevance.
    Answer: FALSE

15. The fallacy of equivocation occurs when something is taken out of context and misconstrued.
    Answer: FALSE

Pattern Match

16. The fallacy of complex question is one of the fallacies of _____.
    ambiguity, presumption, relevance
    Answer: presumption

17. The *petitio principii* assumes the _____ of what it seeks to prove.
    falsity, truth, ambiguity
    Answer: truth

18. In the fallacy of _____, we reason from the attributes of the parts to the attributes of the whole.
    composition, division, hasty generalization
    Answer: composition

19. If an *ad hominem* argument accuses someone of prejudice because of his race and contends that he is therefore not a good source of information, it is a(n) _____ *ad hominem*.
    abusive, circumstantial, honest
    Answer: circumstantial

20.   When we presume the applicability of a generalization to an individual case, we commit the fallacy of _____.
      hasty generalization, composition, accident
      Answer: accident

Chapter 5: Categorical Propositions

Multiple Choice

1. Categorical propositions:
    A) never refer to just one single object.
    B) concern classes of objects, and tell whether one class is included within the other.
    C) are affirmative statements about classes of objects.
    D) are false if their quality is negative.
    Answer: B

2. The categorical proposition "Some men who go bald are not happy individuals" is a:
    A) universal affirmative.
    B) particular affirmative.
    C) universal negative.
    D) particular negative.
    Answer: D

3. "No good student is a person who would be seen staying up late on a weeknight."
    What is the quality of this proposition?
    A) universal
    B) particular
    C) affirmative
    D) negative
    Answer: D

4. "Some people are annoying drunks who sing too loudly."
    What is the quantity of this proposition?
    A) affirmative
    B) universal
    C) particular
    D) indeterminate
    Answer: C

5. "All professors of logic are gentle souls who just want to be loved."
    Which term in this proposition is distributed?
    A) both the subject and the predicate
    B) gentle souls

C) professors of logic

D) neither the subject nor the predicate

Answer: C

6. "No logic problems are valuable experiences."

    "Some logic problems are valuable experiences."

    How are these two propositions related?

    A) They are contradictories.

    B) They are contraries.

    C) They are corresponding propositions—super- or subalterns.

    D) They are subcontraries.

    Answer: A

7. The proposition "No man is a monkey" may be obtained from the proposition "No monkey is a man" by:

    A) conversion.

    B) obversion.

    C) inversion.

    D) contraposition.

    Answer: A

8. The obverse of "No sofas are chairs" is:

    A) All non-chairs are non-sofas.

    B) All sofas are non-chairs.

    C) No sofa is a non-chair.

    D) No chair is a sofa.

    Answer: B

9. In the Boolean interpretation of propositional logic:

    A) subalternation is no longer valid.

    B) A and I propositions are no longer contraries.

    C) the square of opposition is rescued by making the existential presupposition.

    D) universal propositions have existential import.

    Answer: A

10. To symbolize the proposition "Some dinosaurs were not large creatures" with a Venn diagram:

    A) a small *x* is placed in the intersection of the two circles representing "dinosaurs" and "large creatures."

B) a small *x* is placed inside the circle representing "dinosaurs," but outside the other circle representing "large creatures."

C) a small *x* is placed inside the circle representing "large creatures," but outside the other circle representing "dinosaurs."

D) the part of the circle representing "dinosaurs" is shaded out, except that part overlapping the circle representing "large creatures."

Answer: B

True or False

11. Classical logic applies only to inductive arguments.
Answer: FALSE

12. Categorical propositions affirm or deny that a class *S* is included in some other class *P*, in whole or in part.
Answer: TRUE

13. There are only four standard forms of categorical propositions.
Answer: TRUE

14. The copula, which connects *S* and *P*, can be any form of "to be."
Answer: TRUE

15. Subalternation occurs when two propositions are not corresponding propositions.
Answer: FALSE

Pattern Match

16. There are only _____ ways in which propositions may be "opposed."
two, four, three
Answer: four

17. _____ occur(s) between corresponding propositions.
Contradictories, Subalternation, Conversion
Answer: Subalternation

18. _____ occurs when the subject and predicate terms of a proposition are interchanged.
Conversion, Obversion, Subalternation
Answer: Conversion

19. To _____ a proposition, change its quality and replace the predicate term by its complement.
    obvert, convert, contradict
    Answer: obvert

20. "No men are women" is the _____ of "No women are men."
    converse, obverse, opposite
    Answer: converse

Chapter 6: Categorical Syllogisms

Multiple Choice

1. "No children are soldiers; some males are soldiers; therefore, some males are not children."
   Which term in this standard-form syllogism is the middle term?
   A) children
   B) soldiers
   C) males
   D) therefore
   Answer: B

2. "Some logic professors are not good speakers. All logic professors are individuals who have nice suits. Therefore, no individuals with nice suits are good speakers."
   What is the mood of this standard-form syllogism?
   A) OAO
   B) AOA
   C) AOE
   D) OAE
   Answer: D

3. What happens in the fallacy of the undistributed middle?
   A) The major and minor terms are not directly linked by the middle term, because the major term is undistributed.
   B) The major and minor terms are not directly linked by the middle term, since either the major or minor term is undistributed.
   C) The major and minor terms are not directly linked by the middle term, since the minor term is undistributed.
   D) The major and minor terms are not directly linked by the middle term, since the middle term is not distributed in at least one premise.
   Answer: D

4. "No men are dogs. No dogs eat cheese. Therefore, all cheese-eaters are men."
   What fallacy is committed by this argument?
   A) existential fallacy
   B) fallacy of drawing an affirmative conclusion from a negative premise
   C) fallacy of exclusive premises
   D) fallacy of illicit process
   Answer: C

5.	Which syllogism is not valid in the fourth figure?
	A) AEE
	B) IAI
	C) EIO
	D) OAO
	Answer: D

6.	What characterizes the third figure?
	A) The middle term is the subject of both premises.
	B) The middle term is the predicate of both premises.
	C) The middle term is the subject of the major premise and the predicate of the minor premise.
	D) The middle term is the predicate of the major premise and the subject of the minor premise.
	Answer: A

7.	When you test a syllogism with a Venn diagram, how do you diagram the conclusion?
	A) you don't
	B) last
	C) first
	D) after the major premise
	Answer: A

8.	"All wild animals are vicious; some wild animals are from Africa; therefore, some animals from Africa are vicious."
	Which proposition should be diagrammed first in a Venn diagram test of validity?
	A) It makes no difference.
	B) All wild animals are vicious.
	C) Some wild animals are from Africa.
	D) Therefore, some animals from Africa are vicious.
	Answer: B

9.	"All good chairs are made in a factory. All wooden chairs are good chairs; therefore, all good wooden chairs are made in a factory."
	Which of the six syllogistic rules, if any, does the preceding syllogism break?
	A) It breaks rule #6.
	B) It breaks rule #3.

C) It breaks rule #1.
D) It breaks no rule—it is valid.
Answer: C

10. "No risks are things worth taking; some things worth taking are not exciting; therefore, some things that are not exciting are not risks."
Which fallacy is committed in this syllogism?
A) the existential fallacy
B) the fallacy of exclusive premises
C) the fallacy of undistributed middle
D) the fallacy of the illicit major
Answer: B

True or False

11. A valid syllogism must have its major and minor premises in the proper order.
Answer: FALSE

12. The conclusion of a syllogism is never diagrammed in a Venn diagram test.
Answer: TRUE

13. In a valid syllogism, you cannot derive a negative conclusion from two negative premises.
Answer: TRUE

14. In a syllogism of the second figure, the major term is in the subject position and the minor term is in the predicate position.
Answer: FALSE

15. In syllogistic logic, "loud" and "noisy" count as the same term.
Answer: FALSE

Pattern Match

16. The mood and _____ of a syllogism determine its form.
figure, quantity, quality
Answer: figure

17. A valid syllogism will always distribute the _____ term in at least one premise.
subject, middle, predicate
Answer: middle

18. The _____ of a syllogism is determined by the letters A, E, I, and O, corresponding to the propositions it contains.
    mood, figure, validity
    Answer: mood

19. The term "_____" describes the position of the middle term in the premises.
    figure, mood, subject
    Answer: figure

20. If either premise in a syllogism is _____, then the conclusion must be negative.
    false, negative, positive
    Answer: negative

Chapter 7: Syllogisms in Ordinary Language

Multiple Choice

1. "No physicians are poverty-stricken. Some residents of Chicago are MDs. Therefore, some Chicagoans are not poor."
   What, if anything, must be done to put this syllogism in the proper form to test it for validity?
   A) Nothing. It is perfectly valid as it is.
   B) The two terms in the conclusion are not represented exactly in the premises. "Residents of Chicago" needs to be replaced with "Chicagoans" and "poverty-stricken" with "poor."
   C) This syllogism contains six terms, three pairs of which are synonyms. All three pairs must be reduced to one term each.
   D) There is nothing that can be done to make this syllogism valid.
   Answer: C

2. "All logic professors are funny individuals. No businessman is a funny individual. Therefore, all businessmen are non-logic professors."
   Is this argument ready for testing, or does it need to be rewritten?
   A) No. It is clearly valid as it is.
   B) The conclusion should be changed to its logically equivalent form, "No businessman is a logic professor."
   C) The conclusion should be changed to its logically equivalent form, "No non-logic professor is a businessman."
   D) This syllogism is clearly invalid. No further testing is necessary.
   Answer: B

3. Consider a syllogism with the premise "Some logic professors are unreasonable." What, if anything, needs to be done to get it into standard form?
   A) Nothing needs to be done. The terms are "logic professors" and "unreasonable."
   B) Nothing can be done with this proposition because there are not really two different terms here.
   C) Both terms of this proposition must be rewritten to eliminate adjectives. However, when you do this the premise contains three terms, not two.
   D) The predicate term must be converted to a noun phrase, such as "unreasonable people."
   Answer: D

4. What is the correct standard-form translation of "Not every animal is a vicious beast"?
   A) No animal is a vicious beast.
   B) Some animal is a vicious beast.

C) Some vicious beast is not an animal.

D) Some animal is not a vicious beast.

Answer: D

5. What is the standard-form translation of "None but qualified people need apply"?

A) All people who may apply are qualified people.

B) No non-applicants are not qualified people.

C) No person who is qualified is not a person who may apply.

D) All qualified people are people who may apply.

Answer: A

6. In testing an enthymeme for validity, the logician must:

A) supply any missing information that logic requires, and then treat it exactly as any other syllogism.

B) be careful to remember not to "read into" the material anything that is not explicitly stated.

C) supply any missing parts to the argument, making allowances for the fact that this may make the argument slightly less plausible than might be desired.

D) supply any missing premises required by the logic of the argument, but remember not to supply a missing conclusion; this is the same mistake committed when the conclusion is diagrammed with a Venn diagram.

Answer: A

7. "No person who cries is a person who can be trusted. Fred is a logic professor. No untrustworthy person is a logic professor. Therefore, Fred does not cry."

To tell if this argument is valid, we must:

A) choose the relevant premises for deriving the conclusion and test the resulting syllogism for validity. The other premises are not relevant and need not be tested.

B) first derive the conclusion, "some logic professors do not cry," and test that syllogism for validity.

C) first derive the conclusion, "Fred is a trustworthy person," and test that syllogism for validity. Then test a second syllogism that has that conclusion as a premise.

D) do nothing, since this argument is illogical. The conclusion cannot be derived from what is given.

Answer: C

8. "Either I play ball, or I keep my new shoes clean. I can't resist playing ball, so I guess my new shoes will be getting dirty."

How should we label this argument?

A) An invalid argument that contains extraneous material.

B) Denying the antecedent.

C) *Modus tollens*.

D) Disjunctive syllogism.

Answer: D

9. Starting with the major premise, "If the heater is turned on, then the house will get warm," which of the following completed arguments commits the fallacy of affirming the consequent?

    A) The heater is turned on, so the house is warm.

    B) No one turned the heater on, so the house must be cold.

    C) The house is warm, so someone must have turned on the heater.

    D) The house is cold, so we know that no one turned on the heater.

    Answer: C

10. "Either I keep eating beef and get a heart attack, or I quit and eat yucky vegetables. Since I know I must either eat beef or not, I know I will be stuck either with yucky vegetables or a heart attack."

    To escape between the horns of this dilemma, I might argue:

    A) I haven't really considered the alternatives, though. I can always learn to exercise more so that eating beef won't give me a heart attack.

    B) Now that I think of it, the outlook isn't so bleak. Lots of people manage on vegetables. I'll start eating more vegetables now so that I can avoid heart disease later.

    C) Let's look at it in a new light. Either I eat just enough beef to make my vegetables taste OK now, or I quit eating beef now, and concentrate on looking for better food. Either way, I end up with a different diet.

    D) Of course, the choice shouldn't be between beef and vegetables. What I really need is to find more variety in foods.

    Answer: D

True or False

11. A second-order enthymeme is one in which the major premise is left unstated.

    Answer: FALSE

12. In a disjunctive syllogism, one premise is a disjunction and the other premise denies the truth of one of the disjuncts.

    Answer: TRUE

13. "They told me that if I ran the mile in under four minutes, I'd be on the team. Well, I did! So I am!"
     This argument contains a pure hypothetical syllogism.
     Answer: FALSE

14. "If someone turns on the sprinklers, my paint job will get wet. No one turned them on, so I know my paint job is dry."
     This argument is an example of *modus tollens*.
     Answer: FALSE

15. The point of posing a counterdilemma is not usually to invalidate an opponent's dilemma.
     Answer: TRUE

Pattern Match

16. An argument is a(n) _____ argument if it can be translated into a standard-form categorical syllogism.
     syllogistic, valid, invalid
     Answer: syllogistic

17. In a _____ -order enthymeme, the minor premise is unstated.
     third, second, first
     Answer: second

18. When you deny the consequent, you use the logical technique called *modus* _____.
     tollens, ponens, operandi
     Answer: *tollens*

19. _____ syllogisms contain "if…then" propositions.
     Hypothetical, Categorical, Disjunctive
     Answer: Hypothetical

20. To "grasp a dilemma by the horns," you must show that one of the _____ it contains is false.
     disjuncts, conjuncts, ambiguities
     Answer: conjuncts

Chapter 8: Symbolic Logic

Multiple Choice

1. How could you symbolize the statement, "I will love you unless you kiss me"?
    A) *L* ∨ *K*
    B) *L* ⊃ *K*
    C) ~*L* ∨ *K*
    D) *L* ≡ *K*
    Answer: A

2. ~(*p* • ~*q*) is the same as:
    A) ~*p* • *q*
    B) ~*p* • ~*q*
    C) (~*p* • ~*q*)
    D) *p* ⊃ *q*
    Answer: D

3. What is the symbolic representation of *modus tollens*?
    A) *p* ⊃ *q*, *q*, ∴ *p*
    B) *p* ⊃ *q*, *p*, ∴ *q*
    C) *p* ⊃ *q*, ~*q*, ∴ ~*p*
    D) *p* ⊃ *q*, ~*q*, ∴ *p*
    Answer: C

4. *q* and ~~*q* mean the same thing. What does this illustrate?
    A) material equivalence
    B) logical equivalence
    C) repetition
    D) double negation
    Answer: D

5. "I will either kill you, or I will love you."
    This statement might be symbolized as:
    A) *K* ∨ *L*
    B) ~*K* • *L*
    C) ~*K* ⊃ *L*
    D) *K* ⊃ *L*
    Answer: A

6.   "*p* ⊃ *q* is logically equivalent to ~*p* ∨ *q*."
     This statement is:
     A) De Morgan's Theorem
     B) the definition of material implication
     C) a negation of the conjunction of two statements
     D) an invalid argument
     Answer: B

7.   Let *B* symbolize the statement "All birds are beautiful." Then ~*B* must symbolize all of the following, except:
     A) Some bird is not beautiful.
     B) No birds are beautiful.
     C) It is not the case that all birds are beautiful.
     D) It is false that all birds are beautiful.
     Answer: B

8.   "If you can't use a computer, you won't get a job. I can use a computer very well, so I'm going to get a good job!"
     What is the best symbolic representation of this argument?
     A) *p* ⊃ *q*, ~*p*, ∴ ~*q*
     B) ~*p* ∨ ~*q*, *p*, ∴ ~*q*
     C) *p* ⊃ *q*, ~*q*, ∴ ~*p*
     D) ~*p* ⊃ ~*q*, *p*, ∴ ~*q*
     Answer: A

9.   "If dogs can fly, then the Earth is a sponge."
     Is this statement true? Why or why not?
     A) This is a contingent statement, since it may be either true or false.
     B) This is false, but we must check the world to discover this.
     C) This is false, as neither the consequent nor the antecedent is true.
     D) This is a true statement because it is in the form of a material conditional and has a false antecedent.
     Answer: D

10. Let *B* mean "the bread rises" and *Y* abbreviate "the yeast is good." The compound statement *B* ⊃ *Y* correctly represents any of the following propositions, except:
     A) That the yeast is good is a necessary condition for the bread to rise.
     B) That the yeast is good is a sufficient condition for the bread to rise.
     C) The bread rises only if the yeast is good.
     D) If the bread rises, the yeast is good.
     Answer: B

True or False

11. The following two arguments share the same argument form: "If wishes were horses, beggars could ride; beggars cannot ride; so wishes are not horses." "If price fixing becomes a common practice, the consumer will lose choices and taxpayers will be burdened with debt. We do not want consumers to lose choices and be burdened with debt, so we know that we should not allow price fixing."
    Answer: TRUE

12. A truth table for an argument contains one row in which there are Ts under the premises and an F under the conclusion. This single row shows that the entire argument is invalid.
    Answer: TRUE

13. Another word for material equivalence is material implication.
    Answer: FALSE

14. If an argument form is expressed as a conditional (with the conclusion as the consequent and a conjunction of the premises as the antecedent), and it shows one row on its truth table where Ts appear under the premises but an F appears under the conclusion, it may still be valid.
    Answer: FALSE

15. The principle of excluded middle asserts that no statement can be both true and false at the same time.
    Answer: FALSE

Pattern Match

16. Two statements are logically equivalent if their biconditional is a _____.
    tautology, statement, proposition
    Answer: tautology

17. $p \supset q$ is _____ equivalent to $\sim p \vee q$.
    sufficiently, logically, empirically
    Answer: logically

18. The only way for a disjunction to be false is if both of the disjuncts are proven to be _____ simultaneously.
    true, false, invalid
    Answer: false

19.   Any statement is a _____ instance of its own statement form.
        substitution, logical, sufficient
        Answer: substitution

20.   A conjunction is true only when both of its conjuncts are _____.
        false, true, valid
        Answer: true

Chapter 9: Methods of Deduction

Multiple Choice

1.   Which is not one of the nine rules of inference?
      A) Simplification
      B) *Modus Tollens*
      C) Subtraction
      D) Absorption
      Answer: C

2.   Which of the rules of inference is described by this formula?
      $(p \supset q) \bullet (r \supset s)$
      $p \vee r$
      $\therefore q \vee s$
      A) Conjunction
      B) Absorption
      C) Disjunctive Syllogism
      D) Constructive Dilemma
      Answer: D

3.   What is the formula for Simplification?
      A) $p \bullet q, \therefore p$
      B) $p, q, \therefore p \bullet q$
      C) $p, \therefore p \vee q$
      D) $p \bullet q, p, \therefore q$
      Answer: A

4.   "Either I get married or I live alone; I didn't get married; therefore, I live by myself."
      What is the elementary valid argument form of this argument?
      A) constructive dilemma
      B) *modus tollens*
      C) disjunctive syllogism
      D) hypothetical syllogism
      Answer: C

5.   What is the rule of inference by which the conclusion of this argument follows from the premise?
      $C \supset (A \supset B)$
      $\therefore C \supset (\sim\sim A \supset B)$

A) Distribution
B) Double Negation
C) Addition
D) Constructive Dilemma
Answer: B

6. For the following valid argument, state the rule of inference by which the conclusion follows from its premises:
    [*F* ⊃ (*G* ≡ ~*H*)] ∨ (*I* ∨ *J*)
    ~[*F* ⊃ (*G* ≡ ~*H*)]
    ∴ *I* ∨ *J*
    A) Constructive Dilemma
    B) Disjunctive Syllogism
    C) Absorption
    D) *Modus Ponens*
    Answer: B

7. By which rule of inference does the conclusion of this argument follow from its premises?
    ~(*A* • *B*) ⊃ (*C* ∨ *D*)
    ~(*A* • *B*)
    ∴ (*C* ∨ *D*)
    A) *Modus Ponens*
    B) *Modus Tollens*
    C) Disjunctive Syllogism
    D) Simplification
    Answer: A

8. The method of proving invalidity by assigning truth values to statements in a shortened truth table:
    A) can become more cumbersome than the full truth table method because of the time and energy involved.
    B) works only with *Modus Tollens* and *Modus Ponens*.
    C) is resorted to for convenience—it saves time and space.
    D) is not as accurate as using Venn diagrams.
    Answer: C

9. Which rule of inference makes the conclusion of this argument follow from its premise?
    [*F* ⊃ ~(*G* ∨ *H*)] ⊃ (*I* ∨ *J*)
    ∴ {[*F* ⊃ ~(*G* ∨ *H*)] • [*F* ⊃ ~(*G* ∨ *H*)]} ⊃ (*I* ∨ *J*)

A) Transposition
B) Tautology
C) Association
D) Commutation
Answer: B

10. Which rule of inference makes the conclusion of this argument follow from its premise?
$A \supset B$
$\therefore (\sim A \supset \sim B)$
A) Addition
B) Exportation
C) Commutation
D) Transposition
Answer: D

True or False

11. Conjunction is symbolically represented by $p, q, \therefore p \cdot q$.
Answer: TRUE

12. Simplification is symbolically represented by $p \supset q, \therefore (p \cdot q)$.
Answer: FALSE

13. You can replace $[(p \cdot q) \supset r]$ with $[p \supset (q \supset r)]$.
Answer: TRUE

14. One of De Morgan's theorems states that $(p \lor q)$ is logically equivalent to $(q \lor p)$.
Answer: FALSE

15. Material implication states that $(\sim p \lor q)$ is logically equivalent to $(p \supset q)$.
Answer: TRUE

Pattern Match

16. An argument is proved invalid when its premises are _____ and its conclusion is false in one line of its truth table.
false, true, ambiguous
Answer: true

17.   If no truth values can be given to the statements of an argument to make its premises true and its conclusion false, then the argument must be _____.
      valid, invalid, unsound
      Answer: valid

18.   When the rule of _____ is applied to "If it rains, I will get wet," it becomes "If it rains, not only will it be raining but I will get wet."
      Addition, Absorption, Simplification
      Answer: Absorption

19.   "$p \cdot q$, $\therefore p$" is the form of _____.
      Simplification, Disjunction, Addition
      Answer: Simplification

20.   We can use _____ to substitute $(p \supset q)$ for $(\sim p \vee q)$.
      Material Implication, De Morgan's rule, Simplification
      Answer: Material Implication

Chapter 10: Quantification Theory

Multiple Choice

1. "The only people who cannot vote are those convicted of a felony."
    Translated into symbols, this would be:
    A) $(x)(Fx \supset {\sim}Vx) \bullet (x)({\sim}Fx \supset Vx)$
    B) $(x)(Fx \equiv Vx)$
    C) $(x)({\sim}Fx \supset Vx)$
    D) $(x)(Fx \supset {\sim}Vx)$
    Answer: A

2. Which of the assignments of truth values for *Na*, *Ra*, and *Va* shows the following proof invalid?
    1. $(x)(Nx \supset Rx)$ $Na \supset Ra$
    2. $(x)(Vx \supset Nx)$ $Va \supset Na$
    3. $\therefore (x)(Rx \supset Vx)$ $Ra \supset Va$
    A) *Na Ra Va* — TTF
    B) *Na Ra Va* — TFT
    C) *Na Ra Va* — FFT
    D) *Na Ra Va* — FTT
    Answer: A

3. Which statement is true of asyllogistic arguments?
    A) They are arguments using propositional variables and quantifiers.
    B) They can be translated with the help of quantifiers and propositional functions into forms compatible with Aristotelian syllogisms.
    C) They are called asyllogistic because they are not actual arguments.
    D) They are cogent arguments that cannot be reduced to standard-form categorical syllogisms.
    Answer: D

4. Which of the choices below is a correct translation of "Real apricots are crunchy and delicious" (*R, A, C, D*)?
    A) $(x)[(Rx \bullet Ax) \supset (Cx \vee Dx)]$
    B) $(x)[(Rx \bullet Ax) \supset (Cx \bullet Dx)]$
    C) $(x)[(Cx \bullet Dx) \supset (Rx \bullet Ax)]$
    D) $(x)[(Rx \bullet Ax) \supset (Cx \supset Dx)]$
    Answer: B

5.   Which of the choices below is a correct translation of "Rocks will fall if and only if they are nudged" (*R, F, N*)?
A) (*x*)[*Rx* ⊃ (*Fx* ≡ *Nx*)]
B) (*x*)[(*Fx* ≡ *Nx*) ⊃ *Rx*]
C) (*x*)[(*Rx* • *Nx*) ⊃ *Fx*]
D) (*x*)[(*Rx* ≡ (*Nx* ⊃ *Fx*)]
Answer: A

6.   Which of the following is a correct translation of "Not all books that are easy to read are either cheap or enjoyable" (*B, R, C, E*)?
A) (*x*)[~(*Cx* ∨ *Ex*) ⊃ (*Bx* • *Rx*)]
B) (*x*)[(*Bx* • *Rx*) ⊃ ~(*Cx* ∨ *Ex*)]
C) (∃*x*)[(*Bx* • *Rx*) ∨ ~(*Cx* ∨ *Ex*)]
D) (∃*x*)[(*Bx* • *Rx*) • ~(*Cx* ∨ *Ex*)]
Answer: D

7.   Where is the mistake in the following proof?
    1. (∃*x*)(*Fx* • *Ax*)
    2. (∃*x*)(*Fx* • *Ox*)
       ∴ (∃*x*)(*Ax* • *Ox*)
    3. *Fb* • *Ab* (1, E.I.)
    4. *Fb* • *Ob* (2, E.I.)
    5. *Ab* • *Fb* (4, Com.)
    6. *Ab* (6, Simp.)
    7. *Ob* • *Fb* (5, Com.)
    8. *Ob* (8, Simp.)
    9. *Ab* • *Ob* (7, 9, Conj.)
    10. (∃*x*)(*Ax* • *Ox*) (10, E.G.)
A) line 4
B) line 8
C) line 5
D) line 9
Answer: C

8.   "Hotels are both expensive and depressing. Some hotels are shabby. Therefore, some expensive things are shabby." Quantifier logic is superior to syllogistic logic in rendering arguments such as this one into symbolic form. Why?
A) Quantifier logic allows us to take arguments at face value; it is a lot of unnecessary trouble to rearrange them into syllogisms and a lot easier to have a logic that is a better match for ordinary language.

B) Syllogistic logic fell in after the discovery of the existential fallacy. The new logic allows us to remove ourselves from the problem using quantifiers.

C) Syllogistic logic was burdened with meaningless and redundant structure, such as the meticulous stacking of major and minor premises into the correct order.

D) Quantifier logic allows us to "bundle" concepts with parentheses instead of "hiding" them in the subject or predicate terms, where they become unavailable for use in the proof.

Answer: D

9. The principle of Universal Instantiation (U.I.) asserts that:
A) from the substitution instance of a particular propositional function with respect to the name of any arbitrarily selected individual, one can validly infer the universal quantification of that propositional function.

B) from any true substitution instance of a propositional function, we may validly infer the universal instantiation of that propositional function.

C) any substitution instance of a propositional function can be validly inferred from its existential quantification.

D) any substitution instance of a propositional function can be validly inferred from its universal quantification.

Answer: D

10. Why do we use Universal Generalization (U.G.) in proofs?
A) to allow us to reason about the characteristics of individuals from premises that include generalizations

B) to allow us to unlock simple statements from inside of compound statements about particular individuals so that they may be used in proofs

C) to take isolated instances and put them in the form of "All *S* is *P*" statements so that conclusions may be drawn from them about more than one individual

D) to get from compound statements to simple ones so we can use the components of those statements

Answer: C

True or False

11. The existential quantifier ($\exists x$) stands for the phrase "there is at least one *x* such that."
Answer: TRUE

12. The biconditional relationship $[(\exists x)\Phi x] \equiv [\sim(x)\sim\Phi x]$ tells us that the universal and existential quantifiers negate each other, and so the two quantifiers may never be transformed into one another.
Answer: FALSE

13. The universal quantifier may be dropped from a statement in a proof because of the principle that any substitution instance whatsoever may be validly inferred from a universally quantified proposition.
    Answer: TRUE

14. The rule of Existential Generalization (E.G.) is used to justify this inference:
    $(x)(Px \supset Qx)$
    $\therefore Pa \supset Qa$
    Answer: FALSE

15. To prove invalidity when working with quantified propositions, first construct a possible universe containing two members.
    Answer: FALSE

Pattern Match

16. In quantifier logic, the lower-case *c* (denoting, say, Carl) is an individual _____.
    person, variable, constant
    Answer: constant

17. The process of placing a universal quantifier before a propositional function is called _____.
    universalization, generalization, simplification
    Answer: generalization

18. "_____ professors are not human" may be rendered in symbolic logic as $(\exists x)(Px \bullet {\sim}Hx)$.
    All, Some, Wild
    Answer: Some

19. Any formula in which _____ signs apply only to simple predicates is called a normal-form formula.
    negation, predication, quantification
    Answer: negation

20. In quantification theory, propositions are formed either by quantification or by _____.
    negation, predication, instantiation
    Answer: instantiation

Chapter 11: Analogical Reasoning

Multiple Choice

1. "Compromising with an enemy in your midst is like trying to reason with a cancer in the body. The doctor does not compromise with the cancer—he cuts it out before it can spread."
    Of the choices below, which counteranalogy most decisively refutes this argument?
    A) People are rational agents, and cancers are not.
    B) If a person can be a cancer, then we could call anything we don't like a disease, like taxes or tornadoes.
    C) A doctor who performs surgery when other less drastic measures would have worked instead is a bad doctor—perhaps even a criminal.
    D) Calling people of other ethnic backgrounds "cancers" is like calling them "cockroaches" —it is certainly bigotry.
    Answer: C

2. "Getting up in the morning and going to work without taking a morning jog is like expecting your car to drive without first turning on the engine."
    Which of the following counteranalogies most decisively refutes this reasoning?
    A) Getting up and immediately jogging around the block is like jogging right after a full meal. I wouldn't advise it.
    B) Getting up in the morning and taking a morning run before going to work is like running around the track until you're exhausted just before competing in a big race.
    C) Trying to get up and jog every morning is like remembering to floss your teeth: it is the sort of New Year's resolution that does not last past January.
    D) Going to work right after jogging is like filling out tax forms in your dentist's waiting room—why do this to yourself?
    Answer: B

3. "I have been to Florida two times. Each time, I had great weather and a great time. I conclude, therefore, that Florida is a great place to vacation."
    What would be the best way to make this conclusion stronger?
    A) If I had been there a dozen times.
    B) If I gave more information about the state of Florida.
    C) If I had said where I stayed while there.
    D) If I had discussed other vacations *not* taken in Florida.
    Answer: A

4. "I have always liked Fords. They are great cars: you'll get at least 200,000 miles on an Escort; it will never break down!"
    What is the best way to make this claim even stronger?
    A) Saying "300,000" instead of "200,000."
    B) Saying why Fords are better than Hondas.
    C) Estimating a bit less than "200,000" and saying "almost never."
    D) Letting someone actually drive the Escort in question.
    Answer: C

5. "This chef is from the south of France—the same place that Chef Picard is from! We should dine at his restaurant as soon as we can!"
    On which criterion is this analogical argument rather weak?
    A) number of entities
    B) variety of instances in the premises
    C) relevance
    D) disanalogies
    Answer: C

6. "I have been to McDonald's in New York City, in Los Angeles, and in London—and in all three places, the French fries have tasted exactly the same. Because of these three experiences, I am confident in saying that McDonald's French fries taste the same everywhere."
    This argument's strength rests on the criterion of:
    A) number of entities
    B) relevance
    C) variety of the instances in the premises
    D) all of the above
    Answer: D

7. "What do you mean I should be careful eating this chili? I have been to Wendy's for lunch every day since 1985—except for Sundays and holidays. Each time, I have eaten chili, and each time it has been great. It has never caused me the least bit of discomfort, either. I conclude from this that Wendy's chili will not cause me discomfort now."
    The speaker's argument relies mostly on the criterion of:
    A) number of entities
    B) relevance
    C) variety of the instances in the premises
    D) number of similar respects
    Answer: A

8. "I don't care that you think that you and your silly friend have so much in common. You may be the same age, and weight, and height; you may even both like Pokémon and pizza. But that doesn't matter: he comes from a Baptist family, and we are Buddhist."
    This speaker's argument rests on the criterion of:
    A) disanalogies
    B) relevance
    C) variety of the instances in the premises
    D) number of similar respects
    Answer: B

9. Which conclusion would make an argument the strongest?
    A) I know that we will always be together.
    B) I know that we will be together for years.
    C) I know that we will be friends for a long time.
    D) I know that we will have a good time tomorrow.
    Answer: D

10. Zibby has taken four logic courses at college, and has liked them all. So she decides to take one more, expecting that she will like it, too. Which of the following additional pieces of information would make this conclusion more probable?
    A) Her previous logic courses have all been with the same professor, but she does not know the professor teaching this course.
    B) Her previous logic courses have all been in Aristotelian logic, and this one is in symbolic logic.
    C) Her previous logic courses have been the most exciting experiences of her life—and she has very high expectations of this one.
    D) She also took logic courses in high school, and she liked them as well.
    Answer: D

True or False

11. To be deductively valid, an argument by analogy must pass all six of the criteria for appraising analogical arguments.
    Answer: FALSE

12. Because I've dropped my watch in a pond, worn it in the rain, and had it on me while swimming, my belief in its quality is more justified now than when the salesperson first demonstrated it to me.
    Answer: TRUE

13.   It is not possible to logically refute an analogy, even if the counteranalogy has exactly the same form, because analogical reasoning is inductive, which means that the premises never support the conclusion with certainty.
       Answer: TRUE

14.   If I have always had excellent advice from my best friend, and another friend asks me how good her advice is, my claim will be stronger if I say that her advice has been pretty good instead of excellent.
       Answer: TRUE

15.   One serious disanalogy always tends to weaken an analogy, regardless of the fact that the two things being compared may have a great many similarities.
       Answer: TRUE

Pattern Match

16.   In order for a refutation by logical analogy to be successful, the counteranalogy needs to have a form _____ to that of the original.
       different, opposite, similar
       Answer: similar

17.   In a refuting analogy, the conclusion should be known to be _____.
       true, false, valid
       Answer: false

18.   Pointing out a _____ is often the same as detecting the fallacy of accident.
       false premise, disanalogy, true premise
       Answer: disanalogy

19.   An argument is _____ when its conclusion is made less bold.
       weakened, strengthened, lengthened
       Answer: strengthened

20.   The more dissimilar the instances mentioned in the premises of an analogical argument are, the _____ the argument is.
       weaker, stronger, harder
       Answer: weaker

Chapter 12: Causal Reasoning

Multiple Choice

1. Our experience is of particular events. Causal laws, however, refer to all events of a certain type. Therefore, in order to use our experience to test causal assertions, we must:
   A) gather as many confirming instances as we can before declaring that we know any causal fact with certainty.
   B) not become confused by the apparent contradiction. Just because our experience is only of particular events does not mean we cannot definitely declare general laws to be true.
   C) remember that every time we confirm a causal assertion, we are only confirming a single instance of it.
   D) remember that no causal assertion is ever completely confirmed.
   Answer: D

2. Which of the following statements is *not* true of induction by simple enumeration?
   A) It is a trustworthy way to generate basic hypotheses in science to use for further testing.
   B) It is really extended argument by analogy, and differs from analogy only in that it has a more general conclusion.
   C) It makes no distinctions between genuine confirming instances of a law and sheer coincidence.
   D) It takes no account of critical disconfirming instances of causal laws, and thus does not work for testing causal hypotheses.
   Answer: A

3. The method of agreement is particularly useful when:
   A) we want to narrow down the range of phenomena in question for possible further scientific research.
   B) we are interested in pinpointing the exact cause of a phenomenon such as an epidemic.
   C) we cannot separate the cause we are interested in from the effects it is entangled with, though we do know what some of the other causes are.
   D) we have a phenomenon to study that cannot be disconnected from a network of other significant factors, and any experiment involving the elimination of factors one by one is impossible.
   Answer: A

4. The joint method of agreement and difference is commonly used in medical investigation because:
   A) it allows researchers to double-check their results.

B) other methods are forbidden by laws against human experimentation.

C) it prevents wasted time and research money by doubling the possibility of obtaining results.

D) it allows a substance to be suggested as a cause while allowing other candidate substances to be eliminated.

Answer: D

5. "I was wondering why my houseplants were dying. Perhaps I was watering and fertilizing them incorrectly. Then I realized that my apartment got pretty hot when the air conditioning was off when I was away. I decided to try to find the right temperature to keep my plants healthy. For three days, I left the air conditioner set on one particular temperature, and in five-degree increments I tried temperatures from sweltering to chilly, until I finally found the temperature they liked best."

This experiment used:

A) the method of agreement.

B) the method of concomitant variation.

C) the joint method of agreement and difference.

D) a poor approximation of the method of concomitant variation.

Answer: B

6. Which of the following actions is *not* an example of the application of the method of residues?

A) Moving guests at a hotel, where large numbers of guests became ill, out of a suspected wing to see if the wing's climate control system is at fault.

B) Weighing an inflated balloon to find out how much the air inside it weighs.

C) Identifying all of the possible causes for an irregularity in the orbit of a planet, concluding that they do not completely explain it, and hypothesizing on that basis that there must be some other unknown cause.

D) Running a truck over a truck scale and concluding that it is carrying too much freight.

Answer: A

7. The method of residues is designed to deal with situations where

A) a cause that operates within a complex set of effects is sought, and while the exact variable cannot be isolated, it is possible to manipulate it experimentally.

B) a cause is sought for a similar effect occurring in disparate circumstances, and the major candidates for possible causes can be eliminated or produced experimentally.

C) a cause that operates within a complex set of effects is sought, and many but not all of the contributing causes are already known.

D) a cause, the *necessary* cause of an effect, is sought—investigators wish to confirm that an effect simply cannot happen without this antecedent event.
Answer: C

8. Which of the following situations would *not* be a likely candidate for the use of the joint method of agreement and difference?
A) Allergists suspect that some common substance is causing my rash; they decide to conduct experiments to track down the exact cause.
B) Epidemiologists suspect that a high intake of salt is related to heart disease, so they decide to investigate the question.
C) Medical researchers want to know the cause of a nerve disease; they hope to study a population which has a high incidence of the disease to see if they can learn something about it and, if possible, develop a treatment and test it on the same population.
D) A dentist wants to know if her new denture linings are as good as she thinks, so she phones all of her denture-wearing patients, including those wearing other linings, and asks them how their denture linings are holding up.
Answer: B

9. Which of the following phenomena would be best investigated using the method of residues?
A) Researchers want to study the relationship between drinking wine and heart disease in humans.
B) A detective wants to determine who last touched a murder weapon; he has a finger-print dusting kit.
C) The government wants to know the weight of the freight a semi-truck is carrying.
D) A professor of logic wants to know how much lecturing is optimal for teaching about the method of residues.
Answer: C

10. We can legitimately infer cause from effect only in the sense of:
A) proximate cause
B) sufficient condition
C) necessary condition
D) remote cause
Answer: C

True or False

11. A necessary condition for the occurrence of an event is a circumstance in whose presence the event must occur.
    Answer: FALSE

12. We can never completely confirm a causal assertion, no matter how many confirming instances we accumulate.
    Answer: TRUE

13. "Double-arm" trials, in which one group receives a treatment while another does not, and then the treatment groups are reversed, are based upon the joint method of agreement and difference.
    Answer: TRUE

14. Scientists cannot use the method of residues when they cannot conduct experiments to produce one isolated effect in the lab.
    Answer: FALSE

15. When using the method of concomitant variation, it is necessary to have a measuring system already established.
    Answer: TRUE

Pattern Match

16. When researchers study hundreds of families to try to find something unique to the genetic makeup of persons suffering from a particular disease, they are using the method of _____.
    agreement, residues, difference
    Answer: agreement

17. "Knockout mice" that are missing a crucial gene are specifically bred for use in experiments that use the method of _____.
    difference, residues, agreement
    Answer: difference

18. The method of _____ differs from the other methods in that it may be used to examine only one case.
    residues, agreement, difference
    Answer: residues

19. To say that A causes B is to claim that there is some _____ law determining that A will always generate B in this way.
    particular, general, necessary
    Answer: general

20. A _____ condition describes a circumstance in whose absence an event cannot occur.
    sufficient, true, necessary
    Answer: necessary

Chapter 13: Science and Hypothesis

1. Which, of the choices below, is the least important reason for scientists to pursue their fields?
   A) They want to satisfy their curiosity.
   B) They want to find practical solutions to human problems.
   C) They want to increase the total amount of information available to humanity.
   D) They want to unify knowledge and make it simpler.
   Answer: C

2. The five criteria for evaluating scientific hypotheses do not tell us that:
   A) the facts in question must be deducible from the proposed hypotheses.
   B) certain procedures must be followed in order to generate truly scientific hypotheses.
   C) there must be the possibility of making observations that confirm or disconfirm the proposed hypothesis.
   D) any system of explanatory hypotheses must be self-consistent.
   Answer: B

3. Sir Isaac Newton's celestial mechanics based on his theories of gravitation and motion replaced the astronomical theories of Kepler and Galileo because it:
   A) explained everything that the previous theories did, and additional phenomena.
   B) was set on a firmer scientific basis than the older theories.
   C) got rid of a system of confusing epicycles.
   D) had been proved to be true with a series of brilliant crucial experiments.
   Answer: A

4. Scientific investigation cannot begin until:
   A) a considerable amount of background research has been done on a given question to determine which hypothesis is the most promising.
   B) all the scientists engaged on a project can agree upon what method to use to find answers to a question.
   C) the problem to be solved is clearly identified.
   D) scientists meet and decide to cooperate in research activity.
   Answer: C

5. Which sentence describes a preliminary hypothesis?
   A) It is the sort of thing that misleads researchers who are searching for objective answers.
   B) It should not be formulated until all available information has been evaluated.

C) It is that scientific explanation which subsequent research will ultimately confirm or disconfirm.

D) It is a framework which guides researchers in the collection of data.

Answer: D

6. In formulating a final hypothesis which eventually becomes an accepted scientific explanation,

A) researchers must take care not to reach beyond the facts.

B) scientists must account for all of the new information which their investigation uncovers, but they need not worry about explaining facts accounted for by previous theories.

C) an "imaginative leap" is often necessary which reaches beyond the facts.

D) the sky is the limit—scientists should realize that a creative hypothesis is like a great work of art, and has no conceptual limits.

Answer: C

7. When a hypothesis is labeled *ad hoc*, one of several senses may be intended. Which of the statements below does not describe one of these senses?

A) The hypothesis was devised in order to take some specific data into account.

B) The hypothesis was devised in order to cover up an inconsistency in the theoretical structure caused by the appearance of some new data.

C) The hypothesis was created in a sort of theoretical vacuum: it explains the phenomenon that needs explaining, but nothing else.

D) The hypothesis was created in order to provide an adequate explanation of some data, but does not succeed in doing so.

Answer: D

8. An objective scientist, when comparing two classification schemes, would:

A) realize that one cannot reasonably be preferred over the other, since all classification springs from whatever practical interests inspired it.

B) prefer the simpler scheme.

C) prefer the scheme which allows more facts to be predicted and more theories to be generated out of it.

D) prefer the scheme which reflects reality most accurately.

Answer: C

9.   Which one of the following statements does not help explain why every classification we make is also a bit of a hypothesis?
      A) The best classifications tell us something essential about the thing they name, something that is so much a part of that thing, that if it were changed, the thing really wouldn't be what it is.
      B) There is not enough time in the world to describe any event or object in infinite detail; thus, choices must be made about what to include and exclude in the description. These choices are made on the basis of hypotheses concerning what is important.
      C) Scientists can't classify organisms without making guesses about how those organisms are causally related to each other; when they do that, they are proposing biological hypotheses.
      D) Classifications are always made in order to make comprehending a mass of information easier, and "easier" is, of course, defined in accordance with whatever interests the classifier has.
      Answer: A

10.   Why do scientists accept scientific theories?
      A) Because they come on good authority.
      B) Because they have overwhelming evidence in their favor.
      C) Because they are based on longstanding tradition.
      D) Because they trigger deeply felt intuitions.
      Answer: B

True or False

11.   Scientists are *not* primarily interested in cataloging facts.
      Answer: TRUE

12.   Scientific explanations, because they are based on empirical evidence, inspire greater loyalty than unscientific explanations.
      Answer: FALSE

13.   There is no difference between dogmatic explanation and scientific explanation.
      Answer: FALSE

14.   There are no rules that can tell anyone how to generate good hypotheses, and no rules to which acceptable hypotheses must conform.
      Answer: FALSE

15. Problems in science are sometimes solved by scientists who are motivated by the desire to show the connections between the earlier discoveries of two of their teachers.
Answer: TRUE

Pattern Match

16. The only real test of truth in science for a hypothesis is whether it is supported by _____.
evidence, scientists, politicians
Answer: evidence

17. Science is _____ —that is, it holds that sensory experience is the basis for every scientific statement.
a priori, empirical, biased
Answer: empirical

18. Sometimes a hypothesis is chosen over a rival hypothesis, even though they both explain the world equally well, just because it is _____.
simpler, more elegant, more popular
Answer: simpler

19. After a preliminary hypothesis has been confirmed, a second, more complete _____ hypothesis is formulated.
simple, causal, explanatory
Answer: explanatory

20. A(n) _____ hypothesis is helpful in sorting relevant from irrelevant facts when an investigator is collecting facts.
explanatory, preliminary, final
Answer: preliminary

Chapter 14: Probability

Multiple Choice

1. What is the formula for the joint occurrence of two dependent events?
    A) $P(a$ and $b) = P(a) \times P(b$ if $a)$
    B) $P(a$ and $b) = P(a) + P(b$ if $a)$
    C) $P(a$ or $b) = P(a) \times P(b$ if $a)$
    D) $P(a$ or $b) = P(a) + P(b$ if $a)$
    Answer: A

2. Which of the following is an example of the joint occurrence of two independent events?
    A) drawing the king of clubs from a deck of cards, in two draws, replacing the first card after the first draw
    B) drawing the king of clubs from a deck of cards, in two draws, not replacing the first card after the first draw
    C) drawing an ace or a deuce from a deck of cards, in two draws, not replacing the first card after the first draw
    D) None of the above
    Answer: A

3. My insurance agent claims that my chances of living to age 65 (as a nonsmoking female) are 75%. However, another agent, from another agency, told me just last week that my chances were better than 78%. What is the most reasonable explanation for these different figures?
    A) One agent is giving me false numbers to justify charging a higher rate for life insurance. Both sets of numbers cannot be accurate at the same time.
    B) One agent is using more accurate figures than the other. One set is obviously incorrect.
    C) They are both correct—both are judging probabilities based on the evidence available.
    D) Statistics cannot really tell us anything reliable about what has not happened.
    Answer: C

4. What is the probability of rolling at least one three on a single roll of three dice?
    A) $1/6 \times 1/6 \times 1/6 = 1/216$
    B) $1/6 \times 1/6 \times 1/6 = 1/18$
    C) $1/6 + 1/6 + 1/6 = 1/2$
    D) $1/2 + 2/6 + 3/6 = 5/6$
    Answer: C

5.   I have two cars. I need to know the probability of at least one of my cars starting in the morning. To figure this out, I take the probability that each car itself will start, and:
     A) I add them together.
     B) I multiply them together.
     C) I add them together and subtract from one.
     D) I add them together and subtract the possibility of their joint occurrence.
     Answer: A

6.   I would like to know my chances of surviving to see my son's high-school graduation. I need to live another 12 years, of course, and my son has to live that long as well—and he also has to graduate! What formula would I use to calculate my chances?
     A) the addition theorem for mutually exclusive alternatives
     B) the addition theorem for nonexclusive alternatives
     C) the general product theorem for the joint occurrence of independent events
     D) the general product theorem for the joint occurrence of dependent events
     Answer: C

7.   I have two jars of coins. One jar contains 15 coins (5 pennies and 10 dimes) and the other contains 20 coins (10 of each). What are my chances of drawing two of the same coin if I take one coin from each jar?
     A) $1/2 + 15/20 = 125\%$
     B) $1/6 \times 1/3 = 5.5\%$
     C) $1/2 \times 15/20 = 37.5\%$
     D) $1/6 + 1/3 = 50\%$
     Answer: D

8.   Where investments are concerned, safety and productivity are considerations that always:
     A) serve as indicators of each other.
     B) complement each other.
     C) get in the way of a rational assessment of an investment.
     D) pull in opposite directions.
     Answer: D

9.   I have $400 to invest. I am considering buying a CD (which will pay 6%), but I also just got a prospectus from a corporation selling bonds, which promises 24%. I don't know where to put my money! That is probably because:
     A) I don't know what the expectation value of the CD is.
     B) I don't know what the expectation value of the bond is.

C) I don't know the probability of the corporation making good on the bond.
D) I don't know what the return on the bond is.
Answer: C

10. I take the separate probabilities of at least one of two events (which cannot both happen at once) and add them together. I am trying to figure:
A) a joint occurrence.
B) an alternate occurrence of mutually exclusive events.
C) an alternate occurrence of nonexclusive events.
D) the expected value of the occurrences.
Answer: B

True or False

11. Two events are mutually exclusive when the occurrence of one prevents the occurrence of the other thereafter.
Answer: FALSE

12. To figure the probability of either of two mutually exclusive events (A or B) occurring, the probability of B occurring is subtracted from the probability of A occurring.
Answer: FALSE

13. We use the addition theorem to compute the probability of the alternative occurrences of nonexclusive events.
Answer: FALSE

14. To figure the probability of getting at least one head on your first two coin tosses, figure out how likely it would be not to get any heads at all, and subtract from one.
Answer: TRUE

15. "Expectation value" is the calculated value of a wager or investment, taking into account not only the value but also the probability of each possible return.
Answer: TRUE

Pattern Match

16. The two formulas for the calculation of the probability of the joint occurrence of simple events are known as the _____ theorem.
    product, addition, independent
    Answer: product

17. The probability of a complex event that consists of nonexclusive alternatives can be computed by changing it into a set of mutually exclusive alternatives, and then using the _____ theorem.
    addition, product, expected value
    Answer: addition

18. In the _____ view of probability, we figure the probability of the occurrence of an event by dividing the number of ways in which the event can occur by the total number of equipossible outcomes.
    a priori, relative frequency, product
    Answer: *a priori*

19. Events are called _____ if the occurrence or nonoccurrence of one has no effect upon the occurrence or nonoccurrence of the other.
    probable, independent, dependent
    Answer: independent

20. To compute the probability of the joint occurrence of two independent events, you _____ their separate probabilities.
    add, subtract, multiply
    Answer: multiply