

Chapter 1 Test B

MULTIPLE CHOICE

INSTRUCTIONS: The following selections relate to distinguishing arguments from nonarguments and identifying conclusions. Select the best answer for each.

1. Authoritarian states are characterized by strong central governments that fairly stringently limit the range of political activity. More often than not, they are one-party states, which means that only one party, that which supports the government, is allowed to engage in political activity. Free discussion and association are strictly curtailed in these systems. Anyone who might dare to criticize the government or to express ideas that are not in conformity with its policies can be severely punished, even by death.

Robert A. Heineman, *Political Science*

- a. Argument; conclusion: More often than not ... engage in political activity.
- b. Nonargument.
- c. Argument; conclusion: Authoritarian states ... limit the range of political activity.
- d. Argument; conclusion: Anyone who might dare to criticize ... even by death.
- e. Argument; conclusion: Free discussion and association ... in these systems.

ANS: B PTS: 2

2. Prior to their extinction, Neanderthals had been widespread in Europe for 100,000 years. Then 50,000 years ago, modern humans moved into Europe from Africa. Twenty-six thousand years after that the last Neanderthal died. At one time it was thought that the Neanderthals were killed by climate change, but this theory has now been discounted. So why did the Neanderthals perish? Probably they were killed by the humans.

- a. Argument; conclusion: Then 50,000 years ago ... Europe from Africa.
- b. Argument; conclusion: At one time it was thought ... now been discounted.
- c. Argument; conclusion: Prior to their extinction ... 100,000 years.
- d. Nonargument. Twenty-six thousand years after that the last Neanderthal died.
- e. Argument; conclusion: Probably they were killed by the humans.

ANS: E PTS: 2

3. Hair turns color when we age because the follicles at the base of the hair shaft cease to produce melanin. Melanin is a chemical that gives the hair shaft its color (black, brown, blond, red, and all shades in between). The darkness or lightness of your hair depends on how much melanin each strand contains. With age, the cells in the follicle that produce melanin die off. As they do so, that hair strand will become silver, grey, or white, as it grows.

- a. Argument; conclusion: The follicles ... cease to produce melanin.
- b. Argument; conclusion: Hair turns color when we age.
- c. Argument; conclusion: With age, the cells in the follicle ... die off.
- d. Nonargument.
- e. Argument; conclusion: The darkness or lightness ... each strand contains.

ANS: D PTS: 2

4. Evolution as a process that has always gone on in the history of the earth can be doubted only by those who are ignorant of the evidence or are resistant to evidence, owing to emotional blocks or to plain bigotry. By contrast, the mechanisms that bring evolution about certainly need study and clarification. There are no alternatives to evolution as history that can withstand critical examination. Yet we are constantly learning new and important facts about evolutionary mechanisms.

- a. Nonargument.
- b. Argument; conclusion: By contrast, the mechanisms ... study and clarification.
- c. Argument; conclusion: Yet we are constantly ... evolutionary mechanisms.
- d. Argument; conclusion: Evolution as a process ... blocks or to plain bigotry.
- e. Argument; conclusion: There are no alternatives ... critical examination.

ANS: A PTS: 2

5. Scientists have recently shown that heaps of intact DNA from the extinct woolly mammoth are retrievable from the animals' fur. A great deal of that fur is readily available in natural history museums. Such amounts of DNA make it possible to piece together the entire mammoth genome. Hence, we can expect to see mammoth clones in the not too distant future.
- a. Argument; conclusion: A great deal of that fur ... natural history museums.
 - b. Nonargument.
 - c. Argument; conclusion: Scientists have recently shown ... animals' fur.
 - d. Argument; conclusion: We can expect to see ... in the not too distant future.
 - e. Argument; conclusion: Such amounts of DNA ... the entire mammoth genome.

ANS: D PTS: 2

6. The loss of arctic ice is accelerating as a result of a form of positive feedback. As arctic ice melts, the arctic icecap reflects fewer rays from the sun. When this happens, more rays are absorbed by the surrounding ocean, which increases its temperature. As the temperature of the ocean rises, more arctic ice melts.
- a. Argument; conclusion: When this happens ... which increases its temperature.
 - b. Argument; conclusion: As the temperature of the ocean rises ... ice melts.
 - c. Argument; conclusion: The loss of arctic ice ... positive feedback.
 - d. Nonargument.
 - e. Argument; conclusion: As arctic ice melts ... fewer rays from the sun.

ANS: C PTS: 2

7. If its ion engine operates as planned, its huge solar panel remains deployed and undamaged, and its xenon energy source is not exhausted, then the Dawn spacecraft will reach both Vesta and Ceres (large asteroids in the belt between Mars and Jupiter), and scientists will gather information about the formation of planets, whether Ceres has a buried ocean of fresh water, and whether vestiges of life lurk beneath its icy surface.
- a. Argument; conclusion: Its ion engine operates ... not exhausted.
 - b. Argument; conclusion: The Dawn spacecraft ... Mars and Jupiter)
 - c. Argument; conclusion: The Dawn spacecraft ... beneath its icy surface.
 - d. Argument; conclusion: Scientists will gather information ... formation of planets.
 - e. Nonargument.

ANS: E PTS: 2

8. To focus on the performance of the stock market is to zero in on an economic indicator that can do well even as the country does poorly. In 2006, for instance, the Dow Jones industrial average hit highs. According to the just released census data, however, median earnings fell one percent, and millions more Americans entered the ranks of the uninsured. Indeed, from 2000 to 2007 the S&P 500 gained more than 500 points. Meanwhile, the median household income fell by more than \$900.

Ezra Klein, "Stock Split"

- a. Argument; conclusion: According to the just released ... ranks of the uninsured.
- b. Argument; conclusion: To focus on the performance ... the country does poorly.

- c. Argument; conclusion: In 2006, for instance, the Dow Jones ... hit highs.
- d. Argument; conclusion: Meanwhile ... fell by more than \$900.
- e. Nonargument.

ANS: B PTS: 2

9. The earth is divided into the crust, the mantle, and the core. The crust is the solid portion on which we stand. The mantle is a plastic but solid material under the crust that can flow and move about. And finally, the core is the innermost part of the earth made of solid and molten iron.

Pam Walker and Elaine Wood, *Hands-On General Science Activities*

- a. Argument; conclusion: The mantle ... flow and move about.
- b. Argument; conclusion: The crust is the solid portion on which we stand.
- c. Nonargument.
- d. Argument; conclusion: The core is the innermost part ... molten iron.
- e. Argument; conclusion: The earth is divided into the crust, the mantle, and the core.

ANS: C PTS: 2

10. The relationship between two measurable factors can be represented by a graph. If both values increase, they are considered to have a direct relationship. For example, the more you work, the more money you make. If one value increases while the other decreases, they have an inverse relationship. For example, the more you work on your golf swing, the lower your score will be.

Scott Ryan, *Earth Science*

- a. Nonargument.
- b. Argument; conclusion: If one value increases ... an inverse relationship.
- c. Argument; conclusion: The relationship ... can be represented by a graph.
- d. Argument; conclusion: For example, the more you work ... money you make.
- e. Argument; conclusion: If both values increase ... direct relationship.

ANS: A PTS: 2

11. Scientists may be on the verge of creating life in a test tube. Recently, scientists have used computers to synthesize a highly complex loop of DNA. When this loop was inserted into an empty bacterial cell, the cell began to self-replicate. And self-replication is an essential feature of life.

- a. Argument; conclusion: When this loop was inserted ... began to self-replicate.
- b. Argument; conclusion: Recently, scientists have used computers ... loop of DNA.
- c. Nonargument.
- d. Argument; conclusion: Scientists may be on the verge ... life in a test tube.
- e. Argument; conclusion: And self-replication is an essential feature of life.

ANS: D PTS: 2

12. Good intentions aside, there are compelling reasons to avoid water fluoridation. Hydrofluosilic acid, the industrial waste product used in municipal water systems, is contaminated with arsenic, lead, and other heavy metals. There are significant increases in lead levels in children who drink fluoridated water. A 2006 Harvard study found a fivefold to sevenfold increase in bone cancer in exposed young men. Sadly, the youngest children are the most susceptible.

David S. Banks, Letter to the Editor

- a. Argument; conclusion: Hydrofluosilic acid ... and other heavy metals.
- b. Argument; conclusion: Sadly, the youngest children are the most susceptible.
- c. Argument; conclusion: There are compelling reasons to avoid water fluoridation.
- d. Argument; conclusion: There are significant increases ... fluoridated water.
- e. Nonargument.

ANS: C PTS: 2

13. While there is no technology to reduce CO₂ from a car's exhaust, we can make cars pollute less by making them more fuel efficient. By using today's best technology, car makers could dramatically increase the fuel economy of their cars and trucks. In fact, off-the-shelf technology can change the nation's best selling SUV, the Ford Explorer, from a 19 mpg gas guzzler to an efficient 34 mpg vehicle. If we are to make any progress in slowing global warming, we must make our cars go farther on a gallon of gas.

Sierra Club, "Global Warming Solutions"

- a. Argument; conclusion: While there is no technology ... more fuel efficient.
- b. Nonargument.
- c. Argument; conclusion: In fact, off-the-shelf technology ... 34 mpg vehicle.
- d. Argument; conclusion: By using today's best technology ... cars and trucks.
- e. Argument; conclusion: If we are to make any progress ... a gallon of gas.

ANS: B PTS: 2

14. Developing an AIDS vaccine is not impossible, as some skeptics claim. Research suggests that the human immune system is better at fighting HIV than was originally thought. Most of those infected suppress the virus for years without developing AIDS. A small number never contract the virus despite repeated exposures. If we can figure out the mechanism that accounts for this, we'll have clues about how to engineer a vaccine.

Seth Berkley, "Don't Quit on an AIDS Vaccine"

- a. Argument; conclusion: If we can figure out the mechanism ... engineer a vaccine.
- b. Nonargument.
- c. Argument; conclusion: Most of those infected ... without developing AIDS.
- d. Argument; conclusion: Research suggests ... than was originally thought.
- e. Argument; conclusion: Developing an AIDS vaccine ... skeptics claim.

ANS: E PTS: 2

15. Geology can be divided into two major time-related disciplines: physical geology and historical geology. Physical geology is the study of the materials the planet is composed of and the present day processes that operate on the surface and within the earth's deeper layers. Historical geology is the study of the earth's 4.6 billion year history, its formation, development, and evolution. Historical geologists strive to create a time-line of events that have occurred since the earth's formation.

Alan D. Sills, *Earth Science the Easy Way*

- a. Nonargument.
- b. Argument; conclusion: Historical geologists ... since the earth's formation.
- c. Argument; conclusion: Physical geology ... the earth's deeper layers.
- d. Argument; conclusion: Geology can be divided ... historical geology.
- e. Argument; conclusion: Historical geology ... development, and evolution.

ANS: A PTS: 2

16. Nicotine is addictive because its chemical structure is so similar to the neurotransmitter acetylcholine that once inside the brain it unlocks several other chemicals. One of these chemicals is dopamine, which produces a highly pleasant sensation. Another is adrenaline, which increases alertness. Yet a third is serotonin, which improves one's mood. When people are deprived of these chemicals, they naturally want more, and this leads to addiction.

- a. Argument; conclusion: When people are deprived ... leads to addiction.
- b. Argument; conclusion: Nicotine is addictive.
- c. Argument; conclusion: One of these chemicals is dopamine ... pleasant sensation.
- d. Nonargument.
- e. Argument; conclusion: Its chemical structure ... unlocks several other chemicals.

ANS: D PTS: 2

17. For awhile, during the 1990s, it looked as though the loggerhead sea turtle might be making a comeback. But a new federal report suggests that loggerheads have begun to decline again. Their life-pattern makes them doubly vulnerable to humans. They lay their eggs on beaches, habitat vulnerable to development and disturbance, and they spend their long lives at sea, where they are often fouled in fishing nets.

Newspaper editorial

- a. Argument; conclusion: But a new federal report ... begun to decline again.
- b. Nonargument.
- c. Argument; conclusion: Their life-pattern ... doubly vulnerable to humans.
- d. Argument; conclusion: For awhile, during the 1990s ... making a comeback.
- e. Argument; conclusion: They lay their eggs ... fouled in fishing nets.

ANS: C PTS: 2

INSTRUCTIONS: The following problems relate to identifying and evaluating inductive and deductive arguments. Select the best answer for each.

18. After examining DNA evidence found at the crime scene, Dr. Jacobs, a highly qualified forensic biologist, says that Alex Foster could not have committed the crime. Therefore, we conclude that Foster is innocent.
- a. Inductive, weak.
 - b. Deductive, sound.
 - c. Deductive, invalid.
 - d. Deductive, valid.
 - e. Inductive, strong.

ANS: E PTS: 2

19. Some preachers are evangelists, so some preachers are TV personalities, since some evangelists are TV personalities.
- a. Inductive, weak.
 - b. Deductive, invalid.
 - c. Inductive, strong.
 - d. Deductive, sound.
 - e. Deductive, valid.

ANS: B PTS: 2

20. The poster on your neighbor's lawn says "Vote Horton for Sheriff." Therefore, it's clear that Horton would make a great sheriff.
- a. Inductive, sound.
 - b. Inductive, strong.
 - c. Deductive, valid.
 - d. Inductive, weak.
 - e. Deductive, invalid.

ANS: D PTS: 2

21. After drinking a bottle of Black Diamond Special Brew, Clyde noticed a slightly bitter aftertaste. Lauren and Nicole noticed the same thing when they drank some Black Diamond a year earlier. We conclude that every bottle of Black Diamond Special Brew has a slightly bitter after taste.
- a. Inductive, weak.
 - b. Deductive, invalid.

- c. Inductive, strong.
- d. Deductive, valid.
- e. Inductive, cogent.

ANS: C PTS: 2

22. Either Michelle Pfeiffer or Martha Stewart is a popular film star. But Michele Pfeiffer is not a film star at all. Therefore, Martha Stewart is a popular film star.
- a. Deductive, valid.
 - b. Inductive, weak.
 - c. Deductive, cogent.
 - d. Deductive, invalid.
 - e. Inductive, strong.

ANS: A PTS: 2

23. Given that A and B are the diagonals of a parallelogram. It follows that A and B have the same length.
- a. Deductive, valid.
 - b. Inductive, strong.
 - c. Deductive, sound.
 - d. Inductive, weak.
 - e. Deductive, invalid.

ANS: E PTS: 2

24. Jim Searcy, a religious prophet who now lives in Cypress, claims that the Prince of Wales is the Antichrist. Therefore, we must conclude that the Prince of Wales is up to no good.
- a. Inductive, weak.
 - b. Deductive, invalid.
 - c. Deductive, sound.
 - d. Deductive, valid.
 - e. Inductive, strong.

ANS: A PTS: 2

25. If football is a rough sport, then football injuries abound. It is the case that football injuries abound. Thus, it follows that football is a rough sport.
- a. Inductive, strong.
 - b. Deductive, invalid.
 - c. Inductive, weak.
 - d. Deductive, valid.
 - e. Inductive, uncogent.

ANS: B PTS: 2

26. A divining rod is a magical device for detecting hidden water, metal, and gemstones. Your friend Roger is using his divining rod on the beach right now. Therefore, he'll likely find some diamonds buried beneath the sand.
- a. Deductive, valid.
 - b. Inductive, strong.
 - c. Deductive, invalid.
 - d. Inductive, weak.
 - e. Deductive, unsound.

ANS: D PTS: 2

27. After smoking only a few cigarettes per day, Krista became addicted within two months. The same thing happened to Dave, Jean, and Marty. Therefore, since Dennis has been smoking a few cigarettes per day for the past two months, he's probably addicted, too.
- Deductive, invalid.
 - Deductive, valid.
 - Inductive, weak.
 - Inductive, cogent.
 - Inductive, strong.

ANS: E PTS: 2

28. Natalie is a kleptomaniac. Therefore, she has a compulsion to steal things.
- Deductive, valid.
 - Inductive, weak.
 - Inductive, cogent.
 - Inductive, strong.
 - Deductive, invalid.

ANS: A PTS: 2

29. Lydia loves Ryan, and Ryan loves anchovy pizza. Therefore, it follows necessarily that Lydia loves anchovy pizza.
- Deductive, sound.
 - Deductive, valid.
 - Deductive, invalid.
 - Inductive, strong.
 - Inductive, weak.

ANS: C PTS: 2

30. After investing in the stock market, Pamela doubled her money in just two years, and Beth and Tiffany did the same thing. However, Greg, Ivan, and Marty all lost money on the stock market during the same time frame. The obvious conclusion is that women do better than men in the stock market.
- Inductive, strong.
 - Inductive, weak.
 - Deductive, invalid.
 - Deductive, unsound.
 - Deductive, valid.

ANS: B PTS: 2

31. Andrew is lighter than Carl, and Carl is heavier than Marty. Therefore, it follows necessarily that Andrew is lighter than Marty.
- Inductive, strong.
 - Deductive, valid.
 - Inductive, weak.
 - Deductive, invalid.
 - Deductive, sound.

ANS: D PTS: 2

32. The arctic ice cap has been shrinking for several years as a result of global warming, and that trend is expected to continue. Therefore, since arctic polar bears depend on that ice for survival, the arctic polar bear population will shrink in the years ahead.
- Inductive, weak.

- b. Deductive, invalid.
- c. Inductive, strong.
- d. Deductive, valid.
- e. Inductive, uncogent.

ANS: C PTS: 2

33. If Ken Burns makes historical documentaries, then he enhances our knowledge of the past. Ken Burns does make historical documentaries. Therefore he enhances our knowledge of the past.
- a. Deductive, valid.
 - b. Inductive, weak.
 - c. Deductive, invalid.
 - d. Inductive, strong.
 - e. Deductive, cogent.

ANS: A PTS: 2

34. During the past 80 years, the number of Model T Fords on the highway has steadily fallen while the number of deaths from lung cancer has steadily risen. Thus, to reduce the number of deaths from lung cancer we should bring back the Model T Ford.
- a. Deductive, invalid.
 - b. Inductive, weak.
 - c. Deductive, valid.
 - d. Inductive, strong.
 - e. Inductive, cogent.

ANS: B PTS: 2

INSTRUCTIONS: Select the correct answer for each multiple choice question.

35. Which of the following are all nonarguments?
- a. Illustrations, predictions, warnings.
 - b. Expository passages, opinions, generalizations.
 - c. Syllogisms, predictions, expository passages.
 - d. Opinions, illustrations, causal inferences.
 - e. Conditional statements, explanations, statements of belief.

ANS: E PTS: 2

36. Which of the following are all inductive arguments?
- a. Arguments from authority, arguments from analogy, causal inferences.
 - b. Causal inferences, hypothetical syllogisms, predictions.
 - c. Generalizations, arguments from authority, arguments from definition.
 - d. Hypothetical syllogisms, arguments from definition, disjunctive syllogisms.
 - e. Categorical syllogisms, arguments from authority, arguments based on signs.

ANS: A PTS: 2

37. Which of the following are all conclusion indicators?
- a. As a result, it follows that, given that.
 - b. Accordingly, because, as indicated by.
 - c. Given that, for, seeing that.
 - d. Hence, thus, so.
 - e. Thus, implies that, because.

ANS: D PTS: 2

38. In the expression, "Carbon monoxide is poisonous because it prevents hemoglobin from supplying oxygen to the body," the statement "Carbon monoxide is poisonous" is called the:
- Conclusion.
 - Explanandum.
 - Antecedent.
 - Explanans.
 - Consequent.

ANS: B PTS: 2

39. In the expression "If hybrid cars become popular, then the price of gasoline will drop," the statement "Hybrid cars become popular" is called the:
- Consequent.
 - Premise.
 - Antecedent.
 - Explanans.
 - Conditional.

ANS: C PTS: 2

40. An argument that proceeds from knowledge of an effect to a claim about a cause is:
- A sound argument.
 - A strong argument.
 - An uncogent argument.
 - An inductive argument.
 - A deductive argument.

ANS: D PTS: 2

41. An argument that applies a scientific law to a specific case is usually:
- A cogent argument.
 - An inductive argument.
 - A strong argument.
 - An invalid argument.
 - A deductive argument.

ANS: E PTS: 2

42. If a deductive argument has all false premises and a true conclusion, then we know:
- The argument is invalid.
 - The argument is valid.
 - Nothing as such about the argument's validity.
 - The argument is sound.
 - The argument is uncogent.

ANS: C PTS: 2

43. Which of the following is a necessary condition for graduating from college?
- Fulfilling the course requirements.
 - Attending the graduation ceremony.
 - Receiving gifts from family members.
 - Showing up for all your classes.
 - Wearing a cap and gown.

ANS: A PTS: 2

44. Which of the following is a sufficient condition for winning an election?
- Appealing to the voters.
 - Getting more than half the votes.
 - Staying alive until all the votes are counted.
 - Running an honest campaign.
 - Having adequate funding.

ANS: B PTS: 2

PROBLEM

INSTRUCTIONS: The following problems relate to the counterexample method.

1. **PART A**

No brass lanterns are fixtures that glitter because all crystal chandeliers are fixtures that glitter, and no brass lanterns are crystal chandeliers.

Which of the following correctly expresses the form of this argument?

- | | | |
|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| a. No B are F.
<u>No B are C.</u>
All F are C. | b. No B are F.
<u>All C are F.</u>
No B are C. | c. No B are C.
<u>No B are F.</u>
All C are F. |
| d. All F are C.
<u>No C are B.</u>
No B are F. | e. All C are F.
<u>No B are C.</u>
No B are F. | |

PART B

Which of the following substitutions proves the argument invalid?

- C = cats, F = fish, B = animals.
- C = dogs, F = fish, B = mammals.
- C = cats, F = animals, B = dogs.
- C = animals, F = mammals, B = fish.
- C = dogs, F = mammals, B = animals.

ANS:

Part A: e

Part B: c

PTS: 4

2. **PART A**

If music pirating continues, then property rights are ignored. Thus, if property rights are ignored, then recording artists will be cheated, because if music pirating continues, then recording artists will be cheated.

Which of the following correctly expresses the form of this argument?

- | | | |
|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| a. If M then P.
<u>If P then R.</u>
If M then R. | b. If P then R.
<u>If M then P.</u>
If M then R. | c. If R then M.
<u>If P then M.</u>
If P then R. |
| d. If M then P.
<u>If M then R.</u> | e. If R then P.
<u>If M then P.</u> | |

If P then R.

If M then R.

PART B

Which of the following substitutions proves the argument invalid?

- a. M = Neil Armstrong has walked on the moon, P = Neil Armstrong is a human, R = Neil Armstrong is an astronaut.
- b. M = Paris Hilton has walked on the moon, P = Paris Hilton is a human, R = Paris Hilton is an astronaut.
- c. M = Britney Spears makes CDs, P = Britney Spears is a singer, R = Britney Spears is a human.
- d. M = Nicole Kidman programs computers, P = Ben Affleck sells fertilizer, R = Jennifer Lopez raises elephants.
- e. M = Brad Pitt stars in movies, P = Brad Pitt is an actor, R = Brad Pitt is a human.

ANS:

Part A: d

Part B: b

PTS: 4

3. **PART A**

Some playoff games are heartbreakers, since all playoff games are either heartbreakers or occasions for glee.

Which of the following correctly expresses the form of this argument?

- a. All P are either H or O.
Some P are H.
- b. Some P are H.
All P are either H or O.
- c. All P are either H or O.
Some PG are H.
- d. All P are H.
Some P are either H or O.
- e. All PG are either H or O.
Some G are H.

PART B

Which of the following substitutions proves the argument invalid?

- a. P = fish, H = animals, O = mammals.
- b. P = dogs, H = cats, O = fish.
- c. P = dogs, H = fish, O = animals.
- d. P = male, G = dogs, H = animals, O = fish.
- e. P = women, H = humans, O = doctors.

ANS:

Part A: a

Part B: c

PTS: 4