

Student: _____

1. The scientific study of life is called:
 - A. biology
 - B. ecology
 - C. anatomy
 - D. biochemistry
 - E. limnology
2. A complex individual that consists of organ systems is known as a/an
 - A. community.
 - B. population.
 - C. organism.
 - D. tissue.
 - E. species.
3. All of the ecosystems on the planet together are called the
 - A. atmosphere.
 - B. hydrosphere.
 - C. biosphere.
 - D. lithosphere.
 - E. stratosphere.
4. In a swamp, all of the alligators would represent a/an
 - A. organism.
 - B. population.
 - C. community.
 - D. ecosystem.
 - E. biosphere.
5. Organisms are composed of multiple cells.
True False
6. The region in which populations interact with each other and with the physical environment is called
 - A. an entity.
 - B. an ecosystem.
 - C. a biosystem.
 - D. a community.
 - E. a biosphere.
7. All of the changes that occur from the time an egg is fertilized through childhood, adolescence and adulthood are called
 - A. metabolism.
 - B. evolution.
 - C. homeostasis.
 - D. reproduction.
 - E. development.
8. Which of the following statements most correctly defines homeostasis?
 - A. All living organisms are alike.
 - B. Living organisms do not change much over time.
 - C. Human beings and other animals acquire materials and energy when they eat food.
 - D. It takes energy to maintain the organization of the cell.
 - E. Cells and organisms must be able to maintain a fairly constant internal environment.

9. Viruses are not considered alive. Which of the following characteristics of living things do they lack?
- A. Living things reproduce.
 - B. Living things have an evolutionary history.
 - C. Living things grow and develop.
10. Four million years ago, horses were rather small compared to today's horses and had relatively stocky bodies with a straight shoulder and thick neck. This statement is an example of which biological concept?
- A. metabolism
 - B. evolution
 - C. development
 - D. homeostasis
 - E. reproduction
11. Which of the following is not a basic characteristic of all living things?
- A. Living things are organized.
 - B. Living things acquire materials and energy.
 - C. Living things contain a nucleus and organelles.
 - D. Living things reproduce.
 - E. Living things grow and develop.
12. The face of a sunflower turns to follow the sun as it moves across the sky. This is an example of
- A. metabolism.
 - B. homeostasis.
 - C. response to stimuli.
 - D. development.
 - E. reproduction.
13. Choose the CORRECT order (1-5) of increasing complexity/organization.
- A. (1) tissues, (2) organ systems, (3) cells, (4) organs, (5) organism
 - B. (1) cells, (2) organ systems, (3) tissues, (4) organs, (5) organism
 - C. (1) tissues, (2) organs, (3) organ systems, (4) cells, (5) organism
 - D. (1) cells, (2) tissues, (3) organs, (4) organ systems, (5) organism
 - E. (1) organism, (2) organ systems, (3) organs, (4) tissues, (5) cells
14. The process of change that produces the diversity of life on Earth is called
- A. evolution.
 - B. homeostasis.
 - C. levels of organization.
 - D. biological classification.
 - E. molecular diversification.
15. The development of resistance of MRSA bacteria to antibiotics is an example of
- A. homeostasis.
 - B. metabolism.
 - C. evolution.
 - D. reproduction.
 - E. organization.
16. Fish have scales that enable them to live in a water environment. This is an example of
- A. homeostasis.
 - B. adaptation.
 - C. metabolism.
 - D. development.
 - E. cellular organization.

17. The Domain Eukarya contain(s) _____ kingdom(s).
- A. one
 - B. two
 - C. three
 - D. four
 - E. five
18. Traditions, beliefs, and values are considered what aspect of human life?
- A. communicative
 - B. cultural
 - C. instructional
 - D. biological
 - E. chemical
19. The cell you are examining under the microscope appears to contain a nucleus. This organism belongs to the domain
- A. Bacteria.
 - B. Archaea.
 - C. Eukarya.
20. Which organisms are most closely related to humans?
- A. spiders
 - B. earthworms
 - C. parakeets
 - D. meerkats
 - E. snakes
21. A species has been discovered that is able to live in boiling hot springs. This organism most likely belongs to the domain
- A. Archaea.
 - B. Bacteria.
 - C. Eukarya.
22. Humans evolved from apes.
True False
23. Only humans have a language that allows us to communicate information and experiences symbolically.
True False
24. Humans clear forests to grow crops, and they build houses and cities. What are these an example of?
- A. how humans modify the biosphere
 - B. how humans preserve ecosystems
 - C. the high value humans place on biodiversity
 - D. the positive impact of humans on life on Earth
 - E. how humans do not need the rest of life on Earth
25. Humans are part of the biosphere and must live in harmony with it if we are to survive as a species.
True False
26. Humans have identified and named almost all of the almost 15 million species on Earth.
True False

27. _____ observations are supported by factual information while _____ observations involve personal judgment.
- A. Subjective/analytical
 - B. Objective/analytical
 - C. Objective/subjective
 - D. Objective/hypothetical
 - E. Subjective/theoretical
28. Which of the following statements is an objective observation?
- A. This milk tastes funny.
 - B. This package is larger than that one.
 - C. I like this picture.
 - D. This mattress feels hard to me.
 - E. I think I am going to be sick.
29. What is the unifying principle of the biological sciences?
- A. Technology
 - B. Anatomy
 - C. Biochemistry
 - D. Taxonomy
 - E. Evolution
30. The tentative explanation to be tested is called
- A. a theory.
 - B. a hunch.
 - C. a hypothesis.
 - D. the data.
 - E. the conclusion.
31. The information collected during the experiment or observation is called
- A. a theory.
 - B. a hunch.
 - C. the hypothesis.
 - D. the data.
 - E. the conclusion.
32. Which of the following is not a basic theory of biology?
- A. Theory of ecosystems
 - B. Cell theory
 - C. Gene theory
 - D. Theory of evolution
 - E. Theory of gravity
33. The cause of stomach ulcers appears to be
- A. excess stomach acid.
 - B. the bacterium *Helicobacter pylori*.
 - C. drinking too much coffee.
 - D. extreme stress.
 - E. diets rich in meat products.
34. Which of the following statements is a hypothesis?
- A. If students buy the university meal plan, then they will eat more vegetables.
 - B. Ginny gained 5 lbs her freshman year.
 - C. Blake failed the test.
 - D. There are more calories in french fries than in colas.
 - E. I like my biology class better than my other classes.

35. A controlled study when neither the patient nor the examiner is aware of whether the patient is receiving a treatment, is called a/an
- A. statistical study.
 - B. double-blind study.
 - C. variable study.
 - D. adaptive study.
 - E. blind study.
36. In an experiment designed to test the effect of temperature on goldfish respiration, the temperatures that were changed represent what type of variable?
- A. control
 - B. responding
 - C. experimental
 - D. correlative
 - E. placebo
37. The purpose of informed consent is
- A. to determine whether a patient is acceptable for a particular study.
 - B. to ensure that the doctor does not know which patient is receiving the treatment.
 - C. to decide whether a patient goes into the test group or the control group.
 - D. to ensure the patient knows the risks and is volunteering.
 - E. to determine whether the treatment works.
38. If the control group in an experiment shows the same results as the test group, the treatment was successful.
True False
39. To make all subjects think they are receiving the same treatment, patients in the control group can receive a placebo.
True False
40. One of the difficulties with publication of research in scientific journals is that it
- A. is technical and may be difficult for a layperson to read.
 - B. is often out of context or misunderstood.
 - C. is unverified and usually not referenced.
 - D. displays bias.
 - E. is designed to convince readers to purchase a product.
41. Which of the following URLs would you perhaps distrust in writing a scientific paper?
- A. .com
 - B. .gov
 - C. .edu
 - D. .org
42. An important part of scientific research is repeatability.
True False
43. The standard error tells
- A. how often the examiner made an error.
 - B. how often the experimental variable was tested.
 - C. the relationship between the control and test groups.
 - D. whether or not the research has been published in a scientific journal.
 - E. how uncertain a particular value is.
44. A probability value of less than 5% in a scientific study is acceptable.
True False

45. Which of the following is an example of correlation without causation?
- A. HPV can cause cervical cancer.
 - B. Illegal drug use causes an increase in crime.
 - C. *Helicobacter pylori* can cause ulcers.
 - D. People who commit crimes also consume bread.
 - E. Parents have children.
46. In a graph, the experimental variable is plotted on the
- A. x axis.
 - B. y axis.
47. Jessica is interested in a new vitamin pill her friend recommended. Her friend told her that it really helped her. Should Jessica accept this type of evidence?
- Yes No
48. Choose the following interest group that should be held most responsible for the future roles of new scientific technologies.
- A. Scientists
 - B. Politicians
 - C. Clergy
 - D. Professionals
 - E. Everyone
49. In conducting a review of the literature on the Internet, which of the following sources would be the least reliable?
- A. The Centers of Disease Control
 - B. The Cystic Fibrosis Foundation
 - C. The National Institute of Health
 - D. The Pasteur Institute
 - E. Astrology and Medicine
50. After studying biology, it is hoped that you
- A. will become an animal rights activist.
 - B. will be better able to make wise decisions regarding your own well being and the Earth's.
 - C. will get a high paying job as a biologist.
 - D. will understand all there is to know about humans and biology.
 - E. will dislike anything to do with biology.
51. Technology is the application of scientific knowledge to the interests of humans.
- True False
52. Scientists who have a financial stake in a company are now required to state that when they do research. This is an example of
- A. ethics in science.
 - B. financial planning.
 - C. a new business model.
 - D. a biotechnology revolution.
 - E. statistical significance.
53. Which of the following statements explains the atomic bomb and the benefit of nuclear physics to cancer therapy?
- A. Science and technology are not risk free.
 - B. Science and technology are wrong.
 - C. Science and technology are good for mankind.
 - D. Science and technology are value-neutral.

1 Key

1. The scientific study of life is called:
- A.** biology
 - B. ecology
 - C. anatomy
 - D. biochemistry
 - E. limnology

Biology is the study of life.

Blooms Level: 1. Remember
Learning Outcome: 01.01.02 Describe the levels of organization of life.
Mader - Chapter 01 #1
Section: 01.01
Topic: General

2. A complex individual that consists of organ systems is known as a/an
- A. community.
 - B. population.
 - C.** organism.
 - D. tissue.
 - E. species.

A complex individual that consists of organ systems is known as an organism.

Blooms Level: 2. Understand
Learning Outcome: 01.01.02 Describe the levels of organization of life.
Mader - Chapter 01 #2
Section: 01.01
Topic: General

3. All of the ecosystems on the planet together are called the
- A. atmosphere.
 - B. hydrosphere.
 - C.** biosphere.
 - D. lithosphere.
 - E. stratosphere.

The biosphere is the sphere that contains all life, made up of all Earth's ecosystems.

Blooms Level: 1. Remember
Learning Outcome: 01.01.02 Describe the levels of organization of life.
Mader - Chapter 01 #3
Section: 01.01
Topic: Biomes and Ecosystems

4. In a swamp, all of the alligators would represent a/an
- A. organism.
 - B.** population.
 - C. community.
 - D. ecosystem.
 - E. biosphere.

The alligators in a swamp are all members of one species and belong to a population.

Blooms Level: 2. Understand
Learning Outcome: 01.01.02 Describe the levels of organization of life.
Mader - Chapter 01 #4
Section: 01.01
Topic: General

5. Organisms are composed of multiple cells.

FALSE

Some organisms are single cells.

*Blooms Level: 2. Understand
Learning Outcome: 01.01.02 Describe the levels of organization of life.
Mader - Chapter 01 #5
Section: 01.01
Topic: General*

6. The region in which populations interact with each other and with the physical environment is called

- A. an entity.
- B.** an ecosystem.
- C. a biosystem.
- D. a community.
- E. a biosphere.

An ecosystem includes populations of organisms interacting with each other and the physical environment.

*Blooms Level: 1. Remember
Learning Outcome: 01.01.02 Describe the levels of organization of life.
Mader - Chapter 01 #6
Section: 01.01
Topic: Biomes and Ecosystems*

7. All of the changes that occur from the time an egg is fertilized through childhood, adolescence and adulthood are called

- A. metabolism.
- B. evolution.
- C. homeostasis.
- D. reproduction.
- E.** development.

Development includes the changes that occur in an organism throughout a lifetime.

*Blooms Level: 1. Remember
Learning Outcome: 01.01.03 Summarize how the terms homeostasis, metabolism, development, and adaptation all relate to living organisms.
Mader - Chapter 01 #7
Section: 01.01
Topic: General*

8. Which of the following statements most correctly defines homeostasis?

- A. All living organisms are alike.
- B. Living organisms do not change much over time.
- C. Human beings and other animals acquire materials and energy when they eat food.
- D. It takes energy to maintain the organization of the cell.
- E.** Cells and organisms must be able to maintain a fairly constant internal environment.

Homeostasis is the ability of living things to maintain an internal environment that operates under specific conditions.

*Blooms Level: 4. Analyze
Learning Outcome: 01.01.03 Summarize how the terms homeostasis, metabolism, development, and adaptation all relate to living organisms.
Mader - Chapter 01 #8
Section: 01.01
Topic: General*

9. Viruses are not considered alive. Which of the following characteristics of living things do they lack?

- A. Living things reproduce.
- B. Living things have an evolutionary history.
- C.** Living things grow and develop.

Viruses can reproduce in that they make copies of themselves and they do have an evolutionary history. Viruses do not grow and develop.

Blooms Level: 3. Apply
Learning Outcome: 01.01.01 Explain the basic characteristics that are common to all living things.
Mader - Chapter 01 #9
Section: 01.01
Topic: General

10. Four million years ago, horses were rather small compared to today's horses and had relatively stocky bodies with a straight shoulder and thick neck. This statement is an example of which biological concept?

- A. metabolism
- B.** evolution
- C. development
- D. homeostasis
- E. reproduction

Evolution is the process by which a species changes through time.

Blooms Level: 5. Evaluate
Learning Outcome: 01.01.04 Recognize the special relationship between life and evolution.
Mader - Chapter 01 #10
Section: 01.01
Topic: Evolution--Darwin

11. Which of the following is not a basic characteristic of all living things?

- A. Living things are organized.
- B. Living things acquire materials and energy.
- C.** Living things contain a nucleus and organelles.
- D. Living things reproduce.
- E. Living things grow and develop.

Not all living things have a nucleus and organelles.

Blooms Level: 2. Understand
Learning Outcome: 01.01.01 Explain the basic characteristics that are common to all living things.
Mader - Chapter 01 #11
Section: 01.01
Topic: General

12. The face of a sunflower turns to follow the sun as it moves across the sky. This is an example of

- A. metabolism.
- B. homeostasis.
- C.** response to stimuli.
- D. development.
- E. reproduction.

Movement in response to sunlight is an example of response to an external stimulus.

Blooms Level: 3. Apply
Learning Outcome: 01.01.03 Summarize how the terms homeostasis, metabolism, development, and adaptation all relate to living organisms.
Mader - Chapter 01 #12
Section: 01.01
Topic: General

13. Choose the CORRECT order (1-5) of increasing complexity/organization.
- A. (1) tissues, (2) organ systems, (3) cells, (4) organs, (5) organism
 - B. (1) cells, (2) organ systems, (3) tissues, (4) organs, (5) organism
 - C. (1) tissues, (2) organs, (3) organ systems, (4) cells, (5) organism
 - D.** (1) cells, (2) tissues, (3) organs, (4) organ systems, (5) organism
 - E. (1) organism, (2) organ systems, (3) organs, (4) tissues, (5) cells

The levels of organization include: (1) cells, (2) tissues, (3) organs, (4) organ systems, (5) organism.

Blooms Level: 2. Understand
Learning Outcome: 01.01.02 Describe the levels of organization of life.
Mader - Chapter 01 #13
Section: 01.01
Topic: General

14. The process of change that produces the diversity of life on Earth is called
- A.** evolution.
 - B. homeostasis.
 - C. levels of organization.
 - D. biological classification.
 - E. molecular diversification.

Evolution is the process of change that produces the diversity of life on Earth.

Blooms Level: 2. Understand
Learning Outcome: 01.01.04 Recognize the special relationship between life and evolution.
Mader - Chapter 01 #14
Section: 01.01
Topic: Evolution--Darwin

15. The development of resistance of MRSA bacteria to antibiotics is an example of
- A. homeostasis.
 - B. metabolism.
 - C.** evolution.
 - D. reproduction.
 - E. organization.

Resistance in MRSA is an example of adaptation and evolution.

Blooms Level: 3. Apply
Learning Outcome: 01.01.04 Recognize the special relationship between life and evolution.
Mader - Chapter 01 #15
Section: 01.01
Topic: Evolution--Darwin

16. Fish have scales that enable them to live in a water environment. This is an example of
- A. homeostasis.
 - B.** adaptation.
 - C. metabolism.
 - D. development.
 - E. cellular organization.

Adaptation provides members of a population with a better chance for survival. Fish scales are an adaptation to their environment.

Blooms Level: 4. Analyze
Learning Outcome: 01.01.01 Explain the basic characteristics that are common to all living things.
Mader - Chapter 01 #16
Section: 01.01
Topic: General

17. The Domain Eukarya contain(s) _____ kingdom(s).
- A. one
 - B. two
 - C. three
 - D. four**
 - E. five

The four kingdoms in Domain Eukarya include: plants, fungi, animals, and protists.

Blooms Level: 2. Understand
Learning Outcome: 01.02.01 Summarize the place of humans in the overall classification of living organisms.
Mader - Chapter 01 #17
Section: 01.02
Topic: General

18. Traditions, beliefs, and values are considered what aspect of human life?
- A. communicative
 - B. cultural**
 - C. instructional
 - D. biological
 - E. chemical

Cultural activities of humans include traditions, beliefs, and values.

Blooms Level: 2. Understand
Learning Outcome: 01.02.02 Describe the relationship between humans and the biosphere, and the role of culture in shaping that relationship.
Mader - Chapter 01 #18
Section: 01.02
Topic: General

19. The cell you are examining under the microscope appears to contain a nucleus. This organism belongs to the domain
- A. Bacteria.
 - B. Archaea.
 - C. Eukarya.**

Only domain Eukarya contains organisms that contain a nucleus.

Blooms Level: 4. Analyze
Learning Outcome: 01.02.01 Summarize the place of humans in the overall classification of living organisms.
Mader - Chapter 01 #19
Section: 01.02
Topic: General

20. Which organisms are most closely related to humans?
- A. spiders
 - B. earthworms
 - C. parakeets
 - D. meerkats**
 - E. snakes

All of these are animals. Only snakes, parakeets, and meerkats are vertebrates. Only meerkats are mammals, therefore meerkats are the most closely related to humans.

Blooms Level: 4. Analyze
Learning Outcome: 01.02.01 Summarize the place of humans in the overall classification of living organisms.
Mader - Chapter 01 #20
Section: 01.02
Topic: General

21. A species has been discovered that is able to live in boiling hot springs. This organism most likely belongs to the domain
- A.** Archaea.
 - B. Bacteria.
 - C. Eukarya.

Archaea live in extreme environments.

Blooms Level: 3. Apply
Learning Outcome: 01.02.01 Summarize the place of humans in the overall classification of living organisms.
Mader - Chapter 01 #21
Section: 01.02
Topic: General

22. Humans evolved from apes.
FALSE

Today's apes are our evolutionary cousins. Humans did not evolve from apes.

Blooms Level: 2. Understand
Learning Outcome: 01.02.01 Summarize the place of humans in the overall classification of living organisms.
Mader - Chapter 01 #22
Section: 01.02
Topic: Evolution--Darwin

23. Only humans have a language that allows us to communicate information and experiences symbolically.
TRUE

Humans are the only animals with this capacity.

Blooms Level: 1. Remember
Learning Outcome: 01.02.02 Describe the relationship between humans and the biosphere, and the role of culture in shaping that relationship.
Mader - Chapter 01 #23
Section: 01.02
Topic: General

24. Humans clear forests to grow crops, and they build houses and cities. What are these an example of?
- A.** how humans modify the biosphere
 - B. how humans preserve ecosystems
 - C. the high value humans place on biodiversity
 - D. the positive impact of humans on life on Earth
 - E. how humans do not need the rest of life on Earth

These are an example of how humans modify the biosphere, often to their own detriment.

Blooms Level: 5. Evaluate
Learning Outcome: 01.02.02 Describe the relationship between humans and the biosphere, and the role of culture in shaping that relationship.
Mader - Chapter 01 #24
Section: 01.02
Topic: Biomes and Ecosystems

25. Humans are part of the biosphere and must live in harmony with it if we are to survive as a species.

TRUE

All living things on Earth are part of the biosphere. We are dependent on the rest of the biosphere and must preserve it.

*Blooms Level: 2. Understand
Learning Outcome: 01.02.02 Describe the relationship between humans and the biosphere, and the role of culture in shaping that relationship.
Mader - Chapter 01 #25
Section: 01.02
Topic: Biomes and Ecosystems*

26. Humans have identified and named almost all of the almost 15 million species on Earth.

FALSE

Humans have only identified and named under 2 million species on Earth.

*Blooms Level: 1. Remember
Learning Outcome: 01.02.02 Describe the relationship between humans and the biosphere, and the role of culture in shaping that relationship.
Mader - Chapter 01 #26
Section: 01.02
Topic: General*

27. _____ observations are supported by factual information while _____ observations involve personal judgment.

- A. Subjective/analytical
- B. Objective/analytical
- C. Objective/subjective**
- D. Objective/hypothetical
- E. Subjective/theoretical

Objective observations are supported by factual information while subjective observations involve personal judgment.

*Blooms Level: 1. Remember
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #27
Section: 01.03
Topic: General*

28. Which of the following statements is an objective observation?

- A. This milk tastes funny.
- B. This package is larger than that one.**
- C. I like this picture.
- D. This mattress feels hard to me.
- E. I think I am going to be sick.

Only the observation that one package is larger than another is objective--it can be measured. The rest of the statements rely on personal opinion.

*Blooms Level: 5. Evaluate
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #28
Section: 01.03
Topic: General*

29. What is the unifying principle of the biological sciences?
- A. Technology
 - B. Anatomy
 - C. Biochemistry
 - D. Taxonomy
 - E. Evolution**

The unifying principle of the biological sciences is evolution.

*Blooms Level: 1. Remember
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #29
Section: 01.03
Topic: Evolution--Darwin*

30. The tentative explanation to be tested is called
- A. a theory.
 - B. a hunch.
 - C. a hypothesis.**
 - D. the data.
 - E. the conclusion.

The hypothesis is a tentative explanation to be tested.

*Blooms Level: 2. Understand
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #30
Section: 01.03
Topic: General*

31. The information collected during the experiment or observation is called
- A. a theory.
 - B. a hunch.
 - C. the hypothesis.
 - D. the data.**
 - E. the conclusion.

Data includes the information collected during the experiment or an observation.

*Blooms Level: 1. Remember
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #31
Section: 01.03
Topic: General*

32. Which of the following is not a basic theory of biology?
- A. Theory of ecosystems
 - B. Cell theory
 - C. Gene theory
 - D. Theory of evolution
 - E. Theory of gravity**

The theory of gravity is not a biological theory. The law of gravity is found in physics.

*Blooms Level: 1. Remember
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #32
Section: 01.03
Topic: General*

33. The cause of stomach ulcers appears to be
- A. excess stomach acid.
 - B.** the bacterium *Helicobacter pylori*.
 - C. drinking too much coffee.
 - D. extreme stress.
 - E. diets rich in meat products.

The bacterium *Helicobacter pylori* is a major contributor to stomach ulcers.

Blooms Level: 2. Understand
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #33
Section: 01.03
Topic: General

34. Which of the following statements is a hypothesis?
- A.** If students buy the university meal plan, then they will eat more vegetables.
 - B. Ginny gained 5 lbs her freshman year.
 - C. Blake failed the test.
 - D. There are more calories in french fries than in colas.
 - E. I like my biology class better than my other classes.

If/then statements are often hypotheses. The other statements do not propose something that can be tested.

Blooms Level: 5. Evaluate
Learning Outcome: 01.03.01 Describe the general process of the scientific method.
Mader - Chapter 01 #34
Section: 01.03
Topic: General

35. A controlled study when neither the patient nor the examiner is aware of whether the patient is receiving a treatment, is called a/an
- A. statistical study.
 - B.** double-blind study.
 - C. variable study.
 - D. adaptive study.
 - E. blind study.

In a double-blind study, neither the patient nor the examiner is aware of whether the patient is receiving a treatment.

Blooms Level: 1. Remember
Learning Outcome: 01.03.02 Distinguish between a control group and an experimental group in a scientific test.
Mader - Chapter 01 #35
Section: 01.03
Topic: General

36. In an experiment designed to test the effect of temperature on goldfish respiration, the temperatures that were changed represent what type of variable?
- A. control
 - B. responding
 - C.** experimental
 - D. correlative
 - E. placebo

The temperatures are being changed by the researchers and are called the experimental variables.

Blooms Level: 2. Understand
Learning Outcome: 01.03.02 Distinguish between a control group and an experimental group in a scientific test.
Mader - Chapter 01 #36
Section: 01.03
Topic: General

37. The purpose of informed consent is
- A. to determine whether a patient is acceptable for a particular study.
 - B. to ensure that the doctor does not know which patient is receiving the treatment.
 - C. to decide whether a patient goes into the test group or the control group.
 - D.** to ensure the patient knows the risks and is volunteering.
 - E. to determine whether the treatment works.

Informed consent ensures that subjects know details about the research and that their participation is voluntary.

Blooms Level: 2. Understand
Learning Outcome: 01.03.02 Distinguish between a control group and an experimental group in a scientific test.
Mader - Chapter 01 #37
Section: 01.03
Topic: General

38. If the control group in an experiment shows the same results as the test group, the treatment was successful.
FALSE

If the control and test group show the same results, the treatment has no effect and the experiment is invalid.

Blooms Level: 2. Understand
Learning Outcome: 01.03.02 Distinguish between a control group and an experimental group in a scientific test.
Mader - Chapter 01 #38
Section: 01.03
Topic: General

39. To make all subjects think they are receiving the same treatment, patients in the control group can receive a placebo.
TRUE

A placebo is a treatment that appears to be the same as that administered to the test group but contains no medication.

Blooms Level: 1. Remember
Learning Outcome: 01.03.02 Distinguish between a control group and an experimental group in a scientific test.
Mader - Chapter 01 #39
Section: 01.03
Topic: General

40. One of the difficulties with publication of research in scientific journals is that it
- A.** is technical and may be difficult for a layperson to read.
 - B. is often out of context or misunderstood.
 - C. is unverified and usually not referenced.
 - D. displays bias.
 - E. is designed to convince readers to purchase a product.

Scientific journals are often technical and difficult to read and understand for those outside of the field.

Blooms Level: 2. Understand
Learning Outcome: 01.03.03 Recognize the importance of scientific journals in the reporting of scientific information.
Mader - Chapter 01 #40
Section: 01.03
Topic: General

41. Which of the following URLs would you perhaps distrust in writing a scientific paper?
- A.** .com
 - B. .gov
 - C. .edu
 - D. .org

URLs that end in .com often represent companies that are intending to sell you a product and may not present trustworthy information.

Blooms Level: 1. Remember
Learning Outcome: 01.03.03 Recognize the importance of scientific journals in the reporting of scientific information.
Mader - Chapter 01 #41
Section: 01.03
Topic: General

42. An important part of scientific research is repeatability.
TRUE

Another scientist should be able to repeat the experiment in a different location and get the same, or very similar, results.

Blooms Level: 2. Understand
Learning Outcome: 01.03.03 Recognize the importance of scientific journals in the reporting of scientific information.
Mader - Chapter 01 #42
Section: 01.03
Topic: General

43. The standard error tells
- A. how often the examiner made an error.
 - B. how often the experimental variable was tested.
 - C. the relationship between the control and test groups.
 - D. whether or not the research has been published in a scientific journal.
 - E.** how uncertain a particular value is.

The standard error is a statistical term that tells how uncertain a particular value is.

Blooms Level: 1. Remember
Learning Outcome: 01.04.03 Recognize the importance of statistical analysis to the study of science.
Mader - Chapter 01 #43
Section: 01.04
Topic: General

44. A probability value of less than 5% in a scientific study is acceptable.
TRUE

This is acceptable, but keep in mind that the lower the p value, the less likely that results are due to chance.

Blooms Level: 1. Remember
Learning Outcome: 01.04.03 Recognize the importance of statistical analysis to the study of science.
Mader - Chapter 01 #44
Section: 01.04
Topic: General

45. Which of the following is an example of correlation without causation?
- A. HPV can cause cervical cancer.
 - B. Illegal drug use causes an increase in crime.
 - C. *Helicobacter pylori* can cause ulcers.
 - D.** People who commit crimes also consume bread.
 - E. Parents have children.

Many people consume bread and consuming bread does not make you commit crimes.

Blooms Level: 4. Analyze
Learning Outcome: 01.04.02 Interpret information that is presented in a scientific graph.
Mader - Chapter 01 #45
Section: 01.04
Topic: General

46. In a graph, the experimental variable is plotted on the
- A.** x axis.
 - B. y axis.

The experimental variable is plotted on the x or horizontal axis.

Blooms Level: 1. Remember
Learning Outcome: 01.04.02 Interpret information that is presented in a scientific graph.
Mader - Chapter 01 #46
Section: 01.04
Topic: General

47. Jessica is interested in a new vitamin pill her friend recommended. Her friend told her that it really helped her. Should Jessica accept this type of evidence?
- NO**

No, this is anecdotal, or testimonial evidence, and is not scientifically reliable.

Blooms Level: 3. Apply
Learning Outcome: 01.04.01 Explain the difference between anecdotal and testimonial data.
Mader - Chapter 01 #47
Section: 01.04
Topic: General

48. Choose the following interest group that should be held most responsible for the future roles of new scientific technologies.
- A. Scientists
 - B. Politicians
 - C. Clergy
 - D. Professionals
 - E.** Everyone

Everyone should be held responsible for the future roles of new scientific technologies.

Blooms Level: 2. Understand
Learning Outcome: 01.05.02 Discuss the need for the general public to have a general understanding of science and its relationship to society.
Mader - Chapter 01 #48
Section: 01.05
Topic: General

49. In conducting a review of the literature on the Internet, which of the following sources would be the least reliable?
- A. The Centers of Disease Control
 - B. The Cystic Fibrosis Foundation
 - C. The National Institute of Health
 - D. The Pasteur Institute
 - E. Astrology and Medicine**

The source Astrology and Medicine would be the least reliable.

Blooms Level: 5. Evaluate
Learning Outcome: 01.04.02 Interpret information that is presented in a scientific graph.
Mader - Chapter 01 #49
Section: 01:04
Topic: General

50. After studying biology, it is hoped that you
- A. will become an animal rights activist.
 - B. will be better able to make wise decisions regarding your own well being and the Earth's.**
 - C. will get a high paying job as a biologist.
 - D. will understand all there is to know about humans and biology.
 - E. will dislike anything to do with biology.

After studying biology, it is hoped that you will be better able to make wise decisions regarding your own well-being and the Earth's.

Blooms Level: 3. Apply
Learning Outcome: 01.05.02 Discuss the need for the general public to have a general understanding of science and its relationship to society.
Mader - Chapter 01 #50
Section: 01:05
Topic: General

51. Technology is the application of scientific knowledge to the interests of humans.
TRUE

Technology, the application of scientific knowledge, offers us ways to improve our lives.

Blooms Level: 1. Remember
Learning Outcome: 01.05.01 Recognize the importance of ethics in scientific studies.
Mader - Chapter 01 #51
Section: 01:05
Topic: General

52. Scientists who have a financial stake in a company are now required to state that when they do research. This is an example of
- A. ethics in science.**
 - B. financial planning.
 - C. a new business model.
 - D. a biotechnology revolution.
 - E. statistical significance.

A scientist who has a vested interest in the success of a product may not be honest in evaluating that product. This is an example of ethics in science.

Blooms Level: 3. Apply
Learning Outcome: 01.05.01 Recognize the importance of ethics in scientific studies.
Mader - Chapter 01 #52
Section: 01:05
Topic: General

53. Which of the following statements explains the atomic bomb and the benefit of nuclear physics to cancer therapy?
- A.** Science and technology are not risk free.
 - B. Science and technology are wrong.
 - C. Science and technology are good for mankind.
 - D. Science and technology are value-neutral.

There are often risks and benefits to science and technology.

Blooms Level: 5. Evaluate
Learning Outcome: 01.05.01 Recognize the importance of ethics in scientific studies.
Mader - Chapter 01 #53
Section: 01:05
Topic: General

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