

Student: _____

1. Which is the correct sequence for levels of biological organization within an organism?
 - A. atom - molecule - organelle - cell - tissue
 - B. molecule - atom - organelle - tissue - cell
 - C. cell - organelle - atom - tissue - molecule
 - D. organelle - molecule - atom - tissue - cell
 - E. atom - organelle - molecule - cell - tissue
2. Which is the correct sequence for levels of biological organization occurring beyond an organism?
 - A. population - ecosystem - community - biosphere
 - B. community - population - ecosystem - biosphere
 - C. community - population - biosphere - ecosystem
 - D. population - community - ecosystem - biosphere
 - E. ecosystem - population - biosphere - community
3. All living organisms
 - A. are prokaryotes.
 - B. consist of one or more cells.
 - C. are eukaryotes.
 - D. are multicellular.
 - E. are unicellular.
4. Organisms that extract energy from nonliving environmental resources are called
 - A. heterotrophs.
 - B. decomposers.
 - C. parasites.
 - D. consumers.
 - E. producers.
5. Organisms that obtain energy by consuming other organisms are called
 - A. autotrophs.
 - B. plants.
 - C. heterotrophs.
 - D. producers.
 - E. photosynthesizers.
6. Which is not a required characteristic of life?
 - A. homeostasis
 - B. movement
 - C. structural organization
 - D. evolution
 - E. energy use
7. The four kingdoms included in the domain Eukarya are
 - A. Bacteria, Fungi, Plantae, and Animalia.
 - B. Bacteria, Protista, Plantae, and Animalia.
 - C. Protista, Fungi, Plantae, and Animalia.
 - D. Archaea, Bacteria, Plantae, and Animalia.
 - E. Archaea, Fungi, Plantae, and Animalia.

8. A major difference between prokaryotes and eukaryotes is that prokaryotes
 - A. have cell walls and other organisms do not.
 - B. do not have a nucleus in their cells and other organisms do.
 - C. have a nucleus in their cells and other organisms do not.
 - D. are autotrophs and other organisms are not.
 - E. are not living organisms, while eukaryotes are.
9. Which of the following is a false statement about the scientific method?
 - A. It is a general way of answering questions with evidence.
 - B. It is a framework to consider ideas in a repeatable way.
 - C. It begins with observations.
 - D. It does not apply to problems encountered in everyday life.
 - E. It enables the testing of ideas.
10. Which of the following is false about a hypothesis?
 - A. It can be proven true.
 - B. It can be proven false.
 - C. It is a tentative explanation.
 - D. It is based on previous knowledge.
 - E. It must be testable to be useful.
11. In an experimental procedure, what is manipulated by the investigator to determine whether it influences the phenomenon of interest?
 - A. standardized variable
 - B. control group
 - C. dependent variable
 - D. independent variable
 - E. both control group and standardized variable.
12. In an experimental procedure, what response of the phenomenon is measured by the investigator?
 - A. independent variable
 - B. dependent variable
 - C. control group
 - D. standardized variable
 - E. both dependent variable and standardized variable
13. Which of the following is not a "control" in an experimental procedure?
 - A. a placebo
 - B. a known standard of comparison
 - C. a normal group
 - D. an experimental group
 - E. a "zero"-value group
14. A theory differs from a hypothesis in that a theory
 - A. has more supportive evidence than a hypothesis.
 - B. is broader in scope than a hypothesis.
 - C. has predictive power.
 - D. ties together many existing observations.
 - E. all of the choices are correct.
15. A structure consisting of tissues organized to carry out a specific function defines a(n)
 - A. organ.
 - B. cell.
 - C. population.
 - D. atom.
 - E. molecule.

16. An ecosystem includes all of the following except
 - A. a community.
 - B. a biosphere.
 - C. populations.
 - D. organisms.
 - E. nonliving environmental components.
17. Asexual reproduction differs from sexual reproduction in that
 - A. asexual reproduction produces genetically diverse offspring.
 - B. asexual reproduction utilizes DNA from two parents to code for traits in offspring.
 - C. asexual reproduction occurs only in plants.
 - D. asexual reproduction produces offspring containing DNA from only one parent.
 - E. asexual reproduction only occurs in animals.
18. Homeostasis of an organism is demonstrated by
 - A. a population changing over time.
 - B. environmental conditions holding constant through time.
 - C. cells having enough water to survive.
 - D. plants and animals needing energy sources.
 - E. an organism maintaining nearly constant internal conditions.
19. The correct sequence from smallest to largest is
 - A. tissue - cell - organelle - molecule - atom.
 - B. molecule - atom - organelle - cell - tissue.
 - C. atom - molecule - organelle - cell - tissue.
 - D. cell - tissue - organelle - molecule - atom.
 - E. atom - molecule - cell - organelle - tissue.
20. Which is a correct sequence of steps in the scientific method?
 - A. observe - form hypothesis - draw conclusions - design an experiment
 - B. observe - draw conclusion - design an experiment - form hypothesis
 - C. observe - form hypothesis - collect data - draw conclusions
 - D. form hypothesis - observe - design an experiment - collect data
 - E. form hypothesis - observe - collect data - design an experiment
21. In an experiment designed to measure the distance a golf ball is hit by clubs made of different material, the dependent variable is
 - A. the distance the golf ball travels.
 - B. the type of material the club is made of.
 - C. the wind direction when the experiment takes place.
 - D. the type of material the golf ball is made of.
 - E. the speed of the golf club prior to hitting the golf ball.
22. In an experiment designed to measure the distance a golf ball is hit by clubs made of different material, the independent variable is
 - A. the wind direction when the experiment takes place.
 - B. the distance the golf ball travels.
 - C. the type of material the golf ball is made of.
 - D. the speed of the golf club prior to hitting the golf ball.
 - E. the type of material the club is made of.
23. In an experiment designed to measure the distance a golf ball is hit by clubs made of different material, all of the variables would be standardized except
 - A. the wind direction when the experiment takes place.
 - B. the force used to hit the ball.
 - C. the type of material the golf ball is made of.
 - D. the type of material the club is made of.
 - E. the angle the ball is hit.

24. An inert substance that resembles the treatment given to an experimental group is
- A. a placebo.
 - B. an independent variable.
 - C. a variable.
 - D. a hypothesis.
 - E. never used in an experiment.
25. Which of the following is FALSE about experiments?
- A. The larger the sample size the more meaningful the results.
 - B. The smaller the sample size the more meaningful the results.
 - C. An experiment is not valid without the proper control.
 - D. It is important to standardize aspects of an experiment which might affect the outcome, other than the independent variable.
 - E. All answers are correct.

You perform an experiment in which you take 16 pots of strawberry plants and give half of them 1 gm of ammonium nitrate per liter of water and the other half receive only water. Each group is then split in half again, and exposed to either eight or 16 hours of light each day. You monitor the height of the plants for four weeks. You observe that plants grown in ammonium nitrate and 16 hours of light grow taller than no ammonium nitrate and eight hours of light.

26. Which of the following are independent variables in this experiment?
- A. Amount of ammonium nitrate and light
 - B. Amount of water
 - C. Amount of carbon dioxide
 - D. Height of the plants and amount of light
 - E. Height of the plants
27. Which of the following are dependent variables in this experiment?
- A. Amount of ammonium nitrate and light
 - B. Amount of carbon dioxide
 - C. Amount of water
 - D. Height of the plants
 - E. Height of the plants and amount of light
28. In this experiment, the size of the pot is
- A. an independent variable.
 - B. a dependent variable.
 - C. a standardized variable.
 - D. a placebo.
 - E. a control.
29. Ammonium nitrate is
- A. an atom.
 - B. a molecule.
 - C. a cell.
 - D. a tissue.
 - E. a biosphere.
30. The plants take up nutrients like ammonium nitrate to maintain
- A. asexual reproduction.
 - B. sexual reproduction.
 - C. natural selection.
 - D. evolution.
 - E. homeostasis.

31. The leaf of a strawberry plant is
- A. an organ.
 - B. a molecule.
 - C. an organelle.
 - D. a cell.
 - E. an organism.
32. A strawberry plant is
- A. a consumer.
 - B. a decomposer.
 - C. a producer.
 - D. a heterotroph.
 - E. a consumer and heterotroph.
33. Organisms require energy to grow, reproduce, and survive. What is the energy source for the plants in your experiment?
- A. ammonium nitrate
 - B. light
 - C. water
 - D. soil
 - E. carbon dioxide
34. Your strawberry plants produce both fruit and runners. How do they reproduce?
- A. asexually only
 - B. sexually only
 - C. developmentally only
 - D. developmentally and sexually
 - E. sexually and asexually

You expose the bacterium *Staphylococcus aureus* to low levels of the antibiotic methicillin. The surviving bacteria are then exposed to higher concentrations of methicillin and the process repeated until a strain of methicillin-resistant *S. aureus* (MRSA) is generated. To test your hypothesis, you perform an experiment by spreading the original strain of *S. aureus* and the MRSA strain onto agar plates containing methicillin, and only the MRSA survives.

35. What are the independent variables in this experiment?
- A. the strain of *S. aureus*
 - B. the dose of methicillin
 - C. survival in the presence of methicillin
 - D. the agar plates
 - E. the time of bacterial growth
36. Which of the following are dependent variables in this experiment?
- A. the strain of *S. aureus*
 - B. the dose of methicillin
 - C. the agar plates
 - D. survival in the presence of methicillin
 - E. the time of bacterial growth
37. How did some of the original strain of *S. aureus* bacteria survive in the presence of methicillin?
- A. The methicillin caused mutations in the bacteria.
 - B. They had pre-existing mutations that provided resistance.
 - C. The methicillin was no longer active.
 - D. The methicillin may not have been added to those plates.
 - E. The bacteria wanted to survive the antibiotic and mutated to become resistant.

38. Some of the original strain of *S. aureus* bacteria surviving in the presence of methicillin is an example of which of the following?
- A. mutation
 - B. homeostasis
 - C. evolution
 - D. sexual reproduction
 - E. natural selection
39. How does the bacterium *S. aureus* reproduce?
- A. asexually only
 - B. sexually only
 - C. sexually and asexually
 - D. developmentally only
 - E. developmentally and sexually
40. The bacterium *S. aureus* belongs to which domain?
- A. Eukarya
 - B. Archaea
 - C. Prokarya
 - D. Protista
 - E. Bacteria
41. The bacterium *Staphylococcus aureus* has which of the following?
- A. nucleus
 - B. cell wall and nucleus
 - C. cell wall
 - D. cell wall and cell membrane
 - E. cell membrane and nucleus
42. MRSA infections occur in humans (*Homo sapiens*). *Homo sapiens* are in which domain?
- A. Archaea
 - B. Bacteria
 - C. Eukarya
 - D. Animalia
 - E. Protista
43. MRSA infections occur in humans (*Homo sapiens*). Humans are in which kingdom?
- A. Eukarya
 - B. Archaea
 - C. Bacteria
 - D. Animalia
 - E. Protista
44. The bacterium *Staphylococcus aureus* became resistant to methicillin because the *Staphylococcus* mutated so that methicillin was no longer harmful.
True False
45. In the section "Investigating Life: The Orchid and the Moth," what did Charles Darwin predict after observing the 11-inch long nectaries of the *Angraecum sesquipedale* orchid in Madagascar?
- A. the existence of a moth with a proboscis of 10-11 inches
 - B. the existence of a competitor which also possessed especially-long nectaries
 - C. the presence of very small bees that could fit into long nectaries
 - D. that the orchid must reproduce asexually
 - E. that the orchid was an evolutionary dead end and could no longer reproduce

46. In the section "Investigating Life: The Orchid and the Moth," Charles Darwin's prediction about the long nectaries is
- a standardized variable.
 - a theory.
 - an independent variable.
 - a dependent variable.
 - a hypothesis.
47. After reading the section "Investigating Life: The Orchid and the Moth," you test Charles Darwin's prediction that an orchid with long pollen tubes has a pollinator with long, thin mouthparts that could reach the bottom of the elongated nectar tube. You place nets over some orchids that allow pollinators with small, short mouthparts to enter, but prevents pollinators with long, thin mouthparts. Then, you compare the number of seeds produced by plants with and without the nets. The seed production is
- a dependent variable.
 - a hypothesis.
 - a theory.
 - an independent variable.
 - a standardized variable.
48. In the section "Investigating Life: The Orchid and the Moth," what is the advantage to the orchid of having an 11-inch long nectar tube?
- It can produce nectar over a larger area and attract more pollinators.
 - It can collect more rainwater.
 - It can be fertilized only by the largest moths.
 - It can collect more sunlight for photosynthesis.
 - It can trap insects as a source of nutrients.
49. In the section "Investigating Life: The Orchid and the Moth," what is the advantage to the sphinx moth *Xanthopan morgani* of having an 8-inch long tongue?
- It is used to attract mates through sexual selection.
 - It can pollinate only one type of flower.
 - It makes flying more efficient.
 - It can be used to capture other flying insects for food.
 - It can reach nectar that no other pollinator can reach.
50. As described in the section "Investigating Life: The Orchid and the Moth," pollination is a step of _____ in a plant.
- sexual reproduction
 - asexual reproduction
 - development
 - metabolism
 - homeostasis
51. The "kingdom" is the most all-inclusive taxonomic category.
True False
52. The cell is the basic unit of life.
True False
53. The smallest identifiable unit of an element is a molecule.
True False
54. Decomposers are a special group of producers.
True False
55. In an experiment designed to determine if a fertilizer increased crop yield in tomato plants, the number of tomatoes produced by each plant would be the independent variable.
True False

56. In an experiment designed to determine if a fertilizer increased crop yield in tomato plants, the number of tomatoes produced by each plant would be the dependent variable.
True False
57. In an experiment designed to determine if a fertilizer increased crop yield in tomato plants, the amount of sunlight and water the plants received would be standardized variables.
True False
58. A theory is an advanced hypothesis that has been proven to be true.
True False
59. What is the purpose of a control in an experiment?
A. provides a basis for comparison
B. provides tentative explanations for an observation
C. provides a large sample size
D. provides a small sample size
E. provides wide range of variations in the independent variable
60. Why isn't scientific inquiry foolproof?
A. Multiple interpretations of the data are possible.
B. Definite answers do not always result.
C. Observations can be misinterpreted.
D. Unexpected conclusions are not always readily accepted.
E. All answers are correct.
61. Which of the following questions cannot be answered by science?
A. What is the meaning of life?
B. Why is the sky the color blue?
C. What causes species extinctions?
D. How did I start from only an egg and sperm?
E. Why is too much fatty food bad for me?
62. How do you know the computer you are working on is not alive?
A. It is not made of cells.
B. It does not maintain an internal consistency of water, solutes, and other components.
C. It cannot reproduce, asexually or sexually.
D. It cannot evolve.
E. All answers are correct.
63. What is the purpose of taxonomy?
A. to name and classify living organisms
B. to organize levels of biology from atom to biosphere
C. to predict the outcome of experiments
D. to explain how or why a phenomenon occurred
E. to explain how life began
64. Which of the following does not evolve?
A. humans
B. bacteria
C. flowering plants
D. limestone rock
E. mushrooms

65. Cells, tissues, organs, and organ systems working together to make a human function is an example of _____, because separately none of these components can accomplish what they can together.
- A. an emergent property
 - B. a control
 - C. a placebo
 - D. an independent variable
 - E. a standardized variable
66. Gravity is a theory because it is
- A. a tentative explanation of an observation.
 - B. an untestable prediction.
 - C. a changeable element of experiments.
 - D. an opinion or hunch.
 - E. an encompassing explanation of a natural phenomenon that is well accepted.
67. All mutations lead to evolution of living organisms.
True False
68. If the environment remained the same, organisms would not evolve.
True False

1 Key

1. Which is the correct sequence for levels of biological organization within an organism?

- A.** atom - molecule - organelle - cell - tissue
- B. molecule - atom - organelle - tissue - cell
- C. cell - organelle - atom - tissue - molecule
- D. organelle - molecule - atom - tissue - cell
- E. atom - organelle - molecule - cell - tissue

Blooms Level: 1. Remember

Hoefnagels - Test Bank... #1

Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.

Section: 01.01

Topic: General

2. Which is the correct sequence for levels of biological organization occurring beyond an organism?

- A. population - ecosystem - community - biosphere
- B. community - population - ecosystem - biosphere
- C. community - population - biosphere - ecosystem
- D.** population - community - ecosystem - biosphere
- E. ecosystem - population - biosphere - community

Blooms Level: 1. Remember

Hoefnagels - Test Bank... #2

Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.

Section: 01.01

Topic: General

3. All living organisms

- A. are prokaryotes.
- B.** consist of one or more cells.
- C. are eukaryotes.
- D. are multicellular.
- E. are unicellular.

Blooms Level: 1. Remember

Hoefnagels - Test Bank... #3

Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.

Section: 01.01

Topic: General

4. Organisms that extract energy from nonliving environmental resources are called

- A. heterotrophs.
- B. decomposers.
- C. parasites.
- D. consumers.
- E.** producers.

Blooms Level: 1. Remember

Hoefnagels - Test Bank... #4

Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.

Section: 01.01

Topic: General

5. Organisms that obtain energy by consuming other organisms are called

- A. autotrophs.
- B. plants.
- C.** heterotrophs.
- D. producers.
- E. photosynthesizers.

Blooms Level: 1. Remember

Hoefnagels - Test Bank... #5

Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.

Section: 01.01

Topic: General

6. Which is not a required characteristic of life?
A. homeostasis
B. movement
C. structural organization
D. evolution
E. energy use

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #6
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General*

7. The four kingdoms included in the domain Eukarya are
A. Bacteria, Fungi, Plantae, and Animalia.
B. Bacteria, Protista, Plantae, and Animalia.
C. Protista, Fungi, Plantae, and Animalia.
D. Archaea, Bacteria, Plantae, and Animalia.
E. Archaea, Fungi, Plantae, and Animalia.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #7
Learning Outcome: 01.02.01 Compare and contrast the three branches of life.
Section: 01.02
Topic: General*

8. A major difference between prokaryotes and eukaryotes is that prokaryotes
A. have cell walls and other organisms do not.
B. do not have a nucleus in their cells and other organisms do.
C. have a nucleus in their cells and other organisms do not.
D. are autotrophs and other organisms are not.
E. are not living organisms, while eukaryotes are.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #8
Learning Outcome: 01.02.01 Compare and contrast the three branches of life.
Section: 01.02
Topic: General*

9. Which of the following is a false statement about the scientific method?
A. It is a general way of answering questions with evidence.
B. It is a framework to consider ideas in a repeatable way.
C. It begins with observations.
D. It does not apply to problems encountered in everyday life.
E. It enables the testing of ideas.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #9
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General*

10. Which of the following is false about a hypothesis?
A. It can be proven true.
B. It can be proven false.
C. It is a tentative explanation.
D. It is based on previous knowledge.
E. It must be testable to be useful.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #10
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General*

11. In an experimental procedure, what is manipulated by the investigator to determine whether it influences the phenomenon of interest?
- A. standardized variable
 - B. control group
 - C. dependent variable
 - D. independent variable**
 - E. both control group and standardized variable.

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #11
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General

12. In an experimental procedure, what response of the phenomenon is measured by the investigator?
- A. independent variable
 - B. dependent variable**
 - C. control group
 - D. standardized variable
 - E. both dependent variable and standardized variable

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #12
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General

13. Which of the following is not a "control" in an experimental procedure?
- A. a placebo
 - B. a known standard of comparison
 - C. a normal group
 - D. an experimental group**
 - E. a "zero"-value group

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #13
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General

14. A theory differs from a hypothesis in that a theory
- A. has more supportive evidence than a hypothesis.
 - B. is broader in scope than a hypothesis.
 - C. has predictive power.
 - D. ties together many existing observations.
 - E. all of the choices are correct.**

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #14
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

15. A structure consisting of tissues organized to carry out a specific function defines a(n)
- A. organ.**
 - B. cell.
 - C. population.
 - D. atom.
 - E. molecule.

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #15
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General

16. An ecosystem includes all of the following except
- A. a community.
 - B.** a biosphere.
 - C. populations.
 - D. organisms.
 - E. nonliving environmental components.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #16
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General*

17. Asexual reproduction differs from sexual reproduction in that
- A. asexual reproduction produces genetically diverse offspring.
 - B. asexual reproduction utilizes DNA from two parents to code for traits in offspring.
 - C. asexual reproduction occurs only in plants.
 - D.** asexual reproduction produces offspring containing DNA from only one parent.
 - E. asexual reproduction only occurs in animals.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #17
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General*

18. Homeostasis of an organism is demonstrated by
- A. a population changing over time.
 - B. environmental conditions holding constant through time.
 - C. cells having enough water to survive.
 - D. plants and animals needing energy sources.
 - E.** an organism maintaining nearly constant internal conditions.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #18
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General*

19. The correct sequence from smallest to largest is
- A. tissue - cell - organelle - molecule - atom.
 - B. molecule - atom - organelle - cell - tissue.
 - C.** atom - molecule - organelle - cell - tissue.
 - D. cell - tissue - organelle - molecule - atom.
 - E. atom - molecule - cell - organelle - tissue.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #19
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General*

20. Which is a correct sequence of steps in the scientific method?
- A. observe - form hypothesis - draw conclusions - design an experiment
 - B. observe - draw conclusion - design an experiment - form hypothesis
 - C.** observe - form hypothesis - collect data - draw conclusions
 - D. form hypothesis - observe - design an experiment - collect data
 - E. form hypothesis - observe - collect data - design an experiment

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #20
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General*

21. In an experiment designed to measure the distance a golf ball is hit by clubs made of different material, the dependent variable is
A. the distance the golf ball travels.
B. the type of material the club is made of.
C. the wind direction when the experiment takes place.
D. the type of material the golf ball is made of.
E. the speed of the golf club prior to hitting the golf ball.

*Blooms Level: 2. Understand
Hoefnagels - Test Bank... #21
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General*

22. In an experiment designed to measure the distance a golf ball is hit by clubs made of different material, the independent variable is
A. the wind direction when the experiment takes place.
B. the distance the golf ball travels.
C. the type of material the golf ball is made of.
D. the speed of the golf club prior to hitting the golf ball.
E. the type of material the club is made of.

*Blooms Level: 2. Understand
Hoefnagels - Test Bank... #22
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General*

23. In an experiment designed to measure the distance a golf ball is hit by clubs made of different material, all of the variables would be standardized except
A. the wind direction when the experiment takes place.
B. the force used to hit the ball.
C. the type of material the golf ball is made of.
D. the type of material the club is made of.
E. the angle the ball is hit.

*Blooms Level: 2. Understand
Hoefnagels - Test Bank... #23
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General*

24. An inert substance that resembles the treatment given to an experimental group is
A. a placebo.
B. an independent variable.
C. a variable.
D. a hypothesis.
E. never used in an experiment.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #24
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General*

25. Which of the following is FALSE about experiments?
A. The larger the sample size the more meaningful the results.
B. The smaller the sample size the more meaningful the results.
C. An experiment is not valid without the proper control.
D. It is important to standardize aspects of an experiment which might affect the outcome, other than the independent variable.
E. All answers are correct.

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #25
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General*

You perform an experiment in which you take 16 pots of strawberry plants and give half of them 1 gm of ammonium nitrate per liter of water and the other half receive only water. Each group is then split in half again, and exposed to either eight or 16 hours of light each day. You monitor the height of the plants for four weeks. You observe that plants grown in ammonium nitrate and 16 hours of light grow taller than no ammonium nitrate and eight hours of light.

Hoefnagels - Test Bank...

26. Which of the following are independent variables in this experiment?
- A.** Amount of ammonium nitrate and light
 - B. Amount of water
 - C. Amount of carbon dioxide
 - D. Height of the plants and amount of light
 - E. Height of the plants

Blooms Level: 3. Apply

Hoefnagels - Test Bank... #26

Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.

Section: 01.03

Topic: General

27. Which of the following are dependent variables in this experiment?
- A. Amount of ammonium nitrate and light
 - B. Amount of carbon dioxide
 - C. Amount of water
 - D.** Height of the plants
 - E. Height of the plants and amount of light

Blooms Level: 3. Apply

Hoefnagels - Test Bank... #27

Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.

Section: 01.03

Topic: General

28. In this experiment, the size of the pot is
- A. an independent variable.
 - B. a dependent variable.
 - C.** a standardized variable.
 - D. a placebo.
 - E. a control.

Blooms Level: 3. Apply

Hoefnagels - Test Bank... #28

Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.

Section: 01.03

Topic: General

29. Ammonium nitrate is
- A. an atom.
 - B.** a molecule.
 - C. a cell.
 - D. a tissue.
 - E. a biosphere.

Blooms Level: 3. Apply

Hoefnagels - Test Bank... #29

Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.

Section: 01.03

Topic: General

30. The plants take up nutrients like ammonium nitrate to maintain
- A. asexual reproduction.
 - B. sexual reproduction.
 - C. natural selection.
 - D. evolution.
 - E.** homeostasis.

Blooms Level: 3. Apply

Hoefnagels - Test Bank... #30

Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.

Section: 01.03

Topic: General

31. The leaf of a strawberry plant is
A. an organ.
B. a molecule.
C. an organelle.
D. a cell.
E. an organism.

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #31
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

32. A strawberry plant is
A. a consumer.
B. a decomposer.
C. a producer.
D. a heterotroph.
E. a consumer and heterotroph.

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #32
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

33. Organisms require energy to grow, reproduce, and survive. What is the energy source for the plants in your experiment?
A. ammonium nitrate
B. light
C. water
D. soil
E. carbon dioxide

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #33
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

34. Your strawberry plants produce both fruit and runners. How do they reproduce?
A. asexually only
B. sexually only
C. developmentally only
D. developmentally and sexually
E. sexually and asexually

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #34
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

You expose the bacterium *Staphylococcus aureus* to low levels of the antibiotic methicillin. The surviving bacteria are then exposed to higher concentrations of methicillin and the process repeated until a strain of methicillin-resistant *S. aureus* (MRSA) is generated. To test your hypothesis, you perform an experiment by spreading the original strain of *S. aureus* and the MRSA strain onto agar plates containing methicillin, and only the MRSA survives.

Hoefnagels - Test Bank...

35. What are the independent variables in this experiment?
A. the strain of *S. aureus*
B. the dose of methicillin
C. survival in the presence of methicillin
D. the agar plates
E. the time of bacterial growth

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #35
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

36. Which of the following are dependent variables in this experiment?
- A. the strain of *S. aureus*
 - B. the dose of methicillin
 - C. the agar plates
 - D.** survival in the presence of methicillin
 - E. the time of bacterial growth

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #36
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

37. How did some of the original strain of *S. aureus* bacteria survive in the presence of methicillin?
- A. The methicillin caused mutations in the bacteria.
 - B.** They had pre-existing mutations that provided resistance.
 - C. The methicillin was no longer active.
 - D. The methicillin may not have been added to those plates.
 - E. The bacteria wanted to survive the antibiotic and mutated to become resistant.

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #37
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

38. Some of the original strain of *S. aureus* bacteria surviving in the presence of methicillin is an example of which of the following?
- A. mutation
 - B. homeostasis
 - C. evolution
 - D. sexual reproduction
 - E.** natural selection

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #38
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

39. How does the bacterium *S. aureus* reproduce?
- A.** asexually only
 - B. sexually only
 - C. sexually and asexually
 - D. developmentally only
 - E. developmentally and sexually

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #39
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

40. The bacterium *S. aureus* belongs to which domain?
- A. Eukarya
 - B. Archaea
 - C. Prokarya
 - D. Protista
 - E.** Bacteria

Blooms Level: 2. Understand
Hoefnagels - Test Bank... #40
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

41. The bacterium *Staphylococcus aureus* has which of the following?
A. nucleus
B. cell wall and nucleus
C. cell wall
D. cell wall and cell membrane
E. cell membrane and nucleus

Blooms Level: 2. Understand
Hoefnagels - Test Bank... #41
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

42. MRSA infections occur in humans (*Homo sapiens*). *Homo sapiens* are in which domain?
A. Archaea
B. Bacteria
C. Eukarya
D. Animalia
E. Protista

Blooms Level: 2. Understand
Hoefnagels - Test Bank... #42
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

43. MRSA infections occur in humans (*Homo sapiens*). Humans are in which kingdom?
A. Eukarya
B. Archaea
C. Bacteria
D. Animalia
E. Protista

Blooms Level: 2. Understand
Hoefnagels - Test Bank... #43
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

44. The bacterium *Staphylococcus aureus* became resistant to methicillin because the *Staphylococcus* mutated so that methicillin was no longer harmful.
TRUE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #44
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

45. In the section "Investigating Life: The Orchid and the Moth," what did Charles Darwin predict after observing the 11-inch long nectaries of the *Angraecum sesquipedale* orchid in Madagascar?
A. the existence of a moth with a proboscis of 10-11 inches
B. the existence of a competitor which also possessed especially-long nectaries
C. the presence of very small bees that could fit into long nectaries
D. that the orchid must reproduce asexually
E. that the orchid was an evolutionary dead end and could no longer reproduce

Blooms Level: 2. Understand
Hoefnagels - Test Bank... #45
Learning Outcome: 01.04.01 Explain how observations of orchids and moths confirmed a prediction of evolutionary theory.
Section: 01.04
Topic: General
Type: Investigating Life

46. In the section "Investigating Life: The Orchid and the Moth," Charles Darwin's prediction about the long nectaries is
- A. a standardized variable.
 - B. a theory.
 - C. an independent variable.
 - D. a dependent variable.
 - E.** a hypothesis.

Blooms Level: 2. Understand
Hoefnagels - Test Bank... #46
Learning Outcome: 01.04.01 Explain how observations of orchids and moths confirmed a prediction of evolutionary theory.
Section: 01.04
Topic: General
Type: Investigating Life

47. After reading the section "Investigating Life: The Orchid and the Moth," you test Charles Darwin's prediction that an orchid with long pollen tubes has a pollinator with long, thin mouthparts that could reach the bottom of the elongated nectar tube. You place nets over some orchids that allow pollinators with small, short mouthparts to enter, but prevents pollinators with long, thin mouthparts. Then, you compare the number of seeds produced by plants with and without the nets. The seed production is
- A.** a dependent variable.
 - B. a hypothesis.
 - C. a theory.
 - D. an independent variable.
 - E. a standardized variable.

Blooms Level: 4. Analyze
Hoefnagels - Test Bank... #47
Learning Outcome: 01.04.01 Explain how observations of orchids and moths confirmed a prediction of evolutionary theory.
Section: 01.04
Topic: General
Type: Investigating Life

48. In the section "Investigating Life: The Orchid and the Moth," what is the advantage to the orchid of having an 11-inch long nectar tube?
- A. It can produce nectar over a larger area and attract more pollinators.
 - B. It can collect more rainwater.
 - C.** It can be fertilized only by the largest moths.
 - D. It can collect more sunlight for photosynthesis.
 - E. It can trap insects as a source of nutrients.

Blooms Level: 4. Analyze
Hoefnagels - Test Bank... #48
Learning Outcome: 01.04.01 Explain how observations of orchids and moths confirmed a prediction of evolutionary theory.
Section: 01.04
Topic: General
Type: Investigating Life

49. In the section "Investigating Life: The Orchid and the Moth," what is the advantage to the sphinx moth *Xanthopan morgani* of having an 8-inch long tongue?
- A. It is used to attract mates through sexual selection.
 - B. It can pollinate only one type of flower.
 - C. It makes flying more efficient.
 - D. It can be used to capture other flying insects for food.
 - E.** It can reach nectar that no other pollinator can reach.

Blooms Level: 4. Analyze
Hoefnagels - Test Bank... #49
Learning Outcome: 01.04.01 Explain how observations of orchids and moths confirmed a prediction of evolutionary theory.
Section: 01.04
Topic: General
Type: Investigating Life

50. As described in the section "Investigating Life: The Orchid and the Moth," pollination is a step of _____ in a plant.
- A. sexual reproduction
 - B. asexual reproduction
 - C. development
 - D. metabolism
 - E. homeostasis

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #50
Learning Outcome: 01.04.01 Explain how observations of orchids and moths confirmed a prediction of evolutionary theory.
Section: 01.04
Topic: General
Type: Investigating Life

51. The "kingdom" is the most all-inclusive taxonomic category.
FALSE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #51
Learning Outcome: 01.02.01 Compare and contrast the three branches of life.
Section: 01.02
Topic: General

52. The cell is the basic unit of life.
TRUE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #52
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General

53. The smallest identifiable unit of an element is a molecule.
FALSE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #53
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General

54. Decomposers are a special group of producers.
FALSE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #54
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General

55. In an experiment designed to determine if a fertilizer increased crop yield in tomato plants, the number of tomatoes produced by each plant would be the independent variable.
FALSE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #55
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

56. In an experiment designed to determine if a fertilizer increased crop yield in tomato plants, the number of tomatoes produced by each plant would be the dependent variable.
TRUE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #56
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

57. In an experiment designed to determine if a fertilizer increased crop yield in tomato plants, the amount of sunlight and water the plants received would be standardized variables.
TRUE

Blooms Level: 1. Remember
Hoefnagels - Test Bank... #57
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

58. A theory is an advanced hypothesis that has been proven to be true.

FALSE

*Blooms Level: 1. Remember
Hoefnagels - Test Bank... #58*

Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.

Section: 01.03

Topic: General

59. What is the purpose of a control in an experiment?

- A.** provides a basis for comparison
- B. provides tentative explanations for an observation
- C. provides a large sample size
- D. provides a small sample size
- E. provides wide range of variations in the independent variable

*Blooms Level: 3. Apply
Hoefnagels - Test Bank... #59*

Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.

Section: 01.03

Topic: General

60. Why isn't scientific inquiry foolproof?

- A. Multiple interpretations of the data are possible.
- B. Definite answers do not always result.
- C. Observations can be misinterpreted.
- D. Unexpected conclusions are not always readily accepted.
- E.** All answers are correct.

*Blooms Level: 3. Apply
Hoefnagels - Test Bank... #60*

Learning Outcome: 01.03.03 Discuss the limitations of the scientific method.

Section: 01.03

Topic: General

61. Which of the following questions cannot be answered by science?

- A.** What is the meaning of life?
- B. Why is the sky the color blue?
- C. What causes species extinctions?
- D. How did I start from only an egg and sperm?
- E. Why is too much fatty food bad for me?

*Blooms Level: 3. Apply
Hoefnagels - Test Bank... #61*

Learning Outcome: 01.03.03 Discuss the limitations of the scientific method.

Section: 01.03

Topic: General

62. How do you know the computer you are working on is not alive?

- A. It is not made of cells.
- B. It does not maintain an internal consistency of water, solutes, and other components.
- C. It cannot reproduce, asexually or sexually.
- D. It cannot evolve.
- E.** All answers are correct.

*Blooms Level: 3. Apply
Hoefnagels - Test Bank... #62*

Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.

Section: 01.01

Topic: General

63. What is the purpose of taxonomy?

- A.** to name and classify living organisms
- B. to organize levels of biology from atom to biosphere
- C. to predict the outcome of experiments
- D. to explain how or why a phenomenon occurred
- E. to explain how life began

*Blooms Level: 3. Apply
Hoefnagels - Test Bank... #63*

Learning Outcome: 01.02.01 Compare and contrast the three branches of life.

Section: 01.02

Topic: General

64. Which of the following does not evolve?
A. humans
B. bacteria
C. flowering plants
D. limestone rock
E. mushrooms

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #64
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General

65. Cells, tissues, organs, and organ systems working together to make a human function is an example of _____, because separately none of these components can accomplish what they can together.
A. an emergent property
B. a control
C. a placebo
D. an independent variable
E. a standardized variable

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #65
Learning Outcome: 01.03.01 Identify standardized, dependent, and independent variables in an experiment.
Section: 01.03
Topic: General

66. Gravity is a theory because it is
A. a tentative explanation of an observation.
B. an untestable prediction.
C. a changeable element of experiments.
D. an opinion or hunch.
E. an encompassing explanation of a natural phenomenon that is well accepted.

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #66
Learning Outcome: 01.03.02 Apply the scientific method to design experiments and analyze data.
Section: 01.03
Topic: General

67. All mutations lead to evolution of living organisms.
FALSE

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #67
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General

68. If the environment remained the same, organisms would not evolve.
FALSE

Blooms Level: 3. Apply
Hoefnagels - Test Bank... #68
Learning Outcome: 01.01.01 Describe the characteristics that all living organisms share.
Section: 01.01
Topic: General

1 Summary

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