

***Exploring Biology in the Laboratory Core Concepts
2nd edition Pendarvis Test Bank***

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Difficulty: Easy

5. Which of the following is a scientific concept?

- a. DNA synthesis.
- b. Observation.
- c. Classification.
- d. All of the above.

Difficulty: Easy

6. Determining the quantitative relationships among data involves which of the following scientific processes?

- a. Classifying.
- b. Inferring.
- c. Measuring.
- d. Using numbers.

Difficulty: Easy

7. The fundamental core of scientific content knowledge consists of _____.

- a. concepts
- b. generalizations
- c. facts
- d. all of the above

Difficulty: Easy

8. A useful hypothesis is _____.

- a. an operational definition
- b. an analysis of test results
- c. a testable statement
- d. an observation

Difficulty: Easy

9. A(n) _____ hypothesis states that there is no relationship between an independent and dependent variable.

- a. unsupported
- b. positive
- c. alternate
- d. null

Difficulty: Easy

10. The scientific method includes all of the following EXCEPT _____.

- a. theories
- b. observation
- c. predictions
- d. hypotheses

Difficulty: Easy

11. In an experiment, which of the following variables is used as a baseline for comparison?

- a. Control.
- b. Dependent.
- c. Independent.
- d. Responding.

Difficulty: Easy

12. A theory is _____.

- a. the same thing as a hypothesis
- b. an idea unconfirmed by evidence
- c. an idea on which experts in the field agree
- d. nothing more than an educated guess

Difficulty: Easy

13. In conducting an experiment, a scientist follows a process of scientific inquiry that includes which of the following?

- a. Communicating.
- b. Inferring.
- c. Predicting.
- d. All of the above.

Difficulty: Easy

Medium (11)

14. The fact that we no longer believe the earth is flat attests to the fact that science is a(n) _____ process.

- a. unpredictable
- b. self-correcting
- c. mystical
- d. contradictory

Difficulty: Medium

15. Your study data show that teenage drivers cause 30% more car accidents than adults over the age of 25, so you _____ that high schools need better driver education programs.

- a. infer

- b. predict
- c. rationalize
- d. hypothesize

Difficulty: Medium

16. When you say that the earth orbits the sun, you are _____.
- a. refuting a long-held belief
 - b. explaining a scientific concept
 - c. making a generalization
 - d. stating a scientific fact

Difficulty: Medium

17. What steps do investigators take before forming a hypothesis?
- a. Collect information.
 - b. Use prior knowledge.
 - c. Draw conclusions.
 - d. All of the above.
 - e. A and B only.

Difficulty: Medium

18. Which of the following is an example of technology?
- a. Conducting a laboratory experiment.
 - b. Making a scientific discovery.
 - c. Observing the stars through a telescope.
 - d. Drilling for oil and gas.

Difficulty: Medium

19. Which of the following is a scientific process, rather than a concept?
- a. Observation.
 - b. Photosynthesis.
 - c. Camouflage.
 - d. DNA.

Difficulty: Medium

20. After completing a controlled experiment, a scientist changes the dosage of an antibiotic and repeats the experiment. The change in dosage is the _____.
- a. independent variable
 - b. dependent variable
 - c. constant
 - d. control

Difficulty: Medium

21. The function of a hypothesis is to _____.
- a. identify the dependent variable
 - b. provide direction for interpreting data
 - c. provide direction for gathering data
 - d. predict the likely outcome of an experiment

Difficulty: Medium

22. Termites are social insects; therefore, communication is essential to their well-being. How do they communicate?
- a. Use chemicals known as pheromones.
 - b. Use visual signals.
 - c. Use chemicals similar to ants.
 - d. A and B.

Difficulty: Medium

23. The correct hypothesis for a study to measure the effectiveness of a pesticide in eradicating a specific mold infecting a crop is that if the pesticide is administered, then the mold will _____.
- a. be eradicated.
 - b. not be eradicated.
 - c. get worse.
 - d. kill the crops.

Difficulty: Medium

24. Results of a clinical trial demonstrated that an antibiotic eradicated the infection in 98% of the study subjects. Therefore, you _____.
- a. construct another hypothesis
 - b. collect additional data
 - c. conclude that the antibiotic is highly effective
 - d. re-evaluate your results

Difficulty: Medium

Hard (6)

25. Which of the following is NOT involved in the process of interpreting data?
- a. Classifying.
 - b. Communicating.
 - c. Predicting.
 - d. Inferring.

Difficulty: Hard

26. Which of the following statements is a scientific generalization?

- a. Antibodies are produced when a virus invades the body.
- b. Red blood cells carry oxygen in the blood.
- c. Many birds migrate south for the winter.
- d. The sun rises in the east and sets in the west.

Difficulty: Hard

27. You design a clinical trial with human subjects to evaluate the efficacy of an antibiotic in eradicating a bacterial infection. Which of the following would be used as the control in this study?

- a. Two different dosages.
- b. A placebo (inactive substance).
- c. No treatment.
- d. All of the above.
- e. B and C only.

Difficulty: Hard

28. In a clinical study to measure the effectiveness of an antibiotic, which of the following is the independent variable?

- a. The number of patients enrolled in the study.
- b. The antibiotic being tested.
- c. The control.
- d. The infection.

Difficulty: Hard

29. If a study fails to produce the expected results, you would _____.

- a. collect additional data
- b. conclude that your hypothesis is not supported
- c. continue observing and asking questions
- d. conduct the study with other patients

Difficulty: Hard

30. You are a public health researcher who wants to conduct a study of the prevalence of a disease in a rural village in India. To define this study operationally, you would specify the _____.

- a. study population
- b. drugs available to treat the disease
- c. cause of the disease
- d. number of people who have died from the disease

Difficulty: Hard

Chapter 2 For Good Measure: Scientific Notation and the Metric System

Easy (22)

1. Scientific notation is a way of expressing _____.
- extremely small numbers
 - extremely large numbers
 - numbers that have many zeros
 - all of the above

Difficulty: Easy

2. For the number 4.5×10^6 , which represents the base?
- 4.5
 - 10
 - 6
 - 4.5×10

Difficulty: Easy

3. For the number 6.8×10^7 , the 7 is called the _____.
- exponent
 - coefficient
 - multiplier
 - product

Difficulty: Easy

4. When multiplying numbers written in scientific notation, you should _____ the exponents.
- multiply
 - divide
 - add
 - subtract

Difficulty: Easy

5. When adding and subtracting numbers written in scientific notation, all the numbers should be converted to the same _____ value.
- exponent
 - base
 - coefficient
 - weighted

Difficulty: Easy

6. The metric prefix “kilo” means _____.
- a. ten
 - b. hundred
 - c. thousand
 - d. million

Difficulty: Easy

7. Which of the following metric units is used to express luminous intensity?
- a. Meter.
 - b. Candela.
 - c. Kelvin.
 - d. Mole.

Difficulty: Easy

8. The cubic centimeter is a unit used to express _____.
- a. mass
 - b. length
 - c. volume
 - d. temperature

Difficulty: Easy

9. What is the symbol for centimeter?
- a. cm
 - b. mc
 - c. km
 - d. mL

Difficulty: Easy

10. Which country commonly uses the English system rather than the metric system?
- a. Canada.
 - b. United States.
 - c. France.
 - d. England.

Difficulty: Easy

11. The earth is 93 million miles from the sun. What is this number in scientific notation?
- a. 0.93×10^8
 - b. 9.3×10^7
 - c. 93×10^6
 - d. 930×10^5

Difficulty: Easy

12. What is the number 4.85×10^5 in standard notation?

- a. 485
- b. 4,850
- c. 48,500
- d. 485,000

Difficulty: Easy

13. How many millimeters are in 1 centimeter?

- a. 10
- b. 100
- c. 1,000
- d. 10,000

Difficulty: Easy

14. Converting between metric units is easier than converting between English units because you only need to _____.

- a. add
- b. move the decimal point
- c. subtract
- d. use scientific notation

Difficulty: Easy

15. When reading a graduated cylinder, you should read the meniscus, which is the _____ of the curve.

- a. bottom
- b. top
- c. side
- d. middle

Difficulty: Easy

16. Which of the following instruments is used in the laboratory to distribute and extract precise amounts of liquid?

- a. Vacuum pump.
- b. Syringe with needle.
- c. Syphon.
- d. Pipette.

Difficulty: Easy

17. In the metric system, the basic unit of linear measurement is the _____.
a. kilometer
b. mile
c. meter
d. milliliter

Difficulty: Easy

18. Which of the following is the most accurate for measuring volumes?
a. Beaker.
b. Flask.
c. Graduated cylinder.
d. Test tube.

Difficulty: Easy

19. Which of the following units is commonly used to measure microscopic objects?
a. Centimeter.
b. Millimeter.
c. Kilometer.
d. Nanometer.

Difficulty: Easy

20. Water freezes at 32 degrees Fahrenheit. Convert this value to degrees Celsius.
a. 0
b. 57.6
c. 77
d. 89.6

Difficulty: Easy

21. What is the basic unit of volume in the metric system?
a. Microliter.
b. Nanometer.
c. Liter.
d. Cubic centimeter.

Difficulty: Easy

22. To convert 1.0 micrometers to millimeters, you would move the decimal point _____.
a. three spaces to the right
b. three spaces to the left
c. two spaces to the right
d. two spaces to the left