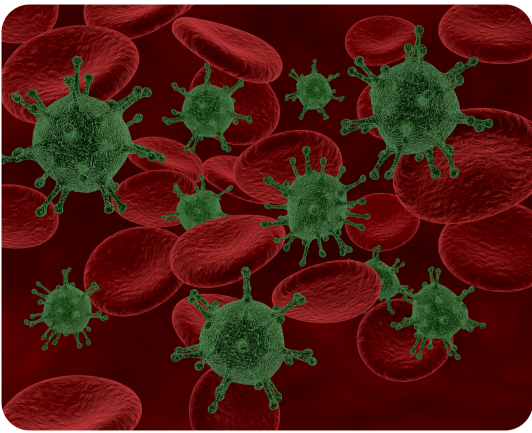


Chapter 1

What is Biology? Worksheets



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- **Lesson 1.1: Science and the Natural World**
- **Lesson 1.2: Biology: The Study of Life**

1.1 Science and the Natural World

Lesson 1.1: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. A hypothesis must be based on scientific knowledge.
- _____ 2. A scientific theory is a guess about how or why something happens.
- _____ 3. Scientists make predictions that tell what will happen under any and all conditions.
- _____ 4. The scientific method includes the steps involved in a scientific investigation.
- _____ 5. “Did life on Earth evolve over time?” This question can be answered scientifically.
- _____ 6. Experiments are performed under controlled conditions.
- _____ 7. Scientists can study all aspects of the natural world, including experimenting on an extinct animal.
- _____ 8. The dependent variable is always the opposite of the independent variable.
- _____ 9. Communicating your results allows others to test your hypothesis.
- _____ 10. Experimental evidence that agrees with your prediction supports your hypothesis.
- _____ 11. The first step in a scientific investigation is always to develop a hypothesis.
- _____ 12. Scientists gradually build an increasingly accurate and detailed understanding of the natural world.
- _____ 13. Newton discovered the law of gravity when an apple fell from a tree and hit him on the head.
- _____ 14. Scientific evidence is any type of data that may either agree or disagree with a prediction.
- _____ 15. Scientific theories are broad explanations that are widely accepted as true.

Lesson 1.1: Critical Reading

Name _____ Class _____ Date _____

Read these passages from the text and answer the questions that follow.

Nature Can Be Understood

Scientists think of nature as a single system controlled by natural laws. By discovering natural laws, scientists strive to increase their understanding of the natural world. Laws of nature are expressed as scientific laws. A scientific law is a statement that describes what always happens under certain conditions in nature.

An example of a scientific law is the law of gravity, which was discovered by Sir Isaac Newton. The law of gravity states that objects always fall towards Earth because of the pull of gravity. Based on this law, Newton could explain many natural events. He could explain not only why objects such as apples always fall to the ground, but he could also explain why the moon orbits Earth. Isaac Newton discovered laws of motion as well as the law of gravity. His laws of motion allowed him to explain why objects move as they do.

Science Cannot Answer All Questions

Science rests on evidence and logic, so it deals only with things that can be observed. An observation is anything that is detected either through human senses or with instruments and measuring devices that extend human senses. Things that cannot be observed or measured by current means — such as supernatural beings or events — are outside the bounds of science. Consider these two questions about life on Earth:

- Did life on Earth evolve over time?
- Was life on Earth created through another method?

The first question can be answered by science on the basis of scientific evidence and logic. The second question could be a matter of belief. Therefore, it is outside the realm of science.

Questions

1. What is an observation?

2. What is a scientific law?

3. What scientific law explains why the moon orbits the Earth? What does the law state? Who developed this law?

4. Complete this sentence: Natural laws allow scientists to _____.

5. Can science answer all questions? Justify your answer.

Lesson 1.1: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

1. Assumptions scientists make include:
 - (a) Nature can be understood through systematic study.
 - (b) Scientific ideas never need to be revised.
 - (c) Science can provide answers to all questions.
 - (d) all of the above
2. A hypothesis
 - (a) is the first step in a scientific investigation.
 - (b) is based on what a scientist believes.
 - (c) is a possible question to a scientific answer.
 - (d) can be proved incorrect.
3. A scientific theory
 - (a) is based on lots of evidence.
 - (b) is a guess about how or why something happens.
 - (c) can never be altered or changed.
 - (d) none of the above
4. Which is the correct order in a scientific investigation?
 - (a) ask a question, test the hypothesis, communicate results, draw conclusions
 - (b) make observations, ask a question, form a hypothesis, test the hypothesis
 - (c) draw conclusions, ask a question, form a hypothesis, test the hypothesis
 - (d) ask a question, make observations, test the hypothesis, draw conclusions
5. To test a hypothesis,
 - (a) a scientist first collects evidence.
 - (b) a scientist first draws conclusions.
 - (c) a scientist first makes a prediction.
 - (d) a scientist first makes observations.
6. An experiment
 - (a) is performed under controlled conditions.
 - (b) generally tests how one variable is affected by another.
 - (c) contributes important evidence that helps scientists better understand the natural world.
 - (d) all of the above
7. Food chains are scientific models that
 - (a) represent simple systems in nature.
 - (b) make the scientific systems easier to understand.
 - (c) are based on mathematical equations.
 - (d) are based on a prediction.
8. *Science cannot answer all questions.*
 - (a) The above statement is true because science cannot answer matters of belief.
 - (b) The above statement is true because all science is based on logic.
 - (c) The above statement is false because science can prove that life evolves over time.
 - (d) The above statement is false because science is based on observations and evidence.

Lesson 1.1: Vocabulary I

Name _____ Class _____ Date _____

Match the vocabulary word with the proper definition.

Definitions

- _____ 1. a statement that describes what always happens under certain conditions in nature
- _____ 2. a possible answer to a scientific question
- _____ 3. any type of data that may either agree or disagree with a prediction
- _____ 4. a plan for asking questions and testing possible answers
- _____ 5. a representation of part of the real world
- _____ 6. a broad explanation for events that is widely accepted as true
- _____ 7. detected either through human senses or with instruments and measuring devices that extend human senses
- _____ 8. a special type of scientific investigation that is performed under controlled conditions
- _____ 9. developed the laws of motion
- _____ 10. a statement that tells what will happen under certain conditions
- _____ 11. developed theory of relativity
- _____ 12. a distinctive way of gaining knowledge about the natural world

Terms

- a. Albert Einstein
- b. evidence
- c. experiment
- d. hypothesis
- e. Isaac Newton
- f. model
- g. observation
- h. prediction
- i. science
- j. scientific investigation
- k. scientific law
- l. scientific theory

Lesson 1.1: Vocabulary II

Name _____ Class _____ Date _____

Fill in the blank with the appropriate term.

1. An _____ is anything that is detected either through human senses or with instruments and measuring devices that extend human senses.
2. An _____ is a special type of scientific investigation that is performed under controlled conditions.
3. A scientific _____ is a statement that describes what always happens under certain conditions in nature.
4. A model is a representation of part of the real _____.
5. _____ is any type of data that may either agree or disagree with a prediction.
6. Scientific investigation are done by following the scientific _____.
7. The goal of _____ is to understand the natural world.
8. A hypothesis is a possible answer to a scientific _____.
9. Matters of _____ are outside the realm of science.
10. A scientific _____ is a broad explanation for events that is widely accepted as true.
11. The last step in a scientific investigation is _____ what you have learned with others.
12. _____ is a distinctive way of gaining knowledge about the natural world that starts with a question and then tries to answer the question with evidence and logic

Lesson 1.1: Critical Writing

Name _____ Class _____ Date _____

Thoroughly answer the question below. Use appropriate academic vocabulary and clear and complete sentences.

Discuss why science is not able to answer all questions. Incorporate the steps of the scientific method into your response.

1.2 Biology: The Study of Life

Lesson 1.2: True or False

Name _____ Class _____ Date _____

Write true if the statement is true or false if the statement is false.

- _____ 1. A cell is the basic unit of the structure and function of all living things
- _____ 2. An adaptation is a characteristic that helps a living thing survive and reproduce.
- _____ 3. Natural selection is a change in the characteristics of living things over time.
- _____ 4. A population consists of many different species.
- _____ 5. Charles Darwin developed the theory of evolution by natural selection.
- _____ 6. All living things must maintain homeostasis.
- _____ 7. The characteristics of all living things are controlled by genes.
- _____ 8. The four unifying principles of biology are the cell theory, the gene theory, homeostasis, and gravity.
- _____ 9. Deer sometimes eat the starlings (birds) that sit on them.
- _____ 10. The cells of many different organisms are very similar.
- _____ 11. Simple life forms, like bacteria, have simple chemistry.
- _____ 12. Simple life forms, like bacteria, do not grow and develop.
- _____ 13. Every living thing begins life as a single cell.
- _____ 14. The mole's touch organ is an adaptation because it helps the mole survive in its dark.
- _____ 15. There are at least 100 million different species live on Earth today.

Lesson 1.2: Multiple Choice

Name _____ Class _____ Date _____

Circle the letter of the correct choice.

- The cell theory states that
 - all living things are made up of cells.
 - living cells may come from other living cells.
 - all living things remain single-celled.
 - all of the above
- Levels of organization of an individual organism includes
 - the tissue.
 - the population.
 - the community.
 - all of the above
- Which is the best definition of "biology"?
 - The science of living organisms.
 - The study of humans and animals.
 - The study of plants, humans, and animals.
 - The science of life.
- Homeostasis is
 - the ability to give rise to offspring.
 - maintaining a stable internal environment.
 - the ability to detect and respond to changes in their environment.
 - the ability to grow and develop.
- Evolution
 - is a change in characteristics of living things over time.
 - occurs by natural selection.
 - explains how modern organisms have descended from ancient life forms.
 - all of the above
- An example of a symbiotic relationship in which one organism is harmed is
 - the relationship between a flock of starlings and a red deer stag.
 - the relationship between a lion and an antelope.
 - the relationship between hummingbirds and flowers.
 - the relationship between humans and their pet dogs.
- Cells
 - are all unique; no two cells are similar.
 - come from other cells, except for the very first cell of a new organism.
 - are the basic unit of structure and function of all living things.
 - are all circular in shape.
- To be classified as a living organism, an object must
 - maintain homeostasis.
 - have a complex chemistry.
 - be made of at least one cell.
 - all of the above

Lesson 1.2: Vocabulary I

Name _____ Class _____ Date _____

Match the vocabulary word with the proper definition.

Definitions

- _____ 1. the basic unit of the structure and function of living things
- _____ 2. the process by which evolution occurs
- _____ 3. the same species that live in the same area
- _____ 4. all of the populations that live in the same area
- _____ 5. maintaining a stable internal environment
- _____ 6. a change in the characteristics of living things over time
- _____ 7. an individual living thing
- _____ 8. the diversity of living things
- _____ 9. all the living things in a given area, together with the nonliving environment
- _____ 10. a characteristic that helps a living thing survive and reproduce
- _____ 11. a group of similar ecosystems
- _____ 12. the science of life

Terms

- a. adaptation
- b. biodiversity
- c. biology
- d. biome
- e. cell
- f. community
- g. ecosystem
- h. evolution
- i. homeostasis
- j. natural selection
- k. organism
- l. population

Lesson 1.2: Vocabulary II

Name _____ Class _____ Date _____

Fill in the blank with the appropriate term.

1. _____ developed the theory of evolution by natural selection.
2. All living things grow and _____.
3. A cell is the basic unit of the structure and _____ of living things.
4. An adaptation is a characteristic that helps a living thing survive and _____ in a given environment.
5. The process of maintaining a stable internal environment is _____.
6. A _____ is made of cells of the same kind.
7. An _____ is an individual living thing.
8. _____ is a relationship between living things that depend on the same resources.
9. An ecosystem consists of all the living things in a given area, together with the nonliving _____ - _____.
10. _____ is a change in the characteristics of living things over time.
11. The _____ is the part of Earth where all life exists.
12. _____ is the process by which living things give rise to offspring.

Lesson 1.2: Critical Writing

Name _____ Class _____ Date _____

Thoroughly answer the questions below. Use appropriate academic vocabulary and clear and complete sentences.

List and describe three characteristics necessary to define life.