

Vocabulary: Introduction To Biology

Name _____

Word Part	Meaning	Vocabulary Word
per-	Through, across	permissible
-miss-	Send	permissible
Syn.sym	Together	synthesis
Homeo	Same	homeostasis
Hypo	Under, below	hypothesis
-ize	To make	analyze
Bio	Life	symbiosis
Quanti	Number	quantitative
Quali	qualitative	qualitative
-ive	Like, pertaining to	qualitative

Format

Word	Part of speech	Word parts/meanings
permissible		
synthesis		
homeostasis		
hypothesis		

analyze		
---------	--	--

compare		
---------	--	--

contrast		
----------	--	--

Animate		
---------	--	--

quantitative		
--------------	--	--

qualitative		
-------------	--	--

Video: Eyewitness Life

Study of Life

Section 1.1 What is Biology Name _____

Answer the following questions.

1. What is the focus of all biological studies?

2. What is meant by the statement, "Living things do not exist in isolation".

3. People study biology only if they are planning to become biologists.

4. By studying biology, you can better appreciate the great diversity of species on Earth and the way each species fits into the dynamic pattern of life on the planet.

5. The study of biology includes the investigation of interactions among species.

Complete each statement.

6. To be considered _____ something must exhibit all of the _____ of life.
7. _____ is another word for "living thing".
8. Every living thing, from simple, single-celled organisms to complex, multi-cellular plants and animals, is made up of parts that function in an orderly living _____.

Read each of the following statements. If it describes the process of reproduction, write yes and if not write no.

9. New leaves appear on a tree in the spring.
10. An amoeba divides in half.
11. A bean plant produces seeds in long pods.
12. Pollen grains are released from a flower.
13. A starfish produces a new arm after losing one to a predator.

Circle the letter of the choice that best completes the statement.

14. A species is defined as a group of similar-looking organisms that
 - a. undergo similar developmental changes
 - b. can interbreed
 - c. can interbreed and produce fertile offspring.
 - d. Reproduces in the same way
15. Every organism begins life as a(n)
 - a. embryo
 - b. single cell
 - c. nucleus
 - d. fertilized egg
16. A corn plant producing ears of corn is an example of
 - a. growth
 - b. reproduction
 - c. development
 - d. all of these
17. If members of a species fail to reproduce successfully, the species
 - a. will eventually become extinct.
 - b. will not develop normally
 - c. will evolve into a new species
 - d. will remain unchanged

Complete the table below by checking the correct column for each sample.

Example	Stimulus	Response
18. The recess bell ringing at an elementary school.		
19. Your mouth watering at the sight of food on a plate.		
20. A sudden drop in air temperature.		
21. A flu virus entering you body.		
22. Getting butterflies in you stomach before giving a speech.		

Answer the following questions

23. Explain the concept of homeostasis.

24. What is an adaptation?

25. What is evolution?

Chapter 1: The Study of Life

1.1 What is Biology

Pg 11-20

Science of Biology

Name _____

Growth

Development

Stimulus and Response

Homeostasis

Energy

Adaptation

Evolution

Section Assessment 2-5

2. Explain the difference between a stimulus and a response and give an example of each. How do these terms relate to an organism's internal environment?

3. Why is energy required for living things?

4. How are evolution and reproduction related?

5. How are energy and homeostasis related in living organisms?

Main Idea

--	--	--	--

Supporting Detail
Biology

Word Origin and meaning: Biology

Biologists study the Diversity of Life

Main Idea

--	--	--	--

Supporting Detail

Characteristics of Living Things

Describe EACH characteristic and GIVE AN EXAMPLE.

Reproduction

Species

Name _____

Period _____

What makes something living?

<u>Individual List with short explanation</u>	<u>Individual List with short explanation</u>
1	1
2	2
3	3
4	4
5	5

<p>Video: Life <u>Identify and explain each of the 10 traits shown.</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; padding: 5px;">1</td> <td style="width: 50%; padding: 5px;">6</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">7</td> </tr> <tr> <td style="padding: 5px;">3</td> <td style="padding: 5px;">8</td> </tr> <tr> <td style="padding: 5px;">4</td> <td style="padding: 5px;">9</td> </tr> <tr> <td style="padding: 5px;">5</td> <td style="padding: 5px;">10</td> </tr> </table>	1	6	2	7	3	8	4	9	5	10	<p>Official list</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p>
1	6										
2	7										
3	8										
4	9										
5	10										

Station	Items	Characteristic
1		
2		
3		
4		
5		
6		
7		
8		

Scientific Method

Scientific Method Notes

Procedure _____

Standard

Investigation and Experimentation

1. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content the other four strands, students should develop their own questions and perform investigations. Students will:

- a. select and use appropriate tools and technology (such as computer linked probes, spread sheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.
- b. identify and communicate the sources of error inherent in experimental design.
- c. identify discrepant results and identify possible sources of error or uncontrolled conditions.
- d. formulate and revise explanations using logic and evidence.
- f. distinguish between a guess, a hypothesis and a theory as these terms are used in science.
- g. recognize the use and limitations of models and theories as scientific representations of reality.
- k. recognize the cumulative nature of scientific evidence.

1. analyze situations and solve problems that require combining concepts from more than one topic area of science and applying these concepts.

m. investigate a science -basis societal issue by researching the literatures, analyzing data where appropriate and communication of their findings.

TYPES OF DATA

Data: _____

- _____
- _____

VARIABLES

- _____
- _____

For example: _____

Conclusion: _____

VIDEO: _____

Name _____ Period _____

Case Study 1: The Science Fair

For a science fair project, a student decided to find out if temperature affects the growth of bean seeds. The student did some research and found out that bean seeds are unlikely to grow at cold temperatures. To test this hypothesis, the student devised the following experiment. Ten seeds were placed in a jar with moist cotton. The other 10 seeds were placed in another jar with moist cotton. One jar was kept at room temperature. The other jar was kept in the refrigerator. After one week the student observed each jar. The student observed that the beans in the refrigerator did not grow.

Identify the following parts of the scientific method:

1. Identify the problem.
2. What information did the student collect?
3. What was his/her hypothesis?
4. Test the hypothesis:
 - A. Describe the procedure the student used:
 - B. Identify the dependent variable and the independent variable:
 - C. Identify the control?
 - D. What are some of the constants?
5. What type of observations did the student probably make? In what form should the student have recorded and presented the data?
6. What conclusions did the student draw from his/her data?

QUESTIONS

7. Should the student accept or reject their hypothesis? **EXPLAIN**
8. Could there be another reason the refrigerator beans did not grow? How could you test this? **BE SPECIFIC**

Case Study 2: Alexander Fleming Discovers Penicillin

In 1928 Sir Alexander Fleming was studying *Staphylococcus* bacteria growing in culture dishes. He was leaving on vacation and, after putting the used plates of bacteria in the sink, decided to wait until his return to clean his lab. When he returned he found that mold was growing on the plates and that a clear zone existed around the mold. All the bacteria that had grown in this clear zone had died. In the culture dishes without mold there were no clear areas present.

Fleming reasoned that the mold must be producing a chemical that killed the bacteria. He decided to isolate this substance and then test it to see if it would kill the bacteria. Fleming transferred the mold to a nutrient broth solution. This solution contained the materials the mold needed to grow and reproduce. He allowed the mold to grow, then removed the mold from the nutrient broth. He added this nutrient broth to a dish of bacteria. The bacteria were killed. Fleming added nutrient broth that had not had mold growing in it to another dish of bacteria. The bacteria in this dish were not killed. Fleming concluded that the mold produce a bacteria-killing substance in the broth. He called the substance that killed the bacteria penicillin

Answer the following questions in COMPLETE SENTENCES.

1. Identify the problem Fleming wanted to solve.
2. What was his hypothesis?
3. How did Fleming test his hypothesis?
4. What were the independent and dependent variables?
5. What was the control?
6. In what form was the data Fleming obtained?
7. What was his conclusion?
8. Did his data support his hypothesis? **EXPLAIN**

Name _____

BS

Observing and Hypothesizing

Main Idea

Supporting Detail			
-------------------	--	--	--

Scientific Methods:

Word Origin and meaning:

Experimenting

Main Idea

Supporting Detail			
-------------------	--	--	--

Experiment:

Control:

Hypothesis:

- Independent Variable:
- Dependent Variable:
- Safety Symbol:
- Data:
- Theory:

Section Assessment 1-5

1. Suppose you made the observation that bees seem to prefer a yellow flower that produces abundant amounts of pollen and nectar over a purple flower that produces less pollen and nectar. List two separate hypotheses that you might make about bees and flowers.
2. Describe a controlled experiment you could perform to determine whether and how more attracted to butter or to honey.
3. What is the difference between a theory and a hypothesis?
4. Why do experiments usually require a control?
5. Describe a way that a baker might conduct a controlled experiment with a cookie recipe.

Study of Life
Section 1.2 The Methods of Biology Name _____

Read the section and then answer the following questions.

1. What is meant by scientific methods?
 2. What is a hypothesis?
 3. How is a hypothesis tested?
- For each item in Column A, write the letter of the matching item in Column B
- | | |
|--|---|
| <p>4. A procedure that tests a hypothesis by collecting information under controlled conditions</p> <p>5. In an experiment, the group in which all conditions are kept the same</p> <p>6. In an experiment, the group in which all conditions are kept the same except the one being tested.</p> <p>7. The condition that is changed by the experimenter</p> <p>8. The condition being observed or measured in an experiment</p> | <p>a. dependent variable</p> <p>b. experimental group</p> <p>c. independent variable</p> <p>d. experiment</p> <p>e. control group</p> |
|--|---|

Use each of the terms below just once to complete the pages.

Experimental results	experiment(s)	hypothesis	laws
Scientific journals	theory	valid	verify

When (9) _____ are reported in (10) _____ the _____ other scientists may try to (11) _____ the _____ results by repeating the (12) _____. Usually when a(n) (13) _____ is supported by data from several scientists, it is considered (14) _____. Over time, a hypothesis that is supported by many observations and experiments becomes a (15) _____. Some well-established facts of nature, such as gravity, are recognized as (16) _____

89

Continued Section 1.3 The Nature of Biology

In your text book, read about kinds of research.

Complete the chart by checking the correct column for each example.

Example	Quantitative Research	Qualitative (Descriptive) Research
17. Numerical data		
18. Field study of hunting behavior		
19. Thermometer, balance scale, stopwatch		
20. Testable hypothesis		
21. Measurements from controlled Lab Experiments		
22. Purely observational data		
Binoculars, tape recorder, camera		

Complete each statement.

23. In order for scientific research to be universally understood, scientists report measurements in the _____.
24. This system of measurement is abbreviated _____.
25. This system is a _____ system in which measurements are expressed in multiples of _____ and _____ of a basic unit.

Scientific Method Video

Name _____

SUNSCREEN (Scientific Method)

PURPOSE: Your team must come up with a purpose or question to investigate (independent variable). Two possibilities are

- * SPF (use the SAME brand but look at different SPFs for their effectiveness)
- * Brand (use the SAME SPF but compare different brands)

RESEARCH

- From your OWN experience and knowledge: What does SPF mean and why is it important in terms of rating the effectiveness of sunscreens?
- From your team members:
 - o What does the sun do to your skin?
 - o How does sunscreen work? (Include how long it takes to start working.)

HYPOTHESIS: (Must be in an If Then statement)

MATERIALS/PROCEDURE

Your team needs to decide AND LIST the materials and each step in the procedure.

DATA TABLE

TRIAL	OBSERVATIONS (Quantitative or Qualitative)
1	
2	
3	

REMEMBER:

QUANTITATIVE data involves taking numerical data thus requires **TIMING** the

Reaction

QUALITATIVE data involves a description of what you observed.

CONCLUSION

- Accept or reject your Hypothesis and **EXPLAIN WHY**.
- Explain why you selected to collect the type of data (quantitative or qualitative) you did.
- Describe 3 **ERRORS** that occurred. For example having sunscreens of different ages might have affected your results.
- What was the Independent Variable and what was the Dependent Variable?
- Overall statement based on results from the activity.

TRIAL	OBSERVATIONS (Quantitative or Qualitative)
1	
2	
3	

Conclusion