

**SECTION 1-1 REVIEW**

**WHAT IS SCIENCE?**

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**VOCABULARY REVIEW   Define the following terms.**

- 1. **science** \_\_\_\_\_  
\_\_\_\_\_
- 2. **data** \_\_\_\_\_  
\_\_\_\_\_
- 3. **hypothesis** \_\_\_\_\_  
\_\_\_\_\_
- 4. **inference** \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE   Write the correct letter in the blank.**

- \_\_\_\_\_ 1. Which of the following is not a goal of science?
  - a. to investigate and understand the natural world
  - b. to explain events in the natural world
  - c. to use data to support your own beliefs
  - d. to use scientific explanations to make useful predictions
- \_\_\_\_\_ 2. Information gathered from observing a plant that grows 3 cm over a two week period may be recorded as
  - a. quantitative data.      b. qualitative data.      c. nonsense data.      d. All of the above.
- \_\_\_\_\_ 3. A controlled experiment allows the scientist to isolate and test
  - a. a conclusion.    c. a mass of information.
  - b. several variables at once.    d. a single variable.
- \_\_\_\_\_ 4. A(n) \_\_\_\_\_ is a logical interpretation based on prior knowledge or experience.
  - a. inference    c. hypothesis
  - b. observation    d. theory
- \_\_\_\_\_ 5. Which of the following is not a way that scientists generate hypotheses?
  - a. using informed, creative imagination                                      c. using logical inferences
  - b. using prior knowledge    d. using a feeling about what should occur

**SHORT ANSWER Answer the questions in the space provided.**

1. What is the goal of science? (p.3) \_\_\_\_\_  
 \_\_\_\_\_

2. What is an observation? (p.4) \_\_\_\_\_  
 \_\_\_\_\_

3. What is an inference? (p.4) \_\_\_\_\_  
 \_\_\_\_\_

4. What do scientists assume about the universe? (p.6) \_\_\_\_\_  
 \_\_\_\_\_

5. Is the following statement true or false? A community must use its shared values to make decisions about scientific issues. Explain your answer. (p.7) \_\_\_\_\_  
 \_\_\_\_\_

6. Complete the table below. It will help you to better understand the difference between **qualitative** and **quantitative** data.

Type of Data	Data Involves	Examples
_____ _____	Numbers	_____ _____
_____ _____	Characteristics that cannot be easily counted or measured in some way	_____ _____

7. Is a scientific hypothesis accepted if there is no way to test it? Explain your answer. (p.5) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**SECTION 1-2 REVIEW**

**HOW SCIENTISTS WORK**

**VOCABULARY REVIEW** Define the following terms.

- 1. **spontaneous generation** \_\_\_\_\_  
\_\_\_\_\_
- 2. **controlled experiment** \_\_\_\_\_  
\_\_\_\_\_
- 3. **manipulated variable** \_\_\_\_\_  
\_\_\_\_\_
- 4. **responding variable** \_\_\_\_\_  
\_\_\_\_\_
- 5. **theory** \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. Ideally, how many variables should an experiment test at a time?  
a. one                                      b. two                                      c. three                                      d. None of the above.
- \_\_\_\_\_ 2. In a(n) \_\_\_\_\_ experiment, only one variable is changed at a time, while other variables are kept the same.  
a. virtual                                      b. unrealistic                                      c. controlled                                      d. hypothetical
- \_\_\_\_\_ 3. Of the following steps in a scientific investigation, the first to be done is usually  
a. experimenting.                      b. forming a theory.                      c. producing a model.                      d. hypothesizing.
- \_\_\_\_\_ 4. A theory  
a. is always true.                                      c. is the opening statement of an experiment.  
b. may be revised or replaced.                                      d. is a problem to be solved.
- \_\_\_\_\_ 5. The term *spontaneous generation* means that  
a. living things can arise from nonliving things.                      c. living things arise from other living things.  
b. a maggot is part of a life cycle of a fly.                                      d. living things evolve over time.

**SHORT ANSWER Answer the questions in the space provided.**

1. Describe a historical experiment performed to test the theory of spontaneous generation. Use either Redi's (p.9) or Pasteur's experiment. (p.12) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Use the numbers 1 - 5 to place the following steps of an experimental investigation in the correct order. One is the first step and five is the last step. (pp.8-10)

- \_\_\_\_\_ a. draw a conclusion                      \_\_\_\_\_ b. set up a controlled experiment  
\_\_\_\_\_ c. ask a question                      \_\_\_\_\_ d. form a hypothesis                      \_\_\_\_\_ e. record data

3. How are a hypothesis and a theory related? (p.13) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. A scientist wanted to study the effect of a medicine on the blood pressure of rats. She set up an experiment in which the experimental group consisted of rats that were injected with a salt solution containing the medicine. What should the control group consist of? (p.9) \_\_\_\_\_  
\_\_\_\_\_

What were the manipulated and responding variables in her experiment? (p.9) \_\_\_\_\_  
\_\_\_\_\_

5. Examine the drawing of the owl. In each space below, provide an observation that would support the inference given or provide an inference that could be derived from the observation given.



**Observations**

**Inferences**

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| _____                                | Owls live in trees.              |
| _____                                | Owls feed on mice.               |
| _____                                | Owls kill prey with their claws. |
| The owl has wings.                   | _____                            |
| Both of the owl's eyes face forward. | _____                            |
| It is night.                         | _____                            |

**SECTION 1-3 REVIEW**

**STUDYING LIFE**

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**VOCABULARY REVIEW** Circle the term that does not belong in each of the following groups, and briefly explain why it does not belong.

- 1. rocks, cells, **metabolism**, growth \_\_\_\_\_  
\_\_\_\_\_
- 2. **metabolism**, photosynthesis, respiration, diversity of life \_\_\_\_\_  
\_\_\_\_\_
- 3. cell division, cell specialization, internal environment, development \_\_\_\_\_  
\_\_\_\_\_
- 4. water content, insulation, reproduction, homeostasis \_\_\_\_\_  
\_\_\_\_\_
- 5. eggs, fertilization, unicellular organisms, offspring \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. Which of the following is not a characteristic of all living things?
  - a. growth and development
  - b. response to the environment
  - c. ability to move
  - d. ability to reproduce
- \_\_\_\_\_ 2. The sum of all of the chemical processes that occur in an organism is called
  - a. growth.
  - b. metabolism.
  - c. development.
  - d. homeostasis.
- \_\_\_\_\_ 3. Which of the following terms includes all of the others?
  - a. biologist
  - b. botanist
  - c. zoologist
  - d. microbiologist
- \_\_\_\_\_ 4. The process by which an adult body form arises is called
  - a. fertilization.
  - b. metabolism.
  - c. development.
  - d. respiration.
- \_\_\_\_\_ 5. Many of the organisms living today have not been identified because they are
  - a. very large.
  - b. extinct.
  - c. not composed of cells.
  - d. residents of deep ocean waters.

**SHORT ANSWER** Answer the questions in the space provided.

1. List at least six characteristics of living things. (p.15) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Why do organisms require energy? (p.19) \_\_\_\_\_  
\_\_\_\_\_
3. What are the eight levels of organization that biologist study? (p.21) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. What is the difference between sexual and asexual reproduction? (p.17) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Is reproduction essential to the survival of an individual organism? Explain your answer. \_\_\_\_\_  
\_\_\_\_\_
6. **Critical Thinking** A female frog has a genetic trait that prevents it from producing eggs. How likely is it that this trait will spread through the frog population? Explain your answer. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**STRUCTURES AND FUNCTIONS** Explain how the drawing below illustrates the characteristics of life.



\_\_\_\_\_  
\_\_\_\_\_

**SECTION 1-4 REVIEW**

**TOOLS AND PROCEDURES**

**VOCABULARY REVIEW** Circle the term that does not belong in each of the following groups, and briefly explain why it does not belong.

- 1. **compound light microscope**, TEM, centrifuge, SEM \_\_\_\_\_  
\_\_\_\_\_
- 2. Celsius thermometer, stage, nosepiece, objective lens \_\_\_\_\_  
\_\_\_\_\_
- 3. magnification, power of magnification, resolution, mass \_\_\_\_\_  
\_\_\_\_\_
- 4. second, micrometer, meter, kilometer \_\_\_\_\_  
\_\_\_\_\_
- 5. goggles, safety glasses, food, science lab \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. To observe a small living organism, a scientist might use a(n)  
a. electronic balance.    b. TEM.    c. SEM.    d. light microscope.
- \_\_\_\_\_ 2. One limitation of the scanning electron microscope is that it cannot be used to  
a. examine specimens smaller than cells.  
b. view living specimens.  
c. produce an enlarged image of a specimen.  
d. produce an image of the surface of a specimen.
- \_\_\_\_\_ 3. A microscope with a 10x ocular lens and a 25x objective lens has a total power of magnification equal to  
a. 2.5x.    b. 35x.    c. 250x.    d. 2,500x.
- \_\_\_\_\_ 4. The SI base unit for mass in the metric system is  
a. meter.    b. ounce.    c. liter.    d. gram.
- \_\_\_\_\_ 5. The SI prefix that represents 1,000 times the base unit is  
a. deci.    b. centi.    c. kilo.    d. milli.

**SHORT ANSWER** Answer the questions in the space provided.

1. Arrange the following parts in the order that matches the light path through a light microscope: (p.1070)

specimen, eyepiece, objective lens, body tube, illuminator. \_\_\_\_\_

\_\_\_\_\_

2. What is the single most important rule for your safety while working in a laboratory? (p.28) \_\_\_\_\_

\_\_\_\_\_

3. Write the abbreviation for each of the following units: (p.1069) kilometer, centimeter, millimeter, milliliter, gram.

\_\_\_\_\_

What is the mathematical relationship between all units in the metric system? \_\_\_\_\_

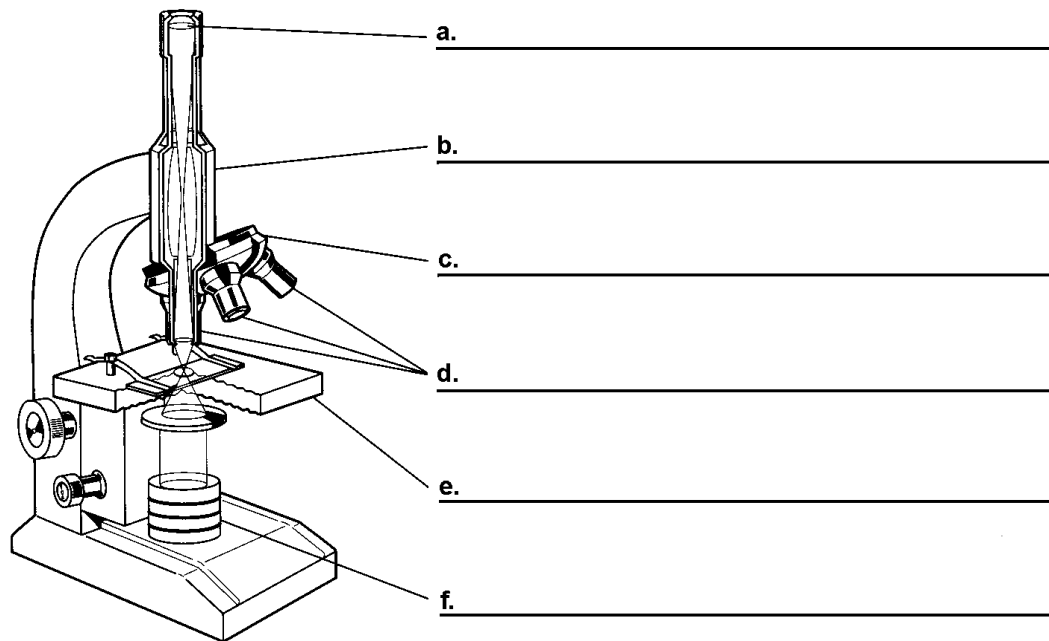
\_\_\_\_\_

4. **Critical Thinking** A group of scientists want to determine whether the bacteria they are studying have viruses inside them. Which type of microscope should they use? Explain your answer. (p.26) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

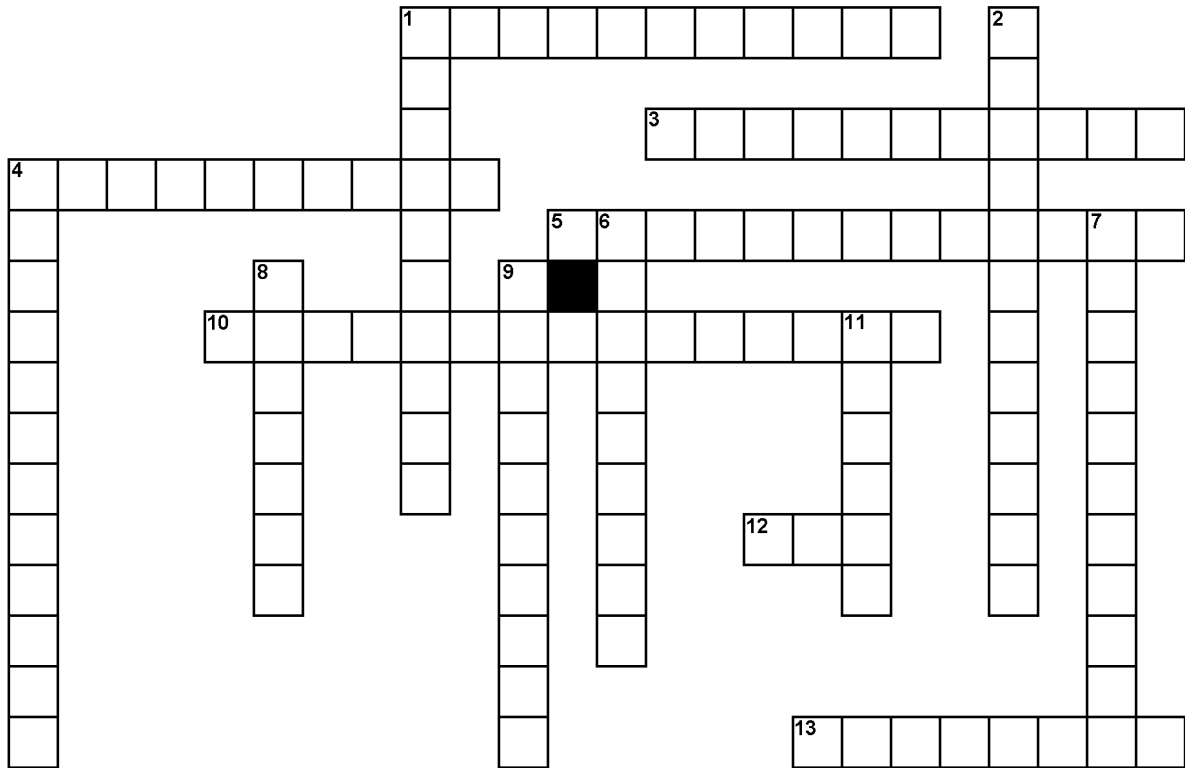
**STRUCTURES AND FUNCTIONS** Label each part of the figure in the spaces provided. Use the following terms: objective lenses, body tube, illuminator, stage, eyepiece, nosepiece. (p.1070)





## VOCABULARY - CHAPTER 1

The crossword puzzle is a simple way to master some of the more important vocabulary terms in this chapter.



**Across**

- 1. eats existing food; not an autotroph
- 3. maintaining an internal balance to a changing environment
- 4. how clearly objects may be seen when magnified
- 5. the enlargement of an object
- 10. process where cells become specialized
- 12. the abbreviation for deoxyribonucleic acid
- 13. using a small group to represent the whole group

**Down**

- 1. a possible explanation about a problem
- 2. numerical data; not qualitative
- 4. creating offspring by sexual or asexual \_\_\_\_\_
- 6. produces its own food; not a heterotroph
- 7. using one's senses
- 8. the science that studies living things
- 9. all of the chemical activities within a cell
- 11. another name for the eyepiece of a microscope

Here are some words in this puzzle that are **not** found in Chapter 1: **autotroph, ocular, heterotroph, differentiation, sampling, and resolution.** To complete this puzzle correctly, use a reference source to find their definition.