

Directed Reading B

Section: Exploring Physical Science

THAT'S SCIENCE!

Everyday Science

Circle the letter of the best answer for each question.

1. What is knowledge gained by observation that can be tested?

- a. physical science
- b. geology
- c. physics
- d. science

2. What is science all about?

- a. making observations and giving answers
- b. getting good grades and right answers
- c. observing science and reading answers
- d. making observations and asking questions

WHAT IS PHYSICAL SCIENCE?

3. What is the study of nonliving matter?

- a. biology
- b. geology
- c. physical science
- d. physics

4. What do we study in physical science?

- a. science methods
- b. knowledge and matter
- c. matter and energy
- d. living things

Directed Reading B *continued*

Chemistry—A Matter of Reactions!

Circle the letter of the best answer for each question.

9. What is the study of the structure and properties of matter called?
- a. meteorology
 - b. geology
 - c. physics
 - d. chemistry

Physics—A Matter of Energy

10. What do physicists study?
- a. energy and how it affects matter
 - b. how matter behaves and changes
 - c. light and how it affects energy
 - d. how energy has no effect

PHYSICAL SCIENCE: ALL AROUND YOU

Meteorology

11. What is the study of the weather and climate called?
- a. geology
 - b. physics
 - c. physical science
 - d. meteorology
12. What do meteorologists need to know about physical science?
- a. atmosphere and tornadoes
 - b. pressure, motion, and force
 - c. weather and tornadoes
 - d. energy, weather, and atmosphere

Skills Worksheet

Directed Reading B

Section: Scientific Methods

WHAT ARE SCIENTIFIC METHODS?

Circle the letter of the best answer for each question.

1. What are the ways that scientists answer questions and solve problems?
 - a. physical science
 - b. physics
 - c. observations
 - d. scientific methods

ASKING A QUESTION

2. Look at the figure outlining the steps that scientific methods are based on. Which of the following is NOT a step in the process called scientific methods?
 - a. testing the hypothesis
 - b. answering a question
 - c. drawing conclusions
 - d. making observations
3. What does asking questions help scientists to do?
 - a. find answers with less investigation
 - b. focus the purpose of an investigation
 - c. ask questions and memorize answers
 - d. know where to find answers
4. What is the word for using the senses to gather information?
 - a. investigation
 - b. measurement
 - c. knowledge
 - d. observation

Directed Reading B *continued*

FORMING A HYPOTHESIS

Circle the letter of the best answer for each question.

9. What is a testable explanation based on observation called?
- a. scientific law
 - b. physical science
 - c. theory
 - d. hypothesis
10. What should be true of a good hypothesis?
- a. It should be reusable.
 - b. It should be testable.
 - c. It should be an answer.
 - d. It should be true.

A Possible Answer from Nature

11. What observations led Czarnowski to form his hypothesis?
- a. how easily penguins propel themselves
 - b. how easily boats propel themselves
 - c. how badly penguins propel themselves
 - d. how badly boats propel themselves
12. What was Czarnowski's hypothesis about propulsion systems?
- a. Propeller-driven systems are always efficient.
 - b. Penguin-like systems are less efficient.
 - c. Penguin-like systems are more efficient.
 - d. Propeller-driven systems are more efficient.

Directed Reading B *continued*

Controlled Experiments

Read the words in the box. Read the sentences. **Fill in each blank with the word or phrase that best completes the sentence.**

controlled experiment experimental group variable

16. A group that is the same as the control group except for one factor is a(n) _____.
17. A factor that makes the experimental groups different from the control group is a(n) _____.
18. An experiment that compares results using a control group is a(n) _____.

Circle the letter of the best answer for each question.

19. Besides controlled experiments, how else can you test a hypothesis?
- a. Observe penguins swimming.
 - b. Give a presentation about your hypothesis.
 - c. Write a paper about your hypothesis.
 - d. Make or build what you want to test.

Testing *Proteus*

20. What is any piece of information gathered through experimentation called?
- a. a factor
 - b. a particle
 - c. an idea
 - d. data