

Scantron
Version

The Nature of Science

SECTION 1.1 Earth Science

In your textbook, read about the scope of Earth science.

Select the term below to identify the major area of Earth science that studies each subject.

- A. astronomy B. meteorology C. geology D. oceanography E. environmental science

- _____ 1. Physical and chemical properties of the oceans
- _____ 2. Objects beyond Earth's atmosphere
- _____ 3. Materials that make up Earth
- _____ 4. Forces and processes that produce weather
- _____ 5. Earth's neighbors, distant stars, and other cosmic bodies
- _____ 6. Rocks, glacial movements, and clues to Earth's history
- _____ 7. Creatures that inhabit salty water
- _____ 8. Interactions of organisms and their surroundings.

Circle the letter of the choice that best completes the statement or answers the question.

9. What subspecialty of Earth science studies patterns of weather over a long period of time?
a. geochemistry b. climatology c. soil science d. paleontology
10. Geochemistry is the study of which of the following?
a. habitats of organisms
b. effects of internal processes on Earth's surface
c. Earth's composition and processes
d. how the moon and stars affect people's lives
11. What subspecialty of Earth science studies ancient environments?
a. paleontology b. geochemistry c. marine geology d. climatology
12. Which of the following might an environmental scientist study?
a. earthquakes and mountain building
b. the remains of organisms that once lived on Earth
c. the kinds of matter in the universe
d. how organisms interact with each other and their environments
13. In what field do scientists study the processes that change Earth's composition?
a. climatology b. astrophysics c. geochemistry d. paleontology

SECTION 1.1 *Earth Science, continued*

In your textbook, read about Earth's systems and Earth science in your everyday life.

For each statement below, Select A) TRUE B) FALSE

TRUE FALSE

- A B 14. The area from Earth's surface to its center is the geosphere.
- A B 15. The water in Earth's oceans, seas, lakes, rivers, and glaciers makes up the atmosphere.
- A B 16. The blanket of gases that surround Earth is the atmosphere.
- A B 17. The mantle is the rigid outer shell of Earth.
- A B 18. The atmosphere contains about 78 percent oxygen.
- A B 19. About three percent of all freshwater on Earth is in glaciers, lakes, rivers, and groundwater.
- A B 20. The hydrosphere includes all organisms on Earth as well as the environments in which they live.
- A B 21. The atmosphere, biosphere, hydrosphere, and geosphere are interdependent systems.

Answer the following questions.

22. Of the five major areas of specialization in Earth Science, Select which one is NOT a specialization

A. Astronomy

B. Meteorology

C. Geology

D. Biology

E. Environmental Science

23. _____ is the application of scientific discoveries

A. Science

B. Technology

C. Scientific Methods

24. _____ is a process or steps-taken, to produce reliable results to answer a specific quest.

A. Science

B. Technology

C. Scientific Methods

SECTION 1.2 Methods of Scientists

In your textbook, read about the nature of scientific investigations.

For each item in Column A, ~~Select~~ the letter of the matching item in Column B.

Column A

- _____ 25. Testable explanation for an observation
- Experiment* 26. Organized procedure that involves making measurements and observations
- _____ 27. Factor in an experiment that can be manipulated by the experimenter
- _____ 27. Factor in an experiment that can change if other factors are changed
- _____ 28. Factor that does not change during an experiment
- _____ 29. Standard for comparison that shows that the results of an experiment are actually due to the condition being tested

Column B

- a. independent variable
- b. constant
- c. hypothesis
- d. dependent variable
- e. control experiment

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

- A fire extinguisher B. laboratory glassware C. loose clothing D. safety goggles E. spill

Wear (30) _____ and a safety apron during any activity or experiment in a science lab. Tie back long hair and (31) _____ before you begin any investigation. Never use (32) _____ as food or drink containers. Know the location and proper use of the (33) _____, safety shower, fire blanket, first aid kit, and fire alarm. Report any (34) _____, accident, or injury to your teacher immediately.

SECTION 1.2 *Methods of Scientists, continued*

In your textbook, read about measurement and scientific notation.

Select which WORD is NOT the correct unit

Celsius centimeter cubic centimeter cubic meter gram per cubic centimeter
 gram per millimeter Kelvin kilogram kilometer liter meter
 milliliter millimeter newton second square centimeter square meter

Measurement	A.	B.	C.	D.
35. length	Centimeter	Kilometer	Squaremeter	meter
36. area	Square centimeter	meter	Square meter	—
37. volume	milliliter	Liter	Cubic meter	Newton
38. mass	Gram/cubic centimeter	gram	Kilogram	—
39. weight	Liter	Newton	—	—
40. density	Gram/cubic centimeter	gram	gram/Kiloliter	—
41. time	Seconds	Hour	Celsius	Century
42. temperature	Kelvin	Celsius	Fahrenheit	Newton

SKIP

Express each number in scientific notation.

- 1,000,000 _____
 0.01 _____
 325 _____
 0.00025 _____
 6421 _____

SKIP Convert each number expressed in scientific notation to a number with no exponent.

- 1×10^3 _____
 5×10^2 _____
 9.99×10^8 _____
 9.99×10^{-8} _____

SECTION 1.3 Communication in Science

In your textbook, read about communicating results.

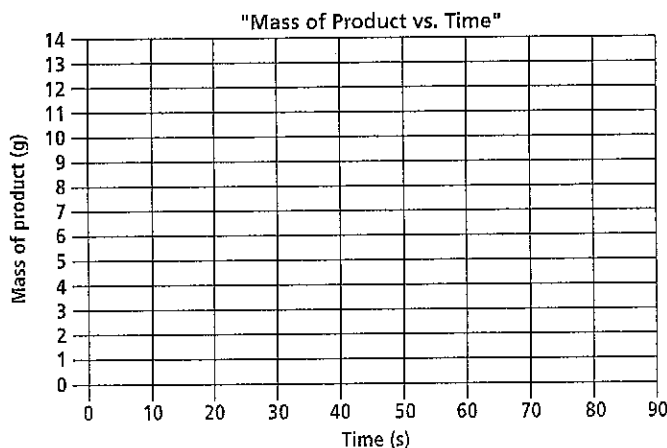
Give three reasons why communicating scientific data is important to others.

Describe two uses for the lab reports you write after doing an activity or experiment.

The table below shows the results of an experiment. Use the data in the table to answer the following questions.

Time (s)	10	20	30	40	50	60	70	80
Mass of product (g)	1.5	3.2	4.3	6.0	7.7	9.2	10.4	12.1

* On the grid below, plot the mass of product versus time. Connect the data points with a line.



43. What is the independent variable in this experiment?

A. Mass of Product B. Time C. Neither

44. What is the dependent variable in this experiment?

A. Mass of Product B. Time C. Neither

45. Describe the relationship between the dependent and independent variables in this experiment.

A. Mass increases with time B. Mass decreases with time
C. Time increases with Mass D. Time decreases with mass

SECTION 1.3 *Communication in Science, continued*

In your textbook, read about models, theories, and laws.

Use the following terms to complete the statements, *by Selecting the Best Term*

- A. law B. model C. theory

46. A scientific _____ is an idea, a system, or a mathematical expression that is similar to an idea being explained.

47. A scientific _____ is an explanation based on many observations during repeated experiments.

48. A scientific _____ is a basic fact that describes the behavior of a natural phenomenon.

Answer the following questions.

49. Which _____ model of the solar system ^{was} developed by early astronomers?

A. Geocentric Solar system

B. Heliocentric Solar System

50. What is the current model of our solar system?

A. Geocentric

B. Heliocentric

C. Egocentric

What three conditions must be satisfied for a scientific theory to be valid?

Under what conditions can a scientific model or theory change?
