

## 1.6: Exercises

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### 1.1: The Scope of Chemistry

1. Identify each as either matter or not matter.

- a. a book
- b. hate
- c. light
- d. a car
- e. a fried egg

**Answer**

- a. matter
- b. not matter
- c. not matter
- d. matter
- e. matter

2. Name an example of a field that is not considered a science.

3. Which of the following fields of study are branches of science?

- a. biophysics (a mix of biology and physics)
- b. art
- c. business

**Answer**

- a. yes
- b. no
- c. no

4. Which of the following fields of study are branches of science?

- a. accounting
- b. geochemistry (a mix of geology and chemistry)
- c. astronomy (the study of stars and planets [but not the earth])

**Answer**

- a. no
- b. yes
- c. yes

### Additional Exercises

5. Describe the scientific method.

**Answer**

Simply stated, the scientific method includes three steps: (1) stating a hypothesis, (2) testing the hypothesis, and (3) refining the hypothesis.

6. "A hypothesis is just a guess." Is this an adequate definition?

**Answer**

No, it is not. A hypothesis is a proposed explanation for something that can actually be tested. It is based on data that is available. A guess is not necessarily able to be tested.

7. Why do scientists need to perform experiments?

**Answer**

Scientists perform experiments to test their hypotheses because sometimes the nature of natural universe is not obvious.

8. What is the scientific definition of a theory? How is this word misused in general conversation?

**Answer**

A theory in science is an explanation of some aspect of the natural world that has been substantiated through repeated experiments or testing. In general conversation, a theory is an idea that has not been tested.

9. What is the scientific definition of a law? How does it differ from the everyday definition of a law?

**Answer**

A scientific law is a specific statement that is thought to be never violated by the entire natural universe. Everyday laws are arbitrary limits that society puts on its members.

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