

Chapter 1 Review Answers

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1. Energy - The ability to do work.
2. Hypothesis - An educated guess.
3. Theory - A widely accepted scientific idea which cannot be proven or disproven.
4. Homeostasis - The process of maintaining a "steady state".
5. Scientific method - A process used to solve problems or develop an understanding of natural events.
6. Biology - The study of living organisms.
7. Scientific theory - A scientific idea with a great deal of experimental evidence.
8. Chemical reaction - Associated with energy changes.
9. Pseudoscience - Deception through the use of scientific language to claim scientific validity.
10. Control group - An experimental group that has not been changed or manipulated.

11. Three requirements of a hypothesis:
 1. It must be testable.
 2. It must be falsifiable.
 3. It is a proposed explanation for a set of observations.

12. Steps in the Scientific Method:
 1. Observation - Gathering data and noticing patterns.
 2. Question - Asking why something happens.
 3. Hypothesis - Proposing a tentative explanation.
 4. Prediction - Determining what should happen if the hypothesis is correct.
 5. Experiment - Testing the prediction.

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6. Analysis - Evaluating the results to draw conclusions.

13. Difference between Independent and Dependent Variables:

- Independent Variable: The variable that is changed or controlled in a scientific experiment to test its effects on the dependent variable.

- Dependent Variable: The variable being tested and measured in an experiment.

14. Science, Non-science, and Pseudoscience:

- Science relies on testable and falsifiable hypotheses supported by empirical evidence.

- Non-science (like philosophy or religion) addresses questions beyond empirical testing.

- Pseudoscience presents claims that appear scientific but lack empirical support and are not falsifiable.

15. Order of Biological Organization:

1. Molecule

2. Organelle

3. Cell

4. Tissue

5. Organ

6. Organ system

7. Organism

8. Population

9. Community

10. Ecosystem

11. Biosphere