

## 1.9: End of Chapter Key Terms

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### Elemental Beginnings: Foundations of Physics and Chemistry Key Terms

1. **Control Group:** A group in an experiment that does not receive the experimental treatment or change in the independent variable, serving as a baseline to compare the effects of the independent variable.
2. **Dependent Variable:** The variable that is measured or observed in an experiment, potentially influenced by changes in the independent variable.
3. **Experiments:** Systematic methods of making observations or measurements under controlled conditions, ideally with only one variable altered at a time.
4. **Hypothesis:** A tentative explanation for an observation or set of observations that can be tested through further investigation.
5. **Independent Variable:** The variable that the scientist deliberately changes to observe its effect, representing the cause in a cause-and-effect relationship.
6. **Junk Science or Pseudoscience:** Research or claims presented as scientific but lacking rigorous standards and peer review, often with predetermined conclusions or biased interpretations.
7. **Law:** A verbal or mathematical description of a phenomenon that allows for general predictions, describing what happens without explaining why.
8. **Manipulative Experiment:** An experiment in which a single variable is deliberately changed under controlled conditions to isolate its effect on another variable.
9. **Negative Controls:** Parts of an experiment designed to give a negative result, showing that the experiment is capable of producing a negative result when it is supposed.
10. **Observational Science:** A scientific approach where phenomena are studied without manipulation, often due to the impracticality of controlled experiments, such as in astronomy.
11. **Observations:** Initial steps in the scientific method, which can be qualitative (describing properties or occurrences without numbers) or quantitative (measurements consisting of numbers and units).
12. **Positive Controls:** Parts of an experiment designed to give a positive result, demonstrating that the experiment is capable of producing a positive result when it is supposed to.
13. **Qualitative Observations:** Descriptions of properties or occurrences that do not rely on numerical measurements, such as the color of sulfur crystals.
14. **Quantitative Observations:** Measurements that consist of both a number and a unit, such as the melting point of a substance.
15. **Scientific Method:** A procedure for searching for answers to questions and solutions to problems through making observations, formulating hypotheses, designing experiments, and collecting data in repeated cycles.
16. **Spontaneous Generation:** An outdated hypothesis suggesting that non-living material can spontaneously transform into living organisms, disproven by experiments such as those conducted by Louis Pasteur.
17. **Theory:** A broad explanation for a phenomenon that has been well-tested, supported by repeated experiments, and widely accepted, explaining why nature behaves as it does.
18. **Treatment Group(s):** Groups in an experiment where the independent variable is manipulated to various degrees to observe the changes that occur in the dependent variable.

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