

Introduction to Chemistry

Section 3 Scientific Methods

Main Idea _____

Details _____

Skim Section 3 of your text. Write three questions that come to mind from reading the headings, boldface terms, and illustration captions.

1. _____
2. _____
3. _____

New Vocabulary

Use your text to define each term.

scientific method _____

qualitative data _____

quantitative data _____

hypothesis _____

experiment _____

independent variable _____

dependent variable _____

control _____

conclusion _____

theory _____

scientific law _____

Section 3 Scientific Methods (continued)

Main Idea

Details

A Systematic Approach

Use with pages 12–15.

Compare *the terms qualitative data and quantitative data.*

Compare *the terms independent variable and dependent variable.*

Analyze *whether the characteristics listed below represent qualitative data, quantitative data, or both.*

Characteristic	Type of Data
the rate at which a candle burns	
a blanket with varying degrees of softness	
sand with a reddish-brown color	

Sequence *the steps of the scientific method.*

- _____ Plan and set up one or more experiments to test one variable at a time.
- _____ Gather information using both qualitative data and quantitative data.
- _____ Observe, record, and analyze experimental data.
- _____ Develop a hypothesis, or tentative explanation based on observations.
- _____ Develop a theory or a scientific law.
- _____ Compare findings to the hypothesis, and form a conclusion.

Section 3 Scientific Methods (continued)

Main Idea

Use with page 15.

Details

Analyze *Figure 13 and the caption information on Molina and Rowland's model. Explain in words what the model visually predicts about the effect of ultraviolet radiation on CFCs.*

SYNTHESIZE

Design a simple experiment using the scientific method. Give your experiment a descriptive title. Limit the number of variables you test. Write the steps of the experiment based on the scientific method, including but not limited to hypothesis, analysis, and conclusions. Draw a simple sketch of your experiment, if appropriate, and label the independent, dependent, and control variables.

Title: _____

Steps: _____

Independent variable(s): _____

Dependent variable(s): _____

Control variable(s): _____