



Underlined words and phrases are to be filled in by students on the Note-taking Worksheet.

## Section 1 How Science Works

- A. Science—process of trying to understand the world
- B. Archaeology—branch of science that studies the tools and other cultural remains of humans
1. Tools—could be stone or bone
  2. Weapons—for hunting or defense
  3. Rock drawings—clues to everyday life
  4. Remains of buildings
  5. Pottery—whole or shards; can more accurately date culture
- C. Technology—knowledge gained from science used to conduct scientific studies; radar surveys can help study archaeological sites.
- D. Archaeological excavations or digs are important ways of studying a site.
1. As artifacts are found, they are mapped, photographed, registered, and cataloged.
  2. In a lab, chemical analysis can help determine the age of artifacts.

### Discussion Question

How are archaeological sites found? *Many are accidentally found; some are found through research.*



CHAPTER  
1

Content Outline  
for Teaching

# The Nature of Science

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## Section 2 Scientific Problem Solving

- A. Scientific methods—solving problems using step-by-step procedures
- B. Scientific problem—question without an answer
1. Scientists make observations using their senses.
    - a. What do you see? Did it change?
    - b. Is there and odor?
    - c. Did the texture change?
  2. Observations lead to inferences—conclusions about observations
- C. After identifying a problem, a hypothesis is developed based on observation, research, or prior knowledge.
- D. An experiment, a series of carefully planned steps, tests the hypothesis.
1. Independent variable—the factor that is changed in the experiment
  2. Dependent variable—the factor or outcome to be measured in the experiment
  3. Constants are factors that stay the same during the experiment.
  4. A standard used for comparison is a control.
- E. Data are collected during the experiment through numeric measurements and observations.
- F. After analyzing data, a scientist makes a conclusion, which is valid only after multiple experiments support it.

### Discussion Question

What is a hypothesis based on? *observation, research, prior knowledge*

