



Directed Reading for Content Mastery

Section 1 ■ How Science Works

Directions: In the blank at the left, write the letter of the term that correctly completes each sentence.

- _____ 1. Pottery and tools used by ancient people are examples of _____.
a. chemicals b. artifacts
- _____ 2. _____ dug around the site help determine the size of the site.
a. Artifacts b. Holes and ditches
- _____ 3. Archaeologists study the _____ of ancient people.
a. cultural remains b. dreams
- _____ 4. Computers, cameras, and radar surveys are examples of _____.
a. hypotheses b. technology
- _____ 5. An archaeological dig is called a(n) _____.
a. vacation b. excavation
- _____ 6. _____ are scientists who study Earth processes.
a. Geologists b. Gemologists
- _____ 7. _____ is a type of technology that lets scientists “see” what’s beneath
the ground.
a. Radar b. Radio
- _____ 8. _____ is the process of trying to understand the world.
a. Technology b. Science
- _____ 9. _____ is the use of knowledge gained through science to make
products and tools people can use.
a. Technology b. Archaeology
- _____ 10. The age of artifacts can be determined by _____.
a. radar b. chemical analysis
- _____ 11. Archaeology covers a time span of more than _____ years.
a. 10,000 b. 3 million

SECTION 1

Reinforcement

How Science Works

Directions: Answer the following questions on the lines provided.

1. Explain the difference between science and technology.

2. Name some types of technology.

3. Why is it necessary to excavate an archaeological site slowly and carefully?

4. What is the focus of each of the two main branches of archaeology?

5. Circle the tools that are likely to be used at an archaeological site.

small shovel paint brush video camera chain saw washing machine

6. How are most archaeological sites discovered?

7. What do maps of an archaeological site show?

8. List archaeological activities that are performed at the site and activities that are performed in the laboratory.

At the Site

In the Lab

SECTION
1**Enrichment****La Brea Tar Pits**

For centuries, crude oil has seeped to Earth's surface through fissures in an area of Los Angeles, California, creating pools of sticky asphalt. These pools, the La Brea Tar Pits, contain fossils and bones from as long as 40,000 years ago.

During the 1800s, people who lived near the area considered them to be only a smelly nuisance. Then, in 1895, the bones of a saber-tooth tiger were dug out of the asphalt, and six years later the first scientific excavation began. Since that time, millions of bones have been collected.

Excavation Today

Today, excavators take an even more scientific approach to their work. Instead of simply digging up and removing the bones from the ground, scientists carefully analyze the bones and how they relate to one another. This gives them a clearer picture of what life was like long ago, when the area was cooler and moister.

Excavations are divided into 3-foot-square grids. This allows the excavators to accurately record the location of each fossil found. In earlier years, the digging was crudely done, and many smaller fossils were missed. Workers today use smaller tools such as chisels and trowels, even tiny brushes and dental picks. In case they miss anything, the sediment is screened to find microfossils.

Including plants, mollusks, and insects, over 650 different species have been identified by their fossil remains at La Brea. Paleontologists—scientists who study fossils—have learned that some of the plants and animals that formerly occupied the area still live there. On the other hand, many species, such as camels, mammoths, land sloths, and giant storklike birds, are found nowhere in North America today.

Creating the Tar Pits

How did the bones get there? The asphalt, as noted above, is very sticky. Careless animals were trapped like flies on flypaper. They eventually died from starvation and dehydration. In time they were completely covered by the asphalt which acts like a natural preservative, saturating bones and protecting them from the ravages of wind, water, and weather. The fossils have been so well preserved that La Brea fossils are now the standard to which other fossils for that period from around the world can be compared.

It is through the careful gathering of data and the keeping of accurate records that a body of scientific knowledge can be accumulated. With that knowledge comes a better understanding of the world and our place in it.

1. Give two reasons so many fossils have been found at La Brea compared to other places.

2. Give two reasons why information about fossils is more accurate today than earlier in the twentieth century.

3. Why have La Brea fossils become the world's standard for fossils from that time period?

4. Some of the fossils found at La Brea are those of extinct animals. Can you think of any reasons why other identified animals may no longer live in the area?

**Note-taking
Worksheet****The Nature of Science****Section 1 How Science Works**

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

Section 2 Scientific Problem Solving