Print Form

Name _____ Class _____ Date _____

Essential Question

What are the consequences of technology?

Preview Before you begin this chapter, think about the Essential Question. Understanding how the Essential Question connects to your life will help you understand the chapter you are about to read.

Connect to Your Life

1. Technology is a way of using science for practical purposes. Think of the technology you use from the time you wake up in the morning until you arrive at school. List the items in the table along with the effect of each. Then write whether the effect is positive or negative.

Ways Technology Affects My Life

Technology	Its Effect	Positive or Negative?

2. Now reach an overall conclusion as to whether technology always improves people's lives. What, if any, problems can it cause?

_____

_____

Connect to the Chapter

3. Preview the chapter by skimming the chapter's heads, photographs, and graphics. In the table below, name a Stone Age technological advance for each category. Then predict how that technology contributed to human economic and cultural development.

	Technology	Prediction
Preparing food		
Hunting		
Shelter		
Protection from the weather		

4. Read the chapter. Then review the predictions you listed in the table. Circle the predictions that were correct.

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Connect to myStory: Mary Leakey: Exploring the Stone Age

1. Think about your favorite activities and places. How are they similar to or different from young Mary Nicol's?

_____

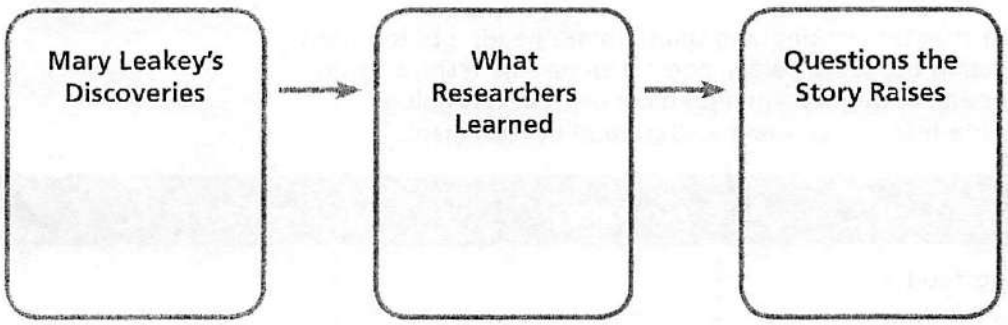
_____

_____

2. Now think about the questions Mary wanted to answer with her work, and the skills she used to search for answers. What questions about the world would you like to answer in the future? What skills would you use to search for answers? Use this table to compare your main questions and skills with Mary's.

Your Questions and Skills	Mary Leakey's Questions and Skills

3. In the first box of the flowchart below, list the discoveries Mary Nicol Leakey made. Then list what researchers learned from those discoveries. Finally, list questions Mary Leakey's story raises about the search for early humans.



4. How do you think technology affects the effort to understand *Homo Habilis* and other early humans?

_____

_____

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Word Wise

Sentence Builder Complete the sentences using the information you learned in this section and the key terms below.

anthropology	archaeologist
prehistory	fossil
geologist	artifact

1. Mary Leakey and other researchers studied people who lived long ago in _____.

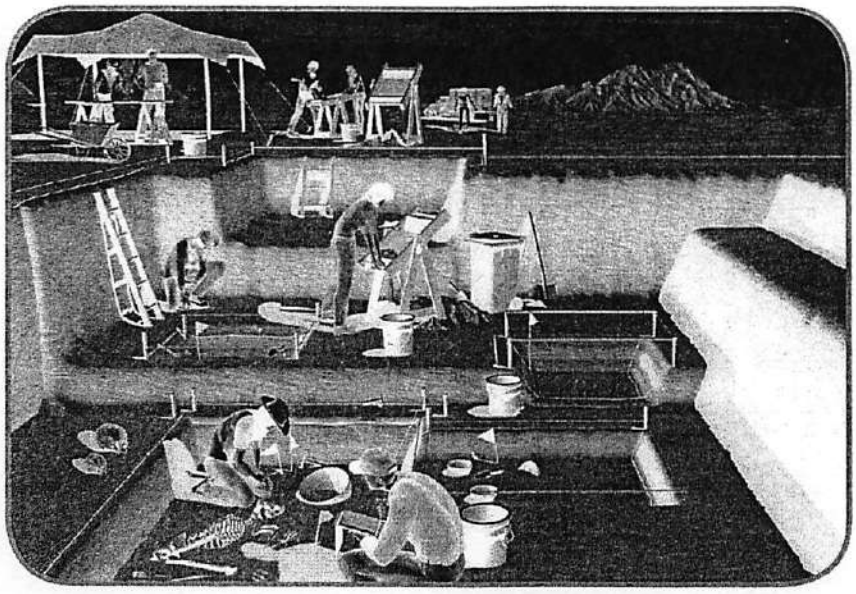
2. Scientists in the field of _____ study how ancient human groups behaved.

3. An _____ examines the things humans from long ago left behind.

4. A rocklike copy of a plant, a feather, or a bone is a _____.

5. A tool, pot, or weapon from early human society is called an _____.

6. A _____ uses layering as a way to determine the age of prehistoric objects.



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Take Notes

Identify Main Ideas and Details Scientists who study the earliest human history are on a journey of discovery. For each part of the journey listed below, give details that tell more about the main idea.

Studying the Distant Past		
Many kinds of scientists work together to study early humans.	Scientists have discovered several important clues to early human life.	Many questions still exist about the beginnings of human life.

Modern archaeologists make use of both hand tools and advanced scientific equipment. Why do you think both types of technology are necessary?

_____

_____

_____

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Word Wise

Word Map Follow the model below to make a word map. The key term *technology* is in the center oval. Write the definition in your own words at the upper left. In the upper right, list Characteristics, which means words or phrases that relate to the term. At the lower left, list Non-Characteristics, which means words and phrases that would *not* be associated with it. In the lower right, draw a picture of the key term *or* use it in a sentence.

Definition in Your Own Words

the tools and skills people use to solve problems and accomplish goals

Characteristics

- made by people
- stone in Paleolithic Era
- cutting tools
- use of fire

Technology

Non-Characteristics

- animals
- plants
- bodies of water
- weather

Picture or Sentence

Now use the word map below to explore the meaning of the word *hunter-gatherers*. You may use your student text, a dictionary, and/or a thesaurus to complete each of the four sections.

Definition in Your Own Words

Characteristics

hunter-gatherers

Non-Characteristics

Picture or Sentence

Make word maps of your own on a separate piece of paper for these words: *culture* and *nomad*.

Name _____ Class _____ Date _____

Take Notes

Analyze Cause and Effect Use what you have read about hunter-gatherer societies to list ways that each change shown affected early human life.

Development of Tools	Use of Fire	Development of Language	Development of Culture
Because of tools, early humans could	Because of fire, early humans could	Because of language, early humans could	Because of culture, early humans could

Choose one technological advance from this section. How did that technology benefit Stone Age people? How could that technology have unexpected results?

_____

_____

_____

Name _____ Date _____ Class _____

STUDY GUIDE (continued) Chapter 1, Section 1

READ TO LEARN

Dating Early Artifacts *(page 20–21)*

History is the story of humankind. The story begins in ***prehistory,*** the time before people developed writing. Scientists have traced the beginning of ***hominids,*** or human beings and the humanlike creatures that came before them, to about 4.4 million years ago. Several kinds of scientists contribute to our understanding of prehistoric people. ***Anthropologists*** study the physical and cultural characteristics of humans and their ancestors. ***Paleontologists*** study fossil remains. ***Archaeologists*** investigate prehistoric life by studying the ***artifacts,*** or objects that were shaped by human hands, left behind by prehistoric people.

Scientists also have to find out the age of the remains and artifacts that they find. One technique that they use is ***radiocarbon dating.*** Once-living things contain small amounts of radioactive carbon, which decays at a known rate. Archaeologists can measure how much the carbon has decayed in organic remains and figure out when the animal or plant died. Scientists have also found a way to measure decay in chemicals other than carbon. In recent years scientists have used genetic material called DNA and analyze the rate of change in DNA over time. These studies have provided valuable information about the links between people today and their prehistoric ancestors.

1. **Why do scientists use radiocarbon dating?**

_____

_____

_____

Prehistoric Finds in Africa *(page 21)*

In 1992 scientists in Ethiopia, a country in East Africa, discovered the remains of human ancestors. By analyzing the fossils, they determined that they were about 4.4 million years old, belonging to the oldest direct human ancestor known.

In 1974 a team of scientists working just north of this site uncovered the 3.2 million-year-old skeleton of a hominid they nicknamed "Lucy." Since then the team of scientists has made other discoveries. In 1994 they put together a complete skull of a Lucy-like hominid. The skull provided evidence that the males and females in this hominid group were different sizes and that they could walk upright.

2. What was the significance of the discovery made in Ethiopia in 1992?

_____

_____

_____

Human Origins *(page 21)*

Scientists disagree about many aspects of the story of human beginnings. One theory says that the first hominids, such as those discovered in Ethiopia, date back 4.4 million years. They were known as *Australopithecus.* They lived in the forests of eastern and southern Africa. They ate fruits, leaves, and nuts, and they probably ate fish and meat from animals killed by lions and other predators. *Australopithecus* were most likely ***nomads***—moving constantly in search of food. Fossils show that they lived in family groups in temporary camps. No evidence shows that they made or used tools.

Scientists are not sure whether a direct relationship connected *Australopithecus* and human beings. They also do not know when hominids became truly human. Scientists use the Latin word *Homo,* which means "human," to name hominids and all later human beings as well. They divided *Homo* into three species that are different somewhat in body structures. The first species was *Homo habilis,* or "person with ability," who lived up to about 1.5 million years ago. The second species was *Homo erectus,* or "person who walks upright." It was followed between 100,000 and 200,000 years ago by *Homo sapiens,* or "person who thinks." All people today belong to the species *Homo sapiens.*

3. To what species do people today belong?

_____

_____

_____

The Ice Ages *(page 24)*

Between 2 million and 10,000 years ago, Earth went through four long periods of cold climate, known as the Ice Ages. Much of the earth during this time was covered by huge ice sheets called glaciers. Only the middle latitudes were warm enough to support human and animal life. As the glaciers formed, the level of the oceans dropped. As a result, some areas that were once separated by water were connected by land bridges. One such land bridge connected Asia and North America at the Bering Strait.

Early human beings adapted to the environment of the Ice Ages in several ways. Some moved to warmer places. Others found ways for keeping warm by using clothing and fire. Those who did not adapt died from the cold or hunger.

4. What were the Ice Ages?

_____

_____

_____

Human Culture *(page 24)*

Clothing and fire had become part of the ***culture,*** or way of life, of prehistoric people. Culture also includes people's language, religious beliefs, and achievements in art and music. One early aspect of culture was the use of tools. At first, early people used digging sticks to dig roots out of the ground. Then they made tools of stone, which helped them skin small animals and cut meat. When early people improved their ***technology***—the skills and useful knowledge available for collecting material and making the objects necessary for survival—they began to create specialized tools, such as spear points.

Scientists use the name Stone Age to refer to the period before writing was started. During this time people used stone tools. The Stone Age is divided into the Old Stone Age (Paleolithic period), which lasted from about 2.5 million years ago to about 12,000 B.C., the Middle Stone Age (the Mesolithic period), which lasted from 12,000 B.C. to about 8000 B.C., and the New Stone Age (Neolithic period). The New Stone Age lasted from about 8000 B.C. to 5000 B.C.

5. What is the Stone Age?

_____

_____

_____

Paleolithic Hunter-Gatherers *(page 25)*

Homo habilis lived during the Old Stone Age. They are probably the oldest hominids known to make tools. They lived in Africa from about 2.5 million to 1.5 million years ago. Much of the evidence for *Homo habilis* comes from the work of Louis and Mary Leakey and their son Richard at sites in the eastern part of Africa.

Homo erectus lived from 1.8 million to about 30,000 years ago. They lived in a variety of environments. Scientists believe that at first they were mostly food gatherers. By about 500,000 years ago, they became hunters. They also learned how to use fire to keep warm and to cook, and they learned how to make clothing from animal skins.

Scientists have evidence that *Homo habilis* may have been the earliest to move from Europe and Asia. *Homo erectus* moved from Africa to Europe and Asia, including Indonesia and China.

At first *Homo erectus* used gestures and grunts to communicate. By about 50,000 B.C., prehistoric people began to use language. This allowed people to communicate more efficiently and to exchange ideas. Language also made it possible for the one generation to pass its culture on to the younger generation, who could then build upon the knowledge of the past.

6. How did *Homo erectus* obtain food?

_____

_____

_____

Daily Lecture Notes

Lesson 1-1

Did you know? Early hominids called *Australopithecus* were primarily herbivores, but the development of stone tools—which allowed them to hack and rip flesh from animal carcasses—meant that later hominids, such as *Homo habilis*, could eat meat regularly.

Discovery of Early Humans in Africa

Outline

I. Dating Early Artifacts *(pages 20–21)*

A. Archaeologists and physical anthropologists face the problem of assigning a definite age to remains.

B. Among the techniques for determining the age of remains are radiocarbon dating and DNA analysis.

II. Prehistoric Finds in Africa *(page 21)*

A. In 1992 a paleontologist in Ethiopia discovered 4.4 million-year-old fossils belonging to the oldest direct human ancestor known.

B. In 1974, again in Ethiopia, two scientists uncovered a nearly complete skeleton of a 3.2 million-year-old hominid nicknamed "Lucy."

C. In 1994 a reasonably complete skull of a Lucy-like hominid provided evidence that Lucy-like hominids could walk upright.

III. Human Origins *(pages 21–24)*

A. *Australopithecus*, the first prehuman hominid, lived in eastern and southern Africa about 4.4 million years ago.

B. Scientists divide *Homo*—the genus of humans—into three species: *Homo habilis, Homo erectus,* and *Homo sapiens.*

turn

IV. The Ice Ages *(page 24)*

A. Between 2 million and 10,000 years ago, Earth experienced four periods called the Ice Ages, during which only the middle latitudes were warm enough to support human and animal life.

B. Early human beings adapted to the Ice Ages by migrating to warmer places or developing strategies for keeping warm.

V. Human Culture *(page 24)*

A. Culture includes the knowledge a people have, the language they speak, the ways in which they eat and dress, their religious beliefs, and their achievements in art and music.

B. One of the earliest cultural developments was the use of stone tools, which has led historians to apply the name "Stone Age" to the period before writing was widely established.

VI. Paleolithic Hunter-Gatherers *(pages 24–25)*

A. *Homo habilis,* who lived during the Paleolithic, are the oldest hominids known to have manufactured tools.

B. *Homo erectus,* who began as food gatherers but became hunters by developing weapons, utilized fire and made clothing from animal skins.

C. Scientists disagree on when prehistoric peoples migrated out of Africa, but there is general agreement that *Homo erectus* was established in China and Europe by about 400,000 years ago.

D. By 50,000 B.C. prehistoric peoples had developed language, which allowed them to exchange ideas and pass their knowledge on to the next generation.

Discussion Question

Discuss the contributions of each of the following to the development of human culture: tool making, fire, and language. (Tools allowed humans to use their natural resources more effectively; fire allowed humans to keep warm, cook food, and live safe from predators; language allowed humans to share information with each other.)

end

Daily Lecture Notes

Lesson 1-2

Did you know? The discovery of a Neanderthal skull in 1856 provided crucial evidence for the theory of evolution because it showed that other types of hominids had once existed and become extinct. First proposed by Charles Darwin in 1859, the theory of evolution holds that all living things are the product of millions of years of inherited change.

The Appearance of *Homo Sapiens*

Outline

I. The Neanderthals *(pages 26–27)*

A. Neanderthals, probably the first *Homo sapiens,* began spreading into Europe and Asia about 100,000 years ago.

B. Neanderthals' tool making ability was more sophisticated than that of *Homo erectus.*

C. Most Neanderthals lived in groups of 35 to 50 people, either in open-air camps or in non-permanent dwellings such as caves.

D. The Neanderthals were culturally advanced in their care for the sick and aged and in their treatment of the dead.

II. *Homo Sapiens Sapiens (pages 27–29)*

A. Most scientists believe that modern humans, or *Homo sapiens sapiens* in Europe, originated in Africa about 50,000 years ago and soon came to dominate almost every continent.

B. The Cro-Magnons, the earliest *Homo sapiens sapiens,* brought with them improved technology and a more sophisticated culture.

C. The advances the Cro-Magnons made in tool making transformed human life by making long-distance travel possible and increasing the supply of food.

D. The Cro-Magnons' increased food supply had political and social consequences, including the cooperation of unrelated bands of Cro-Magnons and the evolution of rule-making and leadership.

turn

E. Cro-Magnons at first lived in temporary structures, but as their hunting methods advanced, they built permanent communities.

F. The Cro-Magnons were accomplished cave painters and sculptors.

III. The Neolithic Revolution *(pages 29–31)*

A. During the Neolithic period and immediately after, people gradually shifted from gathering and hunting food to producing food.

B. The Mesolithic period, during which people domesticated animals and developed farming tools, was a forerunner of the Neolithic Revolution.

C. In different parts of the world, the Neolithic Revolution took place at different times and involved different crops and animals.

D. Farming assured a steady food supply and enabled people to stay longer in one place, but it also required harder and longer work.

E. With the development of agriculture, people began to settle in agricultural villages instead of wandering as nomads.

F. Neolithic farmers made agricultural work easier and more productive by inventing the plow and fertilizing their fields.

G. The relatively steady food supply quickened the pace of technological advance and led to the development of calendars, land ownership, and warfare.

H. Neolithic people believed in deities with the power to hurt or help people.

Discussion Question

In what ways did the development of agriculture make life better or worse for the Neolithic people? (Answers will vary. Students should demonstrate an understanding of the changes in Neolithic life caused by the development of agriculture.)

end