CHAPTER 1

The Peopling of the World, Prehistory–2500 B.C.

Previewing Main Ideas

INTERACTION WITH ENVIRONMENT As early humans spread out over the world, they adapted to each environment they encountered. As time progressed, they learned to use natural resources.

Geography *Study the time line and the map. Where in Africa did human life begin?*

SCIENCE AND TECHNOLOGY The earliest peoples came up with new ideas and inventions in order to survive. As people began to live in settlements, they continued to develop new technology to control the environment.

Geography *Early humans began to migrate about 1.8 million years ago. What paths did these migrations take?*

ECONOMICS Early humans hunted animals and gathered wild plant foods for 3 to 4 million years. Then about 10,000 years ago, they learned to tame animals and to plant crops. Gradually, more complex economies developed.

Geography *Early settlement sites often were near rivers. Why might they have been located there?*

INTEGRATED TECHNOLOGY

eEdition
- Interactive Maps
- Interactive Visuals
- Interactive Primary Sources

INTERNET RESOURCES
Go to **classzone.com** for:
- Research Links
- Internet Activities
- Primary Sources
- Chapter Quiz
- Maps
- Test Practice
- Current Events

4,000,000 B.C.
First hominids appear in Africa.
(early hominid footprint)

1,600,000 B.C.
Homo erectus appears.

200,000 B.C.
Neanderthals appear.

WORLD

4,000,000 B.C.

2,500,000 B.C.
Paleolithic Age begins.
(Paleolithic lunar calendar) ▶

Prehistoric World to 2500 B.C.

40,000 B.C.
Cro-Magnons emerge.

8000 B.C.
Neolithic Age begins; first agriculture takes place.

3000 B.C.
Bronze Age well-established in Mesopotamia.

2600 B.C.
City of Ur flourishes in Sumer.

2500 B.C.

Interact *with* History

How would these tools help early humans survive?

You have joined a team of scientists on an expedition to an ancient site where early humans once lived. The scientists' goal is to search for evidence that might unlock the mysteries of the past.

You're an eyewitness to their astounding discovery—human-made tools about 5,000 years old. They belonged to the so-called Ice Man, discovered in 1991. (See History in Depth, page 15.)

The remnants of a backpack

A birch-bark container

An axe

A dagger and its sheath

EXAMINING *the* ISSUES

- **What did early humans need to do to survive?**
- **What physical actions would these tools help humans do?**

As a class, discuss these questions. In your discussion, think about recent tools and inventions that have changed people's lives. As you read about the ancestors of present-day humans, notice how early toolmakers applied their creativity and problem-solving skills.

1

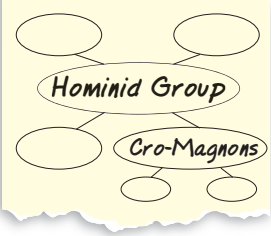
Human Origins in Africa

MAIN IDEA	WHY IT MATTERS NOW	TERMS & NAMES
INTERACTION WITH ENVIRONMENT Fossil evidence shows that the earliest humans originated in Africa and spread across the globe.	The study of early human remains and artifacts helps in understanding our place in human history.	• artifact • culture • hominid • Paleolithic Age • Neolithic Age • technology • *Homo sapiens*

SETTING THE STAGE What were the earliest humans like? Many people have asked this question. Because there are no written records of prehistoric peoples, scientists have to piece together information about the past. Teams of scientists use a variety of research methods to learn more about how, where, and when early humans developed. Interestingly, recent discoveries provide the most knowledge about human origins and the way prehistoric people lived. Yet, the picture of prehistory is still far from complete.

Scientists Search for Human Origins

TAKING NOTES
Categorizing Use a diagram to list advances of each hominid group.



Written documents provide a window to the distant past. For several thousand years, people have recorded information about their beliefs, activities, and important events. Prehistory, however, dates back to the time before the invention of writing—roughly 5,000 years ago. Without access to written records, scientists investigating the lives of prehistoric peoples face special challenges.

Scientific Clues Archaeologists are specially trained scientists who work like detectives to uncover the story of prehistoric peoples. They learn about early people by excavating and studying the traces of early settlements. An excavated site, called an archaeological dig, provides one of the richest sources of clues to the prehistoric way of life. Archaeologists sift through the dirt in a small plot of land. They analyze all existing evidence, such as bones and artifacts. Bones might reveal what the people looked like, how tall they were, the types of food they ate, diseases they may have had, and how long they lived. **Artifacts** are human-made objects, such as tools and jewelry. These items might hint at how people dressed, what work they did, or how they worshiped.

Scientists called anthropologists study **culture**, or a people's unique way of life. Anthropologists examine the artifacts at archaeological digs. From these, they re-create a picture of early people's cultural behavior. (See Analyzing Key Concepts on culture on the following page.)

Other scientists, called paleontologists, study fossils—evidence of early life preserved in rocks. Human fossils often consist of small fragments of teeth, skulls, or other bones. Paleontologists use complex techniques to date ancient fossil remains and rocks. Archaeologists, anthropologists, paleontologists, and other scientists work as a team to make new discoveries about how prehistoric people lived.

Analyzing Key Concepts

Culture

In prehistoric times, bands of humans that lived near one another began to develop shared ways of doing things: common ways of dressing, similar hunting practices, favorite animals to eat. These shared traits were the first beginnings of what anthropologists and historians call *culture*.

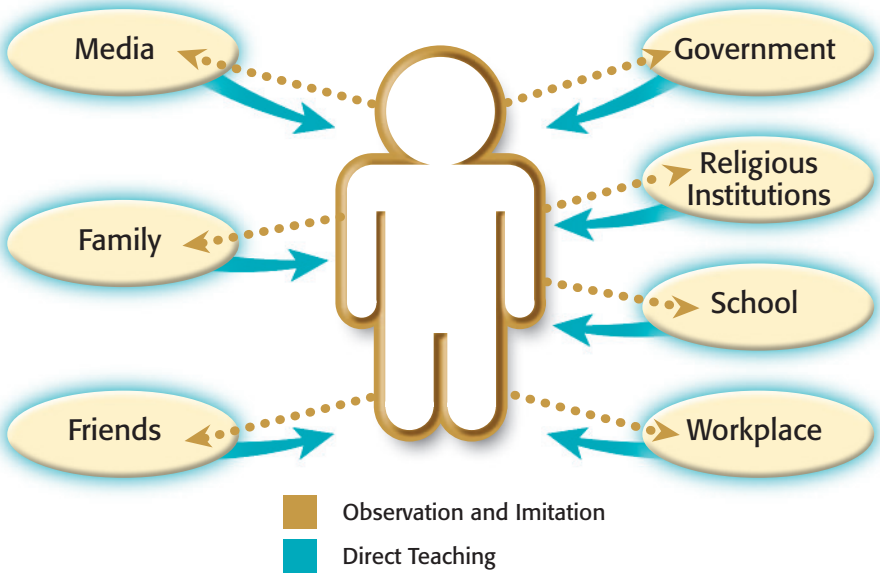
Culture is the way of life of a group of people. Culture includes common practices of a society, its shared understandings, and its social organization. By overcoming individual differences, culture helps to unify the group.

Components of Culture

Common Practices	Shared Understandings	Social Organization
• what people eat • clothing and adornment • sports • tools and technology • social customs • work	• language • symbols • religious beliefs • values • the arts • political beliefs	• family • class and caste structure • relationships between individual and community • government • economic system • view of authority

How Culture Is Learned

People are not born knowing about culture. Instead, they must learn culture. Generally, individuals learn culture in two ways. First, they observe and imitate the behavior of people in their society. Second, people in their society directly teach the culture to them, usually through spoken or written language.

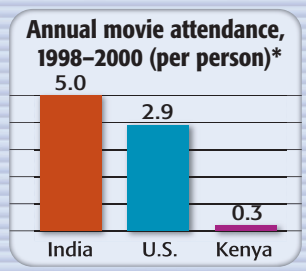


INTEGRATED TECHNOLOGY

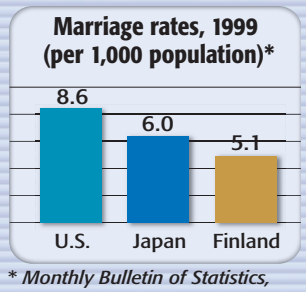
RESEARCH LINKS For more on culture, go to **classzone.com**

DATA FILE

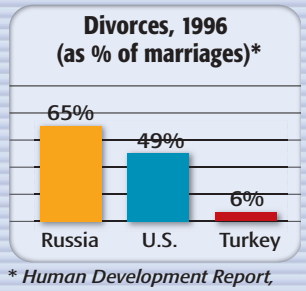
CULTURAL DATA



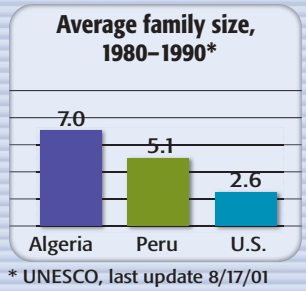
* UNESCO, last update 3/03



* *Monthly Bulletin of Statistics,* United Nations, October 2001



* *Human Development Report,* United Nations, 2000



* UNESCO, last update 8/17/01

Connect *to* Today

1. **Forming and Supporting Opinions** In U.S. culture, which shared understanding do you think is the most powerful? Why?

See Skillbuilder Handbook, page R20.

2. **Making Inferences** Judging from the divorce rate in Turkey, what components of culture do you think are strong in that country? Why?

Early Footprints Found In the 1970s, archaeologist Mary Leakey led a scientific expedition to the region of Laetoli in Tanzania in East Africa. (See map on page 10.) There, she and her team looked for clues about human origins. In 1978, they found prehistoric footprints that resembled those of modern humans preserved in volcanic ash. These footprints were made by humanlike beings now called australopithecines (aw•stray•loh•PIHTH•ih•synz). Humans and other creatures that walk upright, such as australopithecines, are called **hominids**. The Laetoli footprints provided striking evidence about human origins:

PRIMARY SOURCE

What do these footprints tell us? First, . . . that at least 3,600,000 years ago, what I believe to be man's direct ancestor walked fully upright. . . . Second, that the form of the foot was exactly the same as ours. . . . [The footprints produced] a kind of poignant time wrench. At one point, . . . she [the female hominid] stops, pauses, turns to the left to glance at some possible threat or irregularity, and then continues to the north. This motion, so intensely human, transcends time.

MARY LEAKEY, quoted in *National Geographic*

The Discovery of "Lucy" While Mary Leakey was working in East Africa, U.S. anthropologist Donald Johanson and his team were also searching for fossils. They were exploring sites in Ethiopia, about 1,000 miles to the north. In 1974, Johanson's team made a remarkable find—an unusually complete skeleton of an adult female hominid. They nicknamed her "Lucy" after the song "Lucy in the Sky with Diamonds." She had lived around 3.5 million years ago—the oldest hominid found to that date. (A)

MAIN IDEA

Drawing Conclusions

(A) Why were the discoveries of hominid footprints and "Lucy" important?

Hominids Walk Upright Lucy and the hominids who left their footprints in East Africa were species of australopithecines. Walking upright helped them travel distances more easily. They were also able to spot threatening animals and carry food and children.

These early hominids had already developed the opposable thumb. This means that the tip of the thumb can cross the palm of the hand. The opposable thumb was crucial for tasks such as picking up small objects and making tools. (To see its importance, try picking up a coin with just the index and middle fingers. Imagine all the other things that cannot be done without the opposable thumb.)

History Makers

The Leakey Family

The Leakey family has had a tremendous impact on the study of human origins. British anthropologists Louis S. B. Leakey (1903–1972) and Mary Leakey (1913–1996) began searching for early human remains in East Africa in the 1930s. Their efforts turned what was a sideline of science into a major field of scientific inquiry. Mary became one of the world's renowned hunters of human fossils.

Their son Richard; Richard's wife, Maeve; and Richard and Maeve's daughter Louise have continued the family's fossil-hunting in East Africa into the 21st century.

INTEGRATED TECHNOLOGY

RESEARCH LINKS For more on the Leakey family, go to **classzone.com**

The Old Stone Age Begins

The invention of tools, mastery over fire, and the development of language are some of the most impressive achievements in human history. Scientists believe these occurred during the prehistoric period known as the Stone Age. It spanned a vast length of time. The earlier and longer part of the Stone Age, called the Old Stone Age or **Paleolithic Age**, lasted from about 2.5 million to 8000 B.C. The oldest stone chopping tools date back to this era. The New Stone Age, or **Neolithic Age**, began about 8000 B.C. and ended as early as 3000 B.C. in some areas. People who lived during this second phase of the Stone Age learned to polish stone tools, make pottery, grow crops, and raise animals.

Hominid Development

Australopithecines

- 4 million to 1 million B.C.
- found in southern and eastern Africa
- brain size 500 cm^3 (cubic centimeters)
- first humanlike creature to walk upright

Homo habilis

- 2.5 million to 1.5 million B.C.
- found in East Africa
- brain size 700 cm^3
- first to make stone tools

Much of the Paleolithic Age occurred during the period in the earth's history known as the Ice Age. During this time, glaciers alternately advanced and retreated as many as 18 times. The last of these ice ages ended about 10,000 years ago. By the beginning of the Neolithic Age, glaciers had retreated to roughly the same area they now occupy.

***Homo habilis* May Have Used Tools** Before the australopithecines eventually vanished, new hominids appeared in East Africa around 2.5 million years ago. In 1960, archaeologists Louis and Mary Leakey discovered a hominid fossil at Olduvai (OHL•duh•vy) Gorge in northern Tanzania. The Leakeys named the fossil *Homo habilis,* which means "man of skill." The Leakeys and other researchers found tools made of lava rock. They believed *Homo habilis* used these tools to cut meat and crack open bones. Tools made the task of survival easier.

***Homo erectus* Develops Technology** About 1.6 million years ago, before *Homo habilis* left the scene, another species of hominids appeared in East Africa. This species is now known as *Homo erectus,* or "upright man." Some anthropologists believe *Homo erectus* was a more intelligent and adaptable species than *Homo habilis. Homo erectus* people used intelligence to develop **technology**—ways of applying knowledge, tools, and inventions to meet their needs. These hominids gradually became skillful hunters and invented more sophisticated tools for digging, scraping, and cutting. They also eventually became the first hominids to migrate, or move, from Africa. Fossils and stone tools show that bands of *Homo erectus* hunters settled in India, China, Southeast Asia, and Europe.

According to anthropologists, *Homo erectus* was the first to use fire. Fire provided warmth in cold climates, cooked food, and frightened away attacking animals. The control of fire also probably helped *Homo erectus* settle new lands.

Homo erectus may have developed the beginnings of spoken language. Language, like technology, probably gave *Homo erectus* greater control over the environment and boosted chances for survival. The teamwork needed to plan hunts and cooperate in other tasks probably relied on language. *Homo erectus* might have named objects, places, animals, and plants and exchanged ideas. B

MAIN IDEA

Recognizing Effects

B How did *Homo erectus* use fire to adapt to the environment?

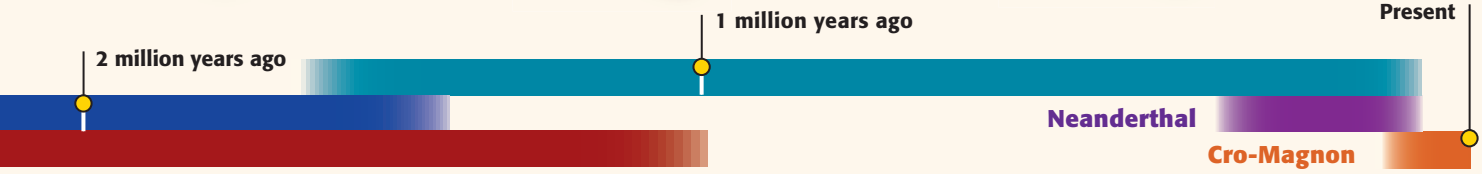
The Dawn of Modern Humans

Many scientists believe *Homo erectus* eventually developed into ***Homo sapiens***—the species name for modern humans. *Homo sapiens* means "wise men." While they physically resembled *Homo erectus, Homo sapiens* had much larger brains.

Homo erectus
- 1.6 million to 30,000 B.C.
- found in Africa, Asia, and Europe
- brain size 1,000 cm^3

Neanderthal
- 200,000 to 30,000 B.C.
- found in Europe and Southwest Asia
- brain size 1,450 cm^3
- first to have ritual burials

Cro-Magnon
- 40,000 to 8000 B.C.
- found in Europe
- brain size 1,400 cm^3
- fully modern humans
- created art



Scientists have traditionally classified Neanderthals and Cro-Magnons as early groups of *Homo sapiens*. However, in 1997, DNA tests on a Neanderthal skeleton indicated that Neanderthals were not ancestors of modern humans. They were, however, affected by the arrival of Cro-Magnons, who may have competed with Neanderthals for land and food.

Neanderthals' Way of Life In 1856, as quarry workers were digging for limestone in the Neander Valley in Germany, they spotted fossilized bone fragments. These were the remains of Neanderthals, whose bones were discovered elsewhere in Europe and Southwest Asia. These people were powerfully built. They had heavy slanted brows, well-developed muscles, and thick bones. To many people, the name "Neanderthal" calls up the comic-strip image of a club-carrying caveman. However, archaeological discoveries reveal a more realistic picture of these early hominids, who lived between 200,000 and 30,000 years ago.

Evidence suggests that Neanderthals tried to explain and control their world. They developed religious beliefs and performed rituals. About 60,000 years ago, Neanderthals held a funeral for a man in Shanidar Cave, located in northeastern Iraq. Some archaeologists theorize that during the funeral, the Neanderthal's family covered his body with flowers. This funeral points to a belief in a world beyond the grave. Fossil hunter Richard Leakey, the son of Louis and Mary Leakey, wrote about the meaning of this Neanderthal burial:

PRIMARY SOURCE

The Shanidar events . . . speak clearly of a deep feeling for the spiritual quality of life. A concern for the fate of the human soul is universal in human societies today, and it was evidently a theme of Neanderthal society too.

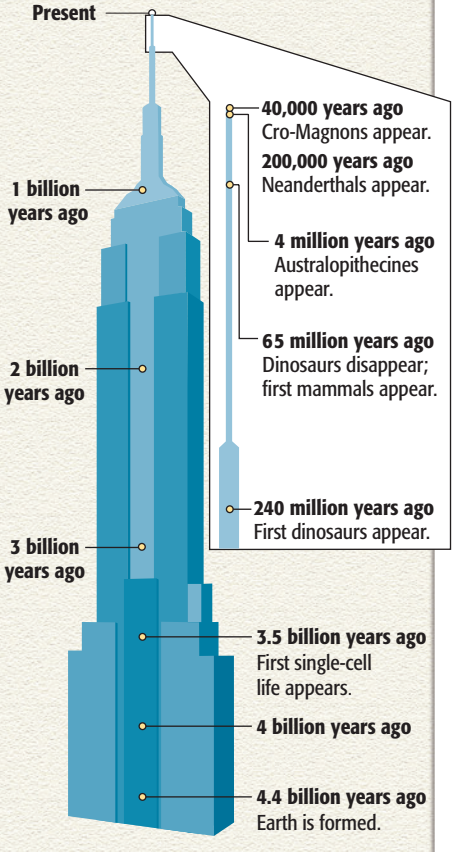
RICHARD E. LEAKEY, *The Making of Mankind*

Neanderthals were also resourceful. They survived harsh Ice Age winters by living in caves or temporary shelters made

History *in* Depth

Time Line of Planet Earth

Imagine the 102 stories of the Empire State Building as a scale for a time line of the earth's history. Each story represents about 40 million years. Modern human beings have existed for just a tiny percentage of the life of this planet.



of wood and animal skins. Animal bones found with Neanderthal fossils indicate the ability of Neanderthals to hunt in subarctic regions of Europe. To cut up and skin their prey, they fashioned stone blades, scrapers, and other tools. The Neanderthals survived for some 170,000 years and then mysteriously vanished about 30,000 years ago. C

Cro-Magnons Emerge About 40,000 years ago, a group of prehistoric humans called Cro-Magnons appeared. Their skeletal remains show that they are identical to modern humans. The remains also indicate that they were probably strong and generally about five-and-one-half feet tall. Cro-Magnons migrated from North Africa to Europe and Asia.

Cro-Magnons made many new tools with specialized uses. Unlike Neanderthals, they planned their hunts. They studied animals' habits and stalked their prey. Evidently, Cro-Magnons' superior hunting strategies allowed them to survive more easily. This may have caused Cro-Magnon populations to grow at a slightly faster rate and eventually replace the Neanderthals. Cro-Magnons' advanced skill in spoken language may also have helped them to plan more difficult projects. This cooperation perhaps gave them an edge over the Neanderthals.

MAIN IDEA

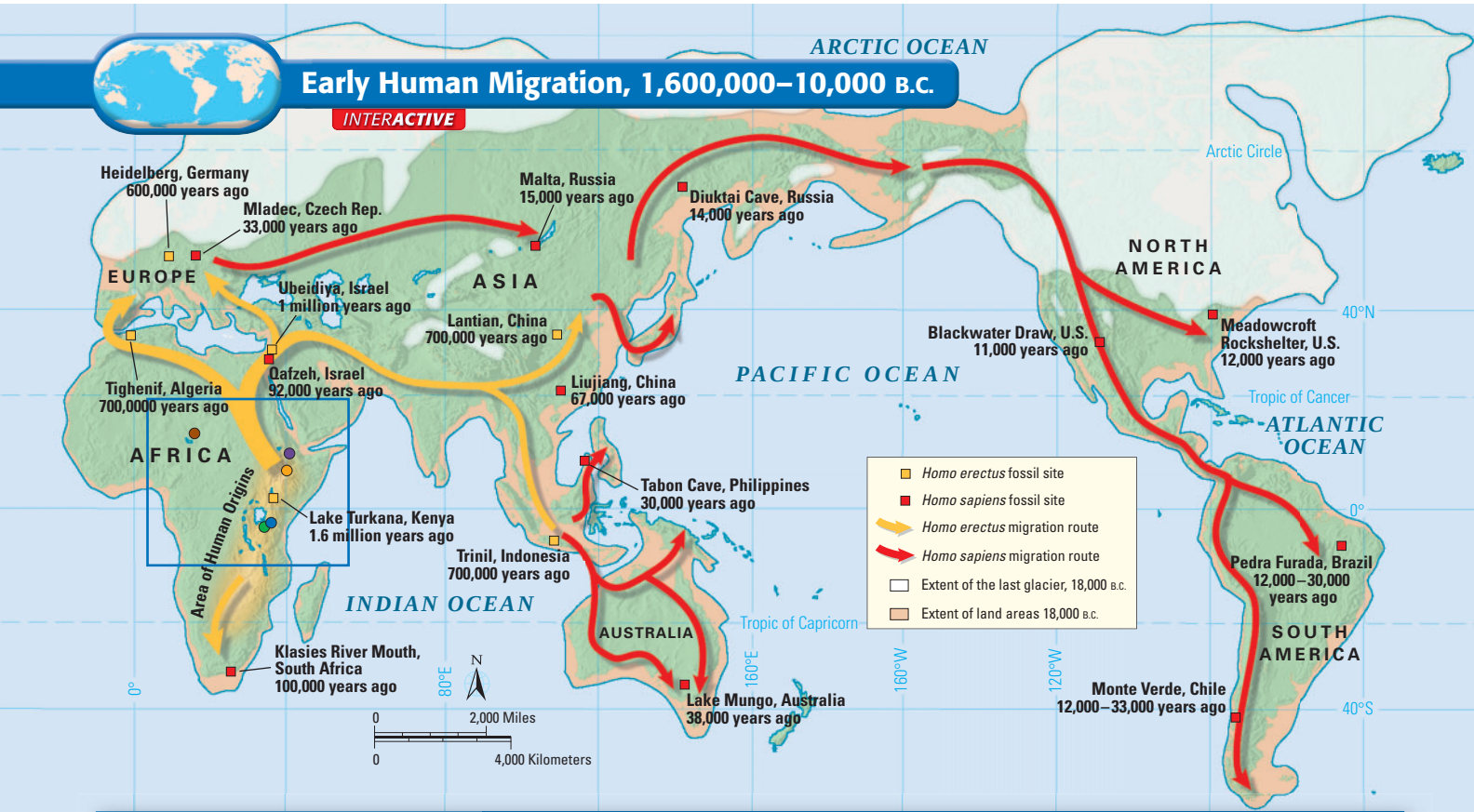
Comparing

C How were Neanderthals similar to people today?

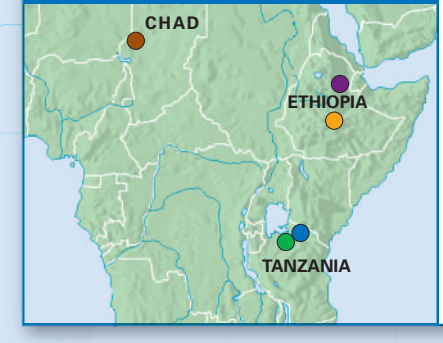
Interactive Feature

Early Human Migration, 1,600,000–10,000 B.C.

INTERACTIVE



Famous Finds



- **1960** At Olduvai Gorge, Tanzania, Louis Leakey finds 2-million-year-old **stone tools.**
- **1974** In Ethiopia, Donald Johanson finds "Lucy," a 3.5-million-year-old **hominid skeleton.**
- **1978** At Laetoli, Tanzania, Mary Leakey finds 3.6-million-year-old **hominid footprints.**
- **1994** In Ethiopia, an international team of scientists finds 2.33-million-year-old **hominid jaw.**
- **2002** In Chad, scientists announce discovery of a possible 6-million-year-old **hominid skull.**

GEOGRAPHY SKILLBUILDER: Interpreting Maps

1. **Movement** *To what continents did* Homo erectus *groups migrate after leaving Africa?*
2. **Human-Environment Interaction** *What do the migration routes of* Homo sapiens *reveal about their survival skills and ability to adapt?*

New Findings Add to Knowledge

Scientists are continuing to work at numerous sites in Africa. Their discoveries change our views of the still sketchy picture of human origins in Africa and of the migration of early humans out of Africa.

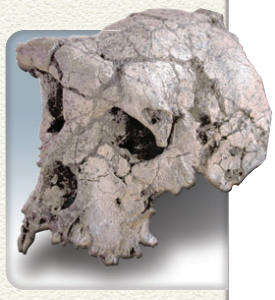
Fossils, Tools, and Cave Paintings Newly discovered fossils in Chad and Kenya, dating between 6 and 7 million years old, have some ape-like features but also some that resemble hominids. Study of these fossils continues, but evidence suggests that they may be the earliest hominids. A 2.33-million-year-old jaw from Ethiopia is the oldest fossil belonging to the line leading to humans. Stone tools found at the same site suggest that toolmaking may have begun earlier than previously thought.

New discoveries also add to what we already know about prehistoric peoples. For example, in 1996, a team of researchers from Canada and the United States, including a high school student from New York, discovered a Neanderthal bone flute 43,000 to 82,000 years old. This discovery hints at a previously unknown talent of the Neanderthals—the gift of musical expression. The finding on cave walls of drawings of animals and people dating back as early as 35,000 years gives information on the daily activities and perhaps even religious practices of these peoples.

Early humans' skills and tools for surviving and adapting to the environment became more sophisticated as time passed. As you will read in Section 2, these technological advances would help launch a revolution in the way people lived.

Connect *to* Today

Chad Discovery



In 2002, an international team of scientists announced the discovery of a 6- to 7-million-year-old skull in northern Chad. The skull is similar in size to a modern chimpanzee, with a similar brain capacity. (See photo.)

The team reported that the skull, nicknamed *Toumai,* or "hope of life," was the earliest human ancestor so far discovered. Its date is, in fact, millions of years older than the previous oldest-known hominid. The skull dates from the time that scientists believe the ancestors of humans split from the great apes.

Whether the skull is actually human or ape will require further study.

INTEGRATED TECHNOLOGY

INTERNET ACTIVITY Create a TV news special on the Chad skull. Include conflicting theories on its origin. Go to **classzone.com** for your research.

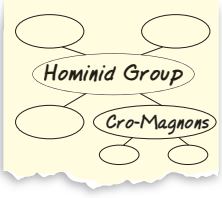
SECTION 1 ASSESSMENT

TERMS & NAMES **1.** For each term or name, write a sentence explaining its significance.

• artifact • culture • hominid • Paleolithic Age • Neolithic Age • technology • *Homo sapiens*

USING YOUR NOTES

2. Which advance by a hominid group do you think was the most significant? Explain.



MAIN IDEAS

3. What clues do bones and artifacts give about early peoples?

4. What were the major achievements in human history during the Old Stone Age?

5. How did Neanderthals and Cro-Magnons differ from earlier peoples?

CRITICAL THINKING & WRITING

6. RECOGNIZING EFFECTS Why was the discovery of fire so important?

7. MAKING INFERENCES Why will specific details about the physical appearance and the customs of early peoples never be fully known?

8. SYNTHESIZING How do recent findings keep revising knowledge of the prehistoric past?

9. WRITING ACTIVITY INTERACTION WITH ENVIRONMENT Write a **persuasive essay** explaining which skill—toolmaking, the use of fire, or language—you think gave hominids the most control over their environment.

CONNECT TO TODAY **CREATING AN ILLUSTRATED NEWS ARTICLE**

Research a recent archaeological discovery. Write a two-paragraph **news article** about the find and include an illustration.

Cave Paintings

Cave paintings created by primitive people are found on every continent. The oldest ones were made about 35,000 years ago. Cave paintings in Europe and Africa often show images of hunting and daily activities. In the Americas and Australia, on the other hand, the paintings tend to be more symbolic and less realistic.

Scholars are not sure about the purpose of cave paintings. They may have been part of magical rites, hunting rituals, or an attempt to mark the events during various seasons. Another theory is that cave paintings (especially the more realistic ones) may simply be depictions of the surrounding world.

INTEGRATED TECHNOLOGY

RESEARCH LINKS For more on cave paintings, go to **classzone.com**

▼ Cave Paintings at Tassili n'Ajer, Algeria

These paintings depict women, children, and cattle. Located in Algeria, the Tassili n'Ajer (tah•SEEL•ee nah• ZHEER) site contains more than 15,000 images. They depict shifts in climate, animal migrations, and changes in human life. The oldest paintings date back to about 6000 B.C. Images continued to be painted until around the second century A.D.

▼ Cave Paintings at *Cuevas de las Manos* in Argentina

Cuevas de las Manos (Cave of the Hands) is located in the Rio Pinturas ravine, northeast of Santa Cruz, Argentina. Its rock walls display numerous hand paintings in vivid colors. The Tehuelches (tuh•WEHL•cheez) people created the paintings between 13,000 and 9,500 years ago. The cave is about 78 feet deep and, at the entrance, about 48 feet wide and 32 feet high.

▲ Replica of Lascaux Cave Painting, France

Discovered in 1940 , the Lascaux (lah•SKOH) cave contains more than 600 painted animals and symbols. These works were probably created between 15,000 and 13,000 B.C. In 1963, the cave was closed to the public. The high volume of visitors and the use of artificial lighting were damaging the paintings. A partial replica of the cave was created and is visited by about 300,000 people a year.

▲ Australian Aboriginal Cave Painting

This Aboriginal cave painting is in Kakadu (KAH•kuh•doo) National Park, Australia. Aboriginal people have lived in this area for at least 25,000 years. The painting depicts a Barramundi (bahr•uh•MUHN•dee) fish and a Dreamtime spirit. In the Aboriginal culture, Dreamtime is a supernatural past in which ancestral beings shaped and humanized the natural world.

Connect *to* Today

1. **Analyzing Motives** Why do you think primitive peoples used the walls of caves for their paintings?

See Skillbuilder Handbook, page R15.

2. **Comparing and Contrasting** How are these paintings similar to or different from public murals created today?

2

Humans Try to Control Nature

MAIN IDEA	WHY IT MATTERS NOW	TERMS & NAMES
ECONOMICS The development of agriculture caused an increase in population and the growth of a settled way of life.	New methods for obtaining food and the development of technology laid the foundations for modern civilizations.	• nomad • hunter-gatherer • Neolithic Revolution • slash-and-burn farming • domestication

SETTING THE STAGE By about 40,000 years ago, human beings had become fully modern in their physical appearance. With a shave, a haircut, and a suit, a Cro-Magnon man would have looked like a modern business executive. However, over the following thousands of years, the way of life of early humans underwent incredible changes. People developed new technology, artistic skills, and most importantly, agriculture.

TAKING NOTES
Outlining Use an outline to organize main ideas and details.

Humans Try to Control Nature
I. Early Advances in Technology and Art
A.
B.
II. The Beginnings of Agriculture

Early Advances in Technology and Art

Early modern humans quickly distinguished themselves from their ancestors, who had spent most of their time just surviving. As inventors and artists, more advanced humans stepped up the pace of cultural changes.

Tools Needed to Survive For tens of thousands of years, men and women of the Old Stone Age were nomads. **Nomads** were highly mobile people who moved from place to place foraging, or searching, for new sources of food. Nomadic groups whose food supply depends on hunting animals and collecting plant foods are called **hunter-gatherers**. Prehistoric hunter-gatherers, such as roving bands of Cro-Magnons, increased their food supply by inventing tools. For example, hunters crafted special spears that enabled them to kill game at greater distances. Digging sticks helped food gatherers pry plants loose at the roots.

Early modern humans had launched a technological revolution. They used stone, bone, and wood to fashion more than 100 different tools. These expanded tool kits included knives to kill and butcher game, and fish hooks and harpoons to catch fish. A chisel-like cutter was designed to make other tools. Cro-Magnons used bone needles to sew clothing made of animal hides.

Artistic Expression in the Paleolithic Age The tools of early modern humans explain how they met their survival needs. Yet their world best springs to life through their artistic creations. Necklaces of seashells, lion teeth, and bear claws adorned both men and women. People ground mammoth tusks into polished beads. They also carved small realistic sculptures of animals that inhabited their world.

As you read in the Cave Paintings feature, Stone Age peoples on all continents created cave paintings. The best-known of these are the paintings on the walls and ceilings of European caves, mainly in France and Spain. Here early artists drew lifelike images of wild animals. Cave artists made colored paints from

charcoal, mud, and animal blood. In Africa, early artists engraved pictures on rocks or painted scenes in caves or rock shelters. In Australia, they created paintings on large rocks.

The Beginnings of Agriculture

Vocabulary
Edible means "safe to be eaten."

For thousands upon thousands of years, humans survived by hunting game and gathering edible plants. They lived in bands of 25 to 70 people. The men almost certainly did the hunting. The women gathered fruits, berries, roots, and grasses. Then about 10,000 years ago, some of the women may have scattered seeds near a regular campsite. When they returned the next season, they may have found new crops growing. This discovery would usher in the **Neolithic Revolution**, or the agricultural revolution—the far-reaching changes in human life resulting from the beginnings of farming. The shift from food-gathering to food-producing culture represents one of the great breakthroughs in history.

Causes of the Agricultural Revolution Scientists do not know exactly why the agricultural revolution occurred during this period. Change in climate was probably a key reason. (See chart on page 17.) Rising temperatures worldwide provided longer growing seasons and drier land for cultivating wild grasses. A rich supply of grain helped support a small population boom. As populations slowly rose, hunter-gatherers felt pressure to find new food sources. Farming offered an attractive alternative. Unlike hunting, it provided a steady source of food.

Early Farming Methods Some groups practiced **slash-and-burn farming**, in which they cut trees or grasses and burned them to clear a field. The ashes that remained fertilized the soil. Farmers planted crops for a year or two, then moved to another area of land. After several years, trees and grass grew back, and other farmers repeated the process of slashing and burning.

History *in* Depth

The Neolithic Ice Man

In 1991, two German hikers made an accidental discovery that gave archaeologists a firsthand look at the technology of early toolmakers. Near the border of Austria and Italy, they spotted the mummified body of a prehistoric traveler, preserved in ice for some 5,000 years (upper right).

Nicknamed the "Ice Man," this early human was not empty-handed. The tool kit found near him included a six-foot longbow and a deerskin case with 14 arrows. It also contained a stick with an antler tip for sharpening flint blades, a small flint dagger in a woven sheath, a copper ax, and a medicine bag.

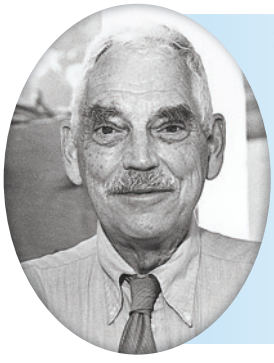
Scientific research on the body (lower right) concluded that the Ice Man was in his 40s when he died in the late spring or early summer from an arrow wound. Scientists also determined that in the hours before his death, he ate wild goat, red deer, and grains. The Ice Man is housed in a special museum in Bolzano, Italy.

Domestication of Animals Food gatherers' understanding of plants probably spurred the development of farming. Meanwhile, hunters' expert knowledge of wild animals likely played a key role in the **domestication**, or taming, of animals. They tamed horses, dogs, goats, and pigs. Like farming, domestication of animals came slowly. Stone Age hunters may have driven herds of animals into rocky ravines to be slaughtered. It was then a small step to drive herds into human-made enclosures. From there, farmers could keep the animals as a constant source of food and gradually tame them.

Not only farmers domesticated animals. Pastoral nomads, or wandering herders, tended sheep, goats, camels, or other animals. These herders moved their animals to new pastures and watering places.

Agriculture in Jarmo Today, the eroded and barren rolling foothills of the Zagros Mountains in northeastern Iraq seem an unlikely site for the birthplace of agriculture. According to archaeologist Robert Braidwood, thousands of years ago, the environmental conditions of this region favored the development of agriculture. Wild wheat and barley, along with wild goats, pigs, sheep, and horses, had once thrived near the Zagros Mountains.

In the 1950s, Braidwood led an archaeological dig at a site called Jarmo. He concluded that agricultural settlement was built there about 9,000 years ago:



PRIMARY SOURCE A

We found weights for digging sticks, hoe-like [tools], flint-sickle blades, and a wide variety of milling stones. . . . We also discovered several pits that were probably used for the storage of grain. Perhaps the most important evidence of all was animal bones and the impressions left in the mud by cereal grains. . . . The people of Jarmo were adjusting themselves to a completely new way of life, just as we are adjusting ourselves to the consequences of such things as the steam engine. What they learned about living in a revolution may be of more than academic interest to us in our troubled times.

ROBERT BRAIDWOOD, quoted in *Scientific American*

MAIN IDEA

Analyzing Primary Sources

A Why do you think Braidwood believes that we can learn from early peoples?

The Jarmo farmers, and others like them in places as far apart as Mexico and Thailand, pioneered a new way of life. Villages such as Jarmo marked the beginning of a new era and laid the foundation for modern life.

Villages Grow and Prosper

The changeover from hunting and gathering to farming and herding took place not once but many times. Neolithic people in many parts of the world independently developed agriculture, as the map at the right shows.

Farming Develops in Many Places Within a few thousand years, people in many other regions, especially in fertile river valleys, turned to farming.

- **Africa** The Nile River Valley developed into an important agricultural center for growing wheat, barley, and other crops.
- **China** About 8,000 years ago, farmers along the middle stretches of the Huang He (Yellow River) cultivated a grain called millet. About 1,000 years later, farmers first domesticated wild rice in the Chang Jiang River delta.
- **Mexico and Central America** Farmers cultivated corn, beans, and squash.
- **Peru** Farmers in the Central Andes were the first to grow tomatoes, sweet potatoes, and white potatoes.

From these early and varied centers of agriculture, farming then spread to surrounding regions. B

MAIN IDEA

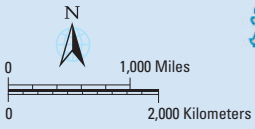
Making Inferences

B What advantages might farming and herding have over hunting and gathering?

Agriculture Emerges, 5000–500 B.C.

INTERACTIVE

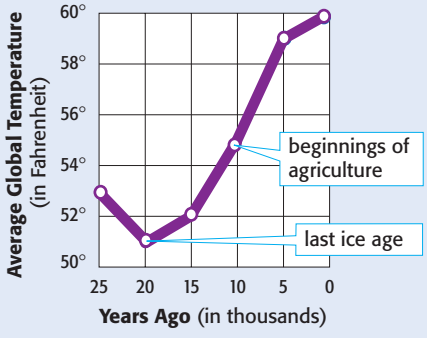
Interactive Feature



▲ A Neolithic grindstone and vessel used to grind grain

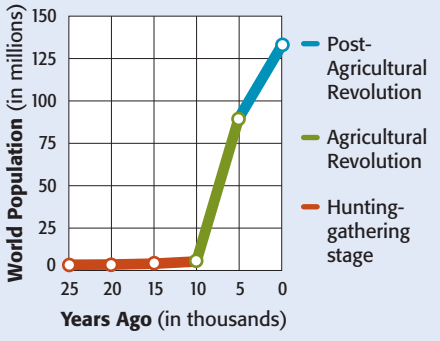
Agricultural Revolution

Temperature



Source: *Ice Ages, Solving the Mystery*

Population



Source: *A Geography of Population: World Patterns*

SKILLBUILDER: Interpreting Maps and Charts

1. **Map** *What geographic feature favored the development of agricultural areas before 5000 B.C.?*
2. **Chart** *What effect did the agricultural revolution have on population growth? Why?*

Catal Huyuk In 1958, archaeologists discovered the agricultural village now known as Catal Huyuk (chuh•TUL hoo•YOOK), or the "forked mound." It was located on a fertile plain in south-central Turkey (about 30 miles from modern-day Konya), near a twin-coned volcano. Catal Huyuk covered an area of about 32 acres. At its peak 8,000 years ago, the village was home to 5,000 to 6,000 people who lived in about 1,000 dwellings. These rectangular-shaped houses were made of brick and were arranged side-by-side like a honeycomb.

Catal Huyuk showed the benefits of settled life. Its rich, well-watered soil produced large crops of wheat, barley, and peas. Villagers also raised sheep and cattle. Catal Huyuk's agricultural surpluses supported a number of highly skilled workers, such as potters and weavers. But the village was best known at the time for its obsidian products. This dark volcanic rock, which looks like glass, was plentiful. It was used to make mirrors, jewelry, and knives for trade.

▼ A 9,000-year-old baked-clay figurine found in Catal Huyuk

Catal Huyuk's prosperity also supported a varied cultural life. Archaeologists have uncovered colorful wall paintings depicting animals and hunting scenes. Many religious shrines were dedicated to a mother goddess. According to her worshipers, she controlled the supply of grain.

Vocabulary
Shrines are places where sacred relics are kept.

The new settled way of life also had its drawbacks—some of the same that affected hunter-gatherer settlements. Floods, fire, drought, and other natural disasters could destroy a village. Diseases, such as malaria, spread easily among people living closely together. Jealous neighbors and roving nomadic bands might attack and loot a wealthy village like Catal Huyuk.

Despite problems, these permanent settlements provided their residents with opportunities for fulfillment—in work, in art, and in leisure time. As you will learn in Section 3, some early villages expanded into cities. These urban centers would become the setting for more complex cultures in which new tools, art, and crafts were created.

SECTION 2 ASSESSMENT

TERMS & NAMES **1.** For each term or name, write a sentence explaining its significance.

• nomad • hunter-gatherer • Neolithic Revolution • slash-and-burn farming • domestication

USING YOUR NOTES

2. Which effect of the development of agriculture was the most significant?

Humans Try to Control Nature
I. Early Advances in Technology and Art
A.
B.
II. The Beginnings of Agriculture

MAIN IDEAS

3. How did Cro-Magnon's new tools make survival easier?

4. What factors played a role in the origins of agriculture?

5. What were the first crops grown in the Americas?

CRITICAL THINKING & WRITING

6. MAKING INFERENCES What kinds of problems did Stone Age peoples face?

7. SUMMARIZING In what ways did Neolithic peoples dramatically improve their lives?

8. HYPOTHESIZING Why do you think the development of agriculture occurred around the same time in several different places?

9. WRITING ACTIVITY SCIENCE AND TECHNOLOGY Write a two-paragraph **opinion paper** on the most significant consequences of the Agricultural Revolution.

CONNECT TO TODAY **CREATING A CHART**

Use text information on Jarmo and Catal Huyuk to make a **chart** listing the tools, weapons, and other artifacts that archaeologists today might find at an ancient site of a farming settlement.

3

Civilization

Case Study: Ur in Sumer

MAIN IDEA	WHY IT MATTERS NOW	TERMS & NAMES
SCIENCE AND TECHNOLOGY Prosperous farming villages, food surpluses, and new technology led to the rise of civilizations.	Contemporary civilizations share the same characteristics typical of ancient civilizations.	• civilization • specialization • artisan • institution • scribe • cuneiform • Bronze Age • barter • ziggurat

SETTING THE STAGE Agriculture marked a dramatic change in how people lived together. They began dwelling in larger, more organized communities, such as farming villages and towns. From some of these settlements, cities gradually emerged, forming the backdrop of a more complex way of life—civilization.

Villages Grow into Cities

Over the centuries, people settled in stable communities that were based on agriculture. Domesticated animals became more common. The invention of new tools—hoes, sickles, and plow sticks—made the task of farming easier. As people gradually developed the technology to control their natural environment, they reaped larger harvests. Settlements with a plentiful supply of food could support larger populations.

As the population of some early farming villages increased, social relationships became more complicated. The change from a nomadic hunting-gathering way of life to settled village life took a long time. Likewise, the change from village life to city life was a gradual process that spanned several generations.

TAKING NOTES

Summarizing Use a chart to summarize characteristics of the civilization at Sumer.

Characteristics

1.
2.
3.
4.
5.

Economic Changes To cultivate more land and to produce extra crops, ancient people in larger villages built elaborate irrigation systems. The resulting food surpluses freed some villagers to pursue other jobs and to develop skills besides farming. Individuals who learned to become craftspeople created valuable new products, such as pottery, metal objects, and woven cloth. In turn, people who became traders profited from a broader range of goods to exchange—craftwork, grains, and many raw materials. Two important inventions—the wheel and the sail—also enabled traders to move more goods over longer distances.

Social Changes A more complex and prosperous economy affected the social structure of village life. For example, building and operating large irrigation systems required the labor of many people. As other special groups of workers formed, social classes with varying wealth, power, and influence began to emerge. A system of social classes would become more clearly defined as cities grew.

Religion also became more organized. During the Old Stone Age, prehistoric people's religious beliefs centered around nature, animal spirits, and some idea of an afterlife. During the New Stone Age, farming peoples worshiped the many gods and goddesses who they believed had power over the rain, wind, and other forces of

nature. Early city dwellers developed rituals founded on these earlier religious beliefs. As populations grew, common spiritual values became lasting religious traditions.

How Civilization Develops

Most historians believe that one of the first civilizations arose in Sumer. Sumer was located in Mesopotamia, a region that is part of modern Iraq. A **civilization** is often defined as a complex culture with five characteristics: (1) advanced cities, (2) specialized workers, (3) complex institutions, (4) record keeping, and (5) advanced technology. Just what set the Sumerians apart from their neighbors?

Advanced Cities Cities were the birthplaces of the first civilizations. A city is more than a large group of people living together. The size of the population alone does not distinguish a village from a city. One of the key differences is that a city is a center of trade for a larger area. Like their modern-day counterparts, ancient city dwellers depended on trade. Farmers, merchants, and traders brought goods to market in the cities. The city dwellers themselves produced a variety of goods for exchange.

Specialized Workers As cities grew, so did the need for more specialized workers, such as traders, government officials, and priests. Food surpluses provided the opportunity for **specialization**—the development of skills in a specific kind of work. An abundant food supply allowed some people to become expert at jobs besides farming. Some city dwellers became **artisans**—skilled workers who make goods by hand. Specialization helped artisans develop their skill at designing jewelry, fashioning metal tools and weapons, or making clothing and pottery. The wide range of crafts artisans produced helped cities become centers of trade.

Complex Institutions The soaring populations of early cities made government, or a system of ruling, necessary. In civilizations, leaders emerged to maintain order among people and to establish laws. Government is an example of an **institution**—a long-lasting pattern of organization in a community. Complex institutions, such as government, religion, and the economy, are another characteristic of civilization.

With the growth of cities, religion became a formal institution. Most cities had great temples where dozens of priests took charge of religious duties. Sumerians believed that every city belonged to a god who governed the city's activities. The temple was the hub of both government and religious affairs. It also served as the city's economic center. There food and trade items were distributed. (A)

Record Keeping As government, religion, and the economy became more complex, people recognized the need to keep records. In early civilizations, government officials had to document tax collections, the passage of laws, and the storage of grain. Priests needed a way to keep track of the calendar and important rituals. Merchants had to record accounts of debts and payments.

Most civilizations developed a system of writing, though some devised other methods of record keeping. Around 3000 B.C., Sumerian **scribes**—or professional record keepers—invented a system of writing called **cuneiform** (KYOO•nee•uh•FAWRM), meaning "wedge-shaped." (Earlier Sumerian writing consisted of pictographs—symbols of the

Global Patterns

The Incan System of Record Keeping

Early civilizations other than Sumer also developed record keeping. The empire of the ancient Incan civilization stretched along the western coast of South America. Though the Inca had no writing system, they kept records using a *quipu,* a set of colored strings tied with different-size knots at various intervals (see photo). Each knot represented a certain amount or its multiple. The colors of each cord represented the item being counted: people, animals, land, and so on.

The *quipucamayoc,* officials who knew how to use the *quipu*, kept records of births, deaths, marriages, crops, and historical events.

MAIN IDEA

Drawing Conclusions

(A) Why were cities essential to the growth of civilizations?

objects or what they represented.) The scribe's tool, called a stylus, was a sharpened reed with a wedge-shaped point. It was pressed into moist clay to create symbols. Scribes baked their clay tablets in the sun to preserve the writing.

People soon began to use writing for other purposes besides record keeping. They also wrote about their cities' dramatic events—wars, natural disasters, the reign of kings. Thus, the beginning of civilization in Sumer also signaled the beginning of written history.

Improved Technology New tools and techniques are always needed to solve problems that emerge when large groups of people live together. In early civilizations, some farmers harnessed the powers of animals and nature. For example, they used ox-drawn plows to turn the soil. They also created irrigation systems to expand planting areas.

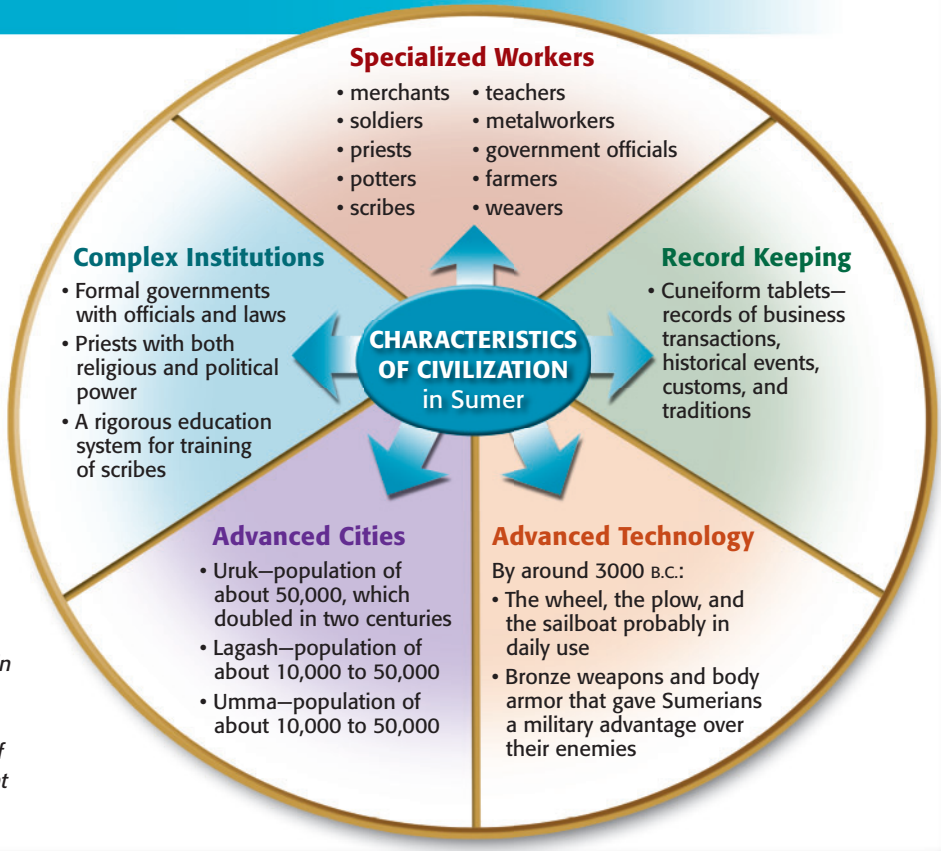
Sumerian artisans relied on new technology to make their tasks easier. Around 3500 B.C., they first used the potter's wheel to shape jugs, plates, and bowls. Sumerian metalworkers discovered that melting together certain amounts of copper and tin made bronze. After 2500 B.C., metalworkers in Sumer's cities turned out bronze spearheads by the thousands. The period called the **Bronze Age** refers to the time when people began using bronze, rather than copper and stone, to fashion tools and weapons. The Bronze Age started in Sumer around 3000 B.C., but the date varied in other parts of Asia and in Europe.

▲ The wedge-shaped symbols of cuneiform are visible on this clay tablet.

Analyzing Key Concepts

Civilization

As the history of Sumer demonstrates, civilization first developed in cities. In fact, the very word *civilization* comes from the Latin word for citizen. However, the development of cities is only one aspect of civilization. Many scholars define civilization as a complex culture with five characteristics. The graphic organizer to the right shows how Sumer displayed these five characteristics.



SKILLBUILDER: Interpreting Graphics

1. **Making Inferences** *Judging from the information on this graphic, what economic activities probably took place in Sumerian cities?*
2. **Drawing Conclusions** *What is the relationship between the development of specialized workers and the development of complex institutions?*

CASE STUDY: UR IN SUMER

Civilization Emerges in Ur

Ur, one of the earliest cities in Sumer, stood on the banks of the Euphrates River in what is now southern Iraq. Some 30,000 people once lived in this ancient city. Ur was the site of a highly sophisticated civilization.

After excavating from 1922 to 1934, English archaeologist Leonard Woolley and his team unraveled the mystery of this long-lost civilization. From archaeological evidence, Woolley concluded that around 3000 B.C., Ur was a flourishing urban civilization. People in Ur lived in well-defined social classes. Rulers, as well as priests and priestesses, wielded great power. Wealthy merchants profited from foreign trade. Artists and artisans created lavish jewelry, musical instruments, and gold daggers. Woolley's finds have enabled historians to reconstruct Ur's advanced culture.

An Agricultural Economy Imagine a time nearly 5,000 years ago. Outside the mud-brick walls surrounding Ur, ox-driven plows cultivate the fields. People are working barefoot in the irrigation ditches that run between patches of green plants. With stone hoes, the workers widen ditches to carry water into their fields from the reservoir a mile away. This large-scale irrigation system was developed to provide Ur with food surpluses, which keep the economy thriving. The government officials who direct this public works project ensure its smooth operation. (B)

MAIN IDEA

Analyzing Causes

(B) How did Ur's agricultural way of life foster the development of civilization there?

Life in the City A broad dirt road leads from the fields to the city's wall. Inside, city dwellers go about their daily lives. Most live in windowless, one-story, boxlike houses packed tightly along the street. A few wealthy families live in two-story houses with an inner courtyard.

Down another street, artisans work in their shops. A metalworker makes bronze by mixing molten copper with just the right quantity of tin. Later, he will hammer the bronze to make spearheads—weapons to help Ur's well-organized armies

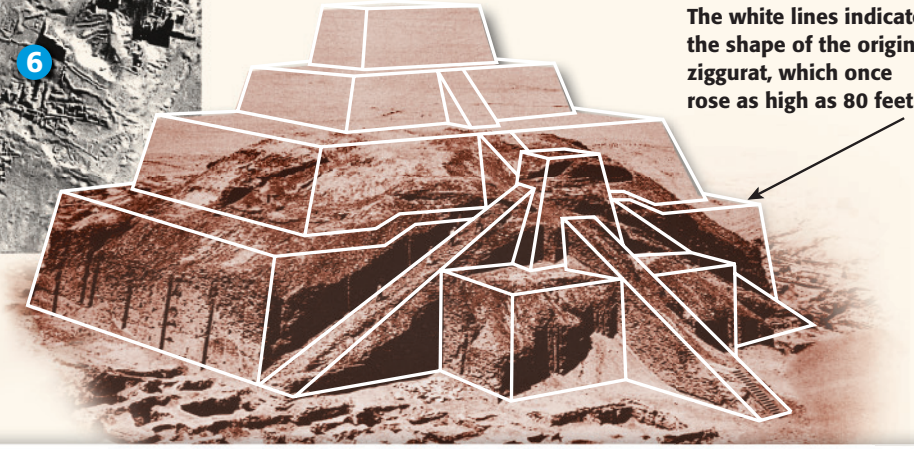
Interactive Feature

The City of Ur

INTERACTIVE

▲ Aerial photograph of Ur taken in 1930.

1. **Ziggurat** A massive temple
2. **Court of Nanna** Sacred place of Ur's moon god
3. **Home of the High Priestess** Place where a woman with great religious authority lived
4. **Surrounding Wall** Defense for protecting Ur residents
5. **Temple and Treasury** Administrative centers in Ur
6. **Royal Cemetery** Burial site of the queen and king of Ur



The white lines indicate the shape of the original ziggurat, which once rose as high as 80 feet.

defend the city. As a potter spins his potter's wheel, he expertly shapes the moist clay into a large bowl. These artisans and other craftworkers produce trade goods that help Ur prosper.

Ur's Thriving Trade The narrow streets open into a broad avenue where merchants squat under awnings and trade farmers' crops and artisans' crafts. This is the city's bazaar, or marketplace. Coins are not used to make purchases because money has not yet been invented. But merchants and their customers know roughly how many pots of grain a farmer must give to buy a jug of wine. This way of trading goods and services without money is called **barter**. More complicated trades require a scribe. He carefully forms cuneiform signs on a clay tablet. The signs may show how much barley a farmer owes a merchant for a donkey.

The Temple: Center of City Life Farther down the main avenue stands Ur's tallest and most important building—the temple. Like a city within a city, the temple is surrounded by a heavy wall. Within the temple gate, a massive, tiered structure towers over the city. This pyramid-shaped monument is called a **ziggurat** (ZIHG•uh•RAT), which means "mountain of god." On the exterior of the ziggurat, a flight of perhaps 100 mud-brick stairs leads to the top. At the peak, priests conduct rituals to worship the city god who looms over Ur. Every day, priests climb these stairs. They often drag a goat or sheep to sacrifice. The temple also houses storage areas for grains, woven fabrics, and gems—offerings to the city's god. Sumerians had elaborate burial rituals and believed in an afterlife.

An early city, such as Ur, represents a model of civilizations that continued to arise throughout history. While the Sumerians were advancing their culture, civilizations were developing in Egypt, China, and elsewhere in Asia.

Connect to Today

Iraq's Ancient Treasures at Risk

The ziggurat at Ur was damaged during the Persian Gulf War of 1991. In that conflict, Iraq parked military planes near the ziggurat, hoping coalition forces would not risk harming the ancient structure. While it was not attacked, bombs caused large craters nearby, and it was hit by stray machine gun fire.

During the 2003 war, the Iraqi National Museum in Baghdad was attacked by looters. Many of the treasures of the area's ancient civilizations were either looted or destroyed.

SECTION 3 ASSESSMENT

TERMS & NAMES **1.** For each term or name, write a sentence explaining its significance.

• civilization • specialization • artisan • institution • scribe • cuneiform • Bronze Age • barter • ziggurat

USING YOUR NOTES

2. Which characteristic is the most important for development of a civilization? Why?

Characteristics
1.
2.
3.
4.
5.

MAIN IDEAS

3. How did the social structure of village life change as the economy became more complex?

4. What role did irrigation systems play in the development of civilizations?

5. What are the key traits of a civilization?

CRITICAL THINKING & WRITING

6. DRAWING CONCLUSIONS How did life in Sumer differ from life in a small farming community of the region?

7. RECOGNIZING EFFECTS Why was writing a key invention for the Sumerians?

8. MAKING INFERENCES In what ways does the ziggurat of Ur reveal that Sumerians had developed an advanced civilization?

9. WRITING ACTIVITY ECONOMICS Choose a person from Ur who has a specialized skill, such as an artisan, a trader, or a scribe. Write an **expository essay** explaining that person's contribution to the economic welfare of the city.

INTEGRATED TECHNOLOGY **INTERNET ACTIVITY**

Use the Internet to create a **chart** showing the ten largest cities in the world, their populations, and the continent on which they are located.

INTERNET KEYWORD
city population