ANTHROPOLOGY AND GEOLOGY

According to tradition, in 1911 a butterfly collector was chasing a butterfly in rural Tanganyika (now Tanzania) when he nearly fell over the edge of a 300-foot cliff. The cliff turned out to be the edge of Olduvai Gorge. Scholars such as Mary and Louis Leakey, Donald Johanson, and Maurice Taieb later made many discoveries there about the evolution of humans. Most of the fossils at Olduvai Gorge have been found near the junction of the Main Gorge and the Side Gorge. The large map shows a view of the two gorges. The insert at the top shows a detailed view of the junction of the gorges. The insert at the bottom shows Olduvai Gorge in relation to surrounding geological features in northern Tanzania. Study the map below, and answer the questions that follow.

Olduvai Gorge
1. In what plain does Olduvai Gorge lie?

__________________________________________

2. Where is Laetoli in relation to Olduvai Gorge?

__________________________________________

3. How might the earthquake faults around Olduvai Gorge affect fossil discoveries?

__________________________________________

4. How might Lemagrut, an extinct volcano, have affected the development of fossil beds at Olduvai Gorge?

__________________________________________

**Critical Thinking: Place**

Anthropologists believe that Olduvai Gorge provides rare opportunities to learn more about human development. How does the information on the map support this belief?
CHAPTER 2

Geography Activity

The First Civilizations

THE END OF AN ISLAND CIVILIZATION

Crete rose to the center of the thriving Minoan civilization due in large part to geographic factors. Crete’s position as a large island with many island neighbors made it a natural shipping center. So did its location between Europe and the great civilizations of Asia Minor. The people of Crete built a massive shipping fleet to handle trade between the two areas.

Crete’s fertile soil and mild climate made it self-sufficient in food production. Its population turned to developing crafts, trading goods, and administering the powerful Minoan civilization.

Despite all these advantages, Crete and the Minoans lost their power suddenly. For centuries, historians wondered why. Only recently have archaeological and geological finds in the Aegean and Mediterranean seas offered a possible explanation. It now appears that Crete was badly damaged as a result of volcanic activity on Thera (now called Santorini), an island in the Aegean Sea.

Archaeological evidence showed that sometime between 1500 and 1400 B.C., many towns in Crete were destroyed. Geologists found a thick layer of volcanic ash buried deep in the sediment below the Aegean and Mediterranean seas. This layer was estimated to have been there since about 1450 B.C. Finally, the remains of a Minoan town were found on Thera. The town had been destroyed by a volcano and buried under volcanic ash.

Further study showed that one of the most powerful volcanic eruptions ever known had occurred on Thera about 1450 B.C. The force of the volcano had literally blown the top off the island. It sent rock and ash 20 miles into the atmosphere. The eruption opened a huge crater 6 miles wide and 2,500 feet deep.

Thera was transformed from one island into five. Sea water rushed in to fill the crater. This massive displacement of water created huge tidal waves that raced toward the north shore of Crete. The waves also washed the shores of all the islands of the Aegean and even touched the Mediterranean coast. The ash and debris hitting the atmosphere moved east-southeast from Thera at speeds of 200 to 400 miles per hour. Volcanic dust blanketed a wide area.

Crete and the Aegean

![Map of Crete and the Aegean](image_url)
Geologists theorize that the tidal waves destroyed the Cretan fleet and flooded the land. Volcanic dust covered the eastern half of the island and destroyed crops. Such a catastrophe must have weakened the entire Aegean area. It probably also left the Minoans easy targets for attack. Study the map on page 3, and answer the questions that follow.

1. What physical features does Crete have that would have encouraged the building of a large fleet of ships?

2. How far does Crete stretch from east to west?

3. How far is Crete from Thera? (Note that Thera is indicated by an arrow on the map.)

4. Why would the explosion on Thera have deposited more volcanic ash on Asia Minor than on mainland Greece?

Critical Thinking: Human-Environment Interaction

How could the volcanic eruption on Thera have destroyed crops on Crete? What does this suggest about the other environmental changes in the Aegean and Mediterranean and their effects on human settlements?
INDIAN TRADE

Around 2500 B.C. a civilization began to develop around the Indus River in what is now Pakistan and western India. In addition to the cities of Mohenjo-Daro and Harappa, archaeologists have uncovered many other sites along the Indus River valley that were part of the Harappan civilization. Ruins of ancient cities show that those ancient people built drainage systems that ran into brick-lined sewers. Brick homes many stories high were common. They also developed systems of writing and counting and dug canals to irrigate their farms. The port of Lothal, for example, had an enclosed shipping dock that was more than 700 feet long. There also was a sluice gate that made it possible to load ships at high or low tide. At such ports, Harappans exported gold, copper, lapis lazuli, turquoise, timber, ivory and cotton. Examine the map below and answer the questions that follow.

Regional Map of India
Chapter 3, Geography Activity, continued

1. Trade occurred between the inhabitants of the cities of Harappan and Mohenjo-Daro. What were some of the items exchanged between occupants of these two cities of the Harappan civilization?

2. Why do you think trade first developed in the southern region along the coast?

3. What type of economic activity do you think took place in the city of Lothal, and why?

4. Why do you think trade developed around the three areas of India that are either river basins or coastline? What is it about being close to water that would encourage that?

Critical Thinking: Economic Independence
How did the exporting of valuable metals and goods add to the quality of life for people who traded with the Harappans?
POLITICAL TURMOIL IN CHINA

By the early 400s B.C., many Chinese leaders had lost confidence in diplomacy as a means of resolving disputes. Several states emerged as leading powers. They battled each other for dominance. By the end of the Era of Warring States, the Qin state had triumphed over the others. Examine the map below, and answer the questions that follow.

The Warring States
Chapter 4, Geography Activity, continued

1. Which state controlled the most territory?

2. Which states had direct access to the Yellow Sea?

3. Which state controlled the cities of Lingyuan and Tangshan?

4. Which state held land in three separate areas?

Critical Thinking: Location

In the struggle to gain control of greater territory, how did the Qin state have geographical advantage over the Han and Wei states?
GREEK ALLIANCES

In the years following the Persian Wars, many Greek city-states banded together for mutual protection. Two main alliances developed: the Delian League and the Spartan confederacy. Increasingly, Athens gained control over the Delian League until the alliance was essentially an Athenian empire. Study the map below and answer the questions that follow.

Athenian Empire, 440 B.C.

[Map of the Athenian Empire, 440 B.C.]
Chapter 5, Geography Activity, continued

1. What regions were allied with Athens?

2. What regions were allied with Sparta?

3. Which alliance controlled the Mediterranean coastline near the Persian Gulf?

4. What did Athens import from Central Asia?

Critical Thinking: Movement

Why was control of the Hellespont and the eastern Mediterranean important to Athens?
STOPPING ALEXANDER THE GREAT
During their long march eastward toward the Indus River, Alexander the Great and his
army met and overcame many enemies. The most difficult enemies to overcome, however,
seemed to come from nature itself. Perhaps the most difficult barrier was the Hindu Kush,
the mountain range whose name means “Killer of the Hindus.” These mountains are
located in what is now northeastern Afghanistan, Pakistan, and northwestern India.
In December of 328 B.C., the snow-covered Hindu Kush blocked Alexander’s path. He
had to wait until spring to lead his men single file through the narrow Khawak pass,
which was 11,650 feet high. The brave troops faced a winding climb and descent.
Nevertheless, the troops pushed on until they reached the Indus River a year later. There
they faced not only a large, well-equipped army, but also drenching monsoon rains.
Monsoons are seasonal winds that blow over the Indian Ocean and the land that sur-
rounds it. They are created as a result of the difference in temperature over land and sea.
In the spring, the sun’s rays fall more directly on the earth. The land heats up and the air
over it becomes hot and dry. The ocean does not warm as quickly, so the air above it
remains cooler and more moist. The warm, dry air rises high above the land, creating low
atmospheric pressure. The difference in pressure created by the rising air pulls the cooler,
moist air from the southwest, creating monsoon winds. These winds bring torrential
rains with them. The summer rainy season lasts from mid-June to mid-September.
In the fall, the land begins to cool more quickly than the sea, and the reverse situation
occurs. Now the cool air over the land rushes out to replace the rising warm air over the
sea. This brings on the winter dry season.
Alexander must not have known about such harsh climate conditions, because he
started his attack as the monsoon rains began. His men fought on, creating bridges of
boats to cross swollen rivers.
Although Alexander’s forces were victorious, they had had enough.
The unending rains had destroyed
their weapons and food, and forced
them to live in constantly wet uni-
forms. Just as Alexander’s forces
reached the point where India lay
before them for the taking, they
refused to go on. The monsoons and
the mutiny ended Alexander’s east-
ward march, and he began the long
journey home. Study the map and
answer the questions that follow.
Chapter 6, Geography Activity, continued

1. From what direction did Alexander attempt to invade India?

2. What geographical feature complicated Alexander’s assault on India?

3. How did climate affect Alexander’s assault on India?

4. Did Alexander’s army encounter the southwest monsoons or the northeast monsoons?

Critical Thinking: Movement
Discuss how advance knowledge of the monsoons might have influenced Alexander’s plans to invade India.
ROME DURING THE REIGN OF AUGUSTUS

During his reign (31 B.C.–A.D. 14) Augustus worked to transform Rome. He established a police force and fire brigade and built and restored several aqueducts. He also oversaw construction of many buildings throughout the city. In addition, he had the surfaces of many existing buildings overlaid with marble to improve their appearance and make them more impressive. The map below shows Rome during Augustus’s reign. Study the map, and answer the questions that follow.

The City of Rome
1. Which temple was constructed during Augustus’s reign?

2. What building is located southwest of the city walls?

3. Which of the buildings inside the city walls were constructed during Augustus’s reign?

4. Which of the buildings outside the city walls were constructed before Augustus’s reign?

Critical Thinking: Location

What reasons might Augustus have had for constructing more public buildings outside the city walls than inside the city walls?
THE SPREAD OF IRONWORKING

Geographical isolation, climate differences, and geographic diversity were three critical factors in shaping the cultures of the vast continent of Africa. In East Africa, settlers spread down the Rift Valley from Ethiopia. Of further importance, trans-Saharan trade increased after 100 B.C. with the introduction of the domestic camel from Asia. These developments aided the spread of iron tools and weapons, which had been introduced by the Greeks and Carthaginians in the 700s and 600s B.C. Study the map below and answer the questions that follow.

Ironworking in Africa
1. In which areas in Africa was iron technology first introduced?

2. In which direction did iron technology spread?

3. What accompanied the introduction of ironworking?

4. Which powerful kingdom was also an early ironworking site?

Critical Thinking: Movement

Based on the map, how do you think ironworking technology spread?
THE MAYA EMPIRE

The Yucatán Peninsula was home to the Maya. The Maya people built elaborate cities throughout their territory. These cities contained temples, ball courts, sacrificial wells, and astronomical observatories. Study the map below and answer the questions that follow.

Maya Cities in the Yucatán
Chapter 9, Geography Activity, continued

1. Which Maya settlement would have been most threatened by hurricanes?

2. Which Maya site is the farthest west?

3. About how far was Chichén Itzá from Uxmal?

4. Which cities were located in marshy zones?

Critical Thinking: Place
How did altitude influence the establishment of Maya cities?