



The Spread of Hellenistic Culture

MAIN IDEA

CULTURAL INTERACTION

Hellenistic culture, a blend of Greek and other influences, flourished throughout Greece, Egypt, and Asia.

WHY IT MATTERS NOW

Western civilization today continues to be influenced by diverse cultures.

TERMS & NAMES

- Hellenistic
- Alexandria
- Euclid
- Archimedes
- Colossus of Rhodes

SETTING THE STAGE Alexander’s ambitions were cultural as well as military and political. During his wars of conquest, he actively sought to meld the conquered culture with that of the Greeks. He started new cities as administrative centers and outposts of Greek culture. These cities, from Egyptian Alexandria in the south to the Asian Alexandrias in the east, adopted many Greek patterns and customs. After Alexander’s death, trade, a shared Greek culture, and a common language continued to link the cities together. But each region had its own traditional ways of life, religion, and government that no ruler could afford to overlook.

TAKING NOTES

Categorizing Use a chart to list Hellenistic achievements in various categories.

Category	Achievements
astronomy	
geometry	
philosophy	
art	

Hellenistic Culture in Alexandria

As a result of Alexander’s policies, a vibrant new culture emerged. Greek (also known as Hellenic) culture blended with Egyptian, Persian, and Indian influences. This blending became known as **Hellenistic** culture. Koine (koy•NAY), the popular spoken language used in Hellenistic cities, was the direct result of cultural blending. The word *koine* came from the Greek word for “common.” The language was a dialect of Greek. This language enabled educated people and traders from diverse backgrounds to communicate in cities throughout the Hellenistic world.

Trade and Cultural Diversity Among the many cities of the Hellenistic world, the Egyptian city of **Alexandria** became the foremost center of commerce and Hellenistic civilization. Alexandria occupied a strategic site on the western edge of the Nile delta. Trade ships from all around the Mediterranean docked in its spacious harbor. Alexandria’s thriving commerce enabled it to grow and prosper. By the third century B.C., Alexandria had become an international community, with a rich mixture of customs and traditions from Egypt and from the Aegean. Its diverse population exceeded half a million people.

Alexandria’s Attractions Both residents and visitors admired Alexandria’s great beauty. Broad avenues lined with statues of Greek gods divided the city into blocks. Rulers built magnificent royal palaces overlooking the harbor. A much visited tomb contained Alexander’s elaborate glass coffin. Soaring more than 350 feet over the harbor stood an enormous stone lighthouse called the Pharos. This lighthouse contained a polished bronze mirror that, at night, reflected the

Vocabulary
Museum means
 "house of the
 muses."

light from a blazing fire. Alexandria's greatest attractions were its famous museum and library. The museum was a temple dedicated to the Muses, the Greek goddesses of arts and sciences. It contained art galleries, a zoo, botanical gardens, and even a dining hall. The museum was an institute of advanced study.

The Alexandrian Library stood nearby. Its collection of half a million papyrus scrolls included many of the masterpieces of ancient literature. As the first true research library in the world, it helped promote the work of a gifted group of scholars. These scholars greatly respected the earlier works of classical literature and learning. They produced commentaries that explained these works.

Science and Technology


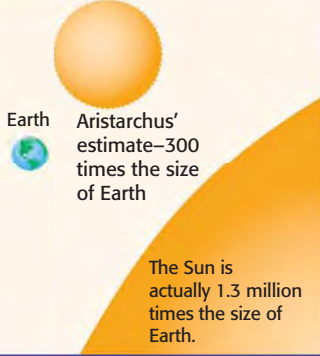
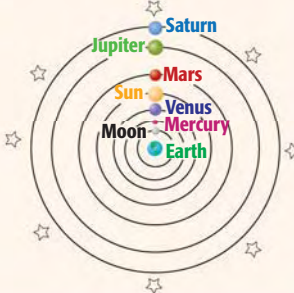
Hellenistic scholars, particularly those in Alexandria, preserved Greek and Egyptian learning in the sciences. Until the scientific advances of the 16th and 17th centuries, Alexandrian scholars provided most of the scientific knowledge available to the West.


Astronomy Alexandria's museum contained a small observatory in which astronomers could study the planets and stars. One astronomer, Aristarchus (AR•ih•STAHHR•kuhs) of Samos, reached two significant scientific conclusions. In one, he estimated that the Sun was at least 300 times larger than Earth. Although he greatly underestimated the Sun's true size, Aristarchus disproved the widely held belief that the Sun was smaller than Greece. In another conclusion, he proposed that Earth and the other planets revolve around the Sun. Unfortunately for science, other astronomers refused to support Aristarchus' theory. In the second century A.D., Alexandria's last renowned astronomer, Ptolemy, incorrectly placed Earth at the center of the solar system. Astronomers accepted this view for the next 14 centuries.

Eratosthenes (EHR•uh•TAHS•thuh•NEEZ), the director of the Alexandrian Library, tried to calculate Earth's true size. Using geometry, he computed Earth's circumference at between 28,000 and 29,000 miles. Modern measurements put the circumference at 24,860 miles. As well as a highly regarded astronomer and mathematician, Eratosthenes also was a poet and historian.

Mathematics and Physics In their work, Eratosthenes and Aristarchus used a geometry text compiled by **Euclid** (YOO•klihd). Euclid was a highly regarded

▼ Hipparchus, who lived in Alexandria for a time, charted the position of 850 stars.

Greek Astronomy		
Earth	The Sun	The Solar System
Eratosthenes' estimate of the circumference—between 28,000 and 29,000 miles  actual circumference—24,860 miles	 Aristarchus' estimate—300 times the size of Earth The Sun is actually 1.3 million times the size of Earth.	Ptolemy's view of the universe 
SKILLBUILDER: Interpreting Charts 1. Comparing Where were Greek astronomers' ideas most incorrect compared with modern concepts? 2. Clarifying Which estimate is closest to modern measurements? How could the Hellenists be so accurate?		

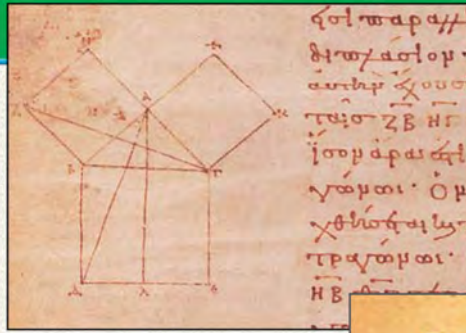


Global Patterns

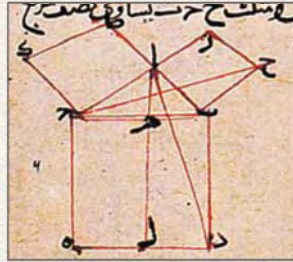
Pythagorean Theorem

Geometry students remember Pythagoras for his theorem on the triangle, but its principles were known earlier. This formula states that the square of a right triangle's hypotenuse equals the sum of the squared lengths of the two remaining sides. Chinese mathematicians knew this theory perhaps as early as 1100 B.C. Egyptian surveyors put it to practical use even earlier.

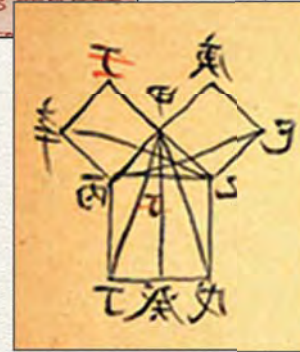
However, the work of the school that Pythagoras founded caught the interest of later mathematicians. Shown are Euclid's proof in Greek along with a Chinese and an Arabic translation. The Arabs who conquered much of Alexander's empire spread Greek mathematical learning to the West. The formula became known as the Pythagorean theorem throughout the world.



Greek, A.D. 800



Arabic, A.D. 1250



Chinese, A.D. 1607

mathematician who taught in Alexandria. His best-known book, *Elements*, contained 465 carefully presented geometry propositions and proofs. Euclid's work is still the basis for courses in geometry.

Another important Hellenistic scientist, **Archimedes** (AHR•kuh•MEE•deez) of Syracuse, studied at Alexandria. He accurately estimated the value of pi (π)—the ratio of the circumference of a circle to its diameter. In addition, Archimedes explained the law of the lever.

Gifted in both geometry and physics, Archimedes also put his genius to practical use. He invented the Archimedes screw, a device that raised water from the ground, and the compound pulley to lift heavy objects. The writer Plutarch described how Archimedes demonstrated to an audience of curious onlookers how something heavy can be moved by a small force:

PRIMARY SOURCE

Archimedes took a . . . ship . . . which had just been dragged up on land with great labor and many men; in this he placed her usual complement of men and cargo, and then sitting at some distance, without any trouble, by gently pulling with his hand the end of a system of pulleys, he dragged it towards him with as smooth and even a motion as if it were passing over the sea.

PLUTARCH, *Parallel Lives: Marcellus*

Using Archimedes' ideas, Hellenistic scientists later built a force pump, pneumatic machines, and even a steam engine. **A**

MAIN IDEA

Summarizing

A What were some of the main achievements of the scientists of the Hellenistic period?

Philosophy and Art

The teachings of Plato and Aristotle continued to be very influential in Hellenistic philosophy. In the third century B.C., however, philosophers became concerned with how people should live their lives. Two major philosophies developed out of this concern.

Stoicism and Epicureanism A Greek philosopher named Zeno (335–263 B.C.) founded the school of philosophy called Stoicism (STOH•ih•SIHZ•uhm). Stoics proposed that people should live virtuous lives in harmony with the will of god or the natural laws that God established to run the universe. They also preached that

human desires, power, and wealth were dangerous distractions that should be checked. Stoicism promoted social unity and encouraged its followers to focus on what they could control.

Epicurus (EHP•uh•KYUR•uhs) founded the school of thought called Epicureanism. He taught that gods who had no interest in humans ruled the universe. Epicurus believed that the only real objects were those that the five senses perceived. He taught that the greatest good and the highest pleasure came from virtuous conduct and the absence of pain. Epicureans proposed that the main goal of humans was to achieve harmony of body and mind. Today, the word *epicurean* means a person devoted to pursuing human pleasures, especially the enjoyment of good food. However, during his lifetime, Epicurus advocated moderation in all things. **B**

MAIN IDEA

Drawing Conclusions

B What was the main concern of the Stoic and Epicurean schools of philosophy?

Realism in Sculpture Like science, sculpture flourished during the Hellenistic age. Rulers, wealthy merchants, and cities all purchased statues to honor gods, commemorate heroes, and portray ordinary people in everyday situations. The largest known Hellenistic statue was created on the island of Rhodes. Known as the **Colossus of Rhodes**, this bronze statue stood more than 100 feet high. One of the seven wonders of the ancient world, this huge sculpture was toppled by an earthquake in about 225 B.C. Later, the bronze was sold for scrap. Another magnificent Hellenistic sculpture found on Rhodes was the Nike (or Winged Victory) of Samothrace. It was created around 203 B.C. to commemorate a Greek naval victory.

Hellenistic sculpture moved away from the harmonic balance and idealized forms of the classical age. Instead of the serene face and perfect body of an idealized man or woman, Hellenistic sculptors created more natural works. They felt free to explore new subjects, carving ordinary people such as an old, wrinkled peasant woman.

By 150 B.C., the Hellenistic world was in decline. A new city, Rome, was growing and gaining strength. Through Rome, Greek-style drama, architecture, sculpture, and philosophy were preserved and eventually became the core of Western civilization.

SECTION

5

ASSESSMENT

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

- Hellenistic
- Alexandria
- Euclid
- Archimedes
- Colossus of Rhodes

USING YOUR NOTES

2. Which Hellenistic achievement had the greatest impact? Why?

Category	Achievements
astronomy	
geometry	
philosophy	
art	

MAIN IDEAS

3. How did trade contribute to cultural diversity in the Hellenistic city of Alexandria?
4. How did Euclid influence some of the developments in astronomy during the Hellenistic period?
5. What did Stoicism and Epicureanism have in common?

CRITICAL THINKING & WRITING

6. **SYNTHESIZING** Describe how the growth of Alexander's empire spread Greek culture.
7. **MAKING INFERENCES** What do you think was the greatest scientific advance of the Hellenistic period? Why?
8. **COMPARING** How was the purpose served by architecture and sculpture in the Hellenistic period similar to the purpose served by these arts in the Golden Age of Athens?
9. **WRITING ACTIVITY** **CULTURAL INTERACTION** The Hellenistic culture brought together Egyptian, Greek, Persian, and Indian influences. Write a brief **essay** showing how American culture is a combination of different influences.

CONNECT TO TODAY **CREATING A COLLAGE**

Archimedes developed, or provided the ideas for, many practical devices—the lever, for example. Consider some of the everyday implements that are related to these devices. Create a **collage** of pictures of these implements. Accompany each visual with a brief annotation.