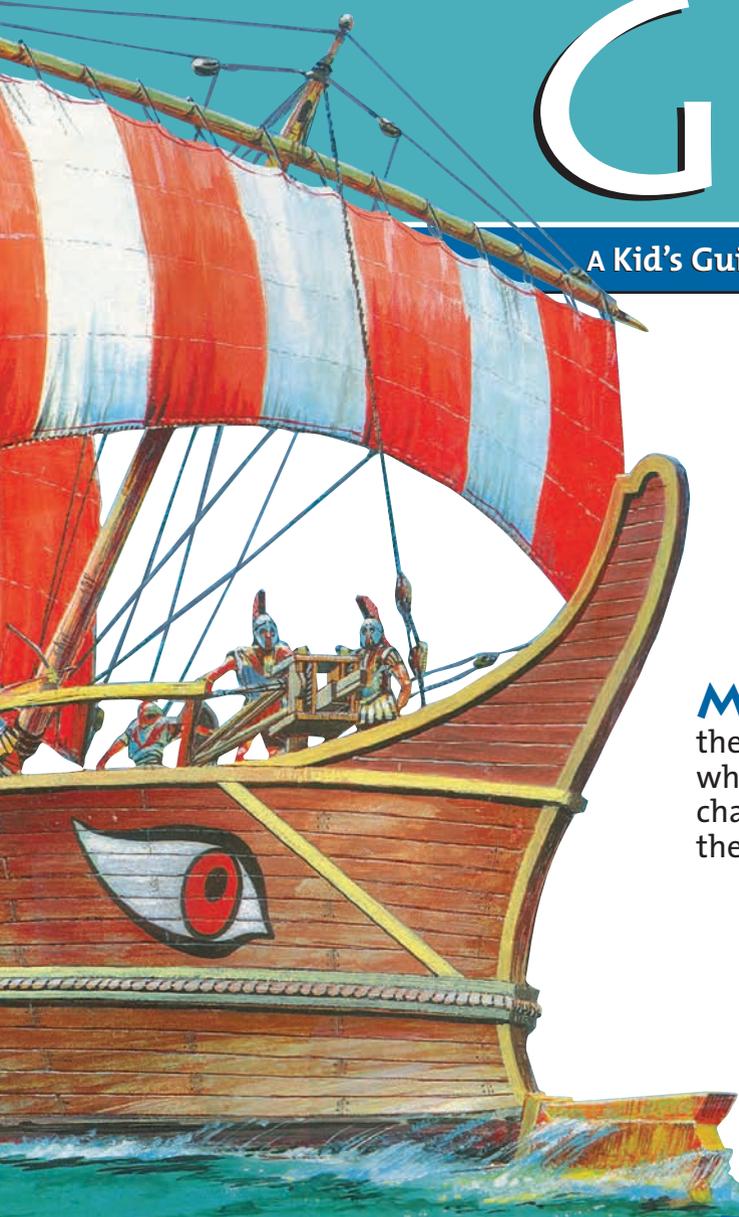
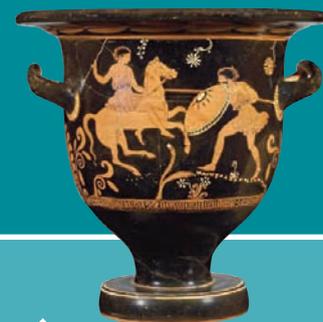




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A Kid's Guide to the History & Science of Life in Ancient Greece

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inventions,  
monuments,  
and works of art

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the people  
whose ideas  
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the history of  
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with hands-on  
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how the discoveries  
of ancient Greece  
affect us today

Kris Bordessa

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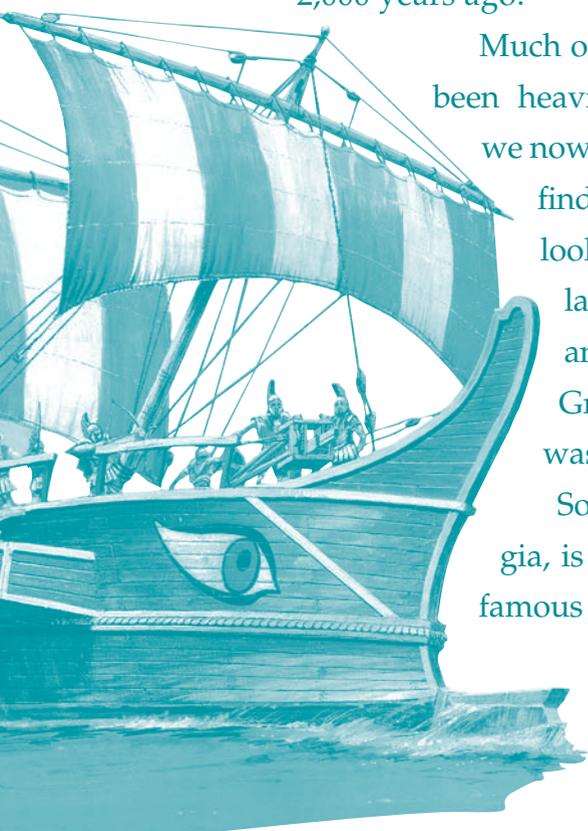
# INTRODUCTION

**W**hen we look at the modern world and try to figure out why we live the way we do, we find ourselves turning again and again to a small nation in the Mediterranean Sea, and to events that took place there more than 2,000 years ago.

Much of the world around us has been heavily influenced by people we now call ancient Greeks. If you find that hard to believe, just look to the sky. Our constel-

lations go by names like Orion, Cassiopeia, Andromeda, and Perseus. Those names come directly from ancient Greek mythology. Even one of America's space programs was named for the Greek god, Apollo.

Some American cities sport Greek names—Athens, Georgia, is one and Homer, Alaska, is another. Some of our most famous buildings feature sweeping colonnades and imposing





columns—elements that were prominent in ancient Greek architecture. The Lincoln Memorial in Washington, D.C., is just one example: it was modeled after the Greek Parthenon.

From our democratic society to our theater, and from our architecture to our names for constellations, ancient Greek culture has influenced our lives today. When we measure, map, and mold the world, we use tools that were invented by the ancient Greeks. Even when we do something simple like argue or run a race, we have the ancient Greeks to thank for showing us how to do it best.

*Tools of the Ancient Greeks* will take you through the intellectual triumphs and mechanical creations of this long-gone, but not-forgotten civilization and show how their world has influenced ours. Biology, astronomy, athletics, democracy, logic, and reason—the Greeks laid the groundwork in nearly every field of learning you can imagine. With this book you can follow in their footsteps.



Learn the names  
and stories of  
the ancient Greek  
populations



Explore ancient  
Greek philosophy  
and inventions



Compare the  
ancient Greek gov-  
ernment and way  
of life to your own

# Ancient Greece

## and the Beginnings of Democracy

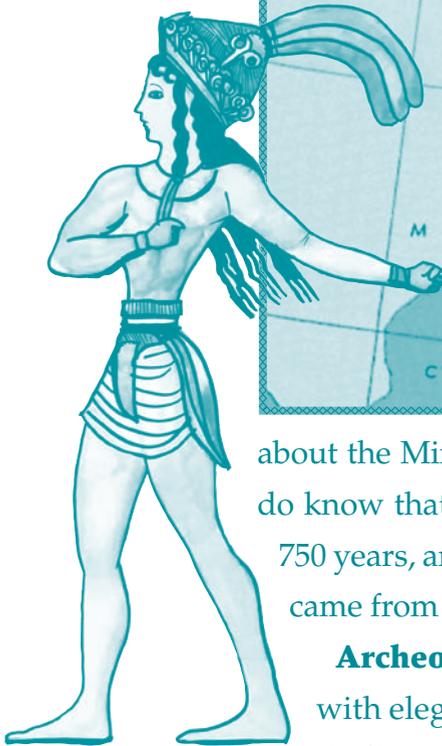
**W**hen we talk about ancient Greece, we are referring to the time period from about 800 BCE to 31 BCE. Those 800 years in ancient Greece produced some amazing ideas, inventions, discoveries, and beliefs, many of which we use in our daily lives today. But before we focus solely on those clever Greeks, let's take a quick look at how ancient Greece evolved.

### The First Greeks

Situated on the Aegean Sea, ancient Greece is considered part of the Aegean world. The Aegean world includes all of the civilizations in this area. The Minoans were the first great civilization in the Aegean world. They lived a peaceful existence on the island of Crete, near mainland Greece. Although much information

#### BCE? CE?

As you read, you will notice dates with the letters BCE. This stands for Before Common Era. The beginning of the Common Era is marked by the birth of Jesus and begins with the year 1 followed by the letters CE. Events that occurred prior to the first year of the Common Era are classified as Before Common Era. The years BCE may seem backward, because as time passes, the years actually become smaller in number. A child born in 300 BCE, for instance, would celebrate his or her 10th birthday in the year 290 BCE. Think of it as a countdown to Common Era.



*Minoan.*

about the Minoan civilization is lost to history, we do know that the Minoans lived on Crete for at least 750 years, and most historians think the first Minoans came from Asia.

**Archeologists** have unearthed Minoan palaces with elegant rooms and elaborate wall paintings, indicating that the Minoan culture was a wealthy one. One interesting discovery about Minoan culture is that they didn't seem to have any military whatsoever. The Minoans traded with other populations throughout the Aegean world, including the Egyptians (they even appear in Egyptian art), but archeologists and histori-



*Mycenaean.*

ans can't find any evidence that the Minoans had an army, or even soldiers. And although the Minoans were the forerunners of ancient Greece, they didn't speak Greek. In fact, no one is sure what language the Minoans used to communicate.

Around 1450 BCE the island of Crete and the Minoans fell under the power of the Mycenaeans, who *did* speak Greek. The Mycenaeans lived on the mainland of Greece, and their nation was called Mycenae. They were excellent craftspeople: they built elaborate underground tombs, giant defensive walls, and the Lion Gate that still stands today. Like the Minoans, the Mycenaeans were traders. Wealth came to them through trade with other lands, such as Egypt and northern Europe. They traded items such as animal skins



*The Trojan Horse.*

and oil for papyrus, a paper-like material made from plant fibers, and amber, a fossilized resin used in making jewelry. But unlike the peaceful Minoans, the Mycenaeans were a warlike people, always battle-ready. Not only did they defend their own people, they actually went looking for trouble. The most famous Mycenaean battle of all is one you'll hear more about later: the battle of Troy in the Trojan War.

There weren't any Greeks in ancient Greece. That term was given to the people of Greece generations later by the Romans. The people we now know as ancient Greeks called themselves Hellenes, after Helen of Troy. Hellenic means Greek.

**Q:** What language did the Minoans speak? What language did the Mycenaeans speak?

## words to know

**archeologist:** someone who studies the buildings, graves, tools, and other objects of people who lived in the past to learn about their culture



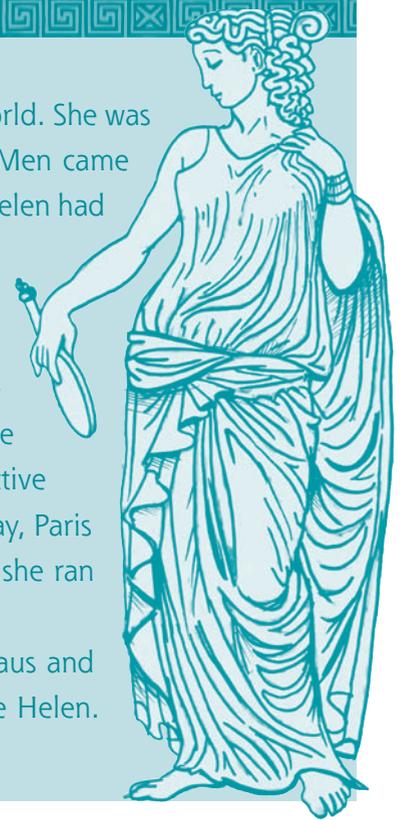
**Know Your Ancient Greeks**

**Helen**

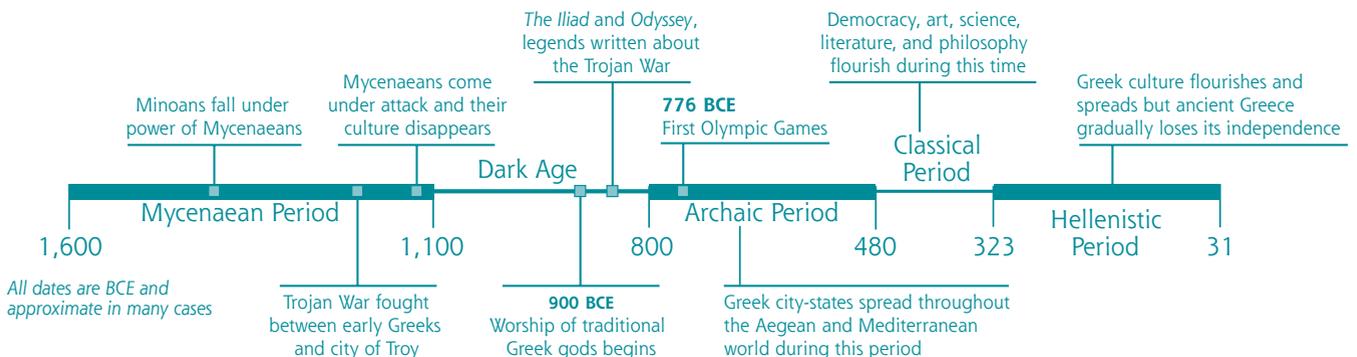
According to legend, Helen was the most beautiful woman in the world. She was the daughter of the Greek god, Zeus, and Leda, a mortal queen. Men came from all over ancient Greece hoping to marry the Spartan princess. Helen had to obey the wishes of her mortal father, Tyndareus, and she married a man named Menelaus, king of Sparta.

The goddess Aphrodite had other plans for Helen. Aphrodite was in debt to a man named Paris because he had chosen her as the most beautiful of three women in a contest. In payment, Aphrodite offered up the beautiful Helen to Paris, and made Paris so attractive that Helen wouldn't be able to refuse him. While Menelaus was away, Paris charmed Helen. People debate whether Paris kidnapped Helen or she ran away with him, but in any case, Menelaus was not happy.

When Paris and Helen reached Troy, they were married. Menelaus and his brother, Agamemnon, followed with an army of men to retrieve Helen. And that's how the Trojan War began in about 1200 BCE.



The mighty Mycenaeans fell under attack between 1200 and 1150 BCE. It isn't known exactly what happened, but some historians believe the Mycenaeans were attacked by the Dorian people from the north. In any case, in less than one hundred years, the Mycenaeans abandoned their civilization, and left few clues as to how they lived. This time period (from about 1100 to 800 BCE) is known as the Greek dark age because all written language and signs of culture completely



### Homer's *Iliad* and *Odyssey*

The *Iliad* tells the story of a single event that occurred during the ninth year of the Trojan War. Achilles, a Greek warrior, became angry at the Greek leader Agamemnon when Agamemnon took a slave who belonged to Achilles. In retaliation, Achilles withdrew from battle and prayed that the war would turn against the Greeks—and it did. Achilles finally returned to battle when his best friend was killed by the great Trojan hero, Hector.

In the *Odyssey*, Homer tells of Odysseus's long journey home after the Trojan War. Delayed for 10 years by the gods, Odysseus encounters much trouble on the way and falls in love with the goddess Kalypso. But when given the choice between staying with Kalypso and becoming immortal, or returning to his wife who is waiting at home, Odysseus chooses to continue home.



Agamemnon

disappeared. Even the decoration of pottery used during this time was only simple geometric forms, not the complicated decorations the Mycenaeans painted. Most historians think that those who survived the upheaval settled into an agricultural, almost tribal, way of life.

The age of the Mycenaeans is described in two of the most famous stories in all of literature: Homer's *Iliad* and *Odyssey*. Written many years after the events they describe, these famous poems tell stories about the Mycenaean civilization. The epics give us some idea of what life must have been like before the Greek dark age.

Gradually, the civilization that we know as ancient Greece emerged from the dark age around 800 BCE. Small agricultural communities slowly expanded into larger settlements. These settlements extended from mainland Greece, across islands scattered throughout the Aegean Sea, and to Asia Minor, a peninsula of land across



### Coins in Ancient Greece

Each city-state had its own coins, recognizable by a distinctive design. Coins were stamped to indicate how much metal they contained, and the markings on both sides of the coin helped to ensure that people wouldn't "shave" it to collect bits of the valuable metal.

A silver coin of the Seleucid king Antiochus IV.



the Aegean Sea from mainland Greece that we now know as Turkey. Greek colonies even developed in areas that are now Italy, Spain, and Egypt. Ancient Greece covered a lot of ground, but it wasn't a single country with one ruler or government like it is today. Instead, those small settlements became a collection of more than 1,000 isolated city-states, called *poleis*.

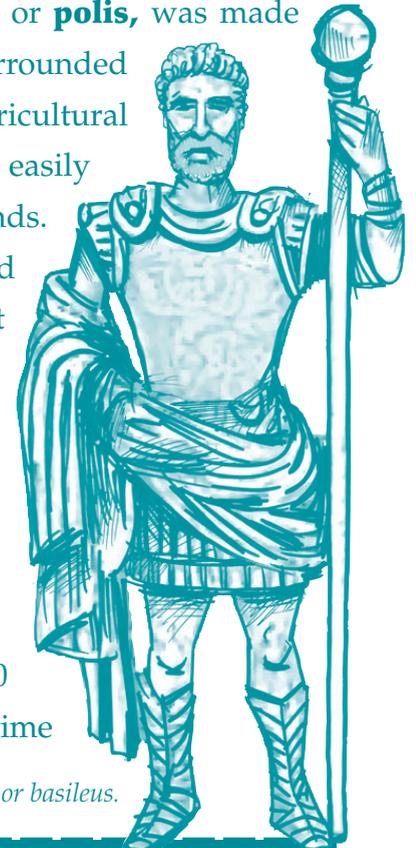
### Greek Poleis

A typical city-state, or **polis**, was made up of a central town surrounded by smaller villages and agricultural

lands. People who lived in the villages could easily walk to town to conduct business or visit friends. The central towns were built around a hill called an **acropolis**. The acropolis was fortified against wartime attacks and offered a clear view of attackers as well as protection to the citizens.

In spite of their physical similarities, each city-state had its own traditions and government. Ancient Greece, therefore, was not one country, but a bunch of tiny nations.

The period in ancient Greece from 800 to 500 BCE is called the **archaic** period. During this time



Greek king or basileus.

## words to know

**polis:** city-state (plural *poleis*)

**acropolis:** high place of the city

**archaic:** from a much earlier period of time, the earliest phases of a culture

**basileus:** a Greek king

many city-states were ruled by king-like figures known as the **basileus**. People soon tired of this type of leadership and eventually overthrew these rulers. City-states began experimenting with different styles of rule, and it was within these city-states that the first democratic government was tested.

## A New Kind of Government

Like most ancient Greek city-states in the archaic period, **Athens** was ruled by a king. A council of nobles, called the **Areopagus**, served under the Athenian

king. As Athens thrived, the nobles got richer and richer, gaining money and land, and as their wealth increased, so did their power. As the members of the Areopagus grew more powerful, the king lost power. Over time, Athens evolved into an **oligarchy** meaning “rule by a few.”

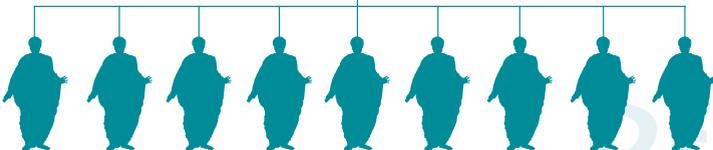
For 200 years, from around 700 to 500 BCE, Athens was ruled by an oligarchy, but since the rulers were wealthy aristocrats, the common people grew more and more frustrated. They were tired of doing things the way wealthy rulers wanted them done, which was usually to benefit



AREOPAGUS—APPOINTS ARCHONS AND HAS FINAL SAY ON ALL MATTERS OF STATE

the wealthy. As the people became more vocal about their complaints, most oligarchies were gradually replaced with a different form of government, and by about 500 BCE

**democracy** became the favored form of government. This early democracy was a step in the right direction, but it



9 ARCHONS—TO RUN THE CITY-STATE

## Democracy

The word *democracy* comes from the Greek term for “people’s rule.” Democracy allows all the people of a governed body to vote on matters of importance, allowing the voice of the majority to be heard. Ancient Greece gave the world its first experiments in democracy, and although these experiments lasted less than 200 years, the lessons learned more than 2,000 years ago have had a major impact on most of today’s governments around the world.

didn't allow all citizens to participate—only free, male citizens were allowed to take part in government decisions.

Athens used a democratic system of self-government. Here's how it worked: the Areopagus, not the people, elected nine rulers, called "**archons**," to run the city-state. But the archons couldn't make a decision without the approval of the Areopagus, so the Areopagus had the final word. Archons ruled for one year, and met weekly to discuss things like taxes, the building and care of temples, and war. Commoners were allowed to attend the assembly to speak out about a case—as long as they were male.

Because the archons were appointed by the wealthy, things were still unfair for the common people. While wheat farmers struggled to grow successful crops in the arid land, the vineyards and olive groves thrived. Guess who owned many of those?

The wealthy men of the Areopagus! While the men of the Areopagus sold their wine and olive oil and became richer, the wheat farmers—who couldn't provide enough wheat for Athens—grew poorer and poorer as Athenians began to import wheat. In order to pay off their debts, poor wheat farmers were forced to sell their wives and children (and sometimes even themselves) into slavery.

## words to know

**Athens:** the cultural center of ancient Greece

**Areopagus:** a council of nobles beneath the king

**oligarchy:** rule by a few

**democracy:** rule by the people

**archon:** after the age of kings, city-states were ruled by nine archons

**boule:** a government council of 400 men balancing the Areopagus



In Athens, groups of poor and middle-class citizens complained about the unfairness and about the way their city-state was run. They demanded to be given some power to make laws. In 594 BCE the Areopagus recognized that the people were ready to revolt and agreed to give all political power to one man, a wealthy businessman and aristocrat named Solon.

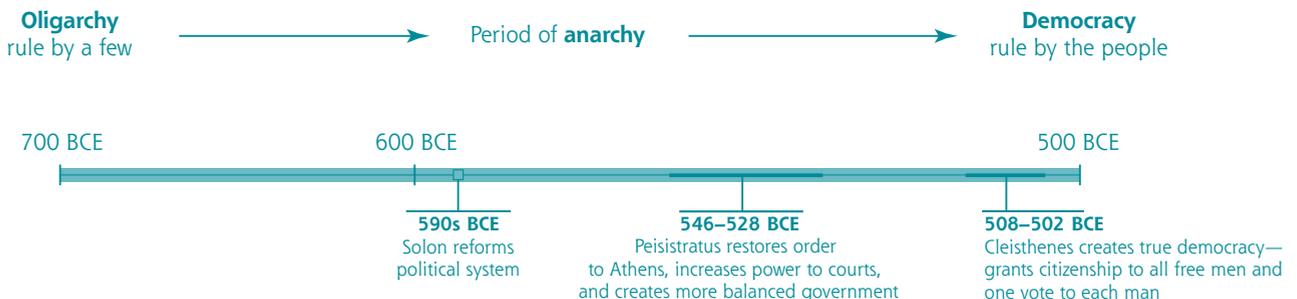
**Q:** Name three **modern-day countries** governed by a **democracy**. What makes them a democracy?



Solon

It was up to Solon to reform the political system to prevent civil war, that is, a war between different groups within Athens. The government of Athens needed to provide more rights and protection for the common people. As a first step in this direction, Solon abolished slavery caused by debt. A man didn't have to sell his wife or children to pay off money he owed any longer! Solon then divided the population of Athens into groups so that people were no longer governed based on wealth and nobility. He created four groups.

Members of the wealthiest two groups were allowed to serve on the Areopagus. Another group was allowed to serve on the **"boule,"** an elected council. The boule was made up of 400 men and served as a kind of balance to the Areopagus. Members of the boule were elected and could



### Assembly Duty

Many men had to travel from the countryside to the city of Athens to participate in the assembly. Sometimes, not enough men showed up. When this happened, a band of specially trained slaves went looking for those who had shirked their duty. Men who had neglected to show up at the assembly were swatted with a rope dipped in red paint and forced to pay a fine.

only serve for one year. A fourth group, made up of the poorest people, could participate in an assembly. Historians believe that between 4,000 and 6,000 men attended each assembly. This assembly acted as the voice of the people and had a lot of power.

Here's how it worked: The council made recommendations about laws and state business, kind of like **legislative bills** today. The assembly discussed these recommendations and voted on them. If a majority of assembly members voted for the recommendation, it became a decree enforceable by law. The men of the assembly voted to elect officials, declare war, grant citizenship, and spend public funds. The assembly had direct authority in affairs of the state and the council enforced the decisions made by the assembly.

### Greek Justice

People accused of a crime in ancient Greece were subject to the judgment of a jury of their **peers**. And what a jury it was! Each year, 6,000 men



**Solon was one of the Seven Wise Men of ancient Greece and today *solon* means a man who is a respected leader.**

## words to know

**legislative bill:** the action of proposing a law, an idea for a new law

**peer:** a person who is of equal standing with another in a group: your friends are your peers

**pension:** regular income during retirement

**magistrate:** someone who administers laws

**anarchy:** a chaotic period with no clear leader

were chosen to act as jurors, though not all of them sat on the same jury at the same time (the trial of Socrates, a fourth-century philosopher who questioned the existence of the the Greek gods, for example, had a jury of about 500 men). These large juries made it nearly impossible for anyone to bribe the jury and influence the verdict. Jurors were selected by drawing lots and had to be at least 30 years old. They were paid a daily fee for their service, and since many of them were old, it became something like a retirement **pension** for many. The courts were kept in order by a **magistrate** (not a judge) and the jurors usually voted twice: once to determine guilt or innocence and a second time to decide upon the penalty. The majority ruled, and there was no such thing as an appeal—the jurors' word was final.



**AREOPAGUS**—MEMBERS OF THE WEALTHIEST TWO GROUPS



**BOULE**—ELECTED COUNCIL

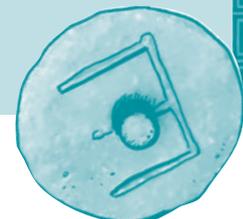
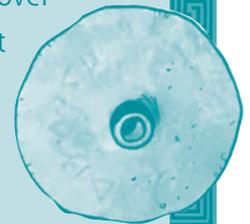


**ASSEMBLY**—POOREST GROUP OF CITIZENS

These changes got the common people more involved in politics, but didn't eliminate their complaints entirely. Although Solon's ideas helped to change the government, poor people were still poor and those who had lost wealth and power because of the reforms were unhappy too. Athens still wasn't a true democracy. Solon left and Athens fell into **anarchy**, a chaotic period with no clear leader. Twice during this chaotic time a

### A Greek Ballot

When a trial ended, jurors voted on whether the accused person was innocent or guilty. To do so, jurors dropped a metal disc into a ballot box—discs were either solid or had a hole in the middle. Solid discs meant "innocent" and discs with a hole in the middle meant "guilty." A juror held his finger over the center of the disc as he dropped it into the box, making it impossible for observers to know how he had voted. The ballots were then counted to determine the accused person's fate. This is what we call a secret ballot.



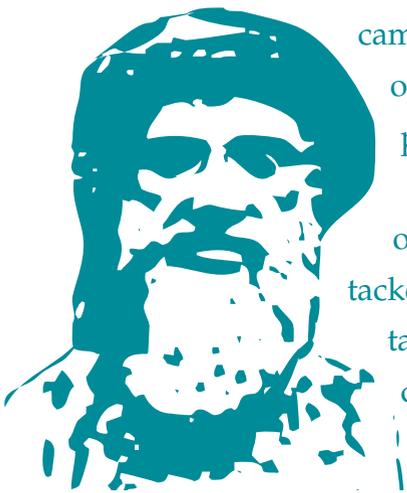
man named Peisistratus tried to take over, but twice he failed.

Finally, in 546 BCE, Peisistratus successfully took charge of Athens and worked to restore order. He decided to turn Athens into a city full of culture. He built new buildings and invited artists and poets to come to Athens to make it more sophisticated and interesting.

Since Peisistratus became leader of Athens by force, he would have been called a *tyrannos*, or, in today's terms, a tyrant. Normally, a tyrant is a cruel leader who bullies others, but Peisistratus wasn't that way. He kept the constitution that Solon introduced and increased the power of the courts that benefited the lower classes. As poor Greek citizens became more involved in the government by acting as assemblymen or jurors, the aristocrats were forced into a smaller role on the political stage, creating a more balanced government.

Peisistratus died around 528 BCE, and his son Hippias took over. Hippias was not a good leader and when Athens was attacked by **Sparta** in 510 BCE, Hippias ran off to Persia. The Spartans eventually agreed to a truce with Athens, and the Athenians chose a man named Cleisthenes to take control of Athens.

Cleisthenes is important because, from 508 to 502 BCE, he helped create the world's first successful democracy. He



Hippias, son of Peisistratus

### Out Among the Citizens

American presidents like to visit factories, farms, daycare centers, and schools to find out what the "person on the street" thinks about the government's actions. More than 2,000 years ago, Greek leaders did the very same thing. Around 550 BCE, for example, our old friend Peisistratus often inspected the farms and country homes of his subjects. One day, after he had made a new tax on the income of farmers, he came across a farmer digging in a field of stones and asked what his income was. The farmer replied, "Just so many aches and pains, and of these pains, Peisistratus ought to take his 10 percent in taxes." Peisistratus was so surprised by the farmer's honesty that he gave the farmer a refund on all the taxes he had paid.

### Away With You!

Another powerful change in the new democratic system of Athens was the introduction of ostracism—a kind of “reverse election” in which voters could decide to kick a citizen out of town for 10 years.

First, citizens voted whether ostracism should take place. If this vote passed, citizens would then write the name of the person they wanted to banish on *ostraca*, fragments of broken pottery. If more than 6,000 citizens participated in this second vote, then the person whose name appeared most often would be banished.

This practice was a powerful threat against wealthy aristocrats who were considered dangerous or untrustworthy. If you bothered too many people with your actions, they’d get together and legally boot you out!

At the end of the fifth century, this system changed so that people accused of wrongdoing were judged by a jury of their peers. The typical jury had several hundred people on it.

granted citizenship to all free men living in Athens and **Attica**, and formed a council and assembly that allowed those citizens to actively participate in government. These changes further reduced the power of the aristocrats, and for the first time, money alone wasn’t enough to guarantee that the government would do what the wealthy wanted it to. “One man, one vote” became the guiding principle—a belief that still holds in today’s democracies.

**Q:** In what areas did Solon fail to create a true democracy?

### Athens

While each city-state in ancient Greece was governed by its own people by the time of Cleisthenes’s rule, Athens emerged as the prime example of democracy. For the first time in history, people had the ability to

## words to know

**Sparta:** a warlike city-state in ancient Greece

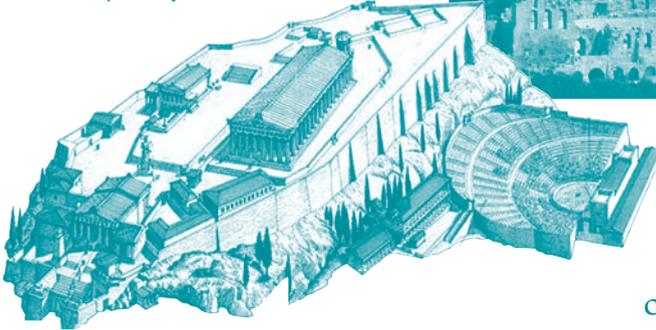
**acropolis:** the fortified part of an ancient Greek city and the surrounding region

**Attica:** Athens and the surrounding region

*The Acropolis ruins in modern-day Athens.*



*The Acropolis of ancient Athens.*



publicly voice their opinions and be heard. Even the poorest people discovered that they had the freedom to make changes in their world.

This freedom to think and share opinions spurred not only a democratic government but also a desire for knowledge. Athens was filled with scholars, artists, scientists, and philosophers—people wondering “how” and “why” and pushing the limits of common thought. Works by famous poets, philosophers, and mathematicians, all written on scrolls, filled huge libraries. Artists carved great marble sculptures. Architects erected grand buildings. One of those buildings was the Acropolis. Topped with a fortress, the Acropolis was a refuge for Athenian families during wars, and it allowed Athenian soldiers to fire

on enemies easily as they tried to climb up the steep embankment. A portion of this structure still stands today.

With regular wars, the citizen soldiers of Athens could be called upon at any time to go to battle. Men kept themselves in good shape by participating regularly in rigorous sporting events such as wrestling, boxing, and chariot racing.



*Greek wrestlers.*

### One of These Democracies Is Not Like the Other

While Athens had the first democratic government, its democracy was far different from what we have in the United States today. To begin with, while all citizens could serve in the government, few of the people who lived in Athens were actually considered citizens!

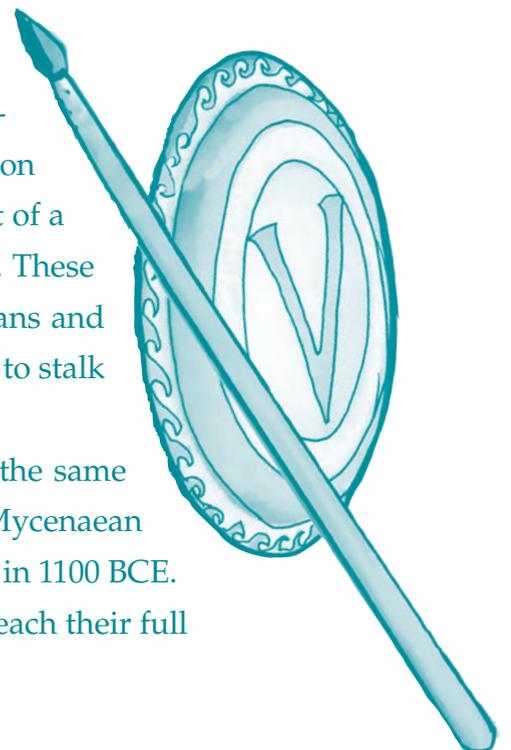
Women, for example, were not citizens. Slaves and most foreigners were not allowed to become citizens, and male adults could only become citizens if both of their parents were from Athens. These restrictions meant that out of an estimated population of 250,000, only about 30,000 were actual citizens. Keep in mind, though, that the United States started its democracy in much the same way. Women couldn't vote in the United States until 1920. Slaves couldn't vote and initially counted as only three-fifths of a person—and the slave owner (not the slave) got to use the vote! If Athenian democracy had lasted, perhaps it would have evolved as the United States's has. But Greek democracy lasted less than 200 years, ending around 338 BCE, when the Greek world lost its independence.

Another difference is in how government officials were selected. The United States has a representative government. Citizens decide to run for office, then we vote for one of these people to represent us. In Athens, your name was submitted with all the others and you might be "elected" to serve. Serving wasn't an option, it was a duty. If you refused to participate, you lost your civil rights and were shunned by others.

## Sparta

Things were different in Sparta, another powerful city-state in ancient Greece. Sparta's economy, whose entire purpose was to provide its armies with supplies, was based on slave labor. As the slave population grew, so did the threat of a slave revolt, so Spartans had to keep their slaves in check. These slaves, called helots, were monitored closely by the Spartans and treated cruelly. It was a rite of passage for those in training to stalk and kill helots, who must have lived in constant fear.

Spartans may have been descended from the Dorians, the same warlike people who are thought to have destroyed the Mycenaean civilization and plunged the Aegean world into a dark age in 1100 BCE. The Spartans saw the militaristic life as a way for men to reach their full



potential. Because the men of Sparta spent all of their time striving for militaristic perfection, they were always ready for war. They developed

## Q: How did ancient Greek democracy differ from democracy in current-day America?

and practiced complicated maneuvers designed to surprise enemies on the battlefield. Because the element of surprise was important, no outsiders were

allowed to watch these secret exercises. Other exercises, though, were public and designed to frighten their enemies.

Spartans lived the disciplined life of a soldier. At night they practiced moving in the dark without the aid of torches. Spartan men spent all day practicing to be soldiers, while women and slaves took care of the daily chores necessary for the city-state to survive.

Spartans were ruthless in their quest to produce fine soldiers and even babies couldn't escape harsh treatment. If a baby boy was determined too weak to be a future soldier, he was taken to the mountains and abandoned, left to die. If he was healthy, he was taken from his mother at the age of seven to begin military training. Boys became soldiers at age 20.

Sparta never achieved the democratic ideals of Athens.

It was ruled by a military oligarchy during times of war and a senate of 30 in between wars.

The city-state of Sparta did contribute to the rise of democracy and culture in Athens though, by helping to defend all of the Greek world from Persian invaders in the sixth century BCE. Without Sparta, Athens could not have flourished. In the end Sparta was also responsible for the decline of Athens in the fourth century BCE, as the two city-states battled each other in war after war.



*Spartan soldier.*

See what the farmers grew, what people ate, and where they bought their food

Learn about ancient Greek money, and how and why ancient Greeks braved the seas to trade

Understand the different roles of gender and class, within the family and without

# Farming, Trade, and the Greek Way of Life

At the height of ancient Greek civilization, there were an estimated 250,000 people living in Athens alone. The area surrounding Athens—called Attica—was home to another 250,000. While Athens was a bustling city-state, life in the countryside was quiet, slow-paced, and conservative.

The people who lived in Attica were mostly farmers, raising crops in the open countryside. The farmers of Attica viewed the Athenians as lazy and frivolous with their money. Athenians, with their educated and worldly ways, considered farmers to be old-fashioned, dim-witted, and miserly. But in spite of their differences, Athenians depended



## The Agora

At the heart of each city-state was the agora. The focus of political, social, and commercial activity, the agora served as the religious and cultural center for the region and as the seat of justice.

The agora was a busy place. Every day, farmers and local craftspeople set up stalls filled with their wares. Think of the agora as an ancient version of a supermarket. Farmers came from the surrounding countryside to sell fruits and vegetables, cheese, wine, and meat; fishermen displayed fish fresh from the Aegean Sea; and craftspeople offered pottery, hardware, and books to passersby. The men of the community came to the agora every morning to purchase the day's food for their families. This gave them the opportunity to gather with other men from the community to hear the news or discuss politics. Shopping for food in ancient Greece was not just a necessity, it was a social activity!

Surrounding the bustling activity of the agora you might find several temples, army headquarters, a court of law, a notice board with information about upcoming legal cases and new laws, and a prison.

upon farmers to supply their city with food, and the farmers of Attica needed the city people to buy it.

Farmers worked hard, from daybreak to sunset, growing and harvesting the food that would feed their families. What the farmer didn't need for his own table was sold to the Athenians at the **agora**.

## *words* to know

**agora:** open-air market

**arid:** very dry, with little rainfall

## Food for Thought

The life of a farmer in ancient Greece wasn't easy. The land was rugged and much of it was too steep for farmers to cultivate crops. Farmers terraced the land to make more usable space by creating big steps in the

**Q:** Were there more people in Athens or Attica?

hillsides. But even in areas where the land was leveled, the soil was rocky

and poor. To make matters worse, the climate of Greece is extremely **arid**. But people must eat, so farmers toiled to produce what food they could, cultivating crops that would thrive in tough conditions.

Grapes, olives, and figs were the primary crops in ancient Greece. Other crops were grown as well, but with little enough success that they weren't very important to the ancient Greek diet. Chickens and goats were raised to provide milk, cheese, and eggs.

The majority of the grape crop was turned into wine, and the rest was eaten fresh when in season. Olives, too, were turned into a liquid product. Olive oil was used for cooking, as you might expect, and also as fuel for lamps, in beauty products, and as a soap of sorts, to remove dirt from the body.

### From Fruit to Wine

The grape harvest meant an abundance of fruit to be made into wine. Winemakers filled big containers with the ripe, sweet-smelling grapes, then a man would step right into the middle of the container and use his feet to crush them! As the grapes were stomped, the juice was released and accumulated in the bottom of the container. The juice was then separated from the grape stems and pulp. This was hard work—40 pounds of grapes might only yield 1 or 2 gallons of juice! Once the juice was extracted, it was ready for the fermentation process, which could take another year or more. Making wine required lots of patience.



## Trade

Bread was important to the ancient Greek diet, though wheat grew poorly. Farmers had greater success with barley, which was more tolerant of the tough conditions, and used it for making barley bread. Even so, farmers could not produce a sufficient amount of grain to fill the needs

**Q** • What were **three uses of olive oil** in ancient Greece?

of the country, making trade essential. The ancient Greeks' successful production of wine and olive oil meant an abundance

that could be offered in trade to people living in distant lands. In addition, ancient Greece exported silver from the mines at Laurium (near Athens) and painted pottery. Greek merchant ships were loaded with

### Thales (circa 636–circa 546 BCE)

An ancient Greek famous for being a deep thinker, Thales put his knowledge to practical use as well. When he was mocked for thinking all the time and never working, he said, "Anyone can make money if he puts his mind to it." His friends challenged him to prove it.

To do so, Thales first had to decide on the best way to make money. In the sixth century BCE, olive oil was such a necessity that olives looked like the best bet. He learned as much as he could about the growing, harvesting, and pressing of olives to make oil and discovered that olive production had been down for the past few years. This led him to investigate weather patterns. The previous few seasons had produced very poor crops, but Thales predicted a change in the weather for the upcoming season that would mean a heavy crop.

Thales toured the olive groves and purchased all the oil presses he could from the discouraged growers. The presses had been almost useless recently, so growers were happy to sell them.

When the weather was favorable the following year, olive trees produced a huge crop, but all the presses belonged to Thales. He had created a monopoly, and olive farmers who wanted to make oil were forced to pay a fee in order to borrow Thales's presses. This monopoly—and Thales's thinking—brought him great wealth.



*Olive press.*

these exports and sent to trade across the Mediterranean and Aegean Seas. They even ventured into the Black Sea to trade for corn. Goods from Egypt, Libya, Cyprus, Sicily, and Italy made their way back to ancient Greece on these ships. Athens imported metals, furs, and grain. Two-thirds of the grain needed to supply Athens came from successful trading.



The merchant ships were less than 100 feet long and graced with a single rectangular sail. The sail was used when winds were favorable; otherwise the ship was powered by men rowing in unison. The ships were open-hulled with no place for the crew to escape wind, rain, and splashing waves. Rowers sat on long, hard benches exposed to the elements. If the weather got too nasty, they would use a canvas cover for protection. Because of the dangers of traveling in a vessel such as this, crews seldom left sight of land and would pull the

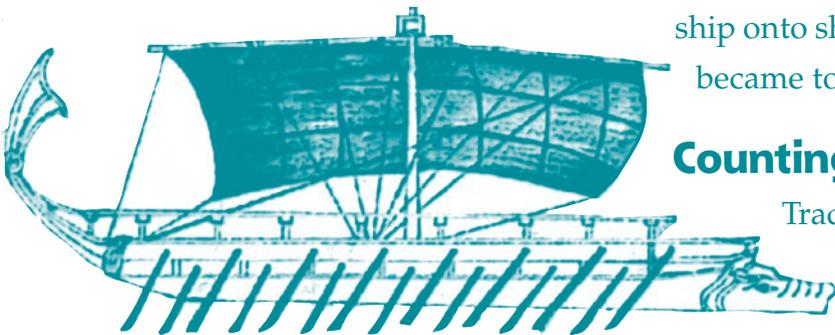
ship onto shore at night or if seas became too rough.

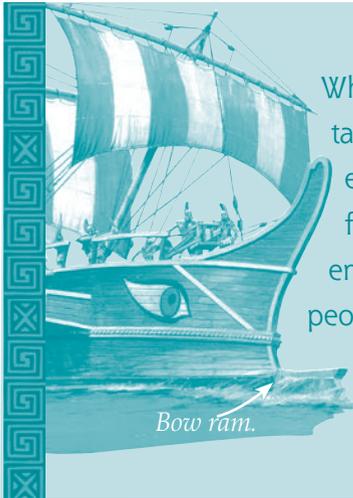
**Q** • What ingredient did ancient Greeks use in place of wheat to make bread?

### Counting Cash

Tradespeople used a system called barter to make sure that each trade was fair. They set certain values on their goods, and in order for a trade to be considered fair, they

needed to receive something of equal value. The earliest coins were





### What About Pirates?

When trading ships ventured out to sea, they were at risk of being attacked by pirates. To combat this problem, Greek merchant ships were equipped with bow rams to fight off pirate ships. Projecting underwater from the bow of the ship, the copper-tipped ram could punch holes in enemy ships that came too close, causing the ships to sink. It was rare for people to learn how to swim during ancient times—even for sailors who spent most of their time on the open ocean. Because of this, causing a ship to sink was quite effective. The pirates on board would quickly perish as they found themselves in the water, unable to stay afloat.

probably lumps of metal stamped to reveal the metal's weight. These coins may have been given as pay to soldiers or used in trade; the coin's recipient could use the metal to purchase goods.

Around 600 BCE, Aegina, a city-state near Athens, made the first Greek coin that could be used as payment for goods. Around 590 BCE Athens issued a coin made of silver called a drachma. Imprinted with an owl, which was recognized as Athena's symbol, drachmas were the most common currency in the Aegean world during the height of the Athenian empire. The coins weren't printed with a number to show their value; instead the value of a coin was determined by its weight, which was stamped on each coin. Only Sparta rejected the drachma, preferring to stick with the more familiar heavy metal lumps. This likely discouraged trade between Sparta and other city-states in ancient Greece. It wasn't until sometime in the third century BCE that Sparta finally began to mint coins.

As coinage became more common, most city-states minted their own coins, decorating them with eagles, owls, horses, and mythological crea-



tures like Pegasus, the winged horse. Coins made in Athens wouldn't necessarily be accepted in, say, Aegina. (This is still true in today's world. You can use American dollars in Canada, but not in European countries; you must

first visit a bank and exchange your dollars for euros.) To deal with this problem, money changers called *trapezitai* would set up tables in agoras and other public places. So an Athenian visitor to Aegina, for example, could visit the *trapezitai* and exchange their Athenian coins for Aeginian coins of equal value, allowing them to buy goods in Aegina.

When Alexander the Great conquered much of Asia in the 300s BCE, he spread the use of one Greek currency across the land, making it much easier for people to trade as they traveled through different city-states. For a time, the drachma fell out of favor, but in 1832, the modern state of Greece reissued the drachma and it was used until 2002, when Greece joined other European countries in adopting the euro. Just another example of modern societies following the Greeks!

**Q:** How much of Athens's grain was imported from other colonies?



### What's a Drachma Worth?

Wondering what a drachma was worth in ancient Athens? Around 550 BCE, three drachmas might buy a bushel of corn, and a sheep was worth eight drachmas. The daily wage for a laborer was about one drachma. Some historians estimate that a family of four could live for four days on a single drachma.

### Currant Events

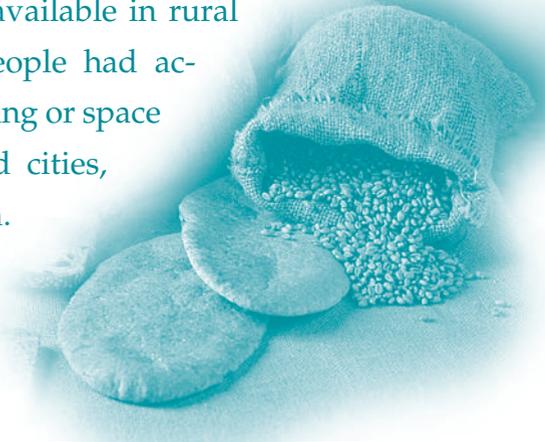
One type of dried fruit favored by the ancient Greeks was the currant. Currants are dried fruits, quite like raisins, only smaller. Ancient Greeks called them *Corinths*, after the *polis* where they originated. Over the years, the term evolved to *currants*—a name we still use today. You can buy currants at a modern-day supermarket.

### What Was the Food Like?

Athenians ate two substantial meals per day—a light lunch, called *ariston*, and dinner, called *deipnon*. In a Greek home, meals were light compared to today's supersized meals. Meat was eaten only a couple of times each week, likely fresh fish, rabbit, deer, or pigeon. Meat was more commonly available in rural areas, as people had access to hunting or space

enough to raise animals. In towns and cities, meat and fish were available at the agora.

Grains, fruits, and vegetables were the main part of the ancient Greek diet. Breakfast might be simply a piece of



### Snack like a Greek

Some foods that were prepared by ancient Greeks are still common today. The ancient Greeks rolled pastry as thin as leaves to make Spanakopita, or spinach pie, and baklava. They coined the term phyllo (or leaf) for their super thin pastry, because it was as thin as leaves. Spinach pie may not sound like something you'd like to try, but baklava is a dessert made with phyllo, honey, and nuts. You can try baklava for yourself—see the recipe on page 36.

Another Greek food that you may recognize is feta cheese. The name *feta* (or sliced) was given to the cheese in the seventeenth century, but the history of this cheese goes back to the time of Homer. Feta cheese is special because it is made only from goat's or sheep's milk. Polyphemus, the Cyclopes who imprisoned Odysseus (you'll read more about him in later chapters) is said to have been the first manufacturer of feta cheese, quite by accident. He stored sheep's milk from his flock in animal skin bags. One day he discovered that some bags that he had left for a number of days were not full of liquid as he expected, but a firm mass of creamy cheese.

bread dipped in wine. Lunch might be bread with cheese, olives, figs, dates, grapes, or currants. Supper was usually something like a thick porridge made from barley. Vegetables such as peas, garlic, lettuce, parsley, mushrooms, artichokes, or beets might accompany the porridge. While today's tables are almost always set with forks, spoons, and knives, the ancient Greeks considered it completely proper to eat with their fingers. Many foods were served raw, often in bite-sized pieces, making them easier to eat. For messier meals, a piece of flat bread might be used as a spoon.

Summertime meals were prepared outside over an open fire. In the wintertime, a small stove called a brazier was used indoors for both cooking and heating the home. Houses had a small hole in the roof to allow smoke to escape.

### Chill Out

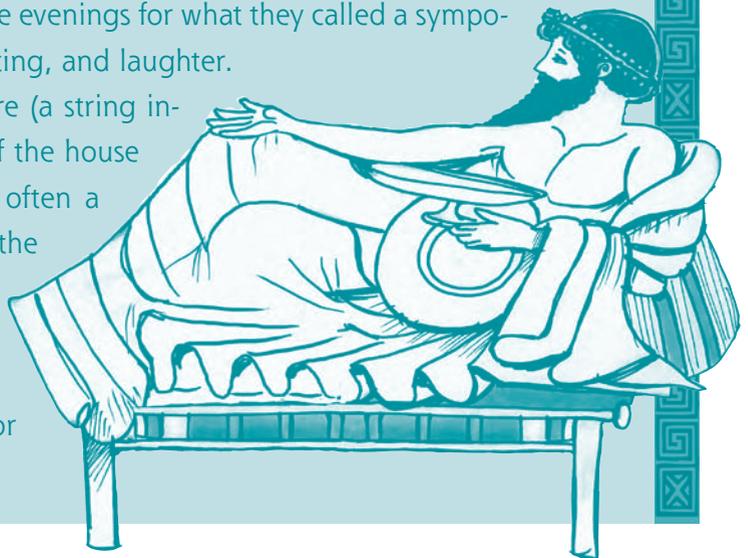
The ancient Greeks preferred their drinks chilled, so they stored their beverages in containers underground. While this worked reasonably well, those who could afford it used ice, which mule trains hauled from the mountains into the city on a daily basis.

**Q:** What made up the largest portion of the ancient Greek diet?

### The Symposium

Wealthy Greek men liked to gather in the evenings for what they called a symposium. This was an evening of food, visiting, and laughter.

Guests would recite poetry, play the lyre (a string instrument), or sing. While the women of the house were not included in the symposium, often a woman called a *hetaira* entertained the men by dancing or playing music. The *hetaira* was usually a foreigner, as it would be considered inappropriate for an Athenian woman to sing or dance for a group of men!



# activity: Host Your Own Symposium



Invite a group of friends to join you for an afternoon with an ancient-Greek feel. In order to host your own symposium, you'll need to provide food, drinks, and entertainment. Here are a few ideas.

1 Send an invitation written on a scroll. Make sure to ask your friends to bring a favorite poem or short story to share. You can even suggest that they come in costume! The ancient Greeks wore simple tunics made of linen; your guests can drape themselves with a white sheet.

2 The ancient Greeks lounged on couches called *klines* during their symposiums. Since you might not have enough couches for your guests, lay towels and pillows on the floor in a circular formation.

Meals served at a symposium were much more elaborate than everyday family meals. Special dishes were prepared for guests. One special ancient Greek dish you are probably familiar with is an egg omelet; the Greeks filled theirs with cheese, honey, and sheep's brains.

## **Bathing, etc.**

The earliest bathtubs in ancient Greece were built by the Mycenaeans at the Palace of Nestor at Pylos and were made from **terra-cotta**. The ancient Greeks kept



*Greek terra-cotta urn.*

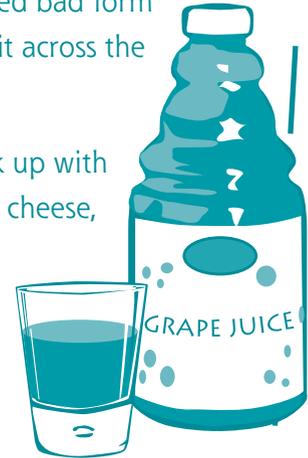
3 Teach your guests about proper symposium behavior: it was considered bad form to drop a cup or laugh during a prayer, tap or whistle to music, or spit across the table at the wine pourer.

4 Small tidbits of food were served because they were easy to pick up with only one hand. Offer your symposium guests grapes, cubes of cheese, and small slices of bread. The ancient Greeks drank wine; you can serve grape juice.

5 For entertainment, ask each guest to share their favorite poem or short story with the group. You might have a book of poems on hand, in case some guests forget to bring a favorite.

6 If one of the guests is a musician, ask her to perform.

7 Try playing a game similar to one played at ancient Greek symposiums: Choose a poem or nursery rhyme that is familiar to everyone. The first player should recite the first line, then, going around the circle, each player adds a line from memory. See how far you can go!



themselves exceptionally clean. Many homes were equipped with a bath—a room that may have contained a terra-cotta tub as well as a basin that sat on a small table, used for washing hands and face. The tub drained through a channel on the floor to the outside of the home. Some of the wealthier homes may even have had showers similar to those found in public bathhouses, with water piped in to spray on bathers.

Water came to the city of Athens via terra-cotta pipes that fed public fountains. People carried empty vessels to the fountain, filled them with water, and carried them home. Dirty water was usually just dumped outside, along with the other trash that people



### Rules of Relief

Even though it was acceptable for men to relieve themselves out of doors, they had to be careful not to offend the gods. Hesiod, an early Greek poet, gave this advice:

“Do not urinate standing upright facing the sun but remember to do it either when the sun has set or when it is rising. Do not make water either on the road or beside the road as you go along and do not bare yourself. The nights belong to the blessed gods. A good man who has a wise heart sits or goes to the wall of an enclosed court.”

generated. Rubbish was often piled ankle deep along roadways, making conditions in ancient Greece less than sanitary. Human waste, too, was a problem. There were no public toilets, but it was common for men to relieve themselves in public. With so many people in the city, the streets quickly filled with smelly waste. Dung collectors worked to clean up the mess, but by law could not dump it within half a mile of the city. Hauling waste that far was time-consuming, and limited the amount of dung that could be removed each day. If dung collectors couldn't keep up with the amount of waste produced, the streets would quickly become a sloppy mess.

Ancient Greeks depended on clay jars and vessels to collect their toilet waste. Slaves disposed of the waste in these stinky jars as part of their job.

### It's a Man's World

The male head of a wealthy family enforced household rules, controlled the family money, and arranged for the education of his children. His family—wife, children, and slaves—were called *oikos*, meaning “household.” The members of the *oikos* were expected to obey him. But while the head of the household spent much of his time in town, educating himself or practicing his athletic skills, the daily running of the home was usually left to his wife.

Women were expected to supervise the household slaves, who did



most of the housework and cared for small children, and take care of certain tasks, such as spinning and weaving. Women from wealthy families in Athens lived, for the most part, separately from all men who were not part of their *oikos*, seldom even speaking to them. Women and female children were confined to their homes except for special occasions, such as weddings and funerals. At home, parents might tell stories in the courtyard or visit with other members of the family. But when the man of the house entertained his friends, women and girls were expected to retire to the women's quarters, since it was considered inappropriate for them to mix with men who were not family members.

In ancient Greece if you weren't wealthy, you were likely poor and struggling to put food on the table. Women from poor families or slaves couldn't afford the luxury of staying indoors. They were needed to help fetch water, sell wares at the marketplace, or harvest

**Q:** What is an *oikos*?

### Legendary Greeks

#### Gaea

Representing the earth itself, Gaea was born of Chaos. The mother of all of the natural features of earth, Gaea was a supreme being honored by the Olympian gods as well as common Greeks. Gaea and Uranus (the starlit sky) produced the Titans, who were the first race on earth. Gaea was imagined by early Greeks to be a bountiful mother and is represented as a gigantic woman, to whom those Greeks offered gifts of fruit and grains.





crops. Some poor women worked for pay—weaving, harvesting grapes, or even as wet nurses, nursing babies for wealthier women.

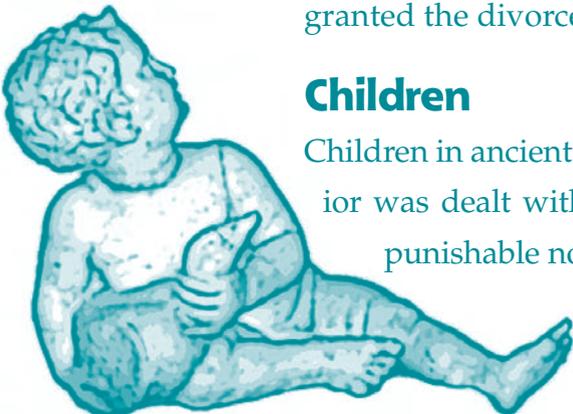
## Marriage

On the rare occasions that wealthy Athenian women were allowed to leave their homes, they were guarded watchfully by the men in the family. It would be a disgrace if an Athenian woman or girl met and fell in love with a non-Athenian. Marriage to a non-Athenian would mean that their children would not be citizens, and only citizens in Athens could own land or participate in government.

The parents of wealthy young Athenian women arranged for a suitable marriage partner for their daughter. Getting married was not usually a matter of love in ancient Greece; it was a legal agreement. A young woman's father provided a "**dowry**"—money to pay for taking care of the bride—as part of the marriage agreement. Divorce in Athens was acceptable and was most often initiated by men. As you might expect, the laws favored men—to make it official, a man simply had to declare his intent to divorce in front of witnesses. A man who chose divorce nearly always retained custody of his children, though he was often required to return the dowry. It was rarer for a woman to divorce her husband, perhaps partly because it was more difficult. Since women were not allowed to bring cases to court, a woman wishing to divorce her husband had to appeal to the city archons, and even if she was granted the divorce, she was rarely allowed to keep her children.

## Children

Children in ancient Greece were kept under close watch, and bad behavior was dealt with harshly. Misbehavior and general foolishness was punishable not only by parents, but also by tutors and community members. Some fathers would even send a slave to



### Athenian Toddlers

Just like toddlers today, Athenian toddlers had to learn proper hygiene. Archeologists discovered an ancient potty chair made of clay when they excavated an Athenian marketplace during the 1950s.



school with their sons, to make certain that they didn't misbehave!

Still, children were allowed to play, just like kids today. You might even recognize some of the toys they played with: balls (*sphairai*), hoops, tops, dolls, yo-yos, and even miniature chariots. At age seven, young boys went to school. Young girls, on the other hand, were trained by their mothers at home in weaving and other household skills. Teachers in ancient Greece were called *grammatistes*.

**Q:** What is the Greek word for ball?

### Slavery in Ancient Greece

The ancient Greeks kept slaves (or “helots”) as early as 800 BCE, though no one knows the exact origins of this custom. Around 400 BCE historians believe that slaves made up about one-third of the Athenian population. People became slaves for different reasons: some were kidnapped and sold into slavery, some were prisoners of war, and others were born into slavery. Unlike slaves in early America, ancient Greek slaves were racially diverse—they came from many regions, including Thrace, Syria, and Lydia—and their status could vary. Domestic slaves worked in the home, doing common household chores, such as grinding grain, washing clothes, and cleaning. Athenian slaves were protected by law from physical abuse, but since slaves could not represent



## Houses at Olynthos

Olynthos was a town across the Aegean Sea from Athens in northeastern Greece. In the fourth century BCE King Philip of Macedon, father to Alexander the Great, wished to expand his empire into Olynthos. When Olynthians tried to resist King Philip's expansion, Philip ordered that the city be demolished. Because nothing was ever rebuilt there, the remains are a perfect opportunity for archeologists to study how people lived at Olynthos. Archeologists excavated about 100 houses, finding things like brass door knockers, clay sculptures, and a bronze arrowhead.



*Floor mosaic.*

The houses at Olynthos were made of sun-baked mud and laid out in a grid pattern with streets running between them. Some of the floors were decorated with mosaics—different colored pebbles arranged in a pattern and set into the mud floor. Like most ancient Greek homes, these houses were built around courtyards situated to take advantage of temperature variations between seasons. A sheltered balcony along three sides of the courtyard faced south, allowing sunlight to reach into the courtyard to warm the residents during the cold, sometimes snowy winters. In the hot summer months, people could stay cool in the shade below the balconies. Archeologists believe that these private courtyards were used for drying laundry as well as other day-to-day chores.

themselves in court, they seldom lodged complaints. Starvation and flogging were two methods used to keep slaves in line, but in many households slaves were treated kindly. These slaves were considered a part of the family and underwent a special initiation ceremony upon becoming a member of a household. The purpose of the ceremony was to invoke the protection of Hestia, goddess of the hearth.

Some slaves acted as shop managers, bankers, ship's captains, and artisans and lived separately from their masters. They were paid for their work and were required to give a portion of their income to their owners.

Slaves who earned a wage were sometimes offered the right to buy their freedom, thus becoming "freedmen."

**Q:** How did **architecture** at Olynthos help **relieve the cold of winter?**

### Pasion, the Slave

Some Athenians refused to work at menial jobs, but these jobs still needed to be done. This provided opportunities for a limited number of slaves. One famous Athenian slave, named Pasion, began his service working at a bank. During a time of financial crisis in Athens, he generously gave money to the state. Because of his actions, he was eventually granted citizenship. When he died in 370 BCE, he was the richest banker and manufacturer in Athens.



Other slaves were owned by the city-state. Some worked alongside citizens on construction crews, building roads and public buildings; others worked as jury clerks or coin testers. By far the most brutal situation for slaves was working the silver mines in Laurium, a city in southeast Attica. Work in the mines continued 24 hours a day, with each slave doing a 10-hour shift. Most of these slaves were foreigners, or “**barbarians**,” who had been captured by pirates or soldiers. The slaves who worked the mines led a harsh life and faced exposure to lead, which was mixed with the silver. This caused many to die at an early age.

Helots in Sparta outnumbered the Spartans 10 to 1, meaning there were 10 slaves for every Spartan. They were treated harshly in order to prevent an uprising. Helots were treated cruelly, meaning they had no political rights and could be executed without a trial. They were considered the property of the state and were forced to work the land in exchange for a small portion of the harvest. By keeping the slaves fearful, Spartans could be confident that they would remain obedient.

**Q:** Where does the term **barbarian** come from?

### *words* to know

**terra-cotta:** a hard, semi-fired, waterproof ceramic clay used in pottery and building construction

**dowry:** the property that a woman brings

to her husband at the time of the marriage

**barbarian:** foreigners with an unrecognizable language that sounded to the Greeks like “bar bar”

# activity: Baklava

Baklava is a rich pastry that may have originated in Asia Minor, then spread throughout the ancient Greek world during the archaic period.

## INGREDIENTS

- |                              |                            |
|------------------------------|----------------------------|
| 4 cups walnuts               | 20 sheets phyllo dough     |
| 1 tablespoon ground cinnamon | 1 ½ cups sugar             |
| ¼ teaspoon ground cloves     | 1 ½ cups water             |
| ¾ cup sugar                  | 1 teaspoon vanilla extract |
| 2 sticks butter, melted      | ½ cup honey                |



**1** Preheat oven to 350 degrees Fahrenheit. Finely chop the nuts and toss with cinnamon, cloves, and sugar. Set aside.

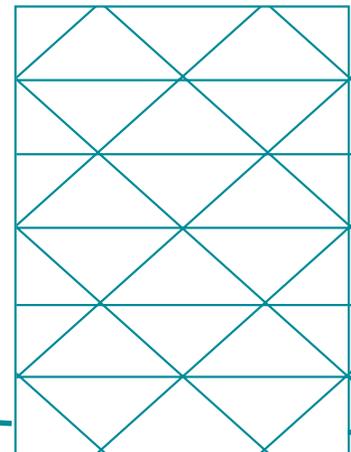
**2** Unroll the phyllo dough and cover it with a dampened cloth to keep it from drying out as you work. Brush the bottom and sides of a 9-by-13-inch pan with melted butter. Place one sheet phyllo in the pan and brush completely with butter. Place another sheet on top and brush with butter. Repeat until you have 7 sheets layered, each brushed with melted butter.

**3** Sprinkle one-third of the nut mixture on top, then layer three sheets of phyllo, each brushed with melted butter. Then in the same way, layer one-third of the nut mixture, three sheets of phyllo, final third of nut mixture, and seven sheets of phyllo.

**4** Using a sharp knife cut diamond or triangle shapes into your baklava all the way to the bottom of the pan. Bake for about 30 minutes.

**5** While your baklava is baking, bring the sugar, water, vanilla, and honey to a boil, then simmer for about 20 minutes.

**6** Remove baklava from the oven and immediately spoon your sugar syrup over it. Let cool, recut your baklava, and enjoy!





Follow the evolution  
of ancient Greek  
performing arts



Learn about the  
ancient Greek  
alphabet

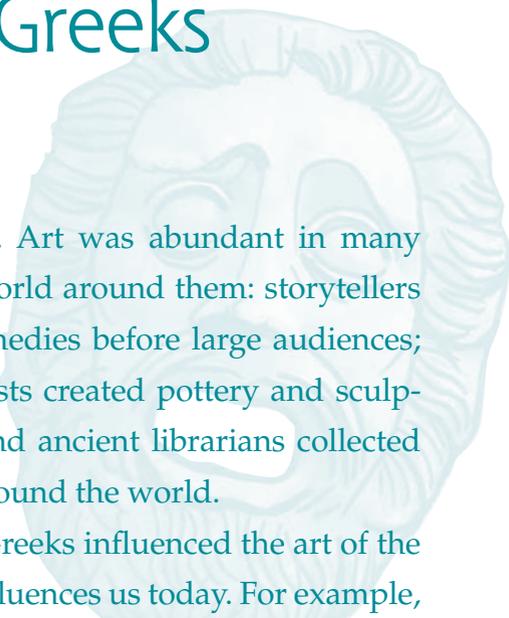


Meet a legendary  
writer, and visit a  
huge library that  
kept catching fire

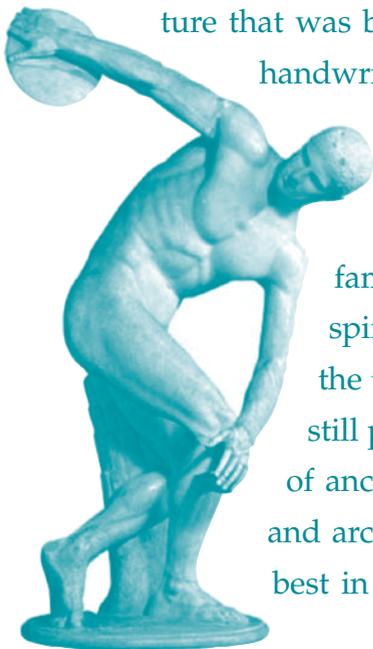


# The Arts of the Ancient Greeks

**A**ncient Greece was a cultural wonderland. Art was abundant in many forms, and artists created beauty in the world around them: storytellers performed epic poems, dramas, and comedies before large audiences; architects designed grand buildings; artists created pottery and sculpture that was both beautiful and useful; and ancient librarians collected handwritten copies of books from around the world.



The art of the ancient Greeks influenced the art of the Roman Empire and still influences us today. For example, many of our grand buildings look quite like some of the famous buildings of ancient Greece, ancient Greek poets inspired Roman poets who in turn influenced English poetry, and the tradition of an orchestra to back up a stage performance is still practiced today. Students of literature still study the works of ancient Greek playwrights just as artists consider the statues and architecture of ancient Greece to be examples of some of the best in the world. Oddly, though, as much as they liked to sur-



round themselves with works of beauty, the ancient Greeks didn't always consider these things "art," as we do today. Their beautifully painted pottery, for example, was made to be useful as well as attractive. Greek sculptures were often used as public memorials, offerings, or markers for graves. But with these creations, the ancient Greeks left a legacy for the modern world.



### The Muses

The ancient Greeks believed that nine goddesses, called muses, presided over the arts and sciences. The muses were daughters of the Greek god Zeus, and each was in charge of a different type of art. Poets, philosophers, and musicians all turned to their muses for guidance and inspiration. Take a look at the muses below, and you'll see how important poetry was to the ancient Greeks!

**Calliope** (kuh-li'-up-ee): the muse of epic poetry

**Clio** (kly'-oh): the muse of history

**Euterpe** (you-terp'-ee): the muse of lyric poetry (sung to flute music)

**Melpomene** (mel-pom'-un-ee): the muse of tragedy

**Terpsichore** (terp-sik'-or-ee): the muse of choral songs and the dance

**Erato** (air'-uh-toe): the muse of love poetry (sung to lyre music)

**Polyhymnia** (pol'-ee-him'-nee-uh): the muse of sacred poetry

**Urania** (you-ray'-nee-uh): the muse of astronomy

**Thalia** (the-lie'-uh): the muse of comedy



## Greek Literature and Drama

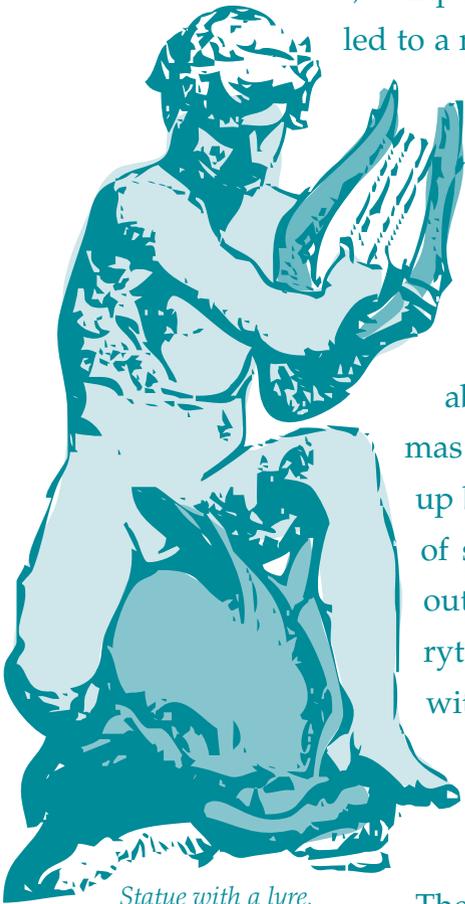
Literature, as we know it today, fills our libraries and homes in the form of books. In the early days of ancient Greece, literature wasn't preserved in books, but was shared through storytelling. Poets performed tales, often accompanied by the music of a lyre (a string instrument), before audiences in a tradition known as **rhapsodoi**. City-states across ancient Greece regularly held festivals where storytellers, also called *rhapsodoi*, competed for prizes. The popularity of *rhapsodoi*

led to a new style of presentation that began around 486 BCE: **drama**.

Drama included performances of **tragedies**, which often told stories of the mythical past, and **comedies**, in which performers poked fun at politicians, famous people, and even the gods. This teasing was acceptable and audiences loved it. The earliest dramas were stories told by one storyteller backed up by a **chorus**. The Greek chorus was a group of singers, dancers, and musicians who acted out the drama of the story being told by the storyteller. Imagine how dull our movies would be without background music. The Greek chorus provided the appropriate background for the stories, transforming a simple spoken performance into a show to be admired.

Their wailing demonstrated grief; their songs rejoiced at triumph. The chorus was always in the background, adding emotion to the performance without upstaging the main performers.

Over time performances grew more complex, with lots of characters, although only three actors were allowed to perform at once. In order to



Statue with a lyre.

portray a large cast of characters, the performers used many masks in each performance, changing them as they slipped into a different character. Masks were sometimes very elaborate, even frightening. Even female characters were played by men wearing masks, because women were not allowed to perform.

Performances were often part of dramatic competitions. Performers competed for first, second, and third place. A panel of 10 *kritai*, or judges, wrote down

their favorite perfor-

mance on tablets, then placed them in an urn. Five tablets were drawn from the urn and the performance with the most votes won. The act of choosing only five

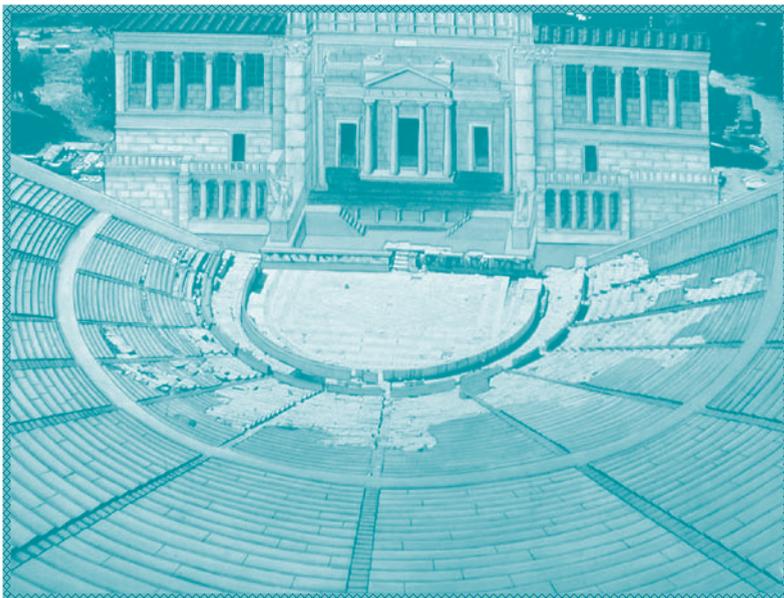
of the ten tablets was intended to allow part of the decision to be made by the gods.

The city of Athens held dramatic competitions in honor of the fer-

tility god Dionysus in the grand Theatre of Dionysus. This theater held 14,000 people in its audience and was famous throughout ancient Greece, but it was not the only theater. Performers often traveled from city-state to city-state to put on shows for admiring audiences. Many theaters were similar to the Theatre of Dionysus,



## Q: What was the ancient Greek word for storyteller and storytelling?



Recreation of the Theatre of Dionysus.



Lyre.

though perhaps not as grand. They were circular, open-air buildings with seating that surrounded a round stage area called an **orchestra**. The orchestra wasn't a group of musicians as we think of it today, but was the part of the stage where the chorus performed.

These dramatic presentations were so popular that they inspired some ancient Greeks to write down the tales that were told. Some historians believe that Homer's *Iliad* and *Odyssey* were the first written stories in ancient Greece. Playwrights began writing down the stories that would be performed on stage, giving us the opportunity more than 2,000 years later to appreciate the works that survived. It was the very first time people used the written word for recording history, and made the ancient Greeks interested in recording other things as well.

**Q:** What does **drama** mean in **Greek**?

Hint: "Lights, camera, \_\_\_\_!"



**If an audience disliked the performance, they expressed it by throwing food and rocks at the performer.**

## words to know

**rhapsodoi:** poetry performed as a story, often to music

**drama:** Greek word meaning "action"

**tragedy:** a play that usually depicts events from a mythical past and that often ends sadly

**comedy:** a play that makes the audience laugh by poking fun at politicians, famous people, and even the gods

**chorus:** singers, dancers, and musicians who acted out the drama, told by a storyteller

**orchestra:** the stage area used by the chorus

**Know Your Ancient Greeks****Who Was Homer?**

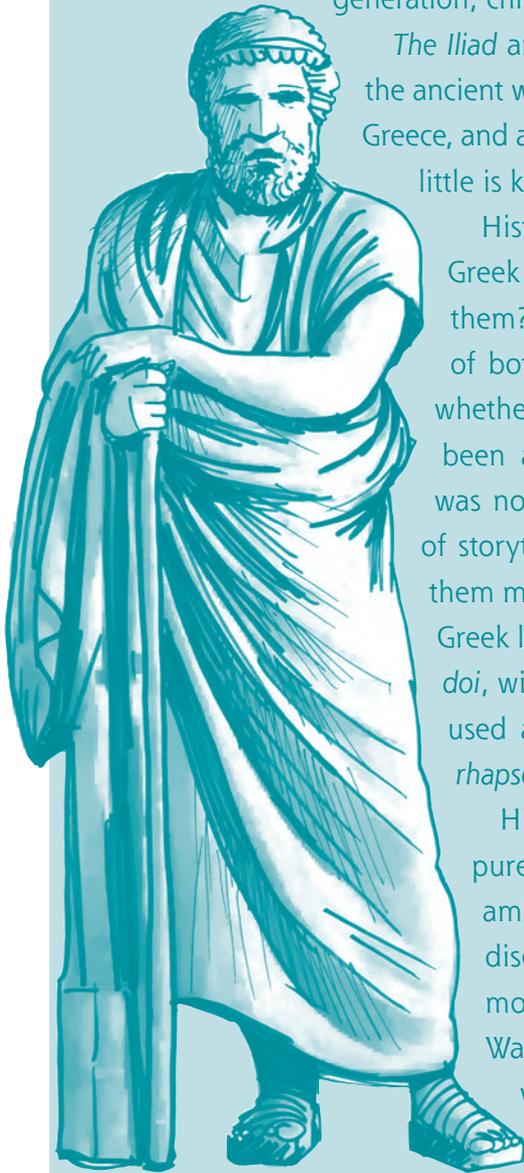
Partly because of a man named Homer, literature became an important part of life in ancient Greece. Around 800 BCE, Homer created two stories, called *The Iliad* and *The Odyssey*. Written about the Trojan War and Odysseus's journey home after the war, the stories incorporated historical figures from the Mycenaean age and many Greek gods and goddesses. These stories were told in verse and were quite long. Passed from generation to generation, children memorized the stories by singing the verses.

*The Iliad* and *The Odyssey* are two of the most famous stories from the ancient world. They were performed on stages throughout ancient Greece, and are even required reading for literature students today. Yet little is known about the author.

Historians believe that these epic poems were composed at Greek settlements on the coast of Asia Minor. But who wrote them? While Homer is generally acknowledged as the creator of both *The Iliad* and *The Odyssey*, some historians question whether he deserves all the credit. Homer is believed to have been a skilled storyteller, or *rhapsodoi*, but it's possible he was not the sole creator of these stories. In the oral tradition of storytelling, *rhapsodoi* could embellish their stories to make them more exciting. Is it possible that these stories—well-known Greek legends—could have been told by many different *rhapsodoi*, with a different twist at each telling? Perhaps then, Homer used a little creative license, combining the stories of other *rhapsodoi* into the two epic stories he is credited with today.

Historians still argue about whether Homer's epics are purely fiction or historically accurate. As archeologists examine ancient artifacts, the debate continues. To some, the discovery of what is believed to be the city of Troy (read more in chapter 10) confirms Homer's claim of a Trojan War. Others argue there is no proof that Homer's stories were anything other than pure entertainment.

Unfortunately, we might never know for sure.



### Great Greek Playwrights

**Aristophanes** was famous for writing comedies such as *The Clouds* and *The Birds* for two Athenian festivals, the Dionysia and the Lenea. He wrote at least 30 plays, but only 11 have survived. *Lysistrata*, Aristophanes's anti-war comedy, was translated into a book and illustrated many centuries later by the artist, Pablo Picasso.

**Sophocles** was a general in the Peloponnesian War, as well as a priest and a playwright. He is famous for the tragedies known as the three Theban plays: *Oedipus the King*, *Oedipus at Colonus*, and *Antigone*.

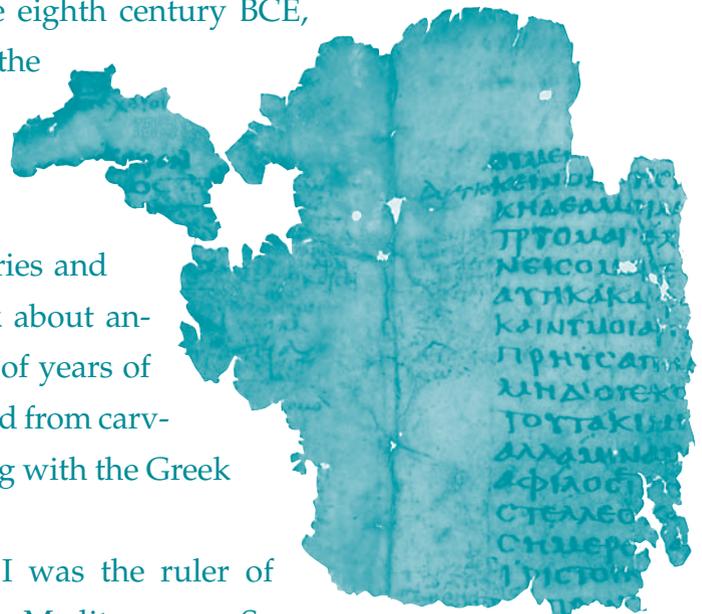
Historians believe that **Euripides** wrote more than 90 tragedies, 18 of which have survived. He broke Greek custom and included strong female characters and smart slaves in his stories.

**Aeschylus** was the first Greek playwright to introduce a second actor and dialogue (conversation) to his plays, and he made the chorus part of the dramatic action. Of the more than 90 plays he is believed to have written, only seven survive.

### Spreading Knowledge with the Written Word

Spoken language existed long before the written word, and it was common for ancient Greeks to rely on memory alone when performing their *rhapsodoi*. But during the early part of the eighth century BCE, around Homer's time, the Greeks met the Phoenicians, seafaring people from the coast of Syria. The ancient Greeks adapted the Phoenician alphabet to create their own and then used it to record Greek stories and history. Remember, though, when we talk about ancient Greece we are referring to hundreds of years of history. Over the centuries, Greeks advanced from carving cryptic script onto clay tablets to writing with the Greek alphabet on papyrus scrolls.

From 323 to 285 BCE, King Ptolemy I was the ruler of Egypt and Lydia, two Greek colonies on the Mediterranean Sea.



Piece of a papyrus scroll.

# activity:

## Comedy and Tragedy Masks



You've read that the ancient Greeks used masks during their performances to convey different emotions. Think about how different emotions can look—how would you portray happy? Or sad? Or angry? Choose two different emotions and create your own double-sided mask.

- 1 Sandwich the wooden paint stirrer between two sturdy paper plates and glue together.
- 2 Either cut out eye holes or simply draw them on. One side of your mask can be comic, the other, tragic.
- 3 To make a comical mask, use bright colors and whimsical decorations like glitter, pom-poms, beads, and pipe cleaners. For a tragic mask, use dark, somber colors such as black, gray, and dark purple.
- 4 Glue pipe cleaners or yarn for hair around the upper edge of the mask on both sides. As you're decorating, remember that anything that extends beyond the edge of the mask will be visible from both sides of the mask.

### supplies

- ☒ wooden paint stirrer or ruler
- ☒ 2 sturdy paper plates
- ☒ glue
- ☒ scissors
- ☒ markers, glitter, pom-poms, beads,
- ☒ pipe cleaners, yarn (in bright, cheerful colors and dark, somber colors)

5 Now, try telling a simple story, using the mask to portray different emotions. If you do the project with a friend, you can each take on a different part.

### Early Greek Writing

In 1900, an archeologist named Arthur Evans discovered ancient clay tablets on the island of Crete (remember, that's where the Minoans and Mycenaeans lived before the Greek dark age), as well as on mainland Greece. On those tablets were two different types of script. In 1952, one of the languages on these tablets was deciphered and given the name Linear B. The other type of script, called Linear A, is still undeciphered! This indicates that even before the dark age, the Greeks made complex recordings of their language, even though little of it has survived.



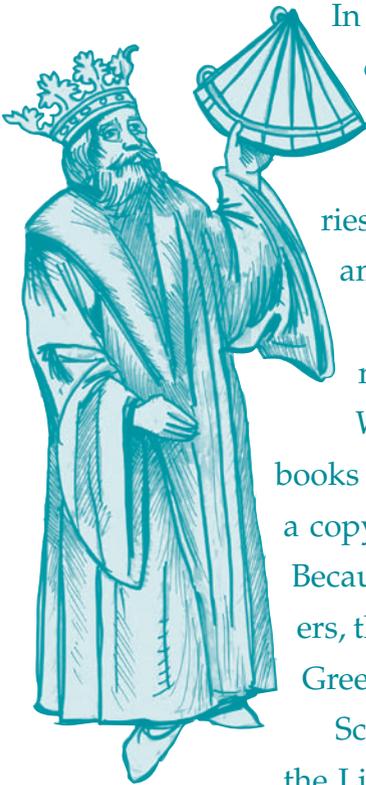
*Clay tablet with Greek alphabet.*

The capital city of Egypt was Alexandria, a great seaport situated in the northern part of Egypt on the Mediterranean Sea. Alexandria was a four-mile-long bustling city that was home to 300,000 free citizens plus many slaves and foreigners. It was the center of science, literature, and art in the Hellenistic world during Ptolemy's rule.

In 288 BCE, Ptolemy established the grand Library of Alexandria, which was eventually filled with an estimated 500,000 scrolls of the best works from all over the world. Poetry, mathematical theories, and scientific studies filled the library with a vast amount of knowledge and ideas.

These ancient Greeks took advantage of the many visitors to their city to support the library. When foreign ships docked in Alexandria any books found on board were copied (by hand, not with a copy machine!) and added to the library's collection. Because of the constant coming and going of foreigners, the library had works in a variety of languages, but Greek was the most common.

Scholars from all over the world were invited to visit the Library of Alexandria. Visitors are thought to have



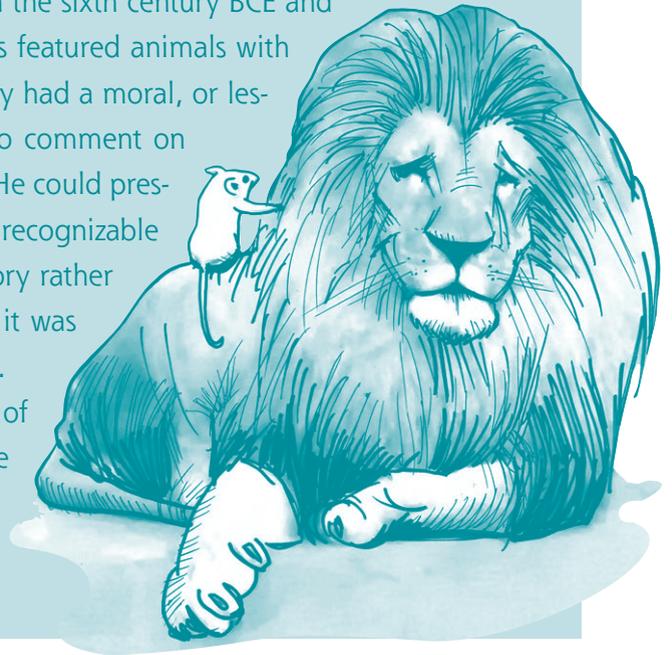
*King Ptolemy I*

## Aesop and His Fables

Do you remember the story of the lion and the mouse? A lion threatens to kill a mouse that is annoying him. The mouse begs for his life, suggesting that perhaps one day, he can repay the favor. The lion finds this suggestion comical, but lets the mouse go free. Lo and behold, one day, the lion finds himself caught in a trap made of rope. Guess who comes along and gnaws through the rope to free the King of Beasts? The moral of the story is that little friends can become great friends.

This is just one story of many that were recorded by a man called Aesop. He is thought to have been a freed slave living somewhere in the sixth century BCE and is famous for fables such as this. Aesop's fables featured animals with human characteristics and voices and each story had a moral, or lesson. Using animal characters allowed Aesop to comment on politics or morality without getting in trouble. He could present a story with circumstances that might be recognizable to his listeners, but by using animals in the story rather than a real person, he could easily claim that it was nothing more than a story about a silly animal.

Fables featuring animals had long been part of the oral storytelling tradition, but Aesop wrote the stories down. Aesop's fables are perhaps the most recognizable collection of fables in the world.



copied some of the works to take back to their homelands, spreading the knowledge held at Alexandria throughout the civilized world. Some works have survived only because people copied them—the Library of Alexandria suffered numerous fires over the years, the result of battles waged in the area. The loss of original manuscripts was great.

## Pottery

Some of the most well-preserved **relics** of ancient Greece are clay pots, vases, and urns that were decorated with very detailed and

# activity: Write a Letter in Greek

Using the chart, write a letter to a friend. Because the symbols are so different from the letters of the English alphabet, it's almost like writing in code. In some cases the sound of a word is more important than its English spelling. For instance, you'll notice that the Greek alphabet doesn't have an *F*. So if you want to write the word *fantastic*, you'll need to use  $\Phi$  to begin the word.

Make sure that when you send your Greek letter you also include a copy of the chart, so that your message can be deciphered.

Capital	Lower Case	Greek	English
A	$\alpha$	Alpha	a
B	$\beta$	Beta	b
Γ	$\gamma$	Gamma	g
Δ	$\delta$	Delta	d
E	$\epsilon$	Epsilon	e
Z	$\zeta$	Zeta	z
H	$\eta$	Eta	h
Θ	$\theta$	Theta	th
I	$\iota$	Iota	i
K	$\kappa$	Kappa	k
Λ	$\lambda$	Lambda	l
M	$\mu$	Mu	m
N	$\nu$	Nu	n
Ξ	$\xi$	Xi	x
O	$\omicron$	Omicron	o
Π	$\pi$	Pi	p
P	$\rho$	Rho	r
Σ	$\sigma$	Sigma	s
T	$\tau$	Tau	t
Υ	$\upsilon$	Upsilon	u
Φ	$\phi$	Phi	ph
X	$\chi$	Chi	ch
Ψ	$\psi$	Psi	ps
Ω	$\omega$	Omega	o



# activity: Make a Pot

To form pots, the ancient Greeks used clay from the earth and fired it to make it strong. You can create a pot of your own—though it won't hold water—from air-dry clay. Either make your own clay or buy it from a craft store.

- 1 If you want to make your own clay, mix  $\frac{1}{2}$  cup cornstarch,  $\frac{1}{2}$  cup flour, and  $\frac{1}{2}$  cup salt. Slowly add warm water just until the mixture sticks together and can be shaped. If you'd like, you can add a little food coloring to the dough. Knead the dough until it is smooth (if you accidentally make it too sticky, just add a little more flour or cornstarch).
- 2 Using either your homemade dough or the store-bought clay, form a small pot. To make a pinch pot, start with a ball of clay and slowly pinch it into shape, forming a basin in the center and molding it into a circular shape.

distinctive patterns. These **artifacts** give us the opportunity to see, first-hand, works that were made in ancient times. But they give us more than that. Many of the pieces are decorated with scenes from life in ancient Greece, and this has helped historians piece together information about life during this time period. Images of food preparation, children

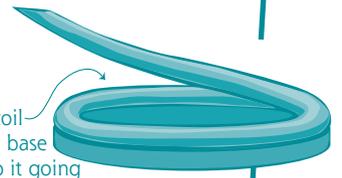
## *words* to know

**relic:** something that has survived from a long time ago

**artifact:** an object made by a human, usually a tool or ornament, that has survived from a long time ago—an artifact is a kind of relic

3 Another kind of pot to try is a coil pot. To make one, roll your clay into snake-like ropes that are about the thickness of a pencil. Make a circular base about ¼-inch thick, and start coiling it into a circle. When your coiled circle is about 3 inches across, start stacking the coils on top of each other, so that each time around your pot gets taller. If you'd like, you can use your fingers to smooth the inside of the pot.

Start to coil clay over base and keep it going in the shape you want your vase



4 Set your finished pot on waxed paper to air dry. Once it's dry, you can use your pot to hold small items on your desk or dresser.



Roll out handles and rough up the ends so they will adhere to the vase better



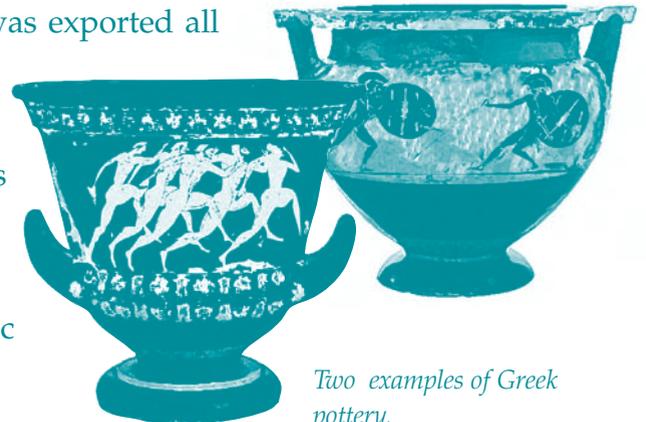
Once you have the shape you want, use water to smooth out the coils

## supplies

- ☒ cornstarch, flour, salt, water, food coloring OR
- ☒ store-bought air-dry clay
- ☒ waxed paper

learning to walk, ancient Greeks exercising, and battle scenes give us a glimpse into the life of ancient Greeks.

Athens was famous for its pottery, which was exported all world. Athenian pottery often featured red figures on a black background, or black figures on a red background. Making these fabulous vases and urns required two specialized craftspeople: a potter, who formed the clay into a certain shape, and a painter, who created artistic patterns, figures, or elaborate scenes.



*Two examples of Greek pottery.*

**Q:** What are two hints that indicate a piece of pottery was made in ancient Greece?

These beautiful clay vessels were used in daily life for carrying water, serving food and drink, storing food, and displaying fruit and flowers. Each pot's function depended on its shape and size.

## Sculpture

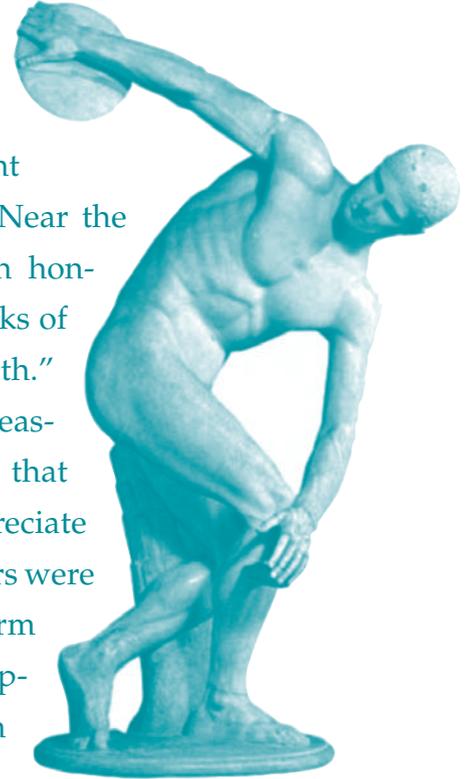
If you take a look at ancient Greek sculpture, one thing will be obvious: ancient Greeks were not embarrassed by nudity! Near the end of the archaic period, sculptors often honored the Greek god Apollo by creating works of nudes in the image of the *kouros*, or "youth."

These statues were considered pleasing to look at, and sculptors felt that the beautiful Apollo would appreciate these works. Greek sculptors were fascinated by the human form and worked to precisely replicate all of the details of an individual's body.

More often than not, sculptors in ancient Greece worked on commission—that is, someone hired them to create a particular work of art. For instance, a wealthy man might hire a sculptor to create a statue for his courtyard, or a family in mourning might hire a sculptor to carve a gravestone. Gravestones were sometimes carved to resemble the deceased, especially if it was a child. Great sculptors were also hired to decorate the grand public buildings for the city-state. Pericles, an Athenian leader during the

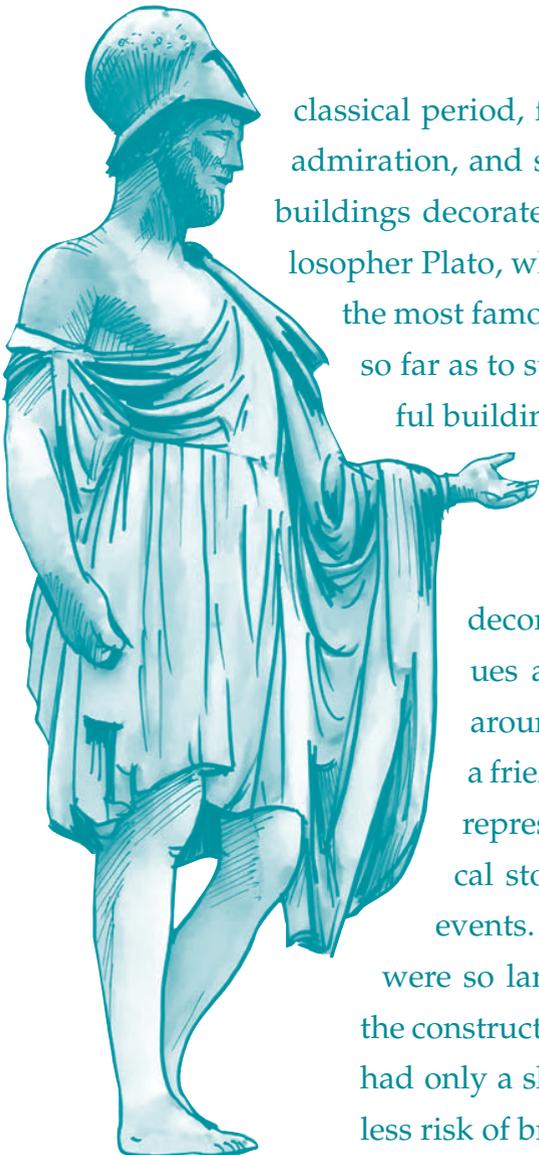
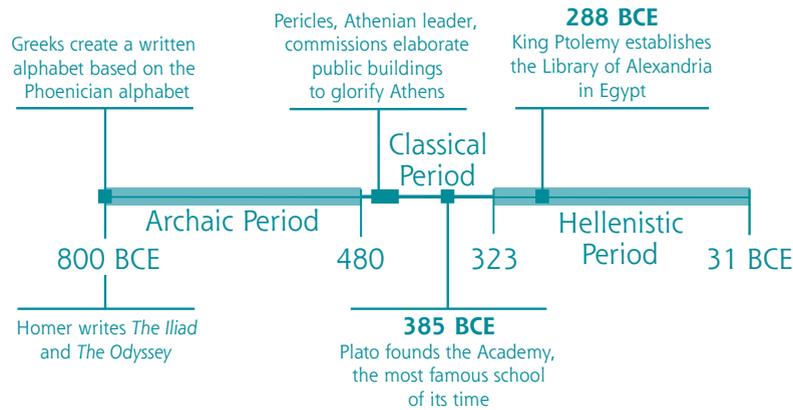


Aphrodite, from the Greek Island of Melos.



Discus thrower.

All dates are BCE and approximate in many cases



Pericles

classical period, felt that Athens should be worthy of admiration, and so he commissioned elaborate public buildings decorated with statues and friezes. The philosopher Plato, who in 385 BCE founded the Academy, the most famous school in the classical world, went so far as to suggest that the law only allow graceful buildings to be constructed!

Creating the sculptures that decorated ancient Greek buildings was a huge job. Temples were often decorated with larger-than-life marble statues and an ornamental band of carvings around the perimeter of the building called a frieze. These sculptures and friezes might represent gods and goddesses, mythological stories, sporting activities, or historical events. Because statues on these buildings were so large, sculptors often set up shop near the construction site—that way, the finished statue had only a short distance to travel and, therefore, less risk of breaking.

Sculptors created a clay model of the statue before they began the final work in marble. The model was often full-sized and supported by a wood or metal frame. The master sculptor, who designed the piece,

**Q:** What famous American Statue in New York City is made of bronze? Hint: It was given to America by the people of France on July 4, 1884.

would guide apprentices in making the model look just right. Once the model was perfect, the apprentices would chisel the marble into its rough form. At this point, the master took over, chiseling the details and finishing touches with a sharp

iron carving tool. The surface of the marble was usually smoothed with pumice, a type of rough stone.

With the carving complete, new craftspeople joined the project. They attached metal details—such as spears or harnesses—through holes the sculptor had drilled in appropriate places. Finally, painters applied wax and bright colors, until the statue seemed almost lifelike. The colors and wax have disappeared over the ages, so the grand Greek sculptures are more familiar to us in their plain white form.

**Athena: The goddess of wisdom, the practical arts, and warfare, and the protector of cities, especially Athens.**

### Athena Parthenos

A huge statue in the image of Athena was created by the famous sculptor Phidias to stand inside the Parthenon, a temple honoring Athena (you'll read more about the Parthenon later). The statue was made of ivory and gold, and featured images of a sphinx (a creature with a lion's body and human head) and griffins (mythical creatures with a lion's body and an eagle's head) on her helmet. The head of Medusa was depicted on Athena's breast.

Athena held a figure of the goddess Victory in one hand and spear in the other. The full-sized statue has not survived, but a few miniature copies give us an idea of just how grand this piece must have been.

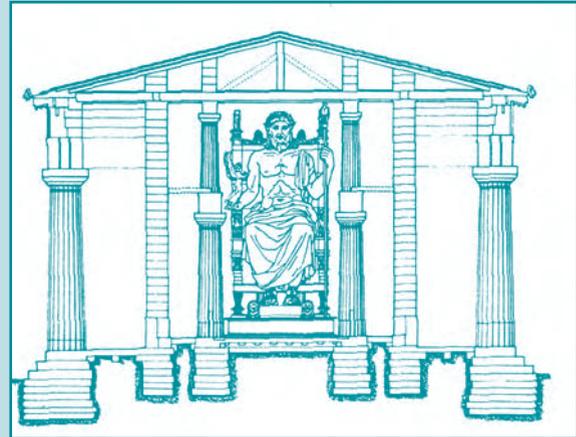
Bronze was another material used by ancient Greek sculptors. The earliest bronze statues were made by hammering sheets of metal into the appropriate shapes, then riveting them together. By the late archaic period, sculptors had developed a method they called lost wax casting. Sculptors first created a wax model, then covered it with clay. Then they heated this clay-covered sculpture, which caused the clay to harden and the wax to melt. The sculptor poured the melted wax out of the

## Know Your Ancient Greeks

### Phidias

Phidias was a famous sculptor born in Attica in the fifth century BCE. While none of his work is known to have survived, there is written documentation of it. Phidias was the general superintendent of public works in Athens. He supervised the building of the Parthenon as well as the Propylaea, the monumental entrance to the Acropolis (you'll read about these famous structures later). He was also hired to create a number of famous statues, including Athena Parthenos and the statue of Zeus, the father of the gods, at Olympia, which was considered his masterpiece.

Phidias was accused of stealing gold that was intended for the statue of Athena Parthenos. Some accounts have him dying in jail, while others say he was simply banished. A slightly different version says he was innocent of stealing the gold, but guilty of adding his portrait, as well as that of the Athenian ruler Pericles, to the shield of Athena. Whether these accusations were true or not, both ancient and modern critics agree that Phidias was indeed a great artist.



*Statue of Zeus.*

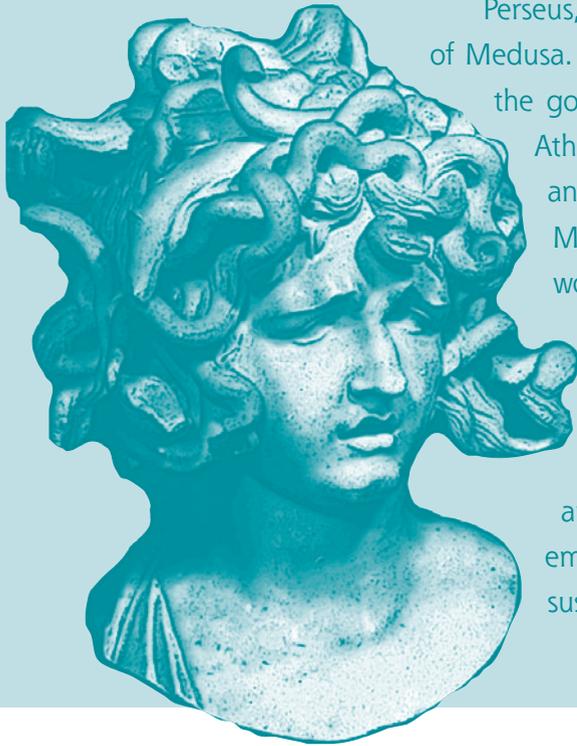


*Statue of Athena for the Parthenon.*

## Legendary Greeks

### Medusa

Medusa was a beautiful maiden who caught the eye of the sea god Poseidon. Boldly, Poseidon charmed Medusa in the Temple of Athena. Enraged at this violation of her temple, Athena turned Medusa into a monster. Writhing snakes replaced the hair on her head and anyone who looked at her would immediately turn to stone.



Perseus, a Greek hero, was sent on a quest for the head of Medusa. He was befriended by the goddess Athena and the god Hermes, who gave him advice for his quest. Athena warned him not to look directly at Medusa and Hermes offered a sickle, a leather bag (to carry Medusa's head), and a pair of winged sandals that would carry him home. Accompanied by Athena, Perseus tracked down Medusa. Athena held her shiny shield so that Perseus could look into it as a mirror, rather than look directly at Medusa. Using this clever trick, Perseus cut off her head and carried it with him, using it to turn his enemies to stone. From Medusa's blood sprang Pegasus, the winged horse, and Chrysaor, a giant.

clay mold, and poured in the molten metal. Once the metal hardened, the sculptor broke the clay mold to reveal a solid bronze reproduction of the original wax sculpture.

Bronze sculptures were finished with inset eyes of glass or

stone, silver teeth and fingernails, and copper lips and nipples, all of which combined to create an amazingly lifelike appearance.

**Q:** What's **missing from the ancient Greek statues** that still exist today?

Learn about  
mythology and the  
ancient Greek Gods

See how the  
ancient Greeks  
practiced their  
religion

Create your own  
children of  
the gods

# Greek Gods

**T**he ancient Greeks were very religious people. Religion wasn't confined to a certain day of the week or time of celebration, although the Greeks did have special religious holidays and festivals in honor of the gods. Rather, religious rituals were part of everyday life. Greeks always offered part of their meal to the gods. Public meetings, assemblies, and councils all began with a prayer. Before troops went off to battle, their general sacrificed one or more animals—often a goat—in honor of the gods to bring success to his troops.

You may recognize some of the Greek gods from their place in ancient Greek mythology. Our word *myth* comes from the Greek word *mythos*. To us, a myth is something that has no basis in fact. To ancient Greeks, a myth was a

**"All men who have any degree of  
right feeling pray at the beginning of any  
enterprise great or small."  
—Plato, Greek philosopher**



*Zeus on his throne atop Mount Olympus.*

### Religious Holidays

Athens observed about 70 religious holidays each year. Many of these holidays were related to farming. The Eleusinian Mysteries, for example, honored Demeter, goddess of the harvest. This celebration lasted for 21 days. Athenian religious holidays were seen not only as a time to honor the gods, but also as a time of rest, since the Athenians didn't have a weekly day off.

wonderful story that told about a fundamental truth—whether about the Greek gods or heroes, the natural world, or Greek society. To the ancient Greeks, nothing was fictional about their gods.

The beginnings of Greek religion are difficult to trace—some gods and rituals date back to the Mycenaean period (1600–1100 BCE). Others developed during the Greek dark age (1100–800 BCE). But by about 900 BCE, the people of ancient Greece were worshipping the **pantheon** of gods that we still

recognize today. While this pantheon of gods was known throughout the lands of ancient Greece, each *polis* also had a patron god—a special **deity** that protected the *polis* and its people. Athena, for instance, was the patron goddess of Athens. Athenians worshipped Athena at special festivals, which included the **Panathenaea**. This celebration was held every four years and was the most important festival: it lasted for six days, and featured banquets, athletic contests, dancing, and music.

### Mount Olympus

Mount Olympus is the highest peak in Greece and the ancient Greeks believed that it was the home of the major Greek gods. How could they believe that gods and goddesses lived in a place that was a part of this world? Probably because Mount Olympus, with its steep terrain, was

## words to know

**pantheon:** a group of gods, heroes, or important people all considered collectively

**deity:** form of god or higher being

**Panathenaea:** an Athenian festival held in mid-August celebrating Athena's birthday

**mortal:** someone who can die; the opposite of immortal, like gods, who cannot die

largely inaccessible. And if people did try to climb the mountain, they would have discovered that the high altitude made breathing difficult. This could easily have been interpreted to mean that the mountain-top wasn't meant for **mortals**.

The ancient Greeks believed that the entrance to the home of the gods on Mount Olympus was through a gate of clouds. Within, the gods feasted on nectar and ambrosia (probably some form of honey) while the muses entertained them. At the center of their home was the hearth fire, kept lit at all times by the goddess of hearth and home, Hestia. From the peak of Mount Olympus, the gods and goddesses observed—and often meddled in—the lives of ancient Greeks below.

The Greek gods differ from other gods in that they are famous for their interference in the lives of ancient Greek mortals. The gods argued



*The summit of Mount Olympus.*

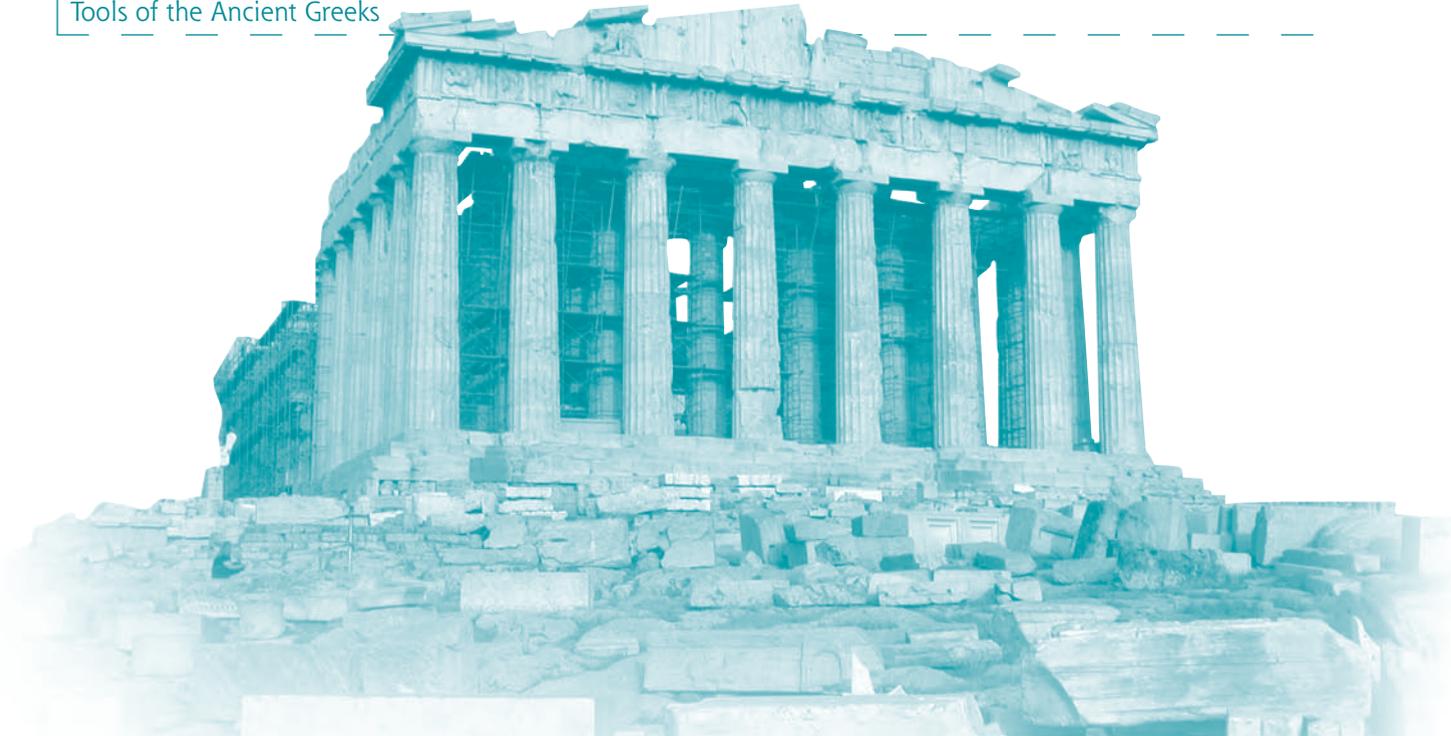
## Legendary Greeks

### King Midas

According to legend, Midas was made king of Phrygia by the will of the gods, but he began his life as a peasant boy. He was convinced that money was all-important, so when Dionysus granted him one wish, King Midas asked that everything he touched be turned to gold. For a while, King Midas reveled in his golden touch. He had to rethink the idea, though, when he became hungry—as he began to eat his meal, it turned to gold. He called for his wine, but it, too, turned to gold.

King Midas begged Dionysus to help him be rid of this curse. Dionysus instructed King Midas to wash himself in the River Pactolus to remove the golden spell, and since that day, the banks of the river have been flecked with gold.





among themselves and often used the people of Greece in their attempts to “best” another god. They often behaved just like humans, acting petty, jealous, and angry. These gods and goddesses were not very good ex-

## Q: Where did the ancient Greeks believe the Gods lived and visited?

amples of how to behave nicely, and the Greek people did all they could to keep from angering these temperamental supreme beings. As the stories go, the gods often moved from the realm of Mount Olympus to the

real world to flirt with mortals or cause trouble.

### **Greek Temples**

The grand temples of ancient Greece were built more to honor the gods than for use by citizens. People did not come together for services or prayer at a temple, the way people worship at a church or temple today. Rather, the citizens of ancient *poleis* visited their temples at any time to offer a sacrifice to the temple’s god or to pray. Temples in ancient Greece were seen as the earthly home of the god for whom it was built, and the Greeks believed that the god visited and spent time in the temple.

Temples were also filled with wealth and acted as a kind of storehouse for each *polis*. Money and valuables were sometimes left at the temple as gifts to the god, while other people used it as a place to store their own valuable items—surely nobody would dare steal valuables from such a sacred place!

## Worship

The worship of ancient Greek gods was part of daily life. While the major gods were worshipped throughout ancient Greece, the minor gods were not recognized in every community.

There were so many minor gods, in fact, that a community couldn't include all of them in the pantheon of gods they worshipped regularly.

People worshipped the gods publicly at altars placed outside of temples, or privately at the altars common in most ancient Greek households. The two most important aspects of worship were prayer and sacrifice. Greek worshippers prayed in a standing position, hands raised to the heavens. Kneeling and touching the ground was to call on the gods from below, called the underworld, and unless someone was trying to address those gods, kneeling in prayer was considered barbaric.

The simplest sacrifice made to please a god involved leaving food or wine at an altar. During some rituals, people sacrificed animals. Goats, sheep, and birds were the most common sacrificial offerings. When the Greeks sacrificed an animal it was with much ceremony; the animal was draped with flowers and sprinkled with barley (making it lower its head, which was seen as submission to its killing), and the altar was pu-



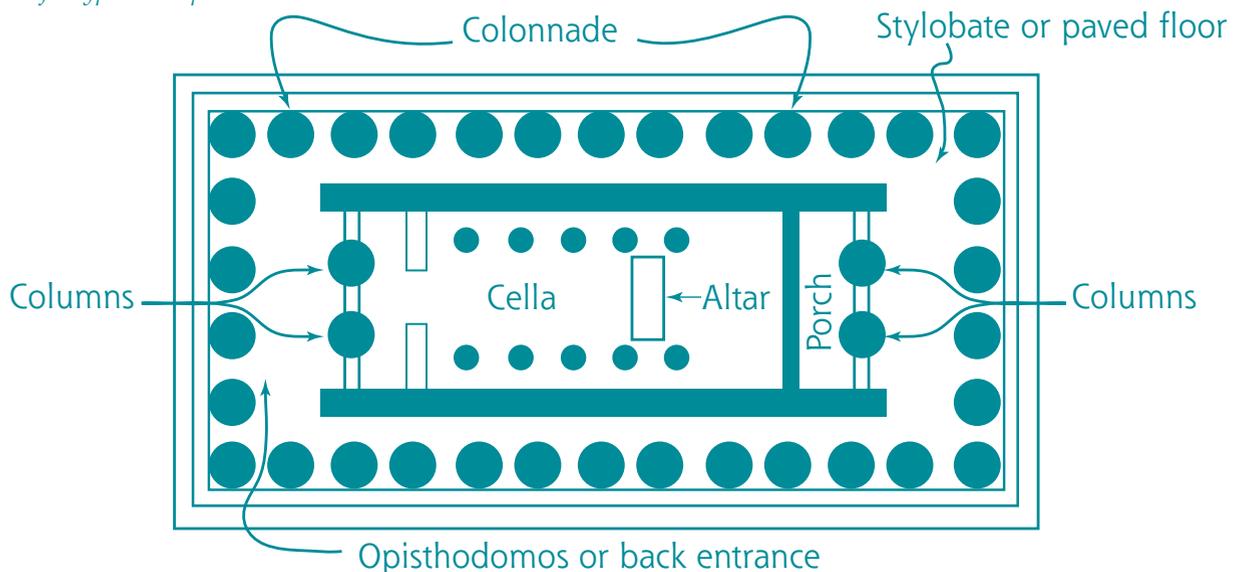
*Greeks making a sacrifice to the gods on an altar.*

rified with water. The animal was then clubbed, and its throat was cut. The animal's blood was drained into a bowl and sprinkled on the altar or over the worshippers. The animal was then cooked and eaten by the worshippers, though the unsavory parts—often the thighs—were left for the gods. An animal sacrifice was seen not only as a sacred ritual, but as a rare opportunity to eat meat.

**Q:** Who was the god of the sea?

While it is common for us to celebrate special religious ceremonies, such as funerals and weddings, in churches or temples, the ancient Greeks did not. The head of the household presided over private ceremonies, and at large public ceremonies, the head of state officiated. The ancient Greeks didn't have full-time spiritual guides, though each family group had a member who was their own priest, who inherited the job from a relative. One duty of the family priest was reading omens. The ancient Greek people believed that fortunes could be told by examining the livers of animals, the patterns of birds in flight, or the patterns of thunder and lightning.

*Floor plan of a typical temple.*



## Oracles

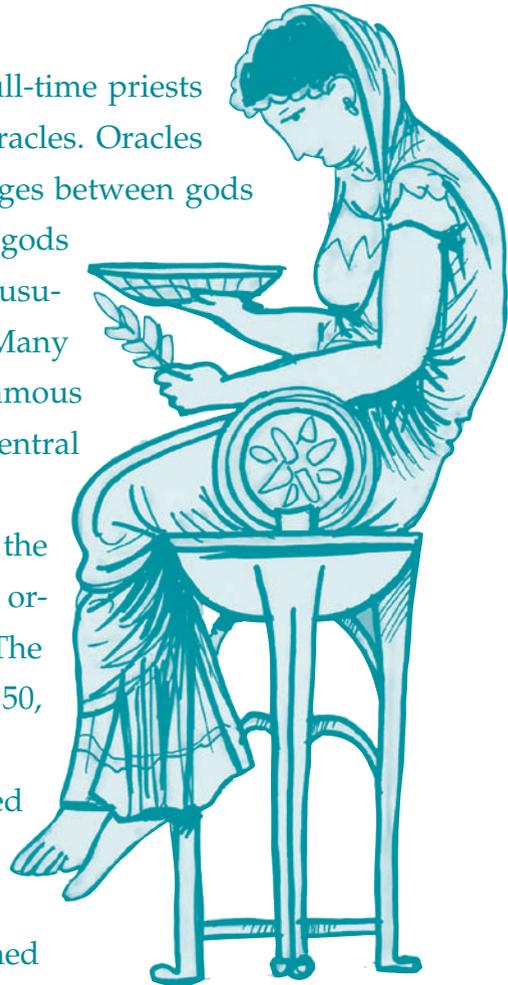
The ancient Greeks may not have had official, full-time priests to preside over ceremonies, but they did have oracles. Oracles were usually peasant women who passed messages between gods and humans. People would seek advice from the gods by asking the oracle a question. The answer was usually vague, with many possible interpretations. Many temples in ancient Greece had oracles. The most famous of them was the Temple of Apollo at Delphi in central Greece.

In ancient times, Delphi was considered to be the center of the world because of the presence of the oracle that prophesied from the Temple of Apollo. The three oracles at Delphi were all over the age of 50, which was considered quite old at the time.

When an oracle was called upon, she first purified herself in a sacred spring, then drank water from a different spring, both situated near the temple.

Seated on a three-legged stool that was positioned over a crack in the rock floor, the oracle is believed to have chewed or inhaled the smoke of bay leaves or taken hallucinogenic drugs to create a trancelike state. Some historians think that the crack in the rock gave off a kind of gas that induced a trancelike state. In this state, the oracle uttered words that seemed to come directly from the gods. A male prophet would interpret the oracle's prophecy, sometimes in a verse that left more questions than answers. A verse with many possible interpretations allowed the oracle a little room for error, don't you think?

Most of the questions people asked the oracles were of a personal nature, though on occasion, a statesman might come for guidance in creating laws or going to war. One particular story tells of a prince who



came to find out how he would die. The oracle pronounced that a *mus* (mouse) would cause his death. The prince was cautious—he had his house cleared of mice and refused to speak to anyone with the name Mus. But he overlooked the fact that the Greek word for muscle is *mus*—he died from an infected muscle in his arm.

In 480 BCE, with the Persians invading mainland Greece, Athenian leaders consulted the oracle at Delphi. They were told their only hope was the defense provided by a “wooden wall.” Some people thought that they should build walls of wood around Athens, but their leader, Themistocles, guessed that the oracle was referring to a fleet of wood-

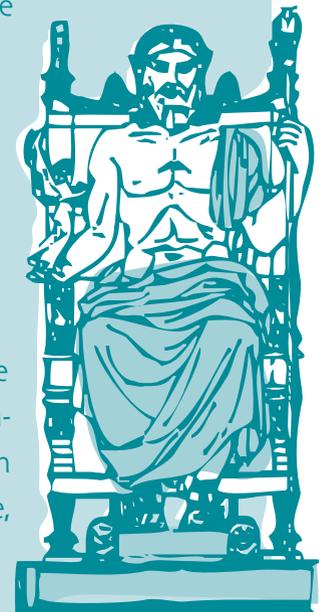
## Legendary Greeks

### Zeus

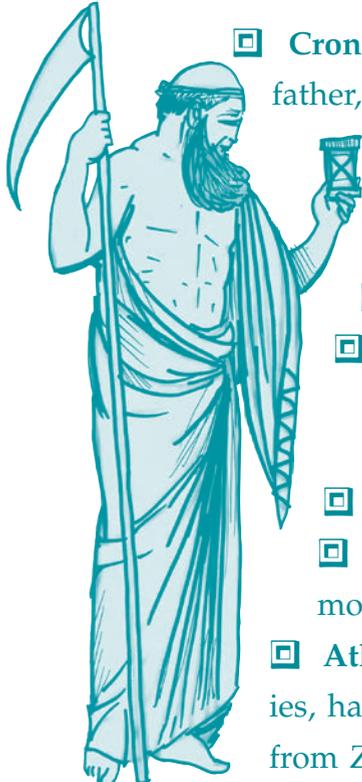
Zeus was the sixth son of Rhea and the Titan Cronus. It was prophesied that Cronus would be overthrown by one of his children. To prevent this, Cronus swallowed every child born to him. Rhea, expecting her sixth child, fled to Crete and gave birth to Zeus. Afterward, she wrapped a stone to look like a baby and tricked Cronus into swallowing the stone, rather than Zeus. Later, Zeus and his cousin Metis conspired to give Cronus a drug that made him throw up Zeus’s siblings.

Zeus and his brothers, Poseidon and Hades, drew straws to divide the world between them. Zeus became the supreme ruler of the heavens, Poseidon ruled the sea, and the underworld was ruled by Hades. Zeus, along with many of the other major Greek gods, resided on Mount Olympus.

Zeus and his wife Hera had four children, but other children were born to Zeus as well, from his relationships with goddesses, nymphs, and mortal women. He was the father of Athena, Apollo, Alexander the Great, and the hero Heracles. According to one story, Hera was so angry at Zeus for his unfaithfulness that she left him. Zeus created a statue of wood, covered it with a veil, and presented it as his new wife. Hera, jealous of Zeus’s new wife, attacked the statue before pulling off the veil to discover her husband’s joke. When she saw that Zeus’s “bride” was not a real woman, she laughed so much that she forgot to be angry.







*Cronos*

▣ **Cronos**, the leader of the Titans, gained power by defeating his father, Uranus. Cronos worried that his children would take power away from him, so he ate his children to protect his position—all of his children, that is, except for Zeus, who was saved from this fate by his fast-thinking mother, Rhea.

▣ **Aphrodite**, the goddess of love and beauty.

▣ **Apollo**, the sun god, also god of music, light, and truth. Each day, Apollo drove a chariot that pulled the sun across the sky.

▣ **Ares**, the god of war.

▣ **Artemis**, goddess of the hunt and the moon, twin sister of Apollo.

▣ **Athena**, the goddess of wisdom, the cities, handicrafts, and agriculture. She sprang from Zeus's forehead fully grown, so she didn't have a mother.

▣ **Demeter**, goddess of the harvest.

▣ **Hades**, the lord of the underworld and the god of wealth, due to all the precious metals that come from underground.

▣ **Hephaestus**, god of fire and metalworking.

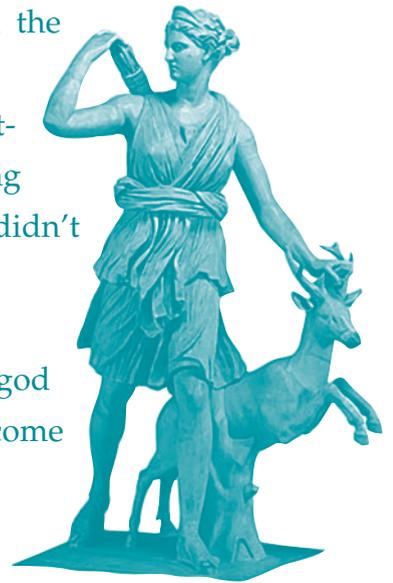
▣ **Hera**, wife of Zeus, the protector of women and marriage.

▣ **Hermes**, the god of thieves and commerce. He was the fastest of the gods and responsible for guiding the dead to the underworld.

▣ **Hestia**, goddess of the hearth.

▣ **Nike**, the goddess of victory.

▣ **Poseidon**, the god of the sea. He was extremely important to the Greeks since they traveled across the Aegean Sea all the time.



*Artemis*



*Apollo*

▣ **Zeus**, god of the earth and heavens, and the rain. He became the leader of the Olympians after he defeated his father, Cronos, and banished the Titans.

Unlike Christianity, which has the Bible, and Islam, which has the Koran, Greek religion had no single text that believers could read and follow. Young Greeks learned about the gods by listening to stories, and when they grew up, they told the same stories to their children. These myths about the gods described how they were born, and about their special powers, love affairs, and rivalries. Over time, historians recorded the various stories, which is how we know about the gods today.



Zeus

## Know Your Ancient Greeks

### Heracles

Heracles (sometimes called Hercules) was the son of Zeus and Alcmene, a mortal woman. When Heracles was a baby, his jealous stepmother, Hera, tried to kill him by placing a serpent in his cradle. But Heracles was a baby with super-human strength, and instead of succumbing to the serpent, the baby Heracles killed it. Hera's jealous ways finally drove Heracles insane, and he killed his own wife and children. Shamed by his insanity, Heracles

asked an oracle how to regain his honor. He was instructed to serve Eurystheus, king of Mycenae, for 12 years. The king wasn't sure what tasks to set for the mighty Heracles, so he consulted Hera. They came up with 12 tasks for Heracles.

Known as the 12 labors of Heracles, these tasks included such feats as killing the nine-headed hydra, who would sprout two new heads for every wound, and bringing Cerberus, the three-headed dog of Hades, from the underworld.

Heracles completed his tasks and was finally free to return to Thebes, where he married Deianira. Upon his death, Heracles was taken to Mount Olympus and became immortal.



# activity: Creature Feature



Some of the demigods and famous creatures from the stories of ancient Greece were combinations of man and beast, or otherwise different from human

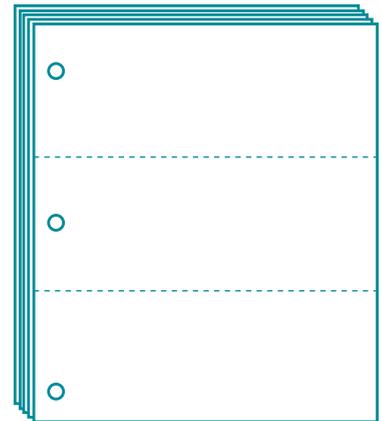
form. Medusa, with snakes for hair, was one. Others were Pegasus, the winged horse who sprang from the blood of Medusa when she was slain by Perseus, and Chiron the centaur, with a human head and torso on a horse's body. Triton was a merman, son of Poseidon and his mortal wife. Human

down to his waist, Triton had the tail of a fish instead of legs. When gods and humans joined in creating offspring, anything could happen!

You can create your own album of creatures that change with the turn of a page.

**1** Use a 3-hole punch to punch holes along one 11-inch side of all 10 sheets of cardstock.

**2** Use the ruler and pencil to divide the sheets into three equal sections. Each section should have one punched hole.



## supplies

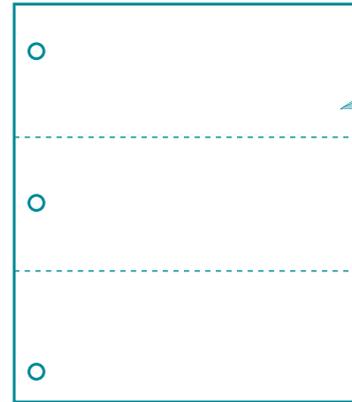
- ☒ ten 8½-by-11-inch sheets of white cardstock
- ☒ 3-hole punch
- ☒ ruler
- ☒ pencil
- ☒ scissors
- ☒ markers
- ☒ small binder

**3** Cut along these lines, making sure to keep the top, middle and bottom sections together. Put the sections into the binder. You have a section for the head, torso, and legs of 10 creatures.

**4** Before you begin drawing your creatures, you need to mark the paper so that all these parts will line up correctly. Make small marks about two inches apart at the same place on every piece of cardstock where the pieces meet. You can do this by first marking the top pieces, then, one at a time, flip the top and bottom sections out of the way and draw matching marks on each new section. Then flip the middle section and mark the next one to match the top and bottom marks.

**5** Now you can draw different creatures. Just make certain that you draw a head on the upper section, a torso on the middle section, and legs and feet on the bottom, and that the body parts are aligned with the marks you made where the paper meets.

**6** Once you've drawn all of your creatures, you can flip the pages in sections to create all kinds of unusual combinations.

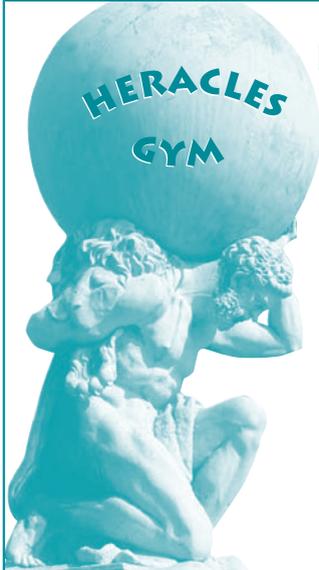


# activity: Supreme Sales

Just as Nike uses the name of a Greek goddess for a product, other companies use names that you'll recognize from ancient Greek mythology as well. Think about Amazon.com, Midas mufflers, Olympus cameras, and Ajax cleanser! Midas was a king who could turn all that he touched into gold. Ajax was a hero of the Trojan War and the Amazons were a race of women warriors in Greek mythology. How would you use the Greek gods and goddesses, and other ancient heroes, to market a product?

- 1 Think about the attributes of some of your favorite gods and heroes of ancient Greece. Heracles for instance, was strong—he'd be a great representative for a gym.
- 2 Come up with a product that is well suited to the god you choose. You can either use a product that is already available to consumers, or develop one of your own.
- 3 Think about how your god relates to the product and how he or she could be used to convince people that your product is the one to buy.
- 4 On poster board, create an advertisement. Include a slogan (a short saying about your product), an image of the product, and a picture of the god or goddess you're using in your ad campaign. Add any other information you think will help sell your product.
- 5 You can even take it further and write a 30-second TV or radio advertisement.

## HERACLES GYM



**BRING OUT THE GREEK GOD IN YOU!**

Bring this ad in when you join and receive a **10% discount.**

100 Main Street  
Anytown, USA

555-1234

## supplies

- poster board
- markers



Learn how the first Olympics were established



Discover what ancient Greeks did to cheaters



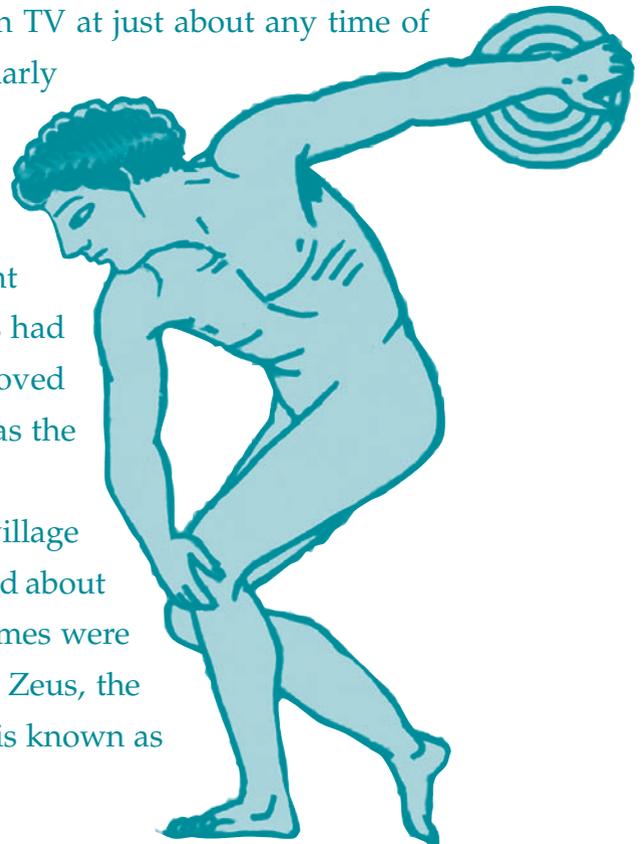
Hold your own ancient Olympics

# Sports and the Olympics

Sports are a big part of American culture. For many kids, the weekend revolves around team sports like soccer, baseball, or basketball. Professional sports are available to watch on TV at just about any time of day. Even people who aren't particularly interested in sporting events get caught up in the Olympic Games.

The Olympic Games that capture our attention every two years got their start in ancient Greece in 776 BCE. While other ancient cultures had sporting events of their own, no event has proved as influential, as important, or as longstanding as the Olympics.

The Olympic Games get their name from the village in which they were held: Olympia, which is located about 300 miles southwest of Mount Olympus. The games were part of a religious and cultural festival to honor Zeus, the father of the Greek gods, and were part of what is known as the **Panhellenic Cycle**.



### Panhellenic Cycle

The Panhellenic Cycle events were considered the most important athletic competitions of ancient Greece. The Olympiad was the four-year schedule for the different festivals: the Olympic Games were held in year one; the Nemean and Isthmian games were held in different months of year two; the Pythian Games were held in year three; and the Nemean and Isthmian games were held again in different months of year four. The cycle then started again with the Olympic Games. Individual athletes could participate in all of the games, and if an athlete won at all four he was especially honored as a **periodonikes**, which means “circuit winner.”

The Panhellenic Cycle was a series of four festivals that combined celebrations to honor a particular god with athletic competition. The other Panhellenic festivals held in ancient Greece included the Nemean Games held in Nemea, (also to honor Zeus), the Isthmian Games near Corinth (to honor Poseidon, the god of the sea), and the Pythian Games at Delphi (to honor Apollo, the god of light).

What made these four festivals different from local festivals that featured athletic events was that

the Panhellenic Cycle events invited all free-born Greeks from throughout ancient Greece and the Greek colonies to compete. Athletes traveled from as far away as modern-day Spain and Turkey to compete in the different Panhellenic Games.

Before and during the Olympic Games, an **ekecheiria**, or truce, was announced, so that athletes and religious worshippers could travel safely to and from Olympia. While the truce was in effect, legal disputes were forbidden, wars were suspended, and armies were not allowed to enter

## words to know

**Panhellenic:** all Greek

**Panhellenic Cycle:** a series of four religious and cultural festivals

**ekecheiria:** the Greek word for truce, literally means “holding of hands”

**periodonikes:** the Greek word for circuit winner, from the words *peri* and *hodos*, meaning “going around in a circle,” and Nike, the goddess of victory who presided over all athletic and military contests

Elis, the city-state where Olympia was located.

There was another major difference between the Panhellenic Cycle events and local athletic competitions. Winners of local athletic events were awarded cash prizes, but the prizes given to winning Panhellenic athletes were modest—a crown of wild olive

leaves at Olympia, a crown of wild celery at Nemea and Corinth, and a crown of laurel leaves at Delphi. But the honor of winning events in these festivals was so great that when they returned home, athletes were often showered with glory and gifts, such as leadership roles in the community or free meals for the rest of their lives. Cereal boxes and product endorsements hadn't been invented yet, but the Greeks had their way of honoring and glorifying their athletes!

### And They're Off!

For at least the first 50 years, the only event at the Olympic Games was the **stadion**, a footrace roughly 200 meters long, which was the length of the stadium. This distance was called a **stade**.

In 724 BCE, a second race was added, called the **diaulos**, or double-stade. *Diaulos* runners ran the length of the track, made a sharp turn around a post, and returned back down the track. This new event was likely popular because at the very next Olympics in 720 BCE, another new race was introduced. The **dolichos**, as it was called, equaled 24 lengths of the stadium.



The Stadium.



The Olympic Games were held during the summer and were arranged so that a full moon lit the celebrations on the third night.

## words to know

**stadium:** a short footrace, roughly 200 meters long, named after the building it was held in

**stade:** 200-meter distance

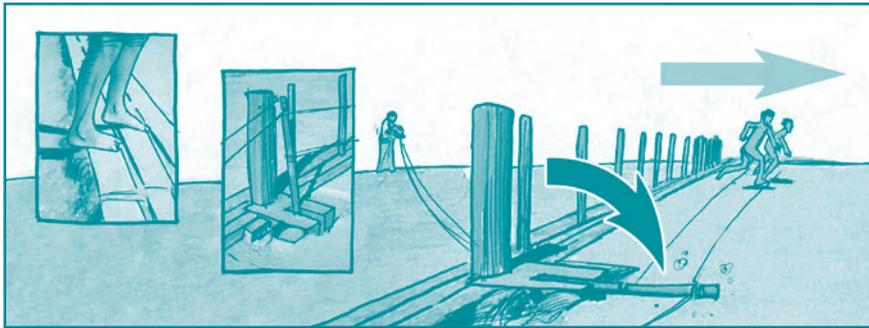
**diaulos:** a footrace roughly 400 meters long

**dolichos:** a footrace roughly 4,800 meters long

**balbis:** the starting line

**hysplex:** the starting gate that ensured all runners started at the same time in ancient Greek running races

Runners started the races from a standing crouch. Stones were set into the ground at the starting line, and runners curled their toes into the dirt at the edge of the stones, a space called the **balbis**, so they could get a



fast start. In today's Olympic races, a runner who makes a false start—that is, who runs before the starting gun is fired—gets one more chance to start the race correctly. Runners in ancient

Greece had it much tougher: racers who committed a false start, in addition to being disqualified, could be whipped!

In later years, officials learned how to prevent false starts in a much less violent way. They planted posts in the ground at each end of the **balbis** and attached twisted ropes that pulled the posts to the ground. They then pulled the posts into a vertical position, placed a rope across the posts, and attached the rope to a trigger. This rope was chest-high on the athletes and kept them from making a false start.

**Q:** How long was a **stade**?

At the start of the race, the official would hit a trigger, and the **hysplex**, as this device was known, would fall, dropping the rope to the ground and letting the runners sprint off.

### Games for the Guys—and a Few for the Girls

The Olympic Games were open to any free-born Greek in the world, and all athletes competed in the nude. By being naked, they could show off their physique and the result of all their hard training. The Greek word for naked is *gymnos*, and the word ***gymnasium*** originally meant a place to exercise in the nude.

As for women, not only couldn't they compete in the Olympics—some couldn't even watch. Unmarried girls were allowed to attend the games, but any married woman found in the stadium (other than the priestess of Demeter who oversaw the games) was supposed to be punished by being thrown off Mount Typaeum. Whether or not this ever actually happened isn't clear, since there doesn't seem to be any record of it.

One woman who did make it inside the stadium and lived to tell the tale was named Callipateira (although some accounts of the story give her name as Pherenice). Callipateira was a widow who cut her hair short and disguised herself as a male trainer so that she could watch her son, Peisirodus, compete in his event. When Peisirodus won, she ran out to congratulate him, but while doing so was exposed as a woman.

Because her dead husband, Diogoras, and another son had also been successful athletes, Callipateira wasn't punished—but at future events everyone in the stadium had to be naked, not just the athletes.

While women weren't allowed to compete directly in the Olympics, they were allowed to enter equestrian (horse riding) events as the owner of either chariots or single horses. In fact, the winner of the first chariot and horse race recorded at the Olympics was a woman named Belistiche.



### Growth of the Games

As the years passed, more and more events were added to the Panhellenic Games: wrestling, boxing, chariot racing, the ***pankration***, horse

**Q:** What happened to women who tried to sneak into the Olympic games?

racing, and the pentathlon. The *pankration* was an unarmed combat event combining striking and wrestling, while the pentathlon was a series of five events includ-

### The Pankration

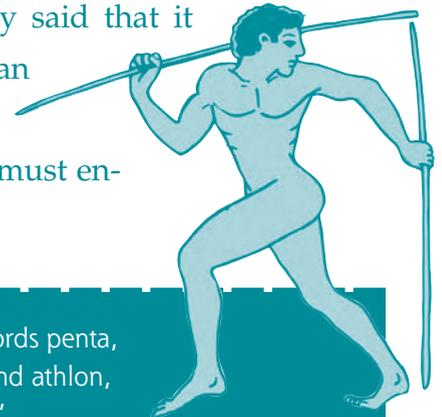
The *pankration* was a combination of wrestling and boxing, and the only restrictions were against biting and gouging out an opponent's eyes, nose, or mouth with fingernails. Competitors fought each other until one man was either knocked out or admitted defeat. Some *pankration* competitors specialized in particularly brutal methods of winning, including breaking fingers or putting strangleholds on their opponents. And kicking in the belly? Perfectly legal.



ing discus, long jump, running, javelin, and wrestling. Believe it or not, the philosopher Plato was also a wrestler and a two-time winner of the Olympic *pankration*!

One important thing to note about all these events is that they were individual competitions. Team events would have seemed completely weird to the Greeks. Working together to achieve an athletic goal was not valued; individual strength and stamina was, so it was every man for himself.

In 632 BCE, boys' events were added to the games, and they competed in running, wrestling, and, much later, boxing. Roughly one hundred years later, a new foot race for men was added in which competitors wore helmets and carried heavy shields. While this race might sound manly, the soldier Philopoemen supposedly said that it takes a lot more than a helmet to make a man into a soldier: "The athlete eats a lot, sleeps a lot, and trains regularly, while the soldier must en-



## words to know

**gymnasium:** place to exercise in the nude

**pankration:** unarmed combat combining hitting and wrestling with very few rules

**pentathlon:** a series of five events including discus, long jump, running, javelin, and wres-

ting, from the words penta, meaning "five," and athlon, meaning "contest"

**Marathon:** the village where the Greeks won a major battle over the Persians, and a running race of 26 miles, 385 yards (42.195 kilometers)

dures lack of food and sleep and exert himself at irregular moments.” On the other hand, historians estimate that the helmet and shield these athletes wore weighed anywhere from 50 to 60 pounds, so running a couple of miles with 60 pounds on his back would probably toughen up just about anyone.

Since they were excluded from the Olympics, women eventually started holding their own sporting events at a separate festival in Olympia to honor Hera, the wife of Zeus. Unlike the men, who competed naked, women wore tunics, a knee-length garment that revealed only one shoulder when they competed.



## The Spirit of the Games

High standards and an honest performance were expected from Olympic athletes. Any athlete found to have cheated was fined, and the money collected was spent on a bronze statue of Zeus that was placed on the road that led to the stadium. A message describing the athlete’s offense was placed on the statue so athletes would be warned not to cheat. Nobody wanted to be recognized as a cheater, so this was a good warning to behave.

Despite the high standards, athletes did occasionally get a little tricky with the rules. One story tells of Sotades, an athlete from Crete who won the *dolichos* at the 99th games. When Sotades competed in the next games four years later, he declared himself an Ephesian, claiming he was from the city Ephesus in Asia Minor. Turns out that the Ephesian people had bribed Sotades to give them a chance at winning.

**In the early Olympics, judges didn’t necessarily divide the men and boys into separate age groups, but rather divided them by physical size and strength.**



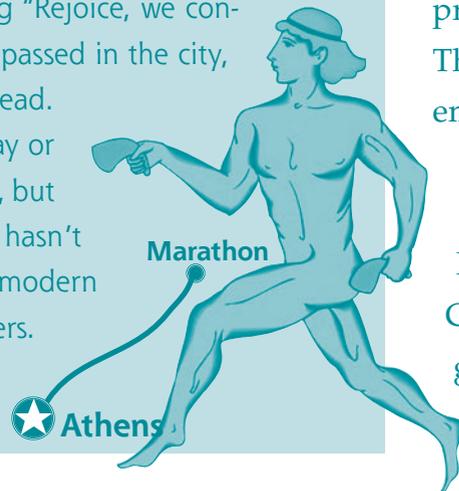
**Q:** How many festivals were in the Panhellenic Cycle and in what order did they take place?

### The Modern Ancient Greek Event

Most people think of the marathon as an event from ancient Greece, but the first marathon actually took place in 1896, when the modern Olympic Games began.

Although the marathon itself is new, the idea for the marathon does come from an ancient Greek legend. General Miltiades led the Greeks to victory over the Persians in 490 BCE. The battle took place in the village of Marathon, northeast of Athens. As the story goes, Miltiades then ordered a runner to carry news of the triumph back to Athens. This runner, Pheidippides, ran approximately 25 miles from the city of Marathon to Athens, shouting “Rejoice, we conquer!” to all he passed in the city, then dropped dead.

This story may or may not be true, but in either case, it hasn’t scared away modern marathon runners.



### From Ancient to Modern

The Olympic Games were held every four years from 776 BCE until 393 CE—a period of more than 1,100 years. But by 393 CE, the Romans had taken control of ancient Greece, and the Roman emperor, Theodosius, outlawed the games and the “pagan cults” that sponsored them. The word *pagan* refers to the belief in multiple gods. The Greeks still believed in many gods, including Zeus, in whose honor the original Olympics were created. The Romans officially practiced Christianity, however, and Theodosius wanted everyone in his empire to share his beliefs.

It took more than 1,500 years for the Olympic Games to be held again. In 1894, Frenchman Baron Pierre de Coubertin proposed a revival of the games to promote athletic competition and improve foreign relationships. He founded the Inter-

national Olympic Committee. While he wanted to hold the Olympics in Paris in 1900, the response to his idea was so enthusiastic that the games were held just two years after they were proposed, in 1896, in Athens. One hundred forty years later, in 2004, the summer Olympics were again held in Greece, and the shotput event was hosted in the Stadium of Ancient Olympia, site of the original Olympic Games.

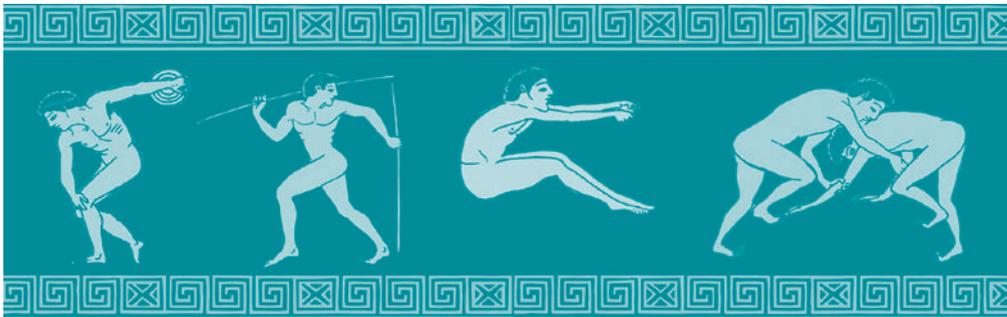
While the modern Olympics strives to be an athletic competition based on the ideals of the ancient games, the tradition of the Panhellenic truce established between ancient city-states for the games at Olympia, Nemea, Delphi, and Corinth has not always survived in the modern era. The games were called off during World Wars I and II, and both the United States and the Soviet Union boycotted the games over non-athletic, political events. Thankfully, the more recent Olympics have seen a return to the spirit of truce, with South and North Korean athletes marching under the same flag, despite the hostilities between the two countries.

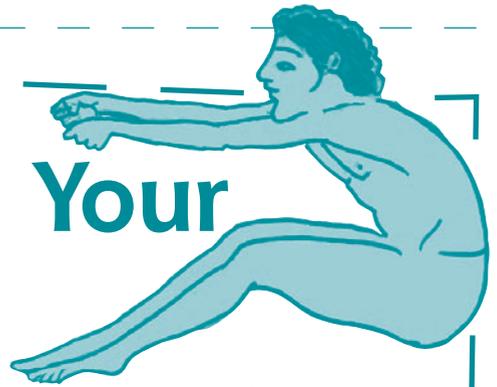
From the original Olympics, with its single event, the games have evolved to include both summer and winter games. In 1994 the schedule changed from every four years, to alternating summer and winter games every two years. The modern Olympics include some events from the original games, such as the discus throw and running races, but most are new. There are now 28 sports included, with many of the sports divided into numerous events; for instance, in gymnastics, there are individual competitions for balance beam, floor exercise, bars, and vault. Recent Olympic Games have hosted athletes from as many as 200 different nations.

**The five intertwined rings of the modern Olympic flag represent the unity of the five continents. The white background symbolizes the field and the colors of the rings—red, blue, green, yellow, and black—were carefully chosen so that every nation had at least one of their flag colors represented.**



**Q:** In what year did the first modern Olympics take place?

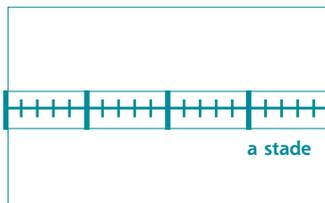




# activity: Hold Your Own Ancient Olympics—and Crown the Winners

This activity will give you an idea of what the first Olympic events were like. In the ancient Olympics, the only prizes for the winners were laurel wreaths. Unlike the ancient Olympians, you may not live where laurel grows—but you can still make wreaths for the winners of your Olympics.

- 1 First figure out just how many meters a *stadion*, *diaulos*, and *dolichos* event would cover. What modern Olympic events could these be comparable to? Next, go outside and measure a stade. Mark the courses.



- 2 Take eight or nine long grass or flower stems and bunch them together, making the ends even. Fasten a rubber band or bag tie around one end to keep them from slipping. Carefully divide the stems into three sections, and braid them together. Or, you can divide the bunch of stems in half and twist them around each other, using a fastener or two partway. Secure the other end with the other rubber band, and fasten the two ends to form a wreath. Stick extra flowers or leaves into the braid for decoration and to cover up the fasteners.

## supplies

- ☒ **tape measure**
- ☒ **8 or 9 stalks of long grass, or long-stemmed flowers** (carefully take off the flower heads, leaving a little bit of stem—you'll use these later)
- ☒ **2 or more small rubber bands or bag ties**
- ☒ **extra flower heads or leaves**
- ☒ **stopwatch**

- 3 Hold your events. Have a starting line and an official start: "On your mark, get set, go!" Time how long it takes to complete *stadion*, *diaulos*, and *dolichos* races.

- 4 In the ancient Olympics, laurel wreaths were worn on the back of the winner's head, tucked behind the ears. Crown your Olympic winners with your own version of an Olympic wreath.



Feel the power of  
philosophy

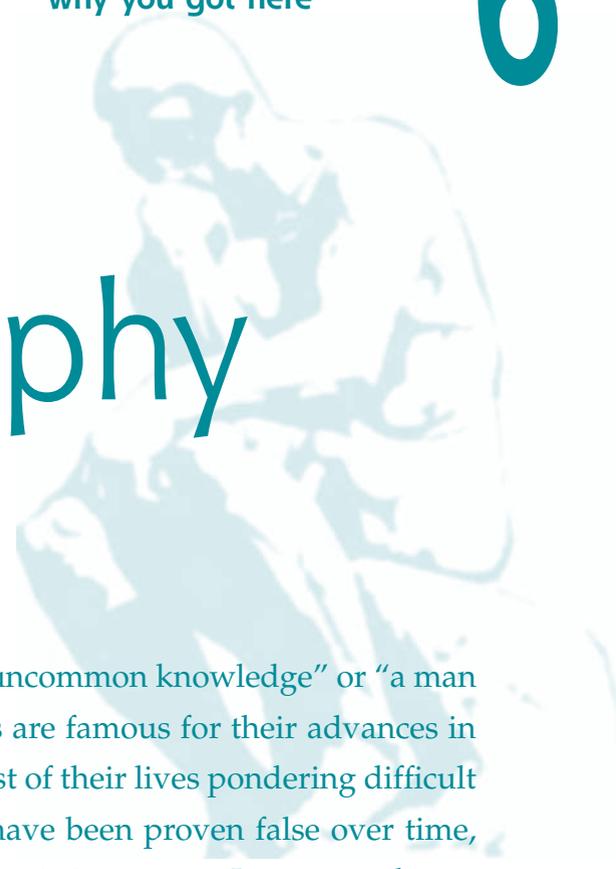


Check out what  
three ancient Greek  
philosophers have  
to say about your  
behavior



Ponder how and  
why you got here

# Philosophy



**T**he word **philosophy** means “devotion to uncommon knowledge” or “a man who likes to be wise.” The ancient Greeks are famous for their advances in philosophy. Greek philosophers spent most of their lives pondering difficult questions. While many of their theories have been proven false over time, the fact that they were even asking these questions is important. It prompted generations to follow to change the way they approached the unknown, it prompted them to question common reason, and it prompted them to ask *Why?*

Have you ever wondered why we are here? Or where things come from? Or what things are made up of? Ancient Greek philosophers moved beyond pure acceptance of the world around them and asked such questions. They used reason and observation to answer their questions, and their findings affected science, math, and geography.

The question “What are things made of?” was one that was pondered by many different philosophers, each of whom arrived at a different conclusion. Dirt and rocks are different from wood and water. They look different and feel different. But many philosophers felt that everything in the universe had to have a common base.

## The Big Philosophical Questions

Though philosophy had its start in ancient Greece, even today people ponder some tough philosophical questions.

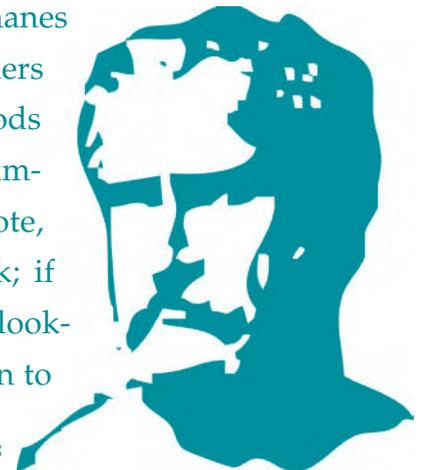
- There are ethical questions: What is right? What is wrong? How do you know, and who decides?
- There are questions about the universe and its origins: How did the world come to be? Is there a system to the world? Did God create the world? How do you know?
- There are questions about our destiny: Can we tell the future? Are our lives planned out for us by fate, or do we choose our destiny?

Greek philosophers searched for commonsense answers to questions. They developed logic and rules of argument that are still used in courts of law and debates today. They realized that for every view, there is often an opposing view. For instance, while rainy weather is good for the crops, it can also cause problems like leaky roofs or flooding.

Think about the big questions. How would you answer them? If you discuss these questions with a friend, there's a good chance that he or she may have a different opinion. You'll notice that it's difficult to separate these philosophical questions from religion or science. Different religious beliefs affect a person's answer to all of these questions. So how can there be any one answer to these questions?

Even in ancient Greece, the questions asked by philosophers were tied up with religious beliefs. Xenophanes (560–478 BCE) was just one of many philosophers who doubted the stories told about the Greek gods and goddesses. He questioned the belief that immortals looked just like human beings. He wrote, "The Ethiopians say that their gods are black; if horses could draw, they would draw their gods looking like horses." Some philosophers even began to

*The philosopher, Xenophanes*



## FUTURE

**Greek Saying**

Have you ever heard the saying “you can’t step into the same river twice?” Read this poem: *The river where you set your foot just now is gone— those waters giving way to this, now this.*\*

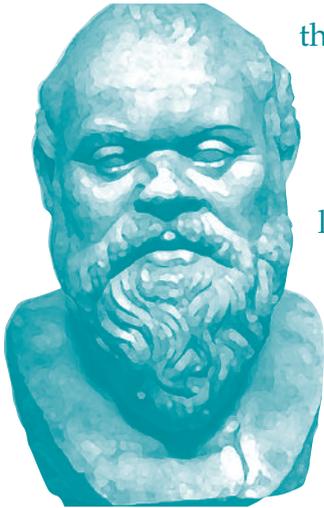
\*translated by Brooks Haxton in the *New England Review*, Winter 2001

This poem was written by Heraclitus (540–480 BCE), an early Greek philosopher. He believed that all things are constantly in a state of flux, or change, and that fire was the essential material uniting all things in the universe. Years later, both Plato and Aristotle dismissed him as being illogical.

A saying that we still use today has its roots in ancient Greece!



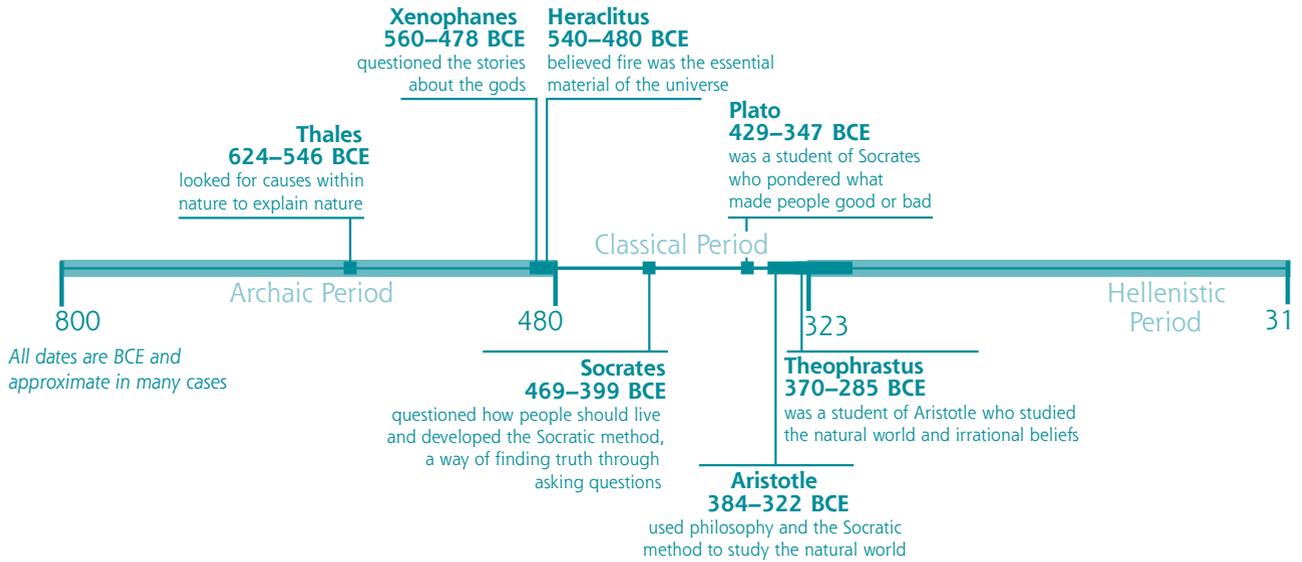
question whether the gods existed at all. But ordinary people still believed in the gods, and philosophers’ questions made them nervous. It seemed dangerous to doubt the gods.

**Socrates (469–399 BCE)**

Socrates is one of the most famous ancient Greek philosophers, yet there is no record of his ever having written a word. Socrates didn’t feel the need to record what he discovered, or how he made his discoveries. He felt that knowledge itself was a living thing. All that we know about Socrates comes from the writings of his peers and students.

Socrates had an interesting idea about his own knowledge. While many ancient Greeks considered him to be a very smart man, he felt that there was so much to know that, in reality, he knew nothing. He thought it was his understanding that he *didn’t* know everything that made him knowledgeable.

Most Greek thinkers before Socrates had tried to answer the question “What is the world really like?” But Socrates cared only about studying



how one should live—that is, how a person should interact with his or her fellow human beings. Instead of questioning the universe and everything in it, like other philosophers did, he might ask questions like “What is courage?” or “What is friendship?”

Socrates felt so strongly about his ideas that he even opposed the study of natural phenomena. He thought people would be better off if they searched for truth and learned how to deal honestly with one another. In his opinion, people should investigate which qualities or virtues lead one to live a good life, then define those virtues in such a way that others can follow the same path.

This concentration on morality and the best way to live led Socrates to develop a unique style, or method, of reasoning, to this day called the Socratic method, in his honor. To get at the heart of goodness, justice,

## words to know

**philosophy:** a quest for truth through logical reasoning, from the Greek word meaning lover of wisdom

**Socratic method:** a way of finding the truth through a series of questions

and other virtues, Socrates merely asked questions of others, listened to their answers, and probed them for contradictions. If one answer proved false, Socrates would ask questions that led down a different path of reasoning in search of the true answer. Through this process of trial and error, Socrates and his listeners would eventually reach an answer that satisfied them all.

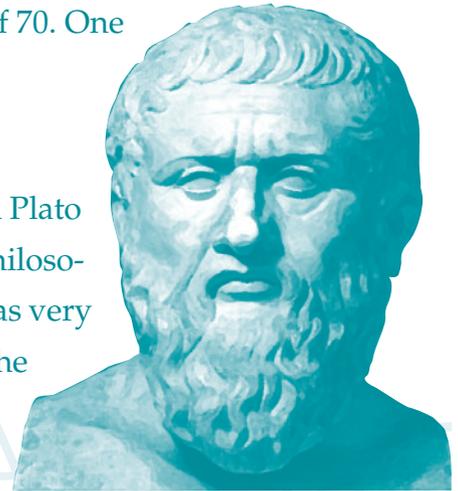
The inquiring mind of Socrates eventually resulted in his death. His determination to question everything and everyone caused the leaders of ancient Greece to become angry. In his quest for knowledge, he was so bold as to question the existence of the gods, something that angered many Greeks—and probably scared them a bit, too. Socrates was accused of corrupting the youth of Athens and sentenced to death. His friends wanted to help him escape from prison, but Socrates felt that it was important to comply with the law and die for his beliefs. Socrates, one of the greatest minds in ancient Greece, was forced to take his own life by drinking poison in the year 399 BCE, at the age of 70. One of Socrates’s students, Plato, continued his work.

### **Plato (429–347 BCE)**

Plato was born in Athens to a very wealthy family. When Plato was young, he listened to and learned from the great philosopher Socrates. Plato had great respect for Socrates and was very upset when he died. Plato began to write down some of the things he heard Socrates speak about, which is how we know about Socrates today.

Soon, Plato wrote down some of his own ideas. He wrote about government, politics, and the natural world. His idea of a good government was that a few great people should make all of the decisions—he felt that most people were not smart enough to make

**Q:** How does your religion answer the philosophical questions on the previous pages?



## Q: Who did Plato believe should be running the government?

such decisions. It was likely that he thought of himself as one of the smart ones! As you might imagine, Plato's ideas about politics weren't popular.

Plato wondered about humans, too. He thought that a soul was made of three parts: natural desire, will, and reason. Understanding our natural desires, having the ability to resist those natural desires, and knowing when to resist them was crucial to a balanced soul. Feeling thirsty is a natural desire. But if you are in the middle of giving a speech, your reason will tell you to wait until you have completed your presentation before getting a drink. Your will makes waiting possible. Plato felt that a person who was unable to control the urges of natural desire had an imbalanced soul, which could lead to that person being bad.

Plato shared his ideas with students at a school he started in Athens called the Academy. During his time there, he continued to write about politics. He died at the age of 82. His students at the Academy are credited with writing down much of what they heard Plato speak of, so that we still have a record of his ideas today.



### Aristotle (384–322 BCE)

Aristotle, another famous philosopher, was a student of Plato's. He combined philosophy and science by applying the Socratic method to the study of natural events. He questioned the causes of natural events, for example, the changes in weather

#### Aristotle's Four Causes

**The material cause:** What is an item made out of?

**The efficient cause:** What is the source of motion?

**The formal cause:** What is the species? The kind? The type?

**The final cause:** What is the full development of the individual? What is the intended function of an invention?

and the motion of the tides. As he worked out his questions and answers, Aristotle developed the Four Causes (see sidebar). He made great progress in the fields of **biology, zoology, astronomy, physics, mechanics**, and many more. Sometimes he supported his arguments with research but in other cases his “data” was simply the current opinion about what was correct, or information based on what other people had previously written on a subject. Though his conclusions weren’t always right, the method he developed—called **inductive reasoning**—is the foundation of the Western scientific method. Because of Aristotle’s contributions to science, he is still considered by many to be the most important thinker of the entire Greek era, if not of all time.



### Logic

Wondering exactly what logic looks like? Look at this problem:

If Y is greater than 12, and 12 is greater than 2 then Y is greater than 2.

Make sense? Here’s another: If London is in England, then London is not in China.

We know that London is in England. Therefore, London is not in China.

But what about this one: Jenny likes ice cream and Jenny likes broccoli. Therefore, Jenny will certainly like ice cream topped with broccoli.

Following this pattern of logic or reasoning can also lead to a conclusion that seems true, but is not.



## words to know

**biology:** the science of life

**zoology:** the science of animals, a branch of biology

**astronomy:** the science of the celestial bodies, like the planets and stars

**physics:** the science of matter and energy and their interactions

**mechanics:** a branch of physical science that studies energy and forces in relation to solids, liquids, and gases

**premise:** a condition stated at the beginning, something assumed

**inductive reasoning:** the truth of the premises lends support to the conclusion but does not guarantee it

**deductive reasoning:** the truth of the premises guarantees the truth of the conclusion

**logic:** the science of formal, correct reasoning

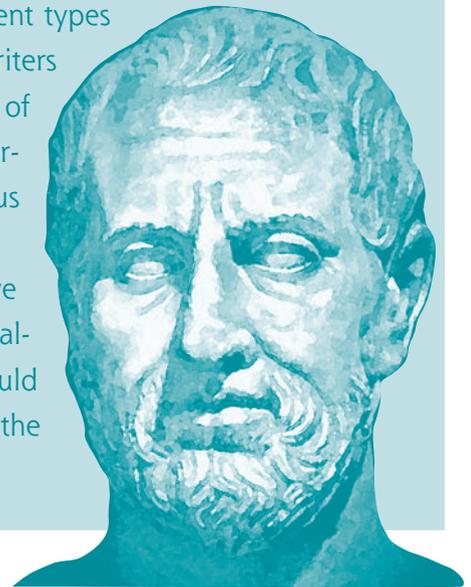
## Know Your Ancient Greeks

### Theophrastus (circa 370–285 BCE)

Theophrastus was born about 15 years after Aristotle, but when he enrolled as a student in Plato’s Academy, the two of them quickly became good friends. They traveled around Greece and Asia Minor together, and when Aristotle died in 322 BCE, he gave Theophrastus his garden, library, and writings. At this time, Theophrastus also became director of the Lyceum, a school in Athens started by Aristotle.

Theophrastus ran the Lyceum for 35 years, doing research in all areas of botany, but also writing about superstitions—that is, irrational beliefs, like black cats causing bad luck. His work, *Characters*, contains 30 humorous essays about different types of people, and it was so influential that European humor writers in the seventeenth century were still using it as an example of how to write. His other writing includes descriptions of minerals, gems, and rocks, and the experiments that Theophrastus and his students performed on them.

When Theophrastus died at age 85, he is believed to have said, “We die just when we are beginning to live.” There’s always more to research and discover, he thought, so we should never sit idle. In his words, “Nothing costs us so dear as the waste of time.”



Using this method and his four causes, Aristotle might have followed this pattern of thought: a young whale is made of tissue and organs, which is the material cause. The efficient cause is its parents, who generated it. Its formal cause is its species—whale—and its final cause is to grow into an adult whale.

One of Aristotle’s greatest achievements was creating the field of **logic**, which is the study of correct reasoning. No one prior to Aristotle had bothered to determine which arguments lead to true conclusions and which ones lead to conclusions that only seemed true.



See how the ancient Greeks built massive structures without modern-day machinery



Find out why they built their temples



Learn about the four ancient wonders of the world that ancient Greeks constructed



# Architecture

**T**hroughout Greece today, you can still find the remains of buildings that were erected thousands of years ago. The ruins of enormous temples, such as the Parthenon, are still visible, making it easy to imagine the grandeur of these ancient sites. Archeologists have also found remains of ancient Greek homes. Common Greek homes were fairly simple, and made of stone, wood, or clay bricks. However, the Greek temples and other public buildings were massive and beautiful.

Erecting these buildings was quite an endeavor. **Quarries** outside the city supplied the marble for the buildings. Masons used mallets and chisels to excavate the marble from the quarry. First they made

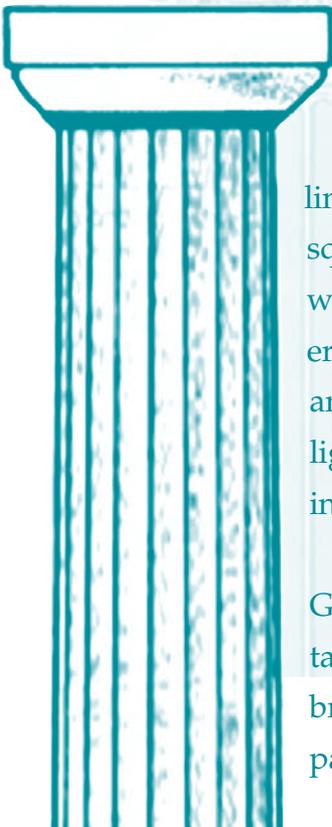


grooves in the marble, and hammered wooden wedges into the grooves. Then these wooden wedges were saturated with water, and as the wood absorbed the water, the wedges expanded, causing blocks of marble to crack apart. The blocks were shaped roughly at the quarry, and then ox-drawn carts transported them from the quarries to the *polis*. Once the blocks arrived at the building site, expert carvers worked the blocks into their final form. They carved them to fit together so snugly that no mortar was necessary to cement the blocks into place, although they did use metal clamps to reinforce the building against earthquakes. Wooden **scaffolding** was built in order to lift the blocks of stone, roof tiles, and decorative elements into place.

To create columns, the stone carvers chiseled the marble into cylindrical shapes. These cylinders were round, but kind of short and squat—certainly not tall enough to be columns. To construct columns, workers pinned the marble sections together with metal pegs. Laborers then raised these heavy stone columns into position using ropes and pulleys. The ancient Greeks even had their own version of a skylight. The stone tiles on some roofs were partially transparent, allowing light to filter into the building.

Most—if not all—of the important public buildings in ancient Greece were embellished with at least one elaborate statue and a detailed **frieze**. Ancient Greeks painted these decorative elements with bright colors or highlighted them with tinted wax, but the wax and paints faded with time and are no longer visible.

You've already read about the Theatre of Dionysus with its tiered



## words to know

**quarry:** an open area where marble and other rock is cut from the earth

**frieze:** a carved band around a building

**scaffolding:** a temporary platform supported by a framework or suspended by rope that allows work at a great height



seating area and grand stage. Ancient Greece was also home to many elaborate public buildings, including gymnasiums, baths, and stadiums. But by far the most impressive were the temples.

## Temples

Each temple in ancient Greece was built in honor of a certain god or goddess. Initially, temples were built of limestone, but during the classical period (480–323 BCE) in ancient Greece, temples were more commonly constructed of marble. Temples were generally built in a rectangular shape. Early temples featured wooden columns at the front to support an extended roof. Later, temples were built with a portico (kind of like a large porch) at the front and back and long, open hallways along each side. Huge columns stood around the exterior of the building. These columns were stunning to look at, but they also served a purpose—to support the roof of the massive structure.

**Q:** What is a **frieze**?

## The Acropolis

The word *acropolis* means “high city” and refers to the highest point in each city-state as well as to the buildings and structures built upon it. The Acropolis of Athens is the most recognized acropolis of the ancient world. It was fortified against attack and acted as a place of refuge for the citizens of Athens. As temples and public buildings were built, the

Acropolis became the city's religious center and the focal point of public life. A stone staircase led visitors to the magnificent entrance of the

**Q:** What type of scenes were depicted on the Parthenon's frieze?

Acropolis complex, the *Propylaea*. Beyond the entranceway stood the Parthenon along with two other temples: the Erechtheum and the Temple of Athena Nike. Polished marble walkways between the three temples

led visitors past towering statues and outdoor altars.

As you might imagine, most Athenians took great pride in their city and the amazing architectural accomplishments at the Acropolis. Athens was one of the most fabulous city-states in the ancient world and the elaborate complex made it all the more stunning. Athenians must have understood that the city that they called home, with its impressive buildings and sculptures, would continue to be awe-inspiring to future generations.

### The Parthenon

The Parthenon—the most famous of all Greek temples—was dedicated to Athena, the patron goddess of the city of Athens, and was the highlight of the Acropolis complex. The Parthenon wasn't always the enormous structure you see on postcards and placemats in Greek restau-



*The ruins of the Acropolis of Athens.*

rants, though. The first version of the Parthenon was destroyed by war in 480 BCE before it was even completed. But in 440 BCE, the Greek ruler Pericles decided to rebuild the Parthenon and make it bigger and grander than before.

The Parthenon was 237 feet long, 110 feet wide, and 60 feet high. It was a rectangular building with low steps up to the main floor on every side. A colonnade of Doric columns stood in line around the exterior of the building—there were eight columns along the short walls and 17 on the longer walls. There were six more columns at each entrance. The design of the Parthenon was a joint effort. The architect Ictinus planned the building and Phidias (you read about him in chapter 3) decorated it with sculptures and carvings. One sculpture depicted the birth of Athena and another, her rivalry with Poseidon, god of the sea. Around the outside of the building, the frieze depicted scenes of daily life in Athens as well as the council of the gods debating the creation of mankind.



*The Parthenon.*



corinthian column

### Colossal Columns

- **Doric columns** are very plain. The top (called the capital) is a simple square. Doric columns were used frequently on mainland Greece and in the colonies in southern Italy.
- **Ionic columns** are more elegant than Doric columns. The shaft is a bit thinner and atop it is a scroll-like capital called a volute.
- **Corinthian columns** were used less frequently in ancient Greece. The capital is very elaborate and decorated with leaves.

doric column



ionic column

### Friezes

Most of the public buildings in ancient Greece were embellished with friezes, which were elaborate scenes carved from marble that ran around the building near the roofline. Sculptors carved these scenes in panels that were then mounted on the building.

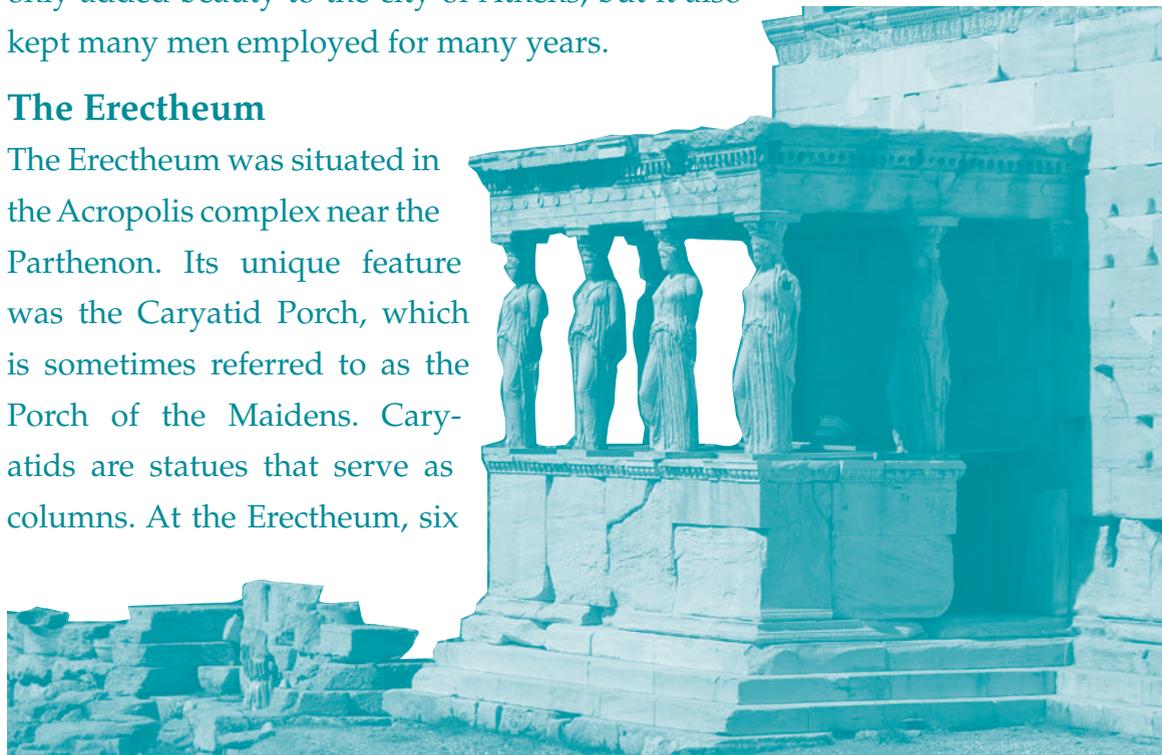


For 15 years, the people of Athens worked together toward the completion of the Parthenon. Thousands of men—Athenians as well as other Greeks—worked on the building during that time. Many craftsmen participated in creating this architectural wonder, and each brought his own specialty to the project. There were not only carpenters, stonemasons, and painters,

but also rope makers, miners, road builders, leatherworkers, and engravers. And this doesn't even take into consideration the people who didn't actually work at the site, such as the sailors who brought supplies, wagon makers, and drivers. The building of the Parthenon not only added beauty to the city of Athens, but it also kept many men employed for many years.

### The Erechtheum

The Erechtheum was situated in the Acropolis complex near the Parthenon. Its unique feature was the Caryatid Porch, which is sometimes referred to as the Porch of the Maidens. Caryatids are statues that serve as columns. At the Erechtheum, six



*The portico on the Erechtheum known as the Porch of Maidens.*

stunning stone maidens act as columns on the porch, helping to hold up the roof. The Erechtheum was dedicated to several gods, including Athena and Poseidon. It housed the Athenians' most sacred statue, Athena Polias (Athena, goddess of the city), which was made of wood.

## World of Wonders

Ancient Greek engineers and architects dreamed big. Not only did they create enormous statues, temples, and public buildings, they also created four of the seven “wonders of the ancient world.”

A Greek historian named Herodotus recorded the wonders of the ancient world in the fourth century BCE. Considered by the ancient Greeks and Romans to be the most fabulous creations of art and architecture, the seven wonders are the Hanging Gardens of Babylon, the Great Pyramid of Giza, the Statue of Zeus at Olympia, the Temple of Artemis at Ephesus, the Mausoleum of Halicarnassus, the Colossus of Rhodes, and the Lighthouse at Alexandria. Seven wonders were chosen because the number seven was considered lucky by the mathematician Pythagoras.

Though many of these ancient wonders no longer exist we

**Q:** Name and describe three types of Greek columns.



### The Elgin Marbles

At the turn of the eighteenth century, a British nobleman and diplomat named Thomas Bruce, the 7th Earl of Elgin, ordered that much of the Parthenon frieze be removed.

He felt that the sculptures were being allowed to fall into disrepair, and wished to salvage them. Sometime between 1801 and 1805, the frieze panels—now known as the Elgin Marbles—were moved to Britain. Since that time, Greece and Britain have debated about who owns those marbles. Currently, they are on display at the British Museum in London.

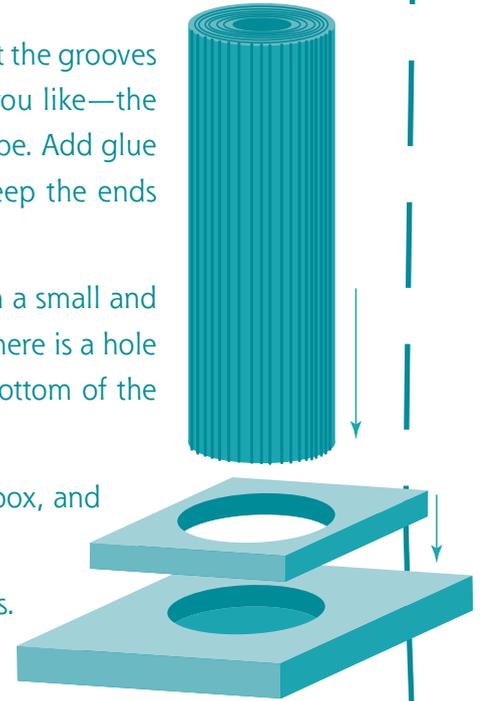


# activity:

## Craft a Column

Most of the major public buildings in ancient Greece featured columns. Add a little Greek style to your room by creating a column that you can use as a stand to display your favorite photos or trinkets.

- 1 Cut the cardboard tube to a 36-inch length.
- 2 Wrap the corrugated cardboard around the tube so that the grooves run up and down. You can wrap it as many times as you like—the more layers you add, the sturdier and thicker your column will be. Add glue between each layer to hold it together and do your best to keep the ends even.
- 3 Trace around the bottom of the column in the center of both a small and medium-sized pizza box. Cut the medium-sized box so that there is a hole in the bottom of the box only. Cut holes in both the top and bottom of the small box.
- 4 Slide the column through the hole in the small pizza box, and then into the hole in the medium-sized box.
- 5 Use glue or tape to secure the column in the pizza boxes. These boxes will become the base of your column. Flip the column over and repeat the steps to add a top to your column.



## supplies

- ☒ **sturdy cardboard tube** (use one from a roll of gift wrap or visit a carpet store and ask for a tube from the center of a roll of carpet)
- ☒ **corrugated cardboard**, 36 inches wide
- ☒ **clean pizza boxes**, 2 small and 2 medium-sized
- ☒ **poster board**
- ☒ **glue or tape**

- 6 Now, decide what type of column topper, or capital, you'll have—Doric, Ionic, or Corinthian. For a Doric column, you'll want to stick with just the two pizza boxes. For an Ionic or Corinthian column, use poster board to embellish and add details to your column. If you'd like, paint the column.

## Know Your Ancient Greeks

### Pericles (circa 495–425 BCE)



Pericles was so influential in Athenian politics and culture that the time he was in power is often referred to as the age of Pericles. He became the recognized leader of Athens in 461 BCE, when aristocratic leader Cimon was ostracized for his friendship with Sparta. Pericles wanted all citizens to participate in matters of state, so he came up with a plan to pay them for participating. Pericles also worked to restore old temples and build new ones, including the Parthenon, and Athens became a center for literature and art.

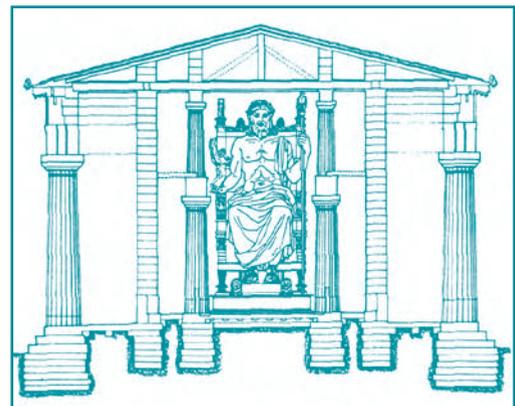
Other Greek city-states came to resent the dominance of Athens, and Pericles himself. Some people claimed that Pericles used the taxes paid by all Greek city-states—collected for military protection—for improvements to the city of Athens. During the Peloponnesian War, Pericles moved people from the countryside to within the walls of Athens to keep them safe from the Peloponnesian army. When plague broke out in the overcrowded city of Athens, Pericles was blamed. He was removed from office and fined for misuse of public funds. Though he was later reinstated, he died of the plague soon after.

know about them through the writings of ancient Greeks and archeological discoveries. Archeologists have found coins depicting these wonders and they've also discovered the remains of a workshop that belonged to Phidias, the man who sculpted the statue of Zeus at Olympia.

### The Statue of Zeus at Olympia

Starting in 776 BCE, athletic events and religious celebrations were held in the town of Olympia, 90 miles west of Athens, to honor Zeus, the most powerful of the Greek gods.

In 450 BCE, the architect Libon designed a magnificent temple dedicated to Zeus, and the Athenian sculptor Phidias had the honor of creating the statue of Zeus himself. The statue was



*Phidias' Zeus at Olympia.*

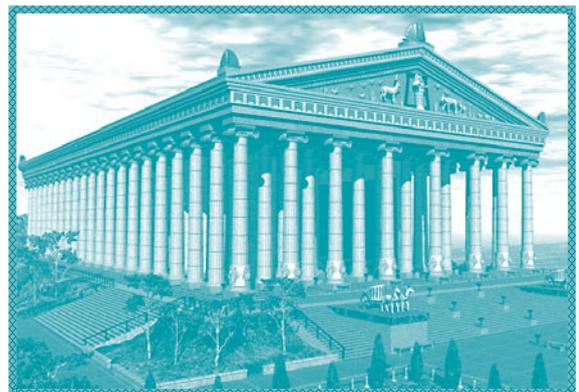


20 feet wide at the base and 40 feet tall; even though Zeus was seated on a throne, his head nearly reached the top of the temple. The statue was made of ivory and gold and decorated with ebony and precious stones. The temple building is believed to have been destroyed by an earthquake. The statue of Zeus was taken by wealthy Greeks to Constantinople (now Istanbul,

Turkey) where it was eventually destroyed by fire in 462 CE.

### The Temple of Artemis at Ephesus

Built by Croesus, King of Lydia, around 550 BCE to honor the goddess Artemis, the Temple of Artemis at Ephesus was often described as the most beautiful building on earth. The temple was built entirely from marble and included 127 sixty-foot-tall columns. It also featured many works of art and four bronze statues of Amazons. Artemis was the goddess of hunting and wild nature, and the Amazons—an independent tribe of female warriors—lived in a way that would have pleased Artemis. In 356 BCE—on the same day that Alexander the Great was born—the temple was burned down by Herostratos, a deranged man in search of fame. Alexander the Great ordered the temple to be rebuilt, but it was ultimately destroyed by the Goths, an invading Germanic tribe, in 262 CE.



## The Colossus of Rhodes

In 408 BCE, three small city-states on the island of Rhodes in the Aegean Sea near Turkey combined to form one territory. Just over 100 years later, the people of Rhodes fought off an attack from the Antigonids of Macedonia. When a peace agreement was reached, the Antigonids left behind much of their military equipment, which the people of Rhodes sold to pay for a giant statue of their sun god, Helios.



It took 12 years to build the statue, which had a base of marble and skin made from cast bronze secured to a framework of iron and stone. The finished statue was over 100 feet tall, nearly the size of the Statue of Liberty. The statue's thumb was so large that few people could circle it with their arms, and each finger was the size of most statues. Fifty-six years after the statue was built, in 226 BCE, an earthquake hit Rhodes, devastating the city and breaking the statue at its weakest point, the

## Legendary Greeks

### The Amazons

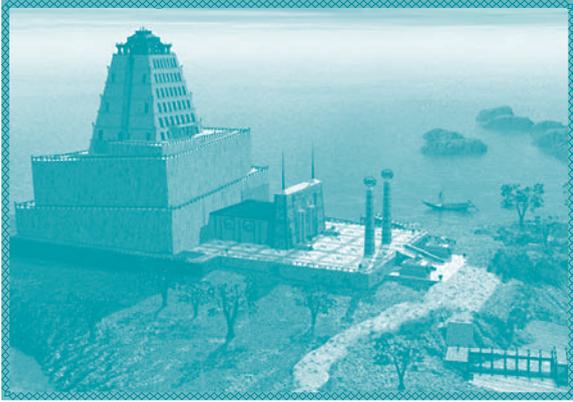
The Amazons were a mythical band of female warriors, ruled by Queen Hippolyte. They are said to have lived near the Black Sea and made trips to Asia Minor where they founded many towns. Amazons were as fierce as lions, and it is said that girls had their right breasts removed in order to draw their bows more easily. Amazons governed and survived without the aid of men, who were not even permitted in Amazon lands.

While we know them as mythical, scholars still debate the possibility that these women were real. Archeologists have uncovered the remains of warrior maidens in an area of Siberia, giving them more to ponder.

*Amazon warriors.*



knee. Ptolemy III Eurgetes of Egypt offered to pay for repairs to the monument, but the leader of Rhodes consulted an oracle who forbade them to erect a repaired statue. The statue lay in ruins until 654 CE, when the Arabs invaded Rhodes, disassembled the statue, and sold it to a Syrian. One story claims that it took 900 camels to transport the pieces.



### The Lighthouse of Alexandria

The rugged shoreline near Alexandria, Egypt, was dangerous to ships that came too close to land, so around 300 BCE the commander of the city ordered construction of an enormous lighthouse to warn sailors that they were close to shore.

The architect Sostratus designed a lighthouse that was over 380 feet tall (equal to a 40-story building). It had a giant mirror on top that could reflect the sun's light up to 35 miles during the day, and lighthouse keepers kept fires

### Shake and Bake

There are still many ruins in Greece where visitors can see the remains of ancient buildings like the Parthenon, the Olympic Stadium, and the Temple of Zeus. What happened to these buildings? Why are they in such disrepair?

The passage of time has a lot to do with it, but two other factors have also had an impact on the buildings raised so long ago: earthquakes and fire. Earthquakes have caused many stone pillars to come crashing down—these structures cannot withstand the earth-shaking that is common to Greece.

You might think that buildings made of stone would be safe from fire damage, but that's not so. Roofs of ancient Greek structures were supported by large timbers covered with tiles. If the timbers caught fire, the entire roof could come down. The stone itself could be damaged by fire, too. While stone will not burn, intense heat will cause it to crack and crumble.



burning at night. The lighthouse survived into the 1300s CE, when it was destroyed by earthquakes. It was never rebuilt.

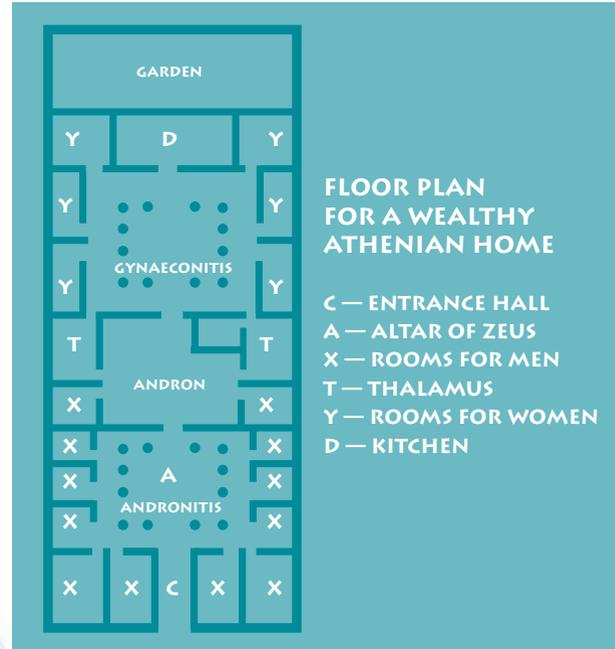
## Common Homes

While the public buildings of ancient Athens and other city-states were awe-inspiring, the homes of Greek citizens were simple in comparison. Private homes varied in size, depending upon the size of the land on which they were built and the wealth of the owner.

In most cases, homes were rectangular in shape, with the narrowest side of the home facing the street. In chapter 2, you read about courtyards. The homes of wealthier Greek citizens might have two courtyards. The front courtyard with its adjoining rooms was called the *andronitis*, or “court of the men,” and the rear courtyard with its adjoining rooms was called the *gynaeconitis*, or “hall of the women.”

The *andronitis* often had an altar at its center with a statue of Zeus, the Protector. The courtyard might even be large enough to allow space for exercise. The *andronitis* acted as the living area of the home and was where the man of the house would receive visitors. The floor of the *andronitis* might be plastered, but was more commonly made of hard earth. Chambers used as storerooms or as sleeping spaces for male slaves or grown-up sons of the household were situated around this courtyard. Directly behind the *andronitis* was the dining area, called the *andron*.

The *gynaeconitis* was a courtyard similar to the *andronitis* and was hidden behind a door in the rear wall of the *andron*. Only the fathers, sons, and other close male relatives were allowed to enter this private space. Surrounding chambers included a kitchen, a room for working wool,



# activity: Make an Ancient Greek Building



1 Decide what building you wish to replicate. Will you recreate the Parthenon? Or would you rather construct a common house?

2 Use cardboard tubes for columns, or make columns by rolling pieces of white paper into tubes. Cut the cardboard into pieces for the roof, the steps, and other parts of your structure.

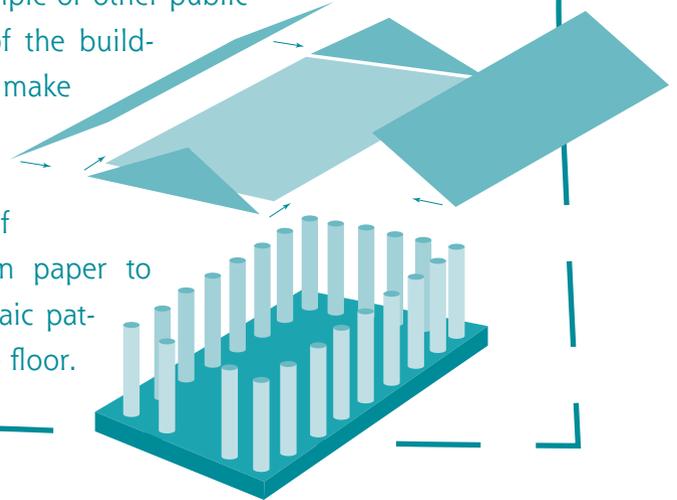
3 Once you are happy with your structure, glue and tape the pieces in place onto the sturdy piece of cardboard.

4 Now, add details. If you are making a temple or other public building, add a frieze around the top of the building. You can glue on pipe cleaners or beads to make it three dimensional. Detail your columns with bottle caps, pipe cleaners, or beads. If you're crafting a common home, use bits of

## supplies

- ☒ some recyclables, such as cardboard boxes, cardboard tubes, and bottle caps
- ☒ glue and tape
- ☒ a sturdy, flat sheet of cardboard
- ☒ assorted craft supplies such as pipe cleaners, construction paper, beads, etc.

construction paper to add a mosaic pattern on the floor.



and sleeping chambers for the female members of the household, including slaves. The *thalamus* was the bedroom that belonged to the master and mistress. This room had the most lavish furnishings and ornamentation in the house.

At the rear of the home, there was likely a garden area for growing flowers or herbs and vegetables to be used in meal preparation.



Ponder the impact of ancient Greek science on religion



Compare the medicine of the ancient Greeks to modern medicine



Learn about the celebrity scientists—those loved, those hated, and one who jumped into a volcano

# Science, Math, and Medicine

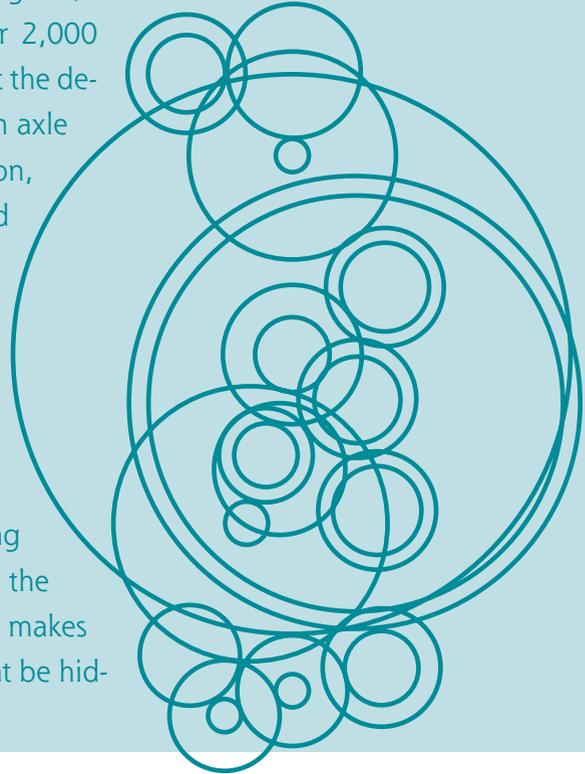
**B**efore the sixth century BCE, the gods were considered responsible for things like illness and death. If someone experienced misfortune, surely they had offended the gods; if the seas raged, someone must have angered Poseidon. But over time the ancient Greeks changed their way of thinking and interpreting the world. They discovered explanations for events they had previously attributed to the gods. Their inquiring minds and interest in how the world worked led to some impressive scientific discoveries and inventions.

Although the ancient Greeks continued to believe in the gods, they began to understand natural causes. The gods couldn't be blamed for every storm or illness that came to ancient Greece. Improved understanding of natural causes meant that people were better prepared for hardships, such as disease and bad weather. Science—the act of learning about the world through observation, identification, and

### A Classical Computer

Among the most fascinating creations of ancient Greece is a complicated, computer-like device that was found by divers in 1901 near the remote island of Antikythera off the southern tip of mainland Greece. The dials, gears, and inscribed plates were badly corroded after 2,000 years under water, but scientists believe that the device used gears connected to a hand-driven axle to mimic the movement of the sun, moon, and planets. In other words, the Greeks had created an analog computer of sorts (one that uses mechanical methods to model a problem) for tracking the movement of heavenly bodies.

The Antikythera Mechanism, as the device is known, remains something of a mystery 100 years after its discovery. Nothing similar has been found, but knowing that the Greeks had such complex mechanical skills makes scientists wonder what other surprises might be hiding beneath the waves.



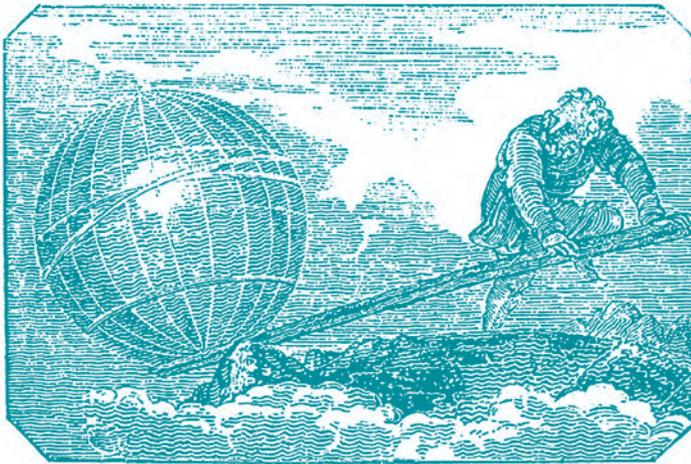
experimental investigation—became an important part of ancient Greek life. Of course, it wasn't called science back then. The ancient Greeks didn't really have a name for their studies; philosophy, mathematics, medicine, astronomy, and other scientific studies were all lumped together in a common quest for knowledge.

Many of the scientific theories developed in ancient Greece were quite advanced. Greek scientists explored the properties of matter, developed theories about atoms, studied anatomy, and created medicine. They discovered and improved upon methods for moving cumbersome and heavy items, such as ships, building materials, and statues. They even made an ancient computer!



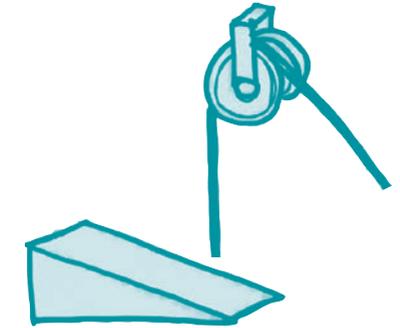
## Simple Machines

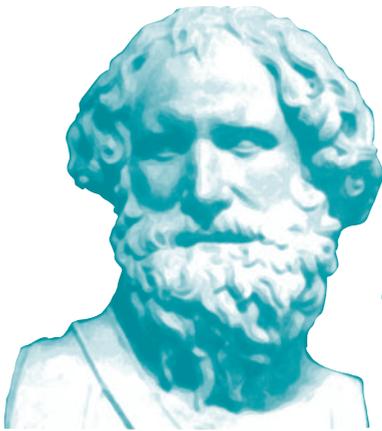
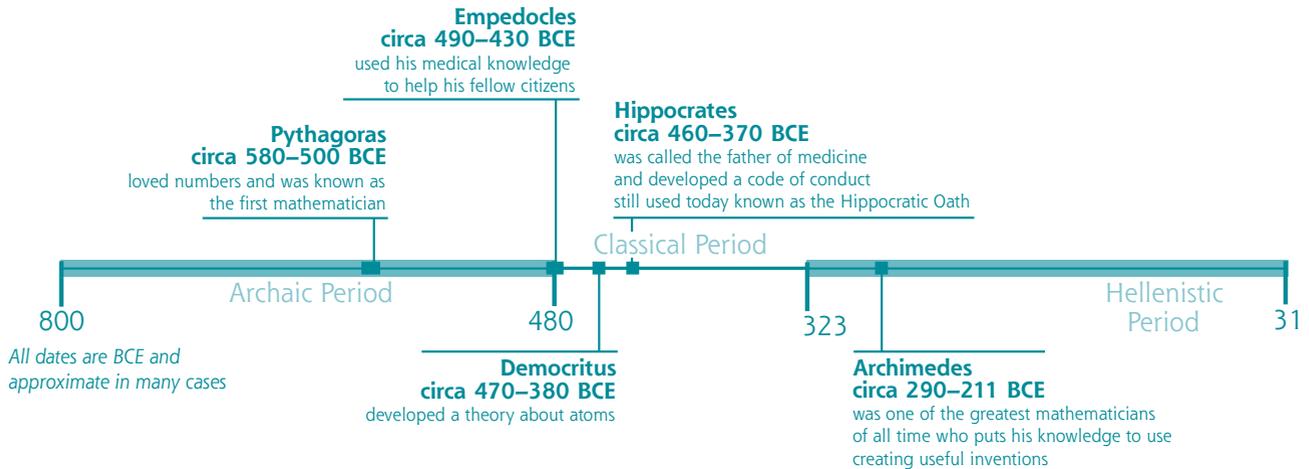
There are six types of simple machines: the lever, the wedge, the pulley, the wheel and axle, the inclined plane, and the screw. These simple machines were used long before people in ancient Greece began experimenting with them, but the curiosity of those ancient Greeks led them to use these simple machines to create more complex machines. One Greek famous for his inventions is Archimedes. Considered one of the greatest mathematicians of all time, Archimedes used his knowledge to invent devices like the Archimedes' claw, a catapult, and the Archimedes' screw.



**“Give me a place to stand and I will move the earth”  
—Archimedes**

Archimedes' inventions were inspired by his desire to solve the problems that people of his time faced every day. During a visit to Egypt, Archimedes invented his endless screw to help peasants bring water from the Nile to irrigate their fields. He improved upon early water clocks (clay vessels made to slowly leak water, thus marking the passage of time) by adding gears that showed the moon and planets in orbit. And he in-





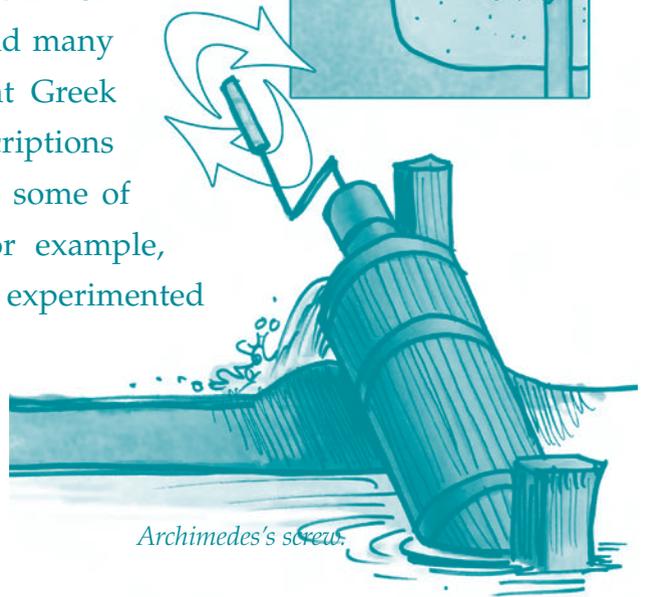
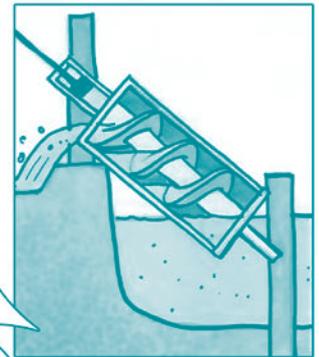
Archimedes



**When working on a difficult problem, Archimedes often became so involved with his work that he would forget to eat!**

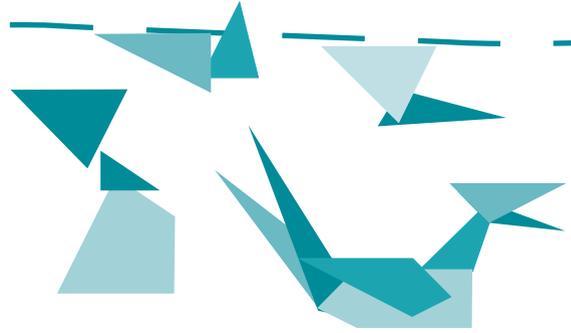
vented numerous weapons that were used in defense of his birthplace, Syracuse, a Greek colony on the Italian island of Sicily, against the Romans. The war weapons of Archimedes included the claw (a crane-like machine that lifted enemy ships out of the water and onto the rocks), catapults, and mirrors that could concentrate the sun's light on enemy ships, setting them ablaze. Did these inventions really work? Scientists still wonder about that, and many have used ancient Greek drawings and descriptions to try to replicate some of these devices. For example, scientists have experimented

with the Archimedes' mirror and found that it *might* have worked, if the targets were in close range.



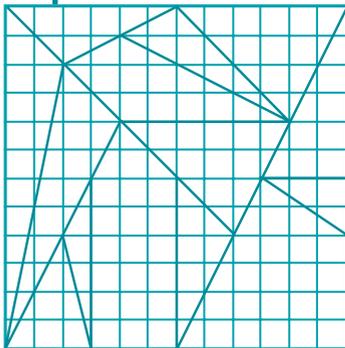
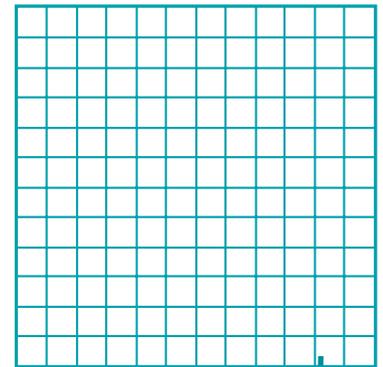
Archimedes's screw.

# activity: Stomachion



Archimedes explored the concepts of geometry by playing a game called Stomachion. Some records refer to this game as *loculus Archimedeus* (Archimedes' box).

- 1 Use the pencil to lightly mark your square into 1-inch grids.
- 2 Duplicate the image you see below, using the grid to help you accurately place each line. Once you have the lines marked in pencil, trace the lines with a dark marker.
- 3 Color the shapes in any manner you'd like.



- 4 Cut along the dark lines to create a 14-piece puzzle.
- 5 To play, use all of the shapes to create clever pictures—like animals or structures.

## supplies

- ☒ a 12-inch square of poster board
- ☒ pencil
- ☒ markers
- ☒ scissors



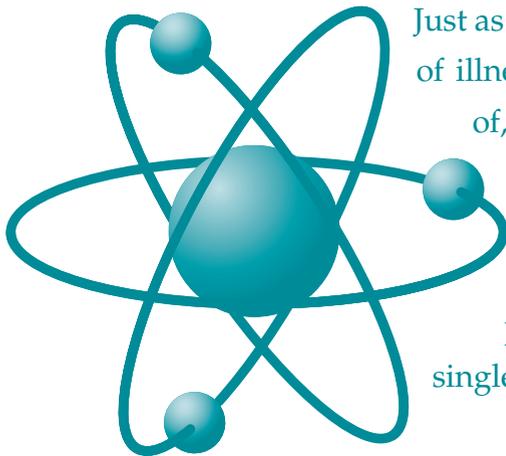
### The Golden Crown

King Hiero II ruled Syracuse, a Greek colony on the island of Sicily, from about 270 to 215 BCE. During his rule, he commissioned a goldsmith to create a golden crown (likely for a statue of a god or goddess). The king gave the goldsmith a specific amount of gold to use in creating the crown. But the king suspected that the goldsmith was deceitful and rather than crafting a solid gold crown, used less expensive silver to fill it. The crown, made in honor of the gods, was a sacred object and could not be melted down to check its purity.

The king brought this dilemma to Archimedes and ask him to figure out whether he had been cheated. Archimedes wasn't sure how to tackle this problem, until one day when he was taking a bath. He noticed that submerging his body caused the water to overflow. He figured out that the volume of water displaced is equal to the volume of the submerged item. With this knowledge he devised a plan. Archimedes knew that silver weighs less than gold. So the goldsmith would have had to use a greater amount, or *volume*, of silver to make a crown that matched the *weight* of the original piece of gold. Archimedes filled a container of water to the brim and put the crown in the water to measure its volume. He then repeated the experiment with a solid piece of gold exactly the weight of the one King Hiero II had given the goldsmith.

Archimedes discovered that the goldsmith—obviously less concerned with angering the gods than King Hiero II—had tried to trick the king by filling the crown with silver, thus making a dishonest profit. There's no record of what happened to the goldsmith, but you can be sure that King Hiero II was thankful for Archimedes's discovery.

### Atomic Knowledge



Just as ancient Greek scientists wondered about the cause of illnesses, they questioned what the world was made of, and made many discoveries in **physics**, the study of matter and energy. Many Greek philosophers believed that the world was made of particles, though they didn't agree upon just how these particles worked. Some argued that there was a single basic element that made up the earth while oth-

ers thought there were more; some thought that all of these particles were exactly the same, and others guessed that every substance had its own kind of particle.

Around 400 BCE, a man named Democritus developed a theory about atoms (the word *atomos* means indivisible in Greek). He believed that atoms are so small that they are invisible to the eye; indivisible into smaller parts; solid, with no empty space inside; eternal, because they are perfect; and able to assemble in an infinite number of shapes, which is why the world has so many different objects in it. What's more, argued Democritus, atoms move around freely in an empty space. This movement of atoms explains why some objects are hard and some soft, why you can see fog, yet put your hand through it.

### Know Your Ancient Greeks

#### **A Man of Many Interests: Democritus (circa 470–380 BCE)**

Democritus is known mostly for creating the theory of atoms with his teacher Leucippus, but Democritus researched many other topics during his lifetime. Unfortunately, most of his writing was lost, but the works of other ancient Greeks shed some light on his accomplishments. He wrote about numbers, geometry, and mapping, and he was the first person to figure out formulas for the volume of a cone and a pyramid.

Supposedly, he traveled to Egypt, Babylon, India, Persia, Ethiopia, and many other lands to meet other thinkers. In addition to exploring zoology (the study of animals), botany (the study of plants), and medicine, Democritus had big ideas about the structure of the universe. He thought that the Milky Way was made of stars that were so far away that they blended together from our point of view. He also suggested that stars other than the sun had their own planets, probably with other living beings on them. Life on other planets? That's a theory we are still trying to prove today!



Democritus's theory of atoms is similar to our modern view of atoms—but today's scientists didn't get their understanding of atoms from the Greeks. In fact, we only know of Democritus's ideas because the Roman poet Lucretius wrote down the theory of atoms in the second century CE, 500 years after Democritus died. Democritus believed that atoms differed in shape, arrangement, position, and magnitude. For instance, water atoms must be round and easily flow past each other, while iron atoms must be ragged, clinging together to form a solid surface. Modern scientists believe that all atoms are the same, though they can differ in size and properties such as color and, when linked together, can create different elements.

Few Greek philosophers liked Democritus's ideas. Aristotle, for example, strongly disagreed with the theory of atoms. Plato even declared that all of Democritus's books should be burned! Perhaps the atomic ideas that Democritus suggested were just too revolutionary for some. Or perhaps, because Democritus's ideas left little room for the gods to interact with the mortal world, people feared that accepting Democritus's ideas would anger the gods.

## Calculating Greeks

The ancient Greeks gave us not only a knowledge of physics, but also many of the mathematical theories and formulas we still use today.

Knowledge about mathematics started out with the basics. Counting was likely created so that herdsman could track their flocks of animals. We know this because archeologists have found scratches carved in bones that are thousands of years old (| | | | |). It's hard to look at a

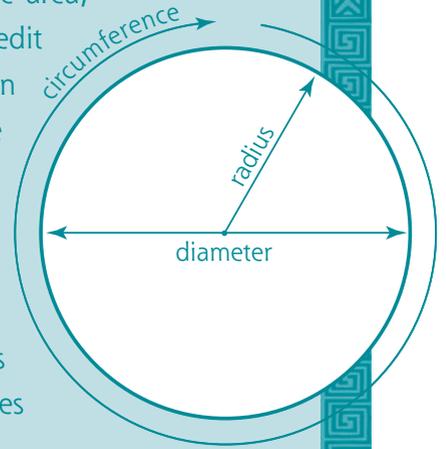
## words to know

**geometry:** the measurement and relationships of points, lines, angles, surfaces, and solids, from the Greek *geo* (earth) and *metro* (measure)

**physics:** the study of matter and energy

### Archimedes and Pi

Archimedes is the clever guy who discovered the famous number we call pi (3.1416). We use pi to solve many geometrical math problems, such as the area, circumference, or radius of a circle. Though Archimedes gets the credit for discovering the exact number for pi, he wasn't the first person to try to calculate the ratio of a circle's circumference (the distance around a circle) to its diameter (the length of the straight line bisecting a circle through its center point). There is documentation that the ancient Egyptians, as far back as 1650 BCE, had approximated a similar, though less accurate, number. The details of just how Archimedes figured out pi are very complex and involve lots of mathematical calculations. The number discovered by Archimedes around 250 BCE is still accurate today. Amazing!



bunch of scratches, though, and immediately see the difference between | | | | and | | | | |, which is what led to the creation of numbers.

Different mathematical fields developed for various practical reasons. Geometry, for example, fulfilled a need for accurately measuring space. In the original Greek, geometry means “measurement of the earth.”

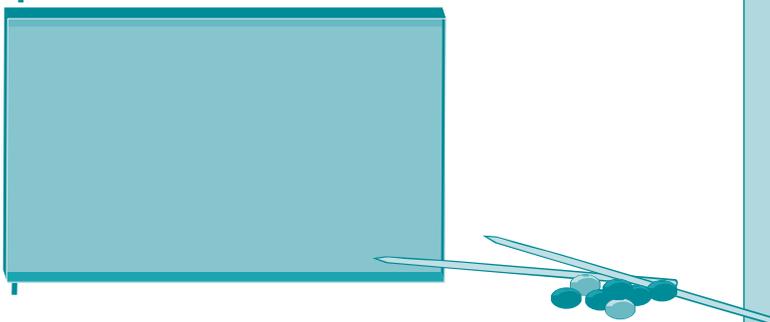
**Geometry** may be a Greek word, but the study of measurement actually began in Egypt. Each year, the Nile River flooded, washing over the croplands, and each year Egyptians had to map out the fields to reestablish where one farmer's fields stopped and their neighbor's began. Geometry basics were brought from Egypt to ancient Greece by Thales of Miletus, who, on his return to Greece, further developed geometric theories. Thales went beyond asking *how* geometry worked and investigated *why* it worked. He realized that understanding how to measure crop lands and lay out cities and palaces is useful, but that knowing the general rules of geometry is even more valuable because then you can measure anything!

# activity:

## Make an Abacus

Keeping track of things in ancient Greece was more difficult than it is today because they didn't have a numbering system that worked well yet. While hands and fingers helped in counting items, there were times when a quantity was too large to use this method. To help in keeping track of items, they used a tool called an abacus.

- 1 Measure off and mark 10 equal increments along both long sides of the shoebox lid, making sure that the marks are directly across from each other. Punch a hole at each mark.
- 2 Cut the extra strip of cardboard to the same length as the shoebox lid. This will be glued into the lid as a divider.
- 3 Punch holes in the strip of cardboard to align with those in the sides of the lid.
- 4 Glue the piece of cardboard into the shoebox lid, about 2 inches from one of the long sides. Let the glue dry. The narrow section will be called the upper deck; the wider section is the lower deck.



### supplies

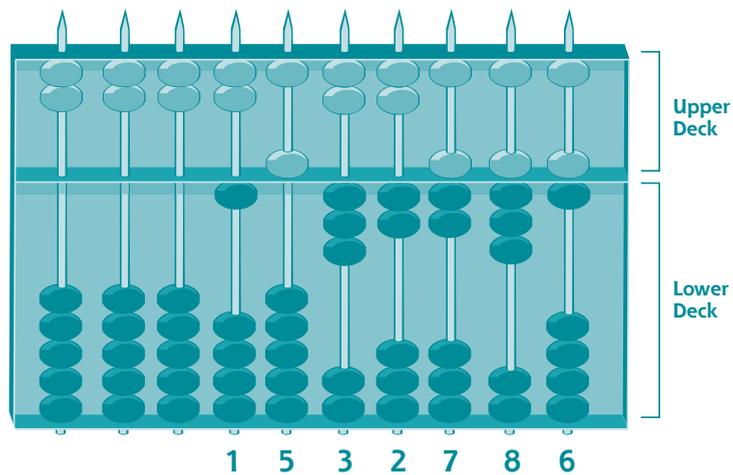
- ☒ sturdy shoebox lid
- ☒ ruler
- ☒ hole punch
- ☒ strip of sturdy cardboard, about 1 inch by 15 inches
- ☒ glue
- ☒ about 10 wooden skewers, 12 inches long
- ☒ 70 beads (these must slide easily on the skewer)

**5** Push a skewer through the first hole, into the lower deck. String five beads onto the skewer. Continue pushing the skewer through the divider, into the upper deck, adding two beads before pushing the end of the skewer through the last hole. Continue in this manner for all skewers.

**6** Glue the skewers in place at the sides of the box.

**7** To use your abacus, place it flat on a table, with the lower deck closer to you. Push all the beads away from the divider. The beads in the upper deck are valued at 5; those in the lower deck are valued at 1. To use the abacus to count, move the beads in the far right column toward the divider. When you count five beads on the lower deck, you will carry to the upper deck. In other words, you'll move the five beads back to the starting position and move one of the beads from the upper deck toward the divider.

For instance, to count out the number eight, you will move one bead (5) from the upper deck and three beads (3) from the lower deck. Adding two (2) beads will give you all the beads on the lower deck, so you'll move those bottom five back (5) to the bottom and another from the top deck to the middle, which equals ten (5 + 5). When you count both of the beads on the upper deck (reaching the number ten), you carry that information to the adjacent skewer—push one bead from the second column to the middle and both beads from the first column to the bottom. The skewer farthest to the right is the units or single digits column; the skewer adjacent to this, the tens column; the next, the hundreds column and so on.



## Know Your Ancient Greeks

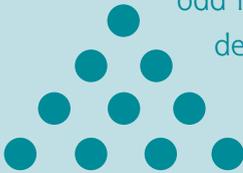
### Pythagoras (circa 580–500 BCE)

The first real mathematician to emerge in ancient Greece was Pythagoras of Samos. In fact, he and his students are thought to have been the first to use the term *mathematike* to mean “mathematics.” Before Pythagoras, *mathema* referred to any type of learning.

Pythagoras focused on clear thinking through “deductive reasoning”—that is, using basic principles and general laws to figure out specific facts and solve problems. He was so devoted to the study of geometry and arithmetic that he opened his own school, which also taught music and astronomy. Students had to live by strict rules so that they could develop pure minds and bodies.

One discovery that comes directly from Pythagoras and his students was the proof that the three angles of a triangle equal the sum of two right angles (180 degrees).

Pythagoras and his students developed very personal relationships with the natural numbers (1, 2, 3, etc.). They thought of odd numbers as male and even numbers as female, and they described numbers as beautiful or ugly, perfect or incomplete. Ten, for instance, was the best number because it was the sum of the first four numbers and could be written as dots in a pyramid to form a perfect triangle.



$$1 + 2 + 3 + 4 = 10$$



### Ancient Remedies: Healing from the Heavens

According to Greek mythology, the centaur Chiron—half-man, half-horse—invented medicine so that he could heal himself after being wounded in a battle with the strong and courageous Heracles, son of Zeus. Chiron then taught the healing arts to the hero Achilles (whose mother dipped him into the River Styx, making him invulnerable to wounds), and to Asclepius, who was thought to be the son of the sun god, Apollo.

In fact, Asclepius was a human who lived around 1200 BCE, but his medical abilities were so respected that he was thought to be as power-



Chiron

## Know Your Ancient Greeks

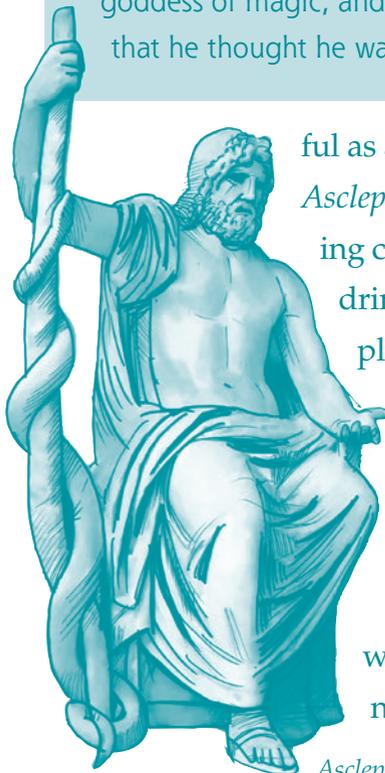
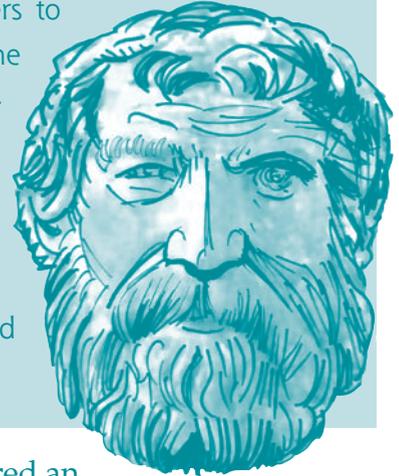
### Empedocles (circa 490–430 BCE)

Empedocles was born into a very wealthy family in Acragas, a Greek colony on the Italian island of Sicily. As a boy he studied philosophy, natural sciences, and the arts.



As an adult, Empedocles used his medical knowledge and wealth to improve the welfare of his fellow citizens. When a plague infected the city of Acragas, Empedocles created a wall of animal skins to cover an opening in the city and divert the illness that was coming in on a polluted breeze. Later, in the neighboring city of Selinus, he diverted the course of two rivers to

clean a polluted water supply and stop the spread of disease in the town. These accomplishments, as well as his writings on philosophy, made Empedocles quite famous, and he came to be treated something like a god. According to legend, Empedocles threw himself into Mount Etna, a volcano in Sicily, leaving behind one bronze sandal. A single bronze sandal was associated with Hecate, goddess of magic, and by leaving it behind, Empedocles indicated that he thought he was going to become immortal, a true god.



ful as a god. Nearly every Greek town featured an *Asclepieion*, a temple devoted to Asclepius where ailing citizens could rest, pray, sacrifice to the gods, and drink clean water. A sick person resting in the temple might either be healed by Asclepius or have a dream in which Asclepius would explain how the person could be healed. One story tells of a man with a nasty sore on his toe who dreamed that a serpent crawled into the temple and licked his toe; when the man woke up, his toe was cured. Another story tells of a crippled man named Nikanor who, unable to walk, was sitting

*Asclepius*

### A Staff of Snakes

Most ancient Greeks thought that snakes had healing properties, and Asclepius was always pictured with a snake wrapped around his staff. Why snakes? Perhaps because snakes shed their skins, which makes it seem like the snake is being reborn again and again.

Today, the caduceus—a staff wrapped with two snakes—is a symbol used by many modern doctors, but the caduceus was originally a symbol of Hermes, the quick-footed messenger god. Asclepius only ever had a single snake by his side, and really, isn't one snake enough for anyone?



in the temple praying. A boy walked by and stole his crutch, which made Nikanor so angry that he got up and chased the boy. He was cured!

Greeks in the seventh and eighth centuries BCE knew a lot about **anatomy**—that is, the structure of the human body. Trainers at **gymnasia** knew how to treat injuries like sprains, fractures, and dislocations. Homer's *Iliad* describes bandage techniques, battlefield surgery, and the use of anesthetics (substances that numb part of the body) before almost anyone else performed these treatments.

Beyond anatomy, though, ancient Greeks generally didn't have much medical knowledge. They couldn't treat a cold properly and didn't really understand how the body worked. If a wound got infected, their only solution was to call in the snakes!

### Hippocrates Gets Hip to Medicine

Because medical “experts” in ancient Greece didn't really understand how the human body worked, they often made up theories that matched their view of the world. While they were right about illness having nat-

## words to know

**anatomy:** the study of the human body

**gymnasia:** a room or building equipped for indoor sports, from the Greek, to exercise naked

ural—and not supernatural—causes, their list of natural causes was a bit off. They felt that illness was caused by an imbalance of the four essential bodily fluids: blood, phlegm, yellow bile, and black bile. These fluids were related to the four earth elements: air (blood), fire (yellow bile), earth (black bile), and water (phlegm). Have a fever? Then you must be lacking in earth and water—the cold substances—and should be packed in mud to bring you back into balance. Even without physical evidence for this theory of illness, most doctors accepted it as true for more than a thousand years afterward and some practitioners still find these ideas valid today.

Despite medical theories that no longer hold true, good medical schools did develop in ancient Greece during the fifth century BCE. One of the most important schools was located at Cos, an island in the Aegean Sea, and another at Cnidus, both near present-day Turkey. The schools offered classroom lessons, research, and apprenticeship programs in which students worked side by side with teachers. Medical students had to promise to help the sick, to love humanity as much as they loved their work, and to never take a patient's life. More than 2,400 years later, doctors and nurses still take a similar vow. We call that vow



**According to one story, ancient Greeks overcame the pain of gout (a painful foot inflammation) by standing on electric eels until their feet were numb.**

### Gruesome Lessons

As scientists became interested in medicine, they wanted to learn more about how the body worked on the inside. Without X-rays, the only way to see inside a human body was to dissect one. Some dissections were done on dead people or animals—but in other cases, a procedure called vivisection was used on condemned criminals. These criminals were cut open while they were still alive, allowing the surgeons to see the heart, brain, and lungs at work.

Ancient Greece in the third century BCE wasn't a good place to break the law!



the Hippocratic Oath, after Hippocrates, the leader of the medical school at Cos.

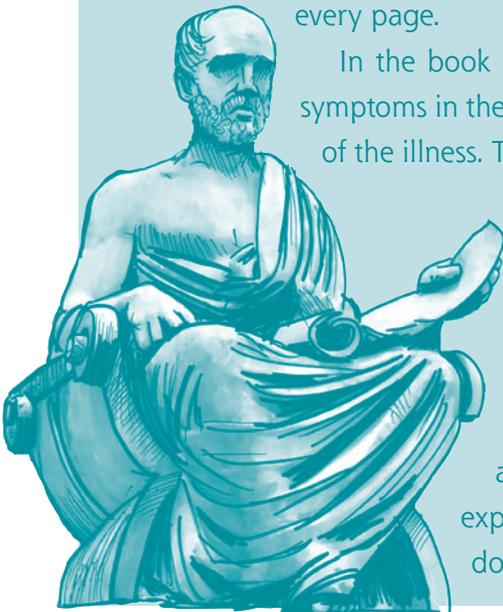
Hippocrates, who became known as the “father of medicine,” wrote hundreds of papers on surgery, anatomy, diseases, treatment of illness with diet and drugs, and medical ethics—that is, the code of conduct that doctors should follow. He taught medical students to observe their patients carefully and record facts, a practice essential for good science. Even more importantly, he convinced most people that illness and disease had natural causes and weren’t inflicted by angry gods.

### Know Your Ancient Greeks

#### Hippocrates (circa 460–370 BCE)

Little is known about Hippocrates other than that he accepted money from patients in exchange for care and he taught medicine at the school on the island of Cos.

While his personal history may be a mystery, his influence on the world of medicine isn’t. The Hippocratic Collection is a set of 60 medical textbooks that tell doctors how they should do their job. While Hippocrates didn’t write every book—which is impossible since they were written over a period of 150 years—his method of practicing medicine is present on every page.



In the book *On Epidemics*, for example, the doctor learns to note specific symptoms in the patient on a day-by-day basis so that he can record the history of the illness. This practice will allow him to treat future patients better. In the book *On Forecasting Diseases*, the doctor learns what to look for in a patient—hollow eyes, cold ears, strange face color—so that he can ask the right questions. Another volume explains how to fix a dislocated shoulder and treat a bone fracture.

According to Hippocrates, the earliest Greek doctors spent too much time on philosophy and not enough time looking at the patient and his symptoms and learning from previous experience. Thanks to the teaching of Hippocrates, the way that doctors treat patients changed forever.

See how the Greeks figured out that the earth was round

Find out why the Greeks studied the night sky

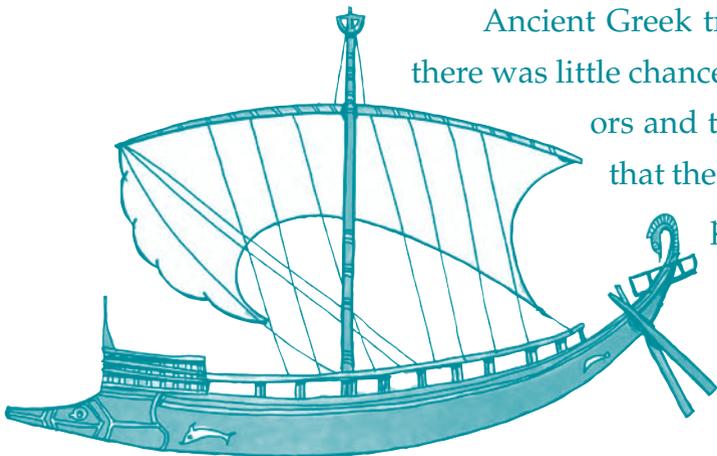
Learn the Greek names for the planets, and what they mean

# Mapping the World and the Stars

Just how did ancient travelers know where they were going? **Geography** didn't begin with the Greeks, of course. Sailors and traveling merchants from countries such as Egypt and Babylon mapped harbors and other locations essential to their work. But can you imagine how *different* each person's map would look?

Ancient Greek travelers seldom left sight of land, so there was little chance that they'd be lost at sea. Those sailors and traveling merchants did map harbors that they visited as they traveled, though, expanding on the information that earlier map makers had recorded.

Just as they did in so many other scientific fields, the Greeks turned a haphazard and scattered practice



*Odysseus' ship.*



Anaximander and his map of the world.



into a rigorous science, starting with Homer's epic work, *The Odyssey*. The story of Odysseus is known more for its adventure and battle scenes than its geographical research, but *The Odyssey* accurately describes much of the eastern Mediterranean coastline—and even includes the distances between many lands.

## The Center of the World?

Anaximander of Miletus is thought to have created the first world map in the early sixth century BCE. Since he knew Greece better than any other land, he naturally placed Greece in the center of the map, surrounding it with bits of Europe, Asia, and Africa. These land masses were circled by an ocean, so that the entire earth fit onto a tiny disc.

Hecataeus, also of Miletus, improved Anaximander's map, adding many details to the coast, including the western parts of the

### Where in the World is Ancient Greece?

It's important to know just where ancient Greece was on the map and how vast it was. The mainland of ancient Greece, situated on the Aegean Sea, looks very similar to modern-day Greece. At their most powerful, the ancient Greeks controlled mainland Greece, a large number of islands in the Aegean Sea, and parts of countries that are now Italy, Egypt, Spain, and Turkey.



## Eratosthenes and the Deep Well

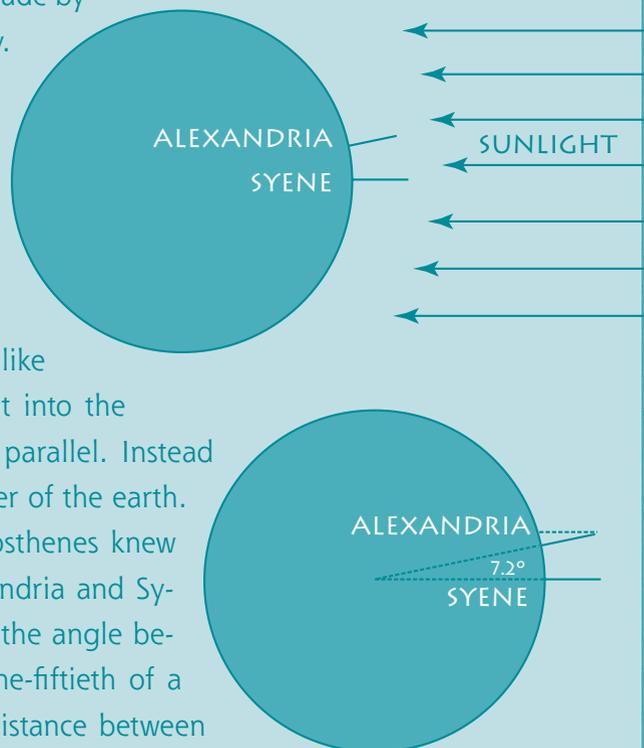
Eratosthenes (circa 275–195 BCE) was a Greek living in Alexandria, Egypt. Not only was he the first person to describe the world as a globe, he tried to measure it.

Eratosthenes knew that south of Alexandria, in the town of Syene, there was a deep well in which sunlight reflected off the water at the bottom of the well on one day of the year: June 21. On this day, and this day only, the sun was directly overhead at Syene. From living in Alexandria, Eratosthenes knew that the sun never appeared directly overhead in that city. However, the closest it came to being straight overhead was also on June 21, when the sun was 7.2 degrees away from being vertical. Eratosthenes knew this because he had measured the shadow made by a vertical stick in the ground on this day.

Eratosthenes thought about the shadows (and lack of shadows) created by the sun on June 21 and realized that the world couldn't be flat. If the world were flat, the shadows would be the same everywhere on the same date.

But what if the earth were round, like a ball? Then two sticks pointed straight into the ground in different cities wouldn't be parallel. Instead both sticks would point toward the center of the earth. With his knowledge of geometry, Eratosthenes knew that if you extended the sticks in Alexandria and Syene to meet in the center of the earth, the angle between them would be 7.2 degrees—one-fiftieth of a full circle. Eratosthenes measured the distance between the sticks at 5,000 *stad*es (remember this ancient Greek measurement from the chapter about the Olympics?). If one-fiftieth of the earth is 5,000 *stad*es, the entire sphere must measure 250,000 *stad*es (or about 23,300 miles). The correct answer is 25,000 miles.

Eratosthenes's calculations enabled him to argue that the world was round, and to come amazingly close to estimating its size. Even so, more than 1,500 years passed before the concept of a round world was embraced.



Mediterranean Sea where the Greeks rarely ventured. In addition to traveling through Greece and the surrounding lands, Hecataeus relied on reports from traveling sailors for improvements to his world map. Yet even with this information, he repeated Anaximander's faulty portrayal of the earth as a flat disc surrounded by a single ocean. The first person to suggest that the earth was a globe was a man named Eratosthenes.

As the ancient Greeks mapped the world, calculating distance, height or angles, mathematics came into play. Many of these map makers were also mathematicians, and they developed concepts that were the begin-

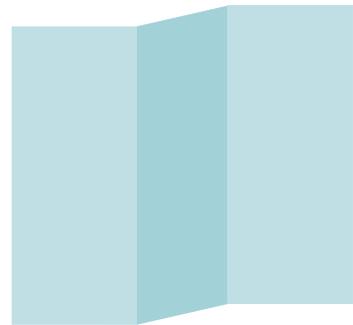
## activity: Ancient Greek City-State Travel Brochure

An ancient Greek citizen from a distant colony who sees a map of Greece may wonder about some of the city-states on the map. Sparta? Athens? What might they find in such places? Here's your opportunity to explore that question. Use some of what you've learned about ancient Greece to design a travel brochure that would entice visitors to visit your favorite ancient Greek city-state.

**1** Fold the paper into thirds.

**2** Determine how you'd like to lay out your brochure. Will you situate it horizontally or vertically? What will you put on the front?

**3** Imagine that ancient Greece is still thriving. Describe the city-state of your choice, using rich descriptions that would make visitors want to stop at your destination. You can use a real city-state or make one up. Think about why someone might want to visit this particular city-state and be sure to share that information.



nings of geometry. While not all of the theories held up over time, many of our geometrical calculations have their roots in ancient Greece.

## Tracking the Stars

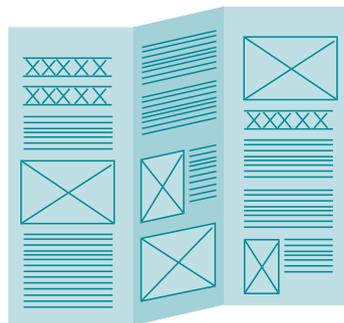
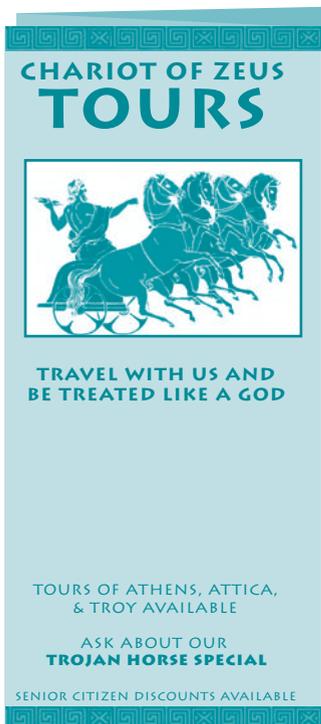
Just as geometry helped the ancient Greeks begin to map the world, it also helped them map the stars and planets. Noting that you saw a star in the sky isn't as important as noting exactly *where* in the sky you saw it. And the only thing better than recording where you saw the star today is noting where you saw it the next day and the day after that and the

4 Add details about some of the famous buildings and landmarks, as well as historical facts. What about the food, or events in your city-state?

5 Mention some of the famous Greeks that a visitor might meet in the agora and perhaps some entertainment that a visitor might expect to see.

6 Add pictures cut from old magazines or drawings of your own to illustrate the brochure.

Remember, your job is to sell visitors on the idea of traveling to this part of ancient Greece. You might not want to mention the lack of proper waste disposal or the smells that accompany it!



## supplies

- heavy paper, 8½ by 11 inches
- markers
- old magazines
- scissors

### Anaxagoras

Around 435 BCE, the Greek philosopher Anaxagoras suggested that the sun was not just a faraway bright light, but rather a glowing rock larger than the 8,000-square-mile peninsula in southern Greece, the Peloponnesus. His claim went against the common belief that the sun was a god. He was imprisoned for impiety—it was feared that this outrageous claim might displease the gods.

day after that. **Astronomy**—that is, the study of the movement of heavenly bodies—requires a long-term approach. Watching the stars for a few weeks isn't enough. To really understand the heavens you need to study them for years, as well as use the records of others who have done so.

But why would the ancient Greeks want to study the sky in the first place? By understanding that the sun, moon, and stars followed a certain pattern, the ancient Greeks could begin to predict changes in season. This knowledge allowed farmers to plant crops at the most appropriate times and helped sailors differentiate between safe and stormy seasons at sea.

Thales (remember, he was the clever Greek who bought all of the olive presses and made a fortune) was one of the first ancient Greeks to study astronomy. He started by using information gained from other cultures. In his travels to Babylon, he ran across tables of astronomical data that recorded eclipses and the movement of the moon over the previous 150 years. From this data, he realized that eclipses occur roughly every 18 years. With this knowledge he successfully predicted an eclipse of the sun in 585 BCE.

### It's Not Science

The ancient Greeks contributed much to the world of science, but oddly, they didn't use that term to describe their efforts. The Greeks used other words, such as *philosophia* (love of wisdom), *episteme* (knowledge), and *peri physeos historia* (an inquiry into nature) to describe their activities.

## Know Your Ancient Greeks

**Thales**

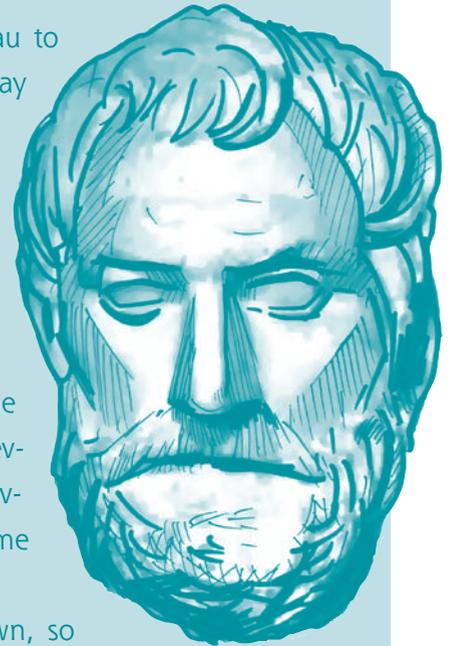
Thales was born around 624 BCE and was the first Greek philosopher and scientist. He thought that you could understand the world by searching for and finding its *physis*—that is, its underlying physical principle. Our modern word *physics*, which refers to the science of mechanics, is derived from the Greek word *physis*.

Thales argued that every bit of land—from beach to plateau to mountain—had formed naturally from the water, much the way dirt piled up beside the Nile River each year during the floods. This land formed a flat disc that floated upon the ocean, and the water of the ocean was also in the air all around us. The sun, moon, and stars floated across the sky on this water, then landed far out on the ocean and circled around to return to the east, where they would start again the next day.

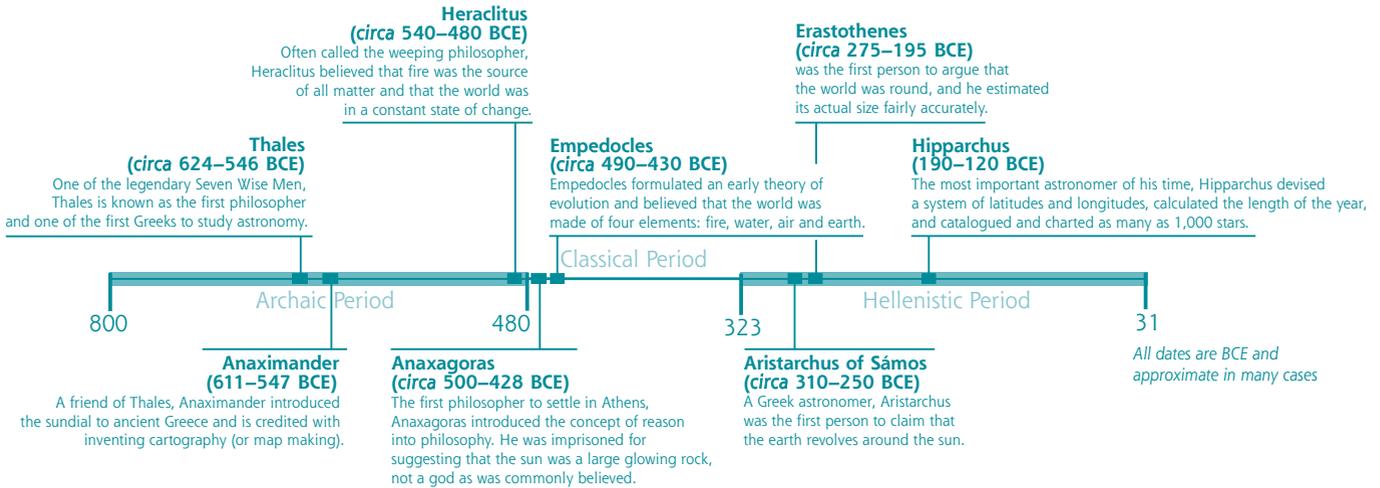
But wait, there's more! For Thales, water wasn't just part of the environment. Everything in the world—every tree, every brick, every person—was also made from water. The earth, air, and all living beings had begun as water and eventually they would become water once again.

Why did Thales believe this? He never wrote anything down, so we're not exactly sure. But Aristotle, a philosopher who was born 250 years later, wrote that Thales noticed that everything living contains moisture, and even heat itself is caused by moisture. Water can change from solid to liquid to gas, so Thales thought that living beings must be made of water because they change forms over their lifetimes.

Thales's argument isn't that good, but it's still important because of what it leaves out: supernatural beings. Thales asked questions about the world and looked for answers in nature instead of in religion. The word *science* wasn't used as we know it for another 2,000 years, but Thales's way of thinking was the start of what we today call the "scientific method."



Various Greek scientists recorded the movement of the sun, moon, and stars over the years, but they were at a loss to describe what these objects actually were. Anaximander, for example, described stars as fire emerging from holes in pipes across the sky, and Heraclitus pictured the

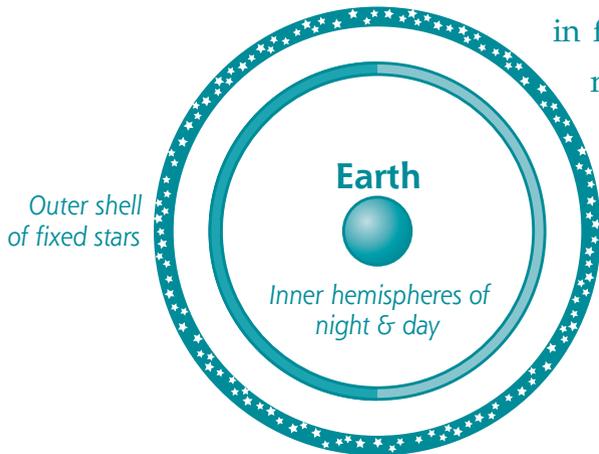


sun and stars as fire caught in bowls that tipped away from view during an eclipse.

The ancient Greeks had many stories for how heavenly objects came into being—the sun was the god Helios and constellations represented mythological beings. But how the stars moved in the sky remained a mystery. Anaxagoras, the first great thinker in Athens, suggested that the sun was not a god as many Greeks believed, but a burning mass of red hot metal. He was sentenced to death for this claim, but Pericles intervened, preventing the sentence from being carried out. Anaxagoras correctly described the sun and moon as separate objects and even suggested that eclipses are caused by the moon passing

in front of the sun (and the earth in front of the moon), but his ideas were generally ignored.

Empedocles, a philosopher and statesman, suggested that the dark of night and light of day came from a sphere that rotated around the earth. This sphere was surrounded by a hard outer sphere on which the stars were fixed, creating a kind of star-studded dome



*Empedocles' double sphere system of day and night.*

### What's in a Name?

The word *planet* comes from the Greek language, but what does it actually mean? Greek astronomers noticed that most of the stars were in the same place night after night, but some stars moved. Greeks called these objects *asteres planetai* (wandering stars) or just *planetai* (wanderers), and the name stuck. The names we use for the planets today come from their Latin (or Roman) names. The Greek names sound different, but have the same meaning because each planet was named for the same god or goddess.

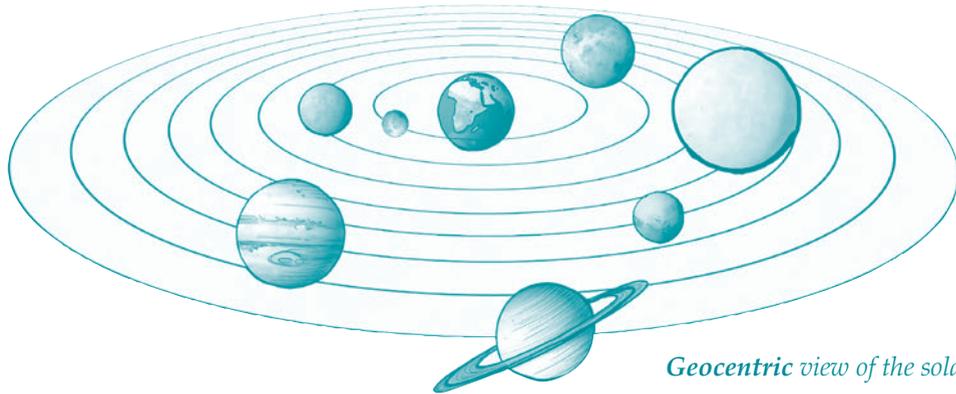
	Greek	Latin	English
Goddess of the earth	Gaia	Terra	Earth
God or goddess of the moon	Selene	Luna	Moon
God of the sun	Helios	Sol	Sun
God of knowledge or communication	Hermes	Mercurius	Mercury
Goddess of love	Aphrodite	Venus	Venus
God of death or war	Ares	Mars	Mars
God of the sky and storms	Zeus	Iuppiter	Jupiter
God of agriculture	Cronos	Saturnus	Saturn

above the earth. To him, the sun and moon weren't physical objects, but merely polished spots on the inner sphere that reflected the light from the stars on the outer sphere.

### Going Around in Circles

Just as Greek map makers placed Greece at the center of the world, nearly every Greek astronomer thought that the earth was at the center of the universe. The sun, the moon, other planets, and the stars were all thought to circle the earth, which sat motionless.

There was a problem with this view of the universe, though. For one thing, the moon appeared to change in size during its cycle, which meant that either the moon was growing and shrinking (unlikely) or that the distance between the earth and moon changed with the seasons. The other planets known at the time—Mercury, Venus, Mars, Jupiter,



*Geocentric view of the solar system.*

and Saturn—also varied in brightness, which meant that the distance between them and earth must also change.

The first ancient Greek to suggest that the earth rotated around the sun was a man named Aristarchus. This suggestion was met with ridicule. Astronomers were absolutely, positively convinced that the earth stayed in one place. (“Do you feel it moving? I don’t feel it moving.”) These astronomers worked to develop a theory to explain how the planets moved through the sky and grew bigger and smaller. Hipparchus of Nicaea came up with a theory that worked remarkably well. Using elaborate observations and calculations, he was able to determine the length of the year to within six and a half minutes. To do this, he kept track of the position of stars and how they related to the equinoxes (the days of the year when night and day are equal in length). He combined his observations with information recorded by people before his time, to determine that a year-long cycle consisted of just over 365 days. In doing so, he made it seem plausible that the earth really was stationary. The

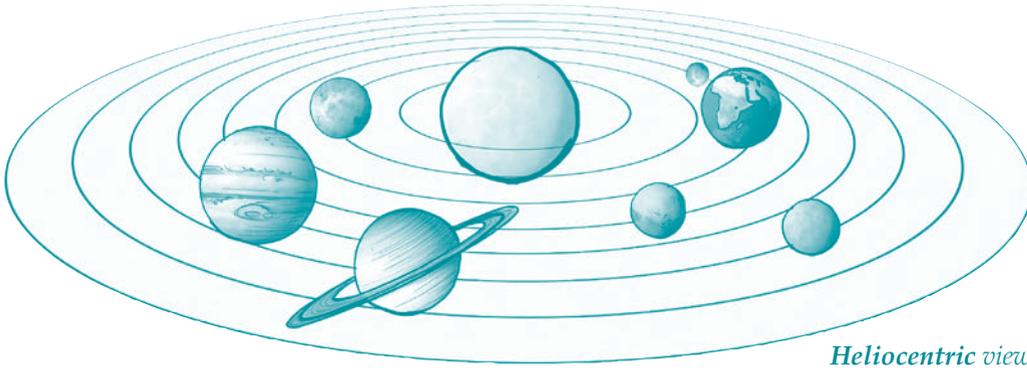
## *words* to know

**geography:** the science of the earth and its features

**astronomy:** the scientific study of the universe

**geocentric:** from the perspective of the earth as the center

**heliocentric:** the sun is the center



*Heliocentric view of the solar system.*

fact that Hipparchus's theory *appeared* to be correct prevented the real answer to the mystery of the moving planets from coming to light for hundreds of years.

Two thousand years later, Aristarchus's idea was revived and further developed by the famous astronomer, Copernicus. Turns out, Aristarchus, the man that was ridiculed by ancient Greek astronomers, was right!



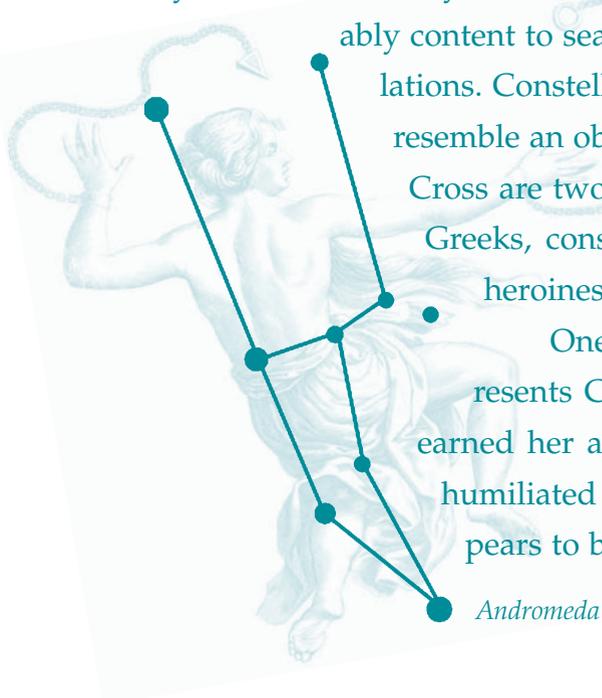
*Aristarchus*

## Pictures in the Stars

While ancient Greek astronomers were trying to solve the mysteries of the starry skies, other Greek citizens were probably content to search the night sky for constellations. Constellations are groups of stars that

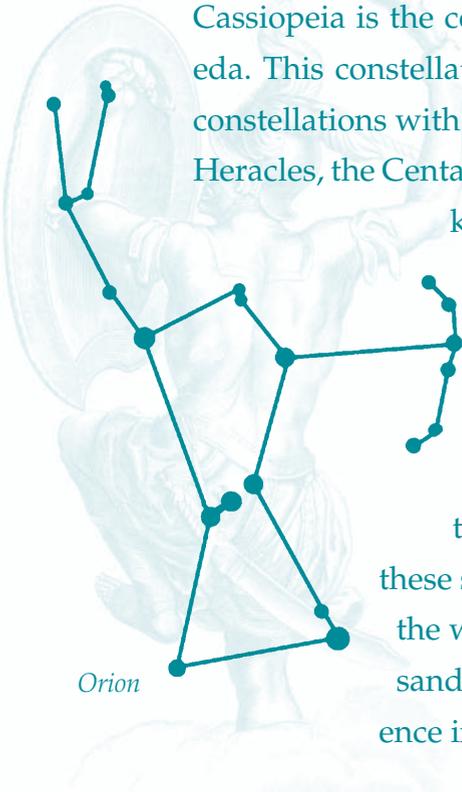
resemble an object—the Big Dipper and the Southern Cross are two familiar constellations. To the ancient Greeks, constellations represented the heroes and heroines of ancient Greek mythology.

One constellation in the northern sky represents Cassiopeia. Her legendary boastfulness earned her a place in the sky, where she could be humiliated forever. How? The constellation appears to be upside down at certain times, which



*Andromeda*

the ancient Greeks would have considered to be quite undignified. Near Cassiopeia is the constellation bearing her daughter's name, Andromeda. This constellation appears to be a maiden held by a chain. Other constellations with ties to ancient Greek mythology are Pegasus, Orion, Heracles, the Centaur (which could represent Chiron) and Pleiades (also known as the Seven Sisters) representing the daughters of Zeus.



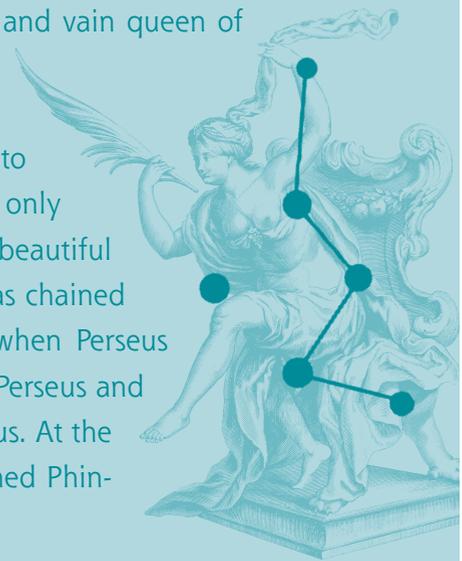
Orion

All of these constellations and more (there are 88 constellations recognized by astronomers) are still visible today. You might be surprised to learn, though, that these stars aren't in a fixed position; they do move. Because the universe is so vast, and these stars are so far away, they still appear very similar to the way they did when they were first discovered. Thousands of lifetimes will pass before there is a visible difference in these celestial pictures.

## Legendary Greeks

### The Boast of Cassiopeia

In ancient Greek mythology, Cassiopeia was the boastful and vain queen of Aethiopia. Her claim that she was equal in beauty to the blue-haired sea nymphs called Nereids angered the sea god Poseidon. In his wrath, Poseidon sent a giant whale to wreak havoc on Aethiopia. An oracle prophesied that the only way to stop the terror was to sacrifice Andromeda, the beautiful daughter of Cassiopeia and King Cepheus. Andromeda was chained to a rock on the shore, awaiting the monstrous whale when Perseus (just back from having slain Medusa) came to her rescue. Perseus and Andromeda wed, even though she was promised to Phineus. At the wedding, Perseus and Phineus quarreled and Perseus turned Phineus to stone with Medusa's head.





Learn about the legendary Trojan Horse



Read about the brutal wars that shaped the course of ancient Greek history



Study ancient Greek weaponry

# Warfare in Ancient Greece

**W**ith all of the attention the ancient Greeks devoted to the arts, architecture, religion, and science, it's easy to think of Athens—and all of Greece—as a cultured city-state that loved living a fine life. But in reality, the ancient Greeks spent much of their time at war. Of course, there wasn't always a large-scale war going on, but it was common for battles to occur between city-states as they fought for control over territory or argued about laws.

Athens was embroiled in war three-fourths of the time! The nearly constant threat of war meant that citizen-soldiers had to be prepared to march off to battle at any time. The ancient Greek militiaman considered it a great responsibility to defend his community, traditions and honor, and worked hard to stay in top shape.

Beyond the small conflicts, there were a number of all-out wars that shaped the history of ancient Greece. Of course, the attack on the Greek Mycenaeans between

## Beware of Greeks Bearing Gifts

One of the most famous tales of ancient Greece is the invasion of the city of Troy. The Trojan War began when Helen, who some claimed to be the most beautiful woman in the world, was kidnapped and taken to Troy. Agamemnon, the leader of Mycenae and Helen's brother-in-law, called on the chiefs of the Greek tribes for support and sailed to Troy to retrieve Helen.

After ten long and bloody years of fighting, the Greeks finally called it quits, boarded their ships for home, and left a giant wooden horse at the gates of Troy to apologize for all the trouble. (The horse was the mascot of Troy, similar to how the bald eagle is the American national bird.) Once the Greeks left, the Trojans pulled the wooden horse into their city to celebrate their victory.

Surprise! The wooden horse was actually filled with Greek soldiers. Once night fell, they snuck out of the horse and opened the gates of Troy, letting hundreds more Greek soldiers (who had only pretended to leave) overrun the city. Helen rejoined her husband, Menelaus, king of Sparta, for the long journey home.

For many years, historians weren't sure whether the Trojan War really happened or even where Troy was! Four hundred years had passed between the Trojan War and the first written histories of its battles, so a lot of *The Iliad* and *The Odyssey*—Homer's epic poems that include details of the war—may have been made up. (You read about Homer and his works in chapter 3.) But in 1871, the German archeologist Heinrich Schliemann discovered ruins on the west coast of Turkey that archeologists believe are the ruins of the ancient city of Troy.



Agamemnon



Helen



Trojan Horse.

1200 and 1150 BCE (possibly by the Dorians) was one important early battle, as it brought about the Greek dark age and then the beginning of ancient Greece as we know it. The Trojan War—the battle that our friend Homer tells us about in *The Iliad*—is another famous Greek war that was

## Legendary Greeks

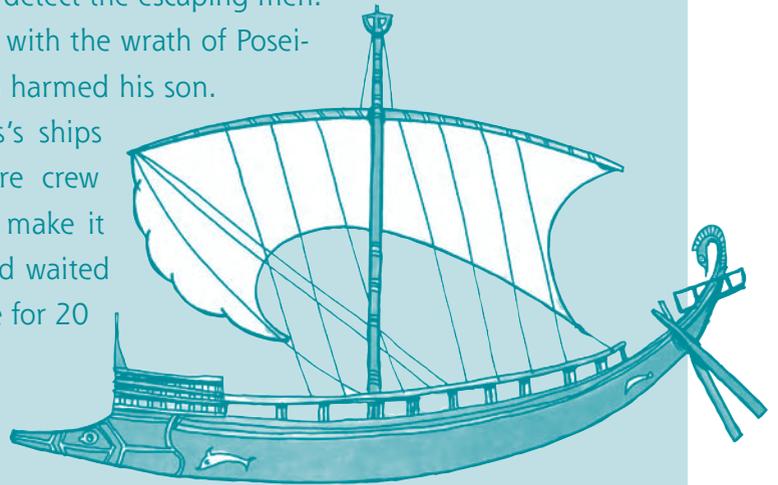
### Odysseus

Following the Trojan War, Odysseus, the king of Ithaca, spent 10 legendary years trying to get back home. Odysseus's ships were cast onto the island of the Lotus Eaters, where part of his crew ate lotus leaves and fell into a trance from which Odysseus rescued them. They encountered the Circe, who with her magic potions turned part of the crew to pigs. They journeyed to the underworld where Odysseus communicated with the dead, and they were captivated by the Sirens who tried unsuccessfully to lure the crew to their death with melodious song.

Landing on the island of the Cyclopes, Odysseus and several of his men were trapped in a cave with the giant known as Polyphemus, who was the son of the sea god, Poseidon. When Polyphemus asked his name, Odysseus was wary. He cleverly answered, "Outis," which means "nobody" in Greek. After several of his men were devoured by Polyphemus, Odysseus managed to blind him with the end of a tree trunk that had been heated in a fire. When Polyphemus told the other Cyclopes that "nobody" was hurting him, they didn't see any need to help. To escape from the now blind Polyphemus, Odysseus tied his men to the underside of a sheep's belly and even though Polyphemus ran his hand over the back of each sheep as it headed out to pasture, he was unable to detect the escaping men.

Returning to sea, Odysseus struggled with the wrath of Poseidon, who was furious that Odysseus has harmed his son. Repeatedly blown off course, Odysseus's ships were wrecked and eventually his entire crew perished. Odysseus finally managed to make it home, to find that his wife Penelope had waited for him, turning down offers of marriage for 20 long years.

You can read about all of Odysseus's adventures in Homer's *Odyssey*.



waged sometime during the twelfth or thirteenth century BCE. But over the years, other wars were just as important, making quite an impact on the history of ancient Greece. Two of the most important were the Persian Wars and the Peloponnesian War.

## Heinrich Schliemann and the Lost City of Troy

As a young boy, Heinrich Schliemann was fascinated with the ancient Greeks. The stories of Homer, in particular, intrigued him and continued to do so throughout his adult life. Having made a good living as a representative for a Dutch shipping company, in 1866, at the age of 44, he retired and set out to follow his passion. He studied ancient Greece, determined to find the lost city of Troy. But Schliemann was not a trained archeologist, just a passionate amateur. When he claimed that Troy was likely situated at the site of the city of Ilion, far from where professional archeologists placed it, he was mocked. But, he was determined.

Schliemann finally gained permission to excavate in 1871, and unearthed Hellenistic inscriptions and what appeared to be a Council House. He was convinced that he had located the lost city of Troy. Over the course of the next two years, he and his crew (including his wife Sophie) managed to excavate what appeared to be several cities that had been erected at different times. When he suspected that he was close to finding a treasure, he sent the crew home and continued to dig with only Sophie at his side. Together they found a copper cauldron, gold jewelry and buttons, vases made of bronze, silver, and gold, daggers, tools, and weapons. One particular engraving led Schliemann to believe that the treasure was that of King Priam, the ruler of Troy during the Trojan War. In an attempt to prevent the Turkish or Greek governments from claiming ownership of the treasure, Schliemann smuggled his find out of the area, and divided it for safekeeping at the homes of friends all over Greece.

By 1879, the second city of Troy—likely built atop the ruins of the famous city of Troy—was found as well as the palace of Priam that once stood in the ancient city of Troy. Schliemann died in 1890 and never saw the completion of this project that he so boldly began. From 1932 to 1938 an expedition from the University of Cincinnati unearthed what they felt was the Troy made famous in Homer's *Iliad*.

Some archeologists question the discoveries of Schliemann, but others credit him and his great passion for history with helping discover the mysterious city of Troy.



### Seven Cities?

The excavation at Ilion, the site of the ancient city of Troy in modern-day Turkey, unearthed seven different cities on the same site. How can this be? When a city falls into ruin, the buildings may no longer be of value, but the land is still usable. If another group of people comes along and decides that they like the location, they might build on that same site. But the first city has already left its mark on the land, maybe with stones stacked in a certain way or a pot that was discarded and eventually covered with soil.

This is what happened at the site of the ancient city of Troy. Different civilizations thrived—cities were built, fell into disrepair, and then new generations rebuilt. So when archeologists excavate a site, they find remains from different times in history buried in layers of rock and soil, called strata.



## The Persian Wars

In their quest to conquer the world, in 546 BCE the Persians defeated King Croesus, ruler of Lydia, which is in present-day Turkey. Over several decades the Greek city-states of the area gradually came under

the control of the Persian king, Darius I. The Persians ap-

pointed a man named Aristagoras to rule the Greek city of Miletus, which had been under Lydian rule. But Aristagoras didn't like Persia's

strict rules, and in 499 BCE he organized a democratic rebellion, called the Ionian rebellion, going to mainland Greece for support. The Spartans thought Aristagoras was a little sneaky and refused to help. But the people of Athens supported his democratic ideas and came to his aid. In 498 BCE, the Athenian army conquered and burned Sardis,

**Q** • What were two of the most important wars in ancient Greece?



*King Croesus*

## Legendary Greeks

### Jason and the Argonauts

Jason, who was the true son of King Aeson, was brought up by the centaur Chiron far from court. During this time, King Aeson's half-brother, Pelias, took over the throne.

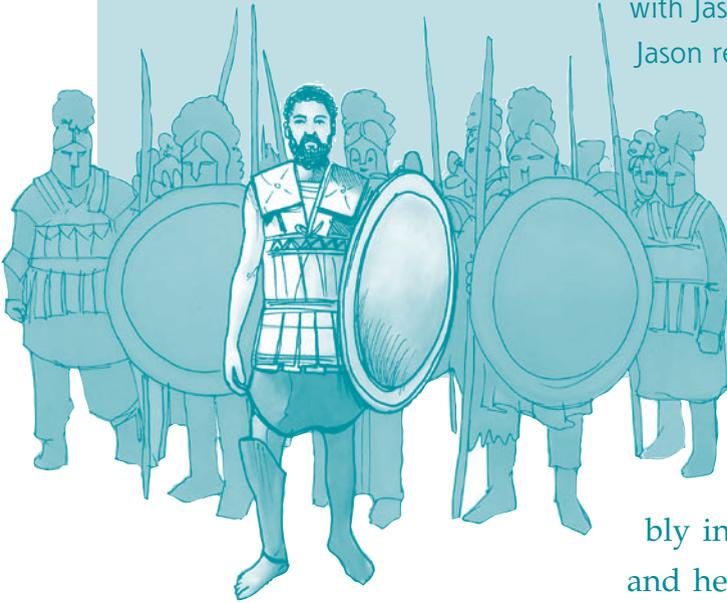
When he became a grown man, Jason went to court to claim his right to the throne. On his way, Jason met an old woman near a flooded river. She begged him to carry her across the water. Jason did, and lost a sandal in the process. The old woman was the goddess Hera in disguise, and Jason's good deed earned Hera's respect and devoted help.

Jason couldn't have known that Pelias had been warned about a threat to his throne that would come wearing only one sandal. Pelias was wary, and agreed to name Jason to the throne if he retrieved the golden fleece belonging to the cruel king of Colchis, named Aëetes. With the help of Athena, Jason built his ship, called the Argo. He assembled his crew, the Argonauts, and headed off in search of the golden fleece.

Reaching Colchis, Jason met Medea, a witch and the daughter of Aëetes. Medea fell in love with Jason and helped him to steal the golden fleece.

Jason returned home with Medea, who killed Pelias.

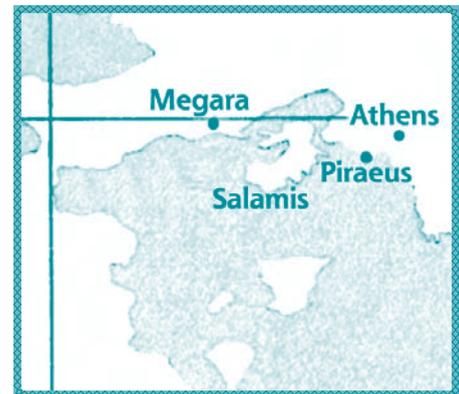
But Jason did not claim the throne as he had intended. Instead he lived with Medea for 10 years in Corinth before rejecting her and marrying King Creon's daughter, Glaukis. Jason lived to an old age and died when he was crushed under the prow of the Argo.



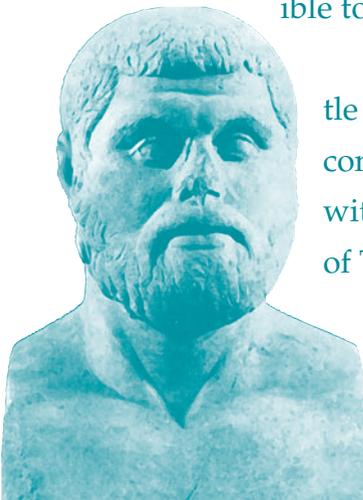
the capital of Lydia, running the Persians out of town. The Athenians weren't terribly interested in this part of the world, though, and headed home. By 495 BCE, the Persians had regained control of the area. And they were angry.

The Persians wished to punish Athens for the destruction of Sardis. In 490 BCE the Athenian and Persian armies met in the Battle of Marathon (Marathon was a town northeast of Athens), perhaps one of the most important battles in Greek history. King Darius sent 25,000 men

to land at the bay of Marathon, and from there the soldiers were to march over land to Athens. Nearly caught by surprise, the Athenians hurried to prepare. A Greek general named Miltiades knew something about Persian battle tactics, and formulated a plan. He felt it best to initiate an attack, rather than wait for the Persians to act. He placed a long line of men across a narrow valley, with the weakest formation at the front. The front formation was flanked on each side by two wings of capable soldiers—but they were hidden from view. The Persians eagerly attacked the weak front and were immediately surrounded by the hidden Greek soldiers. In vicious hand-to-hand combat, the Persians lost 6,400 men. The Athenians lost only 192. These Athenian soldiers were buried in a common grave on the battlefield; the burial mound is still visible to those that visit modern Greece.



*Strait of Salamis.*

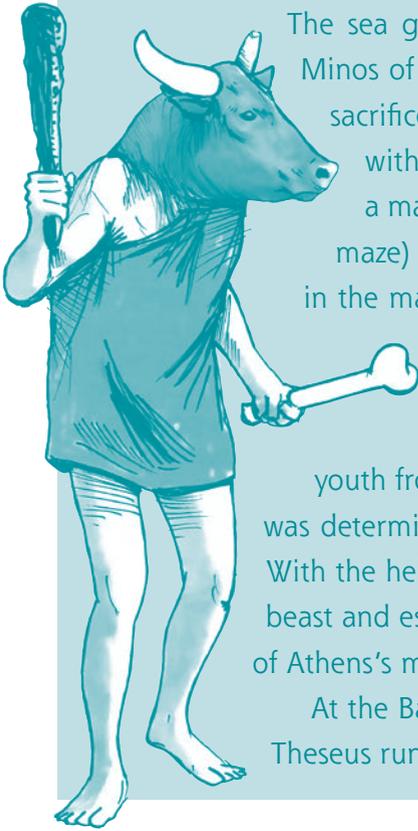


*Themistocles*

Despite the defeat of the Persian army at the Battle of Marathon, one Greek politician, Themistocles, convinced the Athenians that Persia wasn't done with them. By 481 BCE, Athens, under the guidance of Themistocles, amassed a fleet of over 300 ships. In the same year, Persia's new king, Xerxes, assembled 150,000 men and a navy of 800 ships, determined to defeat the Greeks once and for all.

## Legendary Greeks

### Theseus



The sea god Poseidon gave a snow white bull—the Cretan Bull—to King Minos of Knossos on Crete. When Minos refused Poseidon’s instructions to sacrifice the bull, Poseidon made Pasiphaë, King Minos’s wife, fall in love with the bull. She gave birth to the beast we call Minotaur; the body of a man topped by the head of a bull. Minos ordered that a labyrinth (or maze) be built to contain the Minotaur. While the Minotaur was trapped in the maze, Poseidon released the Cretan bull, allowing it to terrorize the city of Marathon. A man named Theseus killed the bull, saving Marathon from much damage.

Stuck with the Minotaur, King Minos demanded a tribute of youth from the city of Athens to be fed to the Minotaur each year. Theseus was determined to stop this sacrifice and went to Crete to slay the Minotaur. With the help of Ariadne, King Minos’s daughter, he succeeded in slaying the beast and escaping from the labyrinth. With his bravery, Theseus became one of Athens’s most famous heroes.

At the Battle of Marathon, many soldiers claimed that they saw the famed Theseus running ahead of them, leading them to battle against the Persians.

Themistocles knew that the battle could only be won at sea. The Greeks filled their boats with men skilled in hand-to-hand combat, then



*Xerxes*

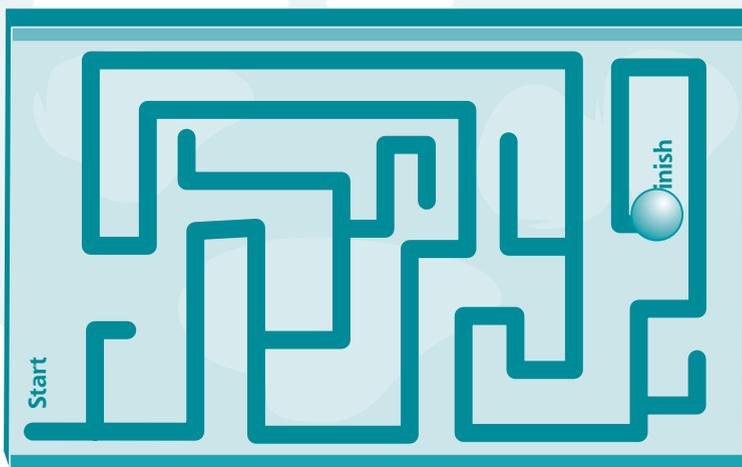
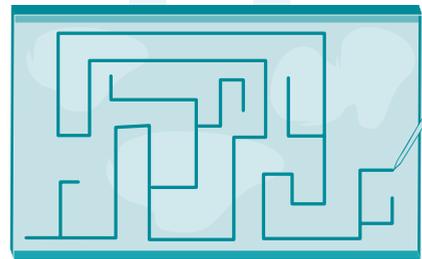
lured the Persian ships into the narrow strait between Salamis and Attica. When the Persians sailed into the strait they were trapped—there was not enough room for the ships to maneuver and flee. The Greek navy succeeded in sinking about 300 Persian ships before the rest of the Persians managed to escape. Following this disgraceful loss, Xerxes returned to Persia, leaving a small army of soldiers in Greece to try—yet again—to conquer Athens. They were unsuccessful.

Even though fighting continued between the Greeks and the Persians until 449 BCE, the Greek victory in the Battle of

# activity: Labyrinth

Create a small-scale labyrinth of your own and see if you can rescue a marble from its twists and turns.

- 1 Press the clay into the shoebox lid, making the surface as smooth as possible. The clay should be about half an inch thick.
- 2 Use the pencil to make a pattern in the clay. Keep the lines about an inch or more apart. Make lots of twists and turns and a start and a finish. Make sure to add some dead ends, as well.
- 3 Pressing firmly, roll the marble along the penciled lines to create an indented trough.
- 4 Let the clay dry overnight.
- 5 To use the labyrinth, place the marble at the starting point and see if you can roll it all the way from the beginning to the end.



## supplies

- ☒ shoebox lid
- ☒ air-dry clay
- ☒ pencil
- ☒ marble

### Marathon Runner

As the story goes, when General Miltiades led the Greeks to victory over the Persians in the Battle of Marathon, he ordered a runner to carry news of the triumph back to Athens. This runner, Pheidippides, ran approximately 25 miles from the city of Marathon to Athens, shouting, "Rejoice, we conquer!" to all he passed. After having run that far without water or rest, he dropped dead. The modern marathon is based on this legend.

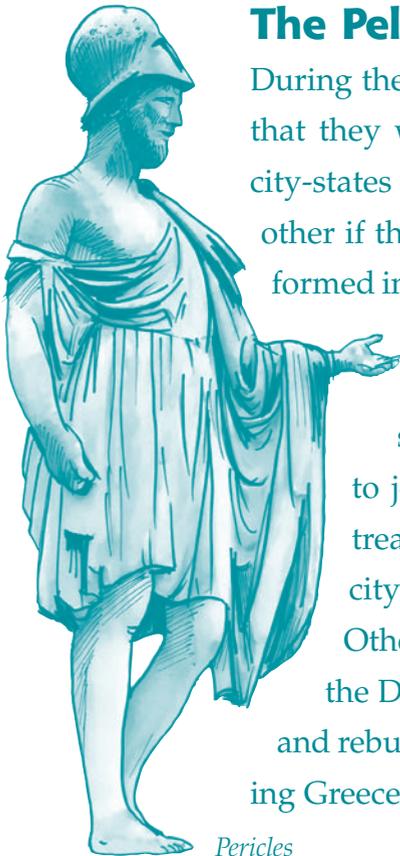


Salamis is important because it allowed the Greeks to avoid becoming part of the rapidly expanding Persian Empire. Greek culture might not have thrived if they'd lost their independence to Persia.

### The Peloponnesian War

During the Persian Wars, the people of Athens wanted to make certain that they were always prepared for battle. They invited neighboring city-states to become their allies, that is, partners who would help each other if they were attacked by the Persians. This alliance of city-states formed in 478 BCE was called the **Delian League**, because the group's headquarters were based on the island of Delos.

But there was a problem. Not every ancient Greek city-state wanted to join this alliance. Those that were reluctant to join were eventually forced to become allies, but they were treated poorly by the league for their initial hesitation. Some city-states felt frustrated with Athens' domination of the league. Others believed that the fancy Athenians were using money from the Delian League treasury to improve the glorious city of Athens and rebuild temples destroyed by the Persians, rather than for protecting Greece from attack.



*Pericles*

Under Pericles, the ruler of Athens, the Delian League became more like a dictatorship than a partnership. City-states that wanted to leave the league were not allowed to do so, and they were viewed as traitors.

In one instance Athens attacked Thasos, an island off the northeast coast of Greece, to teach them a lesson. Their war ships were confiscated and their defenses torn down in an attempt to get Thasos to join the Delian League. The **Spartans**, leaders of their own military alliance, called the Spartan Alliance or **Peloponnesian League**, didn't like how bold the Athenians had become.

Athens and Sparta didn't always see eye to eye; they had a healthy respect for each other but they were what we might call rivals today. Two of the biggest and most influential city-states, they each maintained a large army. Even so, they managed to live as neighbors without conflict for a long time. But under the rule of Pericles, the Delian League had become more like an Athenian empire. When Athens forced Megara, a city-state directly between Sparta and Athens into the Delian League, Spartans became very uneasy.



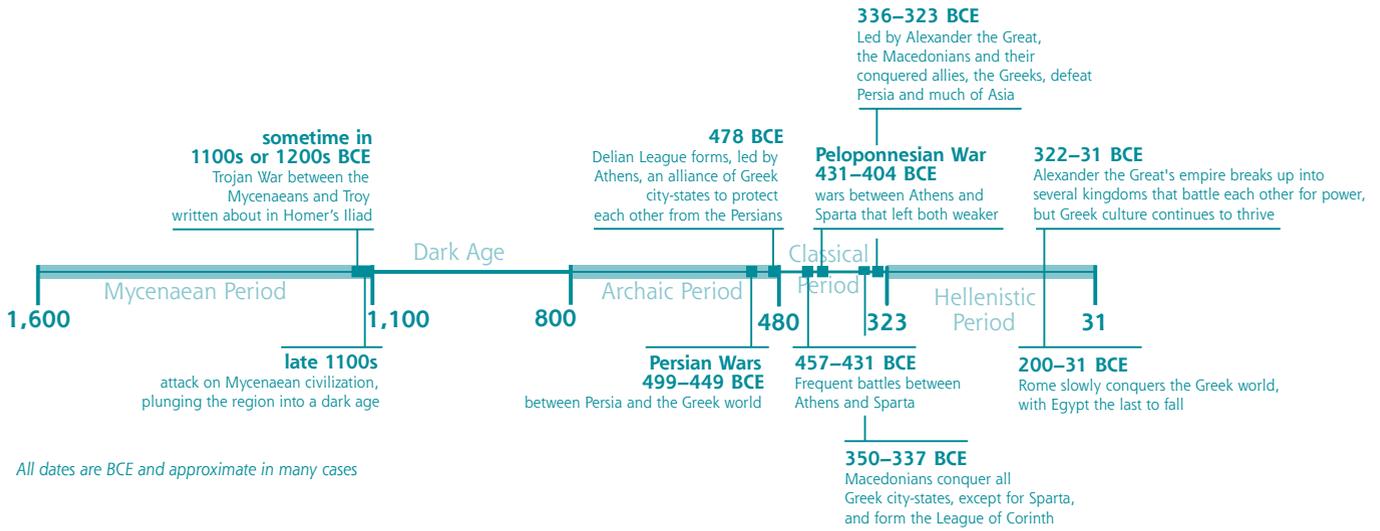
**Q:** Who did the Athenians defeat in the **Battle of Salamis**?

## *words* to know

**Delian League:** a military alliance of Greek city-states dominated by Athens

**Spartan:** someone from Sparta, but has come to mean simplicity, avoidance of comfort and luxury, strict self-discipline

**Peloponnesian League:** a military alliance of Greek city-states dominated by Sparta



The expansion of Athens into Megara sparked one of the first clashes between Athens and Sparta, in 457 BCE. When Megara revolted in 446 BCE, Athens lost a buffer between itself and Sparta, meaning the Spartan

## Q: What was different about the Peloponnesian War?

army could appear at any time. Fighting between Athens and Sparta became common, but Athenians felt safe in their walled city, and a truce in 445 BCE brought some peace between the two

powerful city-states. By 433 BCE the two powers were again provoking each other and it didn't take long before outright war broke out.

Despite the power of the Athenian navy, Pericles knew that Athens was no match for Spartan warriors. He kept his people safe within the



walls of Athens, and let those remaining outside the city walls battle Sparta. He was content to let the Spartan warriors wear themselves out in campaigns that made little difference in order to save the lives of the many citizens sheltering inside the city's walls. While there were losses outside the city's gates, they paled in comparison to the losses that Athenians might have seen had they not taken refuge within the city. But Pericles hadn't

### The Women of Sparta

Unlike girls in most Greek city-states, Spartan girls and women were encouraged to exercise and compete in athletic events. It was thought that a strong, athletic woman would give birth to healthier children. And healthy boys in particular made Spartans happy.



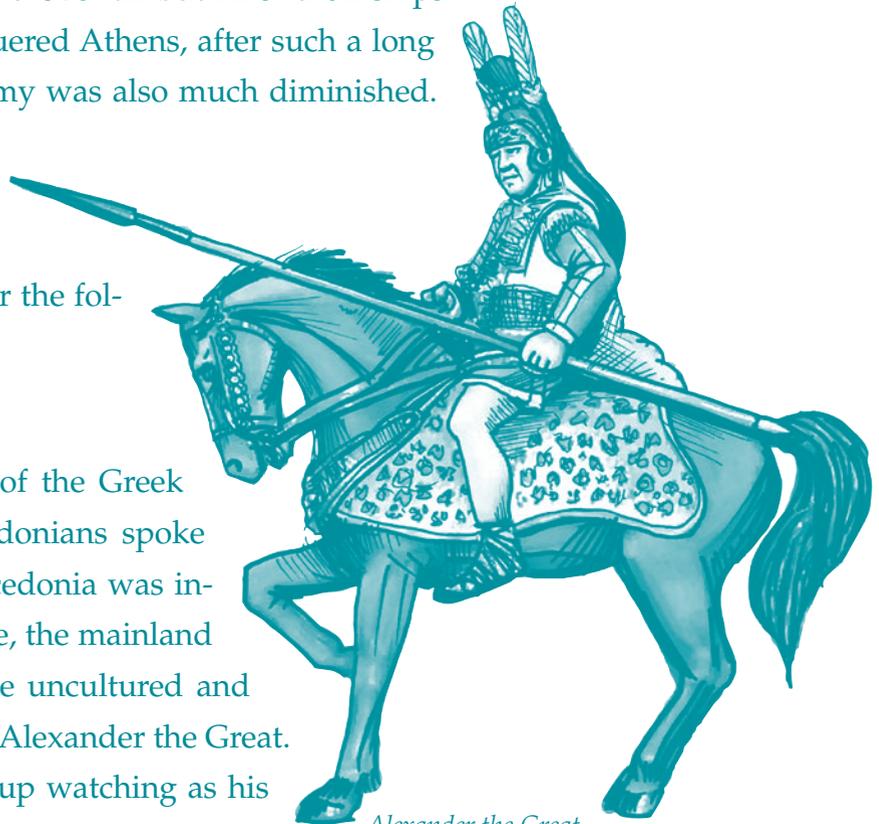
counted on a plague. Illness in Athens killed many citizens—including Pericles himself.

The new Athenian rulers had different ideas—they left the safety of the walled city, and initiated an attack on the Spartan warriors. The Peloponnesian War was an on-again, off-again war, pitting Athens against Sparta in many different battles over many years. Sparta finally won the war in 404 BCE—the Athenian naval fleet was destroyed, preventing them from reaching their source of grain across the Black Sea and Athens starved. The Spartans demanded that Athens submit to rule by Sparta, tear down their defensive walls, and hand over all but 12 of their ships. While Sparta may have conquered Athens, after such a long and grueling war Sparta's army was also much diminished. Neither Athens nor Sparta ever returned to the power and fame they once knew and both slowly declined over the following century.

### Alexander the Great

Macedonia lies to the north of the Greek mainland. Though the Macedonians spoke the Greek language, and Macedonia was inhabited by some Greek people, the mainland Greeks considered them to be uncultured and barbaric. But don't tell that to Alexander the Great.

Born in 356 BCE, he grew up watching as his



*Alexander the Great*

father, King Philip II of Macedonia, did his best to conquer neighboring Greek city-states. King Philip knew that eventually Alexander would become king, so he made certain that his son was suited to the task. He

hired the great Greek philosopher Aristotle as Alexander's tutor, and Alexander learned philosophy, geography, botany, and zoology.



*King Philip II of Macedonia*

By the time Alexander was 16, King Philip had conquered all of the mainland Greek city-states except Athens, Sparta, and Thebes. Alexander joined his father's army of Macedonians and Greeks as it prepared to invade the Persian Empire. First, in order to present a united front against the Persians, King Philip's army needed to defeat Athens and Thebes, thereby securing their help in battle. The battle at Chaeronea against the two city-states in 338 BCE was Alexander's first battle and it ended quickly in favor of the

Macedonians. By 337 BCE, all of the Greek city-states ex-

cept for Sparta had joined with Macedonia to form the **League of Corinth**.

King Philip died the following year, and at 20 years of age, Alexander became the king of Macedonia.

Determined to carry out his father's plans, Alexander led his army to battle against the Persians. The Battle of Granicus was fierce but Alexander was victorious. During one exchange, a Persian soldier raised his sword to stab Alexander. With a single blow,

**Q:** What enemy was able to get through Athens' wall and kill Athenians well before the Spartans did?

## *words to know*

**League of Corinth:** a military alliance of all the Greek city-states except Sparta, led first by King Philip of Macedonia and then his son, Alexander. The alliance lasted until Alexander's death in 323 BCE.

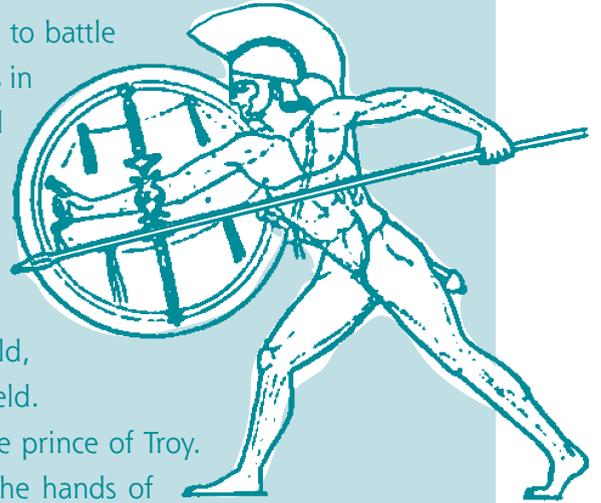
## Legendary Greeks

### Achilles

Achilles was born to a sea nymph named Thetis. Certain that Achilles was destined for greatness, but worried for her son's safety, as most mothers would be, Thetis took a precaution. She dipped baby Achilles into the River Styx to make him invulnerable to wounds. But as she dipped the baby, one part of his tiny body remained dry—his heel.

Under the care of the centaur Chiron, Achilles learned to be brave, to ride horses, and to hunt. Greece was preparing to go to battle with Troy, and the Greek army knew they needed Achilles in order to win the battle—after all, it had been prophesied that without Achilles the Greeks could not win. Thetis had heard the prophecy, too, and took it upon herself to hide Achilles. She dressed him up as a girl and sent him to a faraway town. But clever Odysseus sent a gift to the "girl"—and when she expertly took up the spear and shield, she was recognized as Achilles and led off to the battlefield.

In the final year of the war, Achilles killed Hector, the prince of Troy. While dying, Hector swore that Achilles would die at the hands of Paris. He was right. Paris fired an arrow, hit Achilles directly in the heel—the one part of his body that didn't have the protection of the River Styx—and killed him.



the king's friend, Cleitus, cut off the attackers hand and watched as it dropped to the ground, still holding the sword. With the success of that battle to bolster his image, Alexander and his troops traveled through Ionia, a region in what is now Turkey, where they were welcomed with open arms. The city of Miletus resisted, and was conquered, as were other Persian cities along the coast. Persia, weak from battle and unable to collect supplies, finally surrendered around 332 BCE.

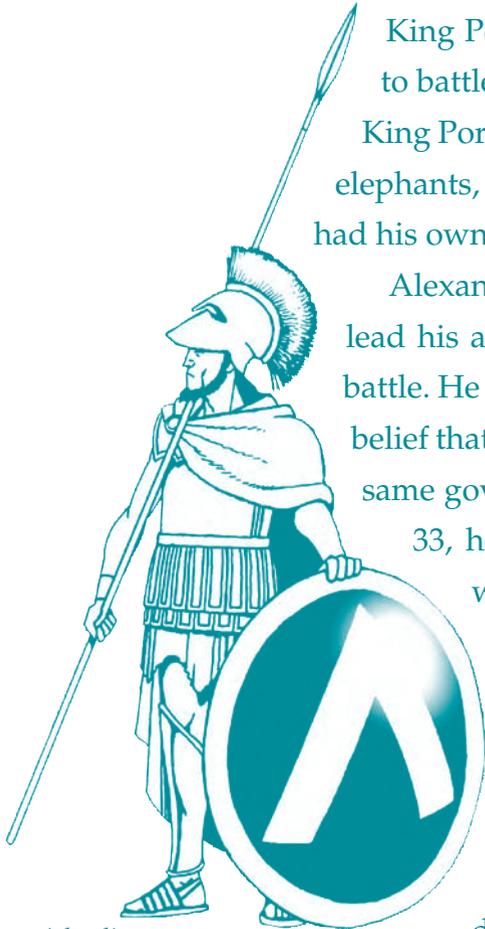
Alexander and his army stormed their way across Persia and Asia, conquering city after city. Before one battle, Alexander equipped the wheels of his chariots with curved knives meant to slash the legs of his enemy's horses and soldiers. Whenever he could, he situated his army

## Q: How did Sparta finally defeat Athens?

so that the enemy was forced to approach over very rocky ground. He even had workers smooth out the ground where his army would take a stand. Alexander's clever thinking and the brute force of his army led him to success after success.

In 326 BCE, at the age of 30, Alexander led his troops against King Porus of India in the Battle of Hydaspes. Alexander came to battle with 700 horses. Imagine his surprise when he saw that King Porus's cavalry was made up of 200 elephants! In spite of the elephants, Alexander was again the victor and from that time on, he had his own cavalry of elephants when he went into battle.

Alexander was well respected by his soldiers and managed to lead his army across 22,000 miles of land without losing a single battle. He handled the people he conquered with grace, sharing the belief that people of different cultures could live together under the same government. It's no wonder that by the time he died at age 33, he had garnered enough respect that future generations would know him as Alexander the Great.



A hoplite.

### Preparing for Battle

The Greeks depended upon their citizens to serve in the military, and most of these middle-class men served as **hoplites**. Armed with spears, which were easy to maintain and affordable, hoplites fought shoulder to shoulder in a formation called a **phalanx**. During

## words to know

**hoplite:** a foot soldier in ancient Greece armed with a sword and a spear

**cuirass:** a piece of armor covering the body front and back

**phalanx:** rows of soldiers marching tightly together with their shields joined

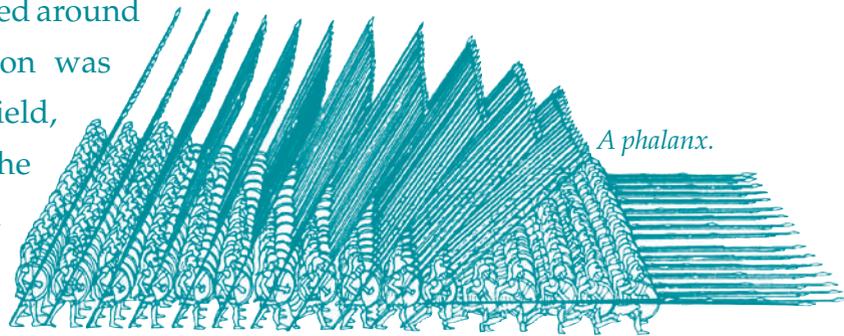
## Hoplites

Hoplites were bound by the rules of war called the *nomima*. In ancient Greece, war prisoners were entitled to fair treatment by their captors. Until the Peloponnesian War city-states would usually just swap prisoners after a battle. But the Peloponnesian War was brutal and the rules of war were often ignored.

We have something similar in the world today. Countries that abide by the agreement made at the Geneva Convention guarantee that their military will provide humane treatment to prisoners of war. Signed in 1864, it was the first treaty of international humanitarian law.



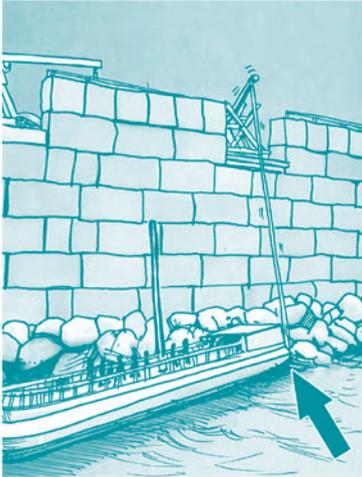
battle, they used shields made of oak and covered with leather or bronze to protect themselves from injury. A hoplite wore a bronze helmet, **cuirass**, and thin bronze plates strapped around bare legs. Sometimes a leather apron was hung from the lower part of the shield, as added protection for the legs. The hoplite's weapons were hand-held: a spear and a sword.



## Weapons of War

Hoplites were skilled in hand-to-hand combat. But why get close to opponents and risk getting hit if you can strike them from far away?

Other wartime inventions include the catapult, created in 399 BCE by Dionysius, the elder of Syracuse, a cruel tyrant who made Syracuse the most powerful of the western Greek colonies. Catapults were built to hurl heavy objects or arrows over long distances, hopefully striking opponents. Flame throwers were another Greek creation, although they weren't guns that shoot out flames like you see in the movies. Instead, the Greeks filled pots with burning sulfur (a flammable mineral), tree sap, and other materials, then threw them onto the decks of enemy ships to set them on fire.



*Archimedes' claw.*



Weapon technology was an active field of innovation for Greek thinkers even after the Greeks lost their independence to the Macedonians and later, as they resisted the Romans. Once again, Archimedes, the inventor and mathematician who lived in the third century BCE (the 200s) that you read

about in chapter 6, stands out for his contributions. According to legend, he developed giant reflecting mirrors that focused sunlight on Roman ships as they attacked Syracuse, setting the ships on fire.

Another tool for warfare was known as the Archimedes' claw. The claw was actually a crane built into the battlements that surrounded and protected a city that could move large enemy ships close to shore, and destroy them as well! To do this, soldiers would hurl the claw hooks of the crane onto the front of an enemy ship. A team of oxen would then pull a series of ropes that lifted the crane's arm, pulling the front of the ship out of the water. Once the oxen pulled the ship as high as they

could, the soldiers would suddenly drop the boat, either sinking or breaking it.

Even stranger than the ancient Greek flame throwers were the ancient Greek landmines that Philo of Byzantium, who wrote much about ancient weaponry, described around

120 BCE. Philo recommended that cities take empty earthenware jars, fill them with seaweed or grass, bury them around the walls of a city, and cover them with dirt. The mines supported the weight of the troops that walked over them. But if an enemy tried to move in a heavy batter-

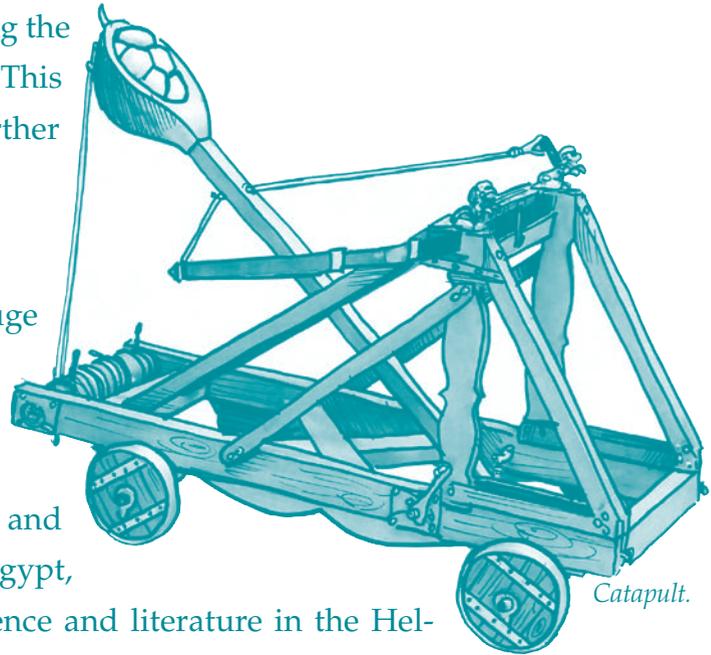
**Q:** Name another Archimedes war invention besides his claw, and explain how it worked.

ing ram, the jars would collapse, causing the battering ram to sink into the ground. This made it impossible to move it any further and therefore, useless.

## The End of Ancient Greece

After Alexander the Great died, his huge empire broke apart into smaller empires marked by wars and shifting alliances: Macedonia, Syria, and Egypt. Greek culture continued to thrive and spread, especially in Alexandria, Egypt, which was an important center of science and literature in the Hellenistic world. During the Second Punic War (218–207 BCE) between Rome and Carthage, King Philip V of Macedon allied with Carthage (a city in North Africa) to protect supply lines from the Roman navy. Rome saw Macedonia's participation as an invitation to interfere on the Greek mainland. From the time of the Second Punic War until about 146 BCE, there were numerous battles for control of the area around the Aegean Sea. In 146 BCE, Rome conquered the Achaean League—the last group of Greeks living independently of the Roman Republic—ending the independence of ancient Greece as a whole. In the same year, the Battle of Corinth completely decimated the Greek city-state of Corinth.

Even after Rome defeated the Greeks in the Battle of Corinth, many Hellenistic kingdoms remained devoted to the Greek way of life. The last Hellenistic kingdom to fall to Rome was Egypt, under the rule of Cleopatra, in 31 BCE. Greece came to be a province of the Roman Empire and remained under Roman control until the thirteenth century CE.



*Catapult.*

**Q** • Explain how the version of the **flame thrower** worked.

# activity: Ancient Greek-opolis



Design your own perilous trip through ancient Greece!

**1** Use a pencil to lightly draw the game board and the path that players will travel. You'll need a start and finish line, and lots of square spaces in between. You can make the path square or create a spiral—it's your choice.

**2** When you are happy with the layout of the board, use markers to make the path permanent and to decorate the board (not the spaces) with Greek designs. Color some of the spaces on your board to match the colors of your index cards. Leave some spaces blank.

**3** Cut 10 index cards of each color in half. On one color of cards, write a true or false statement relating to ancient Greece. Include the answer on the card. Here are a few to get you started:

- Medusa's hair was made of worms (F)
- *Polis* means city-state (T)
- Athens and Sparta were *poleis* in ancient Greece (T)



**4** On the rest of the cards, write down some fun (or funny) things that might happen to an ancient Greek along with instructions that will move a player forward or backward:

- Found innocent by a jury of your peers; move forward 2 spaces
- Decipher the Linear A tablets; take an extra turn

**5** Players take turns rolling the dice and moving their marker accordingly. If you land on a color, choose a card to match and follow the directions. If you pick a True or False card, answer the question; if you are correct, move two spaces forward. If not, move back two spaces. The first person to cross the finish line wins.

## supplies

- ☒ poster board or cardboard
- ☒ pencil
- ☒ colored markers
- ☒ index cards in three different colors
- ☒ 2 dice
- ☒ buttons for markers



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[http://www.mnsu.edu/emuseum/information/biography/pqrst/schliemann\\_heinrich.html](http://www.mnsu.edu/emuseum/information/biography/pqrst/schliemann_heinrich.html)
- The Perseus Project/tufts—<http://www.perseus.tufts.edu/>
- Technology Museum of Thessaloniki—<http://www.tmth.edu.gr/en/aet/1/13.html>
- Washington State University—<http://www.wsu.edu>
- MSN Encarta, 2003
- <http://www.physlink.com/Reference/GreekAlphabet.cfm>
- [http://www.egypttourism.org/New%20Site/places/bibliotheca\\_alexandrina.htm](http://www.egypttourism.org/New%20Site/places/bibliotheca_alexandrina.htm)
- <http://www.bookrags.com/notes/od/BIO.htm>



## GLOSSARY

**acropolis:** High place of the city, also a structure built in the high place of the city (the famous Acropolis built in Athens).

**Aegean Sea:** An arm of the Mediterranean Sea between Greece and Turkey, containing numerous islands.

**Aesop:** Famous for his fables; one of the first storytellers in ancient Greece to put his stories in writing.

**agora:** The central, outdoor marketplace of ancient Greek city-states.

**altar:** A stage of a church.

**Amazons:** An independent tribe of female warriors who lived according to the will of Artemis, the goddess of hunting and wild nature.

**amber:** A hard translucent fossil resin varying in color from yellow to light brown; used in making jewelry and ornaments.

**ambrosia:** The food of the gods, which was supposed to make those who ate it immortal.

**anarchy:** A chaotic period with no clear leader.

**Antigonids:** People of Macedonia who attacked Rhodes in approximately 508 BCE.

**archaic:** From a much earlier period of time.

**archaic period:** The time period after the Greek dark age and before the classical period, from about 800 to about 480 BCE.

**archeologist:** Someone who studies objects that belonged to people who lived in the past in order to learn about their society.

**archons:** The nine rulers of an ancient Greek city-state who were elected by the Areopagus in the time period when oligarchy was the favored system of government.

**Areopagus:** The council of nobles.

**arid:** Very dry.

**ariston:** A light lunch.

**arithmetic:** A branch of mathematics that concerned with real numbers and addition, subtraction, multiplication, and division.

**artifact:** An object made by a human, usually a tool or ornament, that has survived from a long time ago.

**Asia Minor:** A strip of land across the Aegean Sea, linking Asia and Europe.

**assembly:** A group of people (all members of the poorest class) that voted on matters brought to it by the boule.

**astronomy:** The scientific study of the universe.

**Athens:** The cultural center of ancient Greece.

**Attica:** Athens and the surrounding region.

**barbarians:** Foreigners whose unrecognizable language sounded like "bar-bar," "bar-bar" to the ancient Greeks.

**barter:** To trade for something as opposed to using money to buy it:

**basileus:** A king-like ruler of Greek city-states during the archaic period.

**battlements:** A protective wall used for defense.

**boule:** An elected government council of 400 men.

**Caryatid Porch:** Sometimes referred to as the Porch of the Maidens because it is a porch supported by columns that are statues of maidens.

**chisel:** A piece of metal, like a large nail, that miners or sculptors hammer into stone.

**chorus:** Singers, dancers, and musicians who acted out a Greek drama.

**circa:** Approximate date.

**classical period:** The period in ancient Greece from 480 to 323 BCE when art, science, literature, and philosophy flourished.

**comedy:** A play that was meant to make the audience laugh through poking fun at politicians, famous people, and even the gods.

**commission:** A job that an artist is hired by a patron to complete.

**confiscated:** To take possession away from someone, usually as punishment.

**constellations:** The formations of the stars.

**Corinthian columns:** Very elaborate columns decorated with leaves.

**craftsperson:** A person who is skilled at a particular craft, such as carpentry, painting, or candle making.

**Crete:** An island near mainland Greece.

**cultivate:** To grow something or to shape or help shape something into a final product or its most mature form.

**culture:** Group of people or a group of people's way of life. Also the arts.

**currants:** Small dried fruits, quite like raisins:

**deductive reasoning:** The truth of the premises guarantees the truth of the conclusion.

**deipnon:** Dinner.

**deity:** Form of god or higher being.

**democracy:** Greek for "rule by the people." Also a gov-



ernment that represents the free and equal rights of every person to participate in the system of government; often practiced by electing representatives of the people by the majority of the people:

**dissect:** To take apart.

**destiny:** A future that has been determined.

**Doric columns:** Plain columns with a square top:

**dowry:** A sum of money paid to the groom by the family of the bride.

**drachma:** An Athenian coin.

**drama:** A story told through action and dialogue.

**earthenware:** Pottery made of baked clay and fired at a very low temperature.

**economy:** The production and consumption of goods and services of a community.

**embellish:** To exaggerate or decorate.

**epic:** A long series of events with lots of adventure or struggle. Also a lengthy poem that tells a story celebrating the adventures and achievements of a hero.

**ethical:** An issue that revolves around questions that ask whether something is good or bad, right or wrong.

**ethics:** A code of goodness or morality.

**exploits:** Achievements or undertakings.

**frieze:** A carved band of stone or marble around the perimeter of a building that often tells a story or displays a scene.

**geography:** The science of the earth and its features.

**geometry:** The branch of mathematics concerned with shapes and the measurement and relationships of points, lines, angles, surfaces, and solids.

**grammatistes:** Teachers in ancient Greece.

**dark age:** The period between the end of the Mycenaean civilization and the beginning of the development of city-states in ancient Greece, from about 1100 to about 800 BCE.

**grueling:** Something that requires a lot of pain and/or hard work to achieve.

**gymnasium:** Place to exercise in the nude.

**Helen of Troy:** Wife of Menelaus, the king of Sparta, whose abduction sparked the Trojan War.

**Helios:** The ancient Greeks' sun god.

**Hellenes:** What the people of ancient Greece called themselves.

**Hellenistic world:** Refers to the specific time period and group of people that worshipped Helen of Troy; also re-

ferred to as ancient Greece.

**helots:** Spartan slaves owned by the state.

**Hippocratic oath:** A doctor's promise to always do their best in treating a patient.

**humane:** Kind, gentle treatment.

**immortal:** The opposite of mortal; someone who cannot die.

**import:** To bring into one's country.

**inductive reasoning:** The truth of the premises lends support to the conclusion but does not guarantee it.

**inferior:** Not as good as.

**inquiring:** Curious or full of questions.

**Ionic columns:** Fairly elegant columns; thinner than Doric columns; the top is decorated with a scroll-like capital called a volute.

**irrigate:** To supply an area with water.

**jury:** A group of citizens who decide the truth based on the evidence.

**kouros:** Greek for "youth" and refers to statues of nude young men.

**legacy:** A precedent or example to follow.

**Libon:** The architect who designed the magnificent temple to Zeus that held the Statue of Zeus at Olympia.

**Linear A:** A kind of ancient Greek writing that is still not deciphered.

**Linear B:** A type of ancient Greek writing discovered and deciphered in modern times.

**logic:** The branch of philosophy that looks to determine the quality of reasoning used in figuring something out.

**lyre:** A musical instrument that looks like a small guitar.

**Macedonia:** Ancient kingdom to the north of Greece, centralized under Philip II, who, with his son, Alexander the Great, created a vast empire in the fourth century BCE.

**magistrate:** Someone who administers laws.

**mallet:** Hammer.

**marathon:** A running race of over 26 miles, named after a village in Greece.

**matter:** A material substance that has mass, occupies space, and can be converted into energy.

**Mediterranean Sea:** Inland sea of Europe, Asia, and Africa; linked to the Atlantic Ocean at its western end by the Strait of Gibraltar.

**militaristic:** Forceful or even violent.

**Minoan:** The first great civilization of the Aegean world; Minoan people lived a peaceful existence on the island of Crete.



**minute:** A unit of measurement for an angle.

**morality:** The rightness or wrongness of something. (2) Behavior that is considered good.

**mortal:** Someone who can die.

**mosaic:** A picture or design made with small stones stuck onto a surface.

**muses:** Nine goddesses, each of which presided over a different form of art or science:

**Mycenae, Mycenaean:** A person from Mycenae or relating to Mycenae, an ancient Greek civilization that lived on Crete and in the surrounding region before about 1100 BCE.

**mythology:** The stories told in and about ancient Greece, used by the ancient Greeks to explain the world around them, much as we use religion today.

**natural phenomena:** Events that seem to take place naturally, without the influence of humans.

**oikos:** Family or members of a household.

**oligarchy:** A system of government where a few leaders govern.

**Olympia:** A town west of Athens, where Mount Olympus stands and the Olympic games originated.

**oracle:** A liaison between people and the gods.

**orator:** A public speaker.

**orchestra:** A group of performers made up of singers, dancers, and musicians.

**ostracism:** The ancient Greek practice of voting a person out of a community.

**pagan:** The worship of many gods.

**Panathenaea:** An important religious festival dedicated to the goddess Athena.

**Panhellenic:** All Greek.

**Panhellenic Cycle:** Series of four religious and cultural festivals.

**pantheon:** A group of gods, heroes, or important people all considered collectively.

**papyrus:** Material to write on used by the ancient Egyptians, Greeks, and Roman.

**patron god:** The god who represented one's ancient Greek city-state more than any other.

**peasant:** A poor person; a member of the lower class.

**peer:** A person who is of equal standing with another in a group

**pentathlon:** A series of five Olympic events including discus, long jump, running, javelin, and wrestling.

**Persian Wars:** A series of conflicts between the Greek world and the Persian Empire that lasted until 448 BCE.

**physics:** The study of matter and energy.

**plague:** A widespread outbreak of sickness:

**polis:** Greek city-state; *poleis* is plural.

**portico:** A covered walkway or porch that is supported by pillars, often leading to the main entrance of a building.

**premise:** An assumption.

**principle:** An underlying idea.

**properties of matter:** All the measurements of matter (mass, volume, size).

**propylaeum:** An entrance to a temple or group of buildings:

**quarry:** Area of land that is mined for marble and other types of rock.

**relic:** Something that has survived from a long time ago; often a part of something old that has remained when the rest of it has decayed or been destroyed.

**rhapsodoi:** A storyteller; storytelling.

**ritual:** A set of fixed actions and sometimes words performed regularly, especially as part of a ceremony.

**rival:** One's greatest opponent.

**sacrifice:** An offering of food or wine to the gods.

**science:** Learning about the world through observation, identification, and experimental observation.

**scholar:** A person who studies or continually tries to learn about one thing or another.

**scroll:** A roll of paper to be written on.

**sphairai:** Greek for "ball."

**submerged:** Beneath water.

**symposium:** A social gathering of wealthy men that usually involved food and entertainment.

**terra-cotta:** Hard, semi-fired ceramic clay used in pottery and buildings.

**topography:** The lay of the land (i.e. how flat or mountainous the land is).

**tragedy:** A play that usually depicts events from a mythical past and that often ends sadly.

**trapezitai:** Money changer.

**trigonometry:** The branch of mathematics that focuses on triangles.

**underworld:** The kingdom ruled by Hades, where ancient Greeks believed dead people went.

**verdict:** The decision of a jury.

**virtues:** Good qualities in people.

**volume:** The size of the three-dimensional space within an object or occupied by an object.

**wares:** Goods, often handmade crafts.



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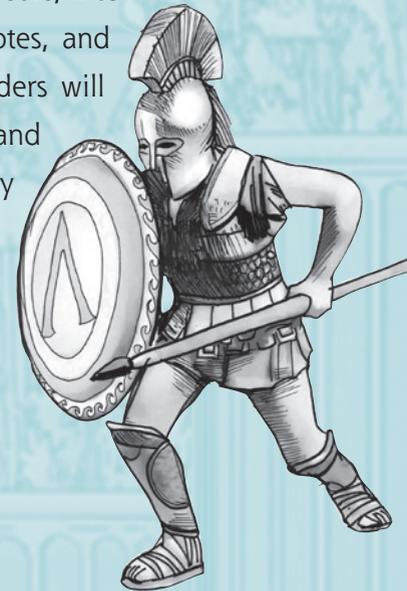
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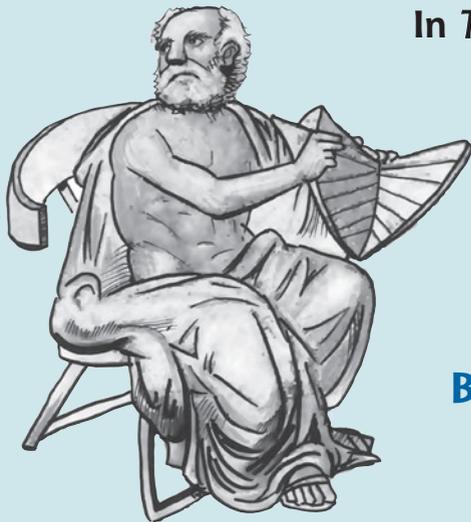


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