

BEARCAT DAY 27

TUESDAY, APRIL 28, 2020

GRADE 7
ANDERSON COUNTY SCHOOLS



ANDERSON COUNTY MIDDLE SCHOOL

7TH GRADE BEARCAT DAY 27

LANGUAGE ARTS	Point of View in Informational Articles Read the following article and answer the four multiple choice questions about the author's point of view.
MATH	STUDY GUIDE PART 2 Answer the questions on the study guide . Use your notes to help you. If you get stuck, email your teacher.
SCIENCE	PLANT SURVIVAL Read the plant structures article and complete the questions that go with it. To turn in work: <ul style="list-style-type: none">• Turn in work to school (with YOUR NAME on it)• Take pictures of work and send it to email
SOCIAL STUDIES	THE MAYA Read the chapter and answer the questions .
PE/HEALTH	FOCUSING ON FITNESS Exercise for 30-45 minutes. Write your activity on your log from Monday. Remember to snap a picture of your log on Fridays and email it to brian.glass@anderson.kyschools.us .
LITERACY	NARRATIVE WRITING Continue to work on narrative writing piece.

Nike's Vaporfly shoes changed running, track world sifts through the fallout

By Washington Post, adapted by Newsela staff on 03.02.20

Word Count 1,023

Level 1050L



Eliud Kipchoge of Kenya crosses the finish line at a marathon on October 12, 2019, in Vienna, Austria. With an unofficial time of 1 hour 59 minutes 40.2 seconds, the Olympic champion became the first ever to run a marathon in under 2 hours. Photo: Alex Halada/AFP

Technological advances in running shoes are as old as the business itself. In 1971, Nike co-founder Bill Bowerman created a sole by pouring urethane into a waffle maker. Urethane is an artificial rubber. Since then, the company has relied on cutting-edge methods.

In January 2016, Kenyan marathoner Eliud Kipchoge tested a new shoe that would come to be known as the Nike Zoom Vaporfly Elite. The Vaporfly series, and the Alphafly series it began, broke barriers. They also sparked controversy.

"The Essence Of Progress"

Track and field's governing body had to respond to the shoe months after Kipchoge wore an early model of the Air Zoom Alphafly Next%. In the shoes, he became the first person to run a marathon in less than 2 hours. Nike calls Kipchoge "the essence of progress." His shoes, wrote South African sports scientist Ross Tucker, "disrupted the meaning of running."

Other sports have struggled for years with questions about fairness and advances in equipment technology. Distance running was slow to realize it faced the same problems. For many years, the sport's leaders regulated shoes as if they were clothing instead of sports equipment.

"If you wanted to put everybody on the same starting line, you can require people to run with their bare feet," said Damiano Zanotto, the head of the wearable robotic systems lab at Stevens Institute of Technology in Hoboken, New Jersey. "Which doesn't make any sense. There is not negative or bad technology. There is a need for regulation, and clear regulation."

World Athletics is the track and field governing body formerly known as IAAF. The organization recently released new rules aimed at curbing the effects of advanced technology. Critics, including rival shoe company executives, called it a compromise that came too late.

"I do think as a governing body, they need to start thinking about the shoe as the piece of equipment," said Shawn Hoy. He is Saucony's vice president of global product. "It's no different than a golfer's clubs or a tennis player's racket."

Using Old Ideas In New Ways

The Vaporfly updates old ideas and uses them in new ways. It features a springy, carbon-fiber plate in the midsole, which Fila had done in the early 2000s. It uses a new foam substance Nike calls ZoomX, an update of an Adidas material. Nike also made the sole extra thick, which plenty of companies had tried.

"I only really became aware of these shoes in early 2019, more or less when the world at large became aware," said Tim Hutchings, an NBC Sports commentator. "Even then, few had any idea of the seismic shift in runner times that they could produce."

Research showed that the shoes improved running economy by an average of 4 percent, a monumental total. Runners who used them could break records, and runners who didn't could not keep up.

Even if everyone had the shoe, it might still create unfair advantages. Some runners, according to studies Tucker cited, respond to the shoes' technology more effectively in terms of running efficiency. Those who respond well have a massive advantage over those who do not. Runners who do not respond as well to the shoe could be cut at an early age from competitive running.

Danny Orr, New Balance's general manager for performance, said Nike could have been more transparent with the IAAF as it developed the Vaporfly. However, he joined other experts in putting the responsibility on the sport's governing body to create rules for companies to innovate within.

A Missed Opportunity

"Very early on, we saw results that were unprecedented with that product, and we felt like at that time the world governing body probably had the opportunity to act," Orr said. "The fact that they didn't since 2016 is what's put us in the position today."

Last October, Kipchoge became the first person to run a marathon in less than two hours. He wore the Next%, an evolutionary, extra-chunky version of the Vaporfly. The next day, Brigid Kosgei

shattered a 16-year-old women's record by 1 minute, 21 seconds in the Next%. The Guardian newspaper reported that the Next% could boost a runner's efficiency by 7 to 8 percent.

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"I don't know if we'd be having this conversation if not for the Kipchoge sub-two-hour marathon," Hoy said.

On January 31, World Athletics acted in a way that left few satisfied. It ruled that shoes worn in competition must be "readily available" for four months and could not be a test model. For distance running shoes, it placed a ban on soles thicker than 40 millimeters and the use of more than one plate.

Preserving Integrity Of Elite Competition

"It is not our job to regulate the entire sports shoe market but it is our duty to preserve the integrity of elite competition," said Sebastian Coe. He is president of World Athletics.

Experts viewed the changes as insufficient. Zanolto said there are reliable ways to test how much energy a shoe can store and recover. Regulations should be based on those, he said, and not simple measurements.

Shoe companies were also upset by the new regulations pertaining to test models. Hoy said there was no clear definition of "readily available." Orr said New Balance had planned to release some shoes after the 2020 Tokyo Olympics. Now it must rush them to stores by April to ensure its athletes can use them.

"Our biggest concern is, nobody picked up the phone and asked us what we thought or included us in the decision-making process," Orr said.

It will likely be a matter of time before the next leap forward, before the next controversial shoe stirs a similar conversation. How innovation affects competition is what matters to fans. What keeps the competition afloat, though, is a running shoe business that needs to sell the next great idea.

"I don't believe the gap between what Nike has created in this space vs. what we are capable of creating is significant," Hoy said. He hopes that, four years from now, one of his company's shoes might be the subject of the same conversation. "That's what keeps you moving forward."

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Quiz

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- 1 Which piece of evidence explains what caused the Vaporfly shoe to significantly increase runners' efficiency?
 - (A) The Vaporfly series, and the Alphafly series it began, broke barriers.
 - (B) The Vaporfly updates old ideas and uses them in new ways.
 - (C) Research showed that the shoes improved running economy by an average of 4 percent, a monumental total.
 - (D) The Guardian newspaper reported that the Next% could boost a runner's efficiency by 7 to 8 percent.
- 2 Which section of the article BEST explains why shoe companies were unhappy with new regulations related to early versions of running shoes?
 - (A) "The Essence Of Progress"
 - (B) "Using Old Ideas In New Ways"
 - (C) "A Missed Opportunity"
 - (D) "Preserving Integrity Of Elite Competition"
- 3 Based on the article, what is the MOST likely reason the author includes the perspective of Sebastian Coe?
 - (A) because he is president of track and field's governing body and therefore has a stake in the fairness of elite competition
 - (B) because some industry insiders suspect that the new shoe regulations are intended to give an advantage to one company
 - (C) because shoe companies have complained about the difficulty of innovating when the rules for footwear keep changing
 - (D) because his job is to show how rules on competitive running shoes are affecting athletes as they train for the 2020 Olympics
- 4 What is the author's purpose for writing this article?
 - (A) to illustrate the controversy surrounding recent innovations in running shoe technology and the running world's response to them
 - (B) to explain why competitive running's governing body has neglected to implement clear regulations on running shoes until recently
 - (C) to describe the various innovative features of the Nike Vaporfly line that allow it to significantly improve competitive runners' performance
 - (D) to show how Nike's competitors have responded to the Vaporfly shoe by introducing their own products with similar features

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Bearcat Day 27 (Study Guide Part 2)

1. Name

2. One-Step Equations with Integers: Adam and Blake solved the equations shown. Who solved their equation correctly? 1 p

 <p>ADAM</p> <div style="border: 2px solid black; padding: 10px; width: fit-content; margin: auto;"> $x - 12 = 41$ $x = 29$ </div>	<p>BLAKE</p> <div style="border: 2px solid black; padding: 10px; width: fit-content; margin: auto;"> $x + 14 = 52$ $x = 66$ </div>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Mark only one oval.

- ☐ Adam only
☐ Blake Only
☐ Both are correct
☐ Neither are correct

3. One-Step equations with rational numbers: The perimeter of a square is 75 inches. What is the length of one side of the square? 1 p

4. Two-Step Equations using Integers: $-4x + 26 = -2$ 1 p

5. Two-Step Equations using Integers: A waiter earns \$128 for 6 hours of work. The total included \$86 in tips. How much does the waiter earn each hour? 1 p

Mark only one oval.

- ☐ \$256
☐ \$21.33
☐ \$35.67
☐ \$7

6. Two-Step Equations using Rational Numbers: Teresa needs to save \$25.50 to go to the movies this weekend. She currently has \$3. If Teresa makes \$7.50 an hour babysitting, how many hours does she need to babysit this week? 1 p

Mark only one oval.

- ☐ 3 hours
☐ 5 hours
☐ 3.4 hours
☐ 6 hours

[Dictionary \(/dictionary\)](#)[Encyclopedia \(/encyclopedia\)](#)[Thesaurus \(/thesaurus\)](#)[Almanac \(/almanac/fact-monster-almanac-search-page\)](#)[Atlas \(/atlas\)](#)[Timelines \(/us/timeline-archive\)](#)[Home \(/\) / Science \(https://www.factmonster.com/science/science-technology\) /](https://www.factmonster.com/science/science-technology/)[E.encyclopedia Science \(/science/eencyclopedia-science-resources\) /](#)[PLANTS \(/science/plants-resources-0\)](#)

PLANT SURVIVAL

[DEFENCES \(/dk/encyclopedia/science/plant-survival#ESC1274PLASUR002\)](#)[TOUGH ALPINES \(/dk/encyclopedia/science/plant-survival#ESC1274PLASUR003\)](#)[HIGH UP ON A HOST \(/dk/encyclopedia/science/plant-survival#ESC1274PLASUR004\)](#)[XEROPHYTES \(/dk/encyclopedia/science/plant-survival#ESC1275XEROPH\)](#)[HALOPHYTES \(/dk/encyclopedia/science/plant-survival#ESC1275HALOPH\)](#)[FIND OUT MORE \(/dk/encyclopedia/science/plant-survival#ESC1274PLASUR_001\)](#)

Some plants have special features that help them to repel predators. Other plants can survive and even thrive in hostile environments, such as cold and rocky mountains. In areas of little rainfall, plants known as **XEROPHYTES** (/dk/encyclopedia/science/plant-survival#ESC1275XEROPH) have developed special methods for collecting and storing water. Another group of amazing plant survivors are known as **HALOPHYTES** (/dk/encyclopedia/science/plant-survival#ESC1275HALOPH). They can endure extremely salty regions, such as salt marshes, salt pans, and sand dunes.



Aquatic (water) plants face their own survival problems. A water lily's flowers either float at the surface or are held high on long stems. The upper surface of each leaf is waxy and repels water. The broad, flat leaves float on the water and are supported by long stalks. The stalks are filled with air chambers supplying oxygen for respiration.



Some plants use disguise to hide from plant-eating animals. Blending in with the background like this is called camouflage. With its fleshy, grey leaves, the pebble plant is difficult to spot against the surrounding pebbles – only its flowers give it away. Most of the time, animals mistake the leaves for real stones, and do not try to eat them.

DEFENCES

Plants cannot move away from predators, so they must defend themselves in other ways. Some have thorns or spines. Others have foul-tasting poisons in their leaves. Stinging nettle leaves are covered in fine hairs that are filled with poison. Each hair ends in a swollen, glassy tip. When touched, the tip breaks off, leaving a jagged end that can pierce flesh and inject the poison from the hollow hair.

TOUGH ALPINES

Known as alpine, mountain plants have to cope with strong sunshine, penetrating frost, and bitterly cold winds. Water may be scarce, too, as there is often low rainfall and thin, frozen soil. Alpines grow in dense cushions, which makes them less exposed. Fine hairs on their leaves reduce water loss and protect them from sun damage.

HIGH UP ON A HOST

The bromeliad lives in tropical rainforests. Seeking light, it grows high on the branches of a host tree, using its roots to anchor itself. The bromeliad's leaves direct any rainwater to the heart of the plant. Plants that fix themselves to other plants like this, but do not draw food from them, are called epiphytes.

XEROPHYTES

Plants that have adapted to cope with dry desert conditions are called xerophytes. Many do not have leaves, which would lose water through evaporation in the heat. Instead they may have defensive spines. Some xerophytes have shallow roots that absorb water quickly after rain. Others have very long taproots that extract water from deep in the ground.

WATER STORER

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Succulents are plants that have swollen, fleshy parts in which they store water. The best-known succulent plants are cacti like this one. A cactus stores water in its stem and can cope with the driest climates. The thick green stem is also used for photosynthesis, as the leaves have been modified into spines.

DESERT BLOOM

Ephemerals are plants that carpet a desert after rare rainfall. In the space of a few days, they sprout, grow, flower, and produce seeds. The seeds of some ephemerals are coated in a chemical that prevents germination until rain has washed the chemical away.

HALOPHYTES

Plants that have adapted to live in salty environments are called halophytes. Salt draws water out of the roots of most plants, slowly drying them out. Some halophytes have ways to get rid of excess salt. Others need a salty environment in order to survive. Halophytes are able to grow in salt marshes, shallow coastal waters, dry salt pans, and on sand dunes.

TROPICAL MANGROVE

Mangrove trees are halophytes that grow along tropical coasts. Their roots take in salt from the seawater. The salt is carried in the tree's sap up to old leaves, which are then shed, or to living leaves, which have glands that excrete the salt. Many mangroves have arching roots that are exposed at low tide. These roots have breathing pores for taking in oxygen from the air.

FIND OUT MORE

Coasts (/dk/encyclopedia/science/coasts)

Parasitic Plants (/dk/encyclopedia/science/parasitic-plants)

Plant Sensitivity (/dk/encyclopedia/science/plant-sensitivity)

Transpiration (/dk/encyclopedia/science/transpiration)

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PLANT SENSITIVITY

(/dk/encyclopedia/science/plant-sensitivity)

FLOWERING PLANTS

(/dk/encyclopedia/nature/flowering-plants)

FOOD PLANTS

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After reading the article on plant survival answer the following questions.

1. A _____ is a plant that has developed special methods for collecting and storing water.
2. _____ can live in very salty areas.
3. _____ is when plants and animals blend in with their surroundings.
An example of a plant that uses this survival method is _____.
4. What are plant defences and WHY are they important?

5. Why do Alpine trees have very fine hairs on their leaves?

6. _____ live high up in forests in order to collect more sunlight, they use another tree as a host but do not harm the other tree.
7. Xerophytes that live in dry regions may have very long roots to

8. Ephemerals are plants that grow in the desert, they often have flowers that bloom. In order to protect the seed it must be coated in a chemical that keeps it from germinating until _____
9. Mangrove trees are very unique. Identify and explain 2 ways these plants survive in their strange environment.

Setting the Stage

Civilizations of the Americas

In the last unit, you learned about Japan. In this unit, you will explore three great civilizations of the Americas: the Maya, the Aztecs, and the Incas.

These civilizations flourished in Central and South America. Although the region extended into the deserts of southern Mexico, most of the area was covered with dense vegetation. Pine forests covered the mountain highlands. Thick rain forests and jungles, broad grasslands, and swamps spread across the warmer, wetter lowlands.



More than 10,000 years ago, bands of hunter-gatherers crossed a land bridge that once linked Asia and North America. By 7000 B.C.E., Mesoamerica was home to many hunter-gather settlements.

Over time, people settled in small villages and began farming. They grew corn, beans, squash and other foods. As the population increased, different cultures, languages, and religions arose. People exchanged goods and ideas. Some settlements grew from centers of trade or religion into massive city-states.

In this unit, we'll focus primarily on the period from 300 C.E., when the Mayan civilization first reached its height, to the early 1500s C.E., at the end of the Aztec and Inca Empires.

The three civilizations we'll explore in this unit were different in many respects. But all three had a stable food supply; technology; a social structure with different jobs and status levels; a system of government; a religious system; and a highly developed culture that included architecture, art, and music.

Let's start our exploration of the Americas with the Maya.



◀ The Maya built entire cities of stone. The ruins of the ancient city of Tikal still stand.

The Maya

23.1 Introduction

Our journey through the Americas begins with an exploration of the **Mayan civilization**. This great civilization lasted 3,500 years, from about 2000 B.C.E. to 1500 C.E. At its peak, it included present-day southern Mexico and large portions of Central America. In this chapter, you will learn about some of the most important achievements of the Mayan civilization.

You can still see the ruins of some amazing stone cities built by the Maya. The ruins of the ancient city of Tikal (shown on the opposite page) lie deep in the Guatemalan jungle.

Imagine standing at the heart of this city in the year 750 C.E. You are in a large, open plaza surrounded by eight soaring temple-pyramids. They reach into the sky like mountains. On the ground, as far as you can see, are structures on raised platforms. The structures are painted in bright colors. Nearby, in the center of the city, you see large palaces made of hand-cut limestone blocks. These palaces are the homes of the ruler, priests, and nobles. Farther out are the stone houses of the merchants and artisans. At the very edge of the city, you glimpse thousands of small, thatched-roof house-mounds where the peasants live.

Tikal was only one of more than 40 Mayan cities. How did the Maya create such great cities and such an advanced civilization? In this chapter, you will trace the development of Mayan civilization. Then you will take a closer look at several aspects of Mayan **culture**, including **class structure, family life, religious beliefs and practices, and agricultural techniques**.



Use these drawings as a graphic organizer to help you remember key aspects of Mayan life.

Mesoamerica "Middle America," the region extending from modern-day Mexico through Central America

23.2 The Development of Mayan Civilization

While the Roman Empire was declining in western Europe, the Maya were creating an advanced civilization in the Americas. Mayan civilization reached its height between 300 and 900 C.E. During this time, Mayan culture spread over much of **Mesoamerica**, including part of present-day southern Mexico, Belize, most of Guatemala, and parts of Honduras and El Salvador.

The landscape in which the Maya lived varied greatly. In the south, pine forests covered the mountain highlands. In the northern and central regions were rainforests, grasslands, and swamps. These areas are known as the lowlands. Thick jungle covered the southern part of the lowlands. This is where Mayan civilization reached its highest development. Today this area is called the Peten region of Guatemala.

The Origins of Mayan Civilization

The Maya built their civilization in part on ideas they inherited from a people called the Olmec. The Olmec lived in the jungle areas on the east coast of Mexico. Their civilization reached its peak between 1200 and 500 B.C.E.

Like early civilizations in other parts of the world, the Olmec civilization was based on agriculture. By 2000 B.C.E., people in parts of Mexico had turned from hunting and gathering to farming as their main source of food. A particularly important crop was maize, or corn.

Farming allowed the Olmec to create permanent settlements. The Olmec established farming villages throughout the region. They also created trade routes that stretched for hundreds of miles.

By 1400 B.C.E., the Olmec had a capital city that boasted palaces, temples, and monuments. They were the first Mesoamericans to develop large religious and ceremonial centers. They

were also the first to use a solar (sun) calendar. The Maya would build on all these achievements.

Three Periods of Mayan Civilization Mayan civilization began to arise in eastern and southern Mexico around 2000 B.C.E. Historians divide the history of Mayan civilization into three main periods: Pre-Classic, Classic, and Post-Classic.

The long Pre-Classic period lasted from about 2000 B.C.E. to 300 C.E. During this time, the Maya farmed the land and lived in simple houses and compounds, or groups of buildings.



One of the most extraordinary achievements of the Olmec was their monumental stone heads, believed to be portraits of their leaders. More than 30 such heads have been discovered. They stand over 8 feet high and weigh about 10 tons. The massive heads were sculpted without the use of metal tools.

Gradually, Mayan culture became more complex. As the Mayan population grew, settlements became larger. The Maya began constructing public buildings for governmental and religious purposes. About 50 B.C.E., they began to adapt the writing system of the Olmec and develop their own system of **hieroglyphic** writing. Mayan civilization reached its peak during the Classic period, from around 300 to 900 C.E. The achievements you will study in this chapter date from this time.

During the Classic Period, the Maya adapted and developed ideas they had learned from the Olmec. For example, they improved on Olmec building techniques. Even though the Maya lacked metal tools and had not discovered the wheel, they built enormous stone cities that boasted elaborate and highly decorated temple-pyramids and palaces. The Maya also built observatories for studying the heavens. They charted the movements of the moon, stars, and planets. They used their knowledge of astronomy and mathematics to create complex and highly accurate calendars.

Mayan society during the Classic period consisted of many independent states. Each state had farming communities and one or more cities. At its height, the Mayan Empire included over 40 cities, including Tikal, Copan, Chichen Itza, and Palenque.

Around 900 C.E., the Classic civilization collapsed. The Maya abandoned their cities in the southern lowland area, and the great cities fell into ruin in the jungle. No one knows for certain why this happened. At the end of this chapter, we will look at some theories that may explain the mystery.

To the north, on the Yucatan Peninsula, Mayan cities continued to prosper during the Post-Classic period. This period lasted from about 900 C.E. to 1500 C.E. During this time, the Maya continued their warfare and empire building, but they had fewer great artistic and cultural achievements.

Even at the height of their empire, the Maya were not one unified nation. Instead they lived in many city-states with separate governments. What united them as Maya was their common culture: their social system, languages, calendar, religion, and way of life. Let's take a closer look at some aspects of Mayan culture, starting with class structure.

hieroglyphic writing that uses pictures as symbols



The social pyramid of the Mayan civilization shows the ruler of each city-state at the top with the rest of Mayan society below him. Each layer of the pyramid represents a different group of people and their level of importance in the society. Notice that there are many more people at the bottom of the pyramid than at the top.



23.3 Class Structure

During the Classic period, the Maya lived in independent city-states, like Tikal. Within each state, Mayan society was structured like a pyramid. The ruler of each city-state was at the top of the **social pyramid**. The rest of Mayan society was organized in a series of layers below him.

The Ruler The highest authority in the state was the *halach uinic*, a Mayan word that means "true man." He ruled the state with the help of his advisors. He decided when and where to go to war.

The Mayan ruler was considered a god-king. During religious ceremonies, he wore a headdress that was as tall as a person. When he died, a son or other close male relative succeeded him. Mayan rulers were almost always men, but scholars believe that women had considerable influence, probably through family relationships.

Nobles and Priests The next layer in the social pyramid was made up of nobles and priests. They were the only members of Mayan society who knew how to read and write.

The nobles served as officials, and oversaw the administration of the states. They gathered taxes, supplies, and labor for projects like the construction of temples. Nobles led peasant armies in times of war. During battles, they wore elaborate costumes, including gold jewelry and animal robes made from the skin of jaguars.

Priests were important because they maintained favor with the gods. Like nobles, they inherited their position from their fathers. Priests led rituals, offered sacrifices, and foretold the future. They were consulted to determine the best days for going into battle. In addition to their religious duties, priests were often mathematicians, astronomers, and healers.

social pyramid a social structure in the shape of a pyramid, with layers representing social classes of different rank or status

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Merchants and Artisans Although the Mayan economy was based mostly on farming, trade and crafts were also important. These functions were carried out by merchants and artisans.

The Maya were accomplished traders. They traveled by sea, river, and well-constructed roads to trade with other city-states. Merchants in the lowlands imported valuable products from the highlands. These products included stones such as obsidian and jade; *copal*, a tree sap that the Maya used as incense during religious ceremonies; and *quetzals*, birds with shiny green feathers used in headdresses.

Mayan artisans made a wide variety of objects, many of them designed to pay tribute to the gods. They painted books on paper made from the bark of fig trees. Artists painted murals, or wall paintings, of Mayan life and important battles. They created sculptures for temples and decorative designs on palace walls. The Maya were also skilled weavers and potters.

Peasants The peasants were the backbone of Mayan society. They worked hard on the land, growing maize, squash, beans, and other crops to feed the population. During the growing season, men spent most of the day in the fields, farming with wooden hoes. Women usually stayed closer to home, preparing food, weaving, and sewing.

When they were not working on the land, peasants spent time building pyramids and temples. In exchange for their work, they sometimes attended royal weddings and religious events. Peasants also served as soldiers during wars.

Slaves At the bottom of the social pyramid were the slaves. Slaves performed manual labor for their owners. Some were born into slavery, but free people sometimes became slaves. Some children became slaves when their parents sold them for money to feed the rest of the family. War prisoners of humble origin were made slaves. (Those of higher rank were sacrificed to the gods.) And some people were made slaves as a punishment for serious crimes.

In general, slaves were not treated badly. Sometimes they actually had easier lives than peasants, depending on what job they did and where their masters lived. But slaves were not free to come and go as they pleased. Often they were sacrificed when their masters died.

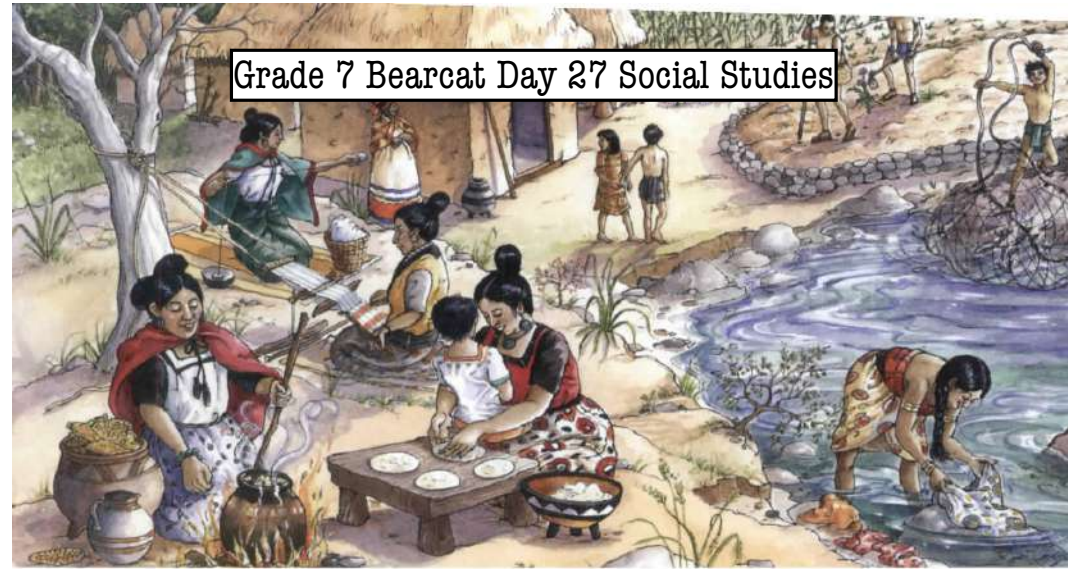
Now that we've looked at the Mayan class structure, let's take a look at what daily life was like for the majority of Maya: the peasants.

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Slaves in Mayan society performed a variety of tasks for their masters.

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Mayan families had many daily tasks, including weaving, cooking, washing clothes, fishing, and working the land.

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23.4 Family Life

In city-states like Copan (in present-day Honduras), Mayan peasants lived in one-room huts built of interwoven poles covered with dried mud. Several family houses were often grouped around a courtyard. A house containing the kitchen was often placed directly behind the main house. Peasant families worked hard, but ceremonies and **rituals** provided a break from work and a chance to honor important events.

Duties of Family Members Life for Mayan peasant families was not easy. Mayan women rose before dawn to get the fire burning in the fireplace. With the help of her daughters, a Mayan woman cleaned the corn that had been boiled and left to soak and soften overnight. Then she set to work at the grinding stone, pounding corn into meal. She patted the meal into *tortillas* (a Spanish word meaning "little breads") or *tamales* and cooked them over the fire. These might serve as the morning meal, or they might be saved for dinner. On special days, they might also have hot chocolate, a drink the Maya made from cacao beans.

During the day, women and older girls cared for small children and for the family's few animals, like ducks and turkeys. They swept their homes, and they gathered, spun, and wove cotton into cloth.

Mayan fathers and sons ate their morning meal quickly before leaving to work the fields. When they weren't busy with the crops, men and boys hunted and trapped animals. They also helped construct large buildings such as palaces and temples. In times of war, peasant men served as soldiers.

Special Occasions Although Mayan families worked hard, they also took time to celebrate the important events in their lives. The

ritual a set of actions that is always performed the same way as part of a religious ceremony

birth of a child was a time of rejoicing. As soon as possible after the birth, the family called in a priest to perform a ceremony much like baptism. The priest forecast the baby's future and gave advice to help guide the parents in raising the child.

At three months of age, girls went through another ceremony. The number 3 was special to Mayan women because it represented the three stones of the fireplace. In the three-month ceremony, the baby girl was introduced to the tools she would use throughout her life. Small items were placed in the baby's hands, such as tools for spinning and weaving, carrying water and cooking, and soaking and grinding maize.

A similar ceremony was held for boys at four months of age. The number 4 was special to Mayan men. It represented the four sides of the plot of land where a boy would spend his life. The baby boy was given farmer's tools, such as axes and planting sticks, and the spears, knives, and traps of a hunter.

Another important ceremony in every Mayan child's life was the **coming-of-age ceremony**. Girls went through this ceremony at the age of 12, boys at 14. The long ceremony involved confessions, cleansing with water, and reciting the rules of behavior. Finally, the priest cut a white bead from the boys' hair and removed a string of red shells from around the girls' waists. Boys and girls had worn these symbols of innocence since they were quite young.

Marriage Customs The next big event for a Mayan youth was marriage. Men usually married around the age of 20. Girls married when they were as young as 14.

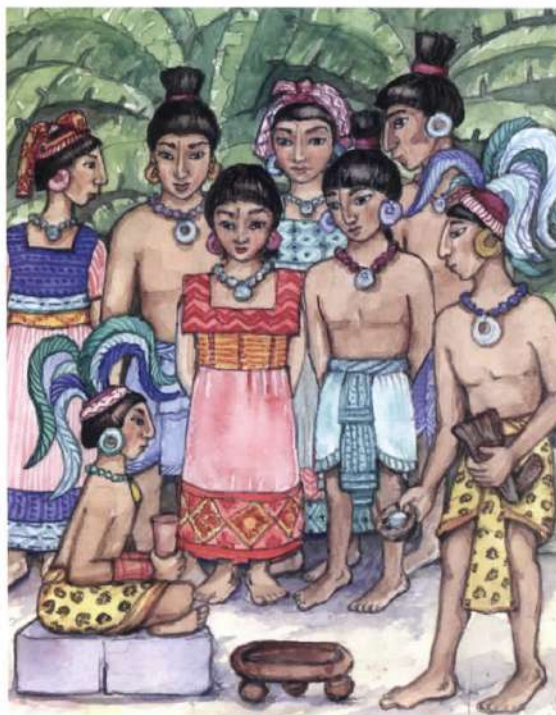
The bride and groom did not choose each other. Instead, marriages were negotiated by the village *atanzahab*, or matchmaker. These negotiations were not simple. Families had to agree on how much food and clothing would be given to the bride's family. They also had to agree on the number of years a young man would work for his new wife's family.

Once the details of a marriage were worked out, the villagers built a hut for the couple behind the home of the bride's parents. When the home was ready, the bride and groom put on clothing woven for the occasion. After a priest blessed the marriage, the villagers celebrated.

Clearly, rituals and ceremonies were an important part of daily life to the Maya. Let's look more closely at Mayan religious beliefs and practices.

coming-of-age ceremony
a ceremony that celebrates the
end of childhood and acceptance
into the adult community

The marriage ceremony was an
important event in the life of a young
Mayan man or woman.



The Maya 265

sacrifice a gift of an animal for
slaughter as a way to honor gods

23.5 Religious Beliefs and Practices

Religion was very important to the Maya. The Maya built their cities around ceremonial and religious centers. Their magnificent temple-pyramids rose high above the jungle canopy, like mountains reaching into the sky. Temple plazas provided gathering places for people to attend rituals and ceremonies.

Scholars have learned about the Mayan religion from studying present-day Mayan practices, ancient artifacts, and documents written during the Post-Classic period. Here are some of the things they have discovered.

Beliefs and Rituals The Mayan religion was polytheistic, which means it included many gods. In fact, the Maya believed in more than 160 gods. The primary Mayan gods were forces or objects in nature that affected people's daily lives, like the god of rain, the god of corn, and the god of death. Many gods had animal characteristics. The jaguar was especially important to the Maya.

The Maya believed that the gods had created the world and could influence or even destroy it. The same god that sent life-giving rain could also ruin the crops with hailstones. So, it was extremely important to honor the gods.

According to Mayan beliefs, only priests could explain signs and lead people through rituals aimed at pleasing the gods. Priests per-

formed **sacrifices** and conducted ceremonies. They consulted sacred books, read omens, interpreted signs, and predicted the future. No decision was made without seeking the gods' advice. No action was taken without first honoring the gods.

The Maya honored their gods with offerings such as plants, food, flowers, feathers, jade, and shells. The Maya believed that blood gave the gods strength, so they also made blood offerings by sacrificing animals and, sometimes, humans. The people who were sacrificed were usually orphans, slaves, and nobles captured during war.

In the ancient city of Chichen Itza, on the Yucatan Peninsula, humans were sacrificed by being

In this reproduction of a Mayan painting, a richly dressed priest is being served by slaves during a Mayan religious ceremony.



thrown into a sacred well whose water level was 60 feet below the ground. Any victims who survived the fall were pulled from the water and asked what message they had brought back from the gods.

Human sacrifice played a role in an ancient Mayan game called **pok-a-tok**. Every Mayan city had at least one ball court where the game was played. Scholars believe that there were two teams of nobles. Players tried to hit a solid rubber ball through a stone ring by using their leather-padded elbows, wrists, and hips. People from all levels of Mayan society watched and placed bets on the outcome of the game. Slaves, land, and homes could be won and lost during a game. Surviving art from the ball courts shows members of the losing team being sacrificed and the captain of the defeated team being beheaded.

The Sacred Calendar The Maya used their knowledge of mathematics and astronomy to develop a complex calendar system. Two main calendars were used for religious and other purposes. The first was a daily calendar, based on the solar (sun) year. It divided the year into 18 months of 20 days each, plus 5 “unlucky” days. This totaled 365 days, as in our calendar.

The second calendar was the sacred or ritual calendar. It was called the *tzolkin*, or Sacred Round. The Sacred Round was based on 13 months of 20 days each, making 260 days in all. It had two cycles that worked together to identify a particular day. One cycle was made up of the numbers 1 to 13. The other cycle was a set of 20 day names. Each of the day names represented a particular god. Every 260 days, a given combination of numbers and day names, such as 1 Ik, would occur.

Only priests could “read” the hidden meaning of the Sacred Round. Priests used the sacred calendar to determine the best days to plant, hunt, cure, do battle, and perform religious ceremonies. To this day, there are calendar priests in southern Mexico who use the 260-day calendar in this way.

Like Mayan art and architecture, the calendar system reflects a highly advanced civilization. This civilization was made possible by the ability of the Maya to create a stable food supply. Next you’ll learn about the agricultural techniques the Maya used to ensure that they had sufficient food.



This is the ball court at the ancient Mayan city of Chichen Itza. Notice the height of the stone rings embedded in the walls.

pok-a-tok a Mayan ball game that had religious significance

23.6 Agricultural Techniques

The Maya were creative, skillful farmers. They used their knowledge of calendars and seasonal change to help them become even better at growing food. But Mayan farmers faced many challenges. In the end, crop failure may have played a key role in the collapse of the Classic Mayan civilization.

Challenges Facing Mayan Farmers

Farmers The primary Mayan food was maize, or corn. Other typical Mayan crops were beans, squash, and chili peppers. Fortunately, beans and squash, when eaten with corn, supply people with a naturally healthful and balanced diet.

One of the most difficult challenges the Maya faced was how to grow enough food to feed their growing population. Farming was not easy in the regions where they lived. Their land included dense forests, little surface water (such as lakes or streams), and poor soil.

The Maya responded to this challenge by developing different agricultural techniques for the various environments in which they lived. In the mountainous



Cutting and burning plants and trees is an easy way to clear land for farming, and the ash from the fire helps fertilize crops. However, this slash-and-burn technique uses up the soil quickly and can be dangerous, as fires sometimes get out of control.

highlands, they built terraces, or earth steps, into the hills to create more flat land for planting. In the swampy lowlands, the Maya constructed raised-earth platforms surrounded by canals that drained off extra water. This technique helped them to grow more food without having to increase the amount of land they used.

A different technique was used in the densely forested lowland areas. In city-states like Palenque (in present-day Mexico), the Maya used **slash-and-burn agriculture**. First they cleared the land by cutting and burning plants and trees. Then they planted their crops. Unfortunately, this kind of farming wears out the soil. Lowland soil was not very rich to begin with, so land that was planted for 2 to 4 years had to be left to rest for 2 to 10 years. Slash-and-burn farmers had to have a lot of land, since each year some areas were planted while others were recovering.

The Mayan agricultural system worked as long as settlements were spread out and not too large. As populations increased, the Maya had trouble raising enough food to feed everyone. In the constant quest for land, they drained swamps and cleared hillsides. They also used household gardens in the cities to increase the amount of land available for growing food.

slash-and-burn agriculture a farming technique in which vegetation is cut away and burned to clear land for growing crops

The End of the Classic Period Creative agricultural techniques were not enough to save the Classic Mayan civilization. For about 600 years, the great cities of the southern lowlands thrived. Then, in the space of 50 to 100 years, the civilization that supported these centers fell apart. By 900 C.E., the Maya had abandoned their cities to the jungle.

The collapse of the Classic Mayan civilization is one of the great mysteries of Mesoamerican history. Many theories have been proposed to explain what happened. Some historians believe that the populations of the cities grew faster than the Mayan farming systems could sustain them. Scholars have also proposed that long periods of drought, or dry weather, caused massive crop failure.

Another possible cause of the Maya's downfall was uncontrolled warfare. In the centuries after 300 C.E., the skirmishes that were common among city-states escalated into full-fledged wars. A final possibility is that invaders from central Mexico helped to destroy the Mayan city-states.

Perhaps a combination of factors brought an end to the Classic period. What we do know is that the great cities disappeared. The Maya migrated away from the old Mayan heartland and returned to village life. Stone by stone, the jungle reclaimed the great pyramids and plazas.

Although the great Mayan cities are ruins today, Mayan culture lives on. About 2 million Maya still live in the southern Mexican state of Chiapas. Millions more are spread throughout the Yucatan Peninsula and the cities and rural farm communities of Belize, Guatemala, Honduras, and El Salvador.



The walls of Mayan tombs were painted with scenes of important events and daily life. This tomb painting is of warriors in battle.

23.7 Chapter Summary

In this chapter, you read about the rise of the Mayan civilization. This great civilization was developed in three main periods: Pre-Classic, Classic, and Post-Classic.

The Maya's greatest cultural achievements came during the Classic period. In studying this period, you explored the Maya's complex social structure and their family life, religion, and farming techniques. In the next chapter, you will learn about the next great civilization that arose in Mesoamerica: the Aztec Empire.

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Instructions: Please read the chapter and answer the questions below.

23.3 The Class Structure

1. Below are the five levels of the Mayan class structure. For each class, list two important details about that group's duties, work, or lifestyle.
- a. The Ruler -
 - b. Nobles & Priests -
 - c. Merchants & Artisans -
 - d. Peasants -
 - e. Slaves -

23.5 Religious Beliefs & Practices

2. After reading about the religious beliefs and practices of the Mayans, list two important pieces of information about each of the following:
- a. Mayan gods -
 - b. Offerings and sacrifices -
 - c. Pok-a-tok -
 - d. The Sacred Round -

23.6 Agricultural Techniques

3. After reading about agricultural techniques, fill out the chart below:

Crops - List three crops the Mayans planted	Agricultural Techniques - Describe three agricultural techniques used by the Maya. Tell what kind of environment each was used	Theories for Decline of the Mayan Civilization - List three theories for the decline of the Mayan civilization.