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Muslim Achievement

TERMS & NAMES

- House of Wisdom
- calligraphy

MAIN IDEA

Muslims combined and preserved the traditions of many peoples and also advanced learning in a variety of areas.

WHY IT MATTERS NOW

Many of the ideas developed during this time became the basis of today's scientific and academic disciplines.

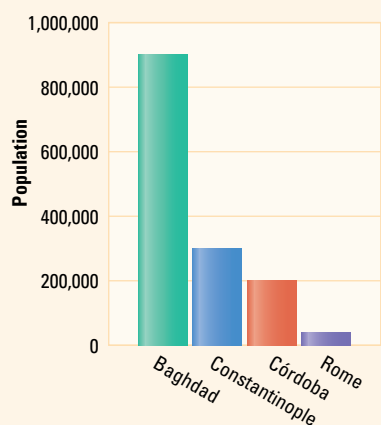
SETTING THE STAGE The Abbasids governed during a prosperous age of Muslim history. Riches flowed into the empire from all over Europe, Asia, and Africa. Rulers could afford to build luxurious cities. They supported the scientists, mathematicians, and philosophers that those cities attracted. In the special atmosphere created by Islam, the scholars preserved existing knowledge and produced an enormous body of original learning.

Muslim Society

Over time, the influence of Muslims grew as the empire encompassed people from a variety of lands. Jobs in the bureaucracy and in the army were available to many different groups. At centers of learning in Syria, Persia, Spain, and Egypt, the halls

echoed with the Arabic language, the language of the Qur'an. The many cultural traditions combined with the Arabic culture to create an international flavor. Muslim society had a sophistication matched at that time only by the Tang Empire of China. That cosmopolitan character was most evident in urban centers.

Urban Centers, A.D. 900



Source: Tertius Chandler and Gerald Fox, *3,000 Years of Urban Growth*.

SKILLBUILDER:
Interpreting Graphs

1. How much larger in population was Baghdad than Córdoba?
2. How would the population of the largest city in your state compare to the population of Baghdad in A.D. 900?

The Rise of Muslim Urban Centers Throughout the empire, market towns blossomed into cities. Migrants from the countryside and new converts came to cities looking for opportunities. Until the construction of Baghdad, Damascus was the leading city. Damascus was known for fine cloth called damask and for outstanding steel swords and armor. It was also the cultural center of Islamic learning. Other cities grew up around power centers, such as Córdoba, the Umayyad capital, and Cairo, the Fatimid capital. (See the map on page 241.) Urban centers, which symbolized the strength of the dynasty, grew to be impressive.

The Abbasid capital, Baghdad, impressed all who saw it. Caliph al-Mansur chose the site for his capital on the west bank of the Tigris River, in 762. Extensive planning went into the city's distinctive circular design, formed by three circular protective walls. The caliph's palace of marble and stone sat in the innermost circle, along with the grand mosque. Originally, the main streets between the middle wall and the palace were lined with shops. Later, the marketplace moved to a district outside the walls. Baghdad's population approached one million at its peak.

Four Social Classes Baghdad's population, made up of different cultures and social classes, was typical for a large Muslim city in the eighth and ninth centuries. Muslim society was made up of

four classes. The upper class included those who were Muslims at birth. Converts to Islam were found in the second class. This class paid a higher tax than the upper class,

**THINK THROUGH HISTORY****A. Summarizing**

What were the four classes of Muslim society?

but lower than other classes of non-Muslim people. The third class consisted of the “protected people” and included Christians, Jews, and Zoroastrians. The lowest class was composed of slaves. Many slaves were prisoners of war, and all were non-Muslim. Slaves most frequently performed household work or fought in the military.

Role of Women The Qur’an states, “Men are the managers of the affairs of women,” and “Righteous women are therefore obedient.” However, the Qur’an also declares that men and women, as believers, are equal. The shari’a gave Muslim women specific legal rights concerning marriage, family, and property. Muslim women had more rights than European women of the same time period. The Qur’an provided for the care of widows and orphans, allowed divorce, and protected the woman’s share of an inheritance.

Responsibilities of Muslim women varied with the income of their husbands. The wife of a poor man would often work in the fields with her husband. Wealthier women supervised the household and its servants. They had access to education, and among them were poets and scholars. Rich or poor, the woman was responsible for the raising of the children. In the early days of Islam, women could also participate in public life and gain an education.



In a miniature painting from Persia, women are shown having a picnic in a garden. Gardens were seen as earthly representations of paradise.

Muslim Scholarship Extends Knowledge

Muslims had practical reasons for supporting the advancement of science. Rulers wanted qualified physicians treating their ills. The faithful throughout the empire relied on mathematicians and astronomers to calculate the times for prayer and the direction of Mecca. The energy that Muslims devoted to preserving and extending knowledge, however, went beyond practical concerns. Their attitude reflected a deep-seated curiosity about the world and a quest for truth that reached back as far as the Prophet. Muhammad himself believed strongly in the power of learning:

A VOICE FROM THE PAST

Acquire knowledge. It enableth its possessor to distinguish right from wrong; it lighteth the way to Heaven; it is our friend in the desert, our society in solitude, our companion when friendless; it guideth us to happiness; it sustaineth us in misery; it is an ornament amongst friends, and an armour against enemies.

MUHAMMAD, quoted in *The Sayings of Muhammad*

THINK THROUGH HISTORY**B. Recognizing**

Effects What are the nine valuable results of knowledge according to Muhammad?

The Prophet’s emphasis on study and scholarship led to strong support of places of learning by Muslim leaders. After the fall of Rome in A.D. 476, Europe entered a period of upheaval and chaos, an era in which scholarship suffered. The scientific knowledge gained up to that time might have been lost. Thanks to Muslim leaders and scholars, much of that knowledge was preserved and expanded. Both Umayyads and Abbasids encouraged scholars to collect and translate scientific and philosophical texts. In the early 800s, Caliph al-Ma’mun opened in Baghdad a combination library, academy, and translation center called the **House of Wisdom**. There, scholars of



different cultures and beliefs worked side by side translating texts from Greece, India, Persia, and elsewhere into Arabic.

Arts and Sciences Flourish in the Muslim World

Scholars at the House of Wisdom included researchers, editors, linguists, and technical advisers. These scholars developed standards and techniques for research that are a part of the basic methods of today's research. Some Muslim scholars incorporated Greek ideas into their own work in fresh new ways. Others created original work of the highest quality. In these ways, Muslims in the Abbasid lands, especially in Córdoba and Baghdad, set the stage for a later revival of European learning. Muslim contributions in the sciences were most recognizable in medicine, mathematics, and astronomy.

Global Impact



Medical Reference Books

When Europeans learned that Muslims had preserved important medical texts, they wanted to translate the texts into Latin. In the 11th century, scholars traveled to libraries in places such as Toledo, Spain, where they began translating—but only after they learned to read Arabic.

Through this process, European medical schools gained access to vital reference sources such as al-Razi's *Comprehensive Book* and Ibn Sina's *The Canon of Medicine*. Ibn Sina's five-volume encyclopedia guided doctors of Europe and Southwest Asia for six centuries. For nearly 500 years, al-Qasim's work, *The Method*, which contained original drawings of some 200 medical tools, was the foremost textbook on surgery in Europe.

Medical Advances A Persian scholar named al-Razi (Rhazes) was the greatest physician of the Muslim world and, more than likely, of world civilization between A.D. 500 and 1500. He wrote an encyclopedia called the *Comprehensive Book* that drew on knowledge from Greek, Syrian, Arabic, and Indian sources as well as on his own experience. Al-Razi also wrote a *Treatise on Smallpox and Measles*, which was translated into several languages. He believed patients would recover more quickly if they breathed cleaner air. To find that location, he hung shreds of meat all around Baghdad. He observed which shreds spoiled more slowly, perhaps because of cleaner air. Then he made a recommendation for the location of a hospital.

Math and Science Stretch Horizons Among the ideas that Muslim scholars introduced to modern math and science, two especially stand out. They are the reliance on scientific observation and experimentation, and the ability to find mathematical solutions to old problems. As for science, Muslims translated and studied Greek texts. But they did not follow the Greek method of solving problems. Aristotle, Pythagoras, and other Greek thinkers preferred logical reasoning over uncovering facts through observation. Muslim scientists preferred to solve problems by conducting experiments in laboratory settings.

Muslim scholars believed, as Aristotle did, that mathematics was the basis of all knowledge. Al-Khwarizmi, a mathematician born in Baghdad in the late 700s, studied Indian rather than Greek sources. He wrote a textbook in the 800s explaining “the art of bringing together unknowns to match a known quantity.” He called this technique *al-jabr*—today called algebra.

Many of the advances in mathematics were related to the study of astronomy. The sciences of mathematics and optics, along with scientific observation, led to major advances in astronomy. Muslim observatories charted stars, comets, and planets. Ibn al-Haytham (Alhazen), a brilliant mathematician, produced a book called *Optics*

that revolutionized ideas about vision. Through thoughtful experiments, Ibn al-Haytham showed that people see objects because rays pass from the objects to the eyes, not from the eyes to the objects as was commonly believed. His studies about optics were used in developing lenses for telescopes and microscopes.

Philosophy and Religion Blend Views In addition to scientific works, scholars at the House of Wisdom in Baghdad translated works of philosophers like Aristotle and Plato into Arabic. In the 1100s, Muslim philosopher Ibn Rushd (Averroës), who lived in Córdoba, tried in his writings to harmonize Aristotle's and Plato's views with those of Islam. Some Islamic religious thinkers attacked Ibn Rushd for using Greek philosophical methods to interpret the shari'a. However, Ibn Rushd

Background

Europeans changed Arabic names to ones they could pronounce. You will see the European names in parentheses.

Background

ibn is a word used to mean “the son of.”



SCIENCE & TECHNOLOGY

Astronomy

Muslim interest in astronomy developed from the need to fulfill three of the Five Pillars of Islam—fasting during Ramadan, performing the hajj, and praying toward Mecca.

A correct lunar calendar was needed to mark religious periods such as the month of Ramadan and the month of the hajj. Studying the skies helped fix the locations of cities so that worshipers could face toward Mecca as they prayed. To correctly calculate the locations, Muslim mathematicians developed trigonometry. Cartographers (mapmakers) illustrated the information.

The cartographer al-Idrisi prepared this map as part of a series of maps for a ruler of Sicily. The maps were done in the 1100s. The map below of the world looks upside down to modern eyes because North is at the bottom. The body of water at the right is the Mediterranean, and the Arabian Peninsula juts out into the Indian Ocean.



The astrolabe was an early scientific instrument used by Muslims and others to measure the angles of the sun and the stars above the horizon. It was like a very simple computer. The device was a brass disk engraved with a star map and having a movable bar used for sighting the angle of the sun or stars. To find the location north or south of the equator, the user rotated the rings to the positions of the stars on any given night.



Before telescopes, observations of the skies were made with the naked eye. The device shown above is called an armillary sphere. By aligning the top rings with various stars, astronomers could calculate the time of day or year. This aided in setting the calendar correctly. Muslims had a number of observatories. The most famous one was located at Samarkand, which is in modern Uzbekistan.

Connect to History

Recognizing Effects How did fulfilling religious duties lead Muslims to astronomy and a better understanding of the physical world?

 SEE SKILLBUILDER HANDBOOK, PAGE R6

Connect to Today

Researching Muslim astronomers developed instruments to improve their observations of the sky. Today, there are telescopes both on earth and in space. Do some research to find out what new information is being discovered from the Hubble telescope in space.



HISTORY MAKERS

Ibn Khaldun 1332–1406

Ibn Khaldun was literally a history maker. He produced a massive history of Muslim North Africa. However, Arnold Toynbee, a 20th-century historian, called Ibn Khaldun's Islamic history masterpiece *Muqaddimah* (an introduction to history) "the greatest work of its kind that has ever yet been created by any mind in any time or place."

In his six-volume study of world civilization, Ibn Khaldun introduced the ideas of sociology, economics, politics, and education and showed how they combined to create historical and social change.

He also established principles for writing about history that required historians to examine critically all facts they presented.

argued that Greek philosophy and Islam both had the same goal: to find the truth.

Moses Ben Maimon (Maimonides), a Jewish physician and philosopher, was born in Córdoba and lived in Egypt. Like Ibn Rushd, he faced strong opposition for his ideas, but he came to be recognized as the greatest Jewish philosopher. Writing during the same time as Ibn Rushd, Maimonides produced a book, *The Guide of the Perplexed*, that blended philosophy, religion, and science.

Muslim Literature Literature was a strong tradition in Arabia before Islam. Bedouin poets, reflecting the spirit of desert life, composed poems celebrating ideals such as bravery, love, generosity, and hospitality. Those themes continued to appear in poetry written after the rise of Islam.

The Qur'an, held sacred by Muslims, is the standard for all Arabic literature and poetry. Early Muslim poets sang the praises of the Prophet and of Islam and, later, of the caliphs and other patrons who supported them. During the age of the Abbasid caliphate, literary tastes expanded to include poems about nature and the pleasures of life and love.

The Sufis were especially known for their poetry that focused on mystical experiences with God. The following poem by the greatest of all Sufi poets, Rumi, describes an experience of sensing God:

A VOICE FROM THE PAST

As salt resolved in the ocean
I was swallowed in God's sea,
Past faith, past unbelieving,
Past doubt, past certainty.

Suddenly in my bosom
A star shone clear and bright;
All the suns of heaven
Vanished in that star's light.

JALAL AL-DIN RUMI, translated by A. J. Arberry, *Persian Poems*

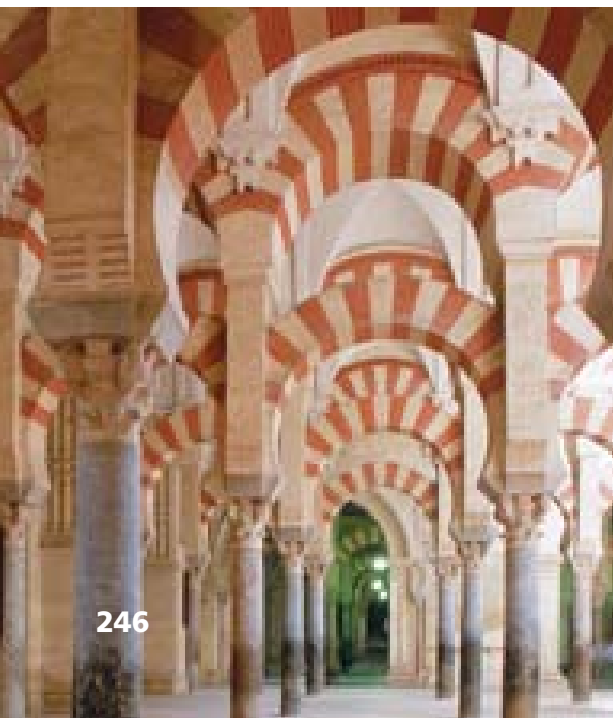
Popular literature included *The Thousand and One Nights*, a collection of entertaining stories that included fairy tales, parables, and legends. The core of the collection has been linked to India and Persia, but peoples of the Muslim Empire added stories and arranged them, beginning around the 10th century.

Muslim Art and Architecture As they expanded, the Arabs entered regions that had rich artistic traditions. These traditions continued, with modifications inspired, and sometimes imposed, by Islam. For example, Islam forbade the depiction of living beings, based on the idea that only Allah can create life.

Thus, picturing living beings was considered idolatry. With the drawing of such images prohibited, many artists turned to **calligraphy**, or the art of beautiful handwriting. Others expressed themselves through the decorative arts, such as woodwork, glass, ceramics, and textiles.

It is in architecture that the greatest cultural blending of the Muslim world can be seen. To some extent, the location of a building reflected the culture of people of the area. For example, the Great Mosque of Damascus was built on the site of a Christian church. In many ways, the huge dome and vaulted ceiling of the mosque blends Byzantine architecture with Muslim ideas. In Syrian areas, the architecture includes features that were very Roman, including baths using Roman heating systems. In Córdoba, the Great Mosque incorporated multi-lobed interwoven arches in a style unknown before. The style

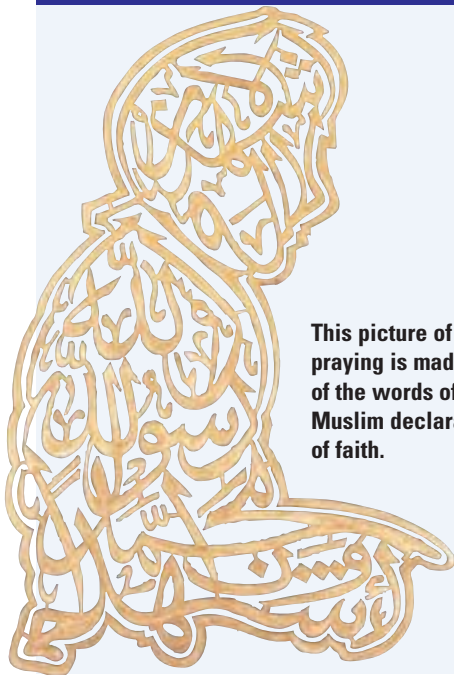
This interior view of the Great Mosque of Córdoba shows a new architectural style. Two tiers of arches support the ceiling.



Background

"Aladdin" and "Ali Baba and the Forty Thieves" are popular tales from *The Thousand and One Nights*.

HISTORY THROUGH ART: Calligraphy



This picture of a man praying is made up of the words of the Muslim declaration of faith.



The bird's body is made up of words of a statement of faith.

Calligraphy, or ornamental writing, is important to Muslims because it is considered a way to reflect the glory of Allah. In pictorial calligraphy, pictures are formed using the letters of the alphabet. Prayers are written in the shape of a bird, plant, boat, or other object.

Connect to History

Clarifying How would these images help Muslims practice their religion?

SEE SKILLBUILDER HANDBOOK, PAGE R3

Connect to Today

Comparing With what kinds of art do other religions in the modern age express their religious ideas?

was based on principles used in earlier mosques. These blended styles appear in all the lands occupied by the Muslims.

The values of many cultures were recognized by the Muslims and combined with Islamic values. A 9th-century Muslim philosophical society showed that it recognized the empire's diverse nature when it described its "ideal man":

A VOICE FROM THE PAST

The ideal and morally perfect man should be of East Persian derivation, Arabic in faith, of Iraqi education, a Hebrew in astuteness, a disciple of Christ in conduct, as pious as a Greek monk, a Greek in the individual sciences, an Indian in the interpretation of all mysteries, but lastly and especially a Sufi in his whole spiritual life.

IKHWAN AS-SAFA, quoted in *The World of Islam*

THINK THROUGH HISTORY

C. Drawing

Conclusions What is the advantage of blending various traditions within a culture?

The elements of Muslim life remained and blended with local culture wherever Islam spread. Though the unified Muslim state broke up, Muslim culture continued. Three Muslim empires, the Ottoman, the Safavid, and the Mughal, would emerge that would reflect the blended nature of the culture of this time. The knowledge developed and preserved by the Muslim scholars would be drawn upon by European scholars in the time known as the Renaissance, beginning in the 14th century.

Section 3 Assessment

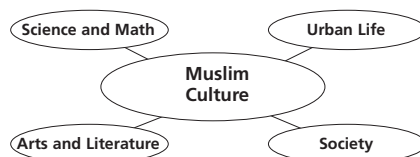
1. TERMS & NAMES

Identify

- House of Wisdom
- calligraphy

2. TAKING NOTES

Create a web diagram like the one below, showing the key elements of Muslim culture. In each circle write 3 aspects of that element.



Which of these most strengthened the Abbasid rule? Explain.

3. EVALUATING

List what you consider to be the five most significant developments in scholarship and the arts during the reign of the Abbasids. Explain the standards you used to make your selections.

THINK ABOUT

- reasons for each development
- immediate and practical impact
- long-term significance

4. THEME ACTIVITY

Cultural Interaction Look at the Voice from the Past above. On a map, mark the location of each of the specific places identified. Link the points together. Shade in the area. About how large an area in miles is covered? What might be learned about cultural blending from this map?