

Cultural Achievements

What You Will Learn...

Main Ideas

1. Muslim scholars made lasting contributions to the fields of science and philosophy.
2. In literature and the arts, Muslim achievements included beautiful poetry, memorable short stories, and splendid architecture.

The Big Idea

Muslim scholars and artists made important contributions to science, art, and literature.

Key Terms and People

Ibn Battutah, p. 369

Sufism, p. 369

Omar Khayyám, p. 371

patrons, p. 371

minaret, p. 371

calligraphy, p. 371



Use the graphic organizer online to take notes on the achievements and advances the Muslims made in various fields.

If YOU were there...

You are a servant in the court of a powerful Muslim ruler. Your life at court is comfortable, though not one of luxury. Now the ruler is sending your master to explore unknown lands and distant kingdoms. The dangerous journey will take him across seas and deserts. He can take only a few servants with him. He has not ordered you to come but has given you a choice.

Would you join your master's expedition or stay home? Why?

BUILDING BACKGROUND Muslim explorers traveled far and wide to learn about new places. They used what they learned to make maps. Their contributions to geography were just one way Muslim scholars made advancements in science and learning.

Science and Philosophy

The empires of the Islamic world contributed to the achievements of Islamic culture. Muslim scholars made advances in astronomy, geography, math, and science. Scholars at Baghdad and Córdoba translated many ancient writings on these subjects into Arabic. Having a common language helped scholars throughout the

Islamic Achievements

Astronomy

Muslim scientists used astrolabes like this one to figure out their location, direction, and even the time of day. Although the Greeks invented the astrolabe, Muslim scholars greatly improved it.



Islamic world share what they learned with each other.

Astronomy

Many Muslim cities had observatories where people could study the sun, moon, and stars. This study of astronomy helped scientists to better understand time and clockmaking. Muslim scientists also improved the astrolabe, which the Greeks had invented to chart the position of the stars. Arab scholars used the astrolabe to figure out their location on Earth.

Geography

Studying astronomy also helped Muslims explore the world. As people learned to use the stars to calculate time and location, merchants and explorers began to travel widely. The explorer **Ibn Battutah** traveled to Africa, India, China, and Spain in the 1320s. To help travelers, Muslim geographers made more accurate maps than were available before, and developed better ways of calculating distances.

Math

Muslim scholars also made advances in mathematics. In the 800s they combined the Indian number system, including the use of zero, with the Greek science of mathematics. A Muslim mathematician used these ideas to write two important

books. One laid the foundation for modern algebra. The other explained the new number system. When his works reached Europe, Europeans called the new numbers “Arabic” numerals.

Medicine

Muslims may have made their greatest advances in medicine. They combined Greek and Indian knowledge with discoveries of their own. Muslim doctors started the first pharmacy school to teach people how to make medicine. A doctor in Baghdad discovered how to treat smallpox. Another doctor, known in the West as Avicenna (av-uh-SEN-uh), wrote a medical encyclopedia. It was used throughout Europe until the 1600s and is one of the most famous books in the history of medicine.

Philosophy

Many Muslim doctors and scientists studied the ancient Greek philosophy of rational thought. Others focused on spiritual issues, leading to a movement called **Sufism** (SOO-fi-zuhm). People who practice Sufism are Sufis (SOO-fee-z). Sufis believe they can find God’s love by having a personal relationship with God. Sufism has attracted many followers to Islam.

READING CHECK Drawing Conclusions

How did Muslims influence the fields of science and medicine?

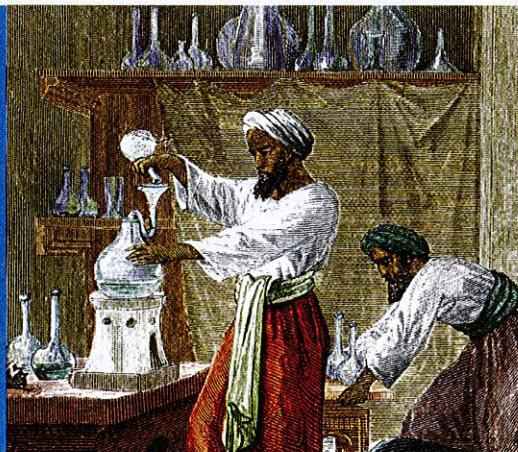
THE IMPACT TODAY

We still call the numerals 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 Arabic or Hindu-Arabic numerals.

Math

Muslim mathematicians combined Indian and Greek ideas with their own to dramatically increase human knowledge of mathematics. The fact that we call our numbers today “Arabic numerals” is a reminder of this contribution.

$$2x + 4$$



Medicine

Muslim doctors made medicines from plants and used them to treat pain and illnesses. Muslim doctors developed better ways to prevent, diagnose, and treat many diseases.

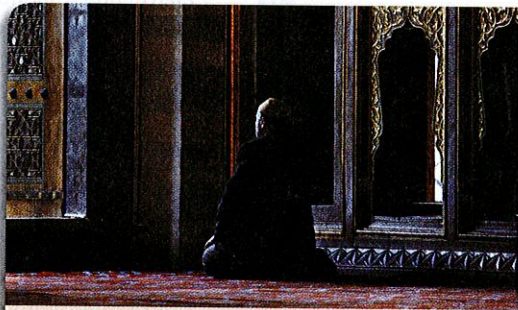
History Close-up

The Blue Mosque

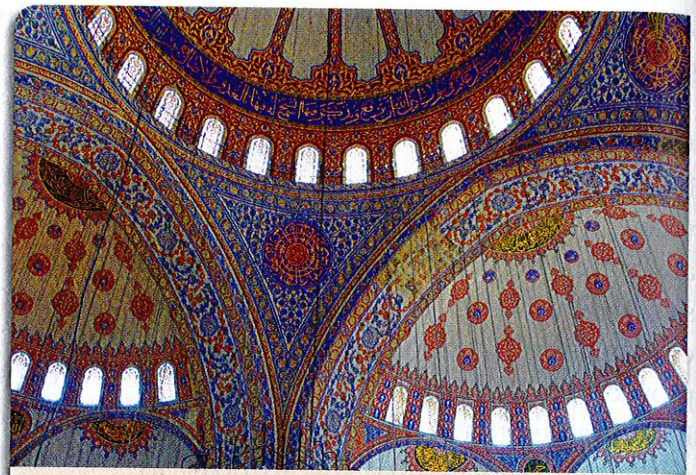
The Blue Mosque in Istanbul was built in the early 1600s for an Ottoman sultan. It upset many people at the time it was built because they thought its six minarets—instead of the usual four—were an attempt to make it as great as the mosque in Mecca.



The mosque gets its name from its beautiful blue Iznik tiles.

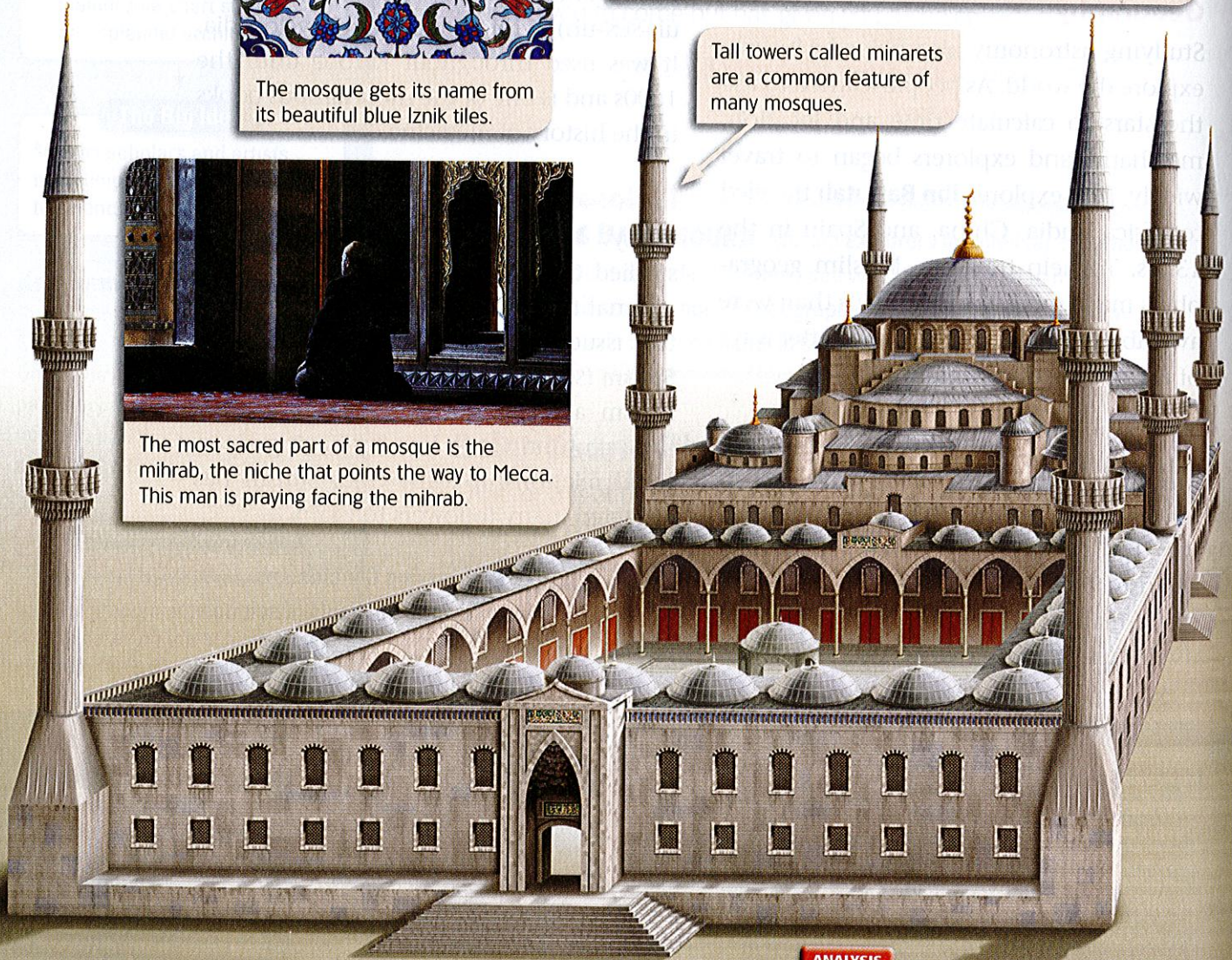


The most sacred part of a mosque is the mihrab, the niche that points the way to Mecca. This man is praying facing the mihrab.



Domes are a common feature of Islamic architecture. Huge columns support the center of this dome, and more than 250 windows let light into the mosque.

Tall towers called minarets are a common feature of many mosques.



ANALYSIS SKILL ANALYZING VISUALS

Why do you think the decoration of the Blue Mosque is so elaborate?

Literature and the Arts

Literature, especially poetry, was popular in the Muslim world. Much poetry was influenced by Sufism. Sufi poets often wrote about their loyalty to God. One of the most famous Sufi poets was **Omar Khayyám** (OH-mahr ky-AHM).

Muslims also enjoyed reading short stories. One famous collection of short stories is *The Thousand and One Nights*. It includes tales about legendary characters such as Sinbad, Aladdin, and Ali Baba.

Architecture was one of the most important Muslim art forms. Rich Muslim rulers became great **patrons, or sponsors**, of architecture. They used their wealth to have beautiful mosques built to honor God and inspire religious followers. The main part of a mosque is a huge hall where people pray. Many mosques also have a large dome and a **minaret, or narrow tower from where Muslims are called to prayer**.

Muslim architects also built palaces, marketplaces, and libraries. Many of these buildings have complicated domes and arches, colored bricks, and decorated tiles.

You may notice, though, that most Muslim art does not show any people or animals. Muslims think only God can create humans and animals or their images. As a result, Muslim art is instead full of complex patterns. Muslim artists also turned to **calligraphy, or decorative writing**. They made sayings from the Qur'an into works of art and used them to decorate mosques and other buildings.

Muslim art and literature combined Islamic influences with the regional traditions of the places Muslims conquered. This mix of Islam with cultures from Asia, Africa, and Europe gave literature and the arts a unique style and character.

READING CHECK **Generalizing** Most mosques include which two architectural elements?

SUMMARY AND PREVIEW Islamic culture produced great achievements in science, philosophy, literature, architecture, and art. In the next chapter, you'll learn about an area that was greatly influenced by Muslim ideas—West Africa.

Section 4 Assessment

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ONLINE QUIZ

Reviewing Ideas, Terms, and People

- Identify** Who traveled to India, Africa, China, and Spain and contributed his knowledge to the study of geography?
 - Explain** How did Muslim scholars help preserve learning from the ancient world?
 - Rank** In your opinion, what was the most important Muslim scientific achievement? Why?
- Describe** What function do **minarets** serve in mosques?
 - Explain** How did Muslim artists create art without showing humans or animals?

Critical Thinking

- Analyzing** Using your notes, complete a chart like the one at right. For each category in the first column, list one important achievement or advance the Muslims made.

Category	Achievement or Advance
Astronomy	
Geography	
Math	
Medicine	
Philosophy	

FOCUS ON WRITING

- Describing Muslim Accomplishments** Review the answers you provided for the graphic organizer above and the information under the Literature and the Arts heading on this page. Then organize what you have learned into a paragraph that describes the cultural achievements of the Muslim world.