

Islamic Achievements

Were there any?

Topic	Placard letter	Symbol	2 summarizing sentences – Each sentence should have two IMPORTANT facts in it.
1. Astronomy			
2. Baghdad			
3. Calligraphy			
4. Chess			
5. Art			
6. Banking			
7. Irrigation and underground wells			
8. Bookmaking and literature			

Topic	Placard letter	Symbol -----	2 summarizing sentences – Each sentence should have two IMPORTANT facts in it.
9. Mathematics			
10. Medicine			
11. Pharmacies			
12. Music			
13. Polo			
14. Scholarship and learning			
15. Libraries			
16. Zoology			

A



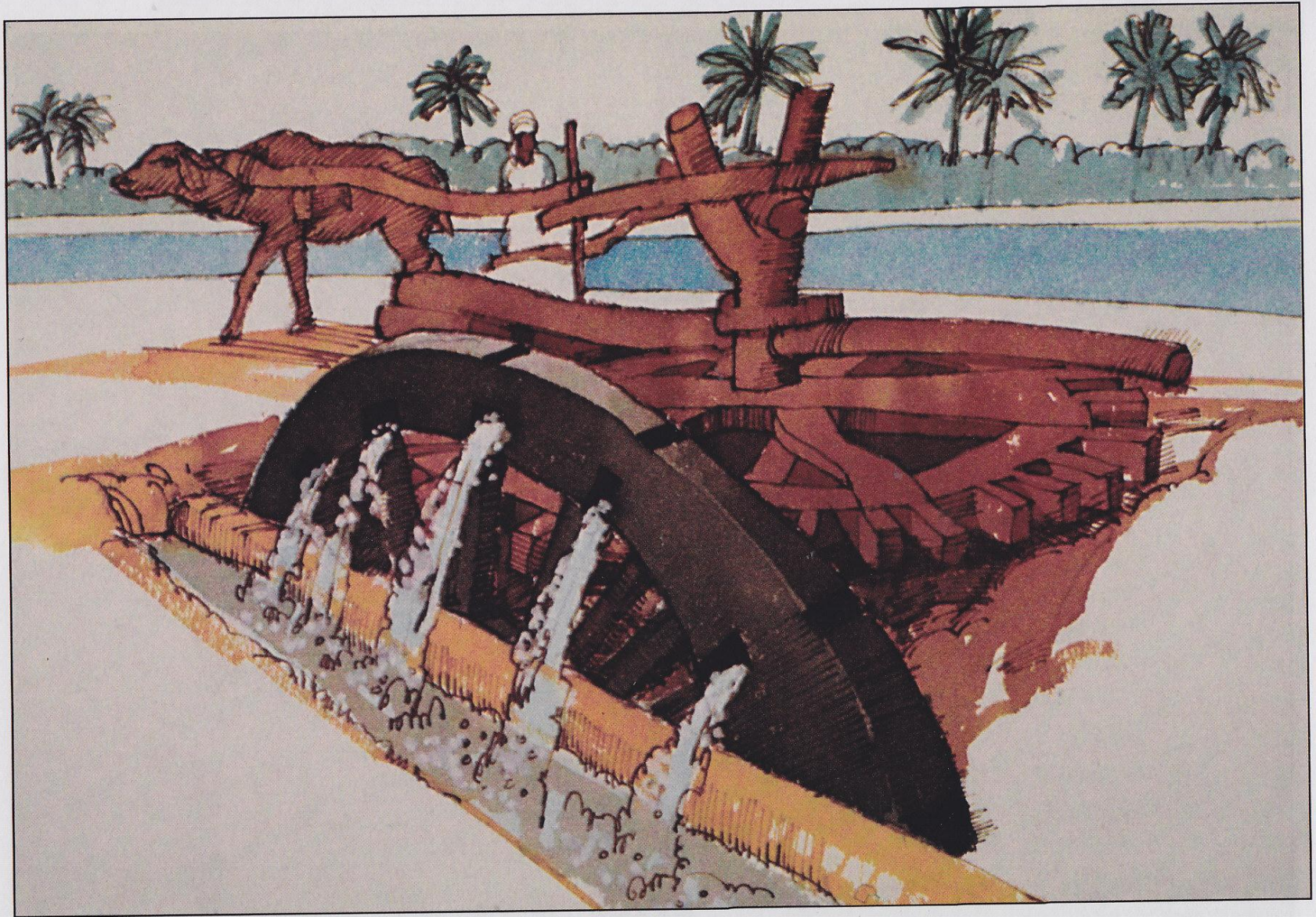
- # Chess

The game of chess was introduced to the Muslim world by the Persians, who had imported it first from India. The game became widely popular among men and women because of its difficulty and intellectual challenge. Caliphs (rulers) would invite champions of the game to chess matches at their palaces. The Muslims continued to adapt and improve the game. Eventually the introduced chess to Europeans, who played it widely from the thirteenth century on.

What I would write

- Chess was brought to the Muslim world from India
- Muslims played it because it was intellectually challenging
- Muslims made improvements to the game and eventually introduced it to Europe

B



• Irrigation

Because water was so scarce in the desert regions of the Islamic Empire, Muslims developed ingenious irrigation techniques and utilized underground wells. Dams, reservoirs, and aqueducts were constructed throughout the Islamic Empire as early as the tenth century. Muslims also perfected the water wheel, a technique that could be operated by man, animals or the wind. When an upright pole connected to a series of geared wheels was turned, four water scoops, rising one after another, emptied their contents into a canal. Both the Umayyad and Abbasid rulers preserved and improved the series of underground wells used to irrigate fields.

Underground wells were paced as much as 50 feet deep in order to tap underground water sources and to keep water loss through evaporation to a minimum. Much of the agriculture of the Islamic Empire was dependent on irrigation techniques and underground wells, as were most of the Muslim people.

• Zoology

Muslim scholars made great advances in zoology, the scientific study of animals, during the Golden Age. Because for years the Muslims' lifestyle and economy were dependent on animals— for trade and travel – there was interest in the study of animals. Al-Jahiz was one of the foremost scholars to explore zoology. Born about the year A.D. 776 in the town of Basra, Al-jahiz's greatest contribution was to popularize science. During his life, al-Jahiz composed some 200 works, the most famous of which was the Book of Animals. This book contained a large collection of lore (knowledge) about animals from the Koran, the Hadith, pre-Islamic poetry, proverbs, storytellers, sailors, personal observation, and Greek writing. While the Book of Animals was full of anecdotes (short, entertaining stories), it also contained important scientific theories and information. Al-Jahiz's work was a model for later scholars like Ibn Bakhtishu, a doctor, who wrote The Uses of Animals, an account of the medicines that could be extracted from animals in the eleventh century. In the fourteenth century Al-Damiri used al-Jahiz's scientific information to write an encyclopedia of animals called The Lives of the Animals.

D



- # Banking

During the rule of the Abbasids of Baghdad, a banking system was developed that helped to end the confusion caused by the many currencies (kinds of money) that were then in use. From this system came the word “check” from the Arabic word *sakk*. The Abbasids had central banks with branch offices and an elaborate system of checks and letters of credit. It became possible for a check written on a bank in one part of the empire to be cashed in a distant city. This was important because international trade had expanded and goods were being marketed (sold) throughout the empire and abroad (in foreign countries).

E

من اسماؤهم من اسماء الله عز وجل
من اسماء الله عز وجل من اسماء
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• Calligraphy

Calligraphy, which means beautiful writing, is the art of elegant handwriting. Calligraphy was first used by Muslims when the Arabs began preparing copies of the Qur'an. The words of the Qur'an were written in calligraphy because only calligraphy was considered worthy of the word of God. As a result, the calligrapher was honored above other artists, and calligraphy was considered the highest form of decoration. Verses from the Qur'an adorned the walls of mosques. Calligraphy was also used to decorate textiles, ceramics, and metal works with inscriptions of worldly wisdom. In Muslim art, the words written in calligraphy are admired for their beauty. The art of calligraphy was taken to such a height because in the early period of Islam, the use of visual images to depict humans or animals was prohibited.

F



• Art

Muslim art was mostly abstract, which meant that the pictures did not represent real subjects like humans or animals. It was believed that human images would distract worshipers from praying to Allah. As a result, Muslim artists turned to plant patterns or geometric designs as art subjects. During the Golden Age of Muslims, these arts flourished throughout the Islamic world. The most common was the arabesque, which was a winding stem of leaves and flowers that formed a spiraling design. The arabesque decorated everything from small objects—metal boxes, ceramic bowls, tiles – to carpets and entire walls. The use of geometry in Islamic art was an expression of the idea that unity and order exists everywhere and at all times. Interlacement, which was another type of arabesque, was made of geometrical patterns drawn inside a circle and repeated several times. Despite the religious guidelines, however, paintings of both humans and animals did exist. They could be found in private places like bathhouses, women's apartments, and the living quarters of the ruling classes.

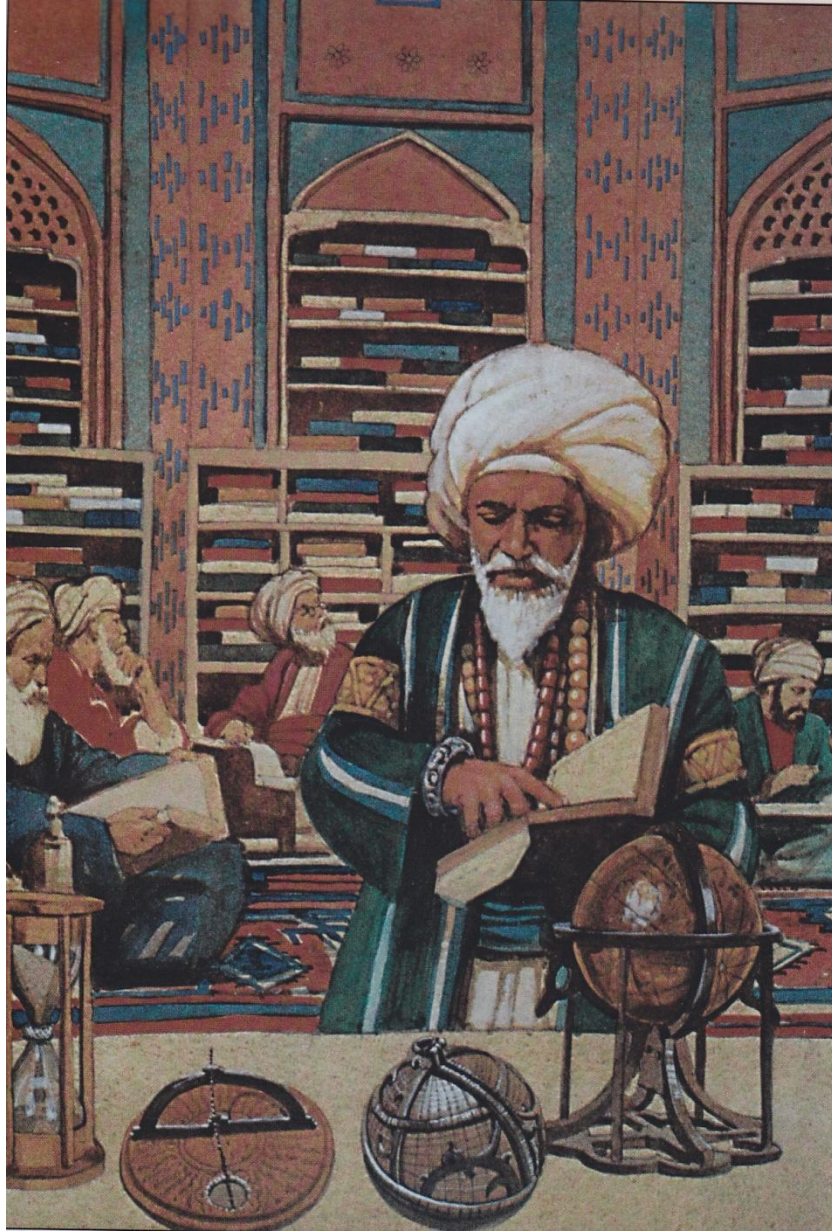
G



- **Bookmaking and Literature**

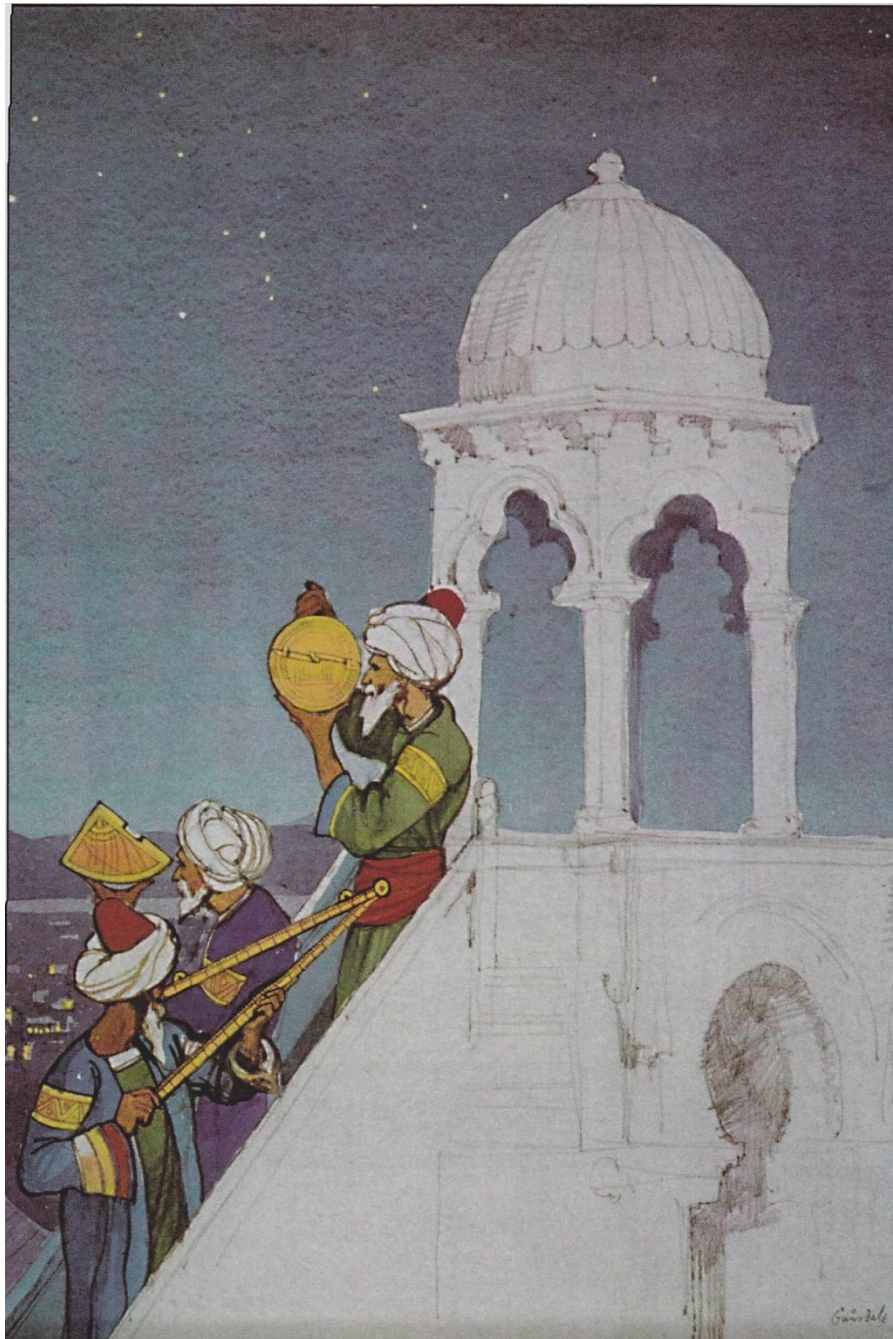
During the rule of the Abbasids, Chinese soldiers captured during a battle in central Asia were discovered to be artisans skilled in paper making. These Chinese prisoners taught their captors how to make paper, and this new skill spread throughout the empire. As a result, books became more available and contributed to interest in all kinds of learning. Furthermore, since both designs and calligraphy were used to decorate books, it became a status symbol to own them. Indeed, a sign of a wealthy person was a well-stocked library.

H



• Learning

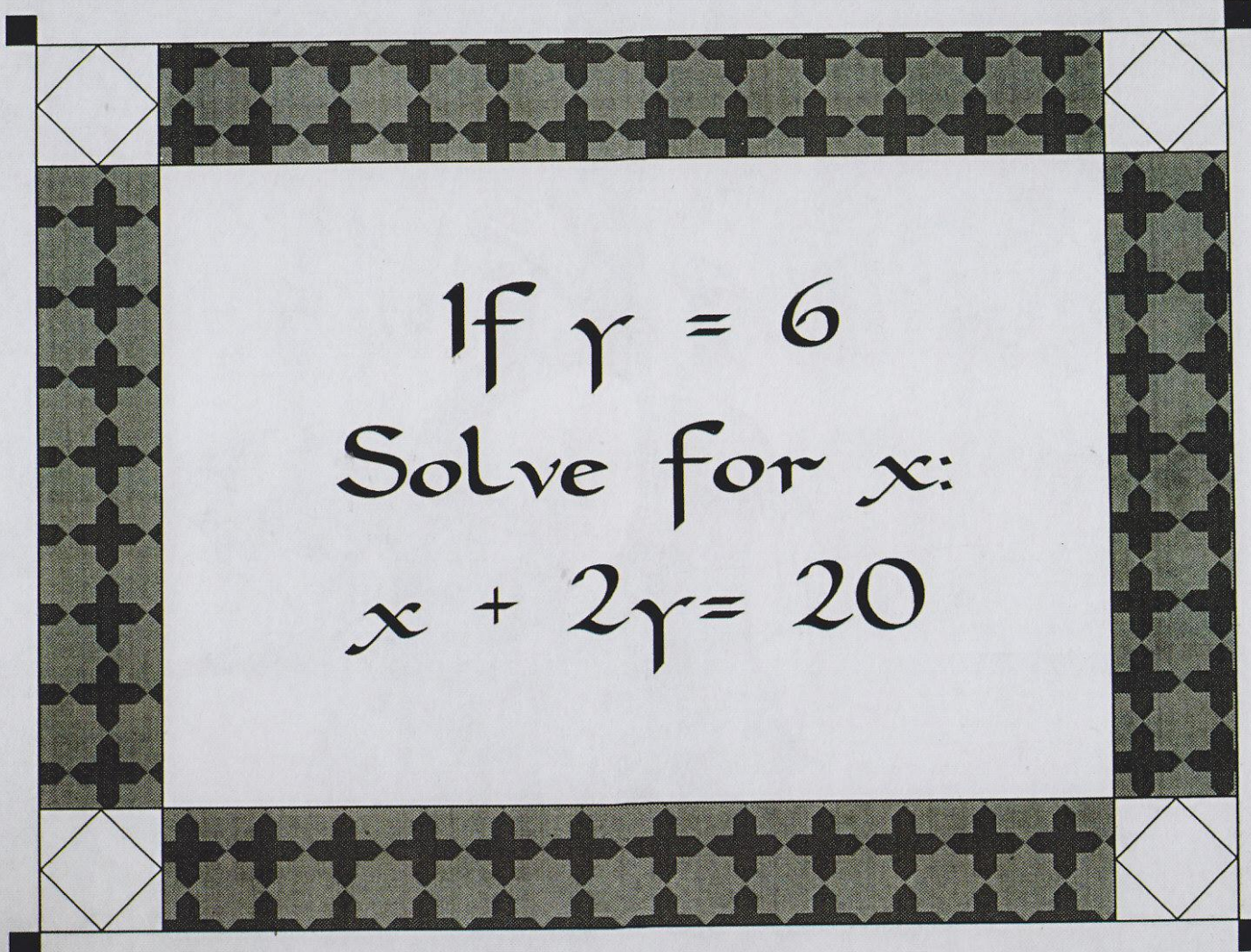
The House of Wisdom was an educational institution founded in Baghdad by the Abbasid caliph al-Ma'mun, in A.D. 830. At the House of Wisdom, scholars from any parts of the world translated into Arabic, Greek, Persian and Indian texts on such topics as mathematics, astronomy, and logic. Scholars who came to the House of Wisdom translated Greek classics in philosophy and science into Arabic. These scholars helped preserve the Greek classics that might otherwise have been lost or destroyed. The result of their work also assisted in encouraging openness to new ways of thinking. In addition, the House of Wisdom's extensive library, which was open to the public, contained Qur'ans and collections of Hadith and books on law, poetry, history and the like. The library was a model for other large libraries throughout the Islamic world.



• Astronomy

—the scientific study of the skies—was an area in which Islamic scientists made great achievements. For centuries, astronomers relied on the belief, put forward by the Alexandrian astronomer Ptolemy, that the earth was the center of the universe and the sun, stars and other planets rotated around the earth. Muslim astronomers studied Ptolemy's tables, made their own observations, and gradually found and corrected many mistakes Ptolemy had made. An instrument used by astronomers that helped them make new discoveries was the astrolabe, a device adapted from the Greeks. This was a small, flat, brass disc marked off in degrees. By lining up the pointer with the sun, the user could measure latitude, tell the time of day, and determine the position or movement of the stars and planets. Some astronomers, who already knew the earth was a sphere, began to believe the earth rotated on its own axis and that the sun was the center of the universe. These same ideas were eventually discovered in Western Europe centuries later.

J



If $\gamma = 6$
Solve for x :
 $x + 2\gamma = 20$

• Mathematics

Muslim scholars of the Abbasid period were very interested in furthering the developments of the ancient Greeks in mathematics. They spend hours trying to stump one another with difficult mathematical puzzles. For fun, they also made “magic boxes” that were grids containing numbers that added up to the same sum horizontally, vertically, and diagonally. The science of algebra as we know it today was introduced by Muslims. The most famous math scholar, Al Khwarazmi, introduced algebra to civilization. Algebra comes from the word “al jabr,” which means “the bringing together of separate parts.” In algebra, a mathematician substitutes symbols such as x , y , or z for numbers in order to solve mathematical problems.

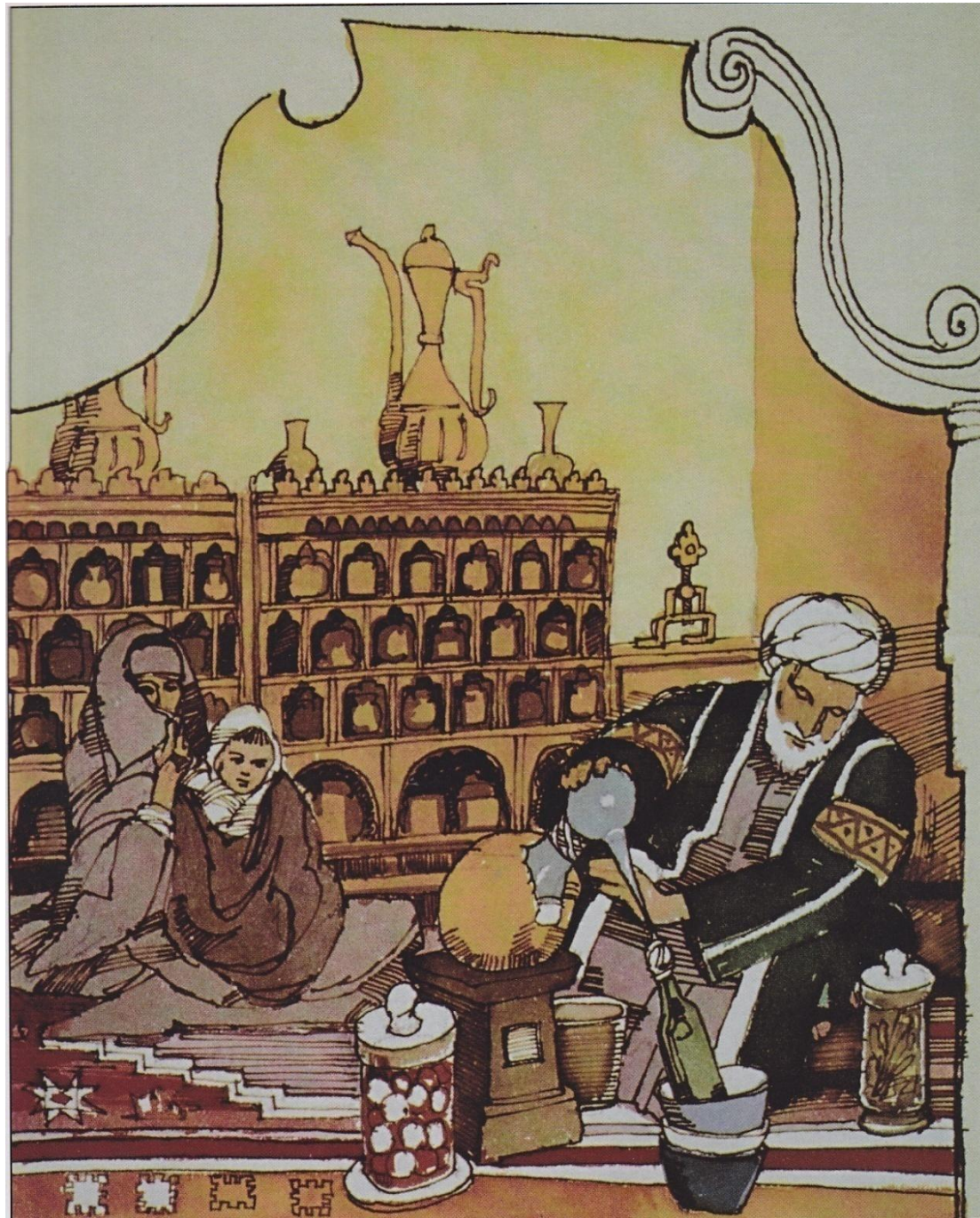
K



• Medicine

An interest in treating illness can be traced back to the beginning of Islamic history when Muhammad himself stated that Allah had provided a cure for every illness. It was in the Muslim world that hospitals were first established. An early hospital that became a model for the future was founded in Damascus, staffed with doctors paid by the government. Hospitals were designed to promote health, cure diseases, and teach and expand medical knowledge. By the ninth century, there were hospitals in all large Muslim towns. The most advanced hospitals—like the ‘Adudi hospital in Baghdad—attracted outstanding medical scholars and were housed in large buildings with lecture halls, libraries, pharmacies, laboratories, and patient rooms with beds. Patients with communicable diseases, as well as those recovering from surgery, were put in a separate part of the hospital.

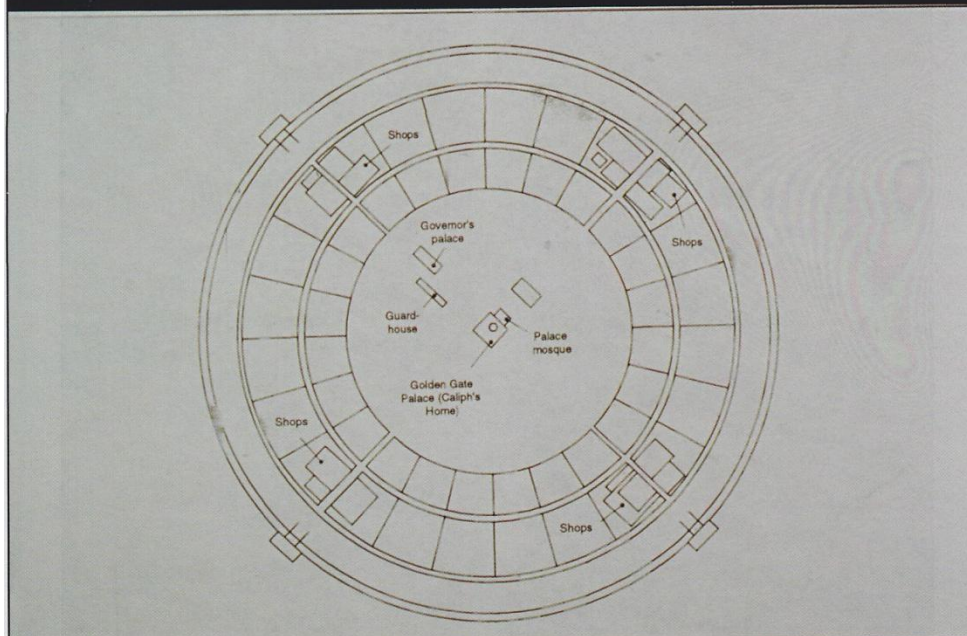
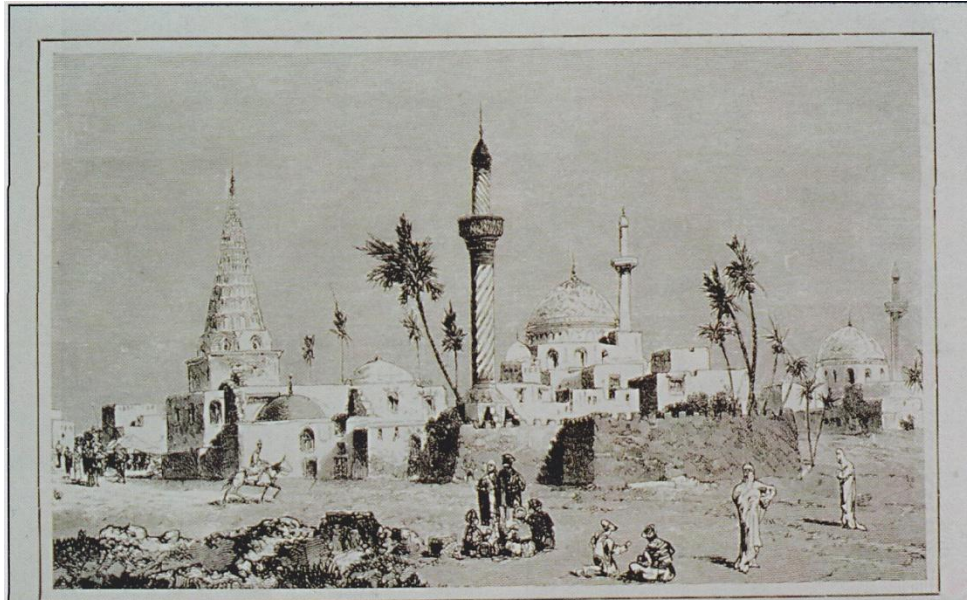
L



- # Pharmacies

Muslim doctors experimented with the treatment of disease through herbal medicines. Plants such as coriander were used for their medicinal powers. Sedatives (drugs used to calm or tranquilize), including hashish (a strong narcotic), were used to kill pain during surgery. Al-Zahrawi, a Muslim doctor from Spain, began using antiseptics (substances derived from herbs that kill germs) to cleanse wounds, a practice unheard of in other parts of Europe until centuries later. Ibn Sina, a famous Persian healer, designed treatments involving the use of herbs and medicinal plants. In addition to making advances in herbal medicine, pharmacies developed in Baghdad to provide medication to heal illnesses. Pharmacies filled prescriptions much as present-day drug stores do. Drugs were considered so important and dangerous that they were carefully supervised, both during preparation and while in storage.

M



• Baghdad

Baghdad, now the capital city of Iraq, was chosen by the Abbasid ruler, Caliph al-Mansur, to be the center of his empire in the eighth century. Baghdad was an ideal choice because it lay between two rivers and was at the crossroads of great trade routes. The city was built in concentric circles (each inside the other), with a deep moat surrounding the three circular walls. The citizens of Baghdad lived in houses outside the walls. The space between the outer and middle walls was left clear for defense. Between the middle and inner walls were the houses of army officers. Behind the innermost wall were the residences of the Caliph's family and the highest officials. At the very hub of the city was the Caliph's palace of marble and stone. The Caliph chose this spot because he wanted to live at the very center of his empire.

N



- **Polo**

The game of polo was introduced to the Muslim world by the Persians. Polo is a ball and goal game played on horseback by two teams of four on a grass field with goal posts at either end. Players use a wooden mallet to strike the ball into the goal. The game became a great favorite among the wealthy classes because of its use of horses. The Abbasid rulers loved the game and valued raising fast-moving, champion Arabian horses to improve polo. The Muslims adapted and improved the game, which was then introduced to Europeans. Today it is played all over the world.

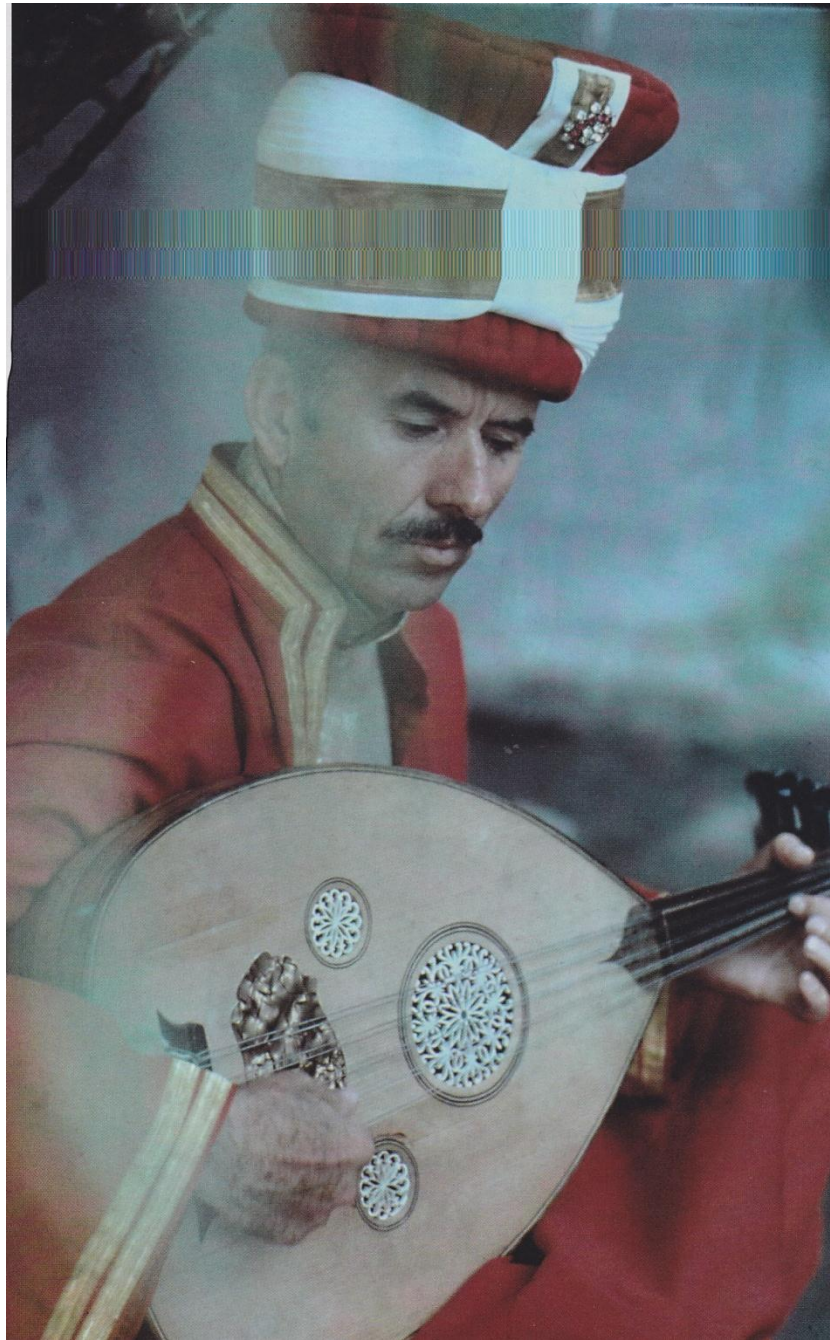
O



• Libraries

In the eighth century a new and independent Muslim kingdom was established by the Umayyads in Spain. Its capital city, Cordoba, became a center of learning and intellectual life and was widely known as a city of bibliophiles (people who love books). The most celebrated library in Cordoba was run by Caliph al-Hakam II al-Mustansir. Al-Hakam, who was an accomplished scholar, sent bookbuyers all over the Muslim Empire to find books for his library. Library clerks, many of them women, carefully hand-copied the books while calligrapher and bookbinders created beautiful text and cover designs. Al-Hakam's library was said to have contained more than 400,000 books, whose titles filled a 44-volume catalog. The people of Cordoba also collected books for their homes. Those who owned large, personal libraries were regarded as important figures in Cordovan society.

P



• Music

The music of Muslim Spain, which combined musical styles from all over the world, was an important achievement during the Golden Age of Muslims. Europe's first music conservatory (school) was established in Cordoba by an Arab name Ziryad, a slave liberated from Baghdad. Musicians from all over Central Asia and Africa were hired by royal courts to entertain royalty and important visitors, such as wealthy merchants. These musicians developed a distinct style of music from the patterns and rhythms of poetry that combined the styles of classical Arab and native Spanish cultures. In fact, poets and musicians worked together to create songs about love, nature and glorious achievements of the empire. By the eleventh century, the music was so popular that musicians produced the most pleasing songs. The instrument most often used in this music included: the oud, a short-necked string instrument that is the ancestor of the guitar; the rebab, an instrument brought to Spain by Middle Eastern musicians that resembles a violin; the new, a simple wood flute; and the darbuka, a goblet-shaped drum made of pottery. The origins of many instruments, including the oboe, trumpet, violin, guitar, harp, and percussion instruments can be traced to this music of Muslim Spain.