

Islamic Achievements

<p style="text-align: center;">City Building and Architecture</p> <ul style="list-style-type: none"> • large cities were built in Muslim lands → built palaces, schools, orphanages, hospitals, mosques, and other buildings • Abbasid capital of Baghdad: <ul style="list-style-type: none"> - Moved capital from Damascus to Baghdad (more central location) - Located between the Tigris & Euphrates Rivers - Crossroads of trade routes - Took 100,000 people and 4 years to build new capital - Center of city: caliph's palace and the grand mosque <ul style="list-style-type: none"> - Houses of court officials and army officers around the center. - Double wall guarded inner city - Outside the wall were shops, markets and housing - Bridges, palaces and gardens added - One of the world's largest and grandest cities • Architecture <ul style="list-style-type: none"> - Muslims created distinctive architecture, specifically the mosque (Muslim house of worship) - Most mosques have a minaret where they call everyone to prayer from - Inside the mosque: prayer room where worshipers sit on the floor and prayer - Imam, or prayer leader, gives his sermon from the minbar (raised pulpit) - Mihrab: shows direction of Makkah - *Mosques show religious faith & artistic heritage of their builders 	<p style="text-align: center;">Scholarship and Learning</p> <ul style="list-style-type: none"> • scholarship & learning were important in Islamic culture • usage and acceptance of the Arabic language advanced the opportunity for learning • in the 700s, Arabic became the language used within scholarship & science <ul style="list-style-type: none"> • This shared language created a chance for scholars to exchange ideas & build upon one another & their works • Built schools, colleges, libraries, and other centers of learning • House of Wisdom was a place in Baghdad where scholars could come together and research and translate texts from all over • More places opened that housed books and acted as places for learning <ul style="list-style-type: none"> - Hall of Wisdom in Cairo - Huge library in Cordoba, Spain • Muslims used Greek ideas (from philosophers like Plato and Aristotle) • Like Christian thinkers, Muslims tried to find how reason/logic agree with their religious faith • Ibn Sina believed all knowledge came from God and that truth was found through revelation & reason <ul style="list-style-type: none"> - Presented argument that the soul was immortal - His writings influenced many thinkers in medieval Europe
<p style="text-align: center;">Science and Technology</p> <ul style="list-style-type: none"> • Qur'an encouraged Muslims to learn more about the world God had made → made progress in science & technology through their efforts • Zoology: scientific study of animals <ul style="list-style-type: none"> - Studied how to make medicine from animals - Presented theories about evolution of animals - Established zoos where exotic animals were displayed • Astronomy: study of objects in the universe <ul style="list-style-type: none"> - Astronomy is used often in Muslim life - Compasses and astrolabes used to locate direction of Makkah (those far away could pray facing the right direction) - Astronomers helped find exact timing for prayer/length during Ramadan - Also learned about the universe in general → Earth turns; questioned Earth being the center of the universe • Irrigation and Underground Wells <ul style="list-style-type: none"> - Helped use scarce water resources - Most land was hot/dry → restored old irrigation systems and designed new ones - Built dams & aqueducts to bring water places - Used water wheels to bring water up from canals/reservoirs 	<p style="text-align: center;">Geography and Navigation</p> <ul style="list-style-type: none"> • Muslim geographers studied plants and animals from different regions <ul style="list-style-type: none"> - Divided the world into climate zones • Muslim scientists realized the world was round and calculated the Earth's circumference (within nine miles of its correct value) • created very accurate maps • A scholar in Muslim Spain made a world atlas (with dozens of maps) • <i>The Book of Roads and Provinces</i>: maps and descriptions of Muslim trade routes • <i>The Book of Countries</i>: facts about land under Muslim rule (travelers could get info on physical features and water access) • travelers acted as a source of knowledge → wrote guidebooks to help pilgrims make their journey to Makkah • used navigational instruments <ul style="list-style-type: none"> - Adapted/perfected compass and astrolabe - Compasses → allowed people to know what direction they were going Astrolabe → sailors at sea could use the position of objects in the sky to find their location

Mathematics

- Muslims greatly advanced math
- translated work from India/Greece and used this and added their own contributions to their work
- Al-Khwarizmi is known as the “father of algebra”
 - Word algebra comes from the title of his book
 - Algebra is used to solve problems involving unknown numbers ($7x+4=25$)
 - His book was translated into Latin and became an important math text in European universities → helped popularize Arabic numerals in Europe
 - Arabic numerals (digits 0,1,2,3,4,5,6,7,8,9) helped business and trade
- Muslims helped spread the Indian concept of zero
- Ancient peoples used written symbols for numbers before anyone through using a symbol for zero (e.g. 0).
 - Zero made it easier to make calculations and write large numbers

Literature and Bookmaking

- Muslims learned how to make paper from the Chinese
- Created bound books
- Bookmaking helped promote growth of Muslim literature
- Craftspeople made bookmaking into an art form through the way they created books:
 - Gathered sheets of paper into leather bindings
 - Illuminated bindings and pages with designs in gold with mini paintings
- Books became a big business → bookshops emerged
 - Sold copies of Qur’an, poetry and prose
- Arabs liked storytelling and poetry
- Persians introduced epics (long poems that tell a story)
- Famous collection of stories: *A Thousand and One Nights* also known as *Arabian Nights*
- Muslim literature was improved by Sufism (or Islamic mysticism)
 - This involves intense personal experiences of God rather than routine performance of rituals
- One way Sufis got closer to God was through expressing their love and devotion in poetry filled with vivid images and beautiful language

Medicine

- learned a lot in the field of medicine from ancient Greeks, Mesopotamians, and Egyptians (and improved upon this earlier knowledge)
- Muslim doctors created the world’s first hospitals
- By 10th Century, Baghdad had at least 5 hospitals
- Most cities had one or two hospitals
- hospitals served as teaching centers for doctors in training
- government paid for treatment → everyone had access
- there were hospital caravans who brought medical care to people in remote villages
- Hospitals made up of different wards for type of person: men, women, surgical patients, people with contagious diseases
- Doctors treated ailments through drugs, diet and exercise → gave patients remedies made from herbs, plants, animals and minerals
- Pharmacists made medications
 - Antiseptics: fought infections and used to clean wounds
 - Ointments: helped wounds to heal
 - Some dulled patients’ pain
- Surgeons performed operations, using drugs to put the patients to sleep, and used animal guts to stitch up wounds
- Muslim doctors made many discoveries and helped spread medical knowledge
- Al-Razi, a Persian doctor, found that infections are caused by bacteria
- Ibn Sina is called “the prince of physicians” as he wrote *The Canon of Medicine* which explored treatment for disease
- Medical schools used their texts to teach their students

Art, Music, and Recreation

- Geometric and Floral Design
 - Muslims gained fame for their decorative art
 - Muslims rejected use of images of humans/animals in art (only God can create something alive)
 - Artists turned to shapes/patterns found in nature & geometry
 - Art could be religious or found in everyday lives
 - Arabesque: artists crafted stems, leaves, etc. into elegant patterns repeated
 - Used geometric shapes in their designs (circles, squares)
 - Used rulers and compasses to form shapes
- Calligraphy: art of beautiful handwriting
 - When copying the Qur’an, felt this form of handwriting was the only one worthy
 - Used sharpened reeds or bamboo dipped in ink to write
- Textiles (or manufactured cloths)
 - Important to Muslims as practical items/trade goods
 - dyed clothing with vivid colors
 - Embroidered sometimes with gold thread
 - Clothes showed rank and served as status symbols in the Muslim world
- Music in Muslim Spain
 - Several music centers in the Islamic world
 - Ziryab (musician/singer from Baghdad) → established Europe’s first conservatory (music school)
- Recreation:
 - Polo: teams on horseback use mallets (wooden sticks) to hit a ball through a goal
 - Popular amongst the wealthy
 - Is still played today
 - Chess:
 - Game where players move pieces on a board following specific rules
 - Brought to the Muslim world in the 600s → adapted and improved the game (still played today)

