

Jabir Ibn Hayyan

721-815

Jabir ibn Hayyan is credited with the invention of many types of now-basic chemical compounds, laboratory equipment, and processes such as hydrochloric and nitric acid, distillation and crystallisation. By combining both hydrochloric acid and nitric acid, he invented aqua regia, one of the only substances that can dissolve gold. He also used manganese dioxide in glassmaking to counteract the green tinge produced by iron – a process that is still used today.



Al-Khwarizmi

780-850

Al-Khwarizmi was a mathematician and astronomer whose major works introduced the Hindu-Arabic numerals and the concepts of algebra into European mathematics. He participated in an experiment to determine the circumference of the Earth. He also developed the first quadrant (an instrument used to determine the time by observation of the Sun or stars), the second most widely used astronomical instrument in the middle ages, after the astrolabe. His book "The Compendious Book on Calculation and Completion and Balancing" is considered the foundational text of modern algebra.

Al Kindi

801-873

Al kindi made important contributions to the field of mathematics. He applied maths to other fields such as optics by drawing geometrical diagrams to explain light rays and the concept of reflection, refraction and shadows.



Al-Razi

854-930

Al-Razi's most important medical work, the 'Kitab al-Hawi', is a compilation of the notes on his thoughts, readings and practice that he gained throughout his entire medical life. His most highly esteemed of Al-Razi's works is the study of measles and smallpox. Although smallpox had been described earlier, his account is astonishingly original and seems almost modern.

Abu'l-Wafa al Buziani

940

Abu'l-Wafa al Buziani was a distinguished Muslim astronomer and mathematician, who made important contributions to the development of trigonometry. His achievements in trigonometry paved the way for more precise astronomical calculations. He made observations to determine the length of the seasons and the latitude of the city of Baghdad. In honour of his astronomical work, a crater on the Moon was named after him.



Abu Rayhan al Biruni

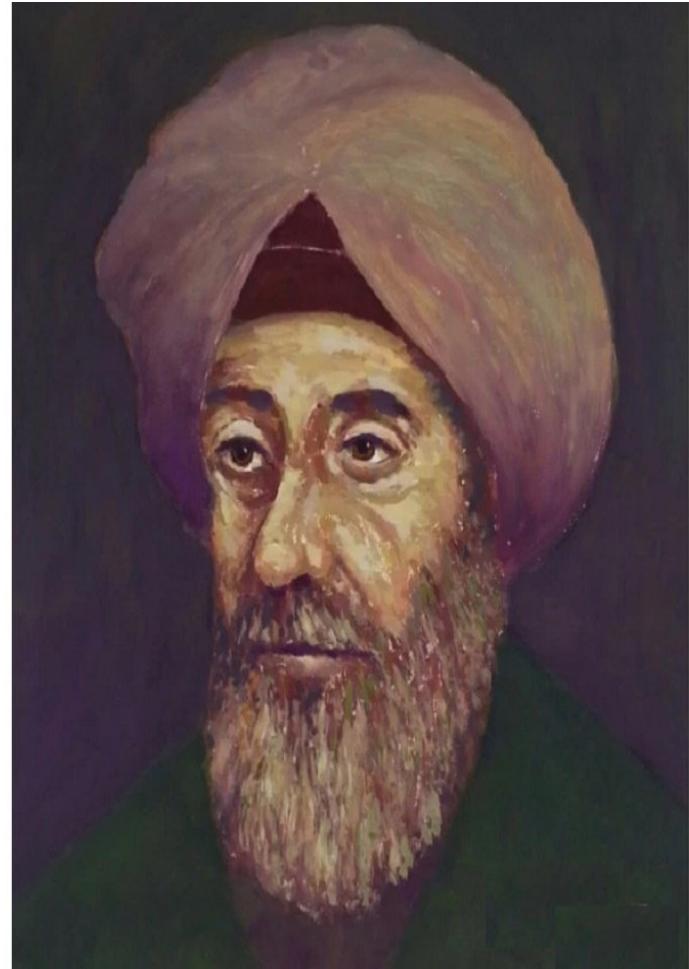
973-1050

al-Bīrūnī developed new algebraic techniques for the solution of third-degree equations and explored many other applied mathematical techniques to achieve much higher precision and ease of use of listed astronomical results. He also detailed all that one needed to know about determining longitudes and latitudes on land. He raised questions about the formation of mountains and explained the existence of fossils by positing that Earth was once underwater. In both cases he treated these matters with a scientific objectivity that matches the modern explanation.

Ibn a-Haytham

965-1040

Ibn al-Haytham's most important work is *Kitāb al-manāẓir* ("Optics"). The work contains a complete formulation of the laws of reflection and a detailed investigation of refraction, including experiments involving angles of incidence. Refraction is correctly explained by light's moving slower in denser mediums.



Ibn Sina

980-1037

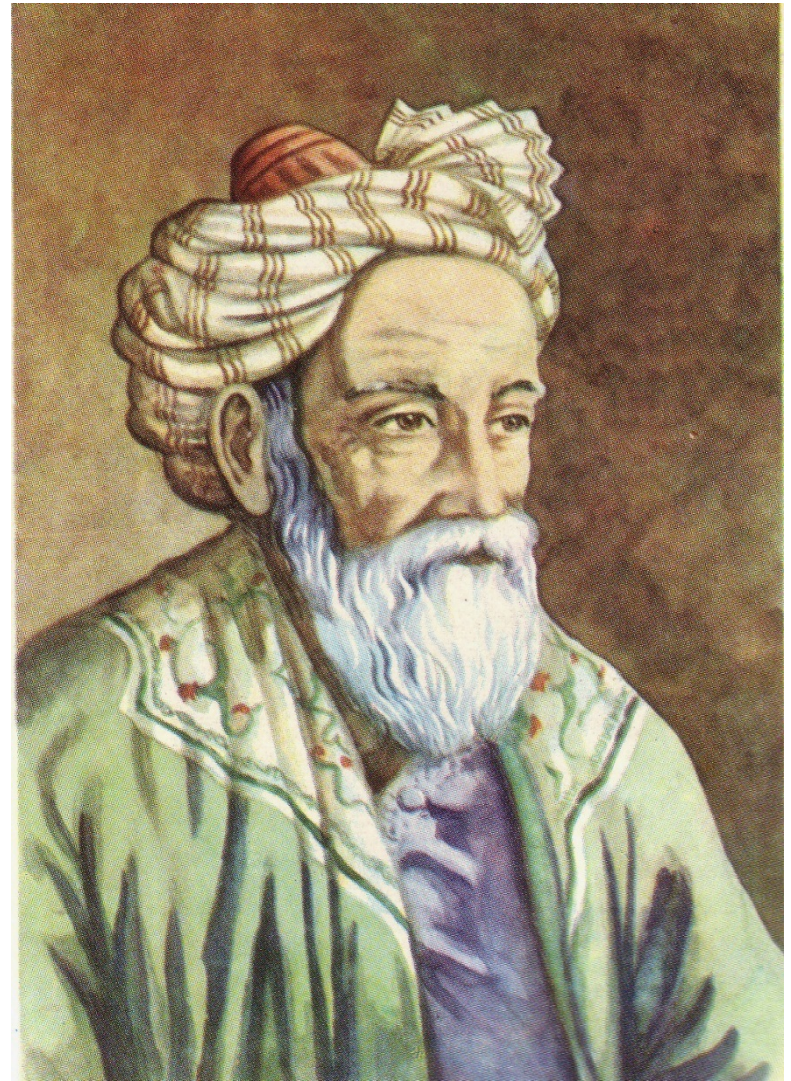
His major contribution to medical science was his famous book known as the "Canon" in the west. It is an immense encyclopaedia of medicine extending over a million words. In addition, the book also described 760 drugs. It served as a textbook in Europe until the mid-17th century.

In astronomy, he proposed that Venus was closer to the Sun than the Earth. He invented an instrument for observing the coordinates of a star. He made several astronomical observations and stated that the stars were self-luminous.

Omar Khayyam

1048-1131

Omar Khayyam was a Persian mathematician and poet. He gave a complete classification of cubic equations with geometric solutions found by means of intersecting conic sections. He also extracted roots using the decimal system (the Indian numeral system).



Sharaf al-Din al-Tusi

1135

Sharaf al-Din al-Tusi followed al-Khayyam's application of algebra of geometry, rather than following the general development that came through the school of algebra at the time. He wrote a treatise on cubic equations which represents an essential contribution to another algebra, aiming to study curves by means of equations. He is known as the founder of algebraic geometry.

Nasir al-Din Tusi

1201-1274

Nasir al-Din Tusi made very accurate tables of planetary movements by observations at the maragheh observatory. Tusi's most influential book in the West may have been *Tadhkirah fi 'ilm al-hay'a* ("Treasury of astronomy"), which describes a geometric construction, now known as the al-Ṭūsī couple, for producing linear motion from a point on one circle rolling inside another. Most historians of Islamic astronomy believe that the planetary models developed at Maragheh found their way to Europe and provided Nicolaus Copernicus with inspiration for his astronomical models. He is often considered the creator of trigonometry as a mathematical discipline in its own right



Ibn al Nafis

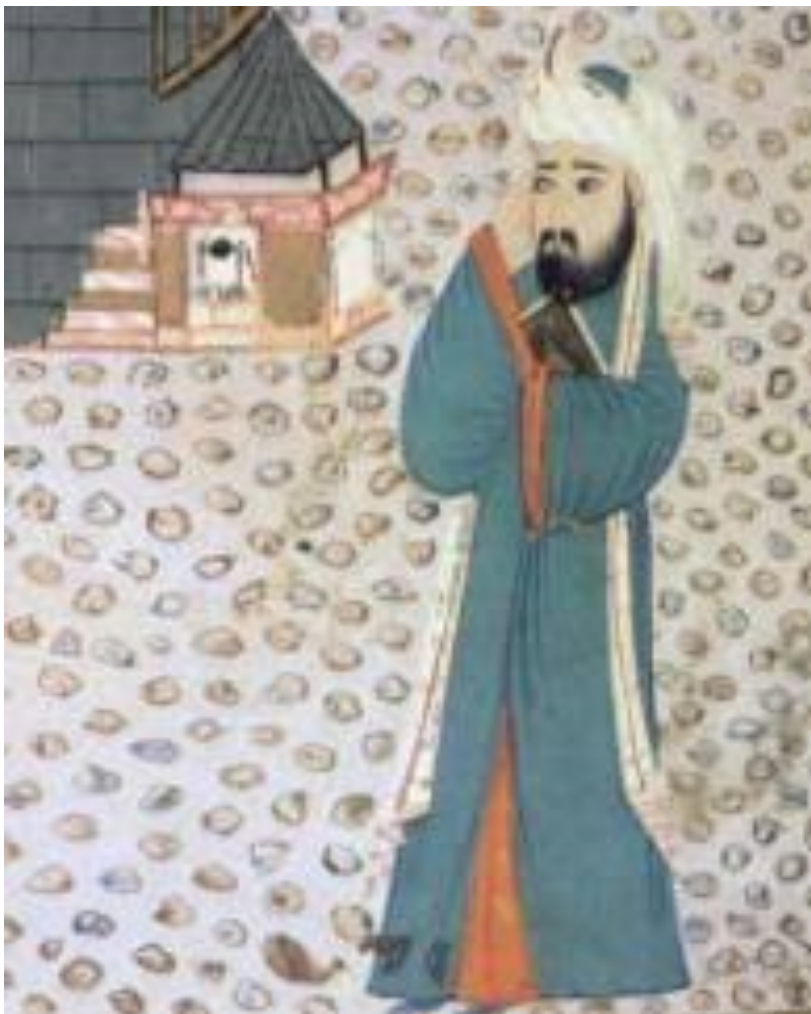
1213-1288

Ibn al Nafis discovered the lesser circulatory system (the cycle involving the ventricles of the heart and the lungs) and described the mechanism of breathing and its relation to the blood and how it nourishes on air in the lungs. By doing so he discredited popular ideas at the time, including theories by Galen and Ibn Sina. Ibn al-Nafis praised the study of comparative anatomy (the study of similarities and differences in the anatomy of different species)

Al-Kashi

1380-1429

Al-Kashi contributed to the development of decimal fractions not only for approximating algebraic numbers, but also for real numbers such as pi. His contribution to decimal fractions is so major that for many years he was considered as their inventor. Although not the first to do so, al-Kashi gave an algorithm for calculating nth roots which is very similar to the methods given many centuries later.



Ibn Masoud

Ibn Masoud observed and computed the solar eclipses of 809AH, 810AH and 811AH. He wrote books on whole number arithmetic, fractional arithmetic, astrology, areas of shapes and finding unknown variables. He found the ratio of the circumference to the radius of a circle to sixteen decimal places. He also devised an instrument which he used at the Samarqand observatory to understand solar and lunar eclipses

Fatima Al-Fihriya

800-880

Fatima Al-Fihriya was an Arab Muslim woman who is credited with founding the oldest existing, continually operating and first degree-awarding educational institution in the world, the University of al-Qarawiyyin. Fatima herself studied astronomy and natural sciences there too.



Queen Amina of Zaria

1533-1610

Commonly known as the warrior queen, Queen Amina of Zaria was the first woman to become the *Sarauniya* (queen) in a male-dominated society. Along with her war strategies she was a well-known engineer. She is credited as the architect of the strong earthen walls around the city, which became the prototype for the fortifications used in all Hausa states. She built many of these fortifications, later known as 'Amina's walls', around various conquered cities.

Sutayta Al Mahamali

987

Sutayta Al Mahamali worked on the theory of algebraic equations and was considered an expert in inheritance formulas, the branch of algebra established by Al Khwarizmi. Her work was significant enough to be referenced by later mathematicians and biographical historians.



Dr Hina Chaudhry

Dr. Chaudhry is the Director of Cardiovascular Regenerative Medicine and is also a developmental geneticist with expertise in cell cycle biology, stem cell biology, and regenerative biology.

Tahani Amer

Amer first started working at NASA in 1992 and has been instrumental in the agency's aeronautic research efforts. She holds a bachelor's in mechanical engineering, a master's in aerospace engineering, and a doctoral of engineering. She's also the 2014 recipient of NASA's Public Service award for her contributions in encouraging students, minorities and women to pursue STEM careers.



Mona Diab

Diab is a computer science researcher who specializes in natural language processing, automatic text analytics, applied machine learning, data science and AI. She works to make computers "seem" smarter, and in the process uses scientific inquiry to give people wider access to information. One of Diab's research areas is identifying emotions in data and finding out what makes people happy or sad. One way she does this is by studying empathy.

Abdus Salam

In 1979, Pakistani scientist Abdus Salam won the Nobel Prize for physics. His life's work was key to defining a theory of particle physics still used today, and it laid the groundwork for the 2012 discovery of the Higgs boson – the particle responsible for giving all other particles mass. He was the first Pakistani to win.



Aziz Sancar

Sancar won the 2015 Nobel Prize in Chemistry for mechanistic studies of DNA repair. He was the first Turkish to date to be awarded the Prize and the third Muslim scientist.