

Calendar 2016 Inventions & Discoveries by Muslims



Meezan Bank
The Premier Islamic Bank



The contribution of Muslims in providing the framework for development of the modern world is profound. Muslim scholars made key advances in subjects such as medicine, physics, optics and mathematics. Through their ingenious inventions and momentous discoveries, Muslims revolutionized science, technology, trade and, consequently, civilizations. Muslim mathematicians promoted the concepts of the decimal system and of the numeral Zero - two ideas that limited the accomplishments of Greek mathematics for centuries. Muslims also introduced the first cheque, windmills, coffee and the fountain pen as well as algebra. These are only a few of the great Muslims contributions highlighted in our 2016 calendar.



Numbers

Muslim scholars have made key advances in mathematics; introducing new concepts and ideas. The Arab Muslims were the first to adopt all the ten symbols 0-9 that we use today, from the Hindu-Arabic numeral system sometime around the 8th century. Arabic numerals initially came to Europe in the late 10th century through Pope Sylvester I who studied in *Qurtaba*, Spain and then returned to Rome. The numeric value representation and application of 'zero' was also the work of Muslim mathematicians, Al-Khwarizmi and Al-Kindi.

It was this system of calculating with Arabic numerals that allowed major advances in numeral methods by Muslim scholars. In the 14th century, Al-Kashi, a Muslim scholar made major contributions to the development of decimal fractions for real as well as algebraic numbers. The foundations of trigonometry were laid by a chain of Muslim scholars before the 10th century who pioneered the study as they observed the movements of the planets. Today, trigonometry is used in solving complex problems in astronomy, navigation and cartography. Muslims also introduced algebra, which comes from the Arabic word *al-jabr*, meaning 'reunion of broken parts'.

January 2016

رَبِيعُ الْأَوَّلِ / رَبِيعُ الثَّانِي ١٤٣٦



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February 2016

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MON	TUE	WED	THU	FRI	SAT	SUN
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٧ 18	٨ 19	٩ 20	١٠ 21	١١ 22	١٢ 23	١٣ 24
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Lunar calendar is subject to appearance of the moon



Fountain Pen

The fountain pen was invented on the commissioning of the Sultan of Egypt, Al-Mu'izz, in 953 C.E. to have a pen that did not require a separate inkpot and would not stain hands and clothes.

A pen was thus created that wrote when filled with ink. It could be turned upside down and tipped from side to side without any ink being spilled. The pen did not release ink except in writing and did not need an inkpot because it had its own inkpot hidden inside. This concept was revolutionary and began the cycle that led to the development of markers and pens we use today. The King asked, "The ink will flow only when there is an intention to write...is this possible?" to which the craftsman replied, "it is possible if Allah so wills."

The idea of fountain pen was not introduced into Europe until 1702 C.E. while the first American patent was designed still a hundred years later in 1809 C.E.

February 2016

ربيع الثاني / ربيع الثاني ١٤٣٦



Meezan Bank
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March 2016

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٦ 15	٧ 16	٨ 17	٩ 18	١٠ 19	١١ 20	١٢ 21
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٢٠ 29						

Lunar calendar is subject to appearance of the moon



Toothbrush

Miswak, the first toothbrush in history, was known before Islam, but Islam added a religious aspect to using it. The use of Miswak was popularized by Prophet ﷺ who recommended Muslims to clean their teeth using a Miswak daily. It is a teeth cleaning twig made from the *Salvadora persica* tree (known as *arak* in Arabic) and is reputed to have been in use for more than 7000 years. The Muslim practice of using a twig of Miswak to scrub one's teeth before each prayer is amongst the credible sources which aided in inventing the toothbrush.

Miswak not only has the chemicals for oral treatment that can help prevent tooth decay and gum diseases but the twig also acts as a brush that helps remove plaque and fights teeth coloring.

This traditional alternative to modern toothbrush not only purifies the mouth, inhibits bad breath and increases salivation but also helps to protect teeth from germs. In 1987, World Health Organization encouraged the use of Miswak for oral hygiene because of tradition, availability and low cost.

March 2016

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ / بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ ۱۴۳۷



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April 2016

MON	TUE	WED	THU	FRI	SAT	SUN
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Lunar calendar is subject to appearance of the moon



Cheque

In history, Muslims were known to be traders, travelling the world, dealing with people of all races and faiths and trading money from one city to another. The historic evolution of the modern cheque comes from the Arabic *sakk*, a written vow used by Muslim businessmen to honour payment for merchandise upon delivery. Originating in the eastern Mediterranean as a convenient form of payment between local merchants in order to avoid the dangers and difficulties in carrying coins, the *sakk* became the foundation of the modern cheque-based payment system seen today. In the 9th century, during the rule of Harun-al-Rashid, a Muslim businessman could cash a *sakk* in China drawn on his bank in Baghdad under a highly developed "banking system".

By promoting the concept of the bills of exchange, *sakk*, or cheque, Muslims made the financing of commerce and intercontinental trade possible. This system became more versatile in 16th century Europe through the development of negotiability, eventually leading to the development of a global cheque payment system.

April 2016

١٤٣٧ / رَجَبُ



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May 2016

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Lunar calendar is subject to appearance of the moon



Medicine

The contributions of Muslim scholars laid the foundations for advancements in the field of medical knowledge; introducing revolutionary treatments such as cataract-operations and even development of the institution of the hospital. The scale and consequences of these contributions were enormous, not just for Islam but for Europe and the world. The origin of some of these ideas emerged from the Prophet's ﷺ sayings containing dietary and medical rules. These are the earliest known motives that led Muslim scholars to devote themselves to medicine.

The first Muslim hospitals date back to the 8th century in Baghdad. Al Zahrawi (936-1013 C.E.), described by many as the Father of Modern Surgery, wrote a thirty-volume medical encyclopedia that was used as the standard reference book in all the universities of Europe for over 500 years. Many modern surgical instruments are also built on the designs developed by him. Ibn al-Nafis, whose work was later translated into Latin, was the first Muslim scholar to perform groundbreaking research into the circulation of blood and functioning of the heart. These observations were unknown in Europe until three centuries later.

May 2016

رجب / شعبان ١٤٣٤



Meezan Bank
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June 2016

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Lunar calendar is subject to appearance of the moon



Parachute

The earliest form of Parachute dates back to 852 C.E., when Abbas ibn Firnas, a Muslim poet, astronomer, musician and engineer made his first attempts to construct a flying machine. This dates back to a thousand years before the Wright brothers. He jumped from the minaret of the Grand Mosque in *Qurtaba*, using a loose cloak stiffened with wooden struts hoping to glide like a bird. Although he did not glide in the air as he had expected, the cloak slowed his fall and created what is considered to be the first parachute.

In 875 C.E., at the age of seventy, having perfected a machine of silk and eagles' feathers he tried again, jumping off a mountain and staying aloft for ten minutes before crashing on landing. His conclusion, which forms the basis of modern physics behind skydiving, was that because he had not given his device a tail, the parachute did not stall on landing. Today, all modern airplanes land to their rear wheels first, which makes Ibn Firnas's comment ahead of its time. Baghdad international airport and a crater on the Moon are named after him.

June 2016

شعبان / رَمَضَانَ ١٤٣٧



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July 2016

MON	TUE	WED	THU	FRI	SAT	SUN
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Lunar calendar is subject to appearance of the moon



Soap & Shampoo

Cleanliness is a religious requirement for Muslims, which is perhaps why the 10th century Islamic world was rife with hygienic practices. Bathroom products used in the Golden Age of Muslims could easily compete with the products found in bathrooms today. It was Muslims who initially made soap for use in *hammams* by mixing oil (usually Olive oil) with *al-qali* (a salt-like substance).

Even though the ancient Egyptians and Romans had a soap of a kind, used mostly as pomade, it was the Arabs who were able to use salts such as Sodium Hydroxide, which forms the basis of soap products used today.

The Muslim cleanliness and beautification processes eventually filtered into France, via merchants, travelers and the Crusaders where they still flourish even after 700 years. Al Zahrawi, the Muslim physician and surgeon known as the Father of Modern Surgery, included in his medical book a chapter devoted to beautification, called *The Medicines of Beauty*. In 1759 Sheikh Dean Muhammad, an Indian Muslim, popularized the Indian treatment of *Champi* (Shampooing) in England and was appointed as the King's Shampooing Surgeon.

July 2016

رَمَضَانَ / شَوَّالَ ١٤٣٦



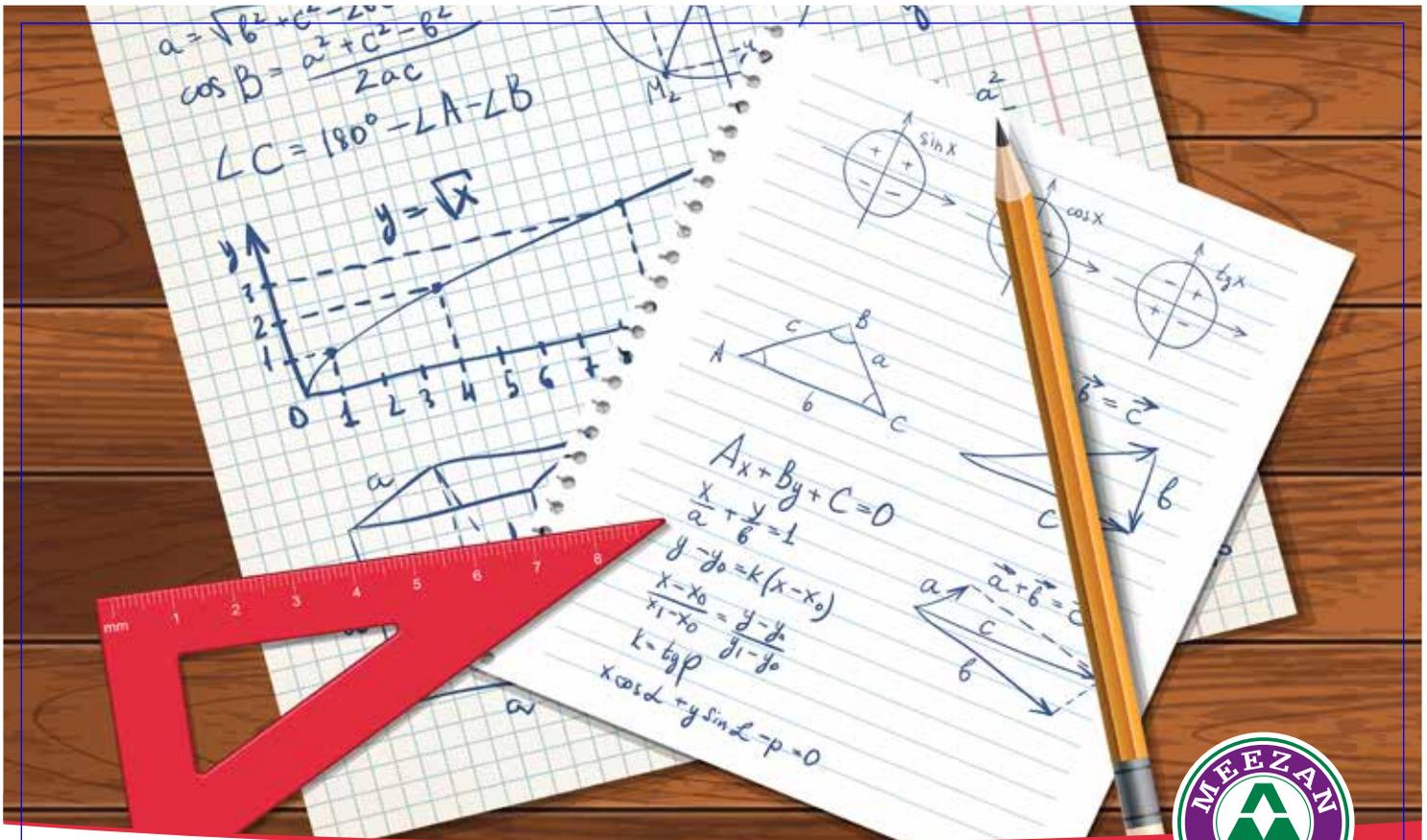
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August 2016

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Lunar calendar is subject to appearance of the moon



Algebra

Algebra is one of the main branches of mathematics developed by Muslim scholars that revolutionized mathematics. Al-Khwarizmi's work brought forth a remarkable period in the history of mathematics, which introduced the beginnings of algebra and originated concepts that were a revolutionary move away from the Greek concept of mathematics, which was essentially based on geometry.

Al-Khwarizmi's work gave mathematics a whole new dimension and enabled further developments in the field. The torch of algebra was later taken up by Al-Khwarizmi's successor, Al-Karaji, a Muslim scholar, who was able to free algebra completely from geometrical operations and replace it with arithmetical operations, which are at the core of algebra today.

200 years later, the 12th century Muslim scholar, Al-Samawal, was the first to give algebra the precise definition of '*operating on unknown using all the arithmetical tools, in the same way as the arithmetician operates on the known*'. The contribution of Muslim mathematicians to algebra was so significant that it completely changed the course of development in the subject, introducing concepts that were imported into Europe after 300 years.

August 2016

شَوَّال / ذُو الْقَعْدَةِ ١٤٣٧



Meezan Bank
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September 2016

MON	TUE	WED	THU	FRI	SAT	SUN
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Lunar calendar is subject to appearance of the moon



Windmill

The invention of the first windmills in the 7th century Persia came as a need for energy in drier parts of the Islamic world where there was not enough water and abundant desert winds blew regularly in a constant direction. Five hundred years before they were seen in Europe, windmills were made in Persia under the order of the second Muslim Caliph Hazrat Umar رضي الله عنه and were first used in the Persian province of *Sistan*. They made use of artificially-created wind tunnels made from brick and mortar.

More than a thousand years ago, geographer Al-Masudi wrote of seeing windmills used to pump water for irrigating gardens in the Iranian province of Sistan. In addition, they were widely used to grind corn and draw up water for irrigation.

The geared windmill used today also traces back to Persian origins, and was not used in the West until in the latter half of the 12th century. The introduction of the windmill had a great effect on the science of mechanical engineering and allowed new trades to be born.

September 2016

ذُو الْحِجَّةِ / ذُو الْعِدَّةِ ١٤٣٧



Meezan Bank
The Premier Islamic Bank

October 2016

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Lunar calendar is subject to appearance of the moon



Camera

Al-Kindi, the 9th century Muslim scientist, was the first person to lay the foundations of modern-day optics by questioning the Greek theories of vision and developing our first understandings of optics.

This understanding was built upon by Ibn al-Haitham in the 10th century, who made a leap forward in optical science and precisely explained much of what we know today about optics. He was also the first man to shift optics from philosophical activity to an experimental one. His theory of 'light entering the eye, rather than leaving it', completely changed our understanding of light and vision and led him to build the first camera in history – the *Camera Obscura* also known as the pinhole camera. His invention was based on the observation of light entering a dark room (*Qamara* in Arabic) through a hole in window shutters.

His work laid the foundation for many modern inventions that rely on the accurate understanding of light and vision. He was also the first person to correctly explain the phenomenon of the moon appearing larger when it is low in the sky, as an optical illusion.

October 2016

ذو الحجة ١٤٣٧ / مُحَرَّم ١٤٣٨



Meezan Bank
The Premier Islamic Bank

November 2016

MON	TUE	WED	THU	FRI	SAT	SUN
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Lunar calendar is subject to appearance of the moon



Carpets

Although carpets were made long before Islam by the Bedouin tribes of Arabia, Persia and Anatolia as tents and shelter from sandstorms, it was the Muslims who popularized them through their advanced designing and weaving techniques. Ibn Badis, a Tunisian scientist, was the first to develop ingenious inks, dyes and mixtures so that carpets could be made in wonderful colors and mesmerizing designs.

Carpets with Muslim patterns and designs were later introduced in Europe in the 12th century when the grandson of William, the Conqueror gave a carpet to an English Church. This was the same time around which woolen carpets were produced in Spain and exported all over the world.

Muslim carpets were so highly priced that Persian carpet makers were imported into England. Besides the Ottoman carpet, no other carpet reached the status and popularity of the Persian carpet, which became a state enterprise in the *Safavid's* reign.

November 2016

مَحْرَمٌ / صَفَرٌ ١٤٣٨



Meezan Bank
The Premier Islamic Bank

December 2016

MON	TUE	WED	THU	FRI	SAT	SUN
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MON	TUE	WED	THU	FRI	SAT	SUN
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Lunar calendar is subject to appearance of the moon



Coffee

The first record of coffee's discovery is from Yemen when an Arab named Khalid noticed that his animals became livelier after eating a certain berry. He boiled the berries to create *al-qahwa*. This brew was later consumed by Muslims to stay awake through nights for prayers.

Sheikh 'Abd-al-Kadir, the Persian Sufi based in Baghdad, wrote the earliest known manuscript on the history of coffee in 1588. Coffee soon spread to the rest of the Muslim world by travelers, pilgrims and traders reaching Makkah and Turkey in the late 15th century, from where it made its way to Venice in 1645.

Coffee was first introduced in England by a Turkish merchant named Pasqua Rosee in 1650 and its consumption was largely based on the traditional Muslim preparation of the drink. By 1700, there were about 500 coffeehouses in London and nearly 3,000 in the whole of England. The Arabic '*al-qahva*' became the Turkish '*kahve*' then the Italian '*caffè*' and then English '*coffee*'.

December 2016

رَبِيعُ الْأَوَّلِ / رَبِيعُ الثَّانِي ١٤٣٨



Meezan Bank
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January 2017

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١٢ 12 Eid-e-Milad-un-Nabi	١٣ 13	١٤ 14	١٥ 15	١٦ 16	١٧ 17	١٨ 18
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٢٦ 26	٢٧ 27	٢٨ 28	٢٩ 29	٣٠ 30	٣١ 31 رَبِيعُ الثَّانِي	

Lunar calendar is subject to appearance of the moon