

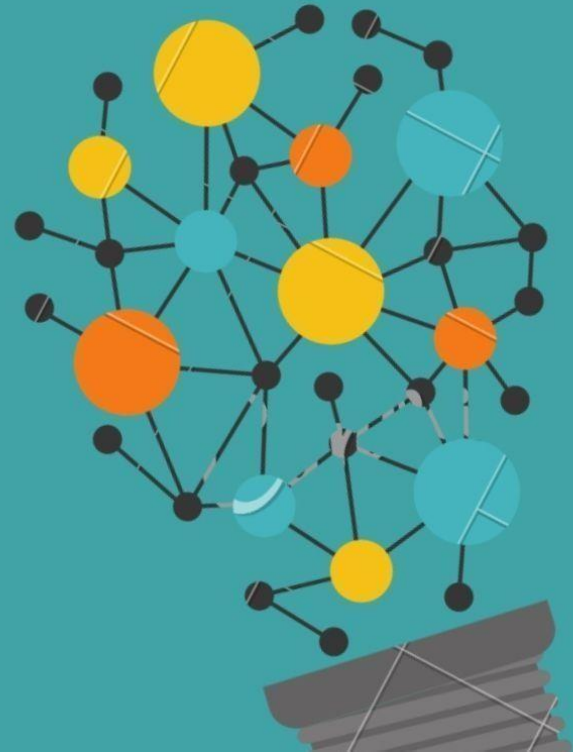
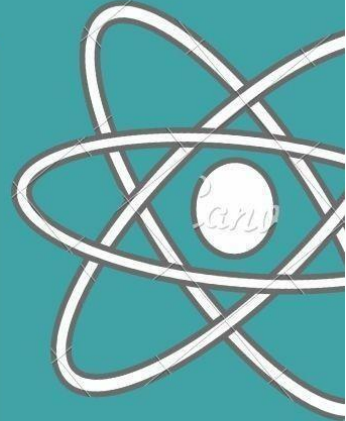
# TEENS' BEST

Uluslararası Pendik Kız Anadolu İmam Hatip Lisesi

NOVEMBER/DECEMBER 2022 6TH ISSUE

LEADING SCIENTISTS IN THE HISTORY

Editör: Davut TAKAN



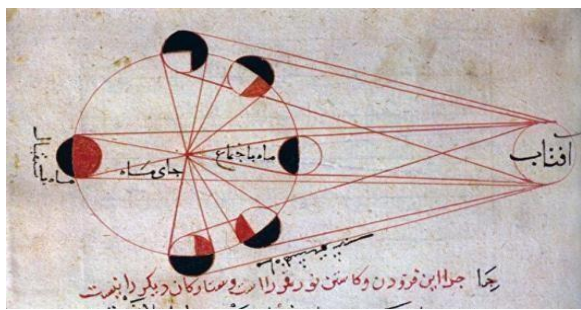
# PREFACE

This study aims to develop creative skills and research skills of the students with an inter-disciplinary approach. While collecting information and creating a well designed template including the information found, the students are also encouraged to improve their language skills. This magazine has been studied and prepared by the students of Uluslararası Pendik Kız Anadolu İmam Hatip Lisesi. Each of the scientists on this magazine is studied by a single student. And this magazine can be used as a material in chemistry, physics and other science classes. And we are happy to share this product with you.

## ALİ KUŞÇU (1403-1474)



Ali Kuşçu, who was interested in mathematics and astronomy from a young age, took mathematics and astronomy lessons from Kadızâde Rumi, Gıyaseddin Cemşid and Muînuddin Kâşî from Bursa. Then he went to Kirman to increase his knowledge. Here, he wrote the treatise Hall-ü Eşkâl-i Kamer (Explanation of the Moon Phases) and his work Şerh-i Tecrid. After completing his education in Samarkand and Kirman, Ali Kuşçu became an assistant to Uluğ Bey and the director of his observatory. He wanted to go on a pilgrimage in 1449. In Tabriz, Akkoyunlu ruler Uzun Hasan showed great respect to him and asked for his help in peace negotiations with the Ottoman Empire.



Ali Kuşçu (Uzbek: Ali Qushchi Samarqandiy), whose real name is Ali Bin Muhammed, was born in Samarkand in 1403 and died on December 16, 1474 in Istanbul. He was an astronomer, mathematician and linguist in the Timurid Empire and the Ottoman Empire. There are claims that he is Turkish or Persian. His family became famous with the nickname "Birdman" because his father, Mohammed, was the Sultan of the Timurid Empire and the bird keeper of his astronomer Uluğ Bey.



Ali Kuşçu, who was welcomed with a great ceremony by the order of Fatih Sultan Mehmet on the Ottoman - Akkoyunlu border, became a professor at the Hagia Sophia madrasah. Mehmet the Conqueror appointed Ali Kuşçu, whom he took with him during his campaign against Uzun Hasan in 1473, to the Hagia Sophia Madrasa on his return. It is known that even scientists followed the lectures of Ali Kuşçu, who brought vitality to the studies in the field of astronomy and mathematics in Istanbul. He died in Istanbul on December 16, 1474 at the age of 71. His tomb, unique to the 15th century, is in the burial area around the Eyüp Sultan tomb. Some of the descendants of Ali Kuşçu were sent to Kahramanmaraş with an edict as a result of the increase of the Shiite Sect in that region shortly after Yavuz Sultan Selim conquered Kahramanmaraş. The remaining grandchildren later migrated to Düzcce of their own accord. Some of the family in Kahramanmaraş settled in Bursa after the proclamation of the Republic. Fuat Kuşçuoğlu Street in Bursa was also named after one of Ali Kuşçu's grandsons, Fuat Bey. His lineage continues in Kahramanmaraş, Düzcce and Bursa with the surname Kuşçuoğlu.

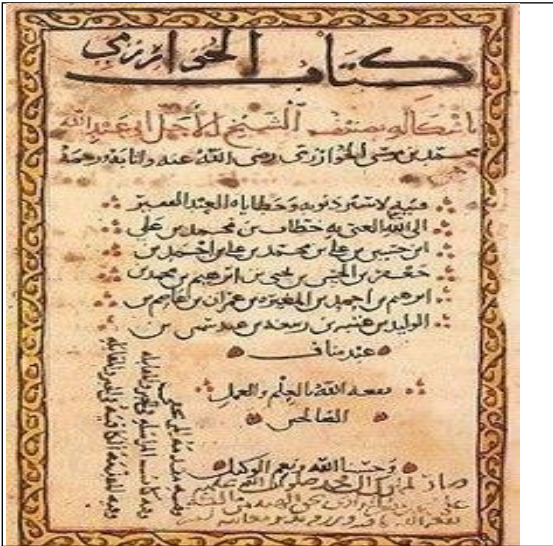
**RABİA BAYRAKTAR**  
**11-E**

Harezmi (Al-Khwārizmī) - 780- 850



**Al-Khwārizmī**, in full **Muḥammad ibn Mūsā al-Khwārizmī**, (born c. 780 —died c. 850), Muslim mathematician and astronomer whose major works introduced Hindu-Arabic numerals and the concepts of algebra into European mathematics. Latinized versions of his name and of his most famous book title live on in the terms *algorithm* and *algebra*.

Al-Khwārizmī lived in Baghdad, where he worked at the “House of Wisdom” (Dār al-Ḥikma) under the caliphate of al-Ma’mūn. The House of Wisdom acquired and translated scientific and philosophic treatises, particularly Greek, as well as publishing original research. Al-Khwārizmī’s work on elementary algebra, *Al-Kitāb al-mukhtaṣar fī ḥisāb al-jabr wa’l-muqābala* (“The Compendious Book on Calculation by Completion and Balancing”), was translated into Latin in the 12th century.

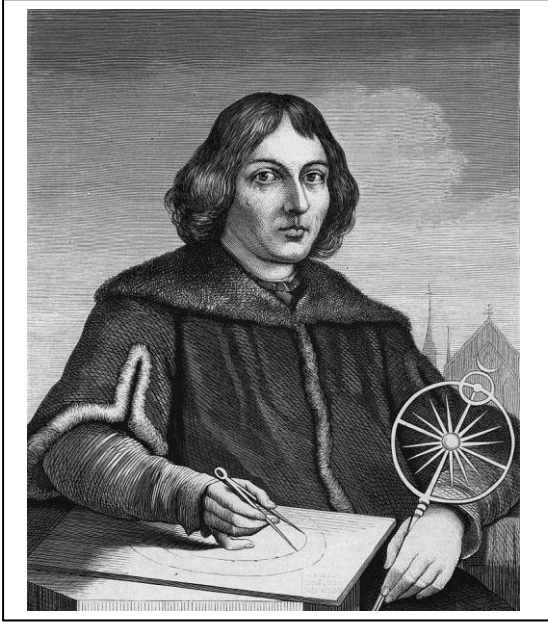


In the 12th century a second work by al-Khwārizmī introduced Hindu-Arabic numerals (see *numerals and numeral systems*) and their arithmetic to the West. It is preserved only in a Latin translation, *Algoritmi de numero Indorum* (“Al-Khwārizmī Concerning the Hindu Art of Reckoning”). From the name of the author, rendered in Latin as *Algoritmi*, originated the term *algorithm*. A third major book was his *Kitāb ṣūrat al-aṛḍ* (“The Image of the Earth”; translated as *Geography*), which presented the coordinates of localities in the known world based, ultimately, on those in the *Geography* of Ptolemy (flourished 127–145 CE) but with improved values for the length of the Mediterranean Sea and the location of cities in Asia and Africa. He also assisted in the construction of a world map for al-Ma’mūn and participated in a project to determine the circumference of the Earth.

Finally, al-Khwārizmī also compiled a set of astronomical tables (*Zīj*), based on a variety of Hindu and Greek sources. This work included a table of sines, evidently for a circle of radius 150 units. Like his treatises on algebra and Hindu-Arabic numerals, this astronomical work (or an Andalusian revision thereof) was translated into Latin.

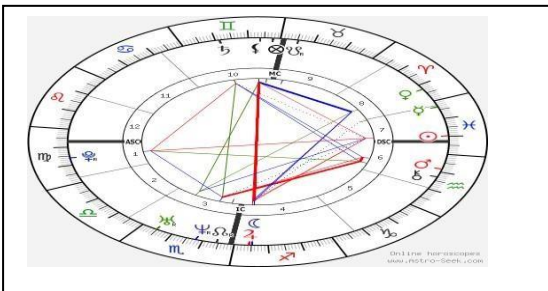
DAID FARES  
11-E

## Nicolas Copernicus (1473-1543)



Nicolaus Copernicus was born on February 19, 1473 in Torun, a city in north-central Poland on the Vistula River. Copernicus was born into a family of well-to-do merchants, and after his father's death, his uncle—soon to be a bishop—took the boy under his wing.

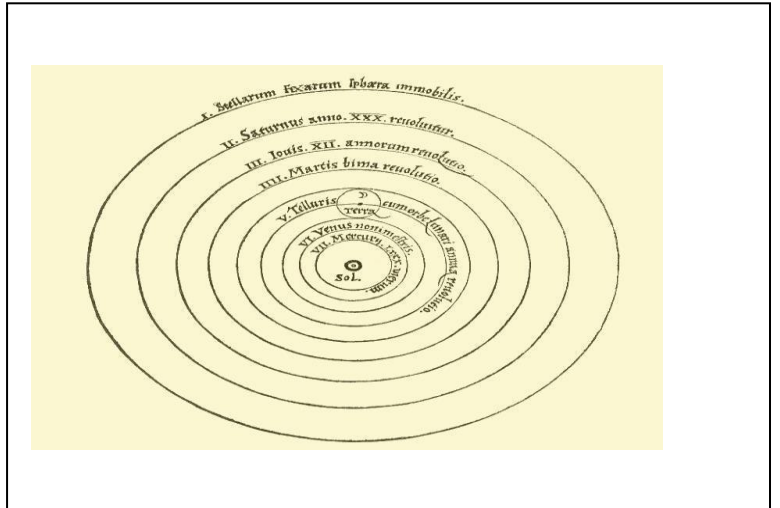
At the University of Krakow, he studied liberal arts, including astronomy and astrology, and then, like many Europeans of his social class, was sent to Italy to study medicine and law.



Nicolaus Copernicus was a Polish astronomer and mathematician known as the father of modern astronomy. He was the first European scientist to propose that Earth and other planets revolve around the sun, the heliocentric theory of the solar system. Prior to the publication of his major astronomical work, “On the Revolutions of the Heavenly Spheres,” in 1543, European astronomers argued that Earth lay at the center of the universe, the view also held by most ancient philosophers.

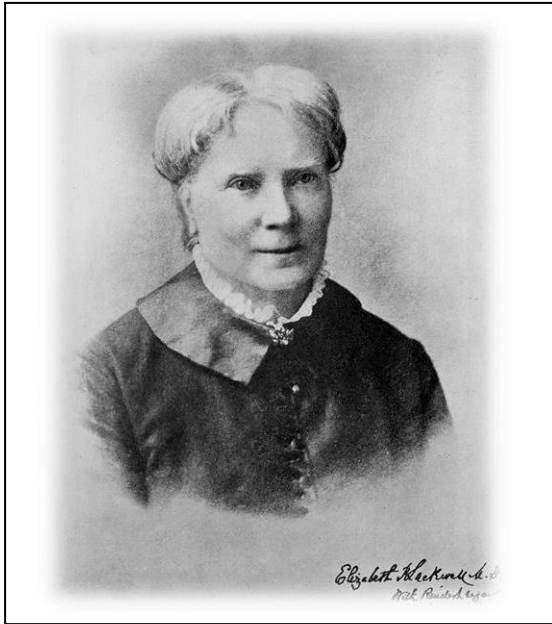
In addition to correctly postulating the order of the known planets from the sun and estimating their orbital periods relatively accurately, Copernicus argued that Earth turned daily on its axis and that gradual shifts of this axis accounted for the changing seasons.

In “On the Revolutions of the Heavenly Spheres,” Copernicus’ groundbreaking argument that Earth and the planets revolve around the sun led him to make a number of other major astronomical discoveries. While revolving around the sun, Earth, he argued, spins on its axis daily. Earth takes one year to orbit the sun and during this time wobbles gradually on its axis, which accounts for the precession of the equinoxes.



**İKLİMA GÜL**  
**11-E**

## Elizabeth Blackwell (1821-1910)



Elizabeth Blackwell was the first woman to earn a degree from medical school in the United States and the first woman to appear on the medical registry of the United Kingdom. Blackwell was also instrumental in opening the medical profession to other women through a distinctive combination of managerial and social vision. She lectured widely and published several works on medical practice, medical advice, medical ethics, and modern morality.



The plan to become a doctor began to take shape in 1845. Blackwell's determination to pursue medicine brought with it something like missionary zeal and moral purpose, as her writings make clear. In her autobiography, Blackwell recalls that she began considering a medical career at this time after a dying female friend claimed that "If I could have been treated by a lady doctor, my worst sufferings would have been spared me."

If society will not admit of woman's free development, then society must be remodeled.

*Elizabeth Blackwell*

Initially, Blackwell planned to become a surgeon. But after a medical accident left her blind in one eye not long after graduating from medical school, she was forced to take a different path. After working for years both in private practice and, later, in her infirmary, she launched a women-only medical college in 1868. The Women's Medical College of the New York Infirmary quickly gained a reputation for its rigorous standards and was eventually absorbed by Cornell.

Five years after returning to her native England, she helped establish the London School of Medicine for Women in 1874–5. She taught there as a professor of gynecology until an injury forced her to retire in 1907.

**RABİA COŞKUN**  
**11-E**

## Galileo Galilei- 1564- 1642



Galileo Galilei (February 15, 1564 - January 8, 1642) Italian astronomer, physicist, mathematician, engineer and philosopher. Galileo, who made revolutionary contributions to the scientific developments in the Renaissance, has been given names such as "father of modern physics" and "father of science". In the field of observational astronomy, he made telescopic proof of the phases of Venus, discovered the four largest moons of Jupiter, and analyzed sunspots. Galileo has also worked in the fields of sciences and technology.



Galilei, who improved himself in the field of mathematics, obtained a professorship in Pisa in 1589. He introduced the compass in 1597, built a primitive thermometer in the early 1600s, developed a pendulum to measure human heartbeat, and in 1604 discovered the mathematical laws of free fall. In 1610 he published his first findings about the Milky Way and star clusters. He became a court mathematician in Florence, as his publications attracted great interest.



Galileo, who was tried by the Inquisition, was suspected of committing the crime of heresy, and Galileo was both forced to retract his writings and sentenced to spend the rest of his life under house arrest. While under house arrest, he wrote Two New Sciences, one of his most successful works, and included his work on kinematics and the force of matter, which he had done forty years ago.

**EBRAR ŞULE GENÇ**  
**11-E**

## Stephen Hawking (1942-2018)

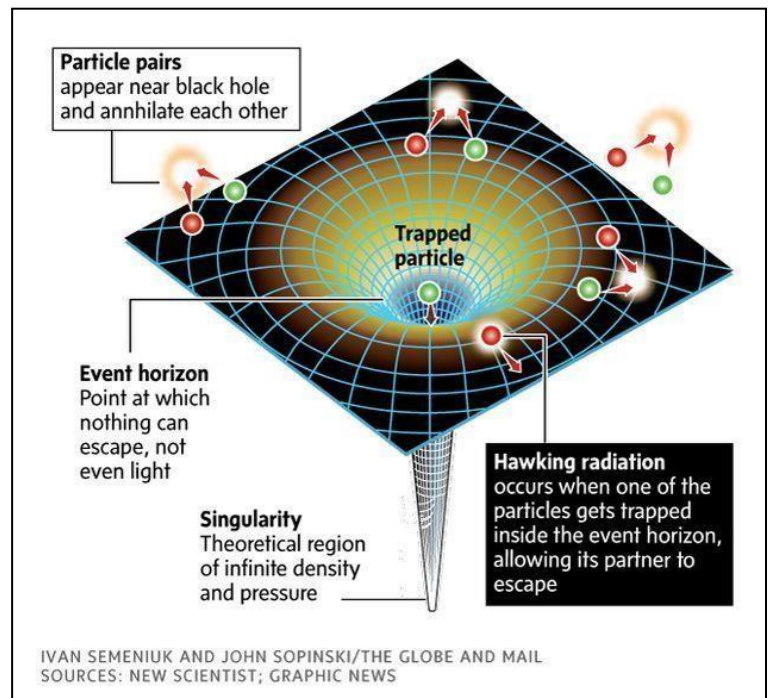
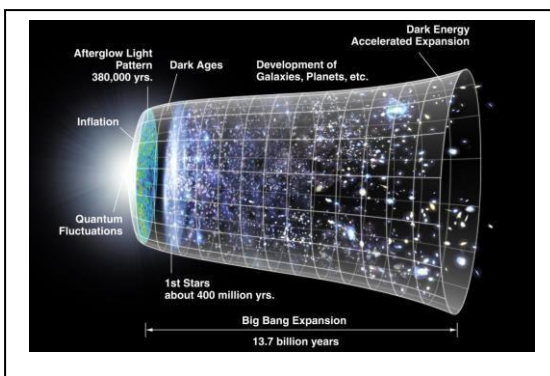


Stephen Hawking, in full Stephen William Hawking, (born January 8, 1942, Oxford, Oxfordshire, England—died March 14, 2018, Cambridge, Cambridgeshire), English theoretical physicist whose theory of exploding black holes drew upon both relativity theory and quantum mechanics. He also worked with space-time singularities.

In 1979, Hawking was elected Lucasian Professor of Mathematics at the University of Cambridge, a position once held by the mathematician Isaac Newton. Over the ensuing years Hawking earned fame for his ideas, not just in the scientific community but in households around the world.

**“Quiet people have the loudest minds.”**  
**Stephen Hawking**

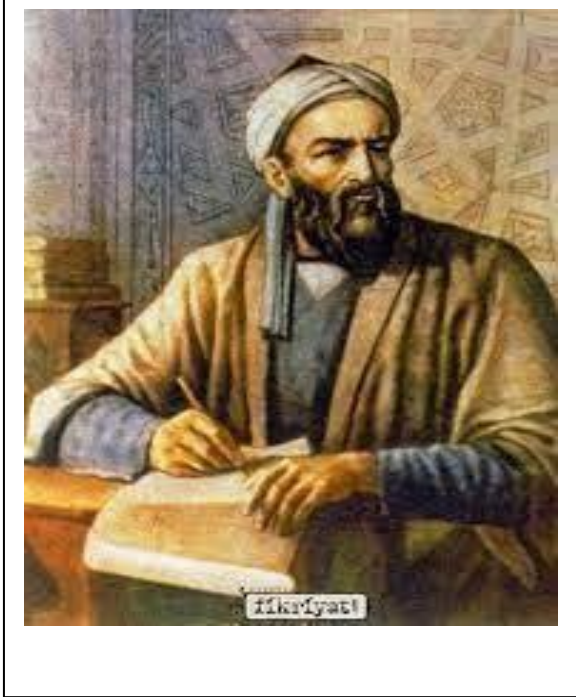
Hawking was diagnosed with 'amyotrophic lateral sclerosis' (ALS), a type of motor neurone disease, at the age of 21. Though initially given just two years to live, the degenerative condition progressed slower than expected, and he continued working for decades with the support of his family and friends.



**Tasnim Alkhateeb**  
**11-E**



**İbn-I Sina (Avicenna) – 980-1037**



He was born around 980 in the village of Eşene (Uzbekistan) near Bukhara and died in the city of Hamadan (Iran) in 1037. He has written about 200 books in different fields, focusing on medicine and philosophy. Known to Westerners as the founder of modern medieval science and the leader of physicians; He is also known as the "Grand Master".

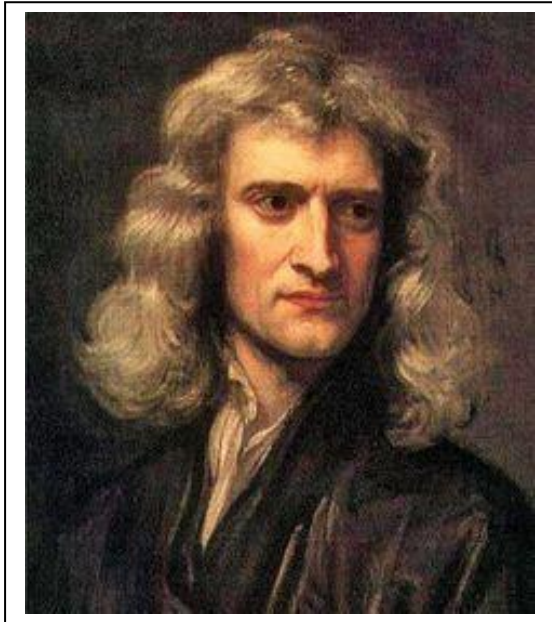
In the work, the causes of health and diseases are explained; According to Ibn Sina, it is not possible to improve health without determining the causes of both health and disease. Apart from these, the work mentions the effect of climate and environment on one's health and the importance of diet. Doctor William Osler stated that the work "remains as the gospel of medicine, longer than any other work".

He wrote about 450 articles on various topics, 240 of which have survived. 150 of his writings are on philosophy and 40 on medicine. The most famous of his works are Kitabü's-Şifa (Book of Healing) and Al-Kanun fi't-Tıb (The Law of Medicine), which is a very extensive work covering philosophy and science. These two works became textbooks in Montpellier and Louvain until 1650, when they were taught in medieval universities.



**Şeyda Betül Gül**  
**11-E**

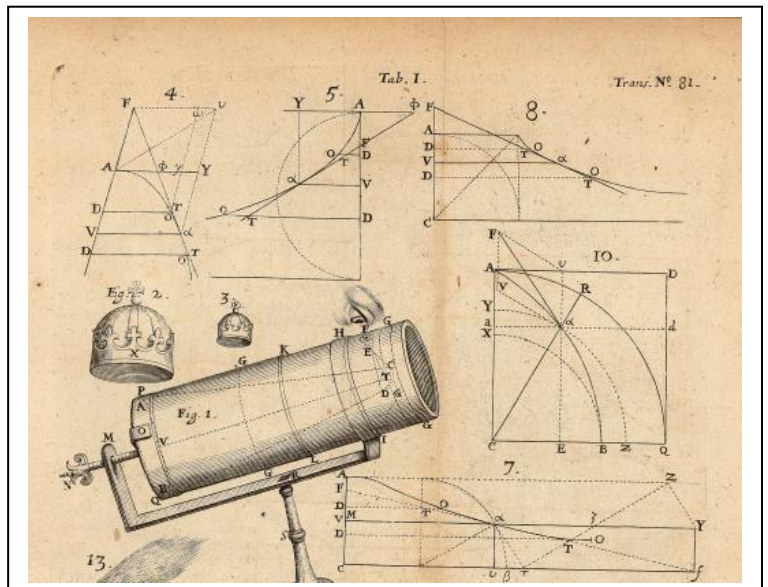
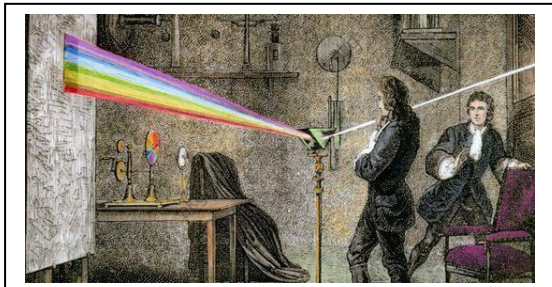
**Isaac Newton (1642-1727)**



Isaac Newton was a physicist and mathematician who developed the principles of modern physics, including the laws of motion and is credited as one of the great minds of the 17th-century Scientific Revolution.

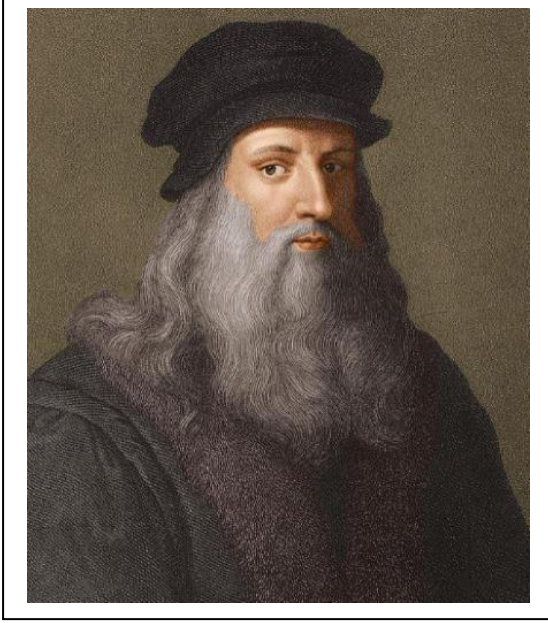
Born in 1643 in Woolsthorpe, England, Sir Isaac Newton began developing his theories on light, calculus and celestial mechanics while on break from Cambridge University. Years of research culminated with the 1687 publication of “Principia,” a landmark work that established the universal laws of motion and gravity.

Newton built the first practical reflecting telescope and developed a sophisticated theory of colour based on the observation that a prism separates white light into the colours of the visible spectrum. His work on light was collected in his highly influential book *Opticks*, published in 1704. He also formulated an empirical law of cooling, made the first theoretical calculation of the speed of sound, and introduced the notion of a Newtonian fluid.



**MELISA MOTOR  
11-E**

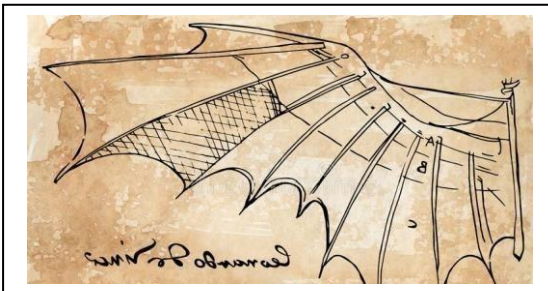
## Leonardo Da Vinci- 1452-1519



Leonardo Da Vinci, who was born on 15 April 1452 and died on 2 May 1519, was an Italian polymath of the High Renaissance who was active as a painter, draughtsman, engineer, scientist, theorist, sculptor, and architecture.

While his fame initially rested on his achievement as a painter, he also became known for his notebooks, in which he made drawings and notes on a variety of subjects, including anatomy, astronomy, botany, cartography, painting, and paleontology. Leonardo is widely regarded to have been a genius who epitomized the Renaissance humanist ideal and his collective works comprise a contribution to later generations of artists matched only by that of his younger contemporary, Michelangelo

The Mona Lisa is a 16th century oil painting portrait painted by Leonardo da Vinci from Florence, Italy, on a panel with the Sfumato technique. The painting is currently exhibited at the Louvre Museum in Paris under the title Portrait of Lisa Gherardini, wife of Francesco del Giocondo



**AYÇA ÇELİK**  
**11-E**

**Adviser Teacher**  
**DAVUT TAKAN**

## Marie Curie (1867-1934)



In 1895, Curie decided to look into uranium rays as a possible field of research for a thesis.

She used an innovative technique to investigate samples. Fifteen years earlier, her husband and his brother had developed a version of the electrometer, a sensitive device for measuring electric charge. Using her husband's electrometer, she discovered that uranium rays caused the air around a sample to conduct electricity.



1911 Nobel Prize diploma

She is the first woman to receive a Nobel Prize. She is the first woman to have a doctorate in Europe. And she is also the first woman to teach at the University of Paris and to receive the title of professor at the same university. Moreover, she is the only person to have received a Nobel Prize in two different fields.

Marie awarded her doctorate in 1904, becoming the first woman in France to receive a doctorate in advanced science. She became the first woman in history to receive the Nobel Prize, receiving the Nobel Prize in Physics, which she shared with her husband and Becquerel, for her research on radioactivity in the same year.

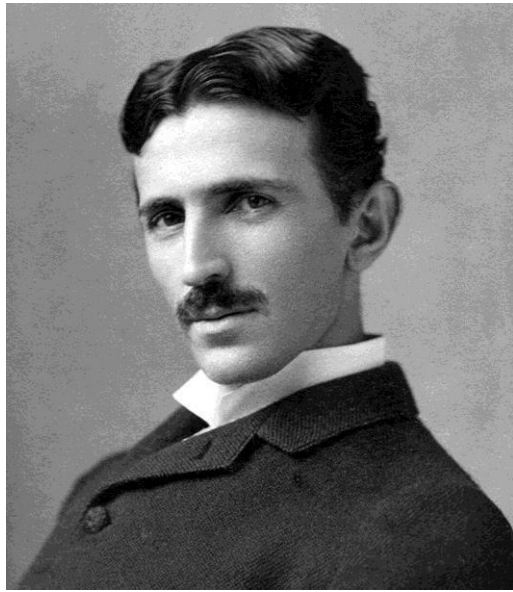


**FATIMA ANLAYIŞ**

**11-E**

**Adviser Teacher  
DAVUT TAKAN**

## Nicola Tesla (1856- 1943)

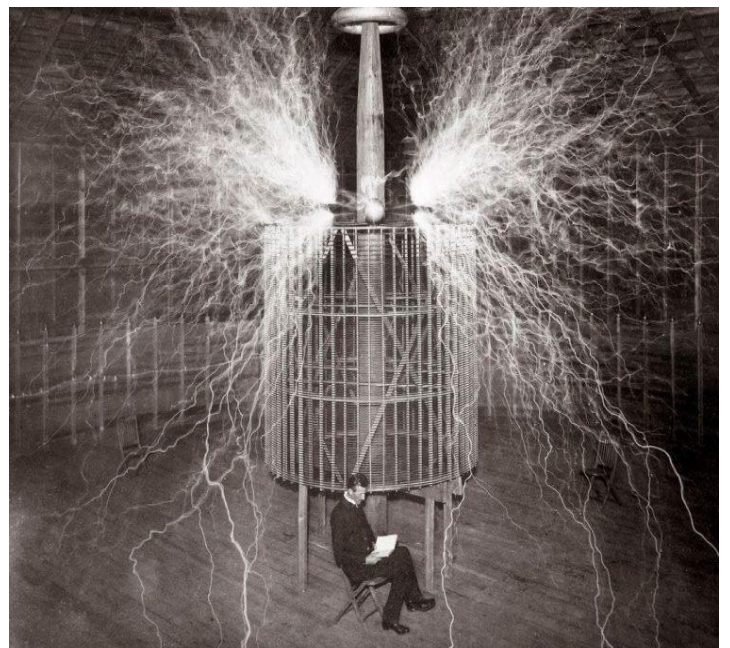


He applied for many patents for his AC power discoveries which were later sold to Westinghouse. AC power has been widely used since its discovery and still has some applications in radio and television transmission.

The most familiar symbol of Tesla's work is the Tesla coil, embodied in the tower that was erected at what is now the last remaining laboratory located in Shoreham, New York, the Tesla Science Center at Wardenclyffe. Here, Tesla created a tower topped by his infamous coils which shot electric sparks through the air and circulated the electricity around the coils by alternating current. Many of Nikola Tesla's inventions went unrecognized, others lost when his notes were destroyed by fire. At the end of his life, his research was confiscated by the FBI, and only in recent years has it been made available to the public.

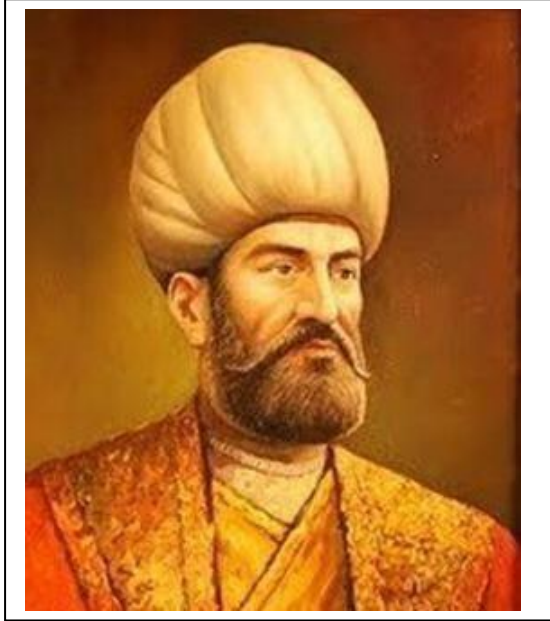
Nikola Tesla inventions constitute numerous technological breakthroughs throughout his lifetime. Born in Smiljan, Croatia, in 1856, the math and physics genius contributed innovations that continue to impact our lives daily today. He held over three hundred patents, but was only recognized for some, indicating many of his ideas were tested and failed or never became well known.

When Tesla came to the United States, he worked for Thomas Edison in Manhattan and was promised \$50,000 if he could make Edison's direct current method successful. As it turned out, Edison's DC current was not as effective as Tesla's own alternating current method in transmitting electricity over long distances. When Edison reneged on his offer to pay Tesla to solve his DC power design flaws, Tesla quit and moved on to his next endeavor.

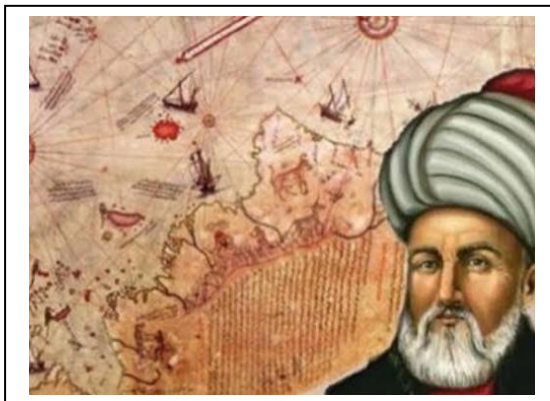


**Sena Sarıkaya**  
**11-E**

## Piri Reis (1470- 1554)



After the expedition, Piri Reis returned to Gallipoli to make a book for the Bahriye from the notes he had taken. He compiled his nautical notes in Kitab-ı Bahriye, a Maritime Book



Ahmet Muhyiddin Piri, who was born in 1470 to a Karaman family, is known for his world maps showing America and his nautical book called Kitab-ı Bahriye. Piri Reis was executed by beheading in Cairo in 1554, upon the decree of Suleiman the Magnificent.

Piri started sailing alongside his uncle Kemal Reis. Between 1487 and 1493 they pirated in the Mediterranean together; They participated in raids on the coasts of Sicily, Corsica, Sardinia and France. When the Muslims, who were massacred in Gırnata, the last city under the rule of Muslims in Andalusia, asked for help from the Ottoman Empire in 1486, the Ottoman Empire, which did not have a navy to go overseas in those years, sent Kemal Reis to Spain under the Ottoman Flag. Piri Reis, who participated in this expedition, carried Muslims from Spain to North Africa with his uncle.



Dilara Nur Ölmez  
11-E

**Aziz Sancar (1946-...)**



Aziz Sancar, born on September 8, 1946 in Savur, Mardin, is a Turkish doctor, academician, biochemist, molecular biologist and scientist. He won the Nobel Prize in Chemistry in 2015 for his work.

Aziz Sancar, who was born in 1946 in the Savur district of Mardin, has been working at the University of North Carolina in the USA since 1997. He is best known for pioneering biochemical approaches used to identify many parts of DNA repair over the past 20 years. He is also the first American Turkish to be elected to the US National Academy of Sciences along with Mehmet Özdoğan. Sancar was awarded the Nobel Prize in Chemistry in 2015 for his research mapping how cells repair damaged DNA and preserve genetic information.

The terms "maxciell technique", developed and named by Aziz Sancar, and "excinuclease/excision nuclease enzyme", which he invented and named after him, entered the Oxford University Biochemistry and Molecular Biology Dictionary in England.

Sancar was awarded the 2015 Nobel Prize in Chemistry, along with American Paul Modrich and Swedish Tomas Lindahl, for his work on DNA repair. These three researchers had worked independently for more than 30 years, largely in bacterial cells. Sancar made breakthroughs in the field of nucleotide cut repair, while Tomas Lindahl and Paul Modrich discovered some of the other DNA repair mechanisms, such as cut repair and mismatch repair. The fundamantal mechanisms they illuminate were later demonstrated in complex organisms, including humans. For example, a direct causal relationship has been found between nucleotide cut repair disordes and skin cancers.

**2015 NOBEL KİMYA ÖDÜLÜ**  
 2015 Nobel Kimya Ödülü "Hücrelerin DNA'yı Nasıl Onardıklarını Haritalamak" üzere yaptığı çalışmalarından dolayı Tomas Lindahl, Paul Modrich ve Aziz Sancar'a verildi.

**DNA HASARI**  
 UV ışığı DNA'da hasar yapar. A-T ile eşleşen C-G ile eşleşir.

**BAZ ESKIZYON ONARIMI**  
 DNA hasarı UV ışığıyla oluşur. Bu hasarı onarmak için baz eşleşimi kontrol edilir. DNA hasarı UV ışığıyla oluşur. Bu hasarı onarmak için baz eşleşimi kontrol edilir.

**NÜKLEOTTİ ESKIZYON ONARIMI**  
 UV ışığı DNA'da hasar yapar. Bu hasarı onarmak için baz eşleşimi kontrol edilir.

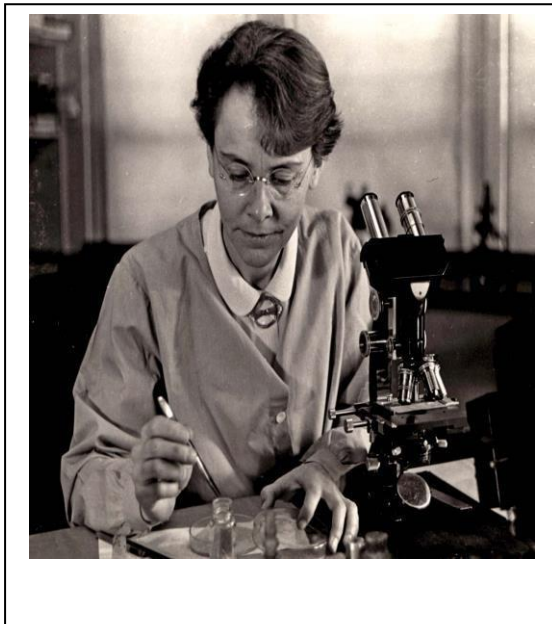
**BAZ ESKIZYON ONARIMI**  
 DNA hasarı UV ışığıyla oluşur. Bu hasarı onarmak için baz eşleşimi kontrol edilir.

**BilimFili**



**Tuğbanur ER**  
**Prep- B**

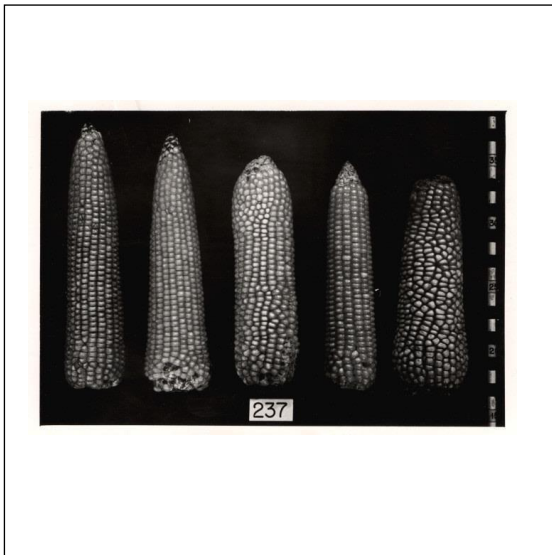
**Barbara McClintock (1902-1992)**



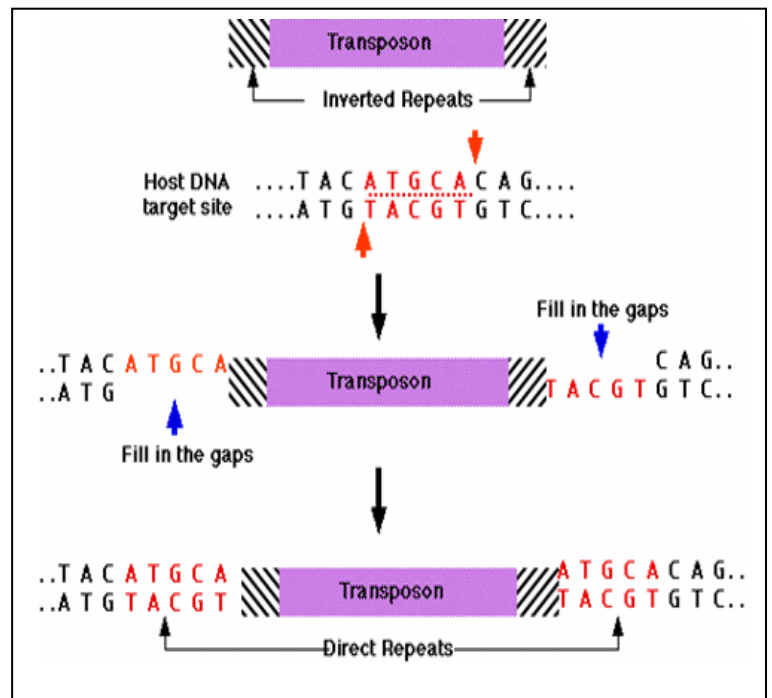
Barbara McClintock was born on 16 June, 1902. She was born in Hartford. She is a USA citizen. She graduated from Cornell University. And she has a lot of prize.

She interested medicine. She studied about sweet corn's build. Her works very important for today's work. She gets a Nobel Prize and she gets a National Science Medal from USA President.

She was interested in jazz music. Also she studies botany as a senior. She never married. She died when she is 90 years old.



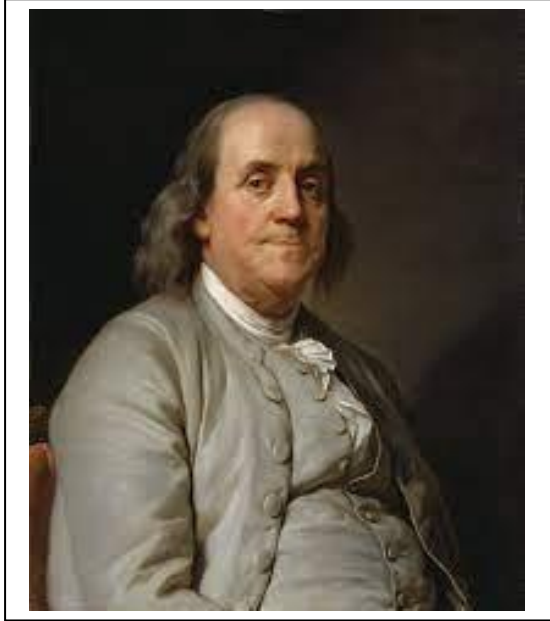
And this is her study of the structure of corn.



**Süeda Mertding  
Prep- B**



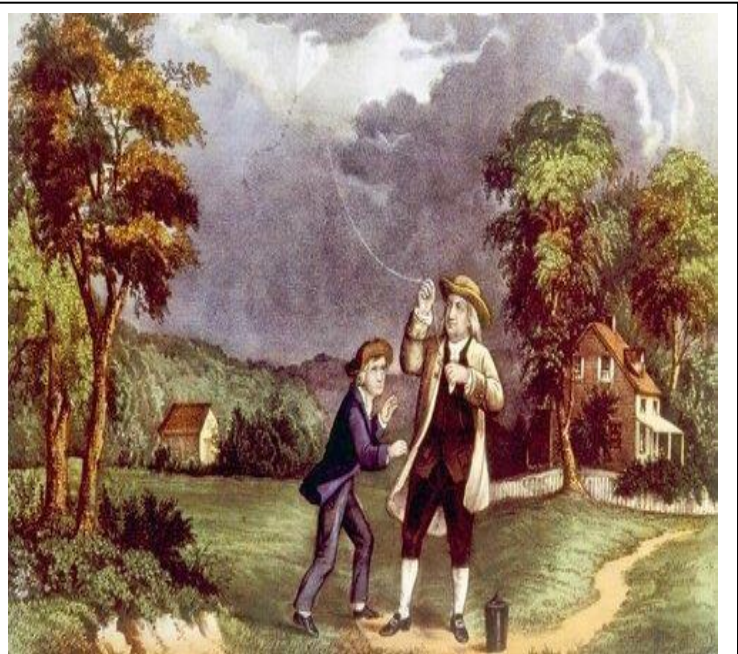
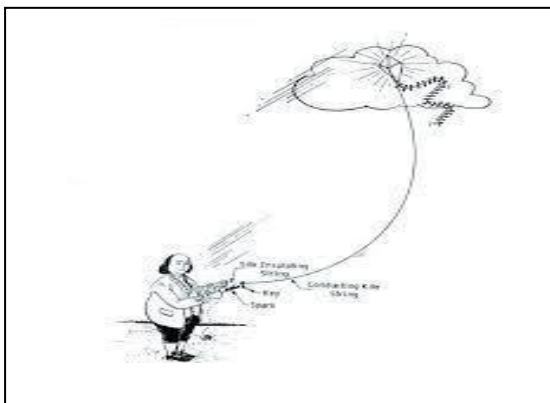
## Benjamin Franklin (1706-1790)



Benjamin Franklin was born January 17, 1706 in America. Benjamin Franklin was an American polymath who was active as a scientist, inventor, statesman, diplomat, printer, publisher. As a scientist, he was a major figure in the American Enlightenment and for charting and naming the current still known as the Gulf Stream.

Franklin, who made researches especially on electrical phenomena, invented the plus and minus ends of electric charges and put forward the principle of conservation of electric charge. At the end of his experiment by flying a kite in a stormy weather, he discovered that lightning is an electrical phenomenon.

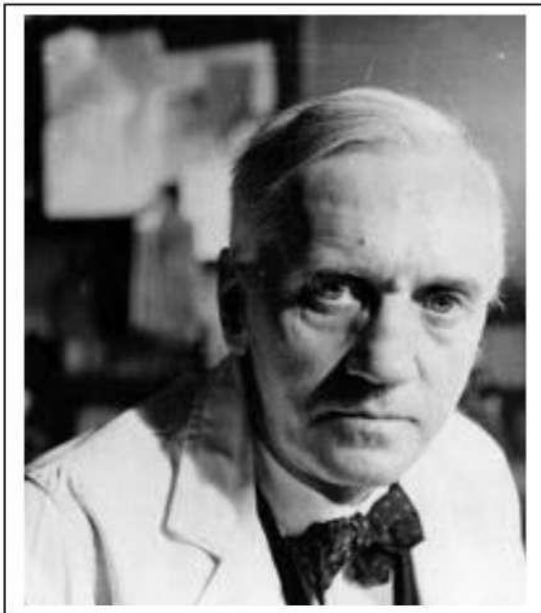
He wrote articles under the signature of Richard Saunders in the Almanac, which he directed between 1732 and 1757. A club called Junto where topics such as politics, philosophy, science and business relations are discussed; He founded a library, hospital and fire insurance company. He multiplied his printing presses.



**SANIYE AKYOL**

**Prep-B**

## Alexander Fleming(1881-1955)



Penicillins are used to treat infections caused by bacteria. They work by killing the bacteria or preventing their growth. There are several different kinds of penicillins. Each is used to treat different kinds of infections.

One hot summer day a laboratory assistant, Marry Hunt, arrived with a cantaloupe that she had picked up at the market and that was covered with a 'pretty, golden mold.' Serendipitously the mold turned out to be the fungus *Penicillium chrysogenum* and it yielded 200 times the amount of penicillin as the species that.

Penicillin is, in fact one of the most important historically groundbreaking inventions discovered by accident. Discovered by Dr. Alexander Fleming, Penicillin was discovered by chance as result of some studies carried out in the laboratory.



**EMİNE ZEHRA NALBANT**  
**PREP-B**

**Adviser Teacher**  
**DAVUT TAKAN**

## Hazarfen Ahmed Çelebi 1609-1640

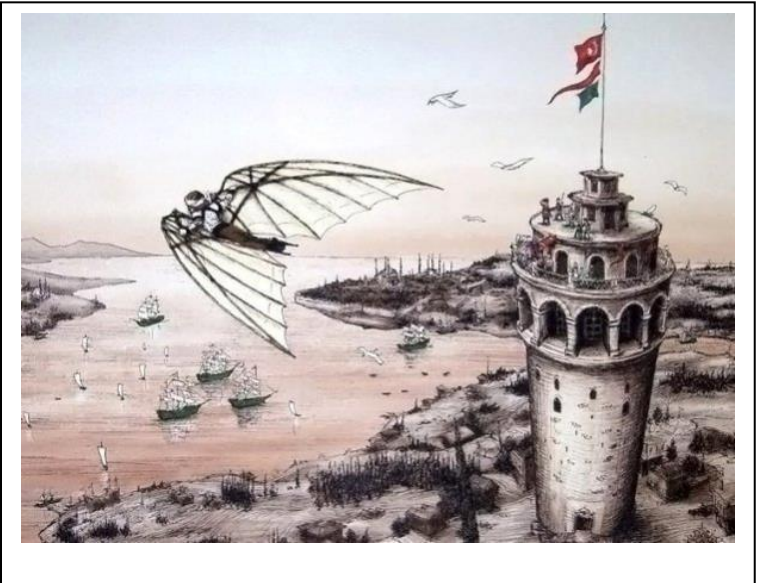


Hezarfen Ahmet Celebi is an unforgettable name. His trials and tribulations have the shadow of genius. Hezarfen airstrip-one of the three airports in Istanbul-is a reminder that dreams do not die.



Hezarfen Ahmet Celebi (1609-1640), an inhabitant of Istanbul in the 17th century Ottoman Empire is credited with the first appropriate flight with artificial wings in the history of aviation. The event took place in the year 1638 during the tenure of Sultan Murad IV. Hezarfen took off from the 183-foot tall Galata Tower near Bosphorus and landed successfully at Uskudar, on the other side

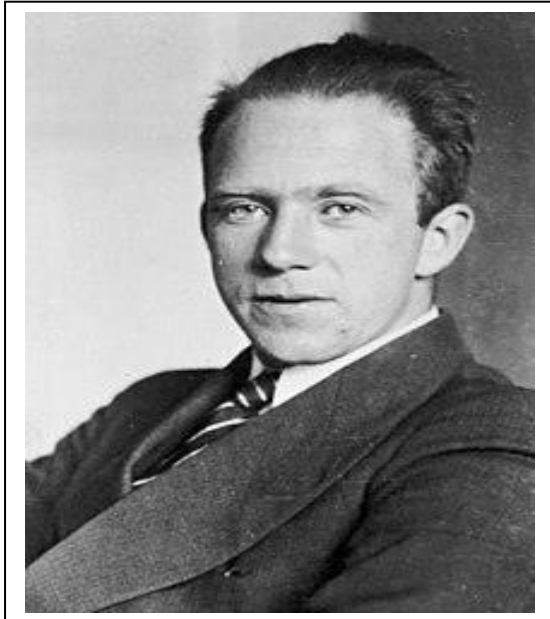
This feat was 200 years ahead of its time. Evliya Celebi, historian and chronicler and an eyewitness, recorded vividly in his Seyahatname (a book of travel), the jubilation that followed. Sultan Murad IV was inordinately pleased. Hezarfen was awarded a thousand gold pieces.



**BİLGE YAREN ARSLAN**

**Prep-B**

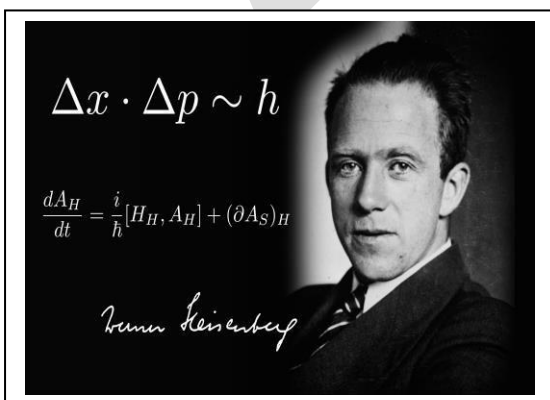
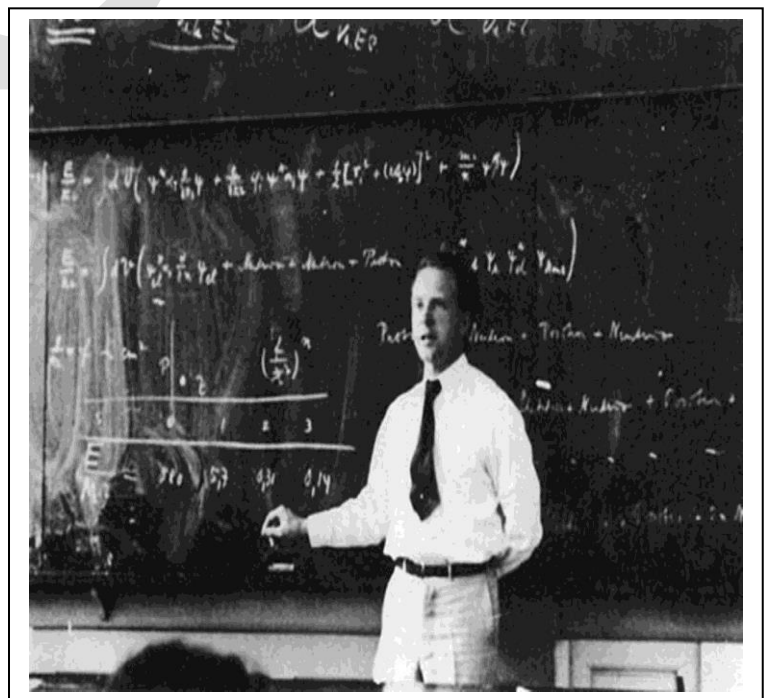
## Werner Heisenberg (1901-1976)



Werner Heisenberg, German physicist and philosopher who discovered a way to formulate quantum mechanics in terms of matrices. For that discovery, he was awarded the Nobel Prize for 1932. He also made important contributions to the of the hydrodynamics of turbulent flows, the atomic nucleus, ferromagnetism, cosmic rays and subatomic particles.

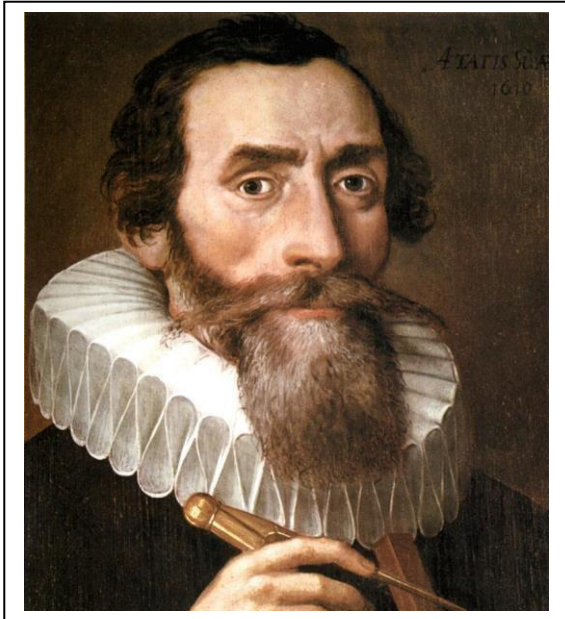
Heisenberg drew a philosophically conclusion: absolute causel determinisim was impossible, since it required exact knowledge of both position and momentum as initial conditions .Therefore, the use of probabilistic formulations in atomic theory resulted not from ignorance but from the necessarily indeterministic relationship between the variables. Heisenberg worked on the theory of the atomic nucleus following the discovery of the neutron in 1932, developing a model of proton and neutron interaction in an early description of what decades later came to be known as the strong force.

In 1925, Heisenberg tackled the problem of spectrum intensities of the electron taken as an anharmonic oscillator. Quantum mechanics demonstrated, according to Heisenberg, that the momentum and position of a particle could not both be exactly measured simultaneously. He said there is a similar relationship between any pair of canonical conjugate variables, such as energy and time.



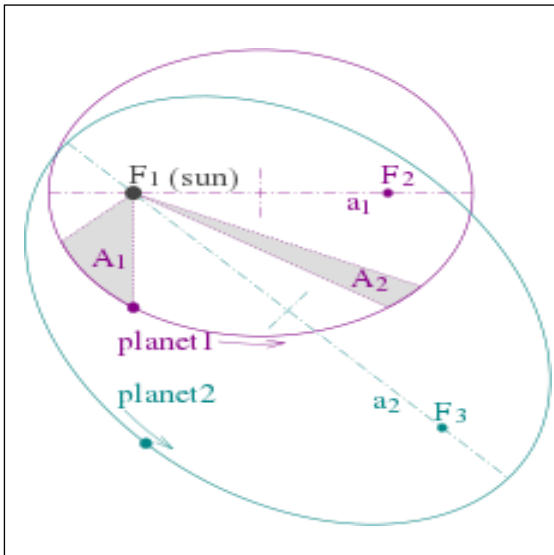
SERPİL BÜŞRA ACAR  
Prep-B

## Johannes Kepler ( 1571-1630 )

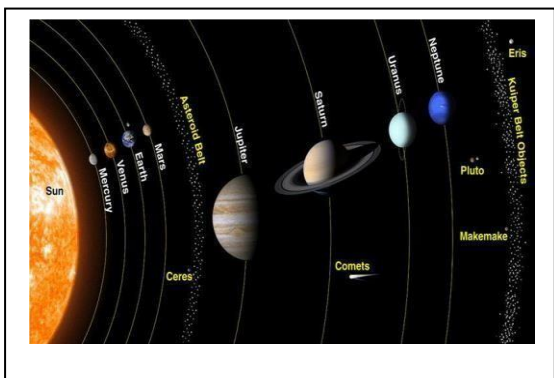


Johannes Kepler was a German astronomer, mathematician, astrologer, natural philosopher and writer on music. He is a key figure in the 17<sup>th</sup>-century Scientific Revolution, best known for his laws of planetary motion and his books *Astronomiae Nova*, *Harmonice Mundi* and *Epitome Astronomiae Copernicanae*. These works also provided one of the foundations for Newton's theory of universal gravitation.

Kepler was a mathematics teacher at a seminary school in Graz, where he became an associate of Prince Hans Ulrich von Eggenberg. Later he became an assistant to the astronomer Tycho Brahe in Prague, and eventually the imperial mathematician to Emperor Rudolf II and his two successors Matthias and Ferdinand II. He also taught mathematics in Linz, and was an adviser to General Wallenstein. Additionally, he did fundamental work in the field of optics, invented an improved version of the refracting (or Keplerian) telescope, and was mentioned in the telescopic discoveries of his contemporary Galileo Galilei. He was a corresponding member of the Accademia dei Lincei in Rome.



Kepler lived in an era when there was no clear distinction between astronomy and astrology, but there was a strong division between astronomy (a branch of mathematics within the liberal arts) and physics (a branch of natural philosophy). Kepler also incorporated religious arguments and reasoning into his work, motivated by the religious conviction and belief that God had created the world according to an intelligible plan that is accessible through the natural light of reason. Kepler described his new astronomy as "celestial physics", as "an excursion into Aristotle's *Metaphysics*", and as "a supplement to Aristotle's *On the Heavens*", transforming the ancient tradition of physical cosmology by treating astronomy as part of a universal mathematical physics.

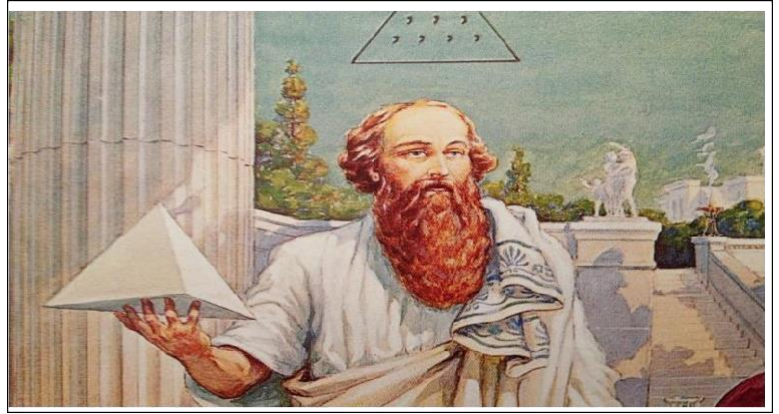


Zeynep AKTAŞ

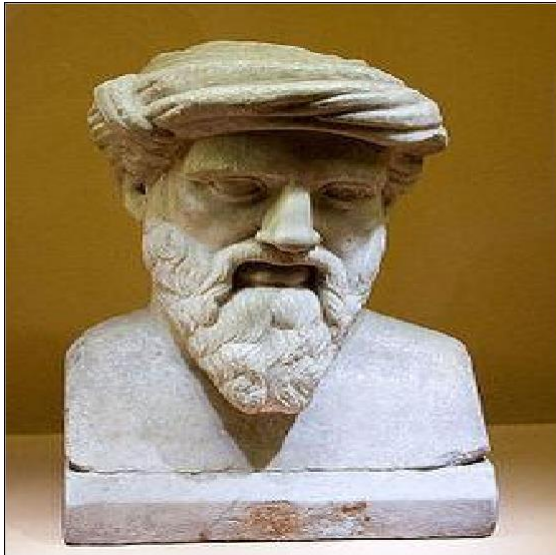
Prep-B

## Pisagor (570 BC – 495 BC)

Herodotus, Isocrates, and other early writers agree that Pythagoras was the son of Mnesarchus, and that he was born on the Greek island of Samos in the eastern Aegean. According to these biographers, Pythagoras' father wasn't born on the island, although he got naturalized there, but according to Iamblichus he was a native of the island. He is said to have been a gem-engraver or a wealthy merchant, but his ancestry is disputed and unclear. His mother was a native of Samos, descending from a geomoroi family. As to the date of his birth, Aristoxenus stated that Pythagoras left Samos in the reign of Polycrates, at the age of 40, which would give a date of birth around 570 BC.

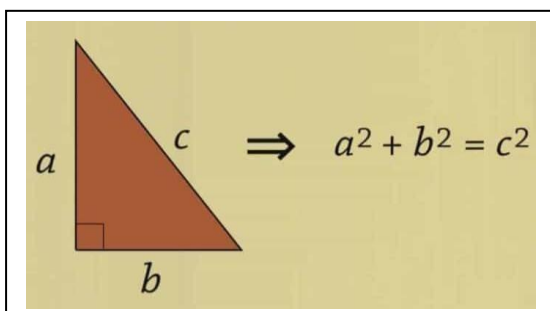


Pythagoras founded a philosophical and religious school in Croton (now Crotona, on the east of the heel of southern Italy) that had many followers. Pythagoras was the head of the society with an inner circle of followers known as mathematikoi. The mathematikoi lived permanently with the Society, had no personal possessions and were vegetarians. They were taught by Pythagoras himself and obeyed strict rules. The beliefs that Pythagoras held were. Both men and women were permitted to become members of the Society, in fact several later women Pythagoreans became famous philosophers. The outer circle of the Society were known as the akousmatikoi and they lived in their own houses, only coming to the Society during the day. They were allowed their own possessions and were not required to be vegetarians.



The theorem of Pythagoras - for a right angled triangle the square on the hypotenuse is equal to the sum of the squares on the other two sides. We should note here that to Pythagoras the square on the hypotenuse would certainly not be thought of as a number multiplied by itself, but rather as a geometrical square constructed on the side. To say that the sum of two squares is equal to a third square meant that the two squares could be cut up and reassembled to form a square identical to the third square.

The discovery of irrationals. This is certainly attributed to the Pythagoreans but it does seem unlikely to have been due to Pythagoras himself. This went against Pythagoras's philosophy the all things are numbers, since by a number he meant the ratio of two whole numbers. However, because of his belief that all things are numbers it would be a natural task to try to prove that the hypotenuse of an isosceles right angled triangle had a length corresponding to a number.



**Zeynep Sude Çalışkan**

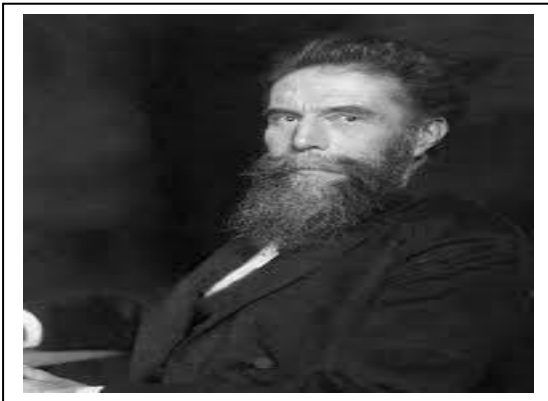
**Prep-B**

## Wilhelm Röntgen (1845-1923)



After his graduation, he worked as a professor of physics in Strasbourg in 1876, at Giessen in 1879 and at the Julius-Maximilians-University of Würzburg in 1888. In 1900 he was appointed chair of Physics at the University of Munich and director of the new Physics Institute.

His wife, Anna Bertha Ludwig, died in Munich in 1923, four years after his death, due to financial difficulties in the high inflation economy created by the First World War.

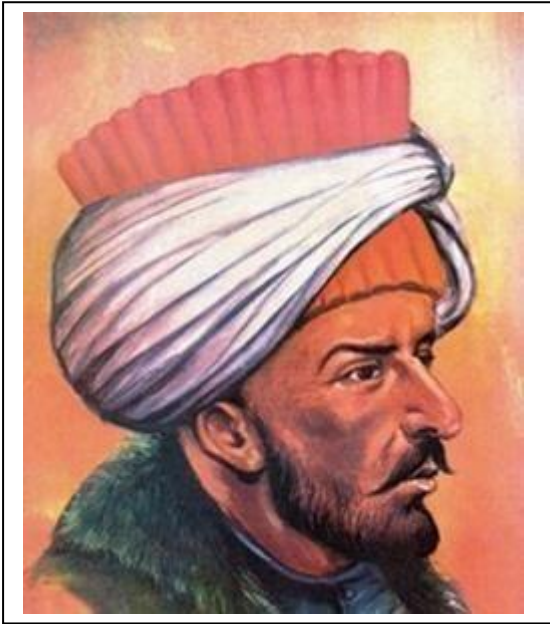


Born on March 27, 1845 in Remscheid, Germany, he was a Nobel Physics laureate, physical scientist and inventor, who discovered X-rays and found X-rays. Wilhelm Conrad Röntgen died on February 10, 1923 in Munich, Germany.

Wilhelm Conrad Röntgen proved that X-rays lie along a straight line, do not undergo reflection or refraction, and do not change direction under the influence of electric or magnetic fields. He studied the ability of X-rays to pass through objects and found that these rays ionized the air.

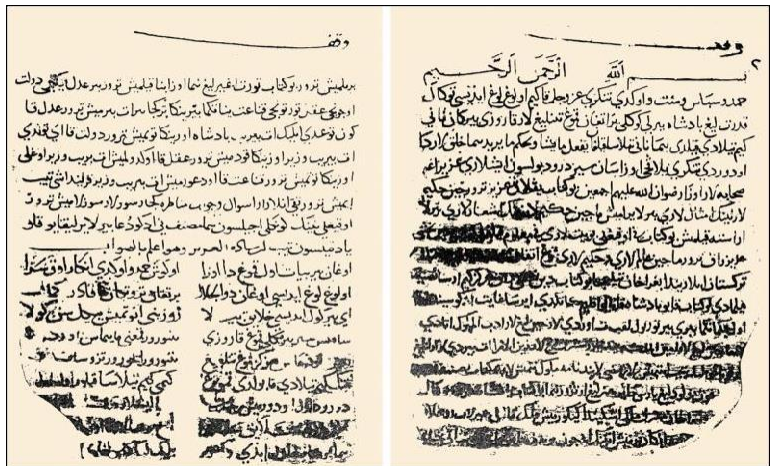


**İSRA ŞEVVAL BAŞIBÜYÜK  
PREP/B**

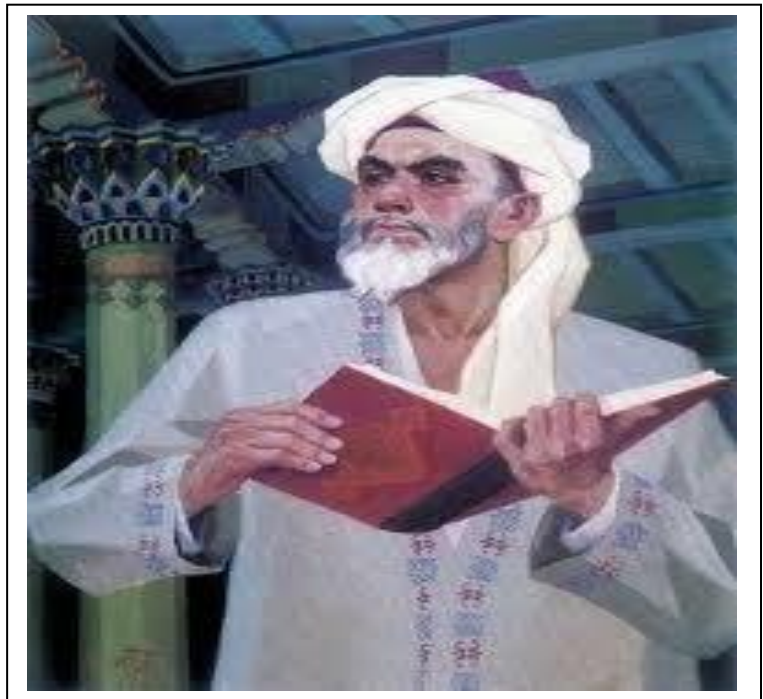


As there is not enough information about the Karakhanids period in Turkish historical sources ; There is almost no information about "Yusuf from Balasagun ", a citizen of this state . It is rumored that he was born between 1017-1019. He was born in Balasagun, the city named Kuz-Ordu of the period . A complete biography of him has not yet been established.

Yusuf Has Hacib is the author of Kutadgu Bilig, which is a fundamental work for Turkish language and literature . Kutadgu Bilig is a work of 6645 couplets. The work begins with praise to Allah and thanks to the Prophet and the Four Caliphs.



Yusuf Has Hacib wrote the first policy in Turkish literature. He also used the first verse form in Turkish literature. This verse form is also masnavi . That's why he was called Yusuf Has Hacib.



Zeynep Yarıcı  
Prep-B



## Mehmet (Ak) Şemseddin (1372-1459)



### Akşemseddin's Most Important Discovery:

He was an influential tutor and adviser to Sultan Mehmed the Conqueror. After completing his work with his master Sheikh Hacı Bayram-1 Veli, he founded the Shamsiyya- Bayramiyya Sufi order. He discovered the lost grave of Abu Ayyub al-Ansari (the companion of Muhammad) in Constantinople preceding the Siege of Constantinople. In addition to his fame in religious sciences and Tasawwuf, Akshemsaddin was popular in the fields of medicine and pharmacology. Akshamsaddin was also knowledgeable in the treatment of psychological and spiritual disorders.

Two centuries before Antonie van Leeuwenhoek's discovery through experiments, Akşemseddin mentioned the microbe in his book Maddat ül-Hayat (The Material of Life).

**And His Other Books:** Risaletü'n-Nûriye, Hall-I Müşkilât, Makamât-I Evliyâ, Kitabü't Tıb, Maddetü'l-Hayat, Def'ü Metain, Nasihatnamei Akşemseddin .



### WHO IS AKŞEMSEDDIN ?

Sufi, scholar, spiritual conqueror of Istanbul.

(B. 1372, Damascus- D. 1459, Göynük / Bolu).

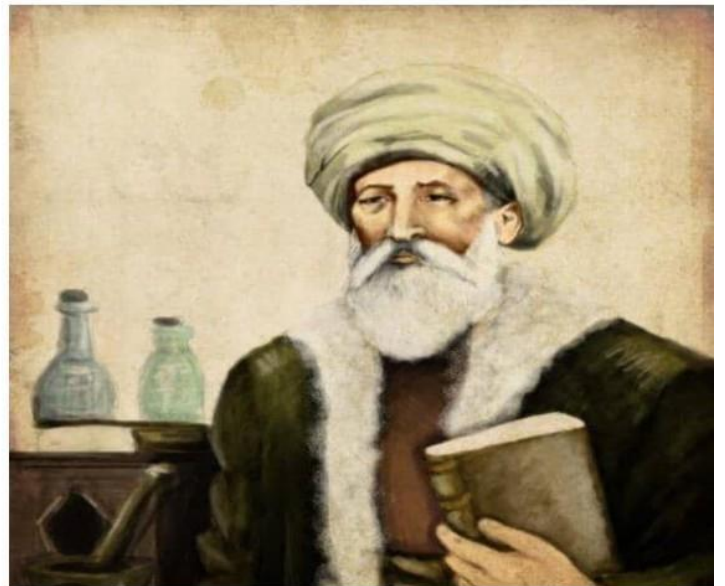
His full name is Muhammed bin Hamza and according to some sources it is "Ahmed" too.

His nickname is Akşeyh.

It is narrated that he was called "Akşemseddin" since he dressed white clothes.

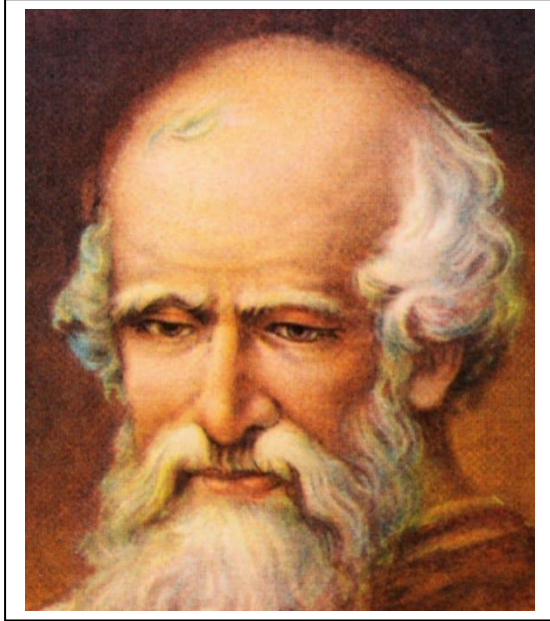
(T.N. Ak means white in Turkish language).

His father Şeyh Hamza-I Şamî, who was known as Kurtboğan Saint, was living in Damascus and then came to Kavak district of Amasya (nowadays it belongs to Samsun). He comes from the lineage of Şihâbüddin Sühreverdî. This lineage reaches until Hazret-I Ebubekir. Akşemseddin memorized the Holy Koran at an early age. He originally came from a scholar family. He acquired his knowledge from scientific environments of the period, which are the madrasahs.



AYŞEGÜL SARI  
PREP / A

**Archimedes (B.C 212 – B.C 287)**

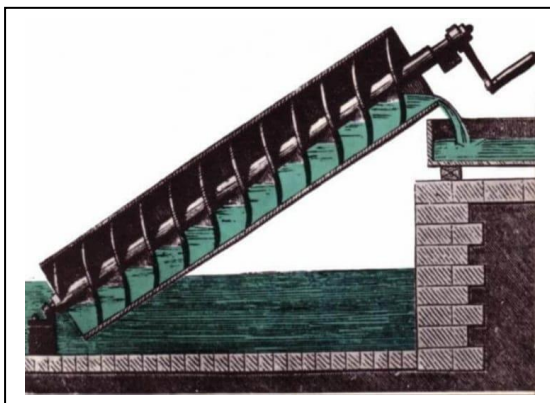


Archimedes, the son of a Greek family, was born in Sicily in 287 BC. His father is Phidias, a well-known astronomer. He completed his education in Alexandria, which was the science center of the period. After returning to Sicily, he devoted his whole life to mathematics and scientific studies.

His correspondence with Eratosthenes, whom he was friends with during his stay in Alexandria, and Konon from Samos, has survived to the present day.

Archimedes believed that theoretical mathematics was the most valuable subject, but he was recognized in his country as an inventor, not a mathematician. He set up a mechanism that could move large weights with a small movement in order to unload the ship, which King Hierro had built for King Ptolemy but could not land, from the slipway. For the Egyptians, he developed the tool known as the Archimedean screw for the equal distribution of the overflowing Nile waters. He laid down the first law of hydrostatics, and other fundamental laws followed. He collected them in a book called "Floating Bodies".

Among the inventions made by Archimedes in the field of mechanics are compound pulleys, worm screws, hydraulic screws and burning mirrors. Works related to these were not given, but he left many works that made important contributions to the geometry field of mathematics, the static and hydrostatic fields of physics.



**IRMAK GÜN  
PREP-A**

**Biruni (973-1048)**



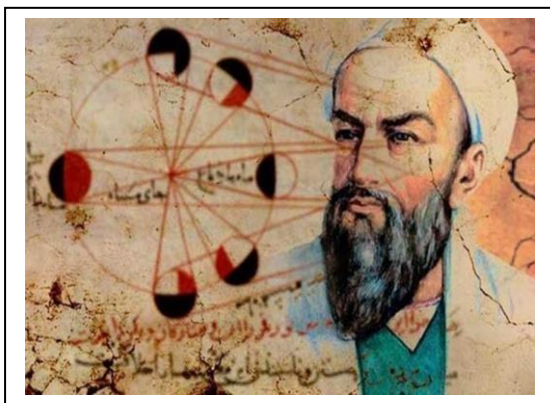
**Who is Biruni?**

Biruni was born on September 4, 973 in Uzbekistan. He is a famous scientist in the field of astronomy, mathematics, natural sciences, geography and history. He worked with many professors in his life (for example, Avicenna). He wrote many books and made important discoveries. He died on December 13, 1048.

**What did Biruni find for science?**

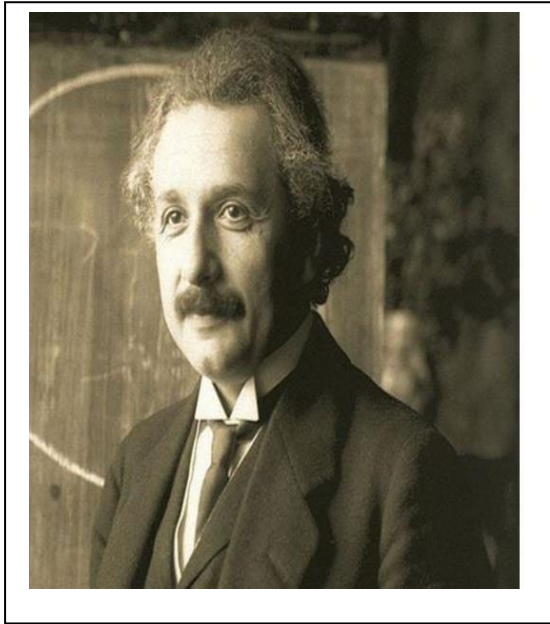
He observed the lunar eclipse. He contributed a lot to the subjects of mathematics, medicine, natural sciences, astrology, physics, history and philosophy. He did the Fraiz calculations. He found out when the seasons started and calculated the diameter of the world.

He wrote many articles for science throughout his life, but Westerners recognized him in the 1870s. Over time, Westerners translated all of Biruni's works into different languages.



**MELIHANUR BATAN  
PREP/A**

## Albert Einstein (1879- 1955)

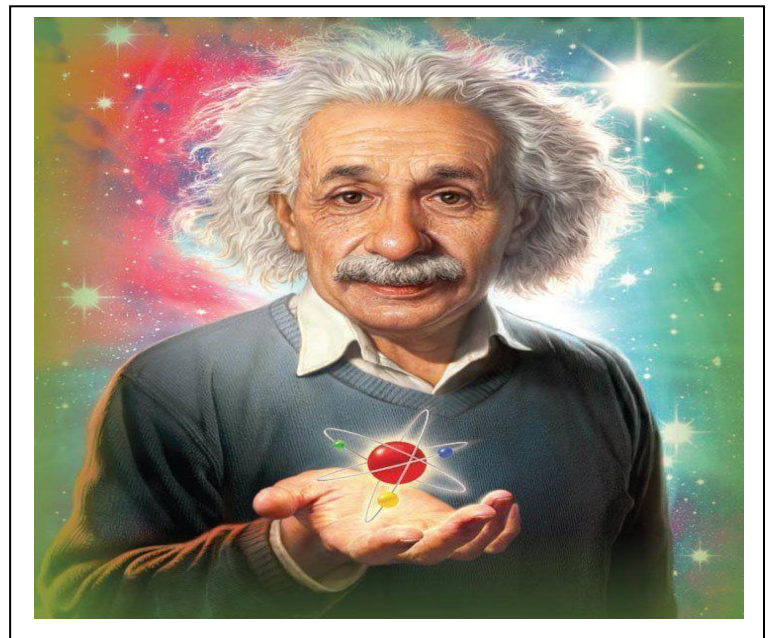
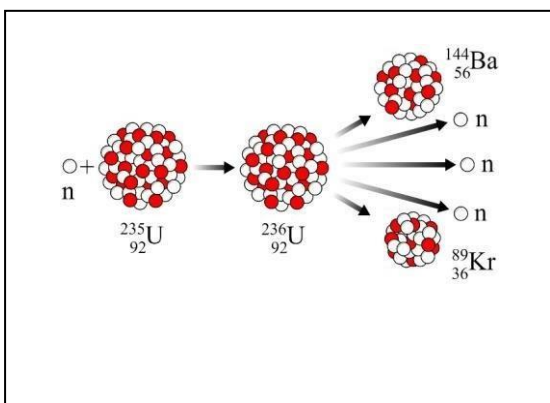


Albert Einstein was born on March 14, 1879 in the city of Ulm. He started his education life at a Catholic Christian school in Munich. After a while, he left here and went to Luitpold Gymnasium. After completing his high school education, he enrolled at the Swiss Federal Polytechnic School. Here he studied physics. Einstein, who graduated from the university, wanted to be an assistant, but he could not fulfill this wish. After being unemployed for two years, he got a job at a patent firm in Switzerland. Meanwhile, he managed to attract the attention of the scientific world with various articles he published. In 1909 he began working as a professor of physics at the University of Zurich.

The first of his inventions is expressed as the refrigerator. Working with his student Leo Szilard, he developed the refrigerator. Albert Einstein proved with his discovery of the photoelectric effect, which he stated that light does not originate from waves, but consists of quanta.

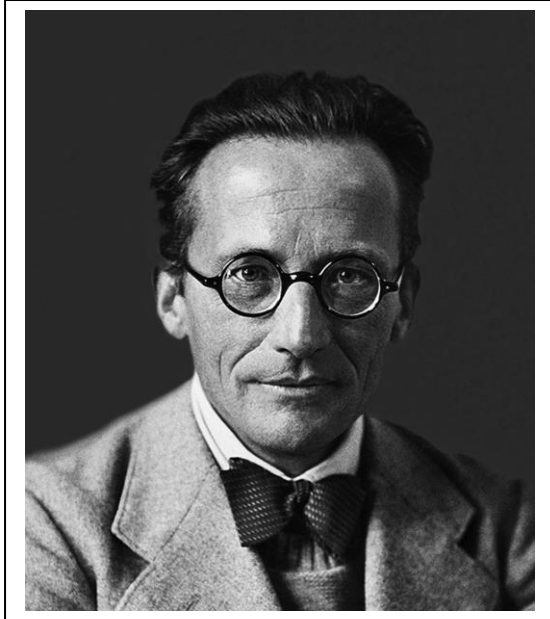
The theory of relativity is expressed as the most important invention of Albert Einstein. In this theory, the speed of light remains constant in vacuum and the laws of physics apply in the universe. This theory provides information about the relationship between space and time.

Albert Einstein proved with his discovery of the photoelectric effect, which he stated that light does not originate from waves, but consists of quanta. As a result of these studies, Albert Einstein laid the foundations of quantum theory. His work in the field of quantum theory earned him the 1921 Nobel Prize in Physics.



**İrem Su ÇÜRÜKOĞLU**  
Prep- A

## Erwin Schrödinger (1887-1961)

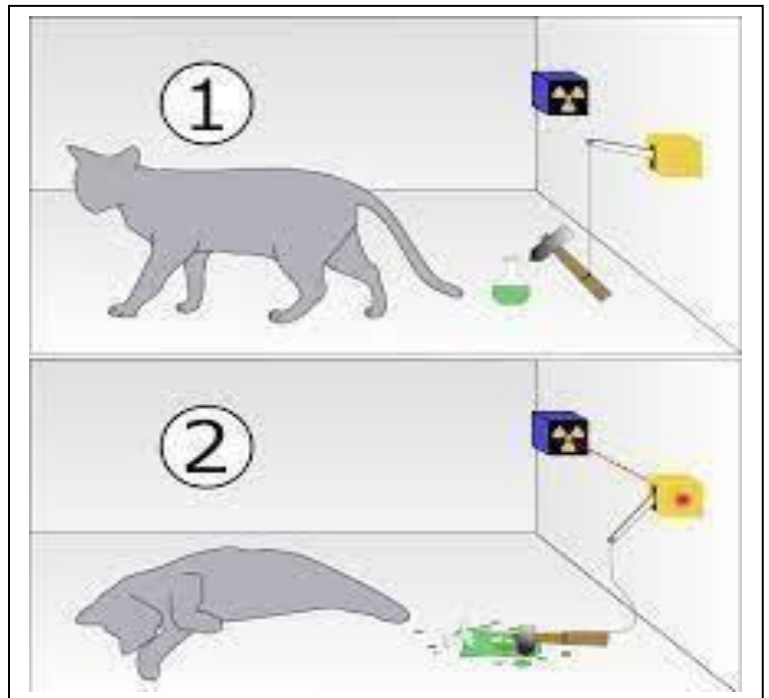


In popular culture, he is most known for his “Schrödinger’s cat” thought experiment. Schrödinger’s cat is a thought experiment that illustrates a paradox of quantum superposition. In the thought experiment, a hypothetical cat may be considered simultaneously both alive and dead as result of its fate being linked to a random subatomic event that may or may not occur.

$$-\frac{\hbar^2}{2m}\nabla^2\psi + V\psi = E\psi$$

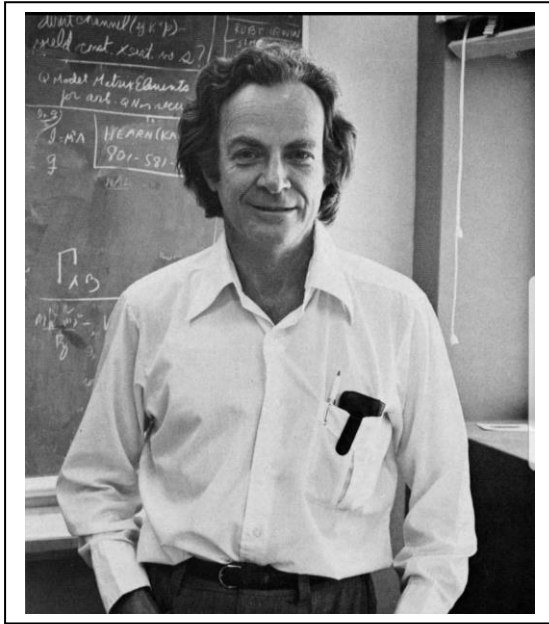
Schrödinger was a Nobel Prize-winning Austrian physicist with Irish citizenship. Schrödinger was developed a number of fundamental results in quantum theory: the Schrödinger equation provides a way to calculate the wave function of a system and how it changes dynamically in time.

In addition, he wrote many works on various aspects of physics: statistical mechanics and thermodynamics, physics of dielectrics, colour theory, electrodynamics, general relativity, and cosmology, and he made several attempts to construct a unified field theory. He also paid great attention to the philosophical aspect of science, ancient, oriental philosophical concepts, ethics and religion

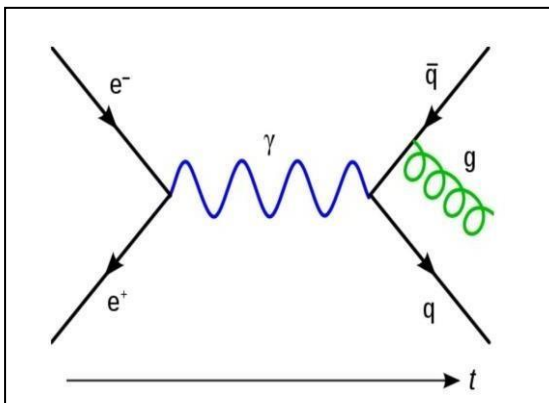


FEİZA ÇELİK  
PREP/A

## Richard Feynman (1918-1988)

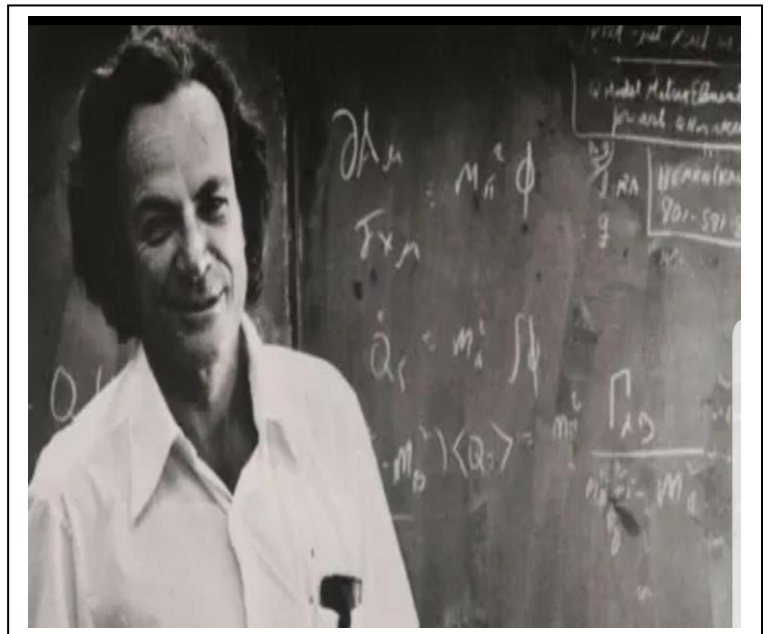


He assisted in the development of the atomic bomb during World War II and became known to a wide public in the 1980s as a member of the Rogers Commission, the panel that investigated the Space Shuttle Challenger disaster. Along with his work in theoretical physics, Feynman has been credited with pioneering the field of quantum computing and introducing the concept of nanotechnology. He held the Richard C. Tolman professorship in theoretical physics at the California Institute of Technology.



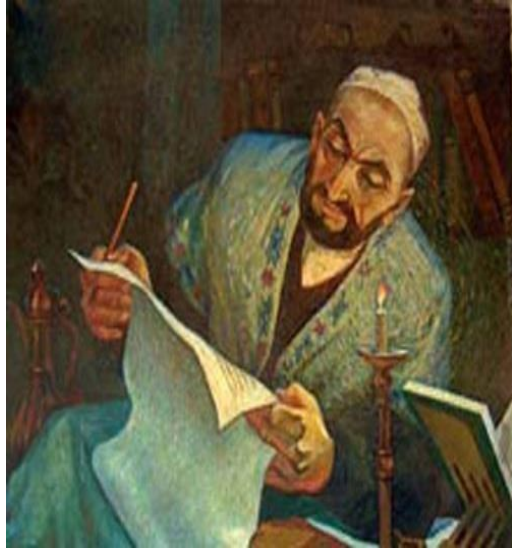
Feynman developed a widely used pictorial representation scheme for the mathematical expressions describing the behavior of subatomic particles, which later became known as Feynman diagrams. During his lifetime, Feynman became one of the best-known scientists in the world. In a 1999 poll of 130 leading physicists worldwide by the British journal *Physics World*, he was ranked the seventh-greatest physicist of all time.

Feynman was a keen popularizer of physics through both books and lectures, including a 1959 talk on top-down nanotechnology called *There's Plenty of Room at the Bottom* and the three-volume publication of his undergraduate lectures, *The Feynman Lectures on Physics*. Feynman also became known through his autobiographical books *Surely You're Joking, Mr. Feynman!* and *What Do You Care What Other People Think?*, and books written about him such as *Tuva or Bust!* by Ralph Leighton and the biography *Genius: The Life and Science of Richard Feynman* by James Gleick.



**FATMA BETÜL TUNA  
PREP/A**

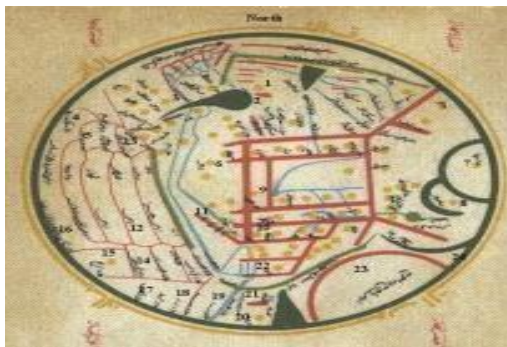
## Kaşgarlı Mahmut (1008-1105)



It was written in the 11<sup>th</sup> century. Known as the first dictionary of Turkish; Kaşgarlı Mahmut, who is the author of Divanü Lügati't-Türk which was written in Karahanlı Turkish, was born in 1008 without having certain information and died in 1105.

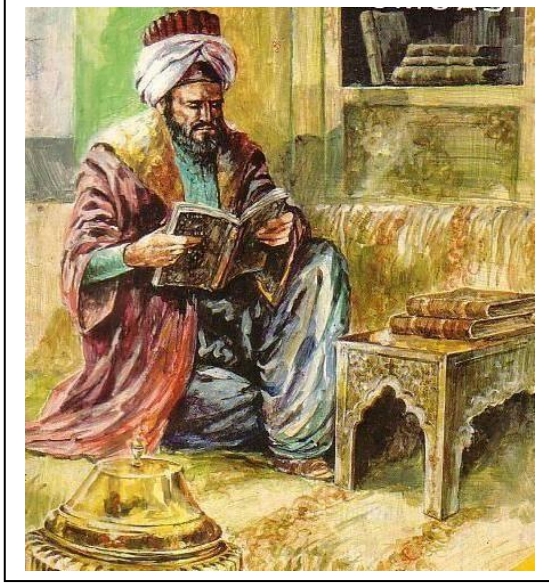
Kaşgarlı Mahmut, the son of Husayn, who was descended from the Karakhanid state; He was born in the town of Opal, 45 km southwest of Kashgar. Unfortunately, there is no detailed information about what Mahmut did after this period, who lost most of his family in a fight for the throne (1047-1048).

The aim of writing Divanü Lügati't-Türk, the book of Kaşgarlı Mahmut, who has only one work and is world-famous for this work, is to make Arabs love Turkish. It is a useful book for both Arabs to learn Turkish and for Turks to learn Arabic.

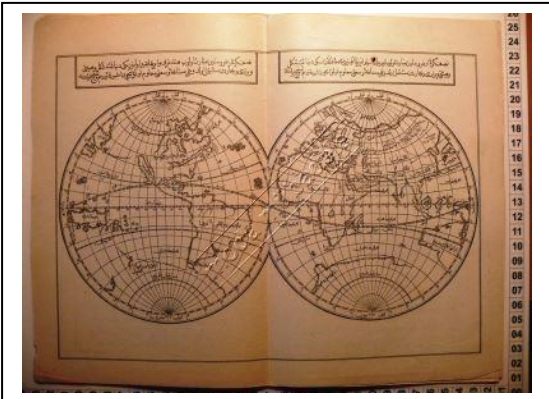


**ŞEVVAL BERRA DEMİREL  
PREP/A**

## Katip Çelebi (1609-1657)



Tuhfetü'l-Kibar fi Esfari'l-Bihar, one of his best-known works, gives a history of the Ottoman navy from the foundation period to 1656, as well as the operation of the Ottoman navy, shipyard and navy organization, and gives the life stories of the captains of the sea. Finally, he lists his advice on how to overcome the recent failures at sea.



Katip Çelebi was born in Istanbul in 1609 and died in Istanbul in 1657. He is highly knowledgeable in history, bibliography, biography and geography. He has written many works. He has become one of the most widely read people in the world. He has developed himself from a young age in terms of both science and science. He memorized the Qur'an. Throughout his working life, he never broke away from especially literature. During his lifetime, he became the most widely read scientist both in our country and in Europe.

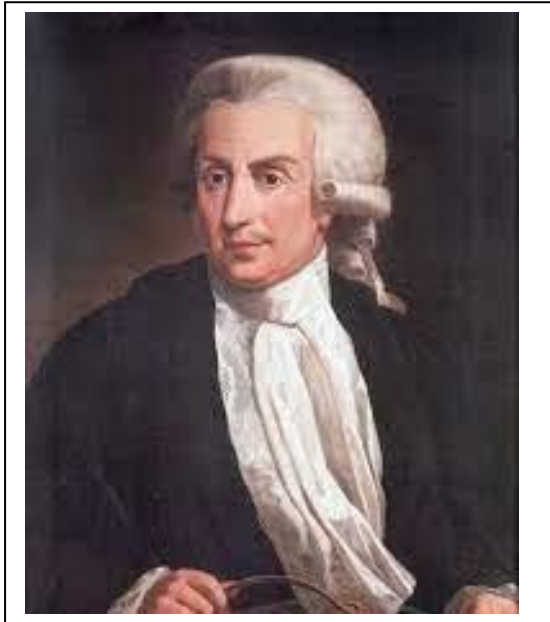
Katib Çelebi's most famous work, known in the West, is Keşfü'z-Zünun an Esamü'l-Kütübi ve'l-Fünun. In the work, which is an Arabic bibliography dictionary, the names and authors of 14.500 books and treatises are given. The work, which was arranged alphabetically and according to Aristotle's classification of science, which is generally accepted in the Islamic world, was completed in twenty years.



Zeynep Karabulut  
Prep-A



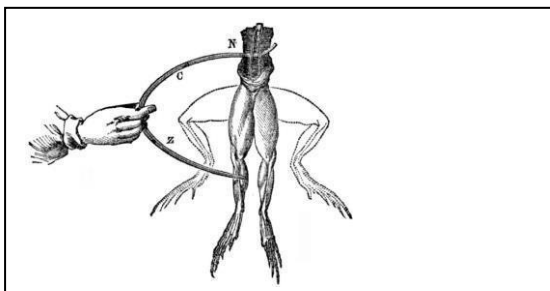
## Luigi Galvani (1737-1798)



Luigi Galvani, (born September 9, 1737, Bologna, Papal States [Italy]—died December 4, 1798, Bologna, Cisalpine Republic), Italian physician and physicist who investigated the nature and effects of what he conceived to be electricity in animal tissue.

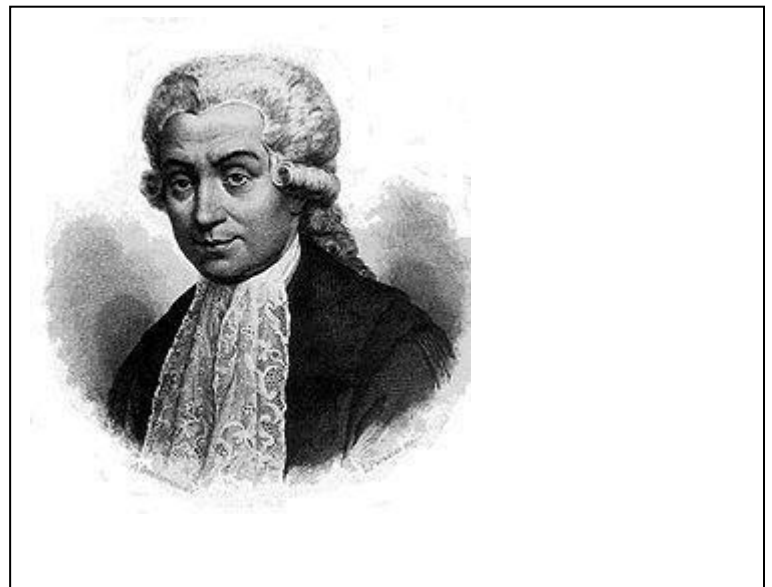
What is Galvani famous for?

Galvani's work pioneered the field of electrophysiology, the branch of science concerned with electrical phenomena in the body, and Volta's experiments resulted in his development of the voltaic pile, an early form of the battery.



What was Galvani's most famous experiment?

Galvani's most famous experiments involved studying the effects of electric sparks on the muscular legs of frogs. He discovered the remarkable effects of static electricity, which caused their legs to twitch and convulse spontaneously, even from a dissected frog.



Edeviye Nur Arduç  
Prep-A

## James Clerk Maxwell (1831-1879)

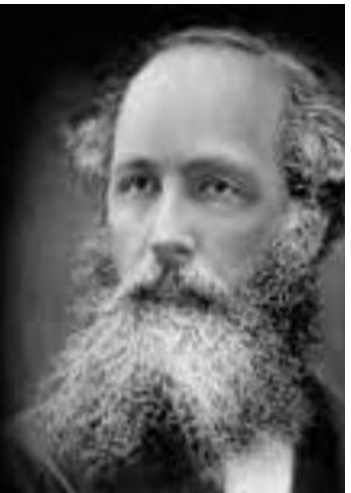


His most important success is to prove with his “Maxwell Equations” that electricity and magnetism, which were previously unrelated to each other in the classical electromagnetic theory, are the same thing.



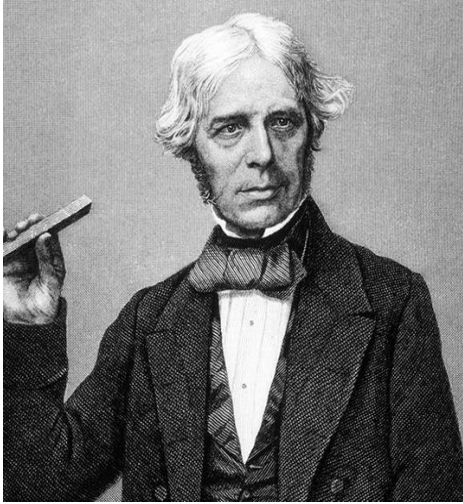
James Clerk Maxwell’s born in 1831 and died in 1879. He is most famous for his theory of electromagnetism, which showed that light was electromagnetic radiation. His theory is considered to have paved the way for both quantum mechanics and Einstein’s theory of special relativity.

Maxwell’s regarded by most modern physicists as the scientist of the 19<sup>th</sup> century who had the greatest influence on 20<sup>th</sup> century physics, and he is ranked with Sir Isaac Newton and Albert Einstein for the fundamental nature of his contributions. In 1931, on the 100<sup>th</sup> anniversary of Maxwell’s birth, Einstein described the change in conception of reality in physics that resulted from Maxwell’s work as “the most profound and the most fruitful that physics has experienced since the time of Newton.”


$$\begin{aligned}\vec{\nabla} \cdot \vec{D} &= \rho \\ \vec{\nabla} \cdot \vec{B} &= 0 \\ \vec{\nabla} \times \vec{H} &= \vec{j} + \frac{\partial \vec{D}}{\partial t} \\ \vec{\nabla} \times \vec{E} &= -\frac{\partial \vec{B}}{\partial t}\end{aligned}$$

**ZEYNEP NİL BAYIROĞLU**  
**PREP-A**

## Michael Faraday (1791-1867)



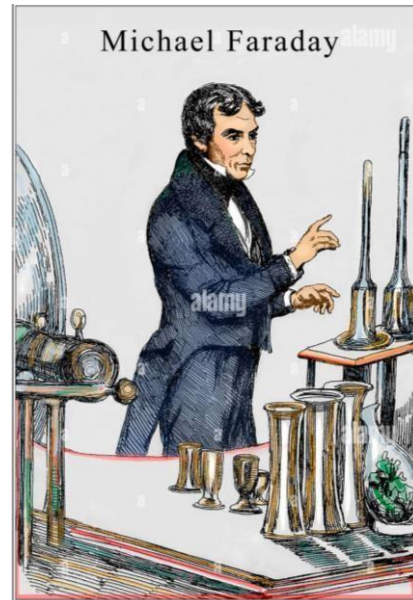
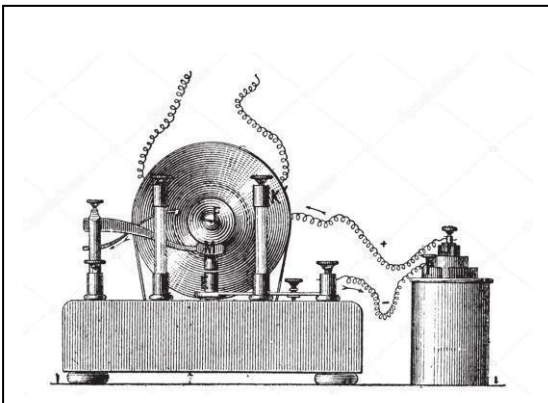
Michael Faraday was born in London. He had 3 siblings.

Michael Faraday died on August 25, 1867, at Hampton Court

Palace in England.

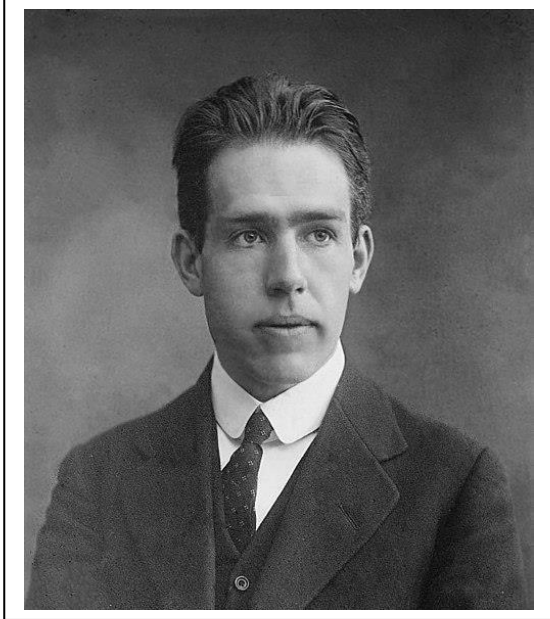
Michael Faraday was an English chemistry and physics scholar known for his contributions to electromagnetism and electrochemistry. He found electromagnetic induction, that the magnetic field rotates the plane of polarization of light. He determined the basic principles of electrolysis.

Thanks to his experiments and observations, Michael Faraday made his important discovery about electromagnetic induction in 1831. He made important studies on the relations between electricity and light. His research studies on the properties of the insulator and his studies on dia-magnetism and the relations between electricity and light were also, in the XIX. It is one of the most important inventions of the mid-century.



**ZEYNEP SENA ÇAP  
PREP-A**

## NIELS BOHR (1885-1962)

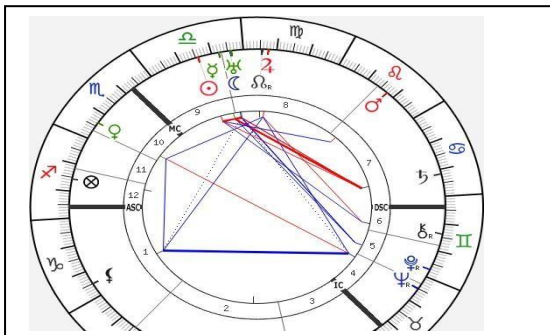


He was born in 7<sup>th</sup> October 1885. He has 5 children. His father was a famous professor of medicine at the University of Copenhagen, and his mother was a daughter of a wealthy banker. Niels and his brother, two years younger, Harald, who later became a famous mathematician, graduated from the University of Copenhagen with outstanding honors. At the same time, they both played for the Denmark national football team.

For the first time in determining the atomic structure of quantum theory, he created the atomic model, which is named after him. He played a leading role in the development of quantum physics for nearly 50 years. He also developed the 'liquid droplet model' of the atomic nucleus.

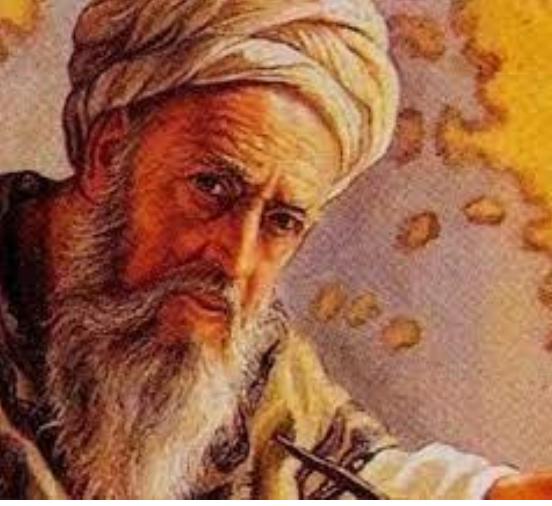
After the war, he announced his decision to develop the peaceful use of atomic energy in many humanitarian publications. He received the Atom for Peace award in 1957. He also won the 1975 Nobel Prize in physics.

Bohr, who was appointed as the head of the Copenhagen Institute of Theoretical Physics, received the Nobel Prize in 1922 for his work on the structure of atoms and the radiation emitted from them. Bohr's interpretation of quantum mechanics was found around this time. Bohr remained head of his institute until Denmark was occupied by the Germans in World War 2.



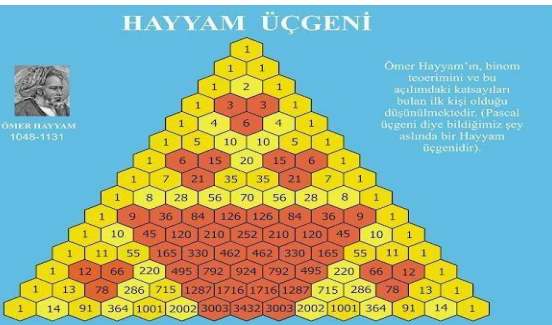
**ZEHRA YETGIN**  
Prep-A

## Omer Hayyam (1048-1131)



### *His works:*

He dealt with many branches of science. He did his most important work in the field of algebra. Khayyâm went beyond the progress made by Hârizmî in algebra, as he systematically solved third-degree equations. I mean he took algebra to the highest point. Also, Ömer Hayyam is the first scientist to use binomial expansion. He proved for the first time that irrational numbers can be used like rational numbers. He found the length of a year to be 365.2424 (the actual length by modern measurements is 365.2422). He is the founder of the rubai type in literature. He has more than 100 rubais. You necessarily heard of Pascal's Triangle. Omar Khayyam discovered the properties of this triangle years before Pascal. This means that Pascal's Triangle was actually Khayyam's Triangle. The Gregorian calendar makes a mistake every 3330 days. But, the Celali calendar makes a mistake every 5000 days.



### *Who is Omer Hayyam?*

He was a mathematician, astronomer, historian, philosopher, and poet. Omer Hayyam was the son of a tentmaker. So, he took his surname, which means tentmaker in the Persian language, from his father's job. He was born in Nishapur city of Horasan province in Iran in 1048. He studied science, philosophy, mathematics, and astronomy in Nishapur. From a young age, he began to be called the genius of Iran. Along his life, he lived by imitate to by scholars such as Harezmi Ibn Heysem and Biruni as an example. His health deteriorated so, he returned to Nishapur and his life ended there in 1131 and his eighties.

### *Extra Information:*

He is known too as Zeltmacher in Europe. His name was given to a crater on the moon in 1970. And, his name was given to a comet in 1980. His greatest work was the Treatise of Algebra. His love of science and love of mathematics provided his name to be written in golden letters in the world of mathematics. Nizamülmülk and Hasan Sabbah were schoolmates and close friends with Ömer Hayyam.



**EMINE HATICE VARGUN  
PREP/A**