RAMANUJAN

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MESSAGE FROM HOD

At first, I thank the entire team involved in publishing the VI Volume of " Ramanujan" , the Annual News Bulletin of the Department of Mathematics & Statistics, Golaghat Commerce College. I am happy to mention here that from this year our department is introducing an Add-on course in " Mathematical Reasoning for Competitive Examinations" for our undergraduate students of the college studying in both the streams of Arts and Commerce.

Apart from emphasizing consistent and good academic performance, the department provides a platform for the students to apply mathematical concepts and to develop the ability to transfer the mathematical thinking and reasoning to real life situations.

Finally, I take the opportunity to congratulate our new department faculty Dr. Rinku Saikia and our faculty Mrs. Tulumoni Gogoi for completing the Bulletin. I wish you all the best for your upcoming future.

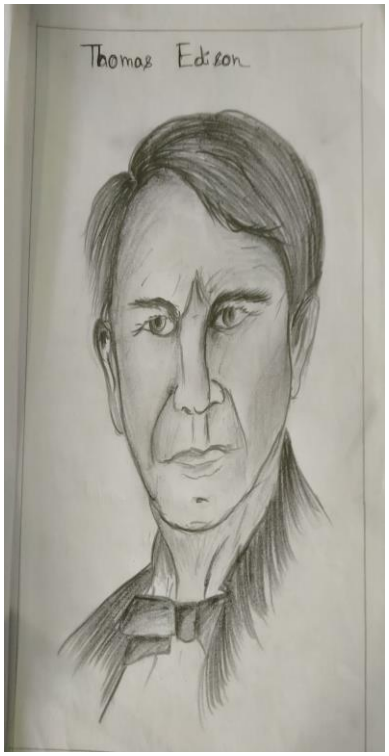
Dr. Karabi Devi

HoD, Department of Mathematics & Statistics

Golaghat Commerce College

Thomas Edison

Thomas Edison was born in 1847 in Milan, Ohio, but grew up in Port Huron, Michigan, after the family moved there in 1854. He was the seventh and last child of Samuel Ogden Edison Jr. and Nancy Matthews Elliott. Edison was taught reading, writing, and arithmetic by his mother, who used to be a school teacher. He attended school for only a few months. However, one biographer described him as a very curious child who learned most things by reading on his own. As a child, he became fascinated with technology and spent hours working on experiments at home. Thomas Edison began his career as a news butcher, selling newspapers, candy and vegetables on the trains running from Port Huron to Detroit. He turned a $50- a-week profit by age 13, most of which went to buying equipment for electrical end chemical experiments. At age 15, in 1862, he saved two years old Jimmy Mackenzie from being struck by a runaway train.



In 1866 at the age of 19 Edison move to Louisville, Kentucky, where, he worked as the Associated Press bureau news wire, Edison Requested the night shift, which allowed him plenty of time to spend at his two favorite pastimes reading an experimenting. Edison's major innovation was the establishment of an industrial research lab in 1876. It was built in Menlo Park, a part of Raritan Township in Middlesex County, New Jersey, with the funds from the sale of Edison's quadruplex telegraph. Edison began his career as an inventor in Newark, New Jersey, with automatic repeater and his other improved telegraphic devices, but the invention that first gained him wider notice was the phonograph in 1877.This accomplishment was so unexpected by the public at large as to appear almost magical. Edison became known as "The Wizard of Menlo Park". On December 25, 1871, at the age of 24, Edison married 16 years old Mary Stilwell (1855- 1884), whom he had met two months earlier, she was an employee at one of his shops. They had three children. Various prestigious award was awarded to this great scientist such as, in 1878, Edison was awarded an honorary PhD from Union College, in Philadelphia City council named Edison the recipient of John Scott Medal in 1889. In 1899, Edison was awarded the Edward Long Street Medal of The Franklin Institute. In 1908, Edison received the American Association of Engineering Societies John Fritz Medal. On May 29, 1928, Edison received the congressional Gold Medal. In 1927, he was granted membership in the National Academy of Sciences. In 2010, Edison was honoured with a Technical Grammy Award. In 2008, Edison was inducted in the New Jersey Hall of Fame. Edison died of complications of diabetes on October 18, 1931, in his home "Glenmont," in Llewellyn Park in West Orange, New Jersey, which he had purchased in 1886 as a wedding gift for Mina. Rev. Stephen. J. Herben officiated at the at the funeral.

Dhruba Jyoti Baishya, B. Com 3rd Semester

BIOGRAPHY OF ANNA MANI

Anna Modayil Mani was born in 1918 at Peermade, then Travancore, now Kerala, India to a Syrian Christian family. Her father was a Civil Engineer and an Agnostic. She was the seventh of eight children in her family and a Voracious reader. She was impressed by Gandhi during Vaikom Satyagraha and inspired by his nationalist movement, she took to wearing only khadi garments. Anna Mani's formative years were spent engrossed in books, and by the age of eight she had read almost all the books in Malayalam at her public library. On her eight birthdays, she declined to accept her family's customary gift of a set of diamond earrings, asking instead for a set of Encyclopedia Britannica. The world of book's opened her to new ideas and imbued in her a deep sense of social justice which informed and shaped her life. Mani wanted to pursue dancing, but she decided in favour of Physics because she liked the subject. In 1939, She graduated from the Pachaiyappas college in Chennai (then Madras), with a B.Sc. Honors degree in Physics and Chemistry. In 1940, she won a scholarship for research in the Indian Institute of Science, Bangalore. In 1945, she went to Imperial College, London to pursue graduate studies in Physics but ended up specializing in Meteorological Instruments.

After graduating from Pachai college, Mani worked under Prof. CV Raman, researching the optical properties of ruby and diamond. She authored five research papers and submitted her Ph.D. dissertation, but she did not have a master's degree in Physics. After returning to India in 1948, She joined the Meteorology department in Pune, where she published numerous research papers on meteorological instrumentation. Mani was responsible for arranging for meteorological instruments imported from Britain. By 1953, she had become the head of a division of 121 men. Mani wished to make India independent in weather instruments. She standardized in drawings of close to one hundred weather instruments. In 1957 and 1958, she set up a network of stations to measure solar radiation. In Bangalore, she set up a small workshop that manufactured instruments to measure wind speed and solar energy and worked on developing an apparatus to measure Ozone.

Mani was made a member of International Ozone Association. She set up a Meteorological observatory and an instrumentation tower at the Thumba rocket launching facility. She was associated with many scientific Organization, including the Indian National Science Academy, American Meteorological Society, International Solar Energy Society,

World Meteorological Organization (WMO), and the International Association for Meteorological and Atmospheric Physics. In 1987, Mani was a recipient of the INSA KR Ramanathan medal.

Mani was transferred to Delhi in 1969 as the Deputy Director General. In 1975, she served as a WMO Consultant in Egypt. She retired as the Deputy Director General of Indian Meteorological department in 1976. In 1994, Mani suffered a Stroke and died on 16th August 2001 in Thiruvananthapuram, a week before her 83rd Birthday.

Asish Kerketta, B. Com 3rd Semester

Fun facts often catch us off guard and is often entertaining in the best possible way

These are unusual and unexpected bits of knowledge from the world of history, science and pop culture that delight and will leave us astonished. Here are some fun and amazing facts that will thrill and surprise you at the same time!

- ***Hot water will turn ice faster than cold water***

An observation conducted in which a liquid (typically water) that is initially hot can freeze faster than the other liquid which is cold under similar conditions.

- ***The Mona Lisa has no eyebrows.***

People always wonder why Mona Lisa doesn't have any eyebrows. This mystery has been solved, all thanks to an engineer named Pascal Cotte. When Da Vinci had painted Mona Lisa, he indeed painted her eyebrows but over time these eyebrows were eroded due to cleaning over time to the point where it's no longer visible today.

- ***Ant's take rest for around 8 Minutes in 12-hours period.***

Yes, surprising right? But not in the way we interpret sleep. James and Cottel have conducted research which shows that ants have a cyclical pattern of resting periods where each nest respite collectively which lasts for around eight minutes in a 12-hour period.

- ***Chocolate can kill dogs, as it contains theobromine, which affects their heart and nervous system.***

Chocolate consists of an ingredient called theobromine (similar to caffeine) that is toxic to dogs. Dogs are not capable of breaking it down or metabolizing theobromine as humans can. Theobromine majorly affects a dog's central nervous system, heart and kidneys.

- ***Women blink nearly twice as much as men!***

This is pure myth! Blink rates are preety identical of both the sexes. Scientists have suggested that the interval between blink is nearly about 2-10 seconds so an average person blinks about 10 times per minute. Another interesting fact is that, we blink less frequently if our eyes are focused on one thing. For instance, while you read, you only blink three times per minute because while reading you are very focused.

- ***It is impossible to lick our elbow.***

This is true, the entire joint of the elbow is between the upper and lower arm and most people seem to think that the elbow is the pointy part on the outside of their arm when they bend it.

- ***It is physically impossible for pigs to look up into the sky***

  The anatomy of a pig's neck muscles and spine has certain limitations to the movement of their head and restricts them to look upwards. This makes it impossible for them to look up straight to the sky.

- ***A snail can sleep for three years***

Snails require moisture to survive. So, if there is extreme weather, they can sleep upto three years. It is reported that based on geography, snails often hibernate or estivate in order to escape from warm climates.

Tikendrajit Sharma

BCom 3rd Semester

Causes of Greenhouse Effect:

There are various reasons which are responsible for

the causes of greenhouse effect and they are:

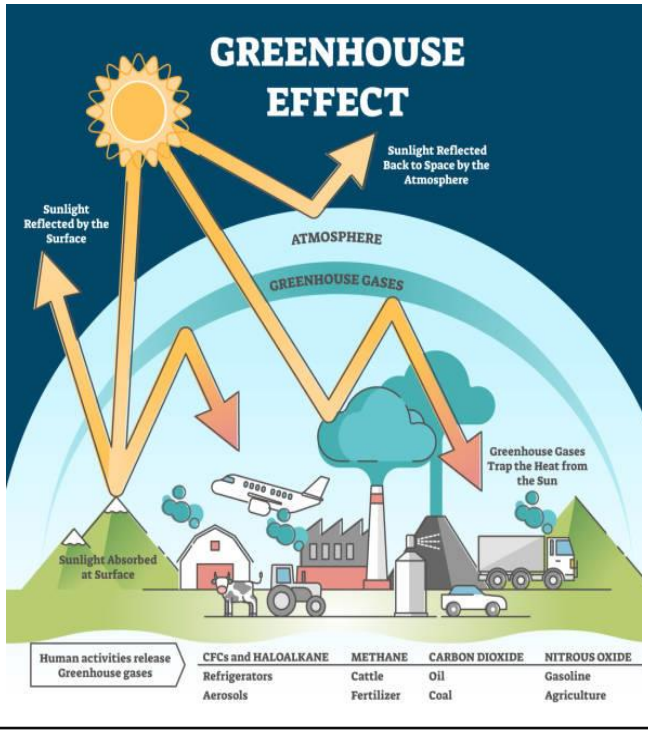
(a) **Deforestation**: This is considered to be one of the most responsible factors for the causes of the greenhouse effect. This is due to the reduction in the release of oxygen and absorption of carbon dioxide by the plant.

(b) **Fossil fuel burning**: Fossil fuel such as coal, oil and nature gases are used as a means of energy which release a huge amount of harmful gases into the environment.

(c) **Population**: As the population increases the need for space increase which again result in deforestation.

Arun Thapa

BCom 3rd Semester



BLACK HOLES A SIMPLE EXPLANATION

Black holes are extremely dense points in space that create deep gravity. Sinks from which even light cannot escape. It can be formed by a death of a massive star. A black hole taken up zero space but does have mass, that used to be a star and black holes get more massive as they consume matter near them. The bigger they are, the larger a zone of "no return" they have, where anything entering their territory is irrevocably lost to the black hole. This point of no return is called the event horizon. When a massive star (more than 8 times bigger than sun) runs out of its thermonuclear fuel in its core-signifies the end of its life and the core become unstable. Then its gravity caused the core to collapse upon itself. This huge weight of its constituent matter falling in compresses the dying star to a point of zero volume and infinite density called the singularity. The concept was given by Albert Einstein in 1915 but the term "Black hole" was coined in the 1960s by American physicist John Archibald Wheeler.

The black holes belong to two categories: - One ranges between a few solar masses and tens of solar masses. These are thought to from when massive stars die. The other is supermassive black holes. These range from hundreds of thousands to billions of times that of the sun from the solar system to which earth belongs. A black hole can't be observed but only detected by the effects of its enormous gravitational fields on nearby matter. Since any matter flowing into the black holes become intensely heated, it radiates X-rays before entering the event horizon and disappearing forever.

These X-rays are detected and the radio image define our idea of the black hole. At the center of most galaxies including our milky way, there is a supermassive black hole. Sometimes these supermassive black holes collect disk of gas, dust and staller berries around it when they fall into the black hole. Its gravitational energy can be converted into light. This process makes the centers of the galaxies very bright and is called Active Galactic Nuclei (AGC). At times the AGN shoots out jest of matter at the speed of light from its center called 'Quasar' and when a galaxy is oriented such that, these jets shoot towards the direction of the earth, it's called 'Blazar'. In simple words, quasar and blazar are the same thing but are pointed at different angles. In April 2019 the scientists at the event horizon telescope project released the first ever image of a black hole. In August 2021, Indian scientists have discovered the merger of three supermassive black holes from as many galaxies to form a triple Active Galactic Nucleus. This suggest that such group mergers also drive and growth of black holes.

Priyanku Protim Goutom, BCom 3rd Semester

VEDIC MATHEMATICS

Vedic Maths is a system of mathematics that was discovered by an Indian mathematician, *Jagadguru Shri Bharati Krishna Tirthaji* during A.D. 1911 and 1918. He printed his findings in a book VEDIC MATHEMATICS. Vedic mathematics is also called mental mathematics in the mathematical world. We can say that the brain's capacity and speed of calculations increases fivefold with the practice of Vedic Maths.

VEDIC MATHEMATICS MULTIPLICATION TRICKS

Method I

In this method, we can multiply the numbers whose unit digits are added up to 10 or powers of 10.

Example: Multiply 63 and 67

Solution: 63×67

Sum of unit Digit $= 3 + 7 = 10$

Digit in tens place =6

So, we can write the multiplication as:

$$63 \times 67 = 6 \times (6+1)/3 \times 7$$
$$= 6 \times 7/3 \times 7$$
$$= 42/21$$
$$= 4221$$

Method II : Multiplication of three digit numbers

Example: Multiply 876 and 999

Solution: Given two numbers are 876 and 999

Now, subtract 1 from 876

$$876 - 1 = 875$$

Subtract 875 from 999

$$999 - 875 = 124$$

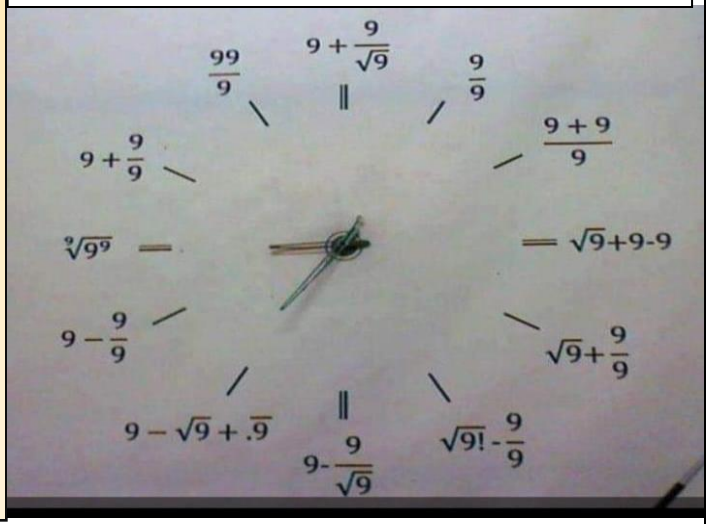
Thus,

$$876 \times 999 = 876 - 1/999 - 875$$
$$= 875 / 124$$
$$= 875124$$

Munmun Bora

BCom 3rd Semester

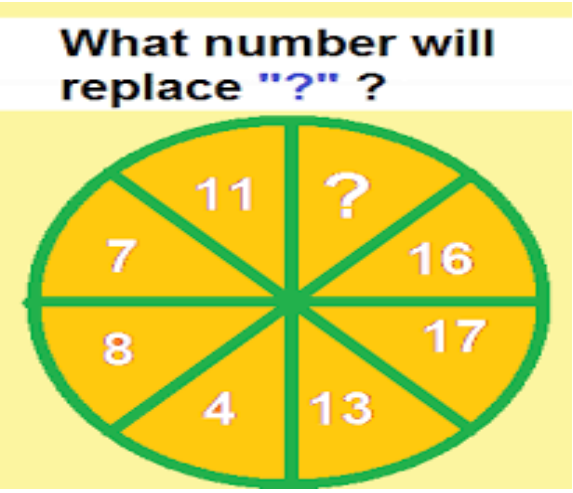
Beauty of the digit 9

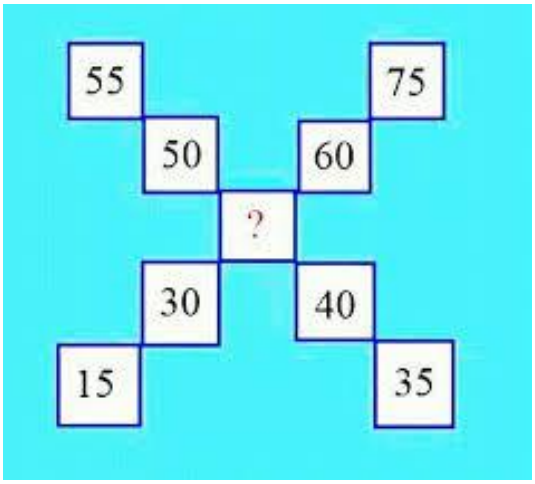


Sir Isaac Newton

Sir Isaac Newton was born in 25th December, 1642. He was in English mathematician, physicist, astronomer, alchemist, theologian, and author, widely recognised as one of the greatest mathematicians and physicists and among the most influential scientists of all time. He was a key figure in the philosophical revolution known as the enlightenment. His book "Philosophia Naturalis Principia Mathematica, "first published in 1687, established classical mechanics. Newton also made seminal contributions to optics, and shares credit with German mathematician, Gottfried Wilhelm Leibniz for developing infinitesimal calculus. In the Principia, Newton formulated the laws of motion and universal gravitation that formed the dominant scientific viewpoint until it was superseded by the theory of relativity. Newton used his mathematical description of gravity to derive Kepler's laws of planetary motion, account for tides, the trajectories of comets, the precession of the equinoxes and other phenomena, eradicating doubt about the solar system's heliocentricity. He demonstrated that the motion of objects on Earth and celestial bodies could be accounted for by the same principles. Newton's inference that the Earth is an oblate spheroid was later confirmed by the geodetic measurements of Maupertuis, La Condamine, and others, convincing most European scientists of the superiority of Newtonian mechanics over earlier systems. Newton built the first practical reflecting telescope and developed a sophisticated theory of colour based on the observation that a prior separates white light into the colours of the visible spectrum. His work on light was collected in his highly influential book Optics, 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. In addition to his work on calculus, as a mathematician Newton contributed to the study of power series, generalised the binomial theorem to non- integer exponents, developed a method for approximating the roots of a function, and classified most of the cubic plane curves. Newton was a fellow of Trinity College and he second Lucasian Professor of Mathematics at the University of Cambridge. Newton was a devout but unorthodox Christian who privately rejected the doctrine of the Trinity. He refused to take holy orders in the Church of England, unlike most members of the Cambridge faculty of the day. Beyond his work on the mathematical sciences, Newton dedicated much of his time to the study of alchemy and biblical chronology, but most of his work in those areas remained unpublished until long after his death. Politically and personally tied to the Whig party, Newton served two brief terms as Member of Parliament for the University of Cambridge, in 1689-90 and 1701-1702.He was knighted by Queen Anne in 1705 and spent the last three decades of his life in London, serving as Warden (1596-1699) and Master(1699-1727) of the Royal Mint, as well as president of the Royal Society (1703-1727).He was died on 31st March,1727 at Kensington, Middlesex, Great Britain.

Swarnav Jyoti Garg, B. Com 3rd Semester





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Editors: Dr. Rinku Saikia, Mrs. Tulumoni Gogoi

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