

EUREKA

SEVENTH EDITION



NOVEMBER 2023

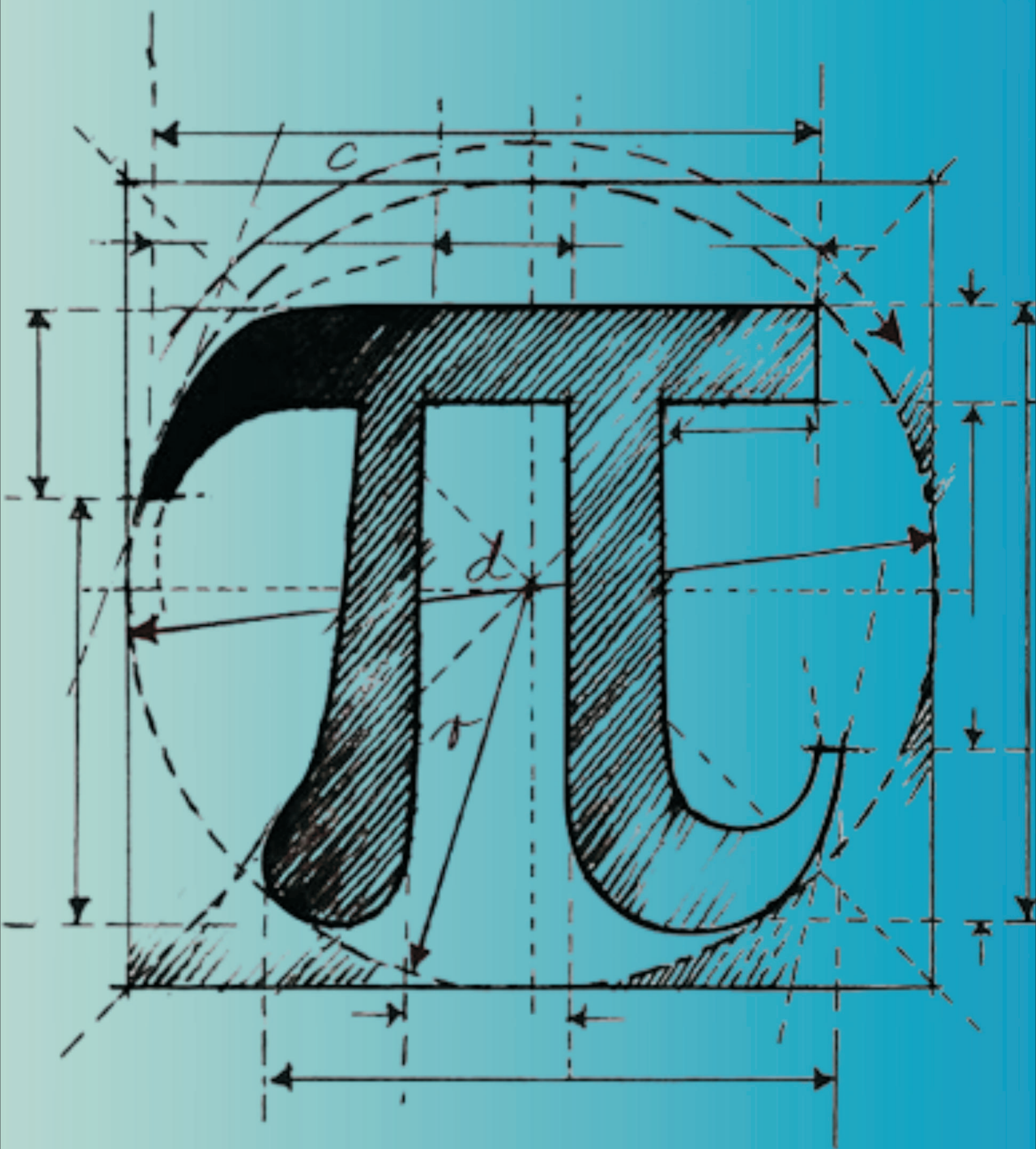
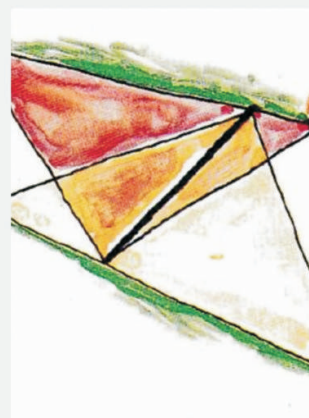


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HEAD OF DEPARTMENT'S AND PRESIDENT'S NOTE



MRS. DEEPTI VERMA
(HOD MATHEMATICS)

It gives me immense pleasure that as the Department of Mathematics, we have been able to release the 7th edition of our Annual Mathematics magazine EUREKA. Although, a lot of technological tools are available in the media for quick information but the significance of print media cannot be denied.

The magazine has been conceptualized and designed by the student officials of the Mathematics Society. It is an annual magazine publishing high-quality, lively, readable, and appealing articles on a wide range of Mathematical topics, including original mathematics, historical content, and connections among Mathematics and other disciplines. An article's quality of presentation depends on its Mathematical significance. We, therefore advised the students to say something new if they have explored something or write something old in a new appealing, and refreshing way.

Readers expect a high standard of exposition; they look for articles that inform, stimulate, challenge, enlighten, and even entertain. Articles are meant to be read, enjoyed, and discussed, rather than just flipped through.

We hope we have been successful in our endeavors to meet your expectations. I express my heartiest gratitude to Pari Shah, the society president, Nishika Shah, and Palak Vohra the team of the editorial board for their diligent efforts and strong determination to bring out this edition.

My best wishes to all!!

“In a world where instant gratification often takes precedence, mathematics teaches us the value of consistency and perseverance. Unlike other subjects, it cannot be conquered in a last-minute cram session.”

This quote encapsulates a fundamental truth that I've consistently shared with those seeking guidance in the realm of Mathematics. Amidst the growing resentment that teenagers harbour towards the subject, the quote serves as a reminder that true mastery in the subject unfolds through dedication and steadfast effort, not fleeting shortcuts. I firmly believe that fostering a love for Mathematics is not confined to learning formulas and theorems; it's about instilling a sense of curiosity and resilience in the face of challenges.

In closing, this journey has been more than a presidency; it has been a collective effort of the team: Nishika Shah and Palak Vohra to nurture a society where the spirit of Mathematics thrives, where challenges are embraced, and triumphs are celebrated. I am honoured to have been a part of this remarkable community, and I eagerly anticipate reading the continued growth and success of the Magazine.



PARI SHAH
PRESIDENT

FROM THE EDITORIAL DESK



NISHIKA SHAH
EDITOR



PALAK VOHRA
CO-EDITOR

In the intricate world of numbers, we've discovered a universal truth – numbers have always given us comfort. They've been our steadfast companions, our allies in navigating life's puzzles. For many of us, they provided that familiar thrill and a sense of achievement that no history book or geography lesson ever could. Today, we take a moment to appreciate the power of numbers in our lives. They are the secret code that unlocks the mysteries of the universe. And it's not just about abstract formulas; it's about the real-world applications that make maths a force for good. Whether it's understanding the rate at which Tanu's watermelons disappeared from her cart or unraveling the secrets of the cosmos, numbers provide us with the tools to make sense of our world.

As we conclude this year, it is an honor and privilege to be a part of the editorial board of the seventh edition of the Mathematics magazine EUREKA. It's a piece of work done by students while their minds speak through words the enigmas that surround the subject. Concluding the year-round articles was a task led by us under the guidance of the Mathematics department. Throughout the process, both of us have thoroughly been enriched by the enthusiasm showcased by the young minds in their pieces and their perception of Mathematics. With the world evolving the meanings and the ideas of disciplinary studies have changed but as we come around to the magazine most of the pieces find their foundation as an epitome of the relevance of the history of the subject in today's time and place. We would like to thank the Mathematics department and Ma'am Deepti Verma, HOD Mathematics for giving us a space to build innovations.

Here's to the unyielding comfort and excitement that numbers have provided us throughout our lives. Let's continue to embrace the world of mathematics, learning, exploring, and celebrating the incredible power of numbers.

NISHIKA SHAH
PALAK VOHRA

UNRAVELING THE MYSTERY OF CHAOS

Complexity And Dynamics

Chaos theory, a captivating and multifaceted branch of mathematics, unveils a world of unpredictability, complex patterns, and hidden order within seemingly chaotic systems. While its applications span various scientific disciplines, chaos theory's relevance to mathematics goes beyond its captivating real-world applications.

Chaos theory emerged in the late 20th century as a response to the realization that many natural systems defy **traditional linear mathematics**. These systems exhibit sensitivity to initial conditions, leading to unpredictable outcomes. Chaos theory delves into the behavior of these dynamic, nonlinear systems and introduces concepts such as **attractors, bifurcations, and strange attractors**. One of the central pillars of chaos theory is the **study of dynamical systems**, which are systems that evolve over time. In mathematics, dynamical systems provide a framework for modeling and analyzing how complex systems change. Chaos theory emphasizes the importance of nonlinear equations, where small changes in input can lead to vastly different outcomes. This understanding challenges traditional linear mathematics and opens new avenues for exploring the complexity of dynamic systems.

Chaos theory's relevance transcends its direct applications in modeling **weather patterns, financial markets**, and other real-world systems. It has sparked a broader reevaluation of mathematical paradigms and prompted the development of chaos-inspired mathematics, leading to innovative approaches in various branches of mathematics. Fractals, intricate geometric shapes that exhibit **self-similarity at different scales**, are a key concept within chaos theory. These fascinating mathematical objects offer insights into the structure of chaotic systems. The study of fractals enriches mathematics by introducing the notion of fractional dimensions and providing a visual representation of the fractal-like nature of many natural phenomena.

Chaos theory extends its influence into **probability theory and stochastic processes**. The concept of probabilistic chaos acknowledges that even in systems with inherent randomness, there are deterministic patterns hidden within the chaos. This recognition has led to the development of new mathematical tools and models that can better describe the behavior of complex systems affected by both **determinism and randomness**. Chaos theory's impact on mathematics is profound. It challenges traditional linear mathematics, introducing nonlinear dynamics, fractal geometry, and probabilistic chaos to enrich the mathematical landscape. Beyond its immediate applications, chaos theory encourages mathematicians to embrace complexity and uncertainty as inherent aspects of the mathematical world. It reminds us that within the apparent chaos, there exists a hidden order that can be unveiled through the elegant language of mathematics. As chaos theory continues to evolve and influence mathematical thinking, it underscores the beauty and depth of mathematics, driving us to explore the infinite complexities of our dynamic universe.

DIVIJA PATWARI
PRE SC COMMERCE
S/2391

THE GEOMETRY OF DANCE

Math and dance are diametrically opposed, aren't they? Dance is enjoyable to perform as well as to watch. The general public, on the other hand, views mathematics as a tedious and unnecessarily complex source of ongoing annoyance. However, dancing is all about altering our body's shape to express an act, a mood, or an idea, and can we talk about shapes without discovering a **geometry notion** concealed underneath them? No! Thus, the art of dancing involves not just lighting, music, and rhythms but also geometrical ideas that we frequently overlook.

Shape, angle, and symmetry concepts are present in every part of the **choreography, including the fundamental movements, group formations, lifts, and spins.** Asymmetrical dance, both in terms of an individual dancer and the group as a whole, is one of the oddest characteristics of a beautifully choreographed dance. Asymmetrical features can be used in performances as a technique to disrupt the eye from the scene or to express disagreement within the work. The hidden geometry that also functions in spins is what gives this symmetry power its power. Dancers employ a method called "**spotting**" while they spin. They keep their head fixed as long as possible while turning their body, then quickly spin their neck to catch up with their body. This aids with their balance and prevents vertigo. Dancers are unable to spin indefinitely like a ball because the human body lacks **rotational symmetry**, whereas a ball or other spherical surface, which has unlimited rotational symmetries. Due to the mirror symmetry of the human body, dance choreographers are able to create more alluring dance moves.

In reality, Rudolf Laban, a choreographer, invented a form of dance he dubbed Labanotation, or, as he puts it, written dance, which manipulates body movements like a mathematical equation. His "**space harmony**" theory focuses on spatial drills that are connected to musical scales that flow via the structures of geometric objects like the cube or an octahedron. He made connections between movement and its relation to the proportions of the human body using intricate mathematical sequences, such as the **golden ratio (phi)**. Although geometric principles are also used in modern dance, ballet's dedication to geometry is particularly clear because of its precise symmetry. The geometric forms that make up the architecture of ballet and the meanings they convey are frequently taken for granted. It appears that there is a kind of sacred geometry, or at least a set of rules, that allows certain configurations to enter a person's heart and spirit.

Bharatanatyam, a form of classical Indian dance that is frequently distinguished by the use of stylized, schematic body movements and sculptural stances, has a close relationship to geometry. Bharatanatyam dancers portray ancient Indian tales from the Hindu epics Ramayana and Mahabharata through poses and movement. To narrate their stories, they frequently use their bodies to make simple geometric patterns like lines, squares, rectangles, and triangles. We have long used these fundamental shapes to visually reflect the world around us. The recurrence of these forms aids in solidifying the geometric concepts in our minds. Geometry is also very important in dance genres including **contemporary, jazz, tap, and Irish dance.** So, regardless of the dance's style or place of origin, geometry is always concealed in its steps.



ANANYA AGARWAL
PRE SC COMMERCE
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THE TRINITY OF NUMBERS: Pi (π), Phi(Φ), AND Psi(Ψ)

Within the realm of Mathematics, certain notable figures have notably intrigued and inspired through their conceptual mystique. Have you ever pondered the importance of numerical representations that define our individual existences? These numbers may seem complex, but they hold the key to unlocking the mysteries of our universe.

Pi(π): Jack of all, and master of all. **From circles, spheres, and cylinders to the Fourier Transform, Eulers Formula for Polyhedra and Stirling;** Approximation for Factorials, it all seems impossible without it. Represented by the sign π and holding the value of **22/7 or 3.1415926535897...** One notable historical contribution is credited to Leonhard Euler, who used pi to solve the Basel problem. Moreover, in everyday life, pi is encountered in seemingly trivial ways.

Phi(Φ): Phi, is the polymath of life, mastering myriad disciplines with grace. Present in the most intriguing atoms, from spirals of galaxies and the Parthenon in Athens to the arrangement of seeds in a sunflower head and the branching of trees, phi is universal. **Its golden ratio (a ratio between two numbers) defies simple representation and decimal representation goes on forever without repeating (1.61803398874...).** It is defined as the unique positive solution to the quadratic equation

$$x^2 - x - 1 = 0.$$

Psi(Ψ): From fluid dynamics and telepathy to representation of the voiceless bilabial fricative sound and paranormal abilities, psi does the most interesting things like **quantum mechanics. Physics, Statistics, Modern Culture, Linguistics, Engineering,** and psi have all these fields covered. It often denotes a wave function, which describes the behavior of particles on a microscopic level, told you it was quantum. Psi functions encapsulate the probability amplitudes of different states that a particle can occupy, and their square modulus gives the probability of observing the particle in a particular state.

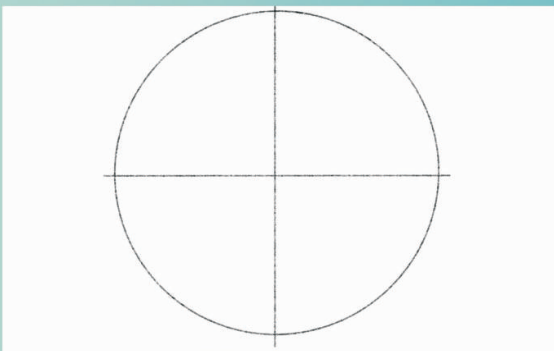
All of these are discovered by Greek mathematicians. However, according to a well-analysed and processed theory, it concludes that there exists a force of attraction by which they are **held together, interconnected,** in some capacity or the other.

Proof:

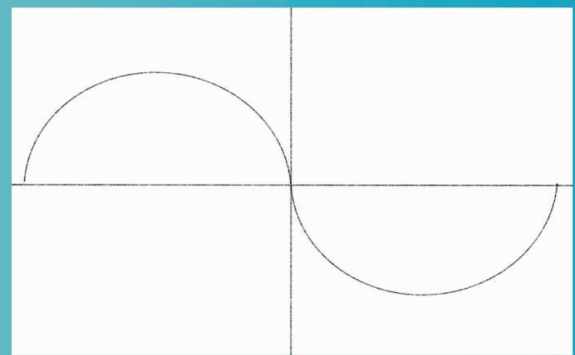
- We know that pi plays an integral role in stating the radii of a circle.
- According to a theory proposed by Ferman in 2020, we can derive that $\sqrt{\pi}$ is related to $\sqrt{5\phi/3}$ in some capacity or the other because they're both a part of the circle.
- If the same circle is directed and forms a crest and trough, psi would play a significant role. This is because **psi represents wave functions**.

• Another proof of this is an equation from quantum physics. $\Psi = A \sin(\omega t + \phi)$, where $\omega = 2\pi/T$.

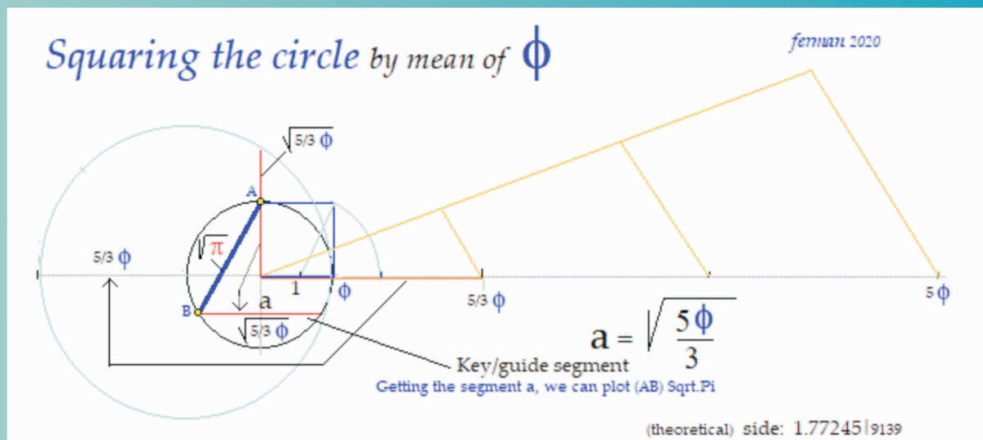
In conclusion, the significance of numbers in our lives goes beyond their numerical value. While pi, phi, and psi are but mere instances, these numeric concepts have enthralled dreams in all eras of human thought. Continuing to unravel the enigmas of our cosmos, the profundity of these numerics will unfailingly persist in bearing paramount importance, spurring us onwards to further immerse ourselves in comprehending the intricate nature of all that encompasses us.



CIRCLE



AMPLITUDE



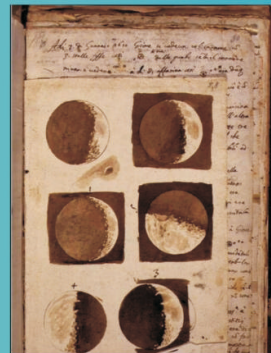
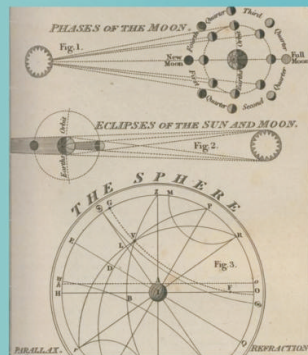
RELATION

JAHNAVI MAHANA
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CONSPIRACIES AND CALCULATIONS: Unmasking the Moon Landing Hoax

In the realm of conspiracy theories, few subjects have captured the imagination—and skepticism—of the masses quite like the moon landing. While this debate may not be a Mathematical conspiracy at its core, some theorists argue that the evidence against the moon landing lies hidden within the mathematical intricacies of lighting and shadows in the photographs.

The Apollo 11 mission, which culminated in Neil Armstrong's historic first step on the lunar surface in 1969, was a monumental achievement of human exploration. However, from the moment the images of the lunar landing were beamed back to Earth, conspiracy theories began to percolate. Theorists have meticulously examined the photographs taken on the moon's surface, arguing that they reveal discrepancies **defying the laws of physics**. Specifically, they claim that the **angle and direction of shadows** in the images are inconsistent with natural lunar lighting conditions. By analyzing the shadows in the photographs, they can pinpoint mathematical discrepancies that suggest a staged **lunar landing**.



They claim that the angle and direction of shadows should not be as they appear in the images, given the assumed location of the sun in relation to the moon's surface.

Mainstream scientists and experts have debunked these claims, providing detailed explanations of how the moon's unique topography and the sun's position in the lunar sky can indeed create seemingly counterintuitive shadow patterns. They assert that the mathematical anomalies pointed out by conspiracy theorists are a result of a fundamental misunderstanding of the lunar environment. Despite the overwhelming evidence supporting the authenticity of the moon landing, the conspiracy theories endure, serving as a testament to the enduring allure of the unknown.

The moon landing hoax conspiracy speaks to a broader human fascination with secrecy, hidden truths, and the ever-present fear of deception. The moon landing hoax conspiracy, fueled in part by mathematical anomalies, offers a captivating glimpse into the human psyche.

It reminds us of the power of skepticism and the enduring quest for hidden truths, even when faced with overwhelming evidence to the contrary. While the moon landing remains a symbol of human achievement, it also stands as a haunting reminder of how the allure of the unknown can cast shadows of doubt across even the brightest of accomplishments.

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BUSINESS: ALL ABOUT PROFIT

How Profit, loss and reduction affect your bottom line preface. Profit loss and reduction operation are pivotal aspects of running a successful business. Understanding how these factors impact your nethermost line is essential for making informed fiscal opinions. In this composition, we will explore the complications of profit loss and reduction and how they can affect your business's overall profitability.

The Basics of Profit Loss Profit loss, also known as income loss or profit loss, refers to the reduction in income or profit that a business gets . It occurs when charges exceed the profit generated. The significance of Profit Loss Analysis assaying profit loss allows businesses to identify areas where they're losing plutocrat. By gaining sapience into these factors, businesses can make informed opinions to ameliorate profitability. Conducting regular profit loss analysis helps to identify trends, assess the impact of colorful cost- cutting measures, and develop effective strategies to alleviate losses.

Inefficient operations inadequately optimised processes, shy force operation, and destruction can lead to fiscal losses. Declining deals drop in client demand or request achromatism can affect in lower profit. Ineffective pricing strategies or failure to acclimatise to request dynamics can negatively impact profit perimeters. Understanding Abatements are a common marketing strategy enforced by businesses to attract guests and drive deals.

A reduction refers to a reduction in the price of a product or service. While abatements can boost client accession and conversion rates, it's pivotal to estimate their impact on profitability. A few common abatements are:

- Chance- grounded abatements- involve offering a chance reduction off the original price.
- Flat- rate abatements Businesses give a specific bone quantum off the regular price.
- Pack abatements guests admit a reduction when copping multiple products or services together.
- Seasonal abatements - are offered during specific seasons or leaves to encourage deals.

Before offering abatements, businesses should consider factors similar as perimeters estimate whether the reduction will beget profit perimeters to drop significantly and impact the overall fiscal viability.

Strategies to Manage Profit Loss and Abatements to effectively manage profit loss and abatements, consider enforcing the following strategies

1. Cost- cutting Measures Identify areas where costs can be reduced without compromising product quality or client satisfaction. Streamlining operations, optimizing force chain operation, and negotiating better deals with suppliers can help control charges.

2. Pricing Optimization Regularly review and acclimate the pricing of products or services to insure they remain competitive without immolating profitability.

3. Value add Propositions- concentrate on furnishing unique value propositions to attract guests. This can include exceptional client service, product invention, or exclusive offers.

4. Targeted Discounting- targets specific client parts or incentivizing bulk purchases. This approach ensures that abatements are employed strategically, maximizing profitability. Conclusion understanding the complications of profit loss and reduction operation is vital for the long- term success of any business.

By assaying profit loss and assessing the impact of abatements, businesses can make informed fiscal opinions that drive profitability. Flash back, maintaining a balance between attracting guests and icing profitability is the key to sustainable growth in the ever- changing business geography

SHANVI AGARWAL

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GOD'S PLAN

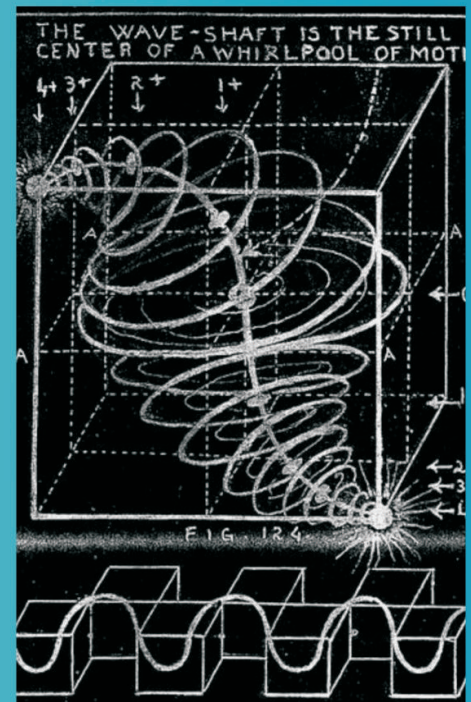
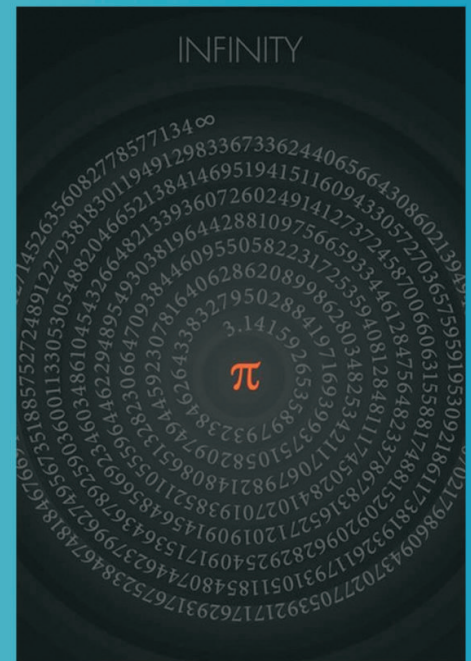
We've often heard the assertion that science and faith are incompatible, that one must prevail over the other - the voice of reason versus the **voice of faith**. So, which should we embrace and which should we discard? Well, I won't discard either. Instead, I believe that I need both science and religion. I rely on science to inspire **marvels and innovations**, and I turn to religion to instill in me a moral compass to ensure the responsible use of these inventions.

What is the highest number the human mind can conceive? What is the extent of the universe? Both questions have the same answer: it's not infinite, but rather zero. As with the largest number, the size of the universe is zero! This might be challenging to grasp, but let me elucidate.

In mathematics, for every positive number, there exists a negative counterpart. In nature, for every matter, there is an **antimatter counterpart**. This is the grand perspective. When you consider everything together, the size of the universe amounts to zero. Zero is simultaneously everything and nothing, which is why it's called a whole number. Whether you add or subtract something from this whole, it remains complete. This brings to mind a famous quote by Albert Einstein: 'Science without religion is lame; religion without science is blind.' Zero's history perfectly illustrates this quote. In India, the Sanskrit word for 'empty' or 'blank' is '**Sunya**.' This 'Sunya' is transliterated, within the Indian system of numerology, to represent the concept of zero and the symbol '0' as we know it today. If we contemplate this circle '0,' it symbolically aligns with the idea of nothing, with a void at its center akin to the emptiness in the heart of the sky.

The profound connection between mathematics and nature explains the evolution of religious thought. Mathematics and religion share fundamental similarities, as both seek truth and employ faith to find it. Mathematical proofs have continuously assisted us in understanding nature, enabling us to uncover the rationale behind religious beliefs. This progress in both fields enables individuals to exercise patience and faith in unraveling the unsolved mysteries of nature. In essence, the passage highlights the harmony between science and faith, showing how they can complement each other to enhance our grasp of the world and our moral values. It underscores that science and mathematics serve as tools for unraveling the universe's mysteries and delving into the spiritual aspects of exploration.

"Mathematics is the language in which God has written the universe."
- Galileo Galilei



NAVYA JAIN
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VEDIC MATH

Vedic Mathematics is the name given to the ancient system of Indian Mathematics which was rediscovered from the Vedas between 1911 and 1918 by **Sri Bharati Krsna Tirthaji(1884- 1960)**.

According to his exploration all Mathematics is grounded on **sixteen Sutras, or word- formulae**.

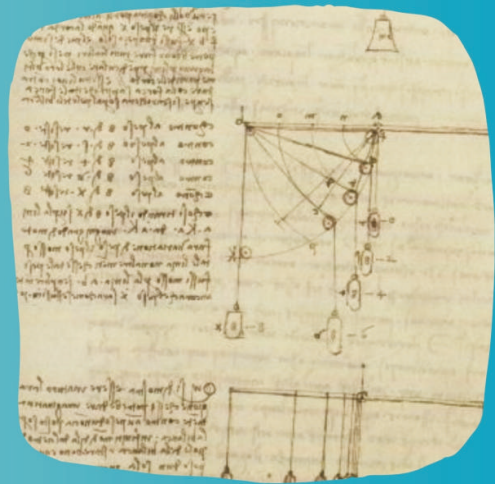
For illustration,' Vertically and cornerwise is one of these Sutras. These formulae describe the way the mind naturally works and are thus a great help in directing the pupil to the applicable system of results.

The Sutras describe internal processes

as explained in the book " Structures in the Vedic Mathematics Sutras". These internal processes construct the mathematics. Maybe the most striking point of the Vedic system is its **consonance**. Rather than a hotch-potch of unconnected ways the whole system is beautifully interrelated and unified the general addition system, for illustration, is fluently reversed to allow **one-line divisions, and the simple squaring system can be reversed to give one-line square roots**. This unifying quality is veritably satisfying, it makes mathematics easy and pleasurable and encourages invention. In the Vedic system,' Delicate' problems or huge totalities can frequently be answered incontinently by the Vedic system. These striking and beautiful styles are just a part of a complete system of Mathematics which is far more methodical than the ultramodern' system'.

Vedic Mathematics manifests the coherent and unified structure of mathematics and the styles are reciprocal, direct, and easy. The simplicity of Vedic Mathematics means that computations can be carried out **mentally**(though the styles can also be written down). There are numerous advantages to using a flexible, internal system. Pupils can construct their own styles, and they aren't limited to one system. This leads to further creative, interested, and intelligent procedures. Interest in the Vedic system is growing in education where Mathematicians are looking for a better and systematic procedures.

Research is being carried out in numerous areas including the goods of learning Vedic calculi in children; and developing new, important but easy operations of the Vedic Sutras in figures, math, calculations, etc. However, the real beauty and effectiveness of Vedic Mathematics can not be completely appreciated without actually exercising the system. One can also see that it maybe the most refined and effective system possible.



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DAILY APPLICATIONS OF NUMBER THEORY

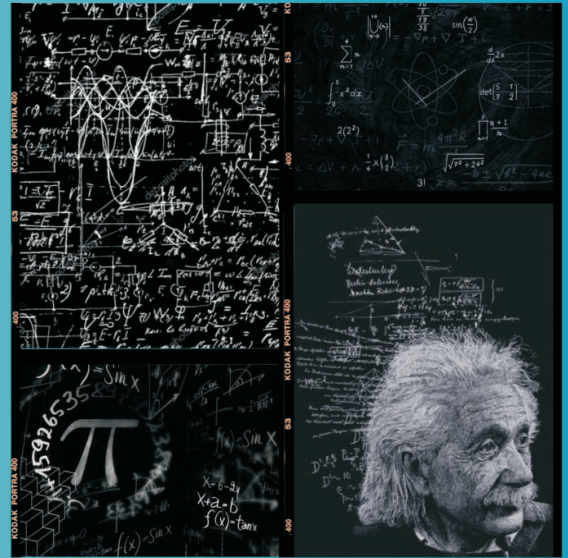
Number theory plays a significant role in credit card **transactions and financial security**.

When you make a purchase using your credit card, the transaction is validated and processed through complex algorithms based on number theory. These algorithms verify the authenticity of the card, detect fraudulent activities, and ensure **secure transmission of data** between the

parties involved. Number theory helps protect your financial information and prevent unauthorized use of your credit card, providing a layer of security for everyday transactions.

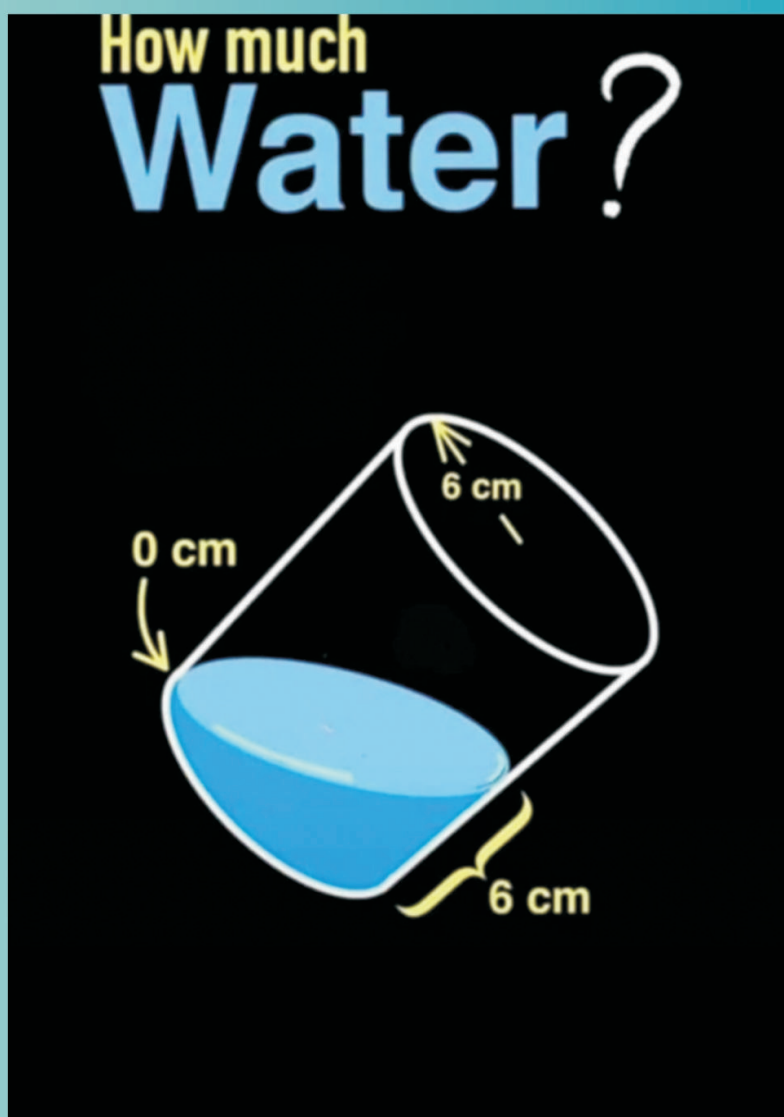
Furthermore, number theory finds applications in **scheduling and optimization problems**. Whether it's organizing daily tasks, planning routes for delivery vehicles, or scheduling shifts for employees, **number theory algorithms** provide efficient solutions to these problems. Techniques like the **Chinese Remainder Theorem and integer programming** help optimize schedules and allocate resources effectively, saving time and improving productivity.

In conclusion, number theory is far from being an abstract discipline that exists solely in the realm of academia. Its principles and concepts have practical applications that affect our daily lives in numerous ways. From ensuring secure communication to optimizing resources and enhancing recreational activities, number theory plays a crucial role in various aspects of modern society. By understanding the significance of number theory in everyday life, we can appreciate the elegance and utility of this branch of mathematics.



OSHI GOYAL
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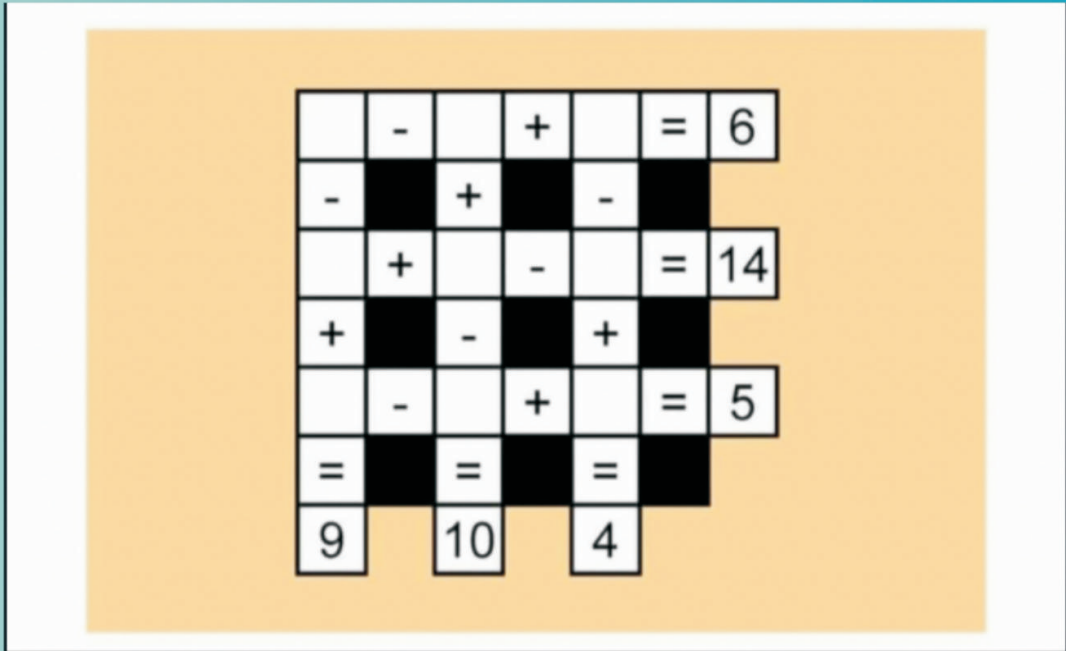
LET YOUR IMAGINATION EXPLORE!



$$x^4 + x^{-4} = 47$$

$$x^3 + x^{-3} = ?$$

$$x \in \mathbb{R}^+$$



Use 1 to 9 digits without repetition

$$2^{3^{8^x}} = 512$$

Find X?

SHAKUNTALA DEVI: UNRAVELING THE ENIGMA OF MATHEMATICAL THEORIES

Mathematics, the universal language of patterns, equations, and logic, has intrigued and confounded scholars for centuries. In this labyrinth of numerical possibilities, individuals often emerge to challenge the conventional wisdom, questioning the boundaries and pushing the limits of mathematical knowledge. One such luminary is the **late Shakuntala Devi**, a woman whose brilliance and contribution to the field of mathematics continue to leave the world awestruck. Born on November 4, 1929, in Bangalore, India, Shakuntala Devi was a prodigy who exhibited extraordinary mathematical prowess from an early age. Often referred to as the "**Human Computer**," Devi possessed a unique ability to solve complex mathematical problems swiftly and accurately, a talent that defied comprehension. Her feats were not limited to mere calculations but rather encompassed a deep understanding and intuitive grasp of numerical relationships. One of the remarkable aspects of Devi's mathematical prowess was her range of abilities. While many individuals excel in specific branches of mathematics, Devi demonstrated a masterful command over various domains. From **mental arithmetic to number theory, probability to trigonometry, she navigated the mathematical landscape with grace and precision.** Her astute observations and unique teaching methods led her to uncover peculiar mathematical theorems, which she shared with the world in her numerous publications. The beauty of Shakuntala Devi's mathematical theories lies in their elegance and simplicity. She possessed an innate ability to distill complex concepts into easily understandable ideas. Her writings and lectures captivated audiences and inspired a new generation of mathematicians and enthusiasts alike. Despite her unparalleled mathematical genius, Devi ardently believed in making mathematics accessible to everyone. Her lucid approach demystified seemingly abstract concepts, making them relatable and understandable to all.

Devi's contributions extended beyond the realm of theoretical mathematics. She recognized the power of mathematics as a tool for social change and advocated for its inclusion in everyday life. Devi urged people to see beyond the classroom and recognize the practical applications of mathematics in various fields, such as **finance, engineering, and even everyday problem-solving.** Her tireless efforts to promote mathematical literacy helped dispel the notion that maths is a daunting subject and fostered a broader appreciation for its utility and beauty. Throughout her life, Shakuntala Devi challenged societal norms and broke barriers, particularly as a woman in a field dominated by men. Her achievements not only shattered stereotypes but also served as a resounding testament to the limitless potential of the human mind.

Devi's unwavering commitment to her craft and relentless pursuit of knowledge continue to inspire generations, highlighting the importance of perseverance and tenacity in the face of adversity. Even after her passing away in April 2013, Shakuntala Devi's mathematical theories and legacy endure. Her innovative approaches and deductions remain widely studied and admired, continuing to shape the future of mathematics. Moreover, her emphasis on the immeasurable value of intellectual curiosity and the boundless wonders of the mathematical universe resonates with aspiring mathematicians worldwide.

In conclusion, Shakuntala Devi's indelible mark on the world of mathematics cannot be overstated. Her unconventional methods, astounding abilities, and groundbreaking theories have left an indelible impression on the discipline. Beyond her numerous records and accolades, Devi's true legacy lies in her ability to inspire and ignite a passion for mathematics in the hearts and minds of the masses. As we delve deeper into the intricacies of mathematical theories, let us remember Shakuntala Devi, forever etched in history as a mathematician par excellence.

KANASHU AGARWAL

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THE HIDDEN SECRET

Today one will find the answer to one of the most curiosity-driven questions. “Where do we use math in real life?”. Our answer is distinct from the ones stacked on the infinitely many out there. The world of banking predominantly relies on the 2 M’s: Money and Mathematics. Moreover, the enlightenment of mighty mathematics merges meticulously with money. The bowels of banking are financing. A bank uses a financial model to systemize loans, deposits, and different types of equity capital. When there is an inflow of financial statements, the bank commences with developing assumptions through mathematics. A bank makes these calculations to prepare themselves to tackle any degree of “what if” scenarios possible. A financial model is established on the pillars of mathematical equations, models, analysis, and statistics.

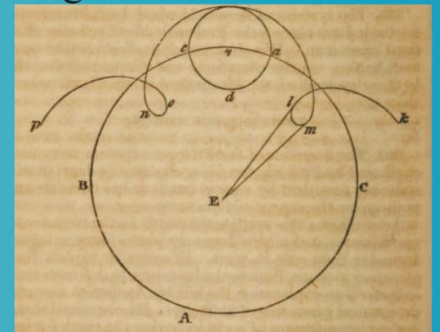
Math plays the role of the knight in shining armor that enables the bank to predict the profitability of a customer’s assets and their activities. Financial models help to provide a systematic and structured way to make a prognosis of a bank’s financial performance. A financial model liberates a bank by allowing it to visualize the degree of risks before making a decision which ensures the bank benefits the maximum profit.

Financial Modeling: Methodical Core

- Projects and suggest profitability of a decision.
- It gives a preview of any impact regarding decision.
- It enables the periodical performance review.

The epitome of a financial model is formulae which provide mathematical proofs to

quantify the financial predictions. Banking is a knot of complex values that we untangle with the help of mathematics.



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MATH IN ART

You thought you escaped math after school graduation. No more torturous hours solving for x or factoring polynomials. But math has followed you into adulthood, lurking in the most unexpected of places - the art world. There's a surprising connection between math and art that enhances our appreciation of creative works. From the **golden ratio in Renaissance paintings to fractals in psychedelic art**, math occurs in aesthetically pleasing ways. Even if you shudder at the memory of algebra, discovering the mathematical secrets hidden in masterpieces will ignite your curiosity. Artists have been using shapes and angles in creative ways for centuries.

Circles represent **harmony, unity, and infinity**. From mandalas to rose windows, circles are a staple of art across cultures. Even a simple dot can make a powerful statement, like **Yayoi Kusama's infinity rooms full of twinkling circle lights**

Triangles are the building blocks of exciting compositions. They lead the eye in dynamic ways and create a sense of stability. See the triangular pediments topping Greek temples or the triangular folds of fabric in Baroque paintings. Cubism broke subjects into triangular facets, revolutionizing Western art. Squares represent order, rationality, and solidity. They compose formal gardens, quilt patterns, and Piet Mondrian's geometric abstractions. However, a square-tipped onto one corner becomes a diamond, creating visual drama and movement, like the diamond motifs of Art Deco. By harnessing the power of shapes and angles, artists transform the rational into the poetic. This magical number, **1.62**, has been used by artists for centuries to compose balanced, harmonious works. How does it work? The golden ratio describes the ideal proportion of two parts where the smaller section is to the larger section as the larger section is to the whole. Photographers can also harness the power of the golden ratio. Math provides structure and logic, art brings creativity and emotion. Together they form a **dynamic duo**, collaborating in mysterious ways to produce some of humanity's greatest masterpieces.



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BEYOND THE LIMINALITIES

1) WHAT DO YOU CALL A
MATHEMATICS MUSEUM?

A GALLERY OF FINE CHARTS

2) KNOCK KNOCK!
WHO'S THERE?
MATH BOOK
DON'T BOTHER I'VE GOT MY OWN
PROBLEMS

3) WHY DID THE MINUS SIGN GET A
HUMANITARIAN AWARD?
TO MAKE A DIFFERENCE

4) WHY ARE BACTERIA SO BAD AT
MATH?
BECAUSE THEY MULTIPLY BY
DIVIDING

1) 1. A Duck Was Given \$9, A
Spider Was Given \$36, And A
Bee Was Given \$27. Based On
This Information, How Much
Money Would Be Given To A
Cat?

2) 5. When My Dad Was 31, I
Was Just 8 Years Old. Now His
Age Is Twice As Old As My
Age. What Is My Present Age?

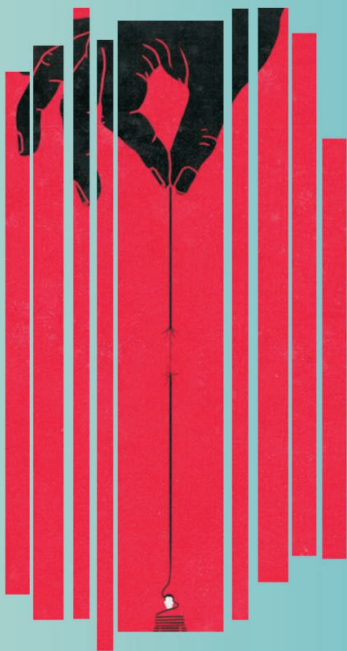
3) X Is An Odd Number. Take
An Alphabet Away From X
And It Becomes Even. Which Is
That Number?



THE INCESSANT: A NEVER ENDING TALE

I thought the cycle ended somewhere
Maybe unknown but not far enough
from the unfound reality
The questions make up the bizarre mind
While the seasons seem to pass by
Unbothered, yet so flawlessly charged
That even it bleeds in the liminalities of
hour
The figure shows that it is all a circle
A glimpse of sorrow, lament, jocund
thoughts
That stands through as you view it from
the center of the radius
The diameter and the radius seem to be
related
Like complimenting that even something
unfinished is complete
The beauty in resilience with this is seen.

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STUCK

Math says that a line
Extends till infinity and
Has infinite points in it
So in a way
Every point is
In between two points
Stuck, endlessly.
Between two people
Between two decisions
Between two ways
Between wrong and more wrong
Between what I was and what I am
Between what I am and what I could be
Today and every day
I resonate with that point.
Stuck, endlessly.

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