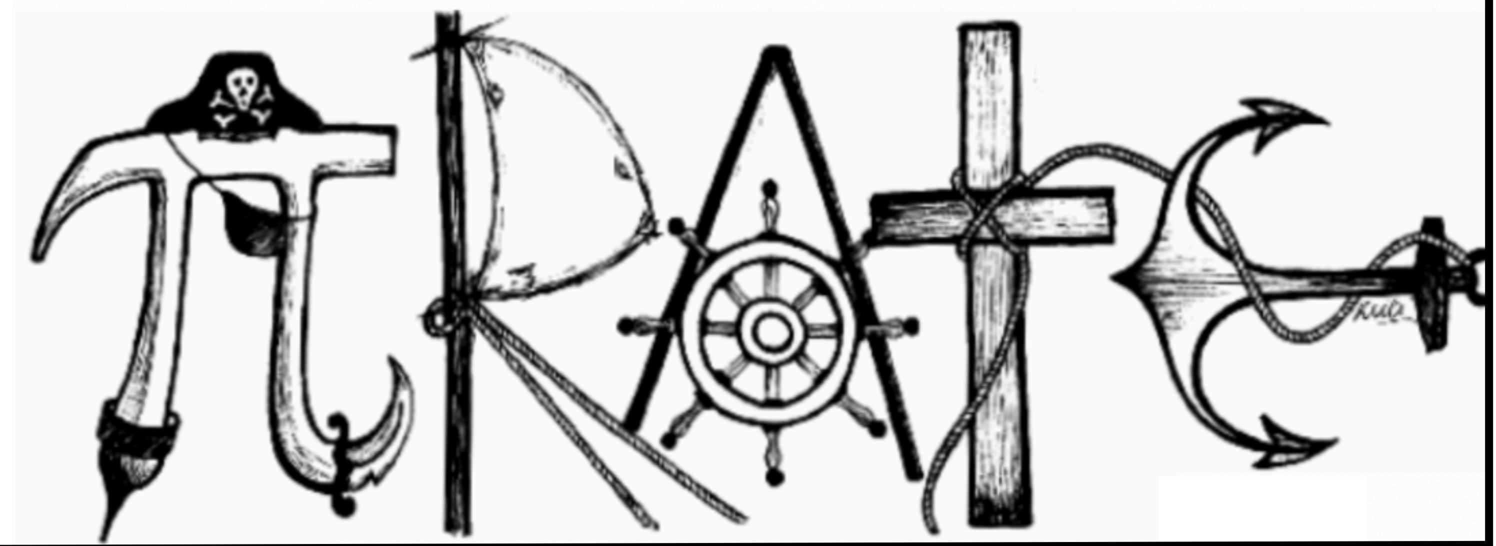


"I begin by imagining the impossible and end by accomplishing the impossible." -Sri Chinmoy

Dear Reader,
Having studied Math for more than a dozen years, there is one observation I would like to put forth. The liking for this subject is only in extremes, either you really like it, or you do not like it at all. I choose to count myself in the first category. Well, I do not have an objective definite answer as to what has made me like Math, but I can answer as to how much I like doing it. For me, Math is not just about numbers and equations. It is about how I can come together with my friends while studying this subject and make endless memories in efforts of solving each other's doubts.
They say that nothing is perfect. So, should it not apply to everything we study too? That got me thinking and I stumbled upon an interesting topic which explored the idea of Mathematics being incomplete. This seemed quite peculiar to me and led me to an unconventional theme for the current issue, 'The Flaws of Mathematics'. The magazine begins with a note on the incompleteness of Math while it concludes its journey with its completeness. This newsletter talks about topics which are related to proving the impossible, and some misconceptions in mathematics, as well as paradoxes, which have left mathematicians perplexed. It also covers relatable articles on our struggles with Math a night before the exam, and the contrast between the gossipy Girl Math, the even-tempered Boy Math and the everlasting 'Welhamath.'
Lastly, I would like to thank the Editorial Board of Pi-rate for putting in all the hard work with the support of 'n' number of coffees in making this issue come to life. I would also like to thank Mr. Rawat and the entire Math Department who have been a constant guide for us.
I hope this magazine continues to ignite curiosity and that you enjoy reading it. Happy reading!
Editor-in-chief
Aaruni Garg

Sara

CONTENTS

Incompleteness of Math

Amidst the struggle to remember the long proof's in our physics books, did you ever think that it is possible for a true statement to not be proved? Well, you may be on to something! This problem has actually been addressed by a mathematician, shaking the fundamental concepts of mathematics.

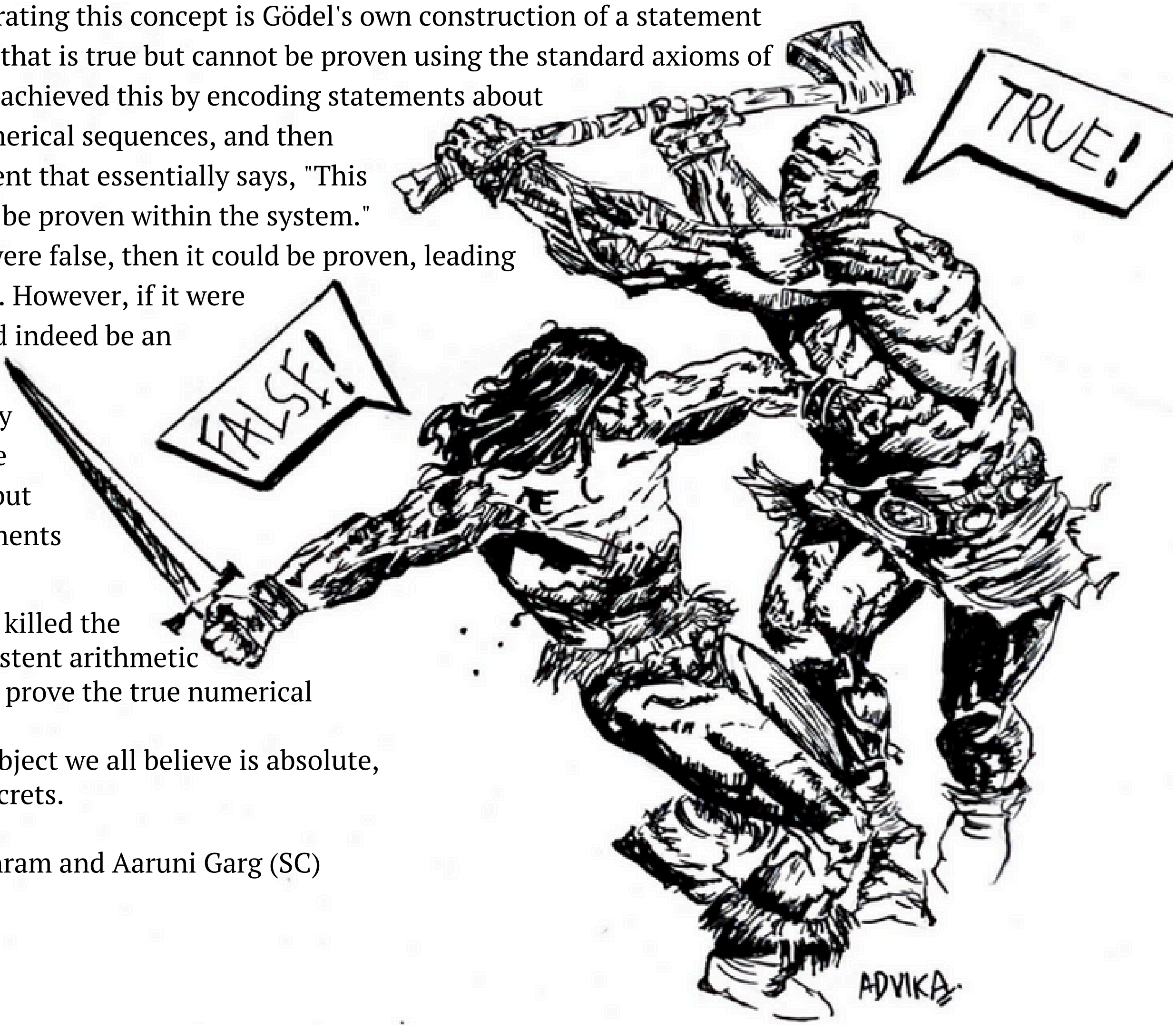
Kurt Gödel made a statement, " In any reasonable mathematical system there will always be true statements that cannot be proved." As odd as this sounds, he managed to prove this statement. He ingeniously constructed a true statement that defied proof. With this revelation, Gödel asserted that mathematics, despite its prowess, has its limits.

He demonstrated that no matter what axioms (a statement that everyone believes is true), one would propose as a potential basis for mathematics, there will constantly be true facts about numbers that those axioms are unable to prove. Additionally, he showed how a potential set of axioms can never establish its own consistency.

In this language, every expression (including sentences) has a unique natural number that is called its Gödel number. Gödel constructed a sentence G, where n is the Gödel number of G itself, which states that a given assertion n is not provable. This concept assigned interesting numbers to images, statements and revealed constraints to capture the mathematical truth. Godel's speculations extend beyond the restrictions of Math, entering the fields of thinking, software engineering, and science. It challenges how we might interpret truth, data, and the idea of the real world.

An example illustrating this concept is Gödel's own construction of a statement within arithmetic that is true but cannot be proven using the standard axioms of arithmetic. Gödel achieved this by encoding statements about numbers into numerical sequences, and then creating a statement that essentially says, "This statement cannot be proven within the system."

If the statement were false, then it could be proven, leading to a contradiction. However, if it were true, then it would indeed be an unprovable statement, thereby demonstrating the existence of true but unprovable statements within arithmetic.



The Gödel's proof killed the search for a consistent arithmetic where he failed to prove the true numerical statement.

Hence, Math, a subject we all believe is absolute, may hold some secrets.

-Nimrat Kaur Mehram and Aaruni Garg (SC)

Girl Math vs Boy Math

There are so many girls to be, and so many things to "girl". Now that we have burned through "clean girl", "cold girl" and "girl dinner", it is onto the next feminine urge: "Girl Math", a loosely defined financial concept to cover our extravagant spending habits. We EAT, BREATHE and SLEEP Girl Math and we SWEAR by it.

Girl Math is buying expensive items on sale and then deluding yourself into believing that you have just saved money. If we were to walk into a Zara store tomorrow and pick up a Rs. 8000 dress for Rs. 6000 on sale, we would pat ourselves on the back and leave the store with a proud smile on our faces because at least we did not buy it at full price. Another common skill which is portrayed by being familiar with this intriguing form of Math is having the ability to calculate the number of washes left in a shampoo bottle just by feeling its weight.

Very often we come across ourselves using this Math to find out the duration of time remaining before we can repeat an outfit. However, it is not limited to such small tasks. It has wider applications which hold great importance in our life, such as when packing for a trip. Let us say you are packing for a ten-day trip. I am sure your calculations resemble this: twenty formal outfits (change twice a day AT LEAST), five casual outfits and five backups, excluding night suits. If you find yourself using eight different types of shampoos with six different brands of conditioner and still being ready to buy 'what's viral', you are a very frequent user of this genius branch of Math. Lastly, if your ideology aligns with the following: "I will spend Rs. 10,000 in one store but not spend a penny in the next three. So, you know? It balances things out ...", then, dear Reader, you are more reliant on Girl Math than most of the world is on ChatGPT and there is no escape for you.

The corollary to Girl Math is Boy Math, the epitome of what is considered "boyish". We do not mean to mock anyone but, very simply, to enlighten everybody on their 'math'. Boy Math is calculating the probability of your dream FIFA team's winning strike. It also includes calling a 5'10" a whopping six feet. Boy Math is realizing it has been just three days since you have changed your socks, and you have two more days before you have to ask your mother to wash them. Packing only a pair of shorts and two T-shirts (which may also become a headache to pack) for a ten-day trip is also a compulsion in this math. You must ensure that you have a 70-inch TV but not a dining table, to truly be a part of this group of masterminds. Never ever using sunscreen is also Boy Math, because ... well, skin cancer does not scare them, but their mothers do. In the end, our favourite point and something we envy from the core of our souls is, Boy Math is using a 5-in-1 toothpaste, shampoo, body wash, face wash and scrub and still achieving the runway-ready-dewy spotless face which Girl Math has given up on.

Now like everything else, there is some good and some bad to both Girl and Boy Math. These are not just 'trends' but a lifestyle. Old habits die hard, is that not what they all say?

-Yaisana Longjam and Sara Goel(AI)

CAN WE DIVIDE BY ZERO?

"Black holes are where God divided by zero."- Steven Wright.

What would your fascinating/impossible things-to-do-before-you-die list consist of? My list was seemingly endless. However, one thing that I had thought about and written down was dividing by zero. Dividing by zero is an eventual corruption in mathematics, a rule we are warned not to break. Whether a number divided by zero is infinite or is even possible, has consistently been a topic for discussion in mathematics. Division is the process of splitting a specific amount into equal parts. We can divide the number 15 into 3 parts by one part containing 5 numbers. However, think about it, diving 15 into 0 parts? (Welhamites: it is truly problematic!) Let us get to the crux of the matter. The whole of the internet says that division by zero is "undefined". Why do we call it undefined? Were the mathematicians lazy, could they not just define it?

You take out your calculator, and type 1 divided by 0, and it is says "math error" – because it is undefined. Does not make sense, right?

When we divide a small number by small numbers, they give us extensive answers. For example, 20 divided by 5 is 4, 20 divided by 1 is 20 and 20 divided by ¼ (decreasing 1 to ¼) is 80. If you divide a number closer to zero it will give answers growing to the largest numbers possible. So, can we say that 20 divided by 0 will lead us all the way down to negative infinity? Well, it cannot be going anywhere because the limit does not exist. We call it undefined because we cannot just "DEFINE" it (no one has yet defined it). There is no number that we can pick for our answer to make sense. This aspect in mathematics has been tried out many times but every time you try, you will just get a random answer which is absurd.

-Riana Thumar (AII)

SUNDAE SCANDAL

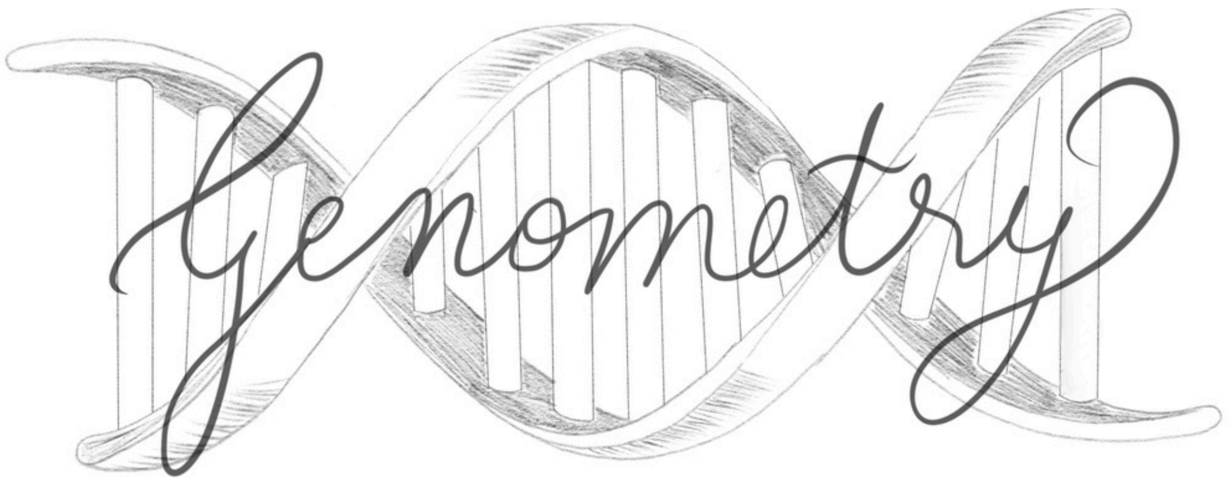
Did you ever think that you buying an ice-cream could somehow correlate to a murder?

Well, that is just how correlation works. It is a statistical measure that expresses the extent to which variables are linearly related. That is, they change together at a constant rate. Correlation analysis finds widespread applications across various fields. From finance to medicine, from economics to sociology, understanding correlations helps in making informed decisions. It is this mathematical evaluation that impacts our daily life, from the weather affecting our clothing choices to the relationship between exercise and health, demonstrating interconnected patterns in our routines and behaviours.

Now, heading back to the ice-cream – murder fiasco. The correlation between the two may seem absurd. However, when you look closely, there are intriguing patterns that emerge based on psychological and environmental factors. It is often observed that both conditions escalate during the warmer months as it can lead to increased ice-cream consumption on the one hand, and higher levels of aggression or social interaction which may contribute to higher crime rates on the other. Nonetheless, just because these two things happen at the same time does not mean that buying ice-cream causes more murders. It is more likely that the hot weather makes people crave ice-cream more and, at the same time, become more irritable, which can lead to aggressive behaviour.

In the final word, ladies and gentlemen, this summer – watch out! – because, it is not just ice-cream and murder which are correlated, there could be much more to the story ...

-Riyanshi Bansal and Deviishee Sodhi(PreSC)



We witness several expressions of mathematical function and concepts in the sphere of infinite variables, but have we ever opened those curiosity doors and viewed our own body at a microscopic level? Our body performs processes every ticking second, and yet we are completely unaware of it. The food we consume consists of more than ten types of biomolecules, like proteins, and they are synthesized through specific intricate processes. A combination of three nucleotides makes up a single codon or a protein molecule. Millions of protein molecules are arranged on a single strand of DNA. Permutations come into play when considering the arrangement of nucleotides within a codon. Since each codon consists of three nucleotides, the order in which these nucleotides are arranged matters. For example, the codons "GCU," "UCG," and "CGU" all represent the amino acid alanine, but they differ in the arrangement of nucleotides. Thus, permutations allow us to calculate the total number of distinct codons that can encode a particular amino acid.

Let us consider an example:

Amino Acid: Alanine. Codons: GCU, UCG, CGU.

In this case, there are 3 (3 factorial) permutations of the nucleotides within the codons, giving us 3 * 2 * 1 = 6 different codons that encode the amino acid alanine.

Combinations come into play when considering how many different combinations of codons can encode a specific set of amino acids. Since there are multiple codons that can encode the same amino acid, combinations help us calculate the total number of unique codon sequences that yield a particular sequence of amino acids.

Let us take another example:

Amino Acid Sequence: Serine-Glycine-Arginine

Corresponding Codons: Serine (UCU, UCC, UCA, UCG), Glycine (GGU, GGC, GGA, GGG), Arginine (CGU, CGC, CGA, CGG, AGA, AGG).

Here we need to calculate the number of combinations of codons for each amino acid in the sequence and then multiply these numbers together to find the total number of unique codon sequences.

There are 4, 4 and 6 possible codons for serine, glycine and arginine respectively.

Thus, the total number of unique codon sequences encoding the specified amino acid sequence is 4 * 4 * 6 = 96.

A flaw or an error is when the intended outcome deviates from the desired result. In mathematics, we rectify calculation errors by several techniques such as proof reading and the use of algorithms. Similarly, in protein synthesis, molecular chaperones assist in the proper folding of the proteins, while molecular machines help degrade damaged proteins. Mathematicians may also uncover interesting patterns or relationships while attempting to correct mistakes, leading to advancements in the field. Mutations in a gene can also lead to altered functions. While the effects of these altered genes are mostly detrimental, some may prove to be advantageous under specific conditions, leading to evolutionary adaptation.

-Vedika Poddar (SC)

From Coffee Cups to Donuts

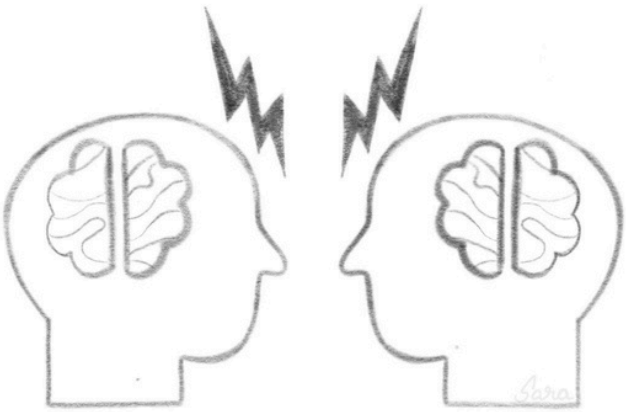
A coffee cup is just like a donut. (Not literally, so please do not try eating it!) Topologically speaking, however, they are somewhat the same. Let me explain it. It all narrows down to TOPOLOGY or the math of shapeshifting. It is the mathematical study of properties that are preserved through deformations.

Topology creates absurd connections between objects which show no real connection but are relatable due to certain unchanging properties, such as the number of holes a thing might have. In topological terms, a mathematical saying is 'a topologist is one who cannot tell the difference between a donut and a coffee cup' as they both have a hole.

Let us take a sphere and a cube. Geometrically and physically, if we compare these objects, they have different geometric properties such as vertices, edges and symmetry. However, if we view these shapes topologically, they are homeomorphic, which means they are topologically related,
as one shape could be easily deformed into the other.

By shaping materials into 'topological states' scientists hope one day to transport energy or information farther and faster than possible today.

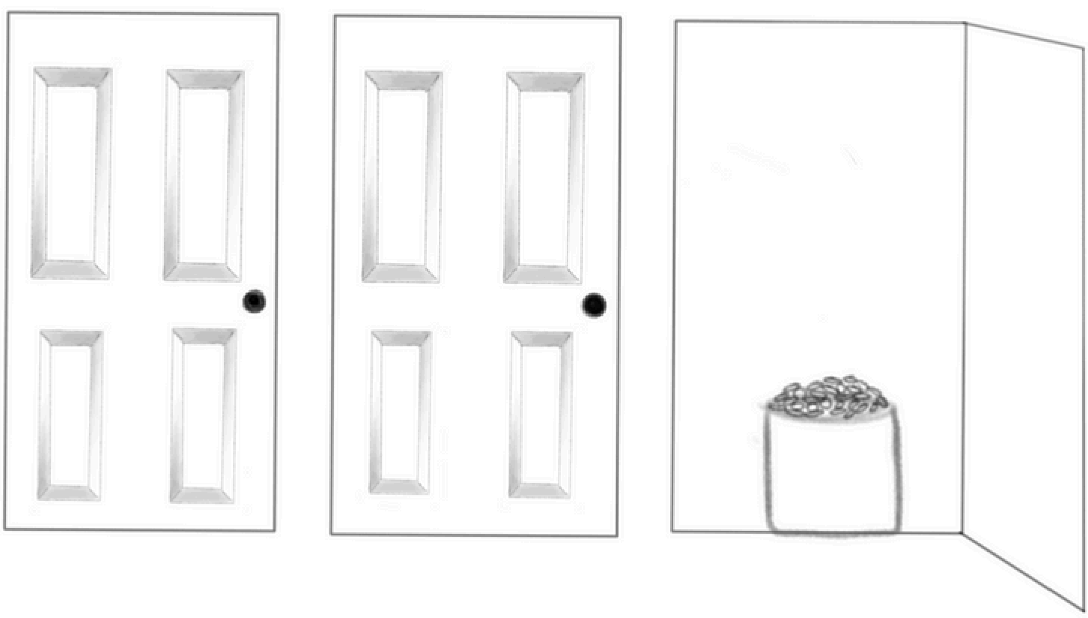
- Ananya Vishal Thakkar (AI)



Para

The Monty Hall Dilemma

The Monty Hall Problem, a captivating probability puzzle originating from the popular American TV game show, Let's Make a Deal, hosted by the renowned Monty Hall, has intrigued mathematicians worldwide since its introduction in 1975. This thought-provoking conundrum presents a scenario where three closed doors challenge your decision-making skills.Behind two doors lurk goats, while behind the remaining door awaits a luxurious, gleaming car.



Initially, you select a door, hopeful that the car hides behind it, with odds of success at 1 in 3, or 1/3. The game takes a thrilling turn when the host, privy to the contents of each door, reveals one hiding a goat that you did not pick.

dox

This revelation introduces a strategic twist to the game. You are then left with a critical choice: do you stand by your initial selection or do you switch to the last unopened door?

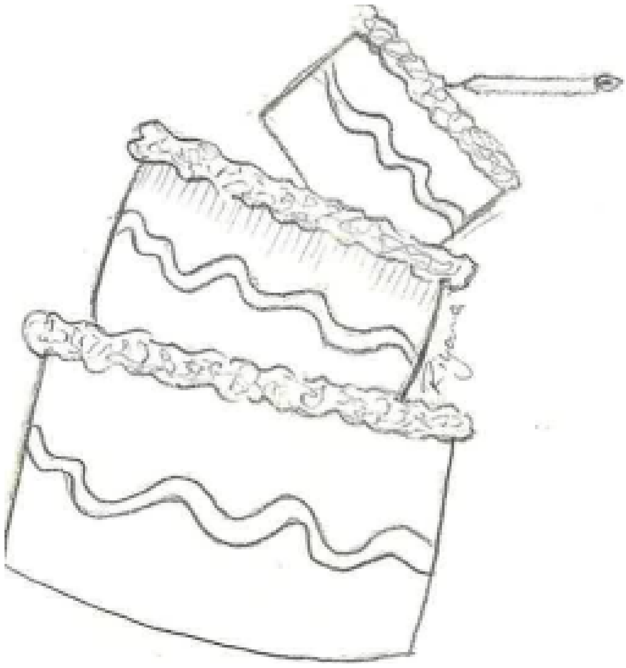
Surprisingly, data and statistics have shown that your chances of driving home the car surge to 2 in 3, or 2/3, if you decide to change doors.

This intriguing problem challenges the boundaries between mathematical probabilities and sheer luck, captivating enthusiasts and scholars alike with its enigmatic aura and perplexing outcomes.

The conundrum continues to baffle and mesmerize, establishing itself as a timeless and compelling exercise that urges individuals to ponder the delicate interplay between chance and strategy in the realm of probability theory.

-Jia Thakkar (AIII)

Who is your birthday buddy?



Birthdays – those annual reminders that time is flying faster than we can keep up with. They are like checkpoints in the game of life, reminding us of another year completed. Amidst the cake, candles and confetti, however, lies a peculiar phenomenon – the Birthday Paradox.

Despite how great it might sound, the Birthday Paradox is not about a contradictory celebration where we are expected to get younger instead of older. In fact, it is something even more confusing, bizarre, and oddly, amusing. The Birthday Paradox states that in a group of 23 people, there is a better-than-even chance that two people will share the same birthday, despite 365 days in a year. This is due to the number of comparisons made between birthdays, meaning the chance of finding a group with no shared birthdays is lower than the chance of two people
having the same birthday. Think about all the 365 days you could be born on. So, when you meet a random person, the odds of you sharing a birthday with them are 1/365. That is why this situation always seems like a neat coincidence.

Picture this: because there are 253 possible comparisons (in 23 people), the first person is compared to 21 others, the second to 21 others and so on. We then multiply the 23 probabilities separately to discover the chances of everyone having a unique birthday. Doing the math, you end up with a chance of 0.49. Now, you separate it from 1 which leaves you with a 50.9% chance, proving this paradox true.

Take my own class (AII-C) for example. In a class of 21 Welhamites, a Hoopoe and a Woodpecker share a birthday!

The Birthday Paradox is a mathematical marvel that highlights the quirky nature of probability and how our brains often struggle to grasp it. It serves as a conversation starter at parties and reminds us that the world of numbers is full of surprises, even in seemingly mundane aspects like birthdays. Who knows, you might just find a birthday buddy!

-Arumai Jain (AII)

A hotel with INFINITE Rooms

It is not uncommon for hotels to run out of rooms, and we frequently observe the manager making every effort to accommodate additional guests. If the hotel has a limited number of rooms, this can still happen, but what would happen if it had an endless number of rooms and ran out?

We can turn to the German mathematician David Hilbert for help in solving this challenging topic. Hilbert demonstrated the counterintuitive games that can be played with infinity by using a hotel as an example.

Say we had to fit another new guest into a hotel with rooms numbered 1, 2, 3, and so on. The person in room one needs to be moved to room two, then to room three, and so on. There are limitless rooms, so people can keep relocating to different rooms even though there would have been a lot of trouble with a finite number of rooms. In order to reduce the amount of time needed, this action must occur concurrently with individuals, who will take an unlimited amount of time.

This clever method allows us to accommodate an endless number of people. You will need to request that the current visitors relocate to the room with number n plus the current room number, assuming that there are n new guests. To further understand this, consider the following scenario: ten additional visitors arrive in addition to the six already using the rooms; they will need to move into room number 6+10=16.

The situation would get even worse if an endless line of people formed outside, which would be quite problematic for both the manager and the owner. We will need to move the occupant of room x to room 2x in order to employ yet another cunning ruse. In this manner, the odd rooms will remain unoccupied to provide place for new visitors, and only the even rooms will be used. To comprehend the occupancy of even-numbered rooms: 2=1*2, 4=2*2, and so forth is to be employed. The management can avoid the worst of times by using the odd-numbered rooms. Let us employ Hilbert's math method to gradually fill the hotel with more and more guests. Dear reader, this is how mathematics rescues overbooked hotels.

-Arshia Aneja (AII)

MATH-A-GENIUS

Sitting alone and confused in class, have you ever wondered where the endless axioms in geometry come from?

Well, it is the famous David Hilbert who proposed them. He is known for solving “Gordan’s problem” by seeking multiple approaches to the question, which reminds us to never give up!

He demonstrated the existence of a finite set of generators and put forward his conclusion in the journal “Mathematische Annalen”. Gordan, the house expert on invariant theory, rejected the article, criticizing the exposition because it was insufficiently comprehensive and commented, "Das ist nicht Mathematik. Das ist Theologie.” (This is not mathematics; this is theology.)

Despite challenges, Hilbert remained dedicated to publishing his work, ultimately leaving an indelible mark on history.

-Aarna Chandak (BI)

possible proof of impossibility

Picture this. You are trying to solve a problem that has stumped generations of mathematicians. No matter how hard you try, you just cannot seem to crack it. Welcome to the world of impossible proofs, where the rules of the mathematical game conspire against you every time.

Try constructing a square with the same area as a circle. Actually, do not. Despite the endless efforts of countless geometers, this task has been proved to be impossible. Though the famous saying, "Nothing is impossible because the word itself says 'I'm possible'" exists, you cannot construct that square, unless you end up making history!

Let us take the example of algebra — the bane of every Welhamite's existence. Just when you thought you had mastered the art of polynomial equations, comes the quintic equation, not ready to give you a neat and tidy solution (speaking from experience).

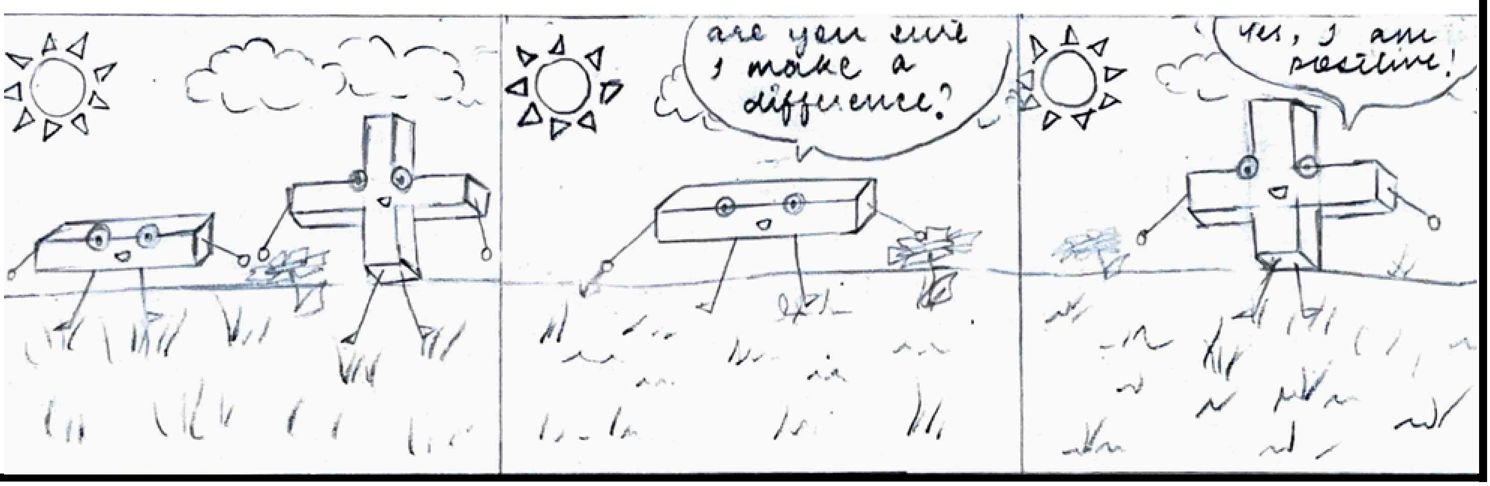
Let us journey through the "Banach-Tarski paradox". Imagine a solid ball sitting innocently on your desk. Now, prepare to have your mind blown

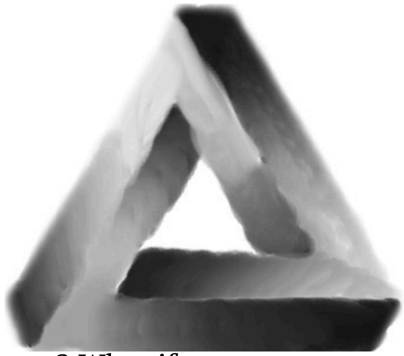
It is theoretically possible to dissect this ball into a finite number of pieces, rearrange them using only rotations, and end up with not one but two identical copies of the original ball!

Whether it is a question of making squares from circles or slicing balls, the realm of mathematics is rife with perplexing puzzles and mind-bending paradoxes. Nevertheless, fear not, Welhamites! For in the face of impossibility, we find not despair but delight. So, the next time you find yourself wrestling with an unsolvable problem, remember to embrace the absurdity of it all.

-Kreeti Dhanuka (AI)

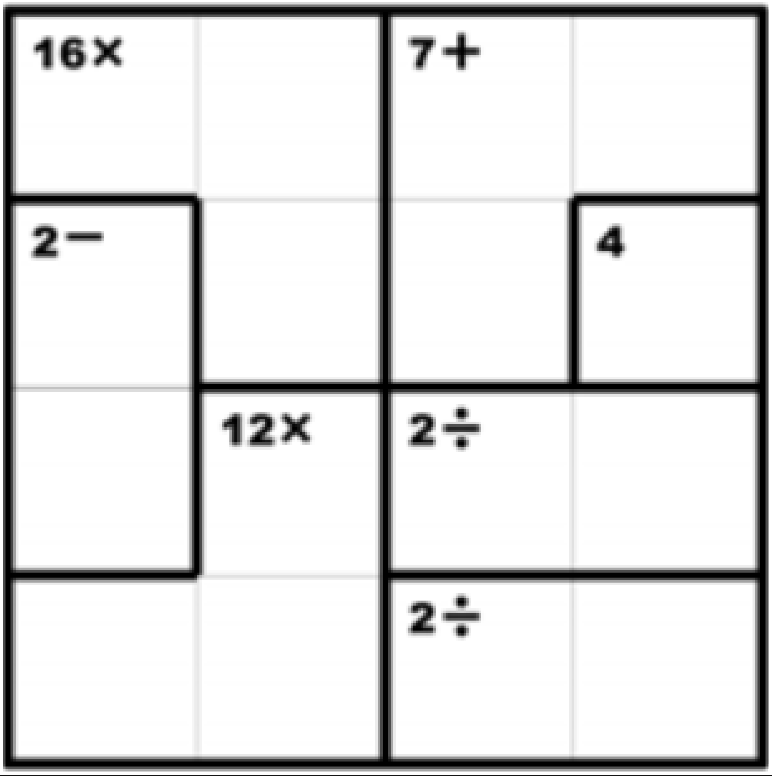
ONE SUNNY MORNING....





They say that everything has a start and an end, but what if some things do not? What if some arrangements defy logic or common sense?
Challenging our understanding about space and dimension is paradoxical geometry. It involves impossible shapes, self-intersecting figures, or other types of paradoxes creating an illusionary object. Dealing with counterintuitive and seemingly contradictory geometric concepts, these paradoxes often arise when playing with infinite sets, non-Euclidean geometries, or unusual topological properties.
This concept can be one which requires great understanding, but, to make it easier, you can view this from the perspective of the 'Arrow Paradox'.
Think about shooting an arrow at a target. Interestingly, before the arrow hits the target, it has to get halfway there. Furthermore, before that, it has to get halfway to that halfway point – and so on ... forever! So, according to this idea, the arrow can never actually reach the target because it has always got a halfway point to cover first. It is a bit like saying you can never reach the end of a race because you always have to get halfway there first, and before that, you have to get halfway to that halfway point, and so on.
One might have heard of different types of triangles like scalene, isosceles and equilateral, but have you heard of the 'Penrose Triangle'? It is a fascinating example of how our brains interpret visual information and how artists and mathematicians can play with perspective and perception to create intriguing illusions. It appears to be a three-dimensional object, but when you examine it closely, you realize that its geometry is impossible. It is made up of three straight bars joined together to form a triangle, but the manner in which they are placed creates an optical illusion where it seems like the bars are connected in a way that defies the rules of geometry. No matter how you look at it, it appears to make sense from one angle, but when you try to picture it in three dimensions, you realize it could not exist as a physical object.
So, the next time you look at a geometrical figure, make sure it is not a trick your brain is playing on you!

-Saisha Bansal and Nitya Rathi (AII)



KEN KEN

Rules:

1. Your goal is to fill in the whole grid with numbers, making sure no number is repeated in any row or column.
2. Since this game is in the form of a 4*4 grid, you can only use the numbers 1,2,3,4.
3. The numbers in each "cage" (indicated by the heavy lines) must combine, in any order, to produce the cage's target number using the indicated math operation (+,-, etc.).
4. For example, if there is a cage with 3 boxes, and your target number is 9 and the operation indicated is multiplication, you can include 3, 3, and 1 in the cages, making sure that no number is repeated in their corresponding rows or columns.

MATH IS NOT MATHING

The number system taught in the B2's was adequate for us to acknowledge our flabbergasting mathematical skills at the time. The pleasant appearance of tangents and cosecants made our A2 answer sheets quite unpleasant. After leaving our memorable A3 report cards behind, we hoped to directly reach the door to a magical wonderland inhabited by the toppers of our batch. Unfortunately, after glancing at the index of our A2 math books, both of us walked hand in hand to the hospital in fresh hopes of getting an ORS (mental math medication).

While the entire batch entered A1 year with their heads held high and spirits soaring up to the clouds, we continued to spiral down the rabbit hole into the darkest corners of Ms. Neena Agarwal's comp lab office, pleading for quarter of a half mark. We were told A1 math was manageable, but we beg to differ. The atrocities of the multiverse of matrix and the detrimental impact of solution sets that actually have no solution obligate us to accept that math has never mathed for us. However, as A1s, we are desperately seeking for some assistance from the Math Department, crawling and sobbing behind them to make math math for us.

From the A2 finals to Sunday math tests, we accept the fact that the Department does not expect more than a 23.5% from our exquisitely empty answer sheets. We may lack the ability to abacus out certain intricate calculations such as 24+12, but we definitely have reached the zenith of the art of writing names in elegant calligraphy on our question paper.

We proudly claim that the value of x has always been subjective to us, and our stances on x will always differ from the answers in the back of our math textbook. Despite all those extra classes we manage, by juggling between classes, co-curriculars and sports every 35 minutes, our burden remains unrelieved. Terms may remain constant but our chances of acing this subject are variable in a lot of ways.

After sharing our profound and heavenly (or as the Math Department would call it, irrational and imaginary) thoughts on this subject, we hope for Pi-rate to acknowledge our efforts and perseverance towards the subject.

We advise those in a similar situation as ours to plough through the galaxy of this subject and NEVER EVER QUESTION THE RATIONALITY OF IT. Whether you are tackling a calculus problem or unfolding trigonometry, the adventure of mathematics awaits.

-Rudrani Rajya Lakshami and Karen Sahdev (AI)

Completeness of Math

In this ever-growing institution by the name of Welham Girls' School, we very often come across some enigmatic calculations and theorems that only the residents of this organisation seem to be able to decipher. For instance, let us observe the theorem of 'first for'. If one is 'first to choose' their share of biscuit pudding on the plate, that automatically applies that they are also 'first for extras'. We all know what 'displacement' is. However, calculating it in Welham terminology brings in a few additional factors. How many SCs will I cross on the way? What are the chances of an HM sending me back to change my sneakers into black shoes? One wrong turn and we might be on our way going through the subway once again!

With PreSCs and SCs, be it making demands for laptops or requests for socials, Math plays a huge role. Analysing the statistics, formulating the data, presenting it in front of the authorities, phew! Dear Juniors, if any of you are fretting over Mathematics and think you will not be able to do it, just remember you probably use more Math in deciding how to bunk sports, (considering factors such as, "When was the last time I did not show up?", "How many of my batchmates are bunking?", and the infamous, "Is my Captain coming today?") than most people do in their entire day! Does this not give rise to a very relevant question, why are all of us so afraid of Math? In some way or the other we incorporate its various functions and uses in our daily life in school, so let us also get rid of this inherent fear we have for the subject when it comes to the classroom. Well, Godel said that Math is incomplete. I beg to differ. A subject that has made our entire life in school so complete, cannot possibly be incomplete!

-Aahana Gupta(PreSC)

CREDITS

Teacher's Note

Dear Reader,
As we come to the end of yet another issue of ' Pi-rate,' I would like to extend my deepest regards to all those who put in effort for this issue to be a success, and to the readers for their constant support. Throughout the pages of this issue, I hope you were able to feel the love for this meticulous subject, that each member of the editorial board feels, and that you found something that sparked your curiosity.
In this issue, our main focus has been on the profound concepts of completeness and incompleteness in mathematics. Mathematics is a subject which students often grow afraid of, due to its endless concepts and theorems, however what they do not realise is that this subject is ever-growing, which gives one the thrill of discovery, and unimaginable happiness.
I hope that we were able to make our readers recognize that while some truths may be complete, others remain boundless due to the limitations of the knowledge the humankind possesses, motivating us to explore further. I wish for all of you to keep giving in your best and be able to recognise your true potential.
With enthusiasm,
Vishal Rawat.

Special Thanks

Ms.Anindita Banerji

Illustrators

Shrreya Agarwal
Samairah Bhatia
Advika Sasmal
Havisha Agarwalla
Riyana Chopra
Vaanya Goel
Aadya Bajaj

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