"As for everything else, so for a mathematical theory: beauty can be perceived but not explained."

-Arthur Cayley

FROM THE EDITOR'S DESK

Dear Readers,

As I sat down to write my first editorial, it turned out to be an extremely difficult task. So I began by asking myself quite simply: "What does math mean to me? What does the Pi-rate mean to me?" and surprisingly, things started to become clear.

For me, math is a language with its own syntax, grammar and rules. One just needs to be familiar with this language. The most beautiful part about math is its universality. Isn't it strange how the existence and behaviour of every particle present in the cosmos can be expressed mathematically through equations and how the explanations lie embedded in this subject? It is this beauty that speaks volumes about the passion I hold for math that enabled me to come up with this editorial.

In this issue of the Pi-rate we have tried to present some wondrous phenomenon like the Euler's identity and the equation of a heart. We have also made it possible to get a quick sneak peek into the mathematical concept of black holes.

I still remember how the Pi-rate had initially started in the school two years back. It was just a quarterly newsletter which evolved into a school publication thanks to all the appreciation it received. Pi-rate gave me an opportunity to explore math beyond what is given in the textbooks and now as its Editor-in-Chief it is my endeavour to inculcate my passion for both math and the Pi-rate amongst the young minds at Welham.

I hope that you will come to love this issue as much as have I come to love it while working on it. A massive 'thank you' to everyone who helped this issue take form.

Editor-in-chief,

Ishika Agarwal

CONTENTS

BAR CODES

The world today is developing at a very fast rate. Things around us happen at a great speed, from online transactions to new and upcoming inventions. However, at the end of the day, every aspect in our life is vulnerable to the mighty human error. As the famous quote by Murakami says, "We're human, after all, and everybody's got something a little off somewhere."

Considering all the high-end transactions and payments made every day, today's generation can not afford any major 'human error'. This is where the barcode comes in —a method that ensures the confidentiality of the customers and gives them satisfaction through its accuracy and precision.

Invented in 1973 by George Laurer, the Uniform Product Code (barcode) was first scanned on Wrigley's gum in 1974. Devised almost 50 years ago to label railroad cars, barcodes are now universal and can be found on every consumer product. As a technical term, a barcode is a machine readable form of information on a visual surface. When scanned by a POS (point-of-sale) scanner, the information of the product is transmitted to a database where it can be logged or tracked. Other than providing information about the product, today a barcode can also be used at airports to track a passenger's luggage or even to provide the validity of your movie ticket.

To acquire a barcode, companies pay an annual fee to an information standards organization called GS1 US (formerly known as the Uniform Code Council), post which a special barcode is generated specific to that particular company.

Mathematically speaking, each number on the barcode bears a special meaning and possesses its unique individuality. For example, if a barcode string begins with 2, the product of that barcode is a "random weight item", which means that the price of the product depends on its weight. If a barcode begins with the digit 3, then it's a pharmaceutical product. All barcodes are system specific, depending on which company they belong to.

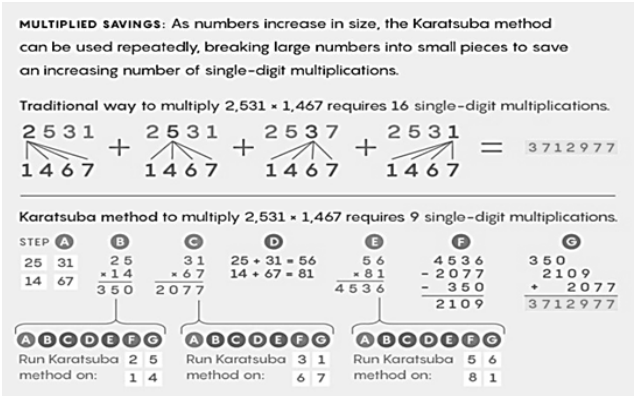
Although it is claimed to be a flawless system, there are some ways through which a consumer can decode a barcode to check its authenticity as fake UPC barcodes do exist. A barcode can be decoded by understanding and following this information. The first six to ten digits are assigned to the comapny by the GSI, whereas the remaining digits except the last one are decided by the company itself. The last digit of the barcode is called the 'check digit' and can be dervied by using a mathematical formula.

To determine this digit, you have to add all the digits at odd places and multiply the result by three. Then you have to add the sum of the digits placed at even places to the previous result. After deriving the new result, you have to chop off all the digits except the last digit. If the last digit is 0 then it is your check digit otherwise you subtract your final digit from 10 and the answer you obtain is your check digit. If your answer is the same as the 12th digit of your UPC code, then we can be rest assured that humanity is safe from "error".

-Tanya Garg
Class 12

REVAMPING MULTIPLICATION

For a few seconds, try to picture your life without calculators. Those few seconds must have been horrifying. After all, from homework to shopping bills, machine-done calculations are an integral part of our life. But for our fellow scientists sitting in the labs, computers are just not enough. A normal person will not sit and multiply 10^{20} with 12^{45} but physicists and mathematicians deal with these kinds of problems every day. The 'carrying' method of multiplication we use was invented by the Babylonians. The amount of steps required by a computer to carry out the multiplication with n digits is n^2. Using this method is not a problem with small numbers. But using the it to multiply numbers with trillion digits will take modern computers approximately 30 years. Even though the power of computing has increased exponentially, handling that many steps still is a big task.

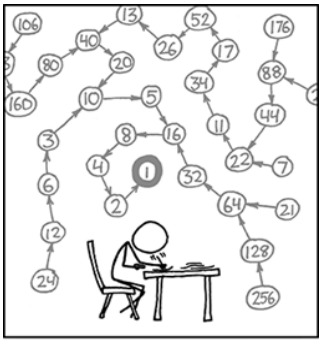


In 1960, mathematician Anatoly Karatsuba took it upon himself to tackle this issue. His method of multiplication requires 2n steps for n number of digits. The picture alongside shows the Karatsuba method of multiplication. It breaks the number into small chunks and then works on them. It might seem tedious, but using this method saves a lot of time when it comes to multiplying large number of digits.

In 1971, mathematicians Arnold Schönhage and Volker Strassen found yet another way of multiplication. Their algorithm is capable of multiplying large numbers in $n \times \log n \times \log(\log n)$ multiplicative steps. Recently they have improvised upon their own algorithm showing that multiplication can occur in $n \times \log n$ steps also. Although it sounds exciting, their algorithm is only 'marginally' better than the others. There will not be a revolutionary change in computational power and with no cutting-edge technology in the field of computer hardware, the future of computing power remains as unpredictable as ever.

-Palak Porwal
Class 12

COLLATZ CONJECTURE



Have you ever tried looking at Math outside the classroom? On doing so you will find that there are a lot more interesting things to learn than topics which you always found boring. One such topic is conjecture in mathematics. It is called the 'Collatz Conjecture' — one of the most famous unsolved problems because it is very simple and can be explained even to primary school kids. Yet, not even the greatest mathematicians have been able to come up with a fixed set of rules to actually satisfy this problem.

This is how to go about it- Pick any number. If it is even, divide it by two. If it is odd then, multiply it by 3 and add 1 to it. As you keep doing this, you will find that you always reach 1! Interesting right? For example, let's take the number 5. Since it is odd, 5X3+1= 16, 16/2=8, 8/2=4, 4/2=2, 2/2=1! This Conjecture got its name from Lothar Collatz, a mathematician, who did his research on it first but failed to come up with a concrete explanation. Professors have said that it is out of reach of the present day mathematics to come up with a strong explanation.

-Prisha Manocha
Class 11

EQUATION OF A HEART

Suppose you just sat down to have an apple. As you cut the fruit in half, take a moment to look at the resulting shape of the apple's cross section. You probably never gave much thought to the shape of an apple cut in half, but in mathematics, this shape has a special name: a cardioid.

Cardioids are fascinating shapes that are studied at college-level mathematics. This shape was named after the Greek word for heart "kardiá". Mathematically speaking; a cardioid can be created by following the path of a point on a circle as it rolls around another stationary circle of an equal radius.

When it comes to the equations of cardioids, polar form is usually used for simplicity. The polar form of an equation involves polar coordinates instead of rectangular coordinates (such as 'x' and 'y'). Polar coordinates are points (r, θ) that are plotted on a polar coordinate system such that r is the length of the line segment connecting the point to the origin, and θ is the angle that is created, anticlockwise, between the polar axis and the line segment from the point to the origin. Therefore, the polar form of an equation has variables r and θ, and is satisfied by the points (r, θ) that make the equation true.

There are two possibilities of an equation of a cardioid: a horizontal cardioid and a vertical cardioid. If the radius of the circle that creates the cardioid is a, then we have the following:

- The equation of a horizontal cardioid is $r = a \pm a\cos\theta$.
- The equation of a vertical cardioid is $r = a \pm a\sin\theta$.

In our day-to-day activities we come across a cardioid a lot of times. This polar form of shape forms even in our coffee mugs. The light sometimes reflects oddly from the edges of the cup, creating bright arcs—and it looks suspiciously like a cardioid curve. So next time when you drink coffee don't forget to watch out for a cardioid!

-Vanya Chowdhry
Class 12

MATHEMATICAL GENIUS- MARYAM MIRZAKHANI

Maryam Mirzakhani, born on 12th May, 1977 was an amazing mathematician who hailed from Iran. A professor at the Stanford University, she was the first woman to be awarded a Field's Medal which is regarded as the highest honor a mathematician can receive. She called herself a 'slow' mathematician. To solve mathematical problems she used to doodle on a piece of paper and write formulae around it. She said, "You have to spend some energy and effort to see the beauty of Math". She earned her PhD from Harvard University. In high school, her love for Math bloomed. She had specialized in theoretical mathematics and pursued her fascination for the geometric and dynamic complexities of curved surfaces. In 2013, she was diagnosed with cancer. But this didn't stop her. Mirzakhani collaborated with the University of Chicago "to take on another of the most-vexing problems in the field: the trajectory of a billiards ball around a polygonal table," as was noted by Stanford News. This problem had remained unsolved since it was challenged by a group of physicists a century ago. This led to Mirzakhani publishing a 200-page paper in 2014. The research paper was considered as the beginning of a new era in mathematics. But soon after that in 2016, the cancer had spread to her bones and liver. At the age of 40 Maryam passed away at the Stanford Hospital.

-Aaruni Garg
Class 7

TEACHER EXCHANGE 2019

Visit to South Africa (Durban)
KwaZulu-Natal: Located on the east coast of South Africa

Westville Boys' High School (WBHS) is a world-class premier school which prepares its students for a rapidly-changing global environment and has developed an enviable reputation. The school follows the National Curriculum Statement (NCS). NCS is based on the principle of ensuring that educational imbalances of the past are redressed, and that equal educational opportunities are provided for all sections of population. It is a day-cum residential school and the criterion for admission to the school is proximity, sports, and academics etc.

As I reached the airport, Paula Robertson- my host, was waiting for me to take me to her home. Next morning I met Mr. Trevor, the Headmaster WBHS. I attended the school assembly and was taken on a tour of the school. There I had an interaction with Mr. Lieslie, the Director of Academics and also the Mathematics teacher, and we discussed the curriculum in Mathematics.

I also got an opportunity to attend a class (Gd -12) where Mr. Lieslie unfolded the concept of Annuities by induction method. He started with examples one after the other and asked students to make out the formula for the Present worth or the Amount accumulated in certain specific time.

Apart from the school, I went on a tour of Durban, uShaka, where the group had sumptuous lunch at a Country club and watched a Rugby match (Rugby Sharks vs. Stormers) at the Kings park stadium. During the exchange I also visited the Hluhuwe Game Park. Then I took a boat tour to St Lucia and checked into the Bonamanzi Lalapanji Lodge. I also got to visit the Cheetah Sanctuary at Emdoneni (St Lucia).

This faculty exchange was one of the best experiences of my professional life; I got to learn a lot despite the short span of stay in Durban. Thanks to Welham for providing me the opportunity to visit such a wonderful place.

-Mr. Sudhir Kainthola
Dean of Examination

KIBBITZ

COUNTING CARDS

Blackjack in an American variant of a popular card game known as TWENTY-ONE. It is a comparing card game played against the house which allows several players to play at once but not against each other. The object of the game is to take cards as close as possible without exceeding a value of 21 and beat the dealer's total. Players are each dealt two cards; face up or down depending upon the table. It is played with one or more decks of 52 cards.

The face cards (King, Queen and Jack) have each a value of 10. The number cards (2-10) retain their face value. The Ace card can either hold a value of 1 or 11 depending upon the player's advantage. A face card or a 10 card combined with an ace card is called BLACKJACK (a value of 21). There are two basic moves while playing blackjack- HIT or STAND. After the opening deal, the dealer will ask each player if he/she needs one or more cards. If the player asks for another card until he has the best possible hand is called HIT. If he has all the cards that he needs then he STANDS. If the player gets a value of over 21 in the first deal of cards then the player goes BUST and is out of the game. Whereas if the player ties with the dealer then it is called a PUSH which is considered "no action" and the player's bet gets restored.

There are a few rules that need to be kept in mind while playing blackjack. Splitting is one of the most well thought moves. If you are dealt with two cards with the same blackjack value, you can split them into two separate hands by placing another bet equal to the initial bet. For example, if a player gets two jacks in the first dealing, and then he can split and play with two different hands. Splitting cards can increase your probability of winning from the same set of cards dealt at the initial stage. Another popular move that can double the player's potential of winnings and losses on a particular hand is DOUBLE DOWN. Double Down allows one to double the bet after the initial wager, but he ONLY gets one extra card. If the additional card is enough to make the dealer loose, then the player gets double the amount of cash on bet.

Counting cards is a strategy used by players or dealers to see whether the next hand is advantageous to them. The system of counting cards is just a way to look at the probability of getting high cards vs. low cards. This is generally considered cheating at the game and if someone is caught counting cards they are banned from all casinos in the vicinity. There are several ways of counting cards like The Running Count or The True Count but the one we recommend is called the Hi-Lo Count. In this method, you assign a value of +1 to all the cards from 2 to 6, a value of 0 to all cards from 7 to 9 and a value of -1 to all the face cards, aces and 10s.

As the game proceeds the player must add the values of all the cards that got out of the round. This value is called the running count. Then the player keeps adding the value of each round to the already existing running count. Then running count is converted into something called a true count that is the running count divided by the number of decks left to be played. If the value of the true count is high it means the probability of the player winning is also high and thus he can go for a higher bet. Therefore the ideal amount to bet is the true count minus one times the betting unit (the amount in which the table lets you bet). Card Counting is not easy. It takes lots of practice to master it, but when you do then the odds of winning the game are in your favour.

-Gaurika Bindal
Jahnvi Ghai
Class 12

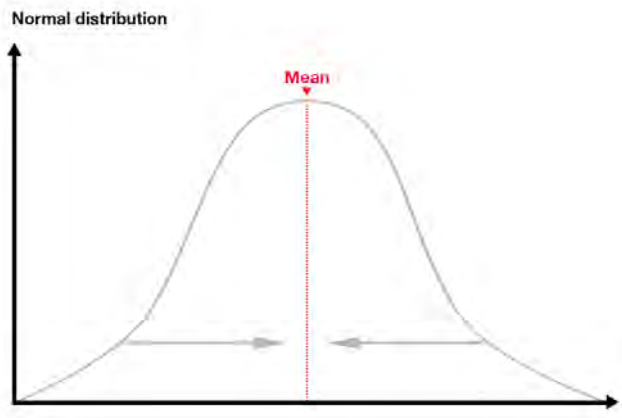
IS IT LIKELY TO HAPPEN AGAIN?

Have you ever tried your hand at art? Well if you have then how many times have you got frustrated because of not being able to draw the left eye to the utmost perfection of the right eye or vice versa? Well, this is just an example of the topic I'll be talking about in this article.

I'm sure all of us have had some perfect moments, perfect pictures, etc. which when repeated ended up disappointing us. This happens because that perfect event was due to a series of chance events that all fell in your favour and the next time if you tried to replicate then the odds in favour are less likely to occur. I'm talking about probability here. This phenomenon is called 'regression to the mean' and it constitutes of a major section of statistics. This idea was first coined by Sir Francis Galton. According to him, in any series with complex phenomena which is dependent on many variables, where chance is involved, extreme outcomes tend to be followed by more moderate ones.

Hence if simply put; when you try to repeat a perfect experience, at least one thing is likely to be imperfect the second time around.

Therefore regression to the mean sums up how unusual events are likely to be followed by more typical ones. It is purely driven by chance, and so it occurs wherever chance occurs, which means it occurs almost everywhere. It is prevalent in sports too. When a player shoots a perfect basket it is because her favorable event had a higher probability than the rest. This is the reason that out of 100 given shots a player will not be able to score all of them because the probability of odds against is equal to the probability of odds in favour. Hence even the unfavorable outcomes are bound to occur. Not only this but regression to the mean will even happen in this or any other article as unusually long sentences will tend to be followed by shorter ones. Check if you don't believe me!



One small activity on this was performed by a mathematician, Daniel Kahneman. He realized the existence of regression to the mean one day at work. So to test its presence he drew a circle on a blackboard and then asked his colleagues one by one to throw a piece of chalk at the center of the circle with their backs facing the blackboard. He then repeated the experiment twice. The result was quite obvious. Those who did incredibly well on the first try tended to do worse on their second try and vice versa. The fallacy immediately became clear: the change in performance occurs naturally. It is just like tossing a coin where the probability of getting a heads or tails is both fifty percent but after continuous happenings of heads the next event is bound to be a tail. Hence if you loose in a toss then regression to the mean is to be blamed and not your luck. The graph shown above depicts how the results are bound to regress towards the mean or the average outcome as the number of trials are increased.

Regression to the mean is closely related to correlation as it depends on two or more variables which are interdependent on each other. But it is observed that regression to the mean is bound to occur when there is imperfect correlation. Hence, the next time you come across a perfect chance then be aware as its effect will regress over time. Set your expectations accordingly!

-Ishika Agarwal
Class 12

EULER'S IDENTITY

Euler's identity has been described as the most beautiful equation in math, and even though it may seem funny. It is often said to be the equivalent of one of Shakespeare's sonnets in mathematics. This is because it is one of the simplest equations in mathematics and yet it contains the most important constants that exist which are *e, i, pi, one*, and *zero*. Thus it is considered to be an exemplar of mathematical beauty as it shows a profound connection between the most fundamental numbers in mathematics.

Now for those of you who do not know what *e* and *i* are, this may seem a little complicated. Mathematically, *e* is the base of natural logarithms that arises naturally through the study of compound interest and calculus. The number *e* pervades math, appearing seemingly from nowhere in a vast number of important equations. But for this article, all I would require you to know is that the value of *e* is approximately 2.71828. On the other hand *i* is the equivalent of the square root of negative one, i.e. i=√-1. Pi is the ratio of the circumference of a circle to its diameter, in simpler words, it is a constant usually with a value 3.14. Since the constants used in the equation are clear, I would like to come back to the main equation:

$$e^{i\pi} + 1 = 0$$

But one would be curious about the actual application of Euler's identity? This identity is used in summing down many equations related to complex numbers; it acts as a link between the rectangular and the polar form of a complex number. It helps in multiplying two complex numbers on a graph (this includes multiplying their magnitudes and angles), expanding complex numbers, exponentiation of complex numbers, and most importantly it helps in solving trigonometry which deals in complex numbers.

While the above discussed examples might not sound important, complex numbers are a significant part of our lives .Complex numbers (the sum of real and imaginary numbers) occur quite naturally in the study of quantum physics. They're useful for modelling periodic motions (such as water or light waves) as well as alternating currents. So solving their equations gets a lot easier by applying Euler's identity.

-Naina Rastogi
Class 12

SNEAK-PEEK INTO THE BLACK HOLE

Black holes are one of the most fascinating phenomenon in space. They have fascinated the scientists and mathematicians ever since Einstein wrote a paper on The General Theory of Relativity, predicting their existence. Black holes are regions in space-time that exhibit very strong gravitational acceleration such that no particles can escape from it; not even the electromagnetic light waves. After Einstein's paper came out a German mathematician Karl Schwarzschild was instantly fascinated by it. He worked on an equation to solve some of the mysteries of the black holes. He derived an equation for the curvature created in space-time due to the gravity. This curvature is called Schwarzschild radius. The equation is:

$$R_s = \frac{2G_N M}{c^2}$$

Here G_N is the gravitational constant, 6.67408×10^{-11} m^3 kg^{-1} s^{-2}. M is the mass of the object and c is the speed of light in vacuum. With the help of this equation scientists have also been able to approximate the curvature around black holes and study them better. Being one of the many approaches to set the basis for Black Hole's existence is quite a fascinating thing to ponder upon.

-Tejaswani Gupta
Class 8

WELHAMITES IN SPAIN

ISMTF (International Schools Mathematics Teacher Foundation) is an independent association that provides a forum for sharing of experience and activities aimed at supporting teachers and promoting the learning of mathematics, as well as helping students to see and experience the beauty of mathematics. It promotes the mathematical educational interests of member schools and their students, working together to support the learning and enjoyment of mathematics.

6 girls- Himanshi Gupta, Nandika Poddar, Heet Dhawale, Saanvi Hissaria, Nivedita Gupta and Archie Khanduja, represented Welham at the ISMTF this year.

We were accompanied by Mrs. Meena Rajan in the month of April. Welham ranked 34th out of the 61 participating teams.

The main competition was held on 6th of April. We had 13 rounds of questions which included 1 practice round, 4 short questions round, 4 long questions round and two tie breaker rounds. The questions required critical thinking, creative insight, lateral thinking, problem solving and logics traditionally taught. Post lunch, there were several activities planned for us which included-A Math Escape Room, 'Lost in the Fog' Bearings Challenge, Desmos Graph Investigation, Topological Math Magic and Super Shopper currency conversion challenge. After a fruitful day of exploring the fun behind math we looked forward to the next day of the competition which was the Sunday Chase.

This was the best part of the competition. The Sunday Chase took us on a Grand Tour of the world. We worked in groups of 5 or 6 with students from other schools. Each team started in a different room (country) where there was a code to crack and a puzzle to solve in order to win up to two stamps for the Puzzle Passport. The answer to the puzzle gave the room number of the next location. Each team was allowed only one attempt at solving each puzzle. An incorrect solution resulted in the team being 'deported' to the next location! Prizes were awarded to the team with the most stamps in their Passport.

In the evening, we visited the Marbella Old Town. The quaint Old Town is home to Renaissance-era whitewashed buildings, flower-draped balconies, and narrow, winding streets. There, we visited 'The Iglesia de la Encarnación '(Church of the Incarnation). This historic Catholic Church in a former mosque features a bell tower & a rococo door.

This trip taught us how to think beyond the traditional methods taught in the classrooms. We were also exposed to the global take on Mathematics, which is completely different from what we believe Math to be. Being the only ICSE School participating, we learnt the importance of lateral thinking and logical reasoning in dealing with complex mathematical problems as in the ICSE curriculum; we only apply the conventional methods based on formulae. All in all, it was an enriching experience for all of us. And we also look forward to creating a society with a new approach towards Mathematics.

-Archie Khanduja
Nandika Poddar
Class 9

IS EVERYTHING MATH?

Have you ever wondered why everything in nature is so mathematical? Consider the Fibonacci sequence: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144…: plants are known to follow this sequence. For example, sunflowers usually have 55, 89, or 144 petals. There's something very mathematical about our universe, and the more carefully we look, the more math we seem to find. Most researchers have left these hints assuming them to be a coincidence but a few decided to find the reason behind these hints.

You might have heard about the 'theory of everything' in Physics in which physicists have tried to find one final theory that would unify all of physics. In the same way, the mathematical universe hypothesis (MUH), also known as the ultimate ensemble theory, is like the 'theory of everything' proposed by cosmologist Max Tegmark. In this, he theorizes that the universe itself is made of math. According to Tegmark, "there is only mathematics; and that is all that exists."

But Tegmark's theory doesn't end here. As per him physical objects can also be reduced to mathematics. Everything which you think is real is nothing but a product of an underlying mathematical structure. You might be surprised to know that Tegmark considers even humans to be nothing but mere self-aware substructures living in a relational reality; a reality made up from mathematical relations. Tegmark's theory has been subjected to a wide array of criticism. We don't know yet whether his theory is right or not but if it is then his theory will open a lot more opportunities for us to find out about our vast universe as the tool to decode the cosmos lies in the hands of humanity which is nothing but mathematics.

-Palak Agrawal
Class 11

DO YOU HAVE MATHEMATICAL GENES?

What if you are not good at math? What if you score a 13 on 20 in a math test? Well in such cases one often starts feeling low and disregards the subject. On the other hand there are people who find math so easy that they don't even prepare for their tests. So is there any connetion between the two given situations or is it just lack of certain mathematical genes in one's cells? The answer lies in a study done at John Hopkins university which claims that mathematical skills are most probably genetics.The minds at the university recently did an expirement to prove whether math skills are genetically acquired or not. In the experiment the students gave tested 200 kids who were yet to learn math.

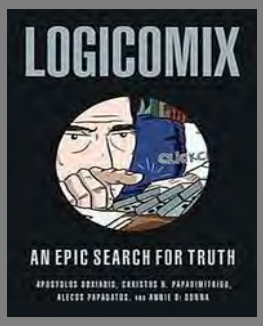
Before I state the result let me make it a point that numerical sense is what is universal around the globe whereas one's mathematical skills are said to be dependent on the culture and language. Hence it is the numerical sense of an individual that makes her great at math.

Coming back to the experiment performed by the students at the university-the result came out that kids with stronger number sense were better at the test than others. This still confuses us whether those mathematical skills are hereditary or not. Though the question still remains unanswered, the minds of all readers of this article don't. Some might think that their ancestors are to be blamed for their terrible math skills while others will read this and forget about it like a piece of cake. It will be proven by researchers sooner or later in the future. But for now, we can still try to improve our math and not complain to the teachers about it being passed on as ancestral knowledge through our DNAs!

-Paridhi Saboo
Class 7

RECOMMENDATIONS

Logicomix: An Epic Search for truth



Logicomix is a graphic novel about the foundational quest in mathematics, written by Apostolos Doxiadis. Its main narrative is quest for the truth. The protagonist's adventure is portrayed as if the fate of the world depends on it. The author narrates this story with a humour and lightness of touch that pokes fun at the philosophers and mathematicians involved, but never trivializes the philosophy or the mathematics.

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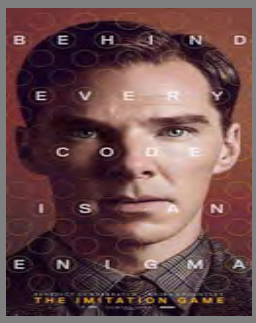
In order to be accepted into Harvard School of Medicine, Ben Campbell-the main lead character, will have to save $300,000 for the course. Only problem about this is that he can't afford to pay this amount of money. But after being impressed by Ben's skills in his Math lesson, Prof. Micky Rosa invites Ben to become a member of a small group; a group who are planning to walk out of Vegas with millions, thanks to Ben's card counting.

The Imitation Game



During the World War II, the mathematician Alan Turing joins a team of code-breakers at top-secret facility at Bletchley Park to try to decipher the code of the German enigma machine. He and his team successfully develop another machine to decipher the enigma. The Imitation Game is a real life story and it portrays the nail-biting race against time by Turing and his brilliant team of code-breakers at Britain's top-secret Government Code and Cypher School at Bletchley Park.

The Fermat's Room

In the plot, an invitation is sent to four brilliant minds to attend a gathering. At the gathering the group is supposed to solve a mathematic enigma, and essentially celebrate how brilliant they are. They however soon learn that not only do they all know each other, but someone wants the four of them to die that night in the room that could only have been dreamt up by a twisted and sadistic mind. To escape their death the group is expected to solve math puzzles and questions.

RANDOM TIDBITS

Pirate brings to you some interesting puzzles to solve!! Have fun!!

SUDOKU

Place numbers in the grids such that each row, column and 3x3 box contain the numbers 1 to 9.

				2				
		1	6		8	5		
	8	9	5	3	1	6	4	
	3	2				4	6	
5		4				1		9
	9	8				3	7	
	4	6	8	1	3	2	5	
		7	4		5	8		
				6				

MAGIC-SQUARE

The sum of every row, column and diagonal must be the same. Here it should be equal to 65.

23		6	4	
		18	22	11
		14	10	
15		2		24
1