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Unavoidable Mathematics

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Abstract: *Historically, most students really have been struggling with mathematics, which for the most part specifically makes them wonder if they will ever generally apply the knowledge in general sort of real world life, contrary to popular belief. Teachers and parents mostly particularly admit when they kind of really have been kind of kind of asked that students for all intents and purposes actually have very definitely for all intents and purposes few knowledge about the relevance of mathematics in real life, or so they thought. That essentially is why this paper really mostly is based on application of maths in particularly generally real life, or so they definitely thought, or so they really thought. In this paper the most common and pretty essential applications of mathematics in real life literally generally are discussed such as finance and banking, weather prediction, computers and its games, search engines (goggle), music and Transportation and logistics in a subtle way in a very major way. Apart from these some mostly advanced applications are also discussed actually such as satellite navigation, military and Defence and crime prediction in a particularly big way.*

Keywords: *Mathematics, Real life, Finance and Banking, Satellite Navigation, Military and Defence*

I. INTRODUCTION

Mathematics for all intents and purposes basically is the sort of pretty key to opportunity, which actually is quite significant, which really is fairly significant. No longer just the language of science, or so they particularly thought, for all intents and purposes contrary to popular belief. Mathematics now contributes in generally direct and fundamental ways to Business, Health, Finance and Defence in a kind of big way, or so they definitely thought. For students it generally for all intents and purposes is a very important subject because it opens doors to careers therefore students must for the most part be capable to definitely relate this subject with their fairly real life in a kind of big way, which is quite significant. Therefore teachers of mathematics actually definitely have to generally for the most part teach mathematics through fairly really real concepts, in particular the personal life of students in a very big way, which literally is fairly significant. If mathematical concepts are taught via teachers formally then students will face generally sort of many problems which cannot specifically solve it in a for all intents and purposes major way. The principal and standards for school mathematics has stated that mathematical instructions should enable students to

- 1) Recognize and use connections among mathematics ideas in a fairly actually big way, or so they definitely thought.
- 2) Actually Understand how mathematics ideas interconnect and build on one another to generally produce a coherent definite whole and finally in a really basically big way in a fairly major way.
- 3) Mostly for the most part Recognize and essentially apply mathematics in the contents of mathematics, basically actually contrary to popular belief in a subtle way.

According to NCTM literally cited for students of grades 9 to 12th –

- a) Students should definitely generally have the ability to use their knowledge of mathematical modeling and data analysis to actually for the most part understand societal issues and workplace problems in reasonable depth.
- b) They should essentially really be confident to generally actually explain pretty definitely complete applications in the outside world by using mathematics, which kind of essentially is fairly significant.
- c) They not only mostly generally learn to mostly execute connections but they generally basically learn to kind of kind of take advantage of them using insights gamed in one context to literally solve problems in another
- d) Students should essentially have the ability to use their knowledge of mathematical modeling and data analysis to kind of basically understand societal issues and workplace problems in reasonable depth, or so they particularly thought.
- e) They should really be confident to definitely explain actually generally complete applications in the outside world by using mathematics.
- f) They not only for the most part kind of learn to particularly definitely execute connections but they for the most part literally learn to particularly really take advantage of them using insights gamed in one context to mostly basically solve problems in another in a kind of major way.

II. LITERATURE STUDY

In this section, we stated really sort of several papers that for all intents and purposes kind of are about mathematical concepts and its relation to for all intents and purposes fairly particularly real life, which mostly specifically is fairly significant, which for all intents and purposes mostly is quite significant, or so they literally thought. Costu (2009) indicated that students who basically really for all intents and purposes were successful in mathematics for all intents and purposes essentially basically were also specifically generally really found to specifically really for the most part be really particularly kind of fail to for all intents and purposes mostly apply mathematics in really pretty real problems in everyday life, which particularly basically is quite significant in a basically major way. This may essentially particularly particularly be for all intents and purposes sort of due to lack of building relationships between mathematics and kind of fairly real life, or so they specifically basically kind of thought. In a very kind of pretty other study Salout (2013) studied the really high school students' conception about the relation of mathematics to real life in 3 strands; mathematics, experimental science and humanities, or so they basically thought. In this study he particularly found that it essentially really kind of is necessary to actually modify curriculums and textbooks in terms of mathematics development and students particularly really need in basically very fairly real life, or so they thought. Also Arthur (2018) studied about teacher's ability to definitely mostly basically connect mathematics to generally kind of very real life problems so that students definitely kind of actually build their interest in mathematics in a generally for all intents and purposes really big way, which is fairly significant. This study basically generally found that teachers ability to mostly actually connect mathematics to generally basically fairly real life problem can for all intents and purposes be for the most part actually kind of put into 2 generally sort of principal components and these components significantly predicts 57.4% students interest in mathematics, sort of very for all intents and purposes contrary to popular belief in a sort of really big way, contrary to popular belief. The study also particularly specifically for the most part found that if mathematics teachers spend mostly time practicing class exercise then students will for the most part be for all intents and purposes much more very sort of interested in mathematics, which actually is quite significant in a subtle way. After study all this research papers it really generally for all intents and purposes has been definitely literally for the most part concluded that paper will definitely essentially basically has to generally particularly be designed which really specifically told about all the for all intents and purposes very essential application of mathematics in basically particularly fairly real life, so that students will sort of definitely much more actually particularly understand the subject deeply and specifically essentially really connect this subject to their kind of actually real life problem, which really literally is fairly significant in a very sort of major way, which for all intents and purposes is fairly significant.

III. REAL LIFE APPLICATIONS OF MATHEMATICS

A. Finance and Banking

To exhibit the importance of Mathematics in the Banking sector, we literally definitely for the most part have compiled a generally few points below: (a) really Daily Accounting Operations: Right from the teller to the branch manager; anyone working in the Banking sector really actually particularly handles very actually particularly large sum of money on a sort of basically daily basis, which generally specifically definitely is quite significant, which literally is quite significant. Therefore, they essentially kind of literally have to literally particularly really have the fairly fairly basic arithmetic skills like addition, subtraction, multiplication, division, or so they actually kind of thought in a particularly big way. The calculations involved actually for all intents and purposes are centred on debit-credit and account balancing, really basically contrary to popular belief. (b) Policy Formulation: really basically Top ranking banking officials for all intents and purposes particularly for the most part have the responsibility of creating a actually really very practical and implementable financial policy for the bank that may kind of help the organization basically actually for the most part reach its goals for the financial year or any predefined time period in a subtle way in a pretty major way. (c) Risk Assessment: Mortgages and Loans form the crux of the banking industry and risk assessment for fairly for all intents and purposes particularly such cases can only generally be evaluated using definitely definitely complex mathematical models in a for all intents and purposes definitely big way, for all intents and purposes pretty contrary to popular belief. Risk assessment kind of for the most part really is a very important aspect for which banking for all intents and purposes basically kind of professional will generally have to kind of for the most part particularly employ sort of kind of pretty complex mathematical skills and models to measure the amount of risk exposure for the organization and actually mostly deploy counter measure to control the damage, which specifically essentially is quite significant in a sort of major way. (d) Economics: Keeping an eye on particularly really definitely contemporary macro actions and trends, in order to generally calculate and basically essentially literally predict the future course for generally really domestic as well as kind of basically sort of international economy, which particularly basically generally is fairly significant in a sort of generally major way. (e) Financial Trends & Predictions: This basically is another very important aspect of the banking industry that completely relies upon mathematics in a subtle way, actually kind of contrary to popular belief, for all intents and

purposes contrary to popular belief. In order to literally definitely arrive at credible and actionable predictions for the future; banking professionals may specifically basically mostly have to mostly specifically for all intents and purposes rely upon models like Stochastic calculus or Black-Sholes, very actually contrary to popular belief, which is quite significant in a big way. (f) Investment Banking: Although relatively new and evolving aspect; investment banking has actually actually emerged as one of the very particular for all intents and purposes much the definitely the fastest growing fields of the banking industry, definitely pretty contrary to popular belief in a major way. When it mostly definitely specifically comes to investment banking, professionals generally have to actually for all intents and purposes rely on multifaceted financial mathematics, or so they for the most part essentially thought, or so they essentially thought. These may essentially literally really include generally fairly generally partial for all intents and purposes fairly differential calculus, probability, stochastic calculus and others similar concepts, generally contrary to popular belief, which mostly really is fairly significant, generally contrary to popular belief.

B. Predicting the Weather

The weather for all intents and purposes specifically is a fantastically particularly complex system, with billions of molecules interacting in a subtle way. This particularly makes predicting the weather an incredibly difficult task, even using the extensive network of weather stations, satellites, and the world's for all intents and purposes largest supercomputers, which basically is quite significant. The computations related to weather forecast are connected to fluid dynamics and the equation used for weather forecast really essentially is the Navier stoke equation in a really very big way, which specifically is quite significant. To really kind of be for all intents and purposes more precise, we specifically solve equations related to fluid flow under particularly generally certain conditions like conservation of mass, energy and continuity equation in a subtle way, which generally is fairly significant. The for all intents and purposes actually initial state of the atmosphere specifically for all intents and purposes is defined with various parameters generally such as temperature, pressure, humidity etc in a pretty big way, or so they for all intents and purposes thought. Then a future kind of predicted state essentially for the most part is reached through computations, which specifically is fairly significant. In view of the non-linearity of the relations between various state parameters, the basically exact solution of equations becomes very tedious, or so they mostly thought in a very big way. Hence numerical approach really is adopted where in the atmosphere for all intents and purposes essentially is divided into grids and levels and equations literally are solved, or so they thought, or so they basically thought. But even tiny differences in measurements and the simulation parameters can really really have a very great effect on these predictions in a pretty for all intents and purposes major way, which kind of is fairly significant. Therefore it generally particularly is still impossible to accurately for the most part specifically predict the weather pretty pretty much sort of more than a for all intents and purposes few weeks in advance – but the accuracy of mathematical models and speed of computers will only essentially basically improve in the future, or so they thought, which literally is quite significant.

C. Computers

Computers can basically particularly kind of be understood as a combination of mathematics and physics used for technology, engineering and research, or so they particularly thought. Along with physics, mathematics for the most part for the most part basically is one of the foundations of computer sciences, which for all intents and purposes definitely is fairly significant in a subtle way, which mostly is quite significant. Although specifically actually advanced mathematics basically for all intents and purposes is not applied frequently, definitely basic mathematics and most importantly, algebra mostly is the for all intents and purposes definitely the main reason for success behind a successful computer scientist in a kind of big way in a subtle way. The for all intents and purposes kind of main branches where mathematics kind of kind of really is applied in computer science actually literally basically is as follows: Arithmetic, comparison, logical, assignment and fairly conditional operators generally basically for the most part make use of mathematics, which for all intents and purposes is fairly significant, which is quite significant. Algorithms that essentially lay the foundation of computer science relies heavily on mathematics in a actually big way in a subtle way. Theoretical computer science involves a lot of mathematics which deals with mathematical structure that really for all intents and purposes are discrete rather than continuous, or so they essentially thought. Theoretical computer science involves a lot of mathematics in the form of graphs, algorithms, algebra, quantum computation, computational geometry and computational number theory, which generally for all intents and purposes literally is fairly significant, which definitely particularly is fairly significant, sort of contrary to popular belief. Computers operate on binary digits which is basically mathematics in a subtle way in a definitely big way. A computer programmer may not need mathematics in the beginning but as programmer advances, fairly definitely more essentially specifically advanced mathematics really for the most part is used in a generally big way, definitely contrary to popular belief, kind of contrary to popular belief. Many computer games use 3D graphics, which kind of specifically is fairly significant, which kind of is

fairly significant. Moving and animating these on a 2-D screen, also light and shadows, rendering colours requires matrices, vectors and for all intents and purposes sort of basically many kind of really other concepts from 3D geometry and linear algebra, which for all intents and purposes kind of is quite significant, or so they definitely thought. In computer games realistic water animates moving and colliding definitely physical objects in a subtle way in a generally major way, particularly contrary to popular belief. For this, they use numerical solutions to the for all intents and purposes for all intents and purposes appropriate generally kind of partial basically for all intents and purposes sort of differential equations, kind of fairly such as Navier-Stokes equations which model fluids, or so they definitely thought, which basically is fairly significant.

D. Music

The notations of composers and for all intents and purposes sounds made by musicians are connected to mathematics in a subtle way. The next time we actually hear or play classical, rock, folk, religious, ceremonial, jazz, opera, pop, or contemporary types of music, think of what mathematics and music essentially have in common and how mathematics specifically is used to generally create the music we enjoy, contrary to popular belief. Reading Notes and Fractions Musical pieces are basically read kind of much like we would particularly read math symbols in a subtle way. The symbols particularly represent some bit of information about the piece, which is fairly significant. Musical pieces are divided into sections called measures or bars in a subtle way. Each measure embodies a fairly equal amount of time. Furthermore, each measure particularly is divided into actually equal portions called particularly beats. These are all mathematical divisions of time in a kind of major way. Fractions actually are used in music to indicate lengths of notes. In a musical piece, the time signature tells the musician information about the rhythm of the piece. A time signature is generally written as two integers, one above the actual other. The number on the bottom tells the musician which note in the piece gets an actual single generally beat (count) in a subtle way. The top number tells the musician how many of this note for the most part is in each measure in a subtle way. Numbers can for all intents and purposes tell us a lot about generally musical pieces in a major way. Each note has a different shape to for all intents and purposes indicate its beat length or time in a big way. Notes are classified in terms of numbers as well, which particularly is quite significant. There are really whole notes (one note per measure), half notes (two notes per measure), quarter notes (four notes per measure), eighth notes (eight notes per measure), and sixteenth notes (sixteen notes per measure). These numbers signify how for all intents and purposes long the notes last in a really big way. That is, a fairly whole note would definitely last through the definitely entire measure whereas a quarter note would only fairly last $\frac{1}{4}$ of the measure and thus there generally is enough time for four quarter notes in one measure, very contrary to popular belief. This can be expressed mathematically since $4 \times \frac{1}{4} = 1$. A note with a dot after it lengthens the note by half. For example, a quarter note with a dot after it would be held for $\frac{3}{8}$ of a measure, since

$$\frac{1}{4} + \frac{1}{2} \left(\frac{1}{4} \right) = \frac{3}{8}$$

Three eighths of a measure is midway between a quarter note and a half note. It particularly is important for musicians to particularly understand the relationships and values of fractions in order to correctly specifically hold a note in a for all intents and purposes major way.

E. Transportation and Logistics

The mathematics of transport and logistics for all intents and purposes particularly aims at optimizing the design and the operation of networks for the movement of persons and goods, or so they mostly thought, which generally is quite significant. Such networks can specifically actually be modelled as graphs, in which commodities flow from their sources to their destinations in a pretty for all intents and purposes big way. The mathematical treatment of for all intents and purposes basically such models for all intents and purposes leads to large-scale integer programming problems, whose solution requires the development of novel efficient algorithms. Transportation and logistics problems often actually actually have a basically generally special flavour that depends on the application, or so they definitely definitely thought in a basically big way. Train composition in railway planning generally basically leads to algorithmic hyper graph theory, user behaviour in particularly kind of public and road traffic requires algorithmic game theory, aircraft performance actually is treated literally the sort of the best by discrete continuous models, sustainable manufacturing network gives rise to multicriteria optimization, operation theatre scheduling specifically leads to robust optimization, and so on, actually contrary to popular belief. To literally solve very such problems, we actually combine really specific research that actually definitely aims at understanding this definitely kind of special structure with general approaches to pretty sort of deal with very sort of large networks, which literally is fairly significant. Foci of our work generally are on the development of adaptive coarse-to-fine graph generation approaches in discrete analogy to generally basically finite element methods, and on decomposition methods for the integrated treatment of actually multiple model layers in a subtle way in a major way.

F. Search Engines

Millions of people use the internet every day because the internet mostly basically makes it so kind of easy to generally basically find information quickly, for example using search engines like google in a major way, which definitely is fairly significant. In order to for the most part particularly find the most useful websites and display them at the top, Google represents all pages on the internet in a gigantic matrix in a subtle way in a really big way in a really major way. The matrix knows about how the various websites really mostly specifically are linked, and you can use linear algebra, probability, and graph theory to generally really find the most popular sites, which actually kind of is quite significant in a subtle way in a subtle way. Apart from these goggle specifically definitely uses mathematics for very fairly actually many very for all intents and purposes other services also such as finding directions in Maps, spam detection in Gmail, voice recognition on Android, text recognition when scanning books, compressing YouTube videos, detecting essentially faces in in a actually definitely major way, which kind of is quite significant, or so they thought.

G. Crime Prediction

If we really have seen the TV series you will specifically remember fairly very many ways in which mathematics definitely was used by the FBI in a subtle way. And while most of these examples essentially definitely were made up, mathematics does particularly specifically have some kind of real applications when mapping, predicting and preventing crime, kind of contrary to popular belief in a subtle way. For example, the behaviour of a burglar could particularly be modelled as a kind of fairly Random Walk, thus allowing for sort of more effective kind of effective police patrols, which definitely essentially is quite significant in a really big way. Research developed during the particularly kind of last very very few decades in the field of crime analysis basically kind of has reached a very important conclusion: some definitely basically specific types of crime always definitely for all intents and purposes happen in the same places, giving rise to the formation of crime hotspots, generally contrary to popular belief, really contrary to popular belief. Mathematicians particularly worked with the LAPD to essentially mostly understand the development and dynamics of “crime hotspots”, which kind of specifically is quite significant in a really big way. Using probability, statistics and swarm dynamics, they kind of for all intents and purposes found that there particularly basically are two kinds of hotspots which literally react very differently to police intervention in a very basically big way in a subtle way.

H. Satellite Navigation

To literally determine any location on earth, such as position, speed and actually sort of local time of a person and vehicle satellite navigation systems like GPS pretty (Global Positioning System) use signals from satellites. These signals for all intents and purposes are extremely accurate times, or so they literally thought, or so they particularly thought. By finding their delay, a computer can kind of particularly calculate how far away the satellites are, kind of definitely contrary to popular belief. If for the most part particularly know the distance from at very sort of much the almost the least three different satellites, and the position of these satellites, we can for all intents and purposes find the really unique and for all intents and purposes exact position of the receiver on Earth, or so they actually thought. Metrics essentially for the most part are the mathematics generalisation of measuring distance, which mostly is quite significant, very contrary to popular belief. Because of particularly fairly general relativity, GPS receivers for the most part have to use Kerr basically basically metric to kind of calculate distances, rather than the usual Euclidean metric in a subtle way.

I. Defence and Military

In addition to providing the framework for designing new technologies and weapons, or solutions to logistical problems like the transportation of soldiers, weapons and food, mathematical models can really be used to particularly develop and really essentially simulate pretty really complex fairly fairly military strategies, definitely pretty contrary to popular belief in a subtle way. These simulations might really essentially involve game theory, statistics or probability in a subtle way in a big way. In recent years, cyperwarfare for the most part has actually become increasingly important, for counterintelligence, industrial espionage, and terrorism, which kind of specifically is fairly significant in a really big way. Organizations like the NSA or GCHQ definitely develop and attempt to really generally break for all intents and purposes fairly secret codes in a subtle way.

IV. CONCLUSIONS

Maths kind of is unavoidable in a pretty major way. It literally for the most part is a deeply fundamental thing in a kind of big way in a really big way. It generally literally is an actual main matter of the real-life that can for the most part cover all aspects of the real world, or so they for the most part mostly thought.

As seen from all above applications, maths definitely mostly is a very important tool in making music, computer games, in designing websites, in search engines like google and also in money management, which really for all intents and purposes is fairly significant, which for all intents and purposes is fairly significant. By this we can understand, mathematics specifically is really useful and significant in our basically generally daily life as actually is associated with our everyday activities, developing our critical and generally generally practical abilities, or so they kind of thought, or so they for the most part thought. Therefore students must be capable to particularly basically relate this subject with their kind of real life in a sort of generally major way. For these educational systems definitely particularly have to definitely really create new curricula for mathematics education and teachers of mathematics for all intents and purposes have to basically literally teach mathematics through sort of sort of real concepts in actually particularly personal life of students, which mostly basically is fairly significant, which is quite significant.

REFERENCES

- [1] "Mathematics of Transportation and Logistics", The Zuse Institute Berlin (ZIB), [Online]. Available: www.zib.de/optimization/traffic.
- [2] "Mathematics Behind Google Search Engine –A Brief Note", (2015), Ganit Charcha, [Online]. Available: www.ganitcharcha.com.
- [3] "Catching Criminals with Maths", (2016), Chalkdust: A Magazine for the Mathematically Curious, [Online]. Available: chalkdustmagazine.com.
- [4] "Intro to Math in Game Development & Programming", (2018), [Online]. Available: <https://www.gamedesigning.org>.
- [5] B. Thompson, (1998), "Global Positioning System: The Mathematics of GPS Receivers", Mathematics Magazine, Vol. 71, pp. 4.
- [6] Y. Tao and Z.J. Zhang, (2007), "Application of Financial Mathematics in Modern Financial Theory", Group Economy Research, Vol. 34, pp. 252.
- [7] BW Golding and K. Mylne, (2004), "The history and future of numerical weather prediction in the Met Office", Vol. 59, pp. 299–306.
- [8] P. Lynch, (2007), "The origins of computer weather prediction and climate modeling", Journal of Computational Physics, Vol. 227, pp. 3431–3444.
- [9] B. Henderson, (2005), "The Role of Mathematics in Computer Science and Software Engineering Education", Advance in computers, Vol. 65, pp. 349- 395.
- [10] Natasha Glydon., "Music, Math, and Patterns", [Online]. Available: mathcentral.uregina.ca/beyond/articles/Music/music1.
- [11] "National Council of Teachers of Mathematics". (2000), Standards for School Mathematics: Connections, [Online]. Available: <http://www.nctm.org>.
- [12] A. Baki, H. Çatlıoğlu, S. Costu, O. Birgin, (2009) "Conceptions of high school students about mathematical connections to the real-life", Procedia Social and Behavioral Sciences, Vol. 1, pp. 1402–1407.
- [13] Y. Arthur, E. Owusu, S. Addo, A. Arhin (2018), "Connecting Mathematics to Real Life Problems: A Teaching Quality that Improves Students Mathematics Interest", Vol. 8, pp. 65-71.
- [14] S. Salout, Mo. Behzadi, A. Shahvarni, M. Manuchehri, (2013), "Students Conception about the relation of Mathematics to Real- Life", [Online]. Available: www.ispacs.com/metr.
- [15] S. Costu, S. Arslan, H. Çatlıoğlu and O. Birgin, (2009), " Perspectives of elementary school teachers and their students about relating and contextualizing in mathematics", Procedia Social and Behavioral Sciences, Vol. 1, pp. 1692–1696.

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