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Importance and Application of Mathematics in Everyday Life

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Abstract: ***Mathematics is a field of science that studies numbers and how they are used. It includes calculations, computations, and problem solving, among other things. It is a subject that is accurate, precise, methodical, and logical. Mathematics has been defined in a variety of ways throughout history; it is an indispensible component of science and is utilized in virtually every discipline, including natural science, engineering, art, and economics. Mathematics is a vital instrument in our lives and in every scientific field that promotes personal growth and development on a broad scale. To avoid chaos and confusion, mathematics makes life smoother and more organized. Problem solving, creativity, critical thinking, and reasoning capacity are some of the traits and talents fostered by mathematics. Other unique skills include analyzing and communicating effectively.***
Everyone requires mathematics in their daily lives, whether they are a cook or a farmer, a carpenter or a mechanic, a shopkeeper or a doctor, an engineer or a scientist, a musician or a magician. Therefore, it would be impossible to summarize mathematics applications in each field. Through this research document, it is intended to talk about the importance and applications of mathematics in our daily lives.
Keywords: Mathematics, Importance of Mathematics, Application of Mathematics, Analysis, Problem Solving and Critical Thinking Abilities.

I. INTRODUCTION

A. *What is Mathematics?*

Mathematics is the study of topics such as quantity (numbers), structure, space and change. Mathematicians seek out patterns and use them to formulate new conjectures. Galileo Galilei (1564–1642) said, "The universe cannot be read until we have learned the language and become familiar with the characters in which it is written. It is written in mathematical language, and the letters are triangles, circles and other geometrical figures, without which means it is humanly impossible to comprehend a single word. Without these, one is wandering about in a dark labyrinth." Carl Friedrich Gauss (1777–1855) referred to mathematics as "the Queen of the Sciences". Benjamin Peirce (1809–1880) called mathematics "the science that draws necessary conclusions".

B. *Importance of Mathematics*

Mathematics is a strong instrument for worldwide knowledge and communication that helps to organise and prevent chaos in our life. Mathematics aids in our understanding of the world and is an efficient method of developing mental discipline. Math develops logical reasoning, critical thinking, creative thinking, abstract or spatial thinking, problem-solving abilities, and even good communication skills.

1) Mathematics aids in the development of thinking skills.
2) It aids in explaining how things function.
3) It aids in the development of wisdom.
4) It accelerates intuitive processing.
5) It contributes to the child's intelligence.
6) When mathematics is employed as a career, money may be made.
7) It is critical in a world that is always changing.
8) It allows the youngster to interact with the outside world.

C. *Mathematical Applications*

The reality is that we employ mathematics on a regular basis. In our daily lives, mathematics is quite useful and thus, It's important to keep track of how one encounters mathematical applications in everyday life, from the time one wakes up until bedtime. Every day, we use math ideas and abilities learned via problem solving.

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When we first wake up, we check the time to determine whether we have enough time to attend to numerous tasks. When we brush our teeth, we think about how long the brush will last, how much it will cost, how much paste will cost, and how many new ones are available. Water consumption, availability, conservation, and effective waste water management are all important considerations in this regard. Drinking coffee, tea, or milk—the amount, the temperature balance that does not affect the tongue, the quantity consumable, the proportion of mixes that make up milk, coffee powder or decoction, the boiling stage, the filtering mechanism, and washed cups / glasses that ensure health—all necessitate analysis, reasoning, and focus. In this regard, acquisition of raw materials for food preparation requires mention, which requires calculation, commercial mathematics to learn how a dealer measures, calculates, and delivers change! Hence, we can use mathematics to decipher patterns, identify relationships, and forecast the future. It assists us in a variety of vital tasks in our everyday lives as mentioned above.

Consider the following applications of mathematics:

1) *Banking And Financial Services:* The most essential aspect of banking and finance is mathematics. To be able to keep the money in the best possible condition, it is important to keep the accounts correct. Math aids in the calculation of bills, financial responsibilities such as taxes, insurance, and loans, among other things.
2) *Architecture:* Mathematics is a fundamental component of all engineering fields and is frequently employed in architecture. Architects utilise mathematics to determine the square area of rooms and structures, as well as the measurements of the ground area and other areas such as parking, plumbing, and others.
3) *Interior Designing:* Most individuals are unaware that this field requires a significant amount of arithmetic. Not only must finances be established, but interior design must be designed depending on the space and volume of the specific rooms. Different mathematical ideas are required to compute the layout.
4) *Sports:* Mathematical principles can assist people in making more rational judgments. When participating in team sports, everyone must be able to make the best judgments for the team. Learning math teaches people how to make analytical judgments based on reasoning. As a result, math is essential when participating in sports.
5) *Computer Science:* Mathematics aids in the learning of data input in many roles that rely solely on mathematics (such as engineering, science, computer programming, accounting, and banking). In computers, mathematics is a key intellectual tool.
6) *Astronomy:* Astronomy has traditionally placed a premium on mathematics. Astronomical computations were used to justify and apply mathematical advancements. From how the spaceship departs the Earth's atmosphere to how the astronaut drives the vehicle, astronauts need precise mathematical formulae.
7) *Cooking:* Mathematics is also important in the kitchen. Baking and cooking need certain mathematics abilities. Every component must be measured, and we must occasionally multiply or divide to acquire the precise amount we require. Everything we do in the kitchen necessitates the use of mathematics. Even utilising a fireplace necessitates basic math abilities.
8) *Music and Dance:* There is always math involved in music, whether you write it, listen to it, or study a dance routine. Every song has a distinct pulse. And every dance has its own beat. As a result, arithmetic is extremely crucial in both music and dancing.
9) *Fashion Designing:* Mathematics is used to measure sample cloth for fittings and to maintain consistency in sizing. Fashion designers utilise math in perimeter measures, waist diameter, and mathematical methods to assist construct designs, determine the amount and cost of fabric needed to carry out the project.
10) *Gardening:* When trying something new in the garden, essence calculations and measurement abilities are always required. The gardening process requires measuring the garden space and determining how much the trees produce to feed others, as well as calculating the cost of the plantings and the cost of selling them.

II. LITERATURE REVIEW

In his study article ‘USE OF MATHEMATICS IN DAILY LIFE’, SANDEEP KUMAR addressed some of the applications of mathematics in our daily lives, as well as the relevance of mathematics in our daily lives. He stated that applied mathematics has always led to significant breakthroughs and the formation of new disciplines. Mathematics is described as the science of numbers and their operations, interrelation, combination, generalisations and abstractions, and of space configurations transformations and generalisations, according to Merriam Webster's dictionary. He eventually stated in his paper that mathematics may be used in a variety of fields, including (1) cooking (2) grocery shopping (3) diet (4) budget (5) building materials (6) work (7) visiting a distant nation.

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Another research document, 'MATHEMATICS IS EVERYWHERE', the authors Eduardo Colli , Fidel R. Nemenzo, Konrad Polthier, Christiane Rousseau listed the many contributions, highlighting the problems that the mathematical community faces. On the one hand, the panel's suggested title, "Mathematics is everywhere," is an intriguing slogan that deserves to be used more frequently, both as a strong message in science and technology and as a game to be played when we look around us and dismantle what we see to discover the mathematics hidden in so many objects or phenomena. Finally, it was proposed that we work together to improve the situation, especially now that the internet makes it simpler than ever to exchange resources and convey the word to the widest possible audience.

'MATHEMATICS IN EVERYDAY LIFE- A STUDY OF BELIEFS AND ACTIONS', Reidar Mosvold's research article focuses on a thesis that is based on the Norwegian curriculum (L97), which was the current curriculum at the time of the study. The Norwegian national curriculum is the primary working document for teachers, and the relationship between mathematics and everyday life has been a major priority. According to the paper, daily mathematics curricula are needed that focus on what mathematics is needed by the majority of people and how teachers may teach "useful" mathematics.

Salman Bin Sami Khan and Reema Salman, wrote a research article 'INFLUENCE OF MATHEMATICS IN OUR DAILY LIVES'. In the research, they placed a high value on fundamental mathematics abilities and the study of technological subjects, which would enable individuals to obtain appropriate employment and participate in the success market. They also stated that individuals who participate in the contests and learning process have a solid understanding and abilities in mathematics, which are the prerequisites and foundation for technical studies education. They concluded with a proposal aimed at improving abilities and academic performance by involvement in mathematical job challenges and never ceasing to study mathematics that is relevant in everyday life. AFAQ AHMAD's study article, 'APPLICATION OF MATHEMATICS IN EVERYDAY LIFE,' emphasises that mathematical heredity instils traits in humans that foster reasoning, critical, creative, and inventive thinking. He gave several instances from everyday life, such as the creation of diverse mathematical patterns in nature's manufacturing, birds' flight patterns, animal motions, the construction of roots, trunks, and leaves, and so on. He subsequently came to the conclusion that mathematics is required for whatever job we perform.

III. METHODOLOGY

We must apply some approach to conclude our conclusions or make a declaration in favour or against anything based on the outcomes in order to uncover some hints or rationale regarding kids' interest in mathematics and their consideration of real-life applications of the mathematics. In order to gather information for this research work, I utilised a brief survey to ask individuals around me if they enjoy or detest mathematics, and if they are aware of the practical approach to mathematics. The study was done using an ICT application called GOOGLE FORMS, which collected data from students from various schools, colleges, and institutions. As a result, the technique employed in this study is SURVEY. PIE CHARTS are one of the most frequent data analysis charts. By accumulating data over time, pie charts give a clear and extremely visual depiction of the relative proportions of performance in percentage and value. Each and every question in the survey was examined utilising pie charts as a graphical representation.

IV. MODELING AND ANALYSIS

Analysis of questions as follow:

1) Question1- I like mathematics subject.

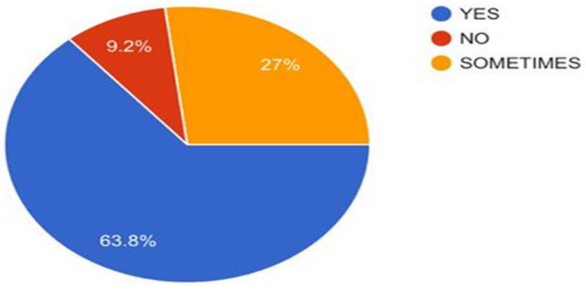

Fig1

The above pie illustrates the percentage of students interested in mathematics subject. We can clearly make out that more than 50% of students like mathematics. Whereas, 27% occasionally like math and less than 10% dislike mathematics as a subject completely.

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2) I am excellent at mathematics.

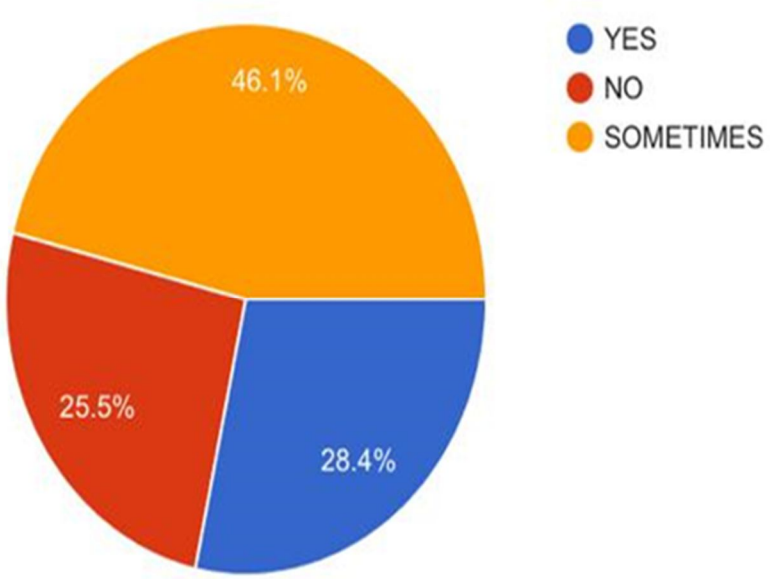

Fig2

The pie above depicts the percentage of pupils who excel in mathematics. The fact that 28.4% of pupils are high achievers is obvious. 46.1% of children are occasionally outstanding at arithmetic, whereas 25.5% are low performers.

3) I believe that understanding mathematics would be beneficial to me in my daily life.

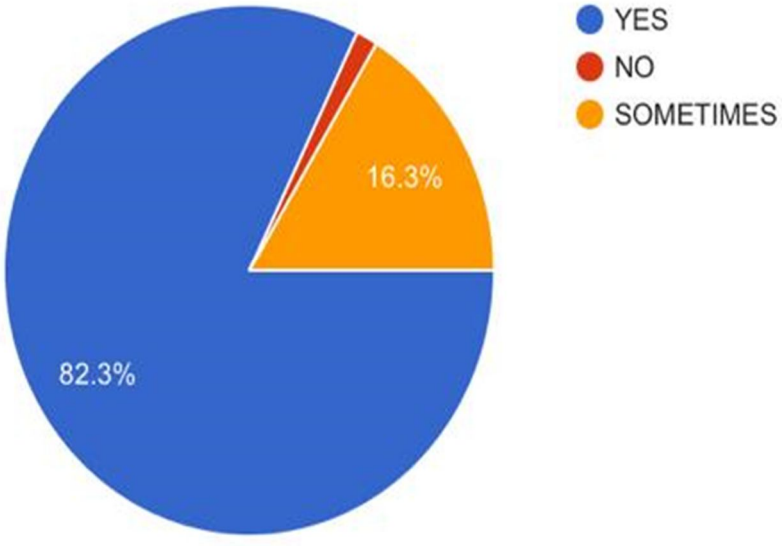

Fig 3

The percentage of students who believe that knowing mathematics would help them in everyday life is depicted in the pie chart above. The fact that 82.3% of students are in agreement is obvious. Furthermore, 16.3% of students feel it can only be beneficial in particular situations. Few people doubt the subject's advantages.

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4) Mathematics is my least favourite subject.

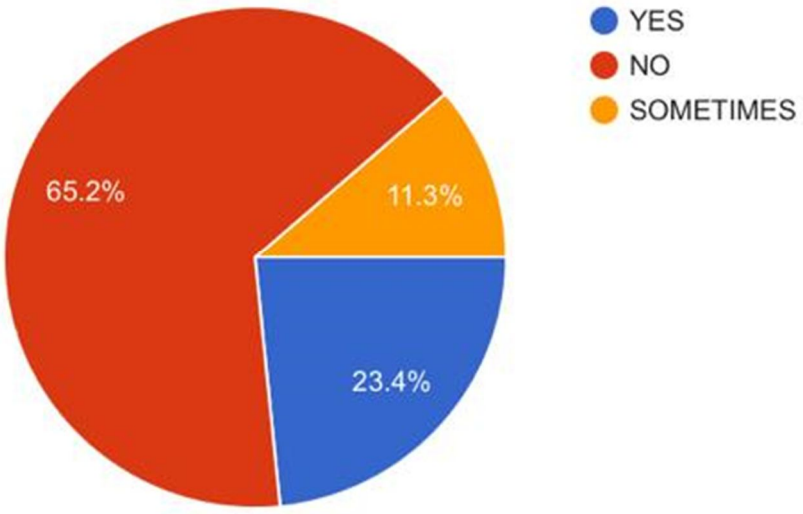

Fig4

After examining the following pie chart, which depicts the percentage of students who despise mathematics as a subject, we can deduce that just 23.4% of students dislike mathematics as a topic, while more than half, or 65.2%, disagree with the assertion. In addition, 11.3% of students sometimes consider mathematics to be their least favourite subject.

5) I'm Comfortable and relaxed when I'm learning maths.

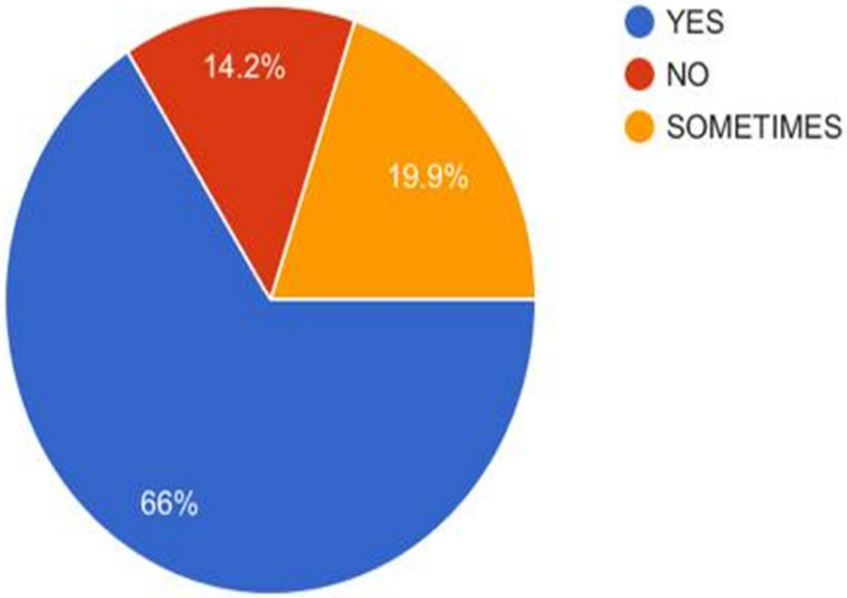

Fig 5

The diagram above demonstrates the percentage of pupils who are at ease and calm when learning mathematics. There is little doubt that 66% of students agree with the statement, while 14.2% disagree. Furthermore, 19.9% of people feel less at ease and calm when practising arithmetic.

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6) Mathematics has practical use in everyday life.

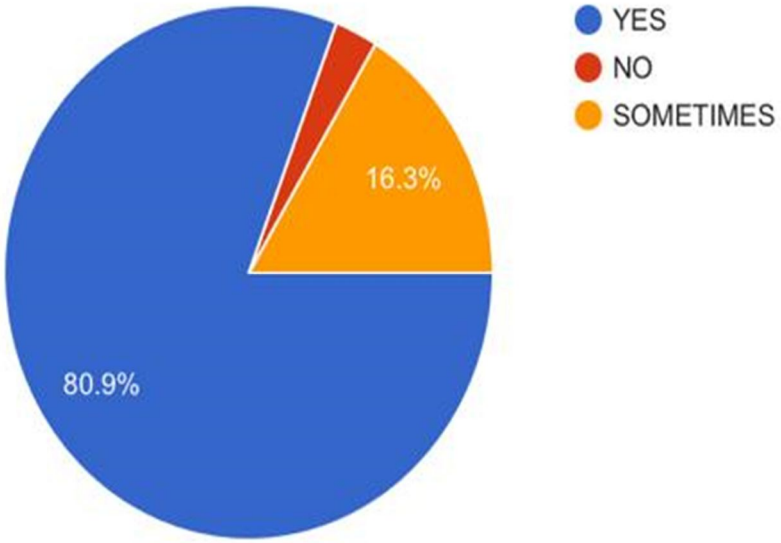

Fig 6

The pie above depicts the percentage of students that believe mathematics is useful in everyday life. We can easily see that the majority of experts, or 80.9%, agree with the aforementioned claim. Furthermore, 16.3% of students feel that mathematics may be used in everyday life on occasion. Few people disagree with the statement and feel it has no practical application.

7) Mathematics is necessary as a discipline as it is needed in designing practically everything.

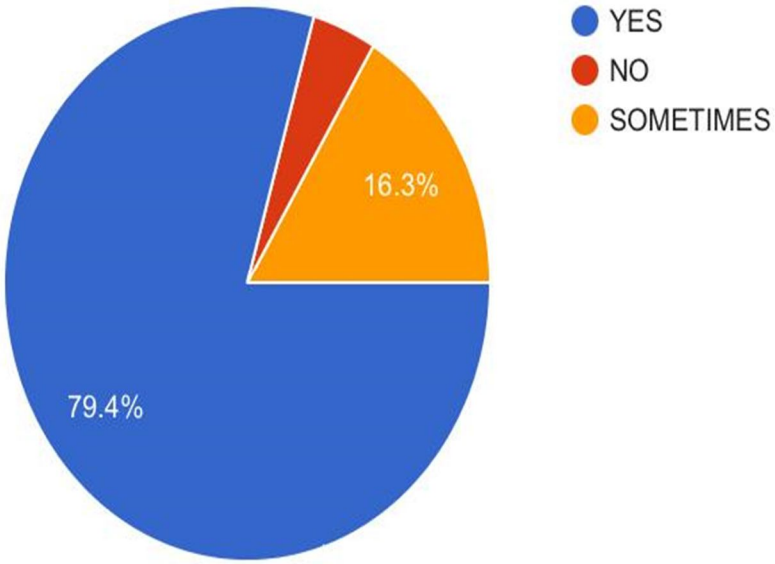

Fig 7

After examining the following pie chart, which depicts the percentage of students who genuinely feel presence of mathematics as a discipline as it is used to design almost everything, we can conclude that just majority of students accurately 79.4% thinks and feel the same, moreover 16.3% sometimes agree with the assertion. Very less scholars deny with the above mentioned fact.

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8) Mathematics is the foundation of all other disciplines.

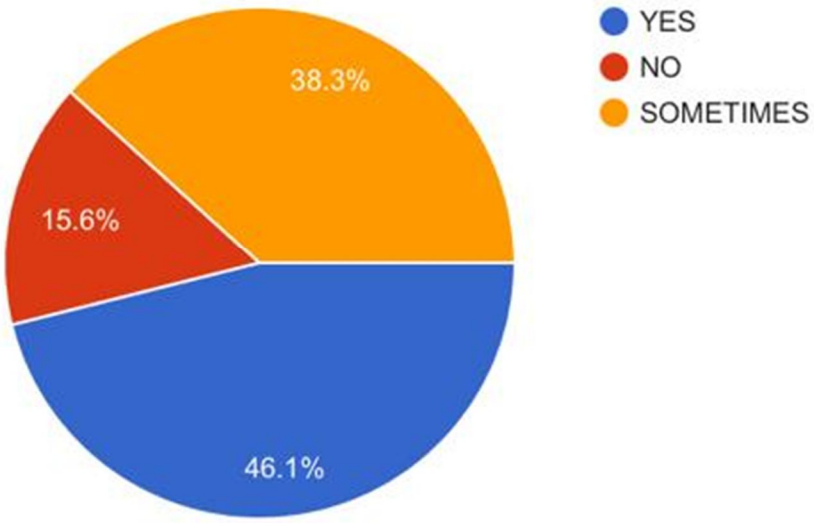

Fig 8

The percentage of students who believe that mathematics sets the foundation of all other disciplines is depicted in the pie chart above. We can see that 46.1% of pupils agree on something. Furthermore, 38.3% of students believe it merely lays the groundwork for a few topics. Only 15.6% of respondents, or less than 20%, dispute the sayings.

9) In my point of view, real-life math and school math are similar.

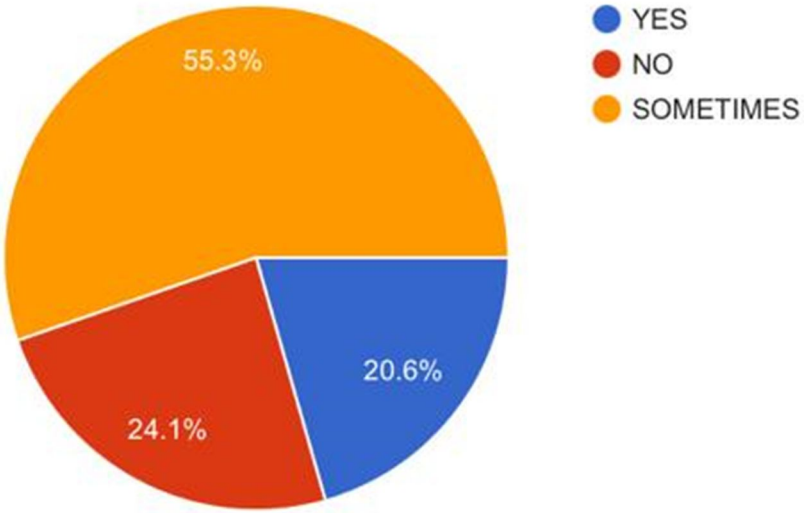

Fig 9

The graph above shows the percentage of students that consider real-life mathematics and school mathematics to be similar. According to the graph, just 20.6% of students agree with this truth, while 24.1% completely disagree. Furthermore, it is apparent that more than half of the respondents feel they are similar on occasion but not all of the time.

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10) Math learned in school can be utilized in solving variety of daily tasks.

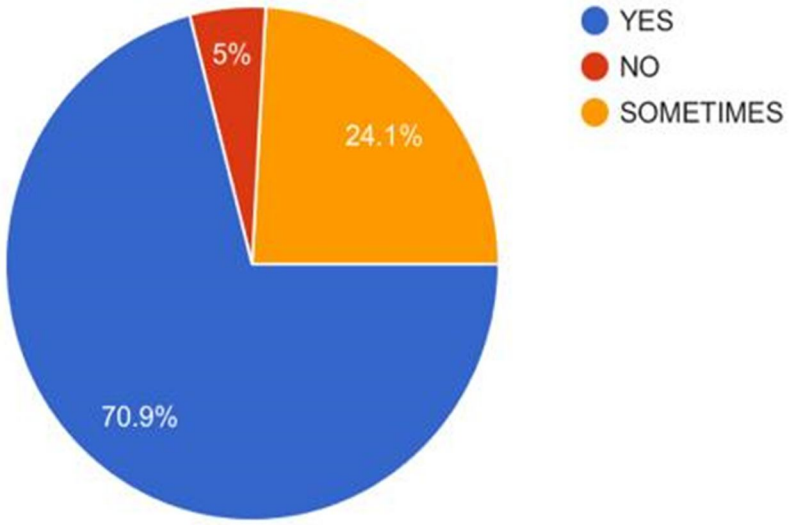

Fig 10

The above pie chart shows how mathematics is used to solve a range of daily activities. We can easily analyze that the statement is supported by the majority of responders (70.9%). Only 5% of pupils, on the other hand, refute the reality. Furthermore, 24.1% of academics agree with the claim every so often.

11) I frequently use math applications in my daily life.

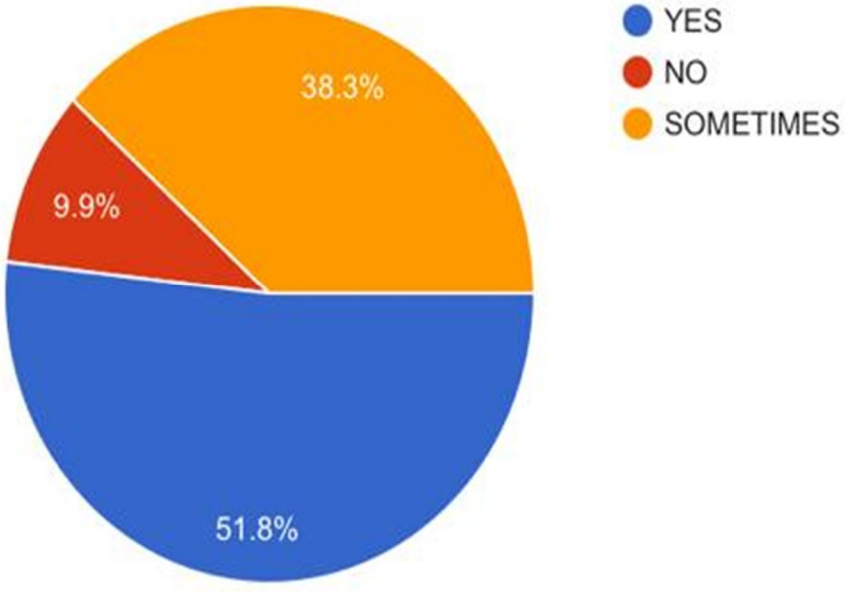

Fig 11

The percentage of students employing mathematics application more frequently in their everyday life is illustrated in the graph above. The fact that 51.8% of students are in agreement is obvious. Furthermore, 38.3% of students feel it can only be used in particular situations and not every day to day tasks. 9.9% doubt the subject's applications and completely deny with statement.

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12) During school, teachers illustrated real-life examples to make students understand the application of mathematics in daily lives.

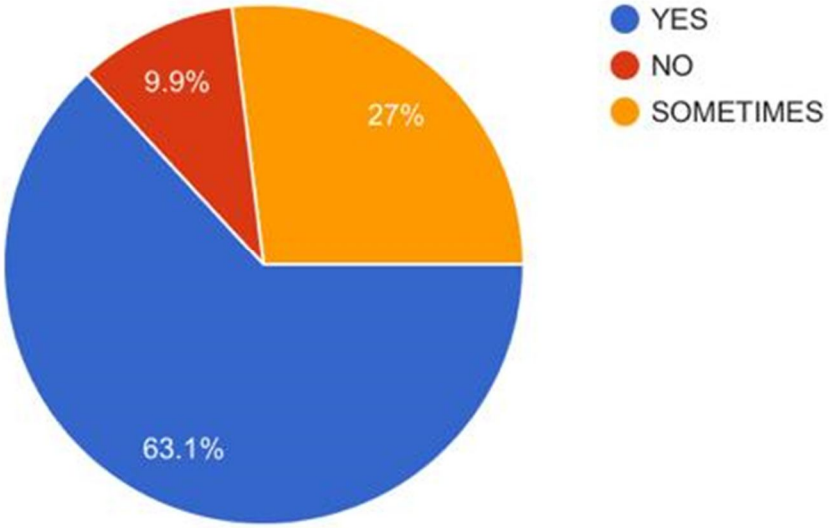

Fig 12

The graph above depicts the proportion of students who believe that their school's teachers utilised real-life examples to help students comprehend how mathematics is used in the real world. There's little question that 63.1% of students agree with the statement, while only about 10% disagree. Furthermore, 27% of individuals feel that such examples are rarely given by instructors.

13) Mathematics application makes me creative.

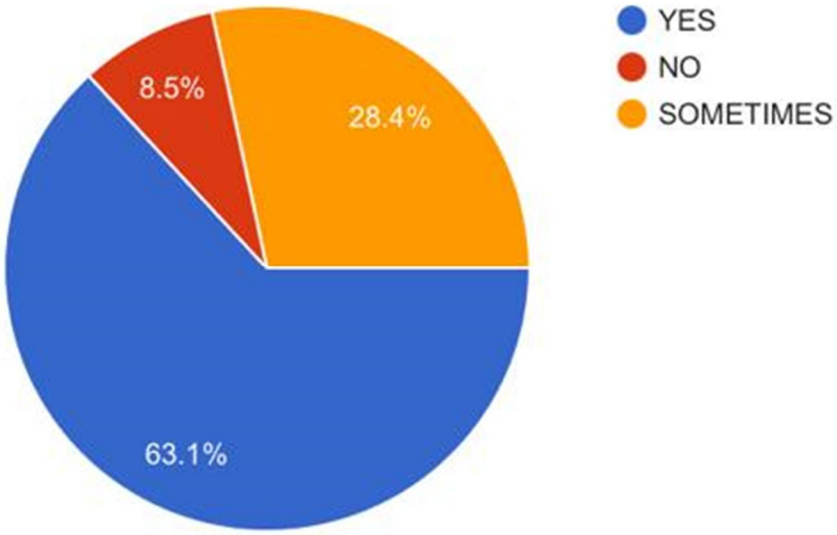

Fig 13

The graph above shows the percentage of students who feel that math helped them be more creative. According to the results, 63.1% of students agree with the statement, while only 8.5% disagree. Furthermore, 28.4% of people believe that mathematics has little creative impact on them.

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14) Applications of mathematics in daily life allow me to discover things by myself.

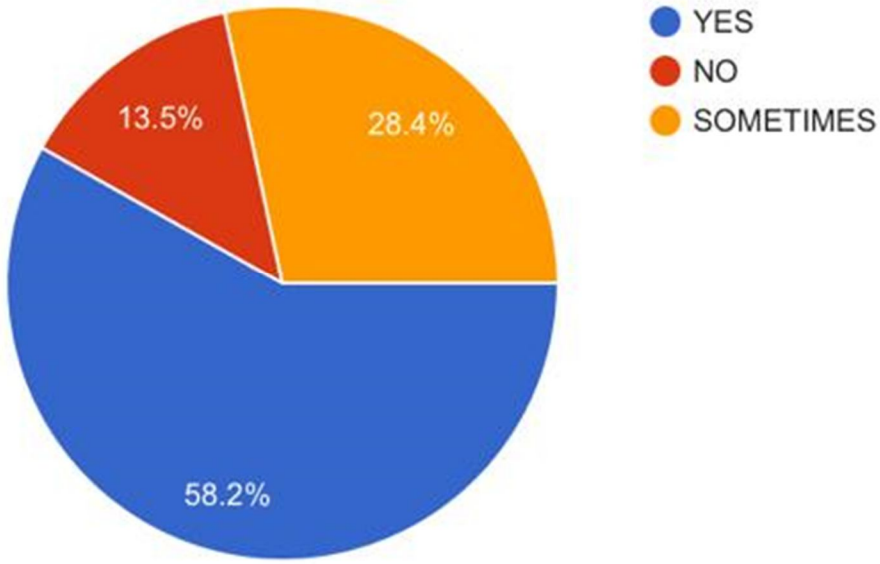

Fig 14

After looking at the pie chart, which depicts the students' conviction in finding new things on their own through the use of mathematics, it is estimated that more than half of pupils are always finding new things. Additionally, 28.4% of people are occasionally active in research. Furthermore, 13.5% of pupils absolutely reject this use of mathematics.

15) Mathematics improves my problem-solving and life skills.

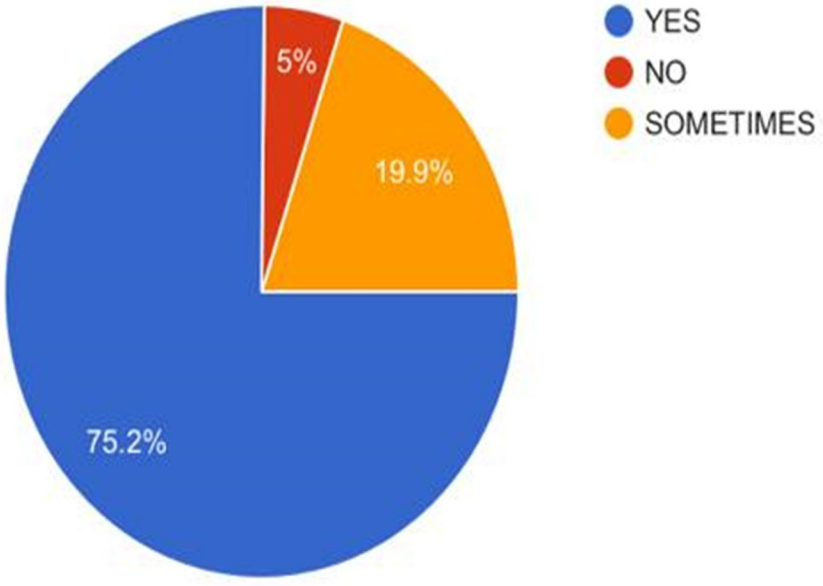

Fig 15

The percentage of students who agree that learning mathematics helps their problem-solving and life skills is shown in the graph above. It's safe to say that the majority of pupils (75.2%) agree that their problem-solving and life skills have improved. Only 5% people disagree with the reality. Moreover, only 19.9% of students develop their abilities on a regular basis.

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16) Mathematics is very important for me so as to get into a university of my choice and thus secure a dream job.

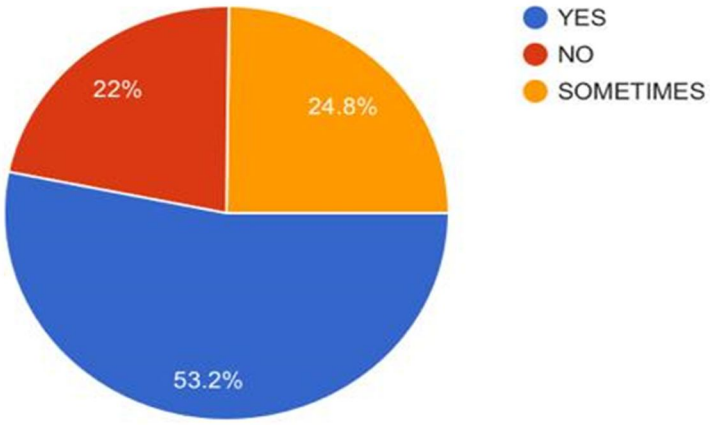

Fig 16

When it comes to mathematics as a fit for a career, the graph above shows how scholars believe that mathematics is critical for getting into a chosen institution and hence securing a dream job. It may be stated that more than half of the respondents (53.2%) agree with the statement, while 22% absolutely disagree. Furthermore, 24.8% of students agree that the information described above satisfies certain characteristics of carrier applicability on occasion.

V. DISCUSSION

After the analysis of overall data it is clear that despite the fact that mathematic is a global language that is used in nearly every aspect of life, some individuals believe that math is simply the application of sophisticated formulae and computations that will never be used in real life. Mostly agree with the fact that mathematics has wider application on various aspects of everyday life situations. It will be right to discuss that mathematics has a significant and distinctive function in human civilizations, as well as a strategic part in the evolution of humanity as a whole. The geometrical comprehension of space time, that is, the physical world and its natural patterns, and the capacity to compute, which is connected to the power of technology and the ability of social organisation, demonstrate the importance of Mathematics in the evolution of a society.

Some suggestions given by the learners are-

1) Mathematics can be utilized in recording Petrol consumption by a vehicle, and keeping daily calorie burning record.
2) Budgeting, accounting, and finance are all aspects of mathematics that are utilised in almost everyone's daily lives. It sharpens one's mind and provides a problem-solving perspective, which aids decision-making and improves a man's status in society.
3) From buying groceries to not getting exploited in terms of salary pay, math is employed.
4) Figuring out distance, time and cost for travelling.
5) Home decorating, Sewing, Gardening and landscaping all require mathematical skills.

VI. CONCLUSION

In this research paper, we discussed what mathematics is and what it truly implies based on its definition. We also discussed the significance of mathematics and, most significantly, the applications of mathematics in everyday life.

We determined that Math aids our problem-solving abilities. It enables us to think more critically and to reason more effectively. Our capacity to think logically about a problem is known as reasoning. Analytical and thinking abilities are necessary in everyday life circumstances. To sum up our research, we must state that "Math is a tool in our hands that allows us to live a more comfortable life. The more mathematical our approach, the more reasonable our thinking will be."

It is important to advise and teach students in technical as well as practical approaches to mathematics in the real world, since even a basic understanding of mathematical abilities and the study of technical disciplines will enable them to obtain appropriate employment and participate in the success market. It's time to appreciate the subject's beauty through comprehending the subject's relevance and applicability in one's daily life. Everyone from all areas of life should embrace math.

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VII. ANNEXURE

The questions used in the survey as follows:

1) I like mathematics subject.
2) I am excellent at mathematics.
3) I believe that understanding mathematics would be beneficial to me in my daily life.
4) Mathematics is my least favourite subject.
5) I'm Comfortable and relaxed when I'm learning maths.
6) Mathematics has practical use in everyday life.
7) Mathematics is necessary as a discipline as it is needed in designing practically everything.
8) Mathematics is the foundation of all other disciplines.
9) In my point of view, real-life math and school math are similar.
10) Math learned in school can be utilized in solving variety of daily tasks.
11) I frequently use math applications in my daily life.
12) During school, teachers illustrated real-life examples to make students understand the application of mathematics in daily lives.
13) Mathematics application makes me creative.
14) Applications of mathematics in daily life allow me to discover things by myself.
15) Mathematics improves my problem-solving and life skills.
16) Mathematics is very important for me so as to get into a university of my choice and thus secure a dream job.
17) Suggestions on how to inculcate habits of applying math in ordinary life ?

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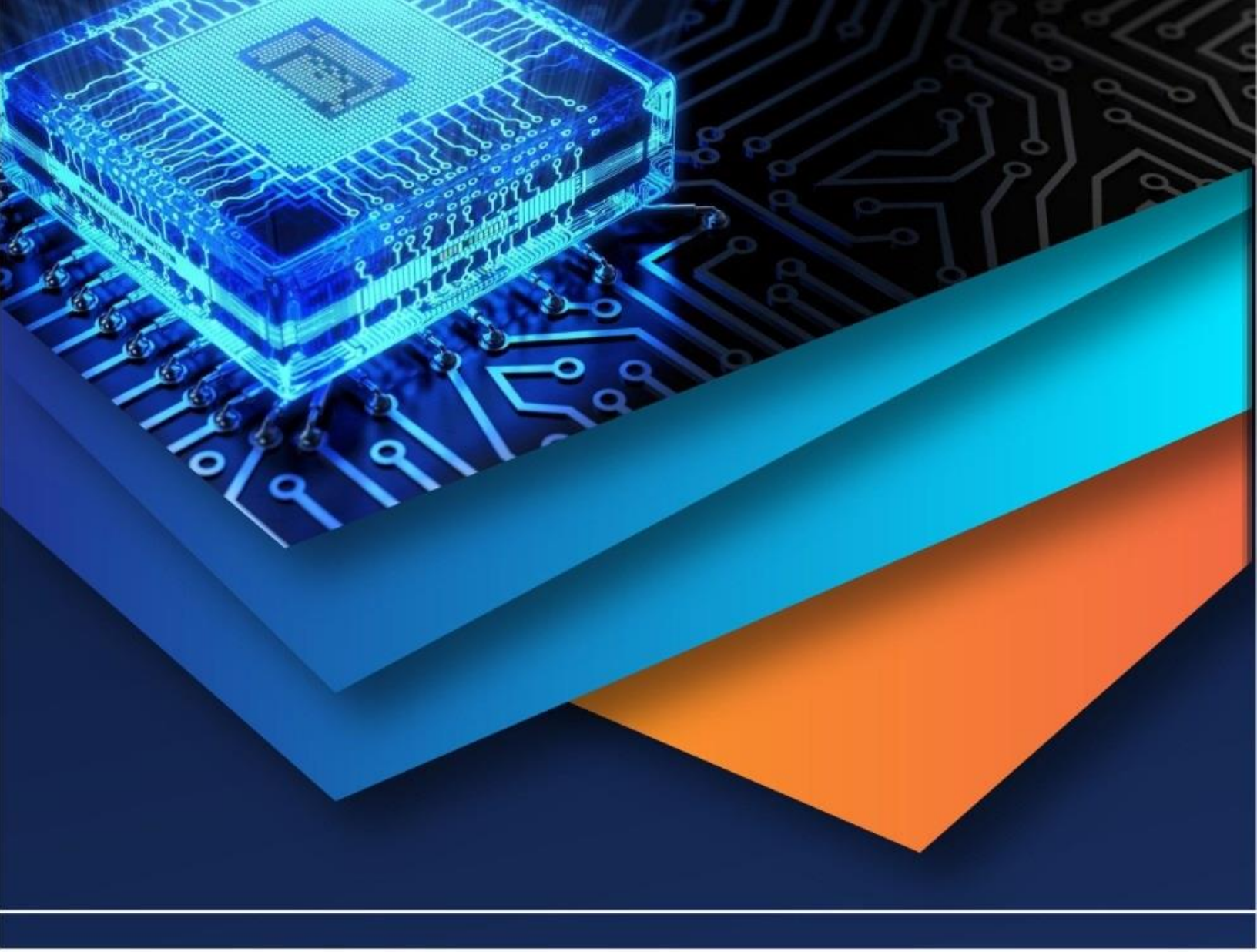

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