

ALU MATH MINDS



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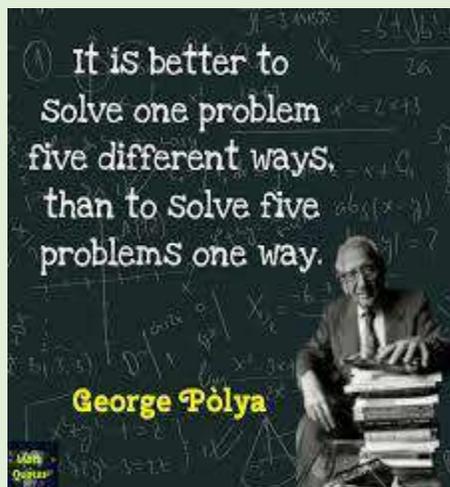
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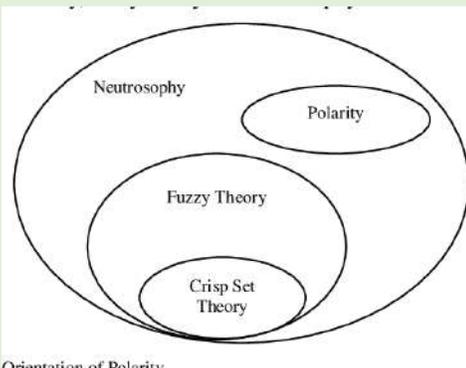
ALU Mathematics News is a monthly publication focused on the developing discipline of mathematics. This is the first apparent product from the Department of Mathematics at Alagappa University. ALU Mathematics News aims to foster communication, education, and networking, while also promoting research, innovations, and technical breakthroughs in the subject. Please provide suggestions on how we can improve this publication and make it more valuable to the community. We want to transform this publication from a newsletter into a helpful resource for the mathematics community. We welcome your feedback to help us achieve this goal.

Thank you for embarking on this adventure with us. Let's explore the infinite possibilities of mathematics together!



DR. N. ANBAZHAGAN

Introduction To Neutrosophy



What is Neutrosophy?

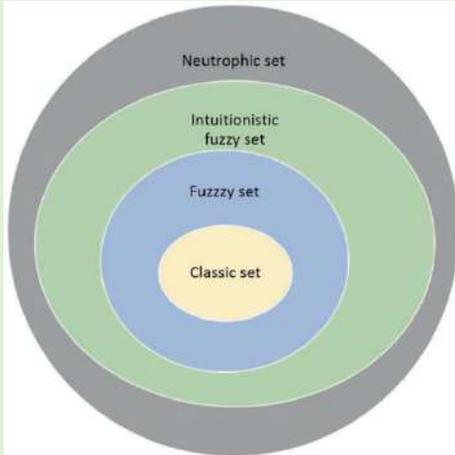
Neutrosophy is a philosophical theory proposed by Florentin Smarandache in the late 20th century. It deals with the study of indeterminacy recognizing that many phenomena and concepts in the world exhibit qualities that are neither entirely true nor entirely false, but rather exist in the state of indeterminacy or partial truth.

The prefix "neuro-" comes from the Greek word "neutrós," meaning neutral or indifferent. In neutrosophy, the neutral state refers to the condition where something is neither true nor false but falls somewhere in between, representing a form of ambiguity or uncertainty.

Key concepts of neutrosophy

- ❖ **Triads:** Neutrosophy often deals with triads, which are sets of three elements representing truth, indeterminacy, and falsity. These elements coexist simultaneously, with each having its own degree or level of influence.
- ❖ **Neutrosophic Logic:** Neutrosophic logic is a form of logic that extends classical logic to accommodate indeterminate and contradictory statements. It allows for the representation and reasoning with uncertain or ambiguous information, recognizing that truth values can be fuzzy and subjective.
- ❖ **Neutrosophic Set Theory:** Neutrosophic set theory generalizes classical set theory to include elements with degrees of membership in a set, degrees of indeterminacy, and degrees of non-membership. This allows for the representation of uncertain or incomplete information within sets.
- ❖ **Applications:** Neutrosophy has applications in various fields such as philosophy, mathematics, computer science, artificial intelligence, decision-making, and linguistics. It provides a framework for dealing with complexity and ambiguity in systems and phenomena where traditional approaches may fall short.

Neutrosophic Set



Neutrosophic Set:

A neutrosophic set is a generalization of a classical set in which the membership of an element is not strictly binary (true or false) but can also be indeterminate, representing a degree of uncertainty. In other words, a neutrosophic set allows for elements to have degrees of truth, indeterminacy, and falsity simultaneously.

Formally, let U be the universe of discourse or the universal set. A neutrosophic set A in U is defined by three membership functions:

- **Truth Membership Function ($T(A)$):**

This function assigns a value between 0 and 1 to each element of U , indicating the degree to which the element belongs to the set A . A value of 1 indicates complete membership, while a value of 0 indicates no membership.

- **Indeterminacy Membership Function ($I(A)$):**

This function assigns a value between 0 and 1 to each element of U , indicating the degree of indeterminacy or uncertainty associated with the element's membership in A . A value of 1 indicates complete indeterminacy, while a value of 0 indicates no indeterminacy.

- **Falsity Membership Function ($F(A)$):**

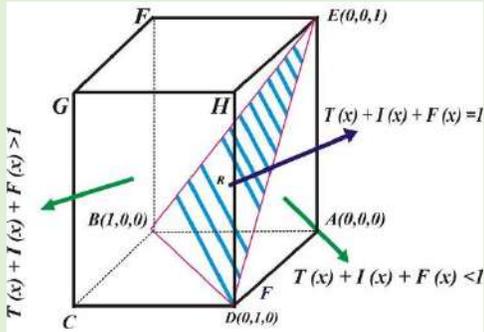
This function assigns a value between 0 and 1 to each element of U , indicating the degree to which the element does not belong to the set A . A value of 1 indicates complete non-membership, while a value of 0 indicates complete membership.

Mathematically, a neutrosophic set A in U can be represented as:

$$A = \{(x, T(x), I(x), F(x)) \mid x \in U\}$$

Where $(x, T(x), I(x), F(x))$ represents an element of A with its corresponding truth, indeterminacy, and falsity degrees.

Neutrosophic Set Based Systems



Neutrosophic Systems:

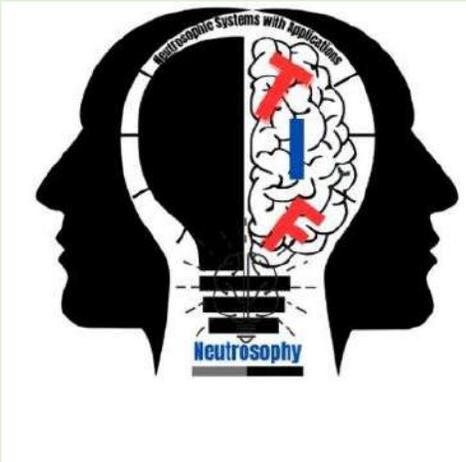
Neutrosophic set-based systems typically involve the development of algorithms, methodologies, and tools that utilize neutrosophic sets for modeling and analyzing complex systems. These systems aim to address the challenges posed by uncertainty and ambiguity in real-world problems, allowing for more accurate and effective decision-making and problem-solving.

Overall, neutrosophic set-based systems offer a valuable approach for dealing with uncertainty and vagueness in various domains, contributing to the advancement of computational intelligence and decision support systems.

The following are some of the examples for Neutrosophic Systems or Models:

- ✓ Neutrosophic algebra
- ✓ Neutrosophic topology
- ✓ Neutrosophic graphs
- ✓ Neutrosophic probabilities
- ✓ Neutrosophic statistics
- ✓ Neutrosophic tools for decision making
- ✓ Neutrosophic theory for machine learning
- ✓ Neutrosophic numerical measures
- ✓ Classical neutrosophic numbers
- ✓ Neutrosophic tools for big data analytics
- ✓ Neutrosophic tools for deep learning
- ✓ Applications of neutrosophic logic in image processing
- ✓ Neutrosophic logic for feature learning, classification, regression, and clustering
- ✓ Wireless sensor networks Neutrosophic set-based Crowd-sourcing
- ✓ Neutrosophic in Astronomy and Space Sciences
- ✓ Applied neutrosophic theory in medicine
- ✓ Applied neutrosophic theory in social science

Applications of Neurosophic Systems



Applications:

Neurosophic systems, which incorporate neurosophic elements possessing degrees of truth, indeterminacy, and falsity, have a wide range of applications across various fields due to their ability to model and analyze uncertainty, ambiguity, and imprecision. Here are some notable applications of neurosophic systems:

- **Decision Making:** Neurosophic systems are used in decision-making processes where uncertainty is prevalent. They provide a framework for evaluating alternatives and making informed decisions in situations where the available information is incomplete or ambiguous.
- **Pattern Recognition:** Neurosophic systems are applied in pattern recognition tasks such as image recognition, handwriting recognition, and speech recognition. They allow for the modeling of uncertain or ambiguous patterns and facilitate accurate classification and recognition.
- **Medical Diagnosis:** Neurosophic systems are utilized in medical diagnosis to analyze patient data and make diagnostic decisions. They accommodate uncertain or incomplete information in medical records and assist healthcare professionals in making accurate diagnoses and treatment recommendations.
- **Financial Analysis:** Neurosophic systems are employed in financial analysis to assess investment opportunities, forecast market trends, and manage risk. They provide a robust framework for modeling financial data and making investment decisions in volatile markets.
- **Engineering Design:** Neurosophic systems are used in engineering design processes to evaluate design alternatives, assess performance criteria, and optimize engineering systems. They accommodate uncertainty and variability in design parameters and facilitate the development of robust and reliable engineering solutions.
- **Supply Chain Management:** Neurosophic systems are applied in supply chain management to optimize inventory levels, forecast demand, and mitigate supply chain risks. They provide a flexible framework for modeling uncertainties in supply chain dynamics and improving decision-making in complex supply chain networks.
- **Robotics and Automation:** Neurosophic systems are utilized in robotics and automation to analyze sensor data, make control decisions, and navigate uncertain environments. They enable robots and automated systems to adapt to changing conditions and make real-time decisions in dynamic environments.
- **Environmental Modeling:** Neurosophic systems are used in environmental modeling to assess environmental risks, predict environmental impacts, and develop mitigation strategies. They accommodate uncertainties in environmental data and facilitate informed decision-making in environmental management.

Math Breakthroughs



Several significant mathematical breakthroughs occurred in 2019 across various fields. Here are a few notable ones:

✚ **Proof of the Kadison-Singer Conjecture:** In February 2019, breakthrough research by Adam Marcus, Daniel Spielman, and Nikhil Srivastava provided a proof for the Kadison-Singer Conjecture, a long-standing problem in operator theory and functional analysis. This conjecture had implications in quantum physics and signal processing.

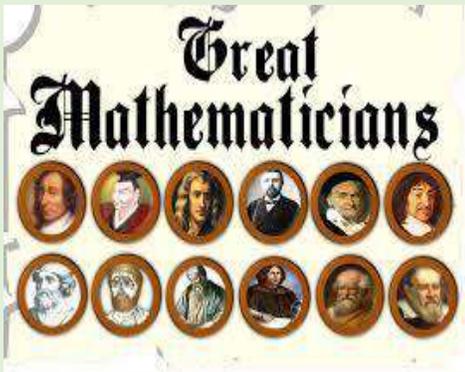
✚ **Progress in the Twin Prime Conjecture:** Yitang Zhang's groundbreaking work in 2013 had demonstrated that there are infinitely many pairs of primes that are at most 70 million apart. In 2019, James Maynard and others made significant progress by further reducing this gap, showing that there are infinitely many pairs of primes that are at most 246 apart.

✚ **Resolution of the Logarithmically Small Gaps Conjecture:** Building on the work of Maynard and others, Maynard and Terry Tao proved in 2019 that there are infinitely many prime pairs with gaps no larger than $\log^2(n)$, where n is the smaller of the two primes in the pair. This represented a major advancement in understanding the distribution of prime numbers.

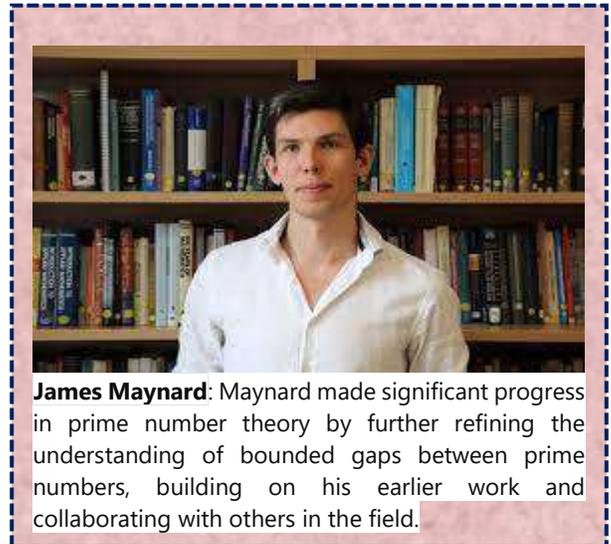
✚ **Progress in the Riemann Hypothesis:** In 2019, Michael Atiyah claimed to have a proof of the Riemann Hypothesis, one of the most famous unsolved problems in mathematics. However, his claimed proof was met with skepticism from the mathematical community due to various issues and errors found in his arguments.

✚ **New Developments in Geometric Langlands Program:** There were significant developments in the Geometric Langlands Program, a vast area of mathematics that connects number theory and algebraic geometry. Progress was made by several mathematicians, including Daves Maulik and Paul Ziegler.

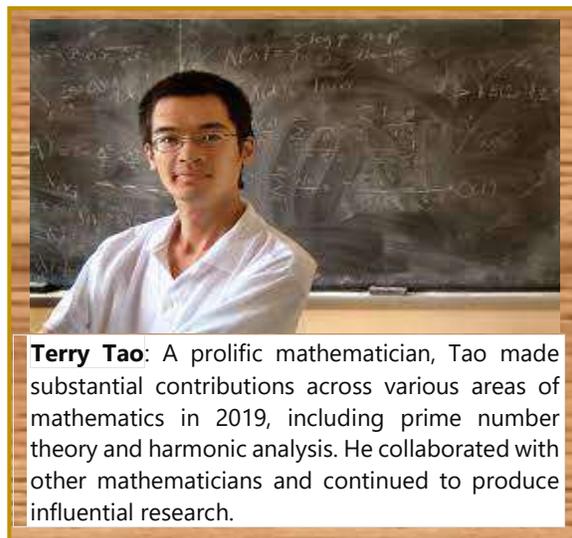
Achieved Mathematicians of 2019



Adam Marcus, Daniel Spielman, and Nikhil Srivastava: These mathematicians provided a groundbreaking solution to the Kadison-Singer problem, a significant problem in operator theory and functional analysis.



James Maynard: Maynard made significant progress in prime number theory by further refining the understanding of bounded gaps between prime numbers, building on his earlier work and collaborating with others in the field.



Terry Tao: A prolific mathematician, Tao made substantial contributions across various areas of mathematics in 2019, including prime number theory and harmonic analysis. He collaborated with other mathematicians and continued to produce influential research.

Notable International Developments



United States:

- American mathematicians contributed to advancements in prime number theory, operator theory, algebraic geometry, and other fields.
- The United States continued to host numerous mathematical conferences, workshops, and seminars, fostering collaboration and innovation within the mathematical community.
- Academic institutions and research centers across the country conducted cutting-edge research in mathematics, with contributions from mathematicians at universities such as MIT, Harvard, Stanford, and many others.

United Kingdom:

- British mathematicians made significant strides in various areas of mathematics, including number theory, combinatorics, and mathematical physics.
- The UK remained a hub for mathematical research and education, with institutions such as the University of Cambridge, Imperial College London, and the University of Oxford playing key roles in advancing mathematical knowledge.
- The London Mathematical Society and other mathematical organizations in the UK continued to promote mathematical research and outreach activities.

France:

- French mathematicians contributed to the advancement of fields such as algebraic geometry, dynamical systems, and mathematical analysis.
- France hosted several mathematical conferences and workshops, attracting mathematicians from around the world to collaborate and exchange ideas.
- Institutions like the Institut des Hautes Études Scientifiques (IHÉS) and the Centre national de la recherche scientifique (CNRS) supported mathematical research and provided opportunities for

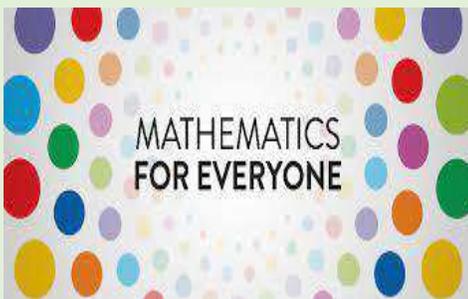
Germany:

- German mathematicians played active roles in areas such as differential geometry, algebraic topology, and mathematical logic.
- Germany's mathematical community benefited from collaboration between universities, research institutes, and industry partners.
- Institutions like the Max Planck Institute for Mathematics and the Berlin Mathematical School continued to foster research and training opportunities for mathematicians at all career stages.

China:

- Chinese mathematicians made significant contributions to various fields of mathematics, including number theory, algebra, and mathematical physics.
- China hosted international mathematical conferences and competitions, showcasing the country's commitment to promoting mathematical excellence and innovation.

International Events and Gatherings



International Mathematical Union (IMU) Congress:

- The IMU Congress, held every four years, convened in 2019 in São Paulo, Brazil. This event brought together mathematicians from around the world to present their research, discuss recent advancements, and collaborate on new ideas.
- The Congress featured a wide range of topics, including algebra, analysis, geometry, topology, and applications of mathematics in various fields such as physics, computer science, and biology.

Fields Medal and Nevanlinna Prize Awards:

- The Fields Medal, often considered the highest honor in mathematics, was awarded at the IMU Congress to four outstanding mathematicians under 40 years old for their exceptional contributions to the field.
- The Nevanlinna Prize, awarded for outstanding contributions in mathematical aspects of information sciences, was also presented at the Congress.

International Collaborative Research Projects:

- Mathematicians from different countries collaborated on various research projects, leveraging advances in communication technology to work together remotely and share insights and expertise.
- Collaborative efforts led to breakthroughs in areas such as number theory, algebraic geometry, mathematical physics, and computational mathematics.

Global Mathematical Competitions and Conferences:

- International mathematical competitions, such as the International Mathematical Olympiad (IMO) and the International Congress of Mathematicians (ICM), provided platforms for young mathematicians and seasoned researchers to showcase their skills and exchange knowledge.
- Mathematical conferences and workshops held worldwide facilitated networking opportunities and interdisciplinary collaborations among mathematicians from diverse cultural backgrounds.

International Mathematical Journals and Publications:

- International mathematical journals continued to publish groundbreaking research from mathematicians around the globe, disseminating new discoveries and findings to the broader mathematical community.
- Collaboration between researchers from different countries led to the publication of joint papers and contributed to the advancement of mathematical knowledge in various subfields.

Mathematics Awards



Fields Medal: Awarded every four years by the International Mathematical Union (IMU) to up to four mathematicians under 40 years of age, the Fields Medal is one of the highest honors in mathematics. The winners in 2019 were:

- **Peter Scholze:** For his work in arithmetic algebraic geometry, particularly for his contributions to the theory of perfectoid spaces.
- **Akshay Venkatesh:** Recognized for his synthesis of analytic number theory, homogeneous dynamics, topology, and representation theory.
- **Alessio Figalli:** Honored for his contributions to the theory of optimal transport and its applications in partial differential equations, metric geometry, and

Nevanlinna Prize: Also awarded by the IMU, the Nevanlinna Prize recognizes outstanding contributions in mathematical aspects of information sciences. The recipient in 2019 was *Emma Strömvall* for her work on the solution of partial differential equations and the development of numerical methods for stochastic differential equations.

Abel Prize: The Abel Prize, awarded by the Norwegian Academy of Science and Letters, recognizes outstanding contributions to mathematics. In 2019, it was awarded to **KAREN UHLENBECK** for her foundational work in geometric partial differential equations, gauge theory, and integrable systems, and for the fundamental impact of her work on analysis, geometry, and mathematical physics.

Chern Medal: Awarded by the International Mathematical Union (IMU) every four years to an individual whose lifelong achievements in the field of mathematics warrant the highest level of recognition. In 2019, the recipient was **Yakov Sinai** for his fundamental contributions to dynamical systems, ergodic theory, and mathematical physics.

Swayam Courses



SWAYAM PORTAL

Swayam (Study Webs of Active Learning for Young Aspiring Minds) is an Indian Massive Open Online Course (MOOC) platform established by the Ministry of Education, Government of India. It offers online courses covering a wide range of subjects at various educational levels, from school to postgraduate level.

In 2019, SWAYAM continued to provide notifications and updates to its users regarding new course offerings, enrollment deadlines, course materials availability, assessments, and other relevant information. These notifications were typically sent via email to registered users and were also accessible on the SWAYAM platform itself.

While specific details of the notifications sent in 2019 may vary based on individual user preferences and course enrollments, they would have generally included information about:

- ✓ New course launches and updates: Notifications would have informed users about newly launched courses, course content updates, and any changes to existing course offerings.
- ✓ Enrollment deadlines: Users would have received reminders about enrollment deadlines for upcoming courses, allowing them to register for courses of interest within the specified timeframe.
- ✓ Course materials availability: Notifications would have alerted users when course materials, such as lecture videos, readings, assignments, and quizzes, became available for access on the platform.
- ✓ Assessment schedules: Users would have been informed about assessment schedules, including dates for quizzes, assignments, exams, and submission deadlines.
- ✓ Platform updates and announcements: SWAYAM may have sent notifications regarding platform updates, maintenance schedules, and other important announcements related to the functioning of the platform.

Scholarships



IN INDIA, SEVERAL SCHOLARSHIPS ARE AVAILABLE FOR STUDENTS' PURSUING MATHEMATICS AT VARIOUS LEVELS OF EDUCATION, INCLUDING UNDERGRADUATE, POSTGRADUATE, AND DOCTORAL PROGRAMS. WHILE SPECIFIC SCHOLARSHIPS MAY VARY FROM YEAR TO YEAR, HERE ARE SOME EXAMPLES OF MATHEMATICS SCHOLARSHIPS IN INDIA THAT WERE AVAILABLE IN 2019:

- ✧ NATIONAL BOARD FOR HIGHER MATHEMATICS (NBHM) SCHOLARSHIPS: NBHM OFFERS SCHOLARSHIPS FOR STUDENTS PURSUING POSTGRADUATE STUDIES (MASTER'S AND INTEGRATED PHD) IN MATHEMATICS. THESE SCHOLARSHIPS ARE AWARDED BASED ON PERFORMANCE IN THE NBHM NATIONAL SCREENING TEST (CONDUCTED ANNUALLY) AND COVER TUITION FEES, MAINTENANCE ALLOWANCE, AND CONTINGENCY GRANT.
- ✧ KISHORE VAIGYANIK PROTSAHAN YOJANA (KVPY): KVPY IS A NATIONAL-LEVEL SCHOLARSHIP PROGRAM FUNDED BY THE DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVERNMENT OF INDIA. IT ENCOURAGES STUDENTS TO PURSUE CAREERS IN BASIC SCIENCES, INCLUDING MATHEMATICS, BY PROVIDING FINANCIAL SUPPORT AND MENTORSHIP. SCHOLARSHIPS ARE AVAILABLE FOR STUDENTS STUDYING IN CLASS 11, 12, AND UNDERGRADUATE (UP TO THE PRE-FINAL YEAR) LEVELS.
- ✧ INSPIRE SCHOLARSHIP: THE INNOVATION IN SCIENCE PURSUIT FOR INSPIRED RESEARCH (INSPIRE) SCHOLARSHIP SCHEME OFFERS FINANCIAL ASSISTANCE TO STUDENTS PURSUING BACHELOR'S AND MASTER'S DEGREES IN BASIC AND NATURAL SCIENCES, INCLUDING MATHEMATICS. ELIGIBLE CANDIDATES ARE SELECTED BASED ON THEIR PERFORMANCE IN BOARD EXAMS AND RECEIVE FINANCIAL SUPPORT FOR PURSUING HIGHER EDUCATION.
- ✧ INDIAN STATISTICAL INSTITUTE (ISI) SCHOLARSHIPS: ISI OFFERS MERIT-CUM-MEANS SCHOLARSHIPS TO STUDENTS ENROLLED IN ITS BACHELOR'S, MASTER'S, AND DOCTORAL PROGRAMS IN MATHEMATICS AND STATISTICS. THESE SCHOLARSHIPS COVER TUITION FEES AND PROVIDE A STIPEND TO DESERVING STUDENTS BASED ON THEIR ACADEMIC PERFORMANCE AND FINANCIAL NEED.
- ✧ DR. MANMOHAN SINGH SCHOLARSHIPS: THE DR. MANMOHAN SINGH SCHOLARSHIPS ARE AWARDED TO OUTSTANDING INDIAN STUDENTS PURSUING DOCTORAL STUDIES IN MATHEMATICS AND OTHER DISCIPLINES AT THE UNIVERSITY OF CAMBRIDGE, UK. THESE SCHOLARSHIPS COVER TUITION FEES, LIVING EXPENSES, AND OTHER RELATED COSTS.
- ✧ DEPARTMENTAL SCHOLARSHIPS: MANY UNIVERSITIES AND INSTITUTIONS IN INDIA OFFER DEPARTMENTAL SCHOLARSHIPS SPECIFICALLY FOR STUDENTS PURSUING MATHEMATICS AND RELATED DISCIPLINES. THESE SCHOLARSHIPS MAY VARY IN TERMS OF ELIGIBILITY CRITERIA, APPLICATION PROCEDURES, AND FINANCIAL ASSISTANCE PROVIDED.

IT'S ESSENTIAL FOR STUDENTS TO REGULARLY CHECK THE OFFICIAL WEBSITES OF SCHOLARSHIP PROVIDERS AND EDUCATIONAL INSTITUTIONS FOR THE LATEST INFORMATION ON AVAILABLE SCHOLARSHIPS, ELIGIBILITY CRITERIA, APPLICATION DEADLINES, AND OTHER RELEVANT DETAILS. ADDITIONALLY, STUDENTS CAN EXPLORE SCHOLARSHIP DATABASES AND PORTALS TO FIND COMPREHENSIVE LISTINGS OF SCHOLARSHIPS AVAILABLE IN INDIA.

National Level Mathematics Exams



National Examinations on Maths

IN INDIA, VARIOUS MATHEMATICS EXAMS ARE CONDUCTED AT DIFFERENT LEVELS OF EDUCATION, INCLUDING SCHOOL, COLLEGE, AND COMPETITIVE ENTRANCE EXAMS. HERE ARE SOME NOTABLE MATHEMATICS EXAMS AND NOTIFICATIONS THAT TOOK PLACE IN INDIA IN 2019:

↪ Board Exams:

Central Board of Secondary Education (CBSE) and various state education boards conducted Class 10 and Class 12 board exams, which include mathematics as one of the subjects. Notifications regarding exam schedules, admit cards, and results were issued by respective boards.

↪ Joint Entrance Examination (JEE) Main:

JEE Main is a national-level entrance exam conducted by the National Testing Agency (NTA) for admission to undergraduate engineering programs in NITs, IITs, and other centrally funded technical institutions. The exam includes a mathematics section, and notifications regarding application dates, exam dates, and results were released by NTA.

↪ National Eligibility cum Entrance Test (NEET) UG:

NEET UG is a national-level medical entrance exam conducted by NTA for admission to undergraduate medical and dental courses (MBBS/BDS) in India. The exam includes a section on biology, chemistry, and physics, which also involves mathematical concepts. Notifications regarding NEET UG were issued by NTA.

↪ Indian Institutes of Technology Joint Entrance Examination (IIT JEE) Advanced:

IIT JEE Advanced is conducted for admission to undergraduate programs at the Indian Institutes of Technology (IITs). The exam includes a mathematics section, and notifications regarding application dates, exam dates, and results were released by the respective IITs.

↪ Graduate Aptitude Test in Engineering (GATE):

GATE is a national-level exam conducted for admission to postgraduate programs in engineering and technology. The exam includes a mathematics section, and notifications regarding application dates, exam dates, and results were issued by the organizing institute (IITs or IISc) and the conducting body (usually one of the IITs).

↪ Council of Scientific and Industrial Research- National Eligibility Test (CSIR-NET):

National-level entrance exam conducted by the National Testing Agency (NTA) on behalf of the CSIR, India. The exam is conducted to determine eligibility for Junior Research Fellowship (JRF) and Lectureship in various science disciplines.

State Level Mathematics Exams



Tamil Nadu State Examinations on Maths

Our state government conducts entrance exams for admission to engineering, medical, and other professional courses. These exams include mathematics as a subject, and notifications regarding exam schedules, application processes, and results were issued by respective state examination authorities.

Teacher Recruitment Board (TRB) Exams: TRB conducts various exams for the recruitment of teachers in Tamil Nadu. In 2019, TRB conducted exams for the recruitment of teachers in different subjects and levels, including the recruitment of Post Graduate Assistants (PGAs), Secondary Grade Teachers (SGTs), and Special Teachers (Physical Education, Drawing, Music, etc.). These exams assess candidates' subject knowledge, teaching skills, and eligibility for teaching positions in schools.

Tamil Nadu Teacher Eligibility Test (TN TET): TN TET is conducted by the Tamil Nadu Teachers Recruitment Board (TRB) for candidates aspiring to become teachers in primary (Classes I to V) and upper primary (Classes VI to VIII) schools in the state. The exam assesses candidates' eligibility and proficiency in teaching and pedagogy. TN TET consists of two papers: Paper-I for teaching in Classes I to V and Paper-II for teaching in Classes VI to VIII.

Statistical Exams: Tamil Nadu Public Service Commission (TNPSC) conducts exams for the recruitment of statisticians and other related posts in government departments. In 2019, TNPSC may have conducted exams for the recruitment of statisticians or statistical officers in various departments, including the Tamil Nadu Directorate of Economics and Statistics. These exams assess candidates' proficiency in statistics, data analysis, and related skills.

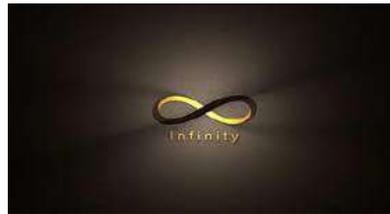
Tamil Nadu Engineering Admissions (TNEA): TNEA is the admission process for engineering courses in colleges affiliated with Anna University and other universities in Tamil Nadu. Mathematics is a key subject for admission to engineering programs, and the TNEA exam may include questions on mathematics to assess students' aptitude for engineering studies.

Tamil Nadu Common Entrance Test (TANCET): TANCET is conducted for admission to postgraduate programs such as MTech, MBA, MCA, and ME in colleges and universities in Tamil Nadu. The exam includes a section on mathematics to assess candidates' quantitative aptitude.

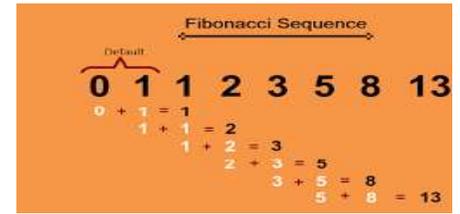
Math Fun Facts

Math Fun & Facts

Math success is a process of solving problems and applying what you have learned to new problems.



Infinity and Beyond: Infinity isn't just a concept; there are different sizes of infinity! For example, the infinity of all real numbers is larger than the infinity of all integers.



Fibonacci Numbers: The Fibonacci sequence, where each number is the sum of the two preceding ones (0, 1, 1, 2, 3, 5, 8, 13, ...), is found throughout nature in the arrangement of leaves, the branching of trees, and the spirals of shells.



Pi's Digits: Pi (π) is the ratio of a circle's circumference to its diameter and is an irrational number, meaning its decimal representation goes on forever without repeating. As of 2022, trillions of digits of pi have been calculated, with enthusiasts continuously pushing the limits.



Golden Ratio: The golden ratio (approximately 1.618) appears in art, architecture, and nature. It's often considered aesthetically pleasing and is found in the proportions of the Parthenon, the Mona Lisa, and even human faces.

Perfect Number Example



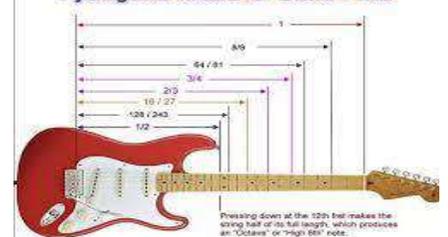
$$6 = 1 + 2 + 3$$

↓ ↓ ↓
Proper Divisors

↓
Perfect Number

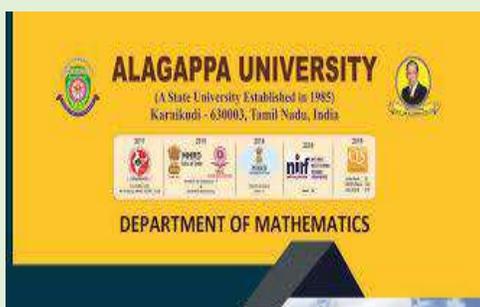
Perfect Numbers: A perfect number is one where the sum of its divisors (excluding itself) equals the number itself. The smallest perfect number is 6 ($1 + 2 + 3 = 6$), and the next one is 28 ($1 + 2 + 4 + 7 + 14 = 28$).

Pythagoras Ratios for Guitar Frets



Math in Music: Music is deeply intertwined with mathematics, with concepts like rhythm, harmony, and frequency all having mathematical underpinnings. Musical scales and chords are based on mathematical ratios.

Department Math Events



Conferences:

- ✚ International Conference on Mathematical Modelling and Computational Intelligence (ICMMCI-2019) at Department of Mathematics, Alagappa University, Karaikudi, held during September 03-04, 2019.
- ✚ National Conference on “Recent Advances in Mathematical Modelling (NCRAMM19) at Department of Mathematics, Alagappa University, Karaikudi, held on September 23, 2019.

Workshop:

- ✚ Three-Day workshop on “Research Methods and LaTeX” from 24th to 26th June, 2019 at Alagappa University, Karaikudi.

National Mathematics Day:

- ✚ National Mathematics Day celebrated by School of Mathematics, Alagappa University, 17 December 2019.

Faculty of Maths Achievements



Dr. N. ANBAZHAGAN (Professor & HoD):

- Member, Senate, Alagappa University
- Member Standing Committee on Academic Affairs
- Coordinator University Business Collaboration Centre
- Coordinator, UGC-SAP(DRS-I)
- Theme Coordinator RUSA 2.0
- Best Paper Presentation Award, International Conference on Mathematical Engineering Applications for Sustainable Development", held during August 16-18, 2019, University of Malaya, Kuala Lumpur, Malaysia
- Convener, International Conference on Mathematical Modelling and Computational Intelligence (ICMMCI-2019) at Department of Mathematics, Alagappa University, Karaikudi
- Convener, National Conference on "Recent Advances in Mathematical Modelling (NCRAMM19) at Department of Mathematics, Alagappa University, Karaikudi
- Foreign Visit: Malaysia
- Guest Editor: One of the Guest Editors of the Special Issue on "Discrete and Computational Mathematics" in the Journal of Discrete Mathematical Sciences & Cryptography, 22(5), 2019, (ISSN: 0972-0529)

Dr. J. VIMALA (Assistant Professor):

- Deputy co-ordinator, SAP, DRS-I, Department of Mathematics
- Deputy co-ordinator, Data Management Centre, Alagappa University
- Deputy co-ordinator, Coaching Scheme for Entry into Services
- Programme Officer, NSS, Alagappa University
- Co-ordinator, IQAC, Dept. of Mathematics
- Co-ordinator, Alumni Association, Dept. of Mathematics
- Member, Department Research Committee
- Member, Department Purchase Committee
- Member, Department Student Affairs and Counselling Cell
- Member, Inspection Committee for affiliation of Alagappa University
- Co-ordinator, "National Mathematics Day" by School of Mathematics, Alagappa University, 17 December 2019
- Member Board of Studies - B.Sc. Mathematics, Bharathidasan University, Tiruchirappalli

Dr. B. SUNDARA VADIVOO (Assistant Professor):

- Organizing Secretary in the International Conference on Mathematical Modeling and Computational Intelligence (ICMMCI-2019) held during September 03-04, 2019

Dr. R. JEYABALAN (Assistant Professor):

- Act as a Department Coordinator in the activity “Anti-Plastic campaign rally at Illuppaikudi Village (VEP) of MHRD-UCG Initiative Swachhata Hi Seva, Swachhta Pakhwada, Rashtriya Poshan Maah & Jal Shakti Abhiyan” Programmes organized by Alagappa University, Karaikudi during 1st July 30th November 2019

Dr. R. RAJA (Assistant Professor, RCHM):

- Acting as a Compliance Officer to coordinate with FRROs/FROs for ascertaining facts in respect of Foreign Students/ Scholars during grant of various services to them through the FRRO portal
- Acting as a Deputy Director for Centre for International Relations (CIR)
- Acted as a Member of the inspection committee for Revival of Approved Research Centre of Alagappa University affiliated colleges
- Acted as a Department Research Committee Member for our Affiliated Colleges.
- Acted as a Placement Cell coordinator in Department of Mathematics
- Acted as a Student Counselling Cell coordinator in Department of Mathematics
- Member of the UGC SAP-DRS (Level-I) in the Department of Mathematics
- Project: DST-SERB (EMEQ), Optimal Control of Population Dynamical Systems & Epidemiology: An LMI Approach
- Visited Rome, Italy and presented a research paper in the 3rd International Conference and Summer School on Numerical Computations: Theory and Algorithms during June14-20, 2019
- Editor for the “DJ Journal of Engineering and Applied Mathematics”, “World Academy of Science, Engineering and Technology”
- Member of the Board of Studies in the School of Mathematics, Alagappa University, Karaikudi

Dr. S. AMUTHA (Assistant Professor, RCHM):

- Received Eminent Mathematician Award from The International Multidisciplinary Research Foundation on the Eve of International Conference at University of Malaya, Malaysia held on 16th August 2019
- Editor for the Special issue of Journal of Discrete Mathematical Sciences and Cryptography, volume 22, year 2019, pp. iii-iv
- Delivered a talk on “Domination in Excellent Graphs” in the State level seminar on Mathematical Analysis and Applications, Sivanthi Aditanar college, Pillayarpuram, Tamilnadu on 14th October 2019.
- Delivered an invited talk on “Gamma Graphs and their Properties” in the International Conference on Computational and Applicable Mathematics, The Quaide Milleth college for men, Chennai, India on 6th September 2019
- Delivered an invited talk on “Gamma Excellent Graphs” at Institute of Mathematical Sciences, University of Malaya, Malaysia on 19th August 2019
- Acted as a Chair person in the “International Conference on Computational and Applicable Mathematics” organized by The Quaide Milleth College for Men, Chennai, Tamilnadu, India on 6th September 2019
- Chaired as a Rapporteur in the “International Conference on Mathematical Engineering Applications for Sustainable Development” at University of Malaya, Kuala Lumpur, Malaysia, August 16-18, 2019

Dr. M. MULLAI (Assistant Professor, DDE):

- Acting as a Member of Board of Studies of Mathematics
- Acting as a Chairperson of Board of Studies of Mathematics for DDE
- Acting as a University Representative to oversee the conduct of Distance Education Examination
- Acted as a Warden for the PG Women's Hostel
- Acted as a member of New College Affiliation Inspection Committee
- Acting as a Department Research Committee Member
- Acting as a Coordinator of Programme Project Report
- Acting as an Internal Marks Coordinator for Karaikudi LSC
- Awarded “Best Article Award 2019” in recognition of the contribution made for Writing Best article for Neutrosophic Sets and Systems, USA
- Member of the Reviewer board in International Journal of Neutrosophic Science
- Member of the Reviewer board in Neutrosophic sets and systems
- Member of the Reviewer board in Expert system with applications

Students & Scholars Highlights



Students & Scholars:

- M. Pushpalatha, M.Sc. Student, Second Prize in Group Song, Alagappa University Talent Exhibit Show-2019, Cultural Club, Alagappa University, Karaikudi
- ↻ V. Vinitha, RUSA Project Fellow
- ↻ S. Sabeena begam, RUSA – Phase 2.0 Research Fellowship
- ↻ D. Preethi, RUSA – Phase 2.0/Ph.D. Fellowship/2019
- ↻ J. Dianavinnarasi, Alu/RUSA/Ph.D. Fellowship – II/2019
- ↻ M. Iswarya, Alu/RUSA/Ph.D. Fellowship – II/2019
- ↻ G. Madhan Kumar, Alu/RUSA/Ph.D. Fellowship – II/2019
- ↻ R. Surya, Alu/RUSA/Ph.D. Fellowship – II/2019
- ↻ S. Rajareega, Alu/RUSA/Ph.D. Fellowship – II/2019
- ↻ G. Siva, CSIR-JRF
- ↻ Neeraj Manhas, RUSA 2.0-Post Doctoral Fellowship

PG Student Strength in 2019-20

