EUREKA
MATHEMATICAL NEWSLETTER

NAZARETH
COLLEGE OF ARTS & SCIENCE
AFFILIATED TO THE UNIVERSITY OF MADRAS
RE-ACCREDITED WITH B GRADE BY NAAC

AUGUST 2019 BIANNUAL

ABOUT THE DEPARTMENT

The Department was established in the year 2007 with 4 students and 4 faculties. The strength has now increased to 110 students and 8 qualified faculties. Nearly 90 students have been graduated with a B.Sc., Mathematics during the past 10 years. The department offers quality education to the students and trains them to excel in their future.

THE HOD'S MESSAGE

Ms. K. Alamelu
The HOD
Department of Mathematics

It gives me immense pleasure to congratulate the students and the faculty members of our department for their publication of articles in Newsletter. This newsletter will stimulate the faculty members and the students in presenting their new innovative with the world and will help in their entire development in carrier. We also encourage students to organize various events such as Rhyma 2019, Eureka 2019 (Inter-collegiate Programme), participate in events organized by other colleges and also get involved in activities of social relevance. As a team we, are optimistic that the excellent work of the department will continue in the coming years. Happy reading!!

EDITOR'S NOTE:

We are excited to launch our maiden edition of the newsletter EUREKA 2019. This brings out the writing skills of our students and their achievements in various areas of education like academics, sports and culturals. The variety of events conducted by the department is also mentioned in this issue. We extend our sincere gratitude to all the members of the faculty and the students who helped us in launching this newsletter.

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Mr. K. Moorthy, III B.Sc., Maths

SECRETARY'S MESSAGE

I am pleased to greet you all through this Newsletter!

Mr.A.N Henry Maris
Secretary,NCAS

The maiden attempt of the Department of Mathematics in expanding its intellectual and scholastic prospects of channeling young minds' spirit of inquiry and interest towards mathematics has sweetened my experience of patronizing novel enterprises. I believe fervently that this issue would be instrumental in restructuring the future of learners. I offer my sincere thanks and appreciation to the members of the faculty who toiled in every step of making this newsletter possible.

PRINCIPAL'S MESSAGE

Dr. Mary Angeline
MSW., PGDHRM., Ph.D.
Principal, NCAS

Mathematics makes a man systematic and the world cannot move an inch without it. Mathematical approaches offer rationality to thoughts and lead us to the ladder of success. 2018 has been a year of learning and growth for the students and the department. And I hope many new opportunities come across their growth. I hope this maiden attempt of EUREKA brings happiness and sense of fulfillment to all who read. I congratulate the department in releasing the newsletter EUREKA 2019.

VICE PRINCIPAL'S MESSAGE

Ms. E. Mano Ranjitham
M.Sc (CS)., MCA .,M.Sc (Psy).,M.Phil.
Vice Principal, NCAS

"May God's unfailing love and peace bless you today and every day." I am extremely delightful in writing this wish message to the department of Mathematics for the release of the Newsletter Eureka 2019. I am happy for the staff and students who used various mediums of expression to present their ideas. As long as our ideas are expressed and thoughts are kindled we can be sure of learning because everything begins with an idea. Education is changing rapidly and new initiatives and best practices are evolving every day. I also wish and congratulate the students for their cooperation in bringing Eureka 2019. God bless you.

SIGMA

Sigma is the eighteenth letter of Greek alphabet and it is equivalent to our letter "S''. The sigma was first used by Leonhard Euler (1707–1783). Sigma is a measurement of variability. The sigma has two cases they are upper case and lower case. The upper case sigma is denoted by $\sum$ and the lower case sigma is denoted by σ.

In Mathematics, the uppercase sigma is stands for summation i.e., sum up. The lower case sigma stands for standard deviation in measure of dispersion or variation. The lower case sigma has six sigma's they are σ,2σ,3σ,4σ,5σ and 6σ. Six sigma is better than the other sigma. Three sigma has a higher tolerance for defects in comparison to six sigma. The three sigma expects an error rate 66.8k errors per million while six sigma expects maximum of 3.4 errors per million.

Bill Smith and Bob Galvin, both of Motorola developed the quality improvement process in 1986. The idea of six sigma is to improve the quality and to measure how many 'defects' you have in a process. Six sigma is a set of techniques and tools for process improvement and its strategies to the output of a process by identifying and removing the cause of defects.

Six sigma aims to increase the profits of the company and it has three levels to learn sigma. The three levels are metric, methodology, philosophy. It is defined as the problem-solving tools. Six sigma is a successful deployment among all sigmas.

Mrs. D. Femila Jayaseeli
Assistant Professor

EFFICIENCY OF MATHEMATICAL MODEL

The changing various conditions in the environment can have a great impact on the occurrence and spread of infectious diseases. Vector-borne infectious diseases are human illness caused by parasites, viruses and bacteria that are transmitted from person to person by direct or indirect contact. However, with the emergence of the serious vector-borne diseases in 1980's, a new interest has emerged in epidemiology which is the study of patterns, causes, and effects of diseases in a defined population with the help of mathematical modelling. This motivated the mathematicians in the development of theory of non-linear differential equations.

Mathematical models are a powerful tool for investigating human infectious vector-borne diseases contributing to the understanding of the dynamics of disease and providing useful predictions about the potential transmission of a disease and the effectiveness of possible control measures, which can provide valuable information for public health policy makers. Differential equation models for interaction of diseases among the individuals are the

unique applications of Mathematics to Biology.
Introduction to epidemic modelling is usually made through one of the first epidemic models proposed by Kermack and Mc Kendrick in 1927, a model known as the Susceptible–Infected –Recovered (SIR) epidemic model to predict the outbreak of the diseases. SIR which is also known as Compartmental models are a technique used to simplify the mathematical modelling of infectious diseases. Here the population is divided into compartment with the assumption that every individual in the same compartment has the same characteristics and computes the number of people infected with a contagious illness in a closed population over time. To solve easily the 3 basic equations of SIR model with a certain formula solution, we use many numerical methods which are quite efficient and practically well suited for solving initial value problem for ordinary differential equations. This process of iteration helps the medical society in finding the solution for spread of diseases and requirements in facing the challenges caused by the disease. Thus, the compartmental model has been developed by the mathematicians in advances level according to their perspectives.

Mrs. K. Alamelu
Assistant Professor

PRESTIGIOUS AWARDS OF MATHEMATICS

There are several awards given to people who excel in various areas of Mathematics. Here are the four prestigious Mathematical excellence awards with one of them even being equivalent to the Nobel Prize.

Fields Medal

The Fields Medal is one of the most recognized prizes given for Outstanding Discoveries in Mathematics. The prize is given at the International Congress by International Mathematical Union which is only held every four years and it is the most prestigious medal in the field of mathematics. It includes a prize amount of C$ 15,000 = Rs.748,421.04

Abel Prize

This prestigious prize is actually presented by a king – the King of Norway – to a Mathematician who is outstanding in their field of study. It is named after Niels Henrik Abel, a popular Norwegian Mathematician when it was first created in 2001. Some even call this the Nobel Prize of Mathematics. It is awarded every year which includes a prize of 6 million NOK = Rs.47,543,992.55

Wolf Prize in Mathematics

The Wolf Foundation of Israel awards six different prizes each year and one of them is the Wolf Prize in Mathematics. This prize has been awarded since 1978 and it is also a very prestigious honor to receive one in the fields in which they are given. It includes a prize amount of C$ 100,000 = Rs.6,673,670.00.

Chern Medal

One of the newer prizes in Mathematics is the Chern Medal, which began recognizing lifetime achievements for Mathematicians in 2010. It is awarded every four years. It is given out at the International Congress of Mathematicians and it includes a prize amount of C$ 250,000 = Rs.16,684,175.00.

Dr. P. Anusha Devi
Assistant Professor

APPLICATIONS OF ALGEBRA IN REAL LIFE

We often see people using Algebra in most aspects of daily life. For example, the people in the market make use of Algebraic terms to calculate profit and loss acquired. Just because we do not see any "X" or "Y" does not mean that Algebra has failed to prove its reality. Still, the real life examples of Algebra are uncountable.
In the early stages of development, an infant makes use of Algebra to calculate routes. A 16-week baby is able to calculate the direction of an object approaching and is even able to determine the position where the object will land. This involves Algebra.
In whatever field you want to try forward, Algebra is needed. When a student goes from school to college, chances are that Algebra will find a way in whatever subject a student chooses. Most of the times, physical and chemical sciences employ the basics of algebraic equations. In the case of Computer Science, the algorithms are based on the Algebraic operations.
Algebra is very essential in business as in other fields. A business owner makes use of algebraic operations to calculate the profits or losses acquired. Also, the business owner needs to calculate the lowest price at which an item can be sold to still cover the expenses.

Miss I. Jenifer
III B.Sc. Mathematics

RARE NUMBERS IN MATHEMATICS

Numbers are the basis for Mathematics. Every human living in this world, work with numbers either directly or indirectly even without really thinking about them. Few to list are the numbers on the newspaper (prices, dates, amounts), numbers on the television or radio, sporting results, time, labels on food, money, addresses, bar codes and many more. Apart from these numbers we also come across many structured and defined numbers like natural numbers, whole numbers, integers, rational numbers, irrational numbers, real numbers, complex numbers, odd numbers, even numbers, prime numbers, and so on. Here is a list of few interesting numbers under discussion.

AMICABLE NUMBERS

Any pair of different numbers x and y are called amicable numbers if the following relation is satisfied.

Sum of the proper divisors of x = Sum of the proper divisors of y and

Sum of the proper divisors of y = Sum of the proper divisors of x

(A proper divisor of a number is a positive integer divisor other than the number itself.)

For example, the smallest pair of amicable numbers is 220, 284 (the proper divisors of 220 are 1, 2, 4, 5, 10, 11, 20, 22, 44, 55 and 110, whose sum is 284; and the proper divisors of 284 are 1, 2, 4, 71 and 142 whose sum is 220.

The first few amicable pairs are: (220, 284), (1184, 1210), (2620, 2924), (5020, 5564), (6232, 6368)

CIRCULAR PRIMES

Circular primes are numbers that always remain a prime number after repeatedly rearranging the first digit of the number to the end of the number. For example, 197, 971 and 719 are all prime numbers. Similarly, 1173, 1731, 7311 and 3117 are all prime numbers. Other numbers that satisfy the definition are 11, 13, 37, 79, 113, 199 and 337.

CYCLIC NUMBERS

A cyclic number is a number of "n" digits that when multiplied by 1, 2, 3,...n, results in the same digits but in a different order.

For example, the number 1,42,857 is a cyclic number since

1,42,857 x 2 = 2,85,714,

1,42,857 x 3 = 4,28,571,

1,42,857 x 4 = 5,71,428, and so on.

It is not known just how many cyclic numbers exist.

Ms. C.Devika

NCAS Alumni, (Batch 2011-2014)

MATHEMATICS ASSOCIATION ACTIVITIES 2018-2019

- BRIDGE COURSE
- SUDOKU
- SEMINAR
- MATHS ART COMPETITION
- EUREKA 2018
- PICTURES IN APPLICATIONS OF MATHEMATICS
- INTERNATIONAL WORKSHOP
- RHYMA 2019

STUDENT'S ACHIEVEMENT

• Ms.S.Geetha of III – B.Sc(M) has attended a One-Day Training Programme on 'Empowering Women In Progressive India : Pathway Towards Autonomy' organized by Saveetha School of Management on 25th Jan 2019.

• The students of the Department of Mathematics have won the First Prize in March- Past which was conducted for the Annual Sports Day on 11th March 2019.

BATCH: 2015 – 2018

UG – UNIVERISTY ENGLISH RANK HOLDER

MAHALAKSHMI KRISHNAMOORTHY   SWEETY SHIFRA   SUSHMITHA

UG – UNIVERISTY HINDI RANK HOLDER

MAHALAKSHMI KRISHNAMOORTHY

UG – UNIVERISTY TAMIL RANK HOLDER

SWEETY SHIFRA   SAKTHIKANI.G   AJITH KUMAR .E

SUSHMITHA.S

VIDHYA.K

FACULTY ACHIEVEMENTS DEPARTMENT LEVEL

FACULTY DEVELOPMENT PROGRAMME:

• The members of the Faculty attended an FDP on 'Qualitative Research Methods' held on 28th September, 2018 at NCAS.

• All the Staff members attended a State-Level Seminar on 'Decoding The NAAC New Framework' held on 6th October 2018 at NCAS.

• The faculty members participated in International Workshop on "Image Processing Using MATLAB (IWIPM 19)" on 29th & 30th January 2019.

B.INDIVIDUAL ACHIEVEMENTS:

Ms. K.ALAMELU

• Participated in the National Conference on "Applied Mathematics and Its Applications (NCAMA – 2019)" at Sacred Heart College, Vellore on 6th & 7th February 2019.

• Published paper in U.G Journal JEITR in February 2019 on "Introduction to Mean Labelling". ISSN NO: 2349 - 5162

• Participated in the short - term course on " Research Methodology for Ph.D Scholars" at University of Madras from 07.01.2019 to 12.01.2019.

• Published a Student's handbook on 'Calculus of Finite Differences & Numerical Analysis – I'.

Ms. E.F.BEULAH ANGELINE

• Presented paper in the International Conference on "Dom – Chromatic Number of Certain Graphs" at Loyola College, Chennai on 16th and 17th November 2018.

• Participated in the International workshop on "Graph Theory and Internet of Things in Engineering" at VIT, Chennai.

• Published a Student's handbook on 'Allied Mathematics – II'.

Ms. S. SUDHA

• Produced 100% result in the subject 'Quantitative Techniques for Business Decision' .

• Published a Student's handbook on 'Allied Mathematics – II'.

4.MS.D.FEMILA JAYASEELI

• Produced 100% result in the subject 'Calculus of Finite Differences & Numerical Analysis – I' class.

5.DR.S.SANTHAKUMAR

SEMINAR:

• Participated in the National Level Seminar on "Step-up in Quality Higher Education- Education 4.0" at Vidhya Sagar Women's College, Chengalpattu on 19th January 2019.

3.PLACEMENTS

S.NO	NAME OF THE STUDENT	NAME OF THE COMPANY
01	JANANI.B	Infosys
02	MUTHUKUMARI.V	Infosys
03	SOWMIYA.S	Infosys
04	BRINDAA DEVI.M	Infosys

UPCOMING EVENTS

S.NO	NAME OF THE EVENT	DATE
01	POT PURI	17.7.2019
02	EUREKA 2019	09.8.2019
03	STATE- LEVEL WORKSHOP	06.9.2019
04	GUEST LECTURER	30.1.2020
05	RHYMA 2020	13.2.2020

FUNNY BRAIN TEASERS

1. If you take 3 apples from 5 apples, how many apples do you have?
2. How many seconds are in a year?
3. There are six eggs in a basket. Six people takes one egg each. How can it be that one egg is left in the basket?
4. The rope ladder of a boat hangs over the side of the boat and just reaches the water. Its rungs are 8 inches apart. How many rungs will be under the water when the tide rises 4 feet?
5. Take away one letter and I become even. What number am I?
6. A few months have 31 days; a few months have 30 days. How many months have 28 days?
7. There is a head and there is a tail! But no body – what is it?
8. You have 5 apples in one hand and 5 apples in other hand. Now what do you have?
9. How will you share 10 oranges equally among 6 boys?
10. What is the difference between here and there?

ANSWERS

1. 3 apples 2. 12: January second, February second, March second,... 3. The last person took the basket with the last egg still inside 4. When the tide rises 4 feet, the boat and its ladder will also rise. So no

rungs will be under the water 5. Seven (take away 's' and it becomes 'even' 6. All months 7. A coin. 8. A big hand 9. Make orange juice and share them equally 10. The Letter T.

Miss K. Divya Sneha
III B.Sc Maths

GREAT PERSONALITIES IN MATHEMATICS

1."Prince of Mathematicians"- Johann Carl Friedrich Guass
2. "King of Mathematicians"- Leonhard Euler
3."Mathematician's Mathematician" -Arthur Cayley
4. "Father of Geometry"- Euclid
5. "Father of Mathematics"-Archimedes
6. "Father of Analytical Geometry"-Rene Descartes
7. "Father of Numbers"-Pythagoras of Samos
8. "Father of Modern Mathematics"- Pythagoras of Samos
9. "Mathematics is Queen of all Sciences"-Johann Carl Friedrich Guass
10."Seven Bridges of Koenigsberg Problem"- Leonhard Euler

Miss V. Dhatchayani
III B.Sc Maths

MATHS JOKES

A guy gets on a bus and starts threatening everybody: "I'll integrate you! I'll differentiate you!" So, everybody gets scared and runs away.
Only one person stays.
The guy comes up to him and says: "Aren't you scared, I'll integrate you, I'll differentiate you!" And the other guy says: "No, I am not scared, I am e^x."

Q: Why was the Calculus teacher bad at baseball?
A: He was better at fitting curves than hitting them.

Q: Why do you rarely find mathematicians spending time at the beach?
A: Because they have sine and cosine to get a tan and don't need the sun!

Q: What did one calculus book say to the other?
A: Don't bother me I've got my own problems!

Q: Why did the algebra students throw bottles of hand cream across the classroom?
A: They were investigating projectile lotion.

Q: How does a mathematician induce good behavior in her children?
A: "I've told you n times, I've told you n+1 time..."

Q: Why did all the apples in the fruit bowl know each other?
A: They were core-relations.

Q: Why was the matrix arrested?
A: Illegal entry.

Mr.Lokesh
II B.Sc Maths

QUOTES:

1. An equation means nothing to me unless it expresses a thought of god. – Mr. Srinivasan Ramanujam
2. Pure Mathematics is, in, its way, the poetry of logical ideas – Mr. Albert Einstein
3. The only way to learn Mathematics is to do mathematics – Mr. Paul Halmes
4. Life is good for only two things, discovering Mathematics and teaching Mathematics – Mr. Simeon Poisson
5. The highest form of Pure thought is in Mathematics – Mr. Plato
6. Mathematics is the alphabet with which God has written the universe – Mr. Galileo Galilei

MATHS PUZZLE :

The day before yesterday I was 25.
The next year I will be 28.
This is true only one day in a year.
What day is your Birthday ?
Answer:
My birthday is on December 31. I am telling this on January 1.

Day before yesterday (dec 30)	= I am 25
Present day (January 1)	= I am 26
this year December 31	= I will be 27.
Next year December 31	= I will be 28.

We have 3 litre bottle and 5 litre bottle. How can We measure 4 litres of water by using 3Lt and 5Lt bottles???
Answer:
Solution 1:
1. First fill 3Lt bottle completely and pour 3 litres into 5Lt bottle.
2. Again, fill 3Lt bottle completely. now pour 2 litres into 5Lt bottle until it becomes full.
3. Now empty 5Lt bottle.
4. Pour remaining 1 litre in 3Lt bottle into 5Lt bottle.
5. Now again fill 3Lt bottle completely and pour 3 litres into 5Lt bottle.
6. Now we have 4 litres in 5Lt bottle.

Solution 2:
1. First fill 5Lt bottle completely and pour 3 litres into 3Lt bottle.
2. Empty 3Lt bottle.
3. Pour remaining 2 litres in 5Lt bottle into 3Lt bottle.
4. Again, fill 5Lt bottle completely and pour 1 litre into 3 Lt bottle until it becomes full.
5. Now we have 4 litres in 5Lt bottle.

Miss Sowndharya Rachel
III B.Sc Maths