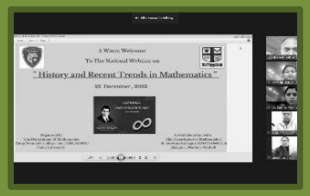
MATHEMATICAL SOCIETY

DEPARTMENT OF MATHEMATICS

ST. ALOYSIUS (AUTO) COLLEGE, JABALPUR

NEWS LETTER 2022 – 2023

PG STUDENT WORKSHOP



GUEST LECTURE

NATIONAL MATHEMATICS DAY

DEPARTMENTAL ACTIVITIES 2022 - 23

28th Sept.-28 Oct. 2022 Certificate Course- Vedic Mathematics

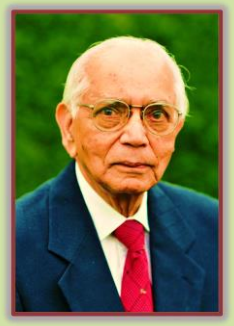
11th -12 th Nov. 2022 Alumni Meet- Batch 1991-1994

19th Nov. 2022 PG Student Workshop

22nd Dec. 2022 National Webinar-
Topic: 'History and Recent Trends of Mathematics'

12th Feb. 23 Guest Lecture- Expert: Dr. Kallol Das
Topic: Mathematical Modelling

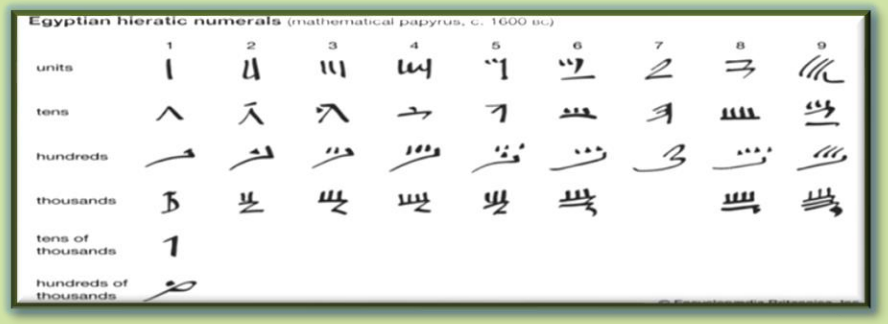
INTERNATIONAL PRIZE IN STATISTICS 2023



Calyampudi Radhakrishna Rao Indian American Statistician was awarded the 2023 International Prize in Statistics at the age of hundred and two just a few months before he expired in August. The award is equivalent of the Nobel Prize.

American Statistical association quoted that 'Rao's work has influenced not only Statistics but also Economics, Genetics, Anthropology, Geology, National Planning, Demography, Biometry, and Medicine'. The citation of the award reads thus: **'C.R. Rao a professor whose work of more than 75 years ago continues to exert a profound influence on science, has been awarded the 2023 International Prize in Statistics'**

HIEROGLYPHS



Hieroglyphs is a complex writing system consisting of pictorial symbols represented numerical values were used for calculations and communicating mathematical concepts by ancient Egyptians.

LAGRANGE'S FOUR-SQUARE THEOREM

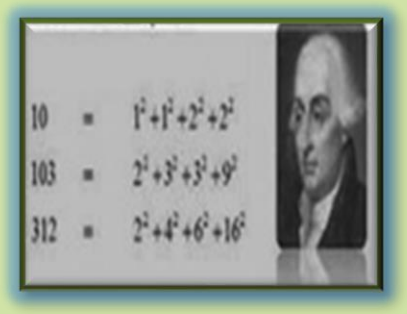
Diophantus a Greek mathematician published a result in his book **'Arithmetic'** which was proved 200 years later in 1770 AD by Joseph-Louis Lagrange an Italian Mathematician and Astronomer and is known as the Lagrange's Four-Square Theorem which states 'Every natural number can be represented as the sum of squares of four integers'

$\forall$ a, b, c, d $\in$ Z, n $\in$ N $a^2 + b^2 + c^2 + d^2 = n$

For example:

$3 = 1^2 + 1^2 + 1^2 + 0^2$

$10 = 2^2 + 2^2 + 1^2 + 1^2$

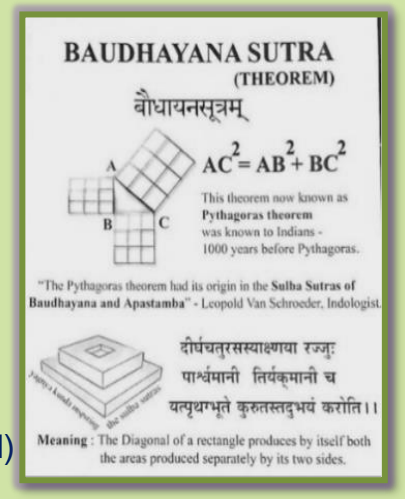


OBELUS

Obelus a mark in ancient Greek manuscripts depicts any passage as corrupt. It is said that modernm mathematical symbols '+' and '-' are derived from it.

BAUDHAYANA SULVASUTRA

Baudhyana theorem is written around 790 BC. Baudhayana Sulvasutra is today's well-known Phythagoras Theorem. The Baudhyana theorem is written in Vedic Sanskrit and reads as:



दीर्घचतुरस्रस्याक्ष्णया रज्जुः पार्श्वमानी तिर्यग्

मानी च यत् पृथग् भूते कुरूतस्तदुभयं करोति॥

अर्थ है यदि विकर्ण पर कोई रस्सी तानी जाय तो उस पर बने वर्ग का क्षेत्रफल ऊर्ध्व (Vertical) भुजा पर बने वर्ग तथा क्षैतिज (Horizontal) भुजा पर बने वर्ग के योग के बराबर होता है। अर्थात: किसी आयत का विकर्ण c हो उसका उर्धव भुजा a हो एवं क्षितिज भुजा b हो तो $c^2 = a^2 + b$

ALBERT CLOCK

It is digital clock meant to enhance numerical ability of kids. It is made for a mental workout. It has four programmable levels and continually tests addition, subtraction, multiplication and division abilities

For example:

For **2:27 pm** the clock displays

2 + 12 for 14 hours

9 x 1 x 3 for 27 min.

FERMAT'S LAST THEOREM/ FERMAT'S CONJECTURE

$\forall$ a, b, c, n ϵ N, n > 2 $a^n + b^n = c^n$ is true. For n =1, 2 there are infinite solutions.

It was first stated by Pierre de Fermat in 1637 in ancient Greek text Arithmetica

Fermat gave many interesting propositions without proofs which subsequently were proven by other mathematicians

Fermat's Last Theorem resisted proof and consequently his proposition was coined as a conjecture. 358 years later in 1995 the first successful proof of this conjecture, was given by Andrew Wiles. The citation of **'Abel's Prize 2016'** received by Wiles stated the result as a **'stunning advance'**


Arithmeticorum Liber II. 61

QVÆSTIO VIII.

OBSERVATIO DOMINI PETRI DE FERMAT.

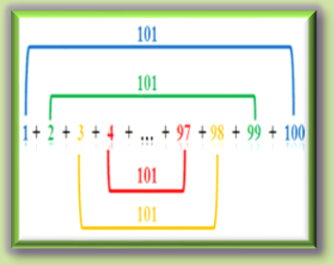
QVÆSTIO IX.

The proof led to Taniyama-Shimura conjecture/modularity theorem. It opened up entire new approaches to numerous other problems and mathematically powerful modularity lifting techniques.

It is one of the most notable theorems in the History of Mathematics and prior to its proof was in the Guinness Book of World Records as the most difficult mathematical problem, perhaps because the theorem had the largest number of unsuccessful proofs and in the process led to the development of algebraic number theory in the 19th and 20th century.

CARL FRIEDRICH GAUSS

In primary school Gauss found that the sum of the digits from 1 to 100 is 5050. He realized that there are fifty number pairs of equal sums The pairs being the first & last number, second & second last number, and so on…



(1 + 100) + (2 + 99) + (3 + 98) +…

Hence Sum of 101 x 50 = 5050

This is the Universal Formula of Arithmetic Progression with First Element 1 and Common Difference 1.

PERFECT NUMBERS

A perfect number is a positive integer that is equal to the sum of its positive divisors including one but not excluding itself. 6 is a perfect number but 8 is not because sum of 1 + 2 + 3 = 6 but 1 + 2 + 4 ≠ 8

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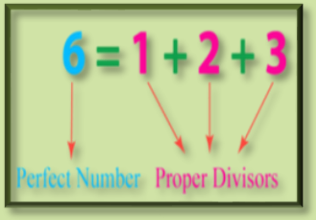

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