

**JANKI DEVI BAJAJ GOVERNMENT GIRLS COLLEGE, KOTA**  
**DEPARTMENT OF MATHEMATICS**

**“Poster exhibition in the celebration of National Mathematics Day”**

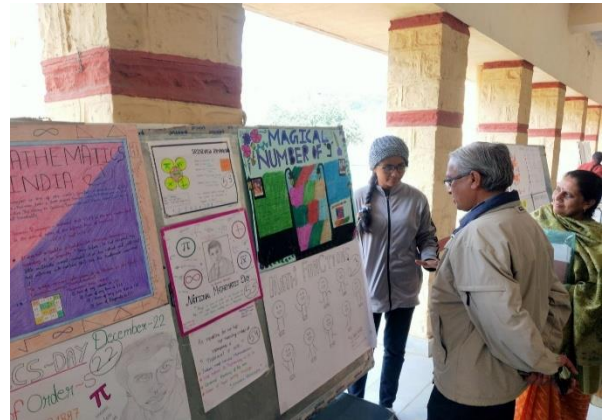
Ramanujan Club: UG and PG association of the department of Mathematics has organized a poster making competition on 22 December, for UG and PG students in the celebration of, National Mathematics Day, Birth anniversary of Srinivasana Ramanujan. The theme for this poster making competition was “Magical number in Mathematics”. We have 62 posters enrolment in solo and group participations.

| <b>Poster No.</b> | <b>Student Name</b>  | <b>Class</b>   |
|-------------------|--|----------------|
| 1                 | PARUL SHARMA   | B.SC. PART III |
| 2                 | LATA RANI, POOJA MEGHWAL, NEHA SUMAN                                     | B.SC. PART III |
| 3                 | PALAK NAZ, ANJUM ANSARI  | B.SC. PART III |
| 4                 | AKSHITA MEENA, KOMAL SEN, RITU MAHAWAR                                   | B.SC. PART III |
| 5                 | SABA SIDDIQUI  | B.SC. PART III |
| 6                 | DEEPIKA KEWAT, GUDDI MEENA, DEEPIKA SHARMA, ANTIMA KUMARI                | B.SC. PART III |
| 7                 | SURBHI SAINI, ANKITA RATHORE, JYOTI RATHORE, KAVITA MEHRA                | B.SC. PART III |
| 8                 | BRAHMVIDHYA MEGHWAL, ANISHA KUMARI MEGHWAL, VARSHA MEENA, KAVITA MEGHWAL | B.SC. PART III |
| 9                 | SANIYA ANJUM   | B.SC. PART II  |
| 10                | SAIMA  | B.SC. PART II  |
| 11                | SONU GOCHER, POOJA MEENA   |                |
| 12                | PRIYANKA CHAUDHARY   | B.SC.PART III  |
| 13                | KHUSHI SSHARMA, RASHI JAIN   | M.SC SEM I     |
| 14                | DIKSHA PAREEK  | M.SC SEM III   |
| 15                | VANDANA  | B.SC. PART I   |

|    |  |                |
|----|--|----------------|
| 16 | <b>AKSHIKA CHAMSTA</b>                                     | M.SC. SEM I    |
| 17 | <b>YASHASVI SHARMA, MUSKAN KOTWANI, KUMKUM JAIN</b>        | B.SC. PART III |
| 18 | <b>PAYAL NAGAR</b>   | B.SC. PART III |
| 19 | <b>BHAWANA KUMARI</b>                                      | B.SC. PART III |
| 20 | <b>MAHEEN PARVEEN, DIKSHA VERMA</b>                        | B.SC. PART III |
| 21 | <b>MONIKA ROY, BEENU KUSHWAH, TEENA GADOLIYA</b>           | B.SC. PART III |
| 22 | <b>DEEPANSHI PAL, GARGI TAK</b>                            | B.SC. PART III |
| 23 | <b>DIYA SOLANKI</b>  | B.SC. PART III |
| 24 | <b>POOJA GURJAR</b>  | B.SC. PART III |
| 25 | <b>ATISHA KUNWAL</b>                                       | B.SC. PART III |
| 26 | <b>JYOTI NAGAR, MONIKA LODHA, ISHA GURJAR</b>              | B.SC. PART III |
| 27 | <b>LAKSHITA HADA</b>                                       | B.SC. PART III |
| 28 | <b>SANJANA VERMA</b>                                       | B.SC. PART III |
| 29 | <b>LOVEPREET KAUR</b>                                      | B.SC. PART-I   |
| 30 | <b>SAHANA KHOKAR</b>                                       | B.SC. PART II  |
| 31 | <b>ANSHI JARROTIYA</b>                                     | B.SC. PART II  |
| 32 | <b>MURTI GURJAR</b>  | B.SC. PART III |
| 33 | <b>DAMINI JAIN, RIZA KHAN, ANJALI SOLANKI</b>              | B.SC. PART III |
| 34 | <b>KHUSHI KANWAR, PRIYANK RATHORE, RISHITA MEENA</b>       | B.SC. PART III |
| 35 | <b>URVASHI SARIYA, DIYA CHANDOLIYA</b>                     | B.SC. PART III |
| 36 | <b>PITRANKSHI POKHARNA</b>                                 | B.SC. PART III |
| 37 | <b>RUPLAI AGARWAL</b>                                      | B.SC. PART III |
| 38 | <b>RITU NAGAR</b>  | M.SC. SEM III  |
| 39 | <b>POONAM PORWAL, NIKITA JAISINGHANI, KRITIKA VAISHNAV</b> | B.SC. PART III |
| 40 | <b>NIKITA SUMAN</b>  | B.SC. PART III |
| 41 | <b>POOJA KUMARI</b>  | B.SC. PART III |

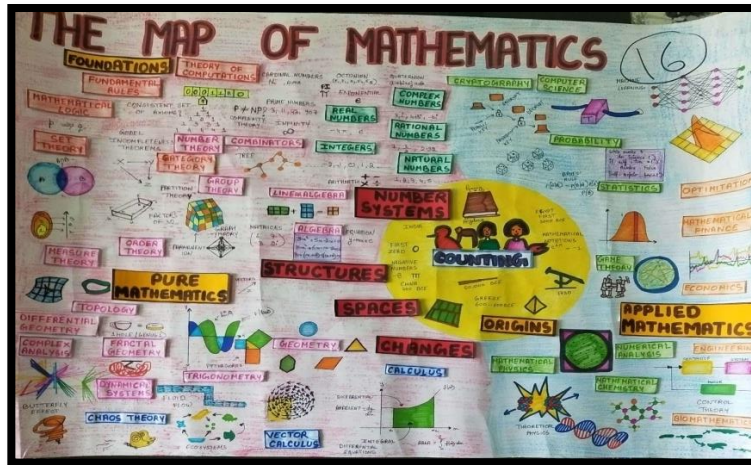
|    |  |                |
|----|--|----------------|
| 42 | <b>LAXMI KUMARI MEENA, SONIA KUMARI</b>              | B.SC. PART III |
| 43 | <b>SAKSHI KANWAR, VARSHA MEROTHA</b>                 | M.SC. SEM I    |
| 44 | <b>ANTIMA MAHAWAR</b>                                | B.SC. PART III |
| 45 | <b>SAKSHI PAHUJA</b>                                 | B.SC PART III  |
| 46 | <b>PRATIBHA</b>                                      | B.SC PART III  |
| 47 | <b>PRAGYA PANCHAL, MONIKA JANGID, SOLONI SANKHLA</b> | B.SC PART III  |
| 48 | <b>MANISHA JAIN</b>                                  | B.SC. PART I   |
| 49 | <b>SHIVANI JAIN, ANJU MEGHWAL</b>                    | B.SC PART III  |
| 50 | <b>JANHVI KUMARI, KUSUM CHAWLA, NISHA CHAUDHARY</b>  | B.SC PART III  |
| 51 | <b>APOORVA, FALAK</b>                                | B.SC PART III  |
| 52 | <b>ISHA BAIRWA</b>                                   | B.SC PART III  |
| 53 | <b>ALISHA</b>  | B.SC PART III  |
| 54 | <b>VANDANA MAHAWAR</b>                               | B.SC PART III  |
| 55 | <b>ANJALI NATH YOGI</b>                              | B.SC PART III  |
| 56 | <b>SHWETA KANWAR CHARAN</b>                          | B.SC PART III  |
| 57 | <b>JYOTI RATHORE, SURBHI SAINI</b>                   | B.SC PART-III  |
| 58 | <b>VISHAKHA SUMAN</b>                                | B.SC PART-III  |
| 59 | <b>HARSHITA RATHORE</b>                              | B.SC PART-III  |
| 60 | <b>ANTIMA MAHAWAR</b>                                | B.SC PART-III  |
| 61 | <b>JIYA DHAMEJA, JYOTI</b>                           | B.SC PART-II   |
| 62 | <b>RIYA VERMA</b>                                    | B.SC PART-III  |

After getting huge response of students, a massive exhibition was organized on 24 Jan 2023 and for the judgement of posters, Dr Manish Gaur, Associate Professor, Mathematics, GC, Kota, Dr Rekha Kalani Associate professor, Chemistry, Dr Poonam Jaiswal, Associate Professor, Botany joins us as the deciders. A poster is judged on the basis of content/theme, presentation, and overall presentation.





Some glimpses of posters presented by students



**ARYABHATTA**

**Zero** was invented by Aryabhata. He used zero as a place holder and in algorithms for finding square roots and cube roots in his treatise.

**SHUNTA** which means "NOTHING"

**PI**  $\pi$  3.14159

**ARYABHATTA** was born in 476 AD in Kerala. Lived in KUSUMPURA of NALANDA. Died in 550 AD. His work was divided into three sections: **GANITA** (arithmetic), **KALA-KRIYA** (time calculations), **GOLA** (optics).

**CHITIGHANA**. Aryabhata worked on various Ar and other verses such as  $n^2$  and  $n^3$ . One of the verses that he explored is called Chitighana, which literally means "the solid contents of a pile (or balls) of the shape of a pyramid or a triangular base. The verse deals with the sum of the first  $n$  natural numbers:  $1 + (1+2) + (1+2+3) + \dots + (1+2+\dots+n) = \frac{n(n+1)(n+2)}{6}$

**Hindu Numerals** discovered the existence of the number 0. Discovered the circumference and measurement of the earth.

**THE BAKSHALI Manuscript** India's oldest mathematical manuscript AND world's oldest written record of zero, an 1800 years old story. → ARYABHATTA Named the first ten decimal places.

|      |        |        |          |        |        |            |
|------|--------|--------|----------|--------|--------|------------|
| 1    | 10     | 100    | 1000     | 10000  | 1 Lakh | 10 million |
| Ekam | Dasham | Shatam | Sahasram | Tantam | lakh   | Prayuta    |

NATIONAL INTERNATIONAL DAY 22 DEC  
 HOW TO ROCK AT  
**MATHEMATICS**  
 + - × ÷

TRY DIFFERENT  
 MAKE A PLAN  
 Look for MATH  
 DISCOVER  
 QUESTION  
 FLEXIBLY  
 LISTEN & LEARN  
 HELP  
 ASK QUESTION  
 TRY YOUR BEST  
 TOOLS

THE Greatest Mathematician  
 "Srinivasa Ramanujan"  
**1729**  
 It is the smallest number that can be represented in two different ways as the SUM of two cubes:  
 $1729 = 1^3 + 12^3 = 9^3 + 10^3$

NAME - DIKSHA PAREEK  
 CLASS - M.Sc. Final

**RAMANUJAN-HARDY NUMBER**  
 Hardy arrived in a cab numbered 1729. He commented that the number was uninteresting. Instantly Ramanujan claimed that it was the smallest natural number which can be written as sum of cubes in 2 ways.  
 $1729 = 1^3 + 12^3 = 9^3 + 10^3$

**SHAKUNTALA DEVI'S SQUARE TRICK**  
 FOR TWO DIGIT NUMBER  
 $(64)^2 = 6^2 \cdot 4^2 = 2 \times 6 \times 4$   
 $(53)^2 = 5^2 \cdot 3^2 = 2 \times 5 \times 5$   
 $(34)^2 = 3^2 \cdot 4^2 = 3 \times 4 \times 2$

|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 36 | 16 | 25 | 09 | 81 | 16 |
| 40 | 36 | 28 | 09 | 88 | 36 |

**SHAKUNTALA DEVI'S PERFECT CUBE ROOT TRICK**  
 $3|994|192$   
 $8^3 = 512$ . So at one place 8 comes. It is less than  $9^3(729)$ .  
 One place of cube root is 8. At tens place we take 9.  
 For tens place reflect last three digits and see (94). ∴ Number becomes -98.

**RAMANUJAN'S MAGIC SQUARE**  

|    |    |    |
|----|----|----|
| 15 | 10 | 20 |
| 12 | 18 | 16 |
| 25 | 08 | 14 |


- Sum of numbers of any column = 139
- Sum of Diagonal elements = 139
- Sum of any  $(2 \times 2)$  square = 139


 What an interesting Square by Srinivasa Ramanujan.


**RAMANUJAN PARADOX**  
 Sum of infinite terms =  $-\frac{1}{12}$   
 Proof:  $A = 1 - 1 + 1 - 1 + \dots$       $A = 1 - (1 - 1 + 1 - \dots)$   
 $A = 1 - A$   
 $2A = 1$   
 $A = \frac{1}{2}$   
 $B = 1 - 2 + 3 - 4 + 5 - \dots$   
 $A - B = (1 - 1) + (-1 + 2) + (1 - 2) + (-1 + 2) + \dots$   
 $A - B = 1 - 2 + 3 - 4 + 5 - \dots \Rightarrow A - B = B$   
 $\Rightarrow B = \frac{A}{2} = \frac{1/2}{2} = \frac{1}{4}$   
 $S = 1 - 2 + 3 - 4 + 5 - \dots$   
 $B - S = (1 - 2 + 3 - 4 + 5 - \dots) - (1 - 2 + 3 - 4 + 5 - \dots)$   
 $B - S = -4(1 + 2 + 3 + 4 + \dots)$   
 $B - S = -4S \Rightarrow S = -B/4 \Rightarrow S = -\frac{1/4}{4} = -\frac{1}{16}$

NAME - KHUSHI SHARMA  
 RASHI JAIN  
 CLASS - M.Sc. MATHS  
 SEM I

# MAGICAL NUMBER OF "9"







**What is the number 9?**

→ The study of the number 9 goes back to 190 when Aryabhata discovered that 9 is the sum of the cube of the digit and the digit itself.

$9 = 3^2 + 3$

**Why 1729 is a Special Number in Mathematics?**


It is the smallest number expressible as the sum of two cubes in two different ways.

$1729 = 10^3 + 9^3 = 12^3 + 1^3$

**What is the number 9?**

→ The 9th number is the sum of the first 8 natural numbers.

$9 = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8$



## MATHS

# MAGICAL NUMBER IN MATHEMATIC

**Like Number: 1729 Number And How?**

→ 1729 is known as the "Taxicab Number".

It is the sum of two cubes in two different ways.

$1729 = 10^3 + 9^3 = 12^3 + 1^3$

**1729**

$(10^3 + 9^3)$

**The Smallest cube number: 1729?**

→ The study of the number 9 goes back to 190 when Aryabhata discovered that 9 is the sum of the cube of the digit and the digit itself.

$9 = 3^2 + 3$

| Year          | 1729                                   | 1730                                     |
|---------------|--|--|
| Continental   | One thousand seven hundred twenty nine | One thousand seven hundred thirty        |
| Ordinal       | Seventy nine                           | Eighty                                   |
| Factorization | $7 \times 13 \times 19$                | $2 \times 3 \times 5 \times 7 \times 13$ |
| Arithmetic    | 1729                                   | 1730                                     |
| Algebra       | $1729 = 10^3 + 9^3 = 12^3 + 1^3$       |  |
| Geometry      | 1729                                   | 1730                                     |
| Calculus      | 1729                                   | 1730                                     |
| Statistics    | 1729                                   | 1730                                     |

**Why 1729 called a Taxicab number?**

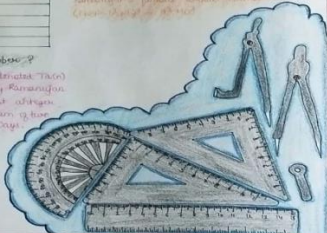
→ The 17th number is the sum of the first 17 natural numbers.

$1729 = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15 + 16 + 17$

**Can be 1729 be divided?**

→ The factors of 1729 are 7, 13, and 19.

$1729 = 7 \times 13 \times 19$



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NAME - VANJANA [G]  
CLASS - BSC I YEAR



22<sup>nd</sup> December  
Birth Anniversary of Indian Mathematician  
**Srinivasa Ramanujan**

# National Mathematics Day

(9)

### Magic of Numbers of Mathematics

**1729** - Hardy Ramanujan's Number  
 यह सबसे छोटी ऐसी संख्या है, जो दो संख्याओं के घन के योग के रूप में दो अलग-अलग तरीकों से व्यक्त की जा सकती है।  
 $1729 = 10^3 + 9^3 = 1^3 + 12^3$

**495** - Kaprekar's Constant  
 किसी भी तीन अंकों वाले संख्या के अंकों को उल्टा करके जोड़ने से प्राप्त संख्या को 999 से गुणा करने पर हमेशा 495 प्राप्त होता है।  
 $495 = 999 \times 0.5$

**1089**  
 Math is very important subject in our life. Everything is possible without math.

**1** **1729** - Hardy Ramanujan's Number  
 यह सबसे छोटी ऐसी संख्या है, जो दो संख्याओं के घन के योग के रूप में दो अलग-अलग तरीकों से व्यक्त की जा सकती है।  
 $1729 = 10^3 + 9^3 = 1^3 + 12^3$

**2** **495** - Kaprekar's Constant  
 किसी भी तीन अंकों वाले संख्या के अंकों को उल्टा करके जोड़ने से प्राप्त संख्या को 999 से गुणा करने पर हमेशा 495 प्राप्त होता है।  
 $495 = 999 \times 0.5$

**3** **1089**  
 Math is very important subject in our life. Everything is possible without math.

An equation for me has no meaning unless it expresses a thought of God. - Ramanujan

**22 DEC**  
National Mathematics Day

**PEN**

Name → Salma  
 Year → B. Sc. II<sup>nd</sup> Year  
 J.D.G. Govt. Girls College,  
 KOTA

**10**

**+**

**o** → आभिनंद [आविष्कारक]

$\sin^2 \theta + \cos^2 \theta = 1$

$\frac{d^2y}{dx^2} + p \frac{dy}{dx} + qy = R$

**x** **MATHEMATICS**  
 ~GIVE US~  
 HOPE  
 THAT EVERY  
 PROBLEM  
 ... HAS A ...  
 SOLUTION

**Square**

**M** → MEMORY  
**A** → ACCURACY  
**T** → TALENT  
**H** → HARDWORK  
**S** → SCIENCE OF LEARNING

**T**rigonometric Formulas

$\sin \alpha = \frac{opposite}{hypotenuse}$   
 $\cos \alpha = \frac{adjacent}{hypotenuse}$

**?**

## Media Coverage of Poster Exhibition

### जेडीबी में पोस्टर प्रदर्शनी में दिखाया उत्साह

संदेश न्यूज। कोटा. जेडीबी राजकीय कन्या महाविद्यालय में 'गणित में मैजिकल संख्याएं' विषय पर पोस्टर प्रदर्शनी का आयोजन किया गया। गणित विभाग प्रभारी डॉ. अनु बंशीवाल ने बताया कि प्राचार्य डॉ. संजय भार्गव ने कहा कि गणित के प्रति रुझान बढ़ता है। डॉ. मनीष गौड़ सह आचार्य, गणित, राजकीय महाविद्यालय, डॉ. रेखा कालानी सह आचार्य तथा डॉ. पूनम जायसवाल सह आचार्य जानकी जेडीबी महाविद्यालय ने पोस्टर्स का मूल्यांकन किया तथा वंदना कुमारी, सानिया अंजुम, लवप्रीत कौर द्वारा बनाए गए पोस्टर्स को प्रथम द्वितीय एवं तृतीय स्थान तथा श्वेता कंवर, जिया धनेजा और ज्योति कुमारी को सांत्वना पुरस्कार के लिए चयन किया गया।

### जेडीबी कॉलेज में पोस्टर प्रदर्शनी का आयोजन



कोटा. जानकी देवी बजाज राजकीय कन्या महाविद्यालय कोटा में 'गणित में मैजिकल संख्याएं' विषय पर पोस्टर प्रदर्शनी का आयोजन किया। प्राचार्य डॉ. संजय भार्गव ने बताया कि ऐसे आयोजन से गणित के प्रति रुझान बढ़ता है। सभी संकाय सदस्यों ने छात्रों की ओर से बनाए गए पोस्टर्स की सराहना की। यह प्रदर्शनी गणित विभाग की प्रभारी डॉ. अनु बंशीवाल ने लगवाई। प्रतियोगिता में सह आचार्य डॉ. मनीष

गौड़, डॉ. रेखा कालानी, डॉ. पूनम जायसवाल ने पोस्टर्स का मूल्यांकन किया। इसमें वंदना कुमारी, सानिया अंजुम, लवप्रीत कौर को प्रथम, द्वितीय, तृतीय स्थान तथा श्वेता कंवर, जिया धनेजा और ज्योति कुमारी को सांत्वना पुरस्कार के लिए चयन किया। इनको गणतंत्र दिवस पर पुरस्कृत किया जाएगा। कार्यक्रम को सफल बनाने में गणित विभाग के गेस्ट फैकल्टी रोहित वर्मा का सहयोग रहा।

**Prize distribution ceremony held on 26 Jan 2023 to reward the students.**

In this poster presentation Ms Vandana Kumari, B.Sc. Part I hold the first place, Ms Saima khan, B.Sc. Part-II holds the second place and Ms. Lovepreet Kaur, B.Sc. Part-I hold the 3<sup>rd</sup> position, two posters are also getting the consolation prize for their presentation. the best 05 posters get prize on republic day, 26 Jan 2023 at Janki Devi Bajaj Government Girls College, Kota.

