RAMJAS INTERNATIONAL SCHOOL

SECTOR IV, R. K. PURAM, NEW DELHI - 110022

Circular No. : RIS/2025/11/005 **Date : 10 November 2025**

Inter-House Participation in the Ramjas Aryabhatta Ganit Challenge (RAGC) 2025 to Celebrate Ramanujan Day

Dear House Wardens,

The school is pleased to announce that the **Ramjas Aryabhatta Ganit Challenge (RAGC) 2025** will be conducted as an inter-house competition for both the Junior (VIII-X) and Senior (XI-XII) divisions. This event is a central part of our efforts to commemorate **National Mathematics Day (Ramanujan Day)** and foster analytical thinking.

Your active involvement is essential in assembling the most competent and balanced teams to represent your House.

I. Competition Overview and Rules

Rule	**Detail**
Mandatory Participation	Every House must nominate a team in both divisions: Classes 8 to 10 and 11-12.
Team Size	Each team will consist of exactly 10 students.
House Score Calculation	The final House Score will be the sum of the individual scores of all participating team members.

II. Examination Pattern and Marking Scheme

*Please note that while the **duration** and **marking** differ between the two divisions, the **question pattern** remains the same across both, and the test will be conducted **in computer-based mode**.*

Classes VIII to X:

- Format: Multiple Choice Questions (MCQs).
- Duration: 1 hour (60 minutes).
- Total Questions: 35 Questions.
- Total Marks: 40 Marks.

The challenge paper is divided into three sections with weighted marking, and negative marking will be applied for wrong answers.

Section	Description	No. of Questions	Marks Per Question	Negative Mark (1/4th)	Total Marks
Section A	**Conceptual Clarity** (Mathematical Fundamentals)	20	+1	-0.25	20
Section B	**Logical Reasoning** (Aptitude)	10	+1	-0.25	10
Section C	**Creative & Abstract Thinking** (HOTS)	5	+2	-0.50	10
TOTAL		**35**			**40**

Syllabus and Areas of Assessment

The challenge assesses students across core mathematical content and competencies, integrating topics primarily from the NCERT syllabus.

Content Area	Key Topics / Focus
Number Systems	Rational/Irrational Numbers, Exponents, Prime Factorisation (HCF/LCM).
Arithmetic & Ratio	Squares, Cubes, Roots, Direct & Inverse Proportion.
Algebra	Linear Equations (One/Two Variables), Algebraic Identities, Polynomials (Zeros, Factor Theorem).
Geometry	Triangles (Congruence & Similarity theorems), Quadrilaterals (Properties), Lines & Angles, Circles (Chords, Tangents).
Coordinate Geometry	Graphing Linear Equations, solving equations using graph.
Statistics & Probability	Measures of Central Tendency (Mean, Median, Mode and Range. Theoretical Probability (Simple events, dice, coins).
Logical Reasoning	Analogy, Blood relations, Series & Pattern, Seating arrangement and Puzzles.

<u>Classes 11 & 12:</u>

- **Format:** Multiple Choice Questions (MCQs).
- **Duration:** 1.5 hours (90 minutes).
- **Total Questions:** 35 Questions.
- **Total Marks:** 40 Marks.

The challenge paper is divided into three sections with weighted marking, and negative marking will be applied for wrong answers.

Section	**Name**	**No. of Questions**	**Marks Per Question**	**Negative Mark (1/4th)**	**Total Marks**
Section A	Conceptual Clarity (Fundamentals)	20	+1 Mark	-0.25 Marks	20
Section B	Logical Reasoning (Application)	10	+1 Mark	-0.25 Marks	10
Section C	Creative & Abstract Thinking (HOTS)	5	+2 Marks	-0.50 Marks	10
TOTAL		**35 Questions**			**40 Marks**

Syllabus and Areas of Assessment

The challenge assesses students across core mathematical content and competencies, integrating topics primarily from the NCERT syllabus.

Unit	Topic	Core Concepts / Focus
I. Sets and Functions	Sets	Sets, subsets, Union, Intersection, Difference, and Complement.
	Relations & Functions	Cartesian product. Domain, co-domain, range. Types of relations (equivalence, etc.). One to one and onto functions. Real-valued functions and their graphs.
II. Algebra	Complex Numbers	Need for complex numbers (-1) and their algebraic properties.
	Permutations & Combinations	Fundamental counting principle. Factorial n. Formulae for ${}^{n}P_{r}$ and ${}^{n}C_{r}$ and their simple applications.
	Binomial Theorem	Statement and proof for positive integral indices. Pascal's triangle and simple applications.
	Sequence & Series	Arithmetic Mean (A.M.). Geometric Progression (G.P.): general term, sum of n terms, infinite sum. Geometric Mean (G.M.).
III. Calculus	Limits and Derivatives	**Intuitive idea of limit**. Derivative as rate of change. Derivatives of **polynomial and trigonometric functions**. Basic rules (sum, product, quotient).
	Continuity & Differentiability	Continuity and differentiability. Chain Rule. Derivatives of inverse trigonometric, implicit, logarithmic, and exponential functions. Second order derivatives.

	Integrals	Integration by substitution, partial fractions, and by parts. Definite integrals and their properties.
	Differential Equations	Order and degree. Solution methods: separation of variables, homogeneous, and linear differential equations.
IV. Geometry	Straight Lines	Slope. Various forms of equations (point-slope, slope-intercept, etc.). Distance of a point from a line.
	Conic Sections	Standard equations and simple properties of circles, parabola, ellipse, and hyperbola.
	3D Geometry	Coordinates of a point. Distance between two points. Direction cosines and ratios. Equation of a line. Shortest distance between two skew lines. Angle between two lines.
Linear Programming	Linear Programming	Related terminology. Graphical method of solution for problems in two variables. Feasible region and optimal feasible solutions.
Logical Reasoning	Analogy, Blood relations, Series & Pattern, Seating arrangement and Puzzles.	Problem-solving that requires connecting two or more core math concepts.

Kindly finalize the team and submit the details of the participating students through the Google Sheet provided below **by 15th November 2025**.
https://docs.google.com/spreadsheets/d/1p_a93GkhjPvcNx_E8G1laKddryVeyu26aDftGRj34zM/edit?usp=sharing

With regards

Ms. Richa Sharma