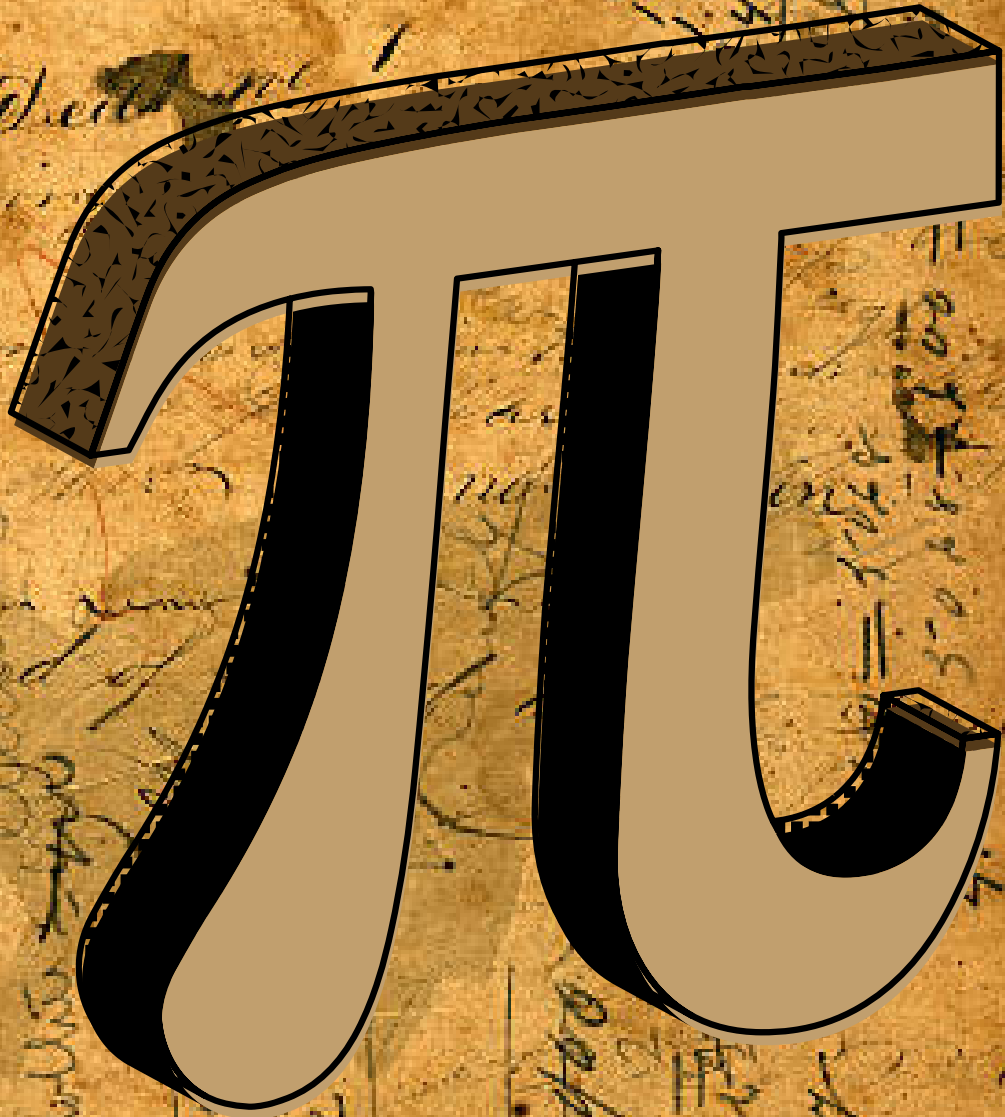


THE PI DIGEST



FIRST EDITION

Maths in Ancient Civilizations: How Egyptians Measured Pyramids

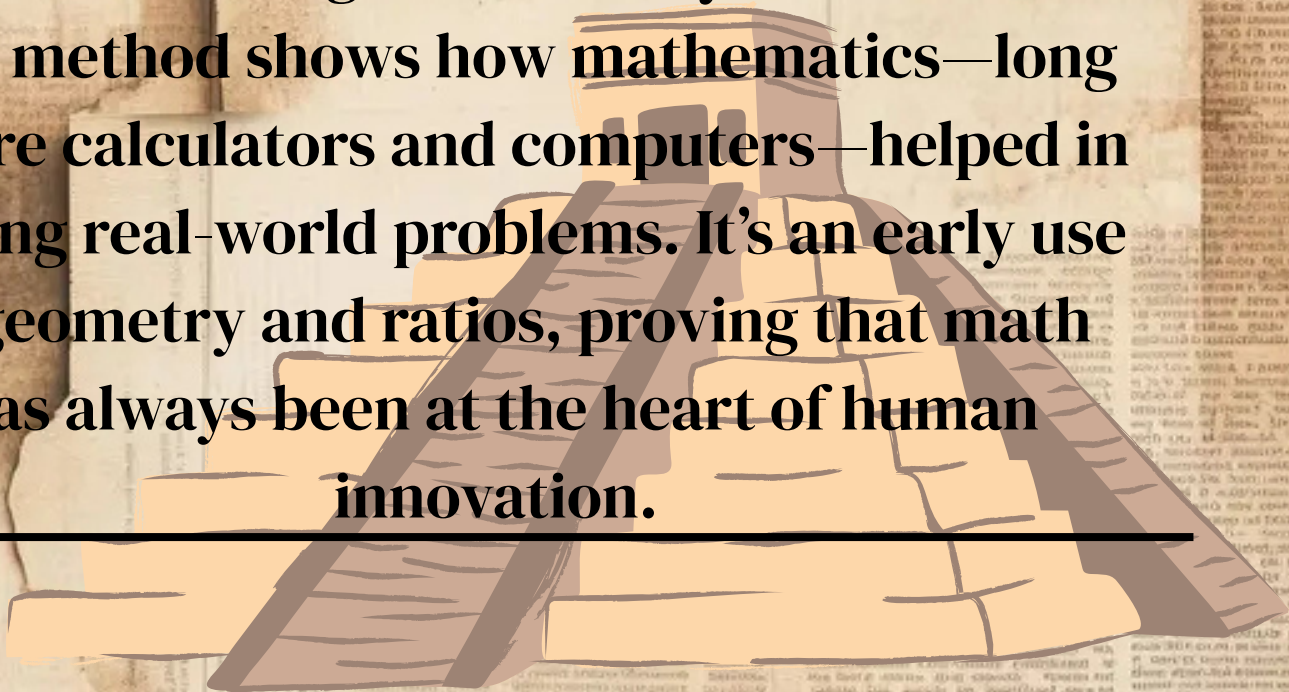


The ancient Egyptians were not only great builders but also clever mathematicians.

One fascinating example is how they measured the height of pyramids without climbing them.

They used a simple trick with shadows. By comparing the shadow of a pyramid with the shadow of a stick of known height, they could form two similar triangles. Using proportions, they calculated the pyramid's height accurately!

This method shows how mathematics—long before calculators and computers—helped in solving real-world problems. It's an early use of geometry and ratios, proving that math has always been at the heart of human innovation.



Sanskrit: The Language that Preserved Mathematics

- Long before modern textbooks, Sanskrit texts were already exploring advanced mathematical ideas. Ancient Indian mathematicians wrote their discoveries in Sanskrit verses, making them easy to remember and pass on.
- Zero & Place Value: The idea of shunya (zero) and the decimal system—the backbone of modern mathematics—were explained in 7th-century Sanskrit works like Brahmasphutasiddhanta by Brahmagupta.
- Geometry & Trigonometry: In the Aryabhatiya (5th century), Aryabhata described concepts like the value of π (pi) and introduced sine tables in Sanskrit centuries before they appeared in Europe.
- Algebra & Arithmetic: Texts like Lilavati by Bhaskara II used poetic Sanskrit problems to explain algebra, fractions, and equations in a way that students could enjoy.
- Combinatorics: Even the rules of permutations and combinations appeared in Sanskrit prosody (the study of poetic meters), showing how poetry and maths blended together.

This shows that Sanskrit wasn't only a language—it was also a living library of mathematical discoveries made hundreds of years before the modern world rediscovered them.

REAL LIFE APPLICATIONS

Maths in Sports

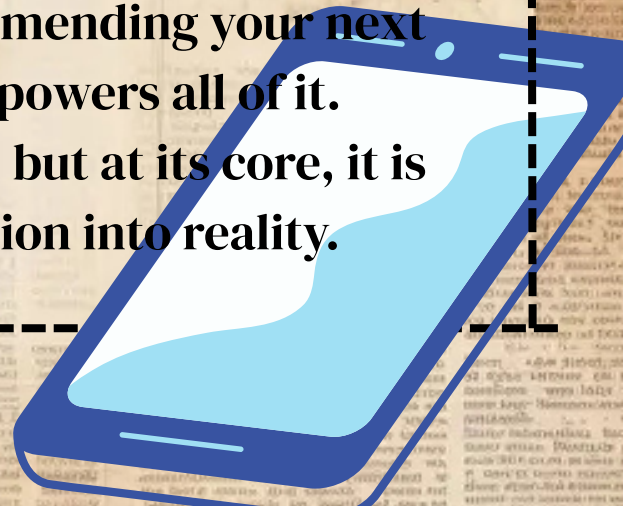
Smart vests, the latest innovation in sports technology, are actually laboratories of mathematics stitched into fabric. Each vest contains accelerometers and gyroscopes that record acceleration, rotation, and orientation. By applying calculus—integrating acceleration over time—these raw signals are converted into velocity, displacement, and even joint angles. Newton's second law, $F=m \cdot a$, transforms these numbers into the exact forces acting on an athlete's body during sprinting, tackling, or landing. To deal with errors and noise in sensor readings, advanced statistical models such as the Kalman filter continuously predict and correct the data stream. Heart rate and breathing patterns, captured by textile electrodes, are analyzed through Fourier transforms, which break complex rhythms into their frequency components to detect fatigue or irregularities. Over days and weeks, workloads are processed using moving averages and trend analysis, while machine-learning algorithms classify movements as efficient or risky and even forecast injury risk. Geometry measures symmetry between limbs, biomechanics calculates torque at joints, and chaos theory explains unpredictable ball impacts or sudden shifts in balance. Hidden beneath a simple jersey, thousands of equations are solved every second, turning sweat into data and mathematics into the silent coach that guides athletes toward peak performance.



REAL LIFE APPLICATIONS

Maths in technology

Did you know your phone is actually a tiny mathematician hiding in your pocket? Every second it performs millions of calculations without you ever noticing. When you start typing, it doesn't simply "guess" the next word—it uses probability and statistics to compare thousands of options in milliseconds. The smooth scrolling of your screen is powered by calculus and differential equations, deciding how pixels glide with such perfection. Your face unlock isn't really "seeing" you; instead, it converts your face into a giant matrix of numbers, then compares it with stored data using linear algebra. Even your camera filters are pure mathematics—geometry to detect edges, trigonometry to balance light, and matrices to blend colors into flawless images. Video games you play use vectors, physics equations, and 3D geometry to make virtual worlds feel real, while Google Maps uses graph theory to find the fastest path through an entire city. From predicting cricket scores to recommending your next YouTube video, maths silently powers all of it. Technology might look like magic, but at its core, it is mathematics turning imagination into reality.



REAL LIFE APPLICATIONS

Maths in technology

The Ramanujan Machine – When Computers Discover Math

What if a computer could think like a mathematician?

That's the idea behind the Ramanujan Machine, a project named after the legendary Indian mathematician Srinivasa Ramanujan, famous for his extraordinary formulas for π and other numbers.

Unlike ordinary calculators that just compute answers, the Ramanujan Machine does something more exciting – it conjectures. This means it looks for hidden patterns in numbers and suggests new formulas, many of them involving constants like π and the Golden Ratio. For example, it has generated completely new ways of expressing π as infinite fractions – results that humans had never written down before!

The amazing part is that the machine doesn't "prove" the formulas; it proposes them, just as Ramanujan himself often did. Later, mathematicians check and confirm if they are true. This combination of human insight and machine creativity is opening a new era in mathematics, where computers are not just solving problems, but also discovering new ones.

Who knows – the next beautiful identity for π in your math textbook might come, not from a human, but from the Ramanujan Machine!

The Pi Summit-Report

The Scindia School proudly hosted the second edition of The Pi Summit, a one-of-its-kind celebration of mathematics, innovation, and problem-solving. With enthusiastic participation from leading schools.

This year's Summit featured four exciting events: Pi Pi Ka Hisab, Pi-rates Quest, Escape the Pi-rates' Den, and Pi-totype. Each round was designed to push participants beyond conventional problem-solving—challenging them to calculate, strategize, decode, and innovate in high-pressure scenarios.

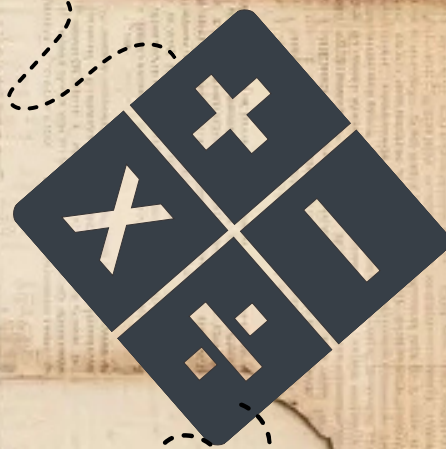
Adding to the academic spirit, a special workshop was conducted for all participating schools, as well as for students of classes VI to IX of The Scindia School. The workshop offered hands-on learning, interactive discussions, and creative approaches to exploring mathematics beyond textbooks.

The competitions were closely contested with 9 other schools with teams displaying brilliance and teamwork in equal measure. After a thrilling finale, Vasant Valley School was declared the overall winner of The Pi Summit 2025, their consistent performance setting a benchmark of excellence.

QUICK PUZZLE GAMES

SUDOKU

8				5			
	7		9				4
		9		7	8	3	2
3		1		9			5
		6				1	
	9			3		6	
2	8	3	6	5		7	
	1				2		8
			1				9



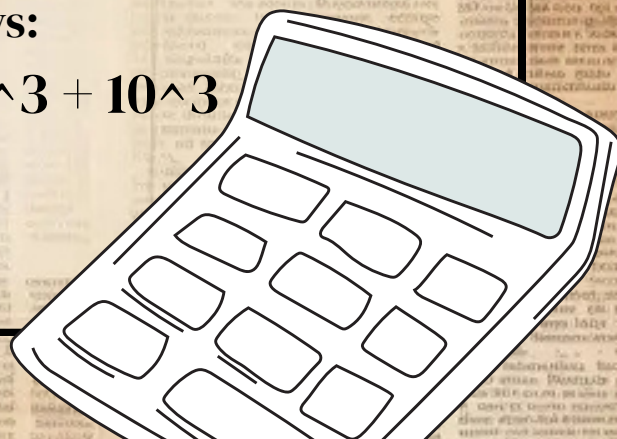
KEN KEN PUZZLE

3÷	200×			5-	1-
	4×	3-			
			9+	2÷	11+
8+					
9+		11+	4-	2-	2÷

MATHS FACTS

- **The number 1089 is magical.**
Pick any 3-digit number with descending digits (like 742). Reverse and subtract → reverse and add → you always land on 1089
- **There is a “champion” prime gap.**
Sometimes prime numbers are close (like 11 and 13), sometimes far apart. Mathematicians have discovered there’s no largest prime gap — they keep growing, but unpredictably.
- **The number 9 has a “digital magic.”**
Multiply any number by 9, then add the digits of the result you’ll always get 9 (example: $9 \times 23 = 207$, and $2 + 0 + 7 = 9$).
- **The number 1729 is famous.**
It’s called the “Hardy–Ramanujan number,” because it is the smallest number that can be written as the sum of two cubes in two different ways:

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





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