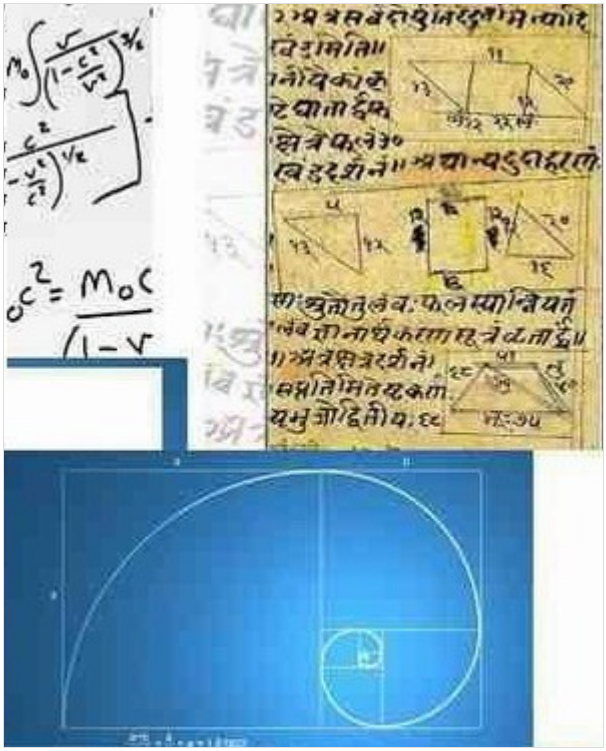
Origins of Mathematics

A secret history



Today there would be no software, no binary computing, accounting or the sciences if there was no zero and the Indian numericals all modern science and technology is based on.

This includes the branches of Math : arithmetic, algebra, geometry, trigonometry, conics, astronomy, calculus, etc.

Ancient Hindus deviced an amazing system of math codes using syllables and then creating sutras [aphorisms] & mantras [chants] with that that gave a student instant idea of the mathematical applications.

This sutra is endowed with spiritual content as well as mathematical significance: gopi bhagya madhuvrta, srngiso dadhi sandhiga, khla jivita khatva, gala hala rasandara It translates: O Lord anointed with the yogurt of the milkmaids' worship, O saviour of the fallen, O master of Shiva, please protect me.

This verse, guised as a petition to Krishna, denotes the value of pi/10 (the ratio of the circumference of a circle to its diameter divided by 10) to 32 decimal places by application of the consonant code given above:
pi/10 = 0.31415926535897932384626433832792.

The mantra praise to Godhead also represents significant, secular truths. This is the real essence of the Vedic world view: transcendental knowledge hides the intricacies of the phenomenal world; the absolute truth hides all relative truths and science forms the smaller circle within the larger circle of spirituality.

Vedas are an extremely codified language replete with sutras containing mathematical truths & scientific formulas. See one more cryptic sutra: "All from 9 and the last from 10," and its corollary: "Whatever the extent of its deficiency, lessen it still further to that very extent; and also set up the square (of that deficiency)."

Thanks to the lies of history, India was extremely well developed at a time when the peoples of the world were emerging from the stone age, hunting and killing each other .

"Like the crest of a peacock, like the gem on the head of a snake,
mathematics is at the head of all knowledge" ~ Vedanga Jyotisha, 1500 BC.

The Anuyoga Dwara sutra composed more than 6000 years ago lists sequences of successive squares or square roots of numbers: (a)2, (a2)2, [(a2)2]2 as well as power series: The first square root multiplied by the second square root, (is) the cube of the second square root; the second square root multiplied by the third square root (is) the cube of the third square root" Based on the Atharvaveda, Tirtha Maharaja points to many sutras, or aphorisms, which appear to apply to every branch of mathematics: arithmetic, algebra, geometry, trigonometry, conics, astronomy, calculus, etc. These techniques permit calculations with incredible ease and simplicity in a fraction of the time required by modern means.

Calculations normally requiring as many as one hundred steps can be done by the Vedic method in one single, simple step. For instance, the conversion of the fraction 1/29 to its equivalent recurring decimal notation normally involves 28 steps! The Hindu Vedic method it can be calculated in one simple step !!

Zero or Shunya & Decimal system is the single most vital development in course of mathematical sciences. Even though concept of Zero is attributed to one of the most ancient Indian math Aryabhatta, it prexisted in ancient texts and I have evidence of that while translating some very very ancient texts from Sanskrit to English on air flying vehicles. Lilavati and Brahmgupt had written treatise on math.

The earliest preserved specimens of numericals are found on stone columns posted by Ashoka about 260 BC, in Brahmi. Fully developed 9 symbols & zero were inscriptions have been found in various time periods. In Ramayana, a hundred times a thousand hundreds makes a koti, a hundred times a thousand kotis makes a snkha and +.

All ancient cultures had some means of counting but nothing was as perfect as the system from India that we use today. Mesopotamian cuneirform was simplistic, Roman numerals were cumbersome and here are some quotes of known pundits on the Indian system:

Pierre Simon Laplace French mathematician 1749-1827 CE:
A profound and important idea which appears so simple to us now that we ignore its true merit. But its very simplicity and the great ease which it lent to all computations put our arithmetic in the first rank of useful inventions". "It is India that gave us the ingenious method of expressing all numbers by the means of ten symbols, each symbol receiving a value of position, as well as an absolute value; a profound and important idea which appears so simple to us now that we ignore its true merit, but its very simplicity, the great ease which it has lent to all computations, puts our arithmetic in the first rank of useful inventions, and we shall appreciate the grandeur of this achievement when we remember that it escaped the genius of Archimedes and Apollonius, two of the greatest minds produced by antiquity".

Prof AL Basham:
"Medieval Indian mathematicians, such as Brahmagupta (7th century), Mahavira (ninth century), and Bhaskara (12th century) understood the import of positive and negative quantities, evolved sound systems of extracting square and cube roots, and could solve quadratic and certain types of indeterminate equations . . . Mahavira's most noteworthy contribution is his treatment of fractions for the first time and his rule for dividing one fraction by another, which did not appear in Europe until the 16th century.
The debt of the Western world to India in this respect [the field of mathematics] cannot be overestimated. Most of the great discoveries and inventions of which Europe is so proud would have been impossible without a developed system of mathematics, and this in turn would have been impossible if Europe had been shackled by the unwieldy system of Roman numerals. The unknown man who devised the new system was, from the world's point of view, after the Buddha, the most important son of India. His achievement, though easily taken for granted, was the work of an analytical mind of the first order, and he deserves much more honour than he has so far received. Unfortunately, Euro centrism has effectively concealed from the common man the fact that we owe much in the way of mathematics to ancient India. Reflection on this may cause modern man to consider more seriously the spiritual preoccupation of ancient India. The rishis (seers) were not men lacking in practical knowledge of the world, dwelling only in the realm of imagination. They were well developed in secular knowledge, yet only insofar as they felt it was necessary within a world view in which consciousness was held as primary".

Rigveda (RV II.18.4-6) knows large numbers, a nascent decimal system, infinity (aditi) and zero (kham). Rigveda gives names to simple fractions such as ardha (1/2), trapada (3/4) etc. Taittriya samhita mentions arithmetical series of odd ayugma 1.3.5 and even yugma 2,4,6, numbers. Terms like dasa (10), sata (100), sahsra (1000), ayuta (10,000) and others are mentioned in Yajurveda from 1 to 10>12times.

Vedic arithmetic and algebra benefit from the same polynomial where subtractions, additions etc. are carried out by a positional notation using the reference of 100, 1000, etc. This is to be contrasted with Greeks who had no names for numbers larger than 10 The first known English use of zero was in 1598.

Even though numerical usage was common 8000 years ago, the written rules governing the use of zero appeared for the first time in the Brahmasputha Siddhanta (7th century). This work considers not only zero, but negative numbers, and the algebraic rules for the elementary operations of arithmetic with such numbers. In some instances, his rules differ from the modern standard, specifically the definition of the value of zero divided by zero as zero.

The Arabic inheritance of science was largely via Greek who acquired them from India. In 773, at Al-Mansur's behest, translations were made of many ancient treatises including Greek, Roman, Indian, and others. The Italian mathematician Fibonacci c.1170–1250, who grew up in North Africa and is credited with introducing the decimal system to Europe, used the term zephyrum. This became zefiro in Italian, and was then contracted to zero in Venetian may be influenced the spelling when transcribing Arabic Cifr.

The ancient Greeks did not have a name for zero and did not use a placeholder. They seemed unsure about the status of zero as a number. They asked themselves, "How can nothing be something?" This led to philosophical and, by the medieval period, religious arguments about the nature and existence of zero and the vacuum. The paradoxes of Zeno of Elea depend in large part on the uncertain interpretation of zero.

In contrast to the poetry in Sanskrit, the Greek alphabet, which had proved so useful in so many ways, proved to be a great hindrance in the art of calculation because they used sexagesimal place notation. The Egyptians had no difficulty in representing large numbers, but the absence of any place value for their symbols so complicated their system that, for example, 23 symbols were needed to represent the number 986.

The Romans could not master calculations and left the chore to an abacus worked by a slave. Pre Islamic Persians used the 0 Zero as Cifr as that meant a VOID or emptiness. The word zero came into the English language via French Spanish zéro. Italian contraction of Venetian zevero form of 'Italian zefiro via safira or cifr. In pre-Islamic time the word cifr Arabic had the meaning 'empty' Sifr evolved to mean zero when it was used to translate Shoonnya Sanskrit from India.

By **Dr Naila Hussain**