Short Communication Paper
Maths Verse

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ARTICLE DETAILS	ABSTRACT
Corresponding Author: Baljit Kaur ***Key words:*** Mathsverse, Mathematics, Universe	Mathsverse brings into light, myriad combination of mathematics with universe. Generally, digits, numbers, calculations, formulas mathematical notation is considered as Maths. It is surprising to view that Mathematics is interdisciplinary, touching every facet of life. The article reviews mathematics as a throb of life. There exist two peas in a pod relationship among mathematics and all streams of life, providing perfection to our existence, evoking thoughts and interest.

Background

While we gaze at the sky at night, we identify infinite patterns with myriad sensational realities that make our imagination go beyond our existence. It often throws our imagination back to Paleolithic humans who started keeping track of phases of moon and the changing seasons. Since times immemorial mathematics has been the language that sustained us and led us to the world of intensive possibilities.

Early Mathematics — By 300 BCE, Sumerians had used cuneiform a system in which symbols were carved on clay tablet. The Egyptians and Babylonians used various objects to represent numbers e.g. rod represented the number 1, a coiled rope represented 100. In case of Inca civilization, the method was Quipu, - using knots and circles of cotton fibers to record numerical data and Chinese devised the method of abacus. India tracks back its mathematics to Vedic period. Aryabhata I composed Aryabhata around 510 CE. Aryabhata's calculation of the earth`s circumference was 99.8 percent accurate. Varahamihira (505-587CE) recorded 4✕4 magic square. Gupta (598-665CE) laid the foundation of two major fields of India – Patiganite and Bejaguita.
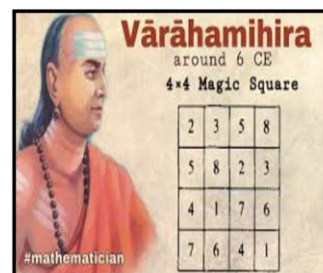

Fig. 1 Aryabhatta around   Fig. 2 Varahamihira 4x4 Magic

Srinivas Iyengar Ramanujan (1887-1920) transformed 20th century mathematics. Albert Einstein and Satyendra Nath Bose developed Einstein statistics.

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Mathematics with verses — Mathematics is engraved deep into our lives since child birth. The date, time of birth, movement of planetary positions is but obvious the result of mathematical notations. Repeated mathematical patterns help us to learn numbers easily.

> One. two buckle my shoes
> Three. four knock the door
> Five. six pick the sticks

Poetry is of course a play with mathematical numbers. As sonnets by Shakespeare has 14 lines with 10 syllables is each line. Japanese Haiku is composed of three lines seventeen syllables. The first line has five syllables and the second has seven and the third has five.

> An^1 old^2 sil^3ent^4 $pond^5$
> A^1 $frog^2$ $jumps^3$ in^4to^5 the^6 $pond^7$
> $Splash^1$ si^2lencs^3 a^4 $gain^5$

Ancient Sanskrit Shlokas were written as couplets (two rhyming lines) of four half lines (padas) that had 8 syllables each.

Mathematics makes our taste — Whatever be the geographical boundaries, the language of the world is only mathematical. Recalling the times when man first started to produce food, barter system prevailed. As for those who produce food could barter in exchange of tools and weapons. Mathematics can be a luile between two linguistic communities as they don`t understand each other's language but they still understand how and how much product is to be exchanged. A farmer even of older times very well understands the amount of water required for irrigation and how many days are appropriate for it.

Mathematics and idioms — There are many idioms that use mathematics, as to be on cloud nine means to be very happy, while to be at sixes and sevens is to be disorganized, a catch – 22 situation means when you don`t have a solution. They always tickle our mind and make us to run our horses.

Musical mathematics —Can one even deny the use of mathematics in musical notes. Be it Sa Re Ga Ma Pa Dha Ni there are notes. All together forms the basis of ten primary arrangements of notes or dhaat, namely, asavani, bharavi, belaival, kafi, kalyan, khawaaj, marwa, poorvi and todi. The other component of music is taal, which is rhythmic beat played in loops to make tune signatures.

Symbols	Sa	Re	Ga	Ma	Pa	Dha	Ni	Sa
Ratio with Sa	1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{15}{8}$	2

Fig 3 : Music in Mathematics

In western music too, there are seven notes in a scale which are further categorized into whole notes (four beats), half notes (two beats), quarter notes (one beat) and so on.

Dancing mathematics —Dance involves couple co-ordination of movements, expressions and rhythms. Different dance forms have different meanings. The Natyashastra, divides the body of dance into three parts. There are six angas (main parts such as the head, the hands, the chest and the legs), six pratyangas (secondary parts such as shoulders, stomach and the arms) and 12 upangas (minor parts such as eyes, eyebrows and nose). A captivating dance deserves the co-ordination of all these. A Bharatanatyam dance creates basic geometric forms to enact a story such as straight lines, a square a right angle, a semicircle, a circle. The famous Cheraw dance of mixes, requires rhythmic and synchronized dance steps with bamboos. Modern dances like hip hop, break dance deliver idea of mathematical synchronization, but this beauty of mathematics is behind the scenes.

 Mathematics and art—Geometrical patterns, lines and figures formulated the base of art since pre historic times. The temples, archaeological sites are witness to the knowledge of art forms by the man of stone age too. Thousands of years later artists from Tibet and central Asia used a scientific method of ratio and proportion called econometry to paint images of Lord Buddha and divine figures. Leonardo do Vinci's Vitruvian man, shows the ideal human body that has mathematical accurate proportions. The swiss – born – French architect, Le Corbusier designed the modular man, a stylized figure of a man who stands with his fat firely plaited as the ground, is a true balance of a human body and space.

Origami – a Japanese art of folding part include mathematics. Indian art forms Rangoli and kolams are drawn on the ground comprising of various patterns.

Mathematical Sprinters —Games, playgrounds seem to be great work of calculated dimensions that include geometrical shapes as square, rectangle. How ironical it is the boxing rings come in squares. Lines, angles and curves are important in performance in any sport. A badminton, tennis player judges the angle at which one throws a shuttle or ball. The moves of chess including king, queen all are nothing less than mathematical calculations. Modern lines ludos, snakes and ladders are the examples of mathematical plays. In all the games scores are tallied to the decimal place to witness the player of the game. Sport stars such as Sachin Tendulkar, Roger Federer, Christano Ronaldo are legends and are account of the records they have set up.

Mathematics and printing —How wonderful the fact is that book we read with illustrations is an example of mathematical calculations that run behind it. Every book has pages of in multiples of 8. Have your ever noticed the reason why? The books are made by taking very large sheets of paper and folding and then cutting into 8 pages each. Paper is weighed in GSM or grammage per square meter. The weight of the paper decides the final weight and thickness of the books. It is a fascinating fact the printing of books includes four colors. The primary colors are red, yellow and blue. Mixing of these basic colors formulates a large spectrum of colors. For example, yellow + magenta = red, yellow + cyan = green, cyan + magenta = blue . These 4 colors are mixed to form tiny dots printed near each other on a page. These dots are printed in the right size and frequency are perceived by us as a single image.

We eat mathematics —Can we deny this fact that we eat mathematically. Crops are measured, right balances are maintained, accuracy of weather, prediction of rain include vast experience of mathematics. New technologies like precision agriculture (PA) are being adopted throughout the world to increase crop production. High resolution data with satellite imagery and drones is used to get better yields. Mathematical measurements are used to add adequate amount of water in flour to get desired consistency of batter and dough to cook mouthwatering dishes. Fruits counted in dozen, oils & milk in liters are all displaying mathematics in eating items.

Mathematics and pandemic —When the whole world comes to an end, pandemic has overtaken our lives, there was just one way that did not stop – the counting. Every hour, a second, minutes and days are passed by counting on figures. This relationship of disease and mathematics is not new. In 18th century mathematics was used to understand the spread of an infectious disease. The swiss mathematician Daniel Bernoulli devised a model to predict the benefit of smallpox inoculation in 1760. In 1897, Nobel Laureate Ranald Ross created model to use mosquito control measures and reduce malaria transmission.
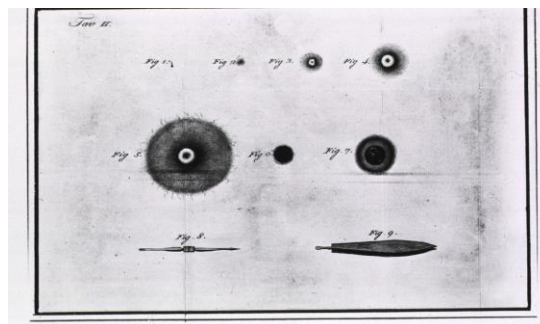

Fig 4 : Daniel Bernoulli Small pox inoculation model

Modern epidemic and rise and fall of infections cases so as to overcome its spread. Mathematics tells us where to focus our time, efforts and resources. Its only mathematics that decides our present and future in the direct times.

Conclusion:
Hence, we can never dodge the impact of mathematics upon our lives. Language is touched by idioms, there is mathematics in music, giving rhythmic touch. Every dance move speaks a language of numbers. The art forms are no less than numeric formations. The printing is no doubt has its foundation upon mathematical calculations and even occurrence of pandemic follows mathematical pattern. So, the article is an endeavour to spotlight once again mathematics, a language of universe.

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