Celebrating mathematics

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Mathematics is inevitable in our day-to-day life. All of us are utilizing the knowledge and skills of mathematics in one form or the other in each moment and every facet of our life with or without our realization. Mathematics is both a tool and an application. People who earn and spend money use mathematics to manage their money no matter whichever class of society they belong to. It is both science and language. It plays a significant role in perfecting all sciences and arts such as physics, chemistry, statistics, biology, geography, economics, education, anthropology, psychology, history, fine arts, music, etc. More recently, the spectrum of applications of mathematics in Biology and medical sciences is becoming immense – from the functioning of organs including the brain to the spreading and control of infectious diseases. Mathematics is also becoming a part of the language for understanding and modelling social phenomena in disciplines like sociology. Mathematics is the foundation of engineering and technology. Mathematical breakthroughs in technology contribute to the creation of higher and higher technology and we enjoy its benefits such as mobile phones, laptops, Mac books, iPods, supercomputers, digital cameras, computer networking and many other gadgets and machines that we use every day. In the field of architecture and designing, computer-aided design is the topmost application of mathematics.

If we look around with eyes and mind tuned in on mathematics, we will find that mathematics is everywhere. According to Galileo Galilei, the universe is a grand book that cannot be read until one first learns to comprehend the language and become familiar with the characters in which it is composed. It is written in the language of mathematics. All natural phenomena such as rising and setting of the sun, rotation and revolution of the planets, eclipses, advance of the perihelion of planets, the change of seasons, the motion of bodies, etc., follow mathematical principles. Many real-world problems such as estimating the population of India in the year 2050 (without waiting till then), finding volume of blood in our body (without bleeding), detecting a tumour in the brain (without invading), measuring the temperature at the centre of the sun (without taking a thermometer there), estimating the age of the universe, etc.., can be solved easily by formulating suitable mathematical models. Today, mathematical modelling is an essential part of all scientific activities and has become widespread due to the increasing computational power of digital computers.

In our day-to-day life, we face many problems and a variety of such problems can be solved easily by formulating mathematically. The mathematical formulation and solution of any problem require some mental exercises like analysis, reasoning, effective judgement, induction, comparison, generalization, verification, etc., which help in the development of one's mental faculties and intellectual traits.

In 2015, March 14 was celebrated as 'Super Pi Day' because in the month/day/year format, the date in 2015 was 3/14/15 and this date together with the time 9:26:53 represented the first 10 significant digits of pi. From 2020, March 14 is being celebrated as International Day of Mathematics. It expands the Pi Day celebration including the whole spectrum of mathematics.

It also develops the reasoning power that disciplines the mind. Reasoning in mathematics generates the latent power of thinking and judgement effectively in an individual. The qualities like self-confidence, punctuality, morality, honesty, truthfulness, dutifulness, etc., can be inculcated through proper learning and teaching mathematics. It also helps a nation to make tremendous progress if due weight is given to the subject because to serve a nation, citizens have to prepare themselves for various occupations in banking, planning, budgeting, networking, marketing, designing, surveying, defence, architecture, trade and commerce, business administration, agriculture, space exploration, computer applications, engineering and technology, etc., and for all these, one must have a very good and sound knowledge of mathematics and its applications. So, everyone must appreciate the effective methods of teaching and learning mathematics.

Mathematics is the universal language of truth through numbers touching our daily life and helping us to model and understand the physical world and to represent and communicate our ideas. It is of all beauty, symmetry, balance and is full of aesthetics. According to Bertrand Russell, "Mathematics, rightly viewed, posses not only truth but supreme beauty – a beauty cold and austere, like that of sculpture without appeal to any part of our weaker nature, without the gorgeous trapping of painting for music, yet sublimely pure, and capable of a stern perfection such as only the greatest art can show."

To celebrate the beauty and importance of mathematics and its essential role in everyone's life, the International Mathematical Union proclaimed March 14 as International Day of Mathematics and the proclamation was approved by the UNESCO Executive Council at its 205th session which was confirmed at its 40th general conference on November 26, 2019. The official celebration of March 14 as International Day of Mathematics was started in 2020.

March 14 has already been celebrated as Pi Day since 1988. It is named after the mathematical constant pi (p) which is the ratio of the circumference of a circle to its diameter. The mathematical concept of pi has been around for thousands of years and is essential in mathematics and all other branches of science and engineering. But its exact value can never be calculated. It is an irrational number starting with 3.1415926535-89793238.... Pi Day is being celebrated on March 14 because the first three significant digits of pi are 3, 1 and 4 and in the month/day format March 14 can be written as 3/14. In 2015, March 14 was celebrated as 'Super Pi Day' because in the month/day/year format, the date in 2015 was 3/14/15 and this date together with the time 9:26:53 represented the first 10 significant digits of pi. From 2020, March 14 is being celebrated as International Day of Mathematics. It expands the Pi Day celebration including the whole spectrum of mathematics. Every year, a new theme will be announced to flavour the celebration, spark creativity and bring light to the connection between mathematics and all sorts of fields, concepts and ideas. The theme for 2020 was 'Mathematics is Everywhere' and that for 2021 was 'Mathematics for a Better World'. The theme for this year is 'Mathematics Unites'.