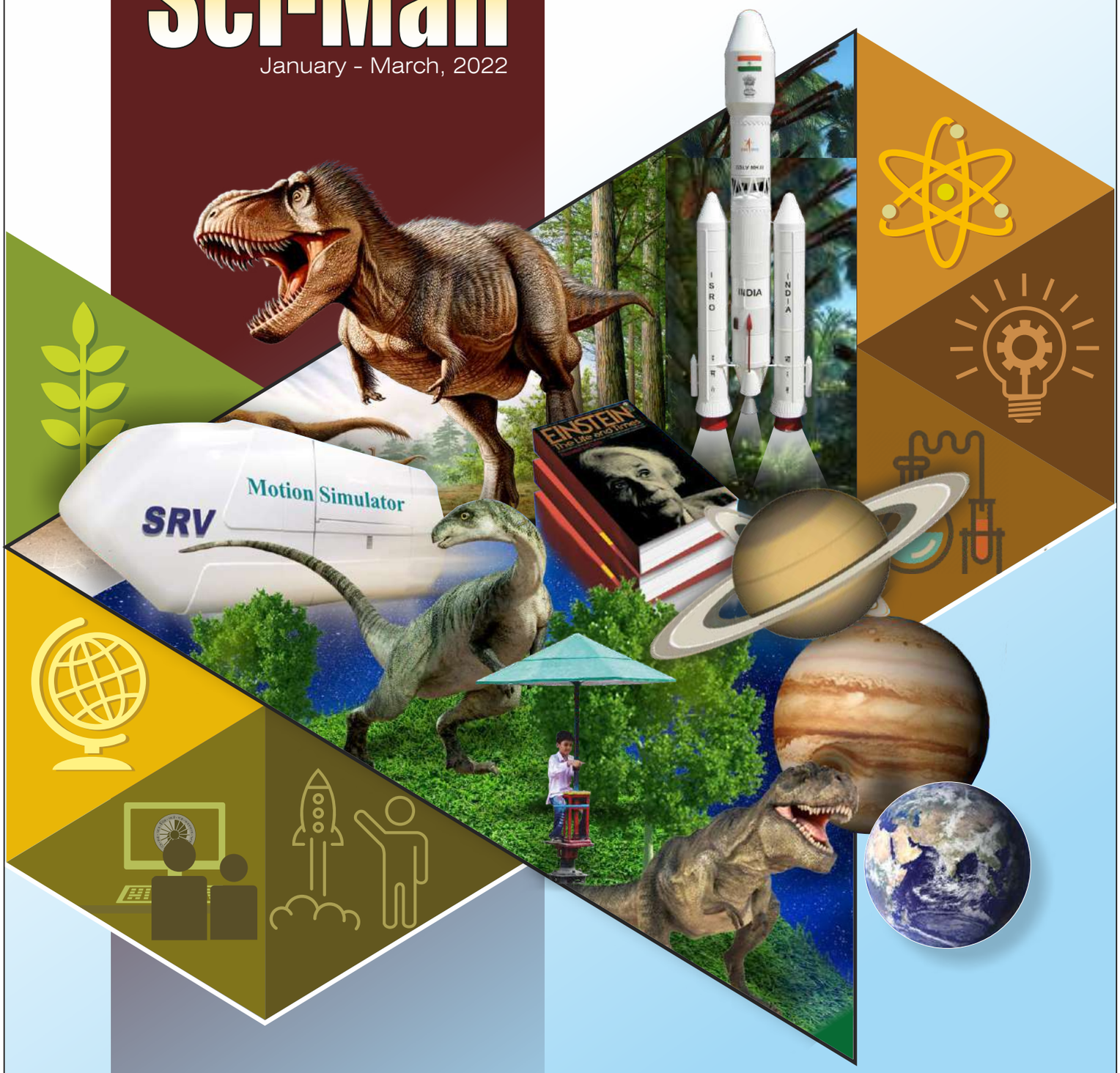
MEMBER NEWS

Sci-Mail

January - March, 2022

संस्कृति मंत्रालय
भारत सरकार
Ministry of Culture
Government of India



नेहरु विज्ञान केन्द्र

राष्ट्रीय विज्ञान संग्रहालय परिषद्
संस्कृति मंत्रालय भारत सरकार

NEHRU SCIENCE CENTRE

National Council of Science Museums
Ministry of Culture, Govt. of India

From NSC, Mumbai

Dear Friends,

Wish you all a very happy, healthy, prosperous and safe New Year. Let us welcome 2022 with open arms and heart!!

On the eve of this New Year, we are glad to share with our readers and visitors that we are now open for public. People are visiting Nehru Science Centre in encouraging numbers day by day. It is a good sign for us and science also that with restrictions in place and after a long confinement in house, people are choosing and preferring visiting the Science Centre. This faith in science post pandemic is a good sign and indicates the scientific temperament of people at large. It was proved beyond doubt when we saw participation in our online workshops and online sky observation programmes. We have surely converted the difficulties into opportunities and were able to enhance our reach much beyond state and international borderlines, though virtually.

As we can see gleam of expectations in the eyes of people while visiting the Science Centre, we have started opening up the facilities and organizing various activities for them to experience science and technology and enjoy the edutainment i.e. learning while playing. The new exhibition on Linguistic Diversity in India was inaugurated on November 23, 2021 by Prof Vasant Shinde, Chairperson, Executive Committee, NSC Mumbai. The exhibition is an attempt to take visitors on a tour to revisit the broad spectrum of linguistic diversity in India through the imprints of our glorious past and analysis of living present. The exhibition also brings an opportunity for visitors to walk among the whispers of ancient manuscripts, cheers for the influences of languages in everyday life – games, textiles, notes, newspapers, cinema, literature, music, and what not!

We also organised successfully the National Mathematics Day by combining online and onsite events for wider reach and awareness. Online lectures and storytelling sessions by leading experts like Prof Manish Jain from Creative Learning Centre of IIT, Gandhinagar, Dr Anil Yadav from Amity University, Gurugram and Founder of the Storytelling Society of Mumbai MS Usha Venkatraman mesmerized students and other participants by making mathematics learning and teaching interesting. The online quiz, onsite open house quiz and mathematics games were the added attractions for people of all age groups. It was organised with the catalytic support from Rajiv Gandhi Science & Technology Commission, Government of Maharashtra and National Council for Science & Technology Communication, DST, Govt of India. Thousands have been benefited by the events organised to commemorate the birth anniversary of the man who knew Infinity, the eminent mathematician Srinivas Ramanujan – the pride of India and the world also.

As informed earlier, the new gallery on Aerospace and an Airforce Pavilion are in waiting for opening very soon. Let us hope that pandemic comes to an end at the earliest and normalcy is restored for all of us to enjoy and experience the magic of science and technology. Stay in touch with us through the social media and plan your visit with all protocols in place to beat COVID-19 and its new variants too. The 3 mantras of wearing mask, washing hands properly & frequently and maintaining social distancing must be followed by one and all to beat COVID-19 and thereby helping our families and hence our nation too.

CONTENT

EXHIBIT
At The Science Centre

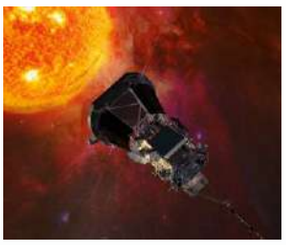
HEAD ON THE PLATTER

In our Science for Children Gallery, you have an opportunity to become a magician and offer your head on a fruit platter to your friend. In the exhibit Head on the Platter, you can see your body vanishing and only head is visible on a fruit platter which can be offered to any of the visitor or your friend.

The table, with the fruit plate, at the top has mirror surfaces on two sides facing you. Images of the floor and wall formed in the mirrors create an illusion of a hollow table and the your body appears to vanish though actually it is hidden behind the mirrors. This optical illusion really amuses everyone owing to fun component involved in it. A photograph of this effect is a good souvenir for you and your friend. Don't forget to visit it.

WHAT'S NEW?

Parker Solar Probe (PSP)



NASA Enters the Solar Atmosphere for the First Time

The Parker Solar Probe (PSP) is a NASA's space probe launched in 2018 to touch the Sun with the objective of making observations of the outer corona of the Sun. After spending a few years spiralling closer to our star the space-craft has finally arrived. A history was achieved on 14th December 2021, as the Probe for the first time, has touched the Sun. PSP has now flown through the Sun's upper atmosphere – the corona – and sampled particles and magnetic fields there. This feat will unveil the mysteries related to formation of Sun and stuff that it's made of. As it circles closer to the solar surface, Parker is making new discoveries that other spacecraft were too far away to see, including from within the solar wind – the flow of particles from the Sun that can influence us at Earth. In 2019, Parker discovered that magnetic zig-zag structures in the solar wind, called switchbacks, are plentiful close to the Sun. But how and where they form remained a mystery. Halving the distance to the Sun since then, PSP has now passed close enough to identify one place where they originate: the solar surface. The first passage through the corona – and the promise of more flybys to come – will continue to provide data on phenomena that are impossible to study from afar.

Closer Than Ever Before

Unlike Earth, the Sun doesn't have a solid surface. But it does have a superheated atmosphere, made of solar material bound to the Sun by gravity and magnetic forces. As rising heat and pressure push that material away from the Sun, it reaches a point where gravity and magnetic fields are too weak to contain it. That point, known as the Alfvén critical surface, marks the end of the solar atmosphere and beginning of the solar wind which races across the solar system, to Earth and beyond. The PSP confirmed the exact position of Alfvén critical surface. During the flyby, PSP passed into and out of the corona several times. This is proved that the Alfvén critical surface affects the solar atmosphere and solar wind.

The first passage through the corona, which lasted only a few hours, is one of many planned for the mission. Parker will continue to spiral closer to the Sun, eventually reaching as close as 3.83 million miles from the surface. Upcoming flybys, the next of which is happening in January 2022, will likely bring Parker Solar Probe through the corona again.

As Parker Solar Probe ventures closer to the Sun, it's crossing into uncharted regimes and making new discoveries. Now that researchers know what to look for, Parker's closer passes may reveal even more clues about switchbacks and other solar phenomena. The data to come will allow scientists a glimpse into a region that's critical for superheating the corona and pushing the solar wind to supersonic speeds. Such measurements from the corona will be critical for understanding and forecasting extreme space weather events that can disrupt telecommunications and damage satellites around Earth.

The mission will come to an end in 2025. Let's wait for more news from PSP.

follow us on : https://twitter.com/NSCmumbai

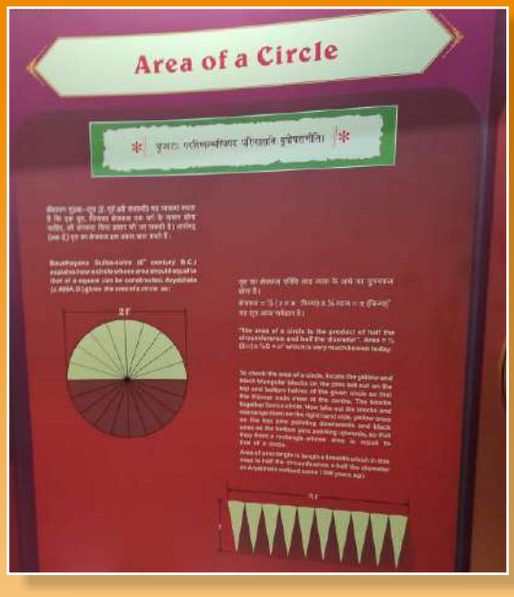
Riddle it Out!!

1. I can burn your mouth and sting your eye,
   but I am consumed everyday what am I?
2. I am a ball that can be rolled, but never bounced or thrown. What am I?
3. At night they come without being fetched. By day they are lost without being stolen. What are they?
4. What sleeps through the day and cries through the night. The more it cries, the more it creates light?
5. I'm as hard as rock, but melt immediately in hot water. What am I?

(Send your answers to nscm.edu@gmail.com)
Last date for Sending Answers for riddles is
31st January 2022
Best entry will be suitably awarded
(Please note that the contest is open to student members up to std. X only)

Our Science & Technology Heritage

Area of a circle



Today it is well known to us that the area of a circle is the product of half of its circumference and half the diameter i.e. radius. You will be amazed to notice that its mention dates back to 6th century BC in Baudhayana's Sulba-Sutra which explains how a circle whose area should equal to that of a rectangle can be constructed. It was noticed by Aryabhata some 1500 years ago.

Area of a rectangle = length X Width = 1/2 (2πr) X r = πr^2 = Area of a circle

This exhibit describes how the area of a circle can be found by making triangles in it. Observe in the figure above that the area of a circle is divided in to the yellow and black triangular blocks . In the adjacent figure the same triangular blocks have been used to form a rectangle whose sides are half the circumference and radius respectively. This clearly proves that the two figures have equal area. This was known to us in 6th century BC. We can surely feel proud on our science & technological heritage. You can see and interact with this concept based exhibit in our Technology Heritage gallery.

Indian Scientist

S.R. Srinivasa Varadhan

Srinivasa Varadhan — or Raghu to his friends was born January 2, 1940 in Chennai (erstwhile Madras), India. His father, Ranga Iyengar, was a science teacher who became the Principal of the Board High School in Ponneri, a small town about 30 km from Chennai.

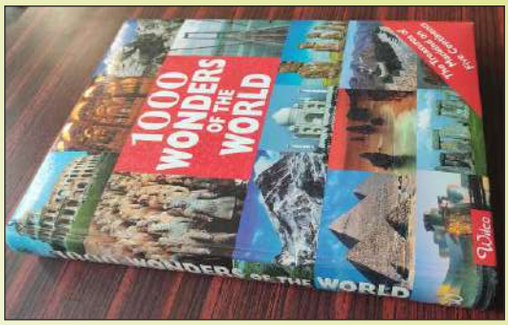
He received his B.Sc. honours degree in 1959 and his M.A. the following year, both from Madras University. In 1963 Varadhan received his Ph.D. from the Indian Statistical Institute, Calcutta. Srinivasa Varadhan began his academic career at the Courant Institute of Mathematical Sciences as a postdoctoral fellow (1963–66). Varadhan had stayed loyal to Courant, where he served as assistant professor (1966–68), associate professor (1968–72), and became a full professor in 1972. Srinivasa S. R. Varadhan is currently Professor of Mathematics and Frank J. Gould Professor of Science at the Courant Institute of Mathematical Sciences, New York University.

He was appointed Director of Courant (1980-84), and then came back to serve a second term as Director of Courant (1992-94). His awards and honours include the Birkhoff Prize (1994), the Margaret and Herman Sokol Award of the Faculty of Arts and Sciences, New York University (1995), and the Leroy Steele Prize (1996). In 2008, the Government of India awarded him the Padma Bhushan. He also had honorary degrees from Université Pierre et Marie Curie in Paris (2003) and Indian Statistical Institute in Kolkata, India (2004).

Srinivasa Varadhan was elected a member of the American Academy of Arts and Sciences (1988), the Third World Academy of Sciences (1988), and the National Academy of Sciences (1995). He was elected a Fellow of the Institute of Mathematical Statistics (1991), the Royal Society (1998), the Indian Academy of Sciences (2004), the Society for Industrial and Applied Mathematics (2009), and the American Mathematical Society (2012).

S.R. Srinivasa Varadhan was awarded the Abel Prize 2007 for his fundamental contributions to probability theory and in particular for creating a unified theory of large deviations.

Book Worth Reading In Library



1000 WONDERS OF THE WORLD:

This magnificent 'Wonders of the World' illustrated book brings to you over a thousand unique natural features and architectural masterpieces of historic interest from around the globe, including many UNESCO World Heritage sites. The wonders of the world are listed roughly in order of their geographical location from North to South. Extensive sites such as, landscapes or rivers, are shown either with just one dot representing their center or with two dots marking their beginning and end. The sites described and illustrated in this book may serve as an incentive to discover the world's beautiful and precious sites for yourself. The most extra ordinary wonders of the world have been gathered for this book. Vividly described and impressively illustrated colour photographs, generous-sized maps for each continent and an extensive index completes this Spectacular book.

PLUCK STRING - SPIN DISC

1) WEAVE STRING IN COLOUR DISC, TIE KNOTS ON ENDS.

2) PLUCK THE STRING WITH YOUR THUMB.

3) TRY SPINNING MANY COLOURED CARDS ON A STRETCHED THREAD.

OPENING SOON

HALL OF AEROSPACE

Tree Treasure at NSC

NEEM TREE

Botanical Name: AZADIRACHTA INDICA

Family: MELIACEAE

Azadirachta Indica" is commonly known as neem tree. It is noted for its drought resistance. Neem can grow in many different types of soil, but it thrives best on well drained deep and sandy soils.

In the world of Ayurveda, Neem is a popular medicinal herb that has been part of traditional remedies that date back almost 5000 years. The neem tree is a really good example of how nature holds both the problem and the cure. Its home to more than 130 different biologically active compounds. No wonder it's such an effective antiviral and antibacterial, along with being a powerful immuno-stimulant.

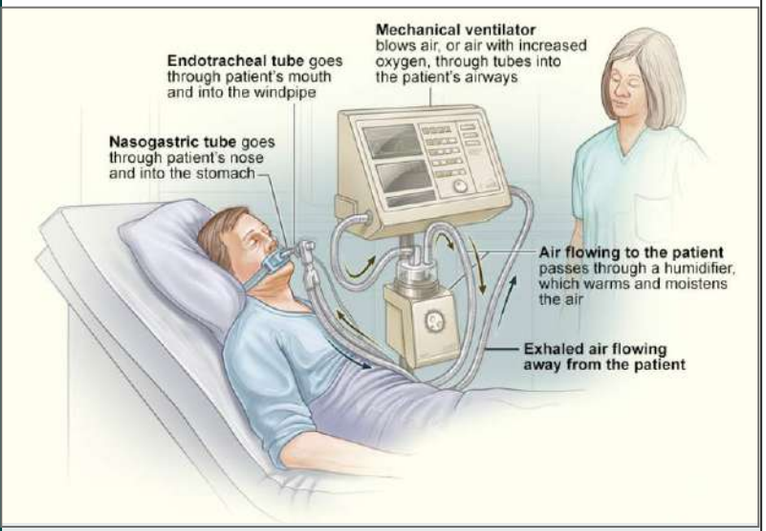
Ayurveda suggests Neem leaves are good for the eyes and useful in treating skin disease and headaches. Nearly all parts of neem tree are useful and many of its medicinal and cosmetic uses are based on its antibacterial and antifungal properties. It is also a component in some tooth pastes and mouth washes and young twigs are used directly as a crude tooth brushes in rural areas.

The Neem oil has been shown to avert termite attack as an ecofriendly and eco nominal agent. Oil extracted from the seeds (Neem cake) can be used directly as an insect and mite repellent, insecticide, fungicide, and is the source of many commercial pesticide products. Neem oil can kill soft bodied insects on contact and decreases mating and reproductive behaviors, reducing pest fecundity. Neem oil is used as a fungicide to control rust, black spot, mildew, scab, anthracnose and blight.

in

How Things Work

WHAT IS A VENTILATOR AND HOW DOES IT WORK?



The ventilator became household word during COVID-19 pandemic. A ventilator is a machine that supports breathing. It's also called a breathing machine or respirator. Ventilators help patient breathe easier, and breathe for people who have lost all ability to breathe on their own.

The machine works by bringing oxygen to the lungs and taking carbon dioxide out of the lungs. A ventilator blows air into the airway through a breathing tube. One end of the tube is inserted into patient's windpipe and the other end is attached to the ventilator. The breathing tube serves as an airway by letting air and oxygen from the ventilator flows into the lungs. This allows a patient, who has difficulty in breathing, to receive the proper amount of oxygen. It also helps the patient's body to heal, since it eliminates the extra energy of laboured breathing. There are different types of ventilator, including non-invasive and invasive, that provide varying degrees of support. Ventilators are most commonly found in a hospital's intensive care unit (ICU) which has ready connections for electrical power and pure, pressurized oxygen. They're typically rolled to the bedside along with a monitor capable of displaying heart and respiratory rates, blood pressure, and the extent of oxygen saturation in the blood stream. It consists of electronic circuits, computer-controlled valves, and plumbing that delivers the breath of life to patient. External knobs and switches allow care providers to regulate the number of breaths per minute, the pressure of the gas that fills the lungs, and other variables. The portable units employed by emergency responders are battery powered and carry their own oxygen supply.

Upcoming Programmes

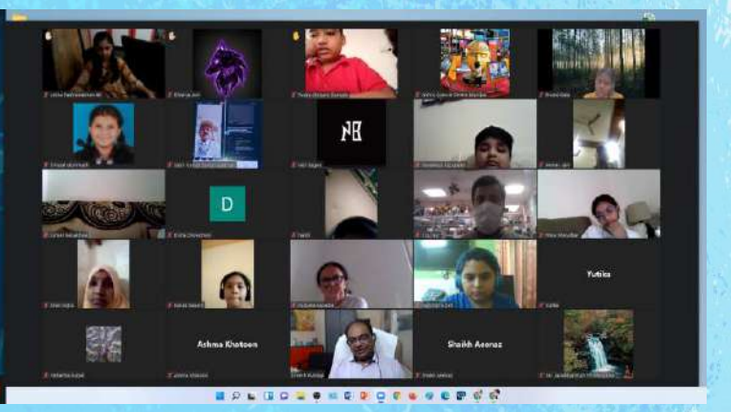
1. Innovation hub workshops (Jan 08, 2022 to March 26, 2022)
2. Ice cool Workshop on Jan 08, 2022
3. National Science Day February 21-28, 2022.
4. Innovation Festival (February 24 to 26, 2022)
5. Annual Science Quiz Contest
6. Lecture series & Quiz on nuclear power
7. International Women's day (March 08, 2022)
8. World water day (March 22, 2022)

For further details and updates

Please visit us at : https://nehrusciencecentre.gov.in/

National Mathematics Day 2021

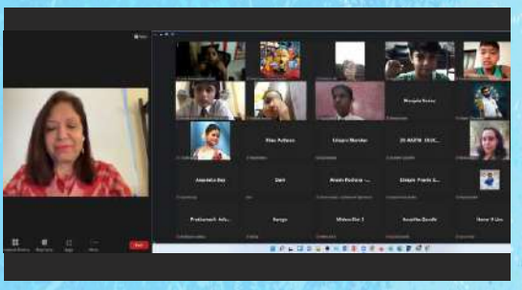
The National Mathematics Day is celebrated on 22nd December annually to mark the birth anniversary of legendary Indian mathematician, Srinivasan Ramanujan and his contributions to the field of mathematics.
NSC Mumbai, in order to commemorate the event, organized various programmes/activities during 21st to 24th December 2021 on both offline and online modes. Many mathematical games and puzzle solving contests were organized for students and general public. In total 3569 visitors visited the interactive exhibition and actively participated in various hands-on activities, solving puzzles and other mathematical tasks in the exhibition.



Online Popular Lectures:

- Come fall in Love with Math' , this Online Lecture was delivered by a well known YouTube sensation Prof. Manish Jain, Associate Teaching Professor, IIT, Gandhinagar on zoom platform on 21.12.2021. In all 1261 people registered and enjoyed the lecture

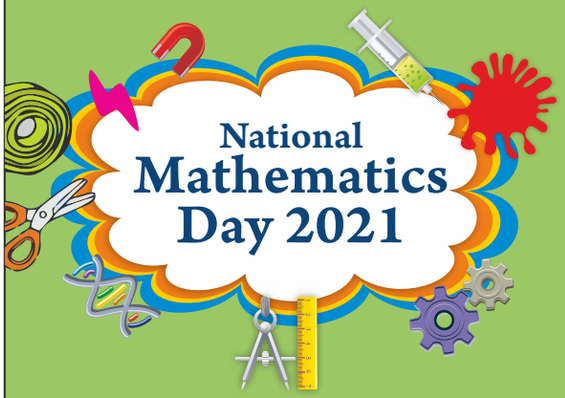
- Another online PSL was delivered by Dr. A K Yadav, Professor & Director, Amity School of Applied Sciences, Amity University Haryana, Gurugram, on the topic 'Fascinating World of Mathematics: Some Interesting Applications' on 22.12.2021. Altogether 579 people registered and got benefitted by the lecture.



- Online session on story telling on the topic "A very Improbable Story." was organized on 23.12.2021 at 5.30 PM on zoom platform. The session was conducted by Ms.Usha Venkatraman, founder and festival Director of Mumbai story teller's society. 620 people were registered and enjoyed the session.

- Online Popular Lecture on the Topic 'Number Games was organized on 24.12.2021 at 4.00 PM. The Lecture was delivered by Shri Umesh Kumar Rustagi, Curator & Head, Education Dept., NSC Mumbai on zoom platform. 603 people were registered for the online programme.

Note: All these lectures are still available on our Facebook page. If you want to listen please like our page and enjoy them now also.



Online Quiz on Mathematics: was organized for students invited from various schools from Mumbai and suburban. Total 441 participated and attempted the quiz.

An Open house quiz on Mathematics for school students and general visitors organized at the Centre on 24.12.2020 Questions based on mathematics were asked during the quiz session and winners were awarded with the merit prizes during the event. In all 56 students were participate in the quizzes at site.

- Workshop on Teaching Aids on Mathematics for the working teachers was organized at the Centre on 22nd & 23rd December 2021 wherein the teachers got an opportunity to make mathematical teaching aids with low cost materials. The workshop was conducted by Shri Sharad Dalavi, Retired Teacher from Lion's Pioneer High school, Matunga, Mumbai and his team.

- Workshop on Mathematics of folding paper for students was conducted by Ms Padmaja Pradhan from Origami Mitra, Mumbai on 23.12.2021 for group of under privilege students. Total 123 students actively participated and learnt the mathematics of paper folding through hands on activities.

As part of celebration a documentary film titled 'The Genius of Srinivasan Ramanujan' was screened in the auditorium of the Centre on 22.12.2021. In all 76 teachers including students attended the show and benefitted by this show.

NSC - A Wonderland of Science

Science Park: Full of interactive exhibits on principles of energy, mechanics, perception & relics from the past: railway engines, tram cars, aircraft, electric power generator in park spread over 8 acres in green environment with over 200 species of plants and picnic area for school groups.

Permanent Exhibitions: The main building houses galleries full of exciting, interactive & interesting exhibits on topic relevant to school curriculum and for general public to make them appreciate Science with fun.

Reception | Science for Children | Sound & Hearing
Mirror Gallery | Machined to Think | Evolution
Human and Machine | Our Technology Heritage | Prehistoric Life
Hall of Nuclear Power | Hall of Aerospace (Opening soon)

Regular Programmes / Activities

SCIENCE ODYSSEY

The Science Odyssey facility with 18m dia Spherical Dome & fish eye lens projection system set up at the Centre, is the first of its kind in this region. It provides an opportunity to learn science in an immersive ambience. special shows can be arranged on request.

Now Showing: Dolphins

Check our website for updates:
https://nehrusciencecentre.gov.in/

follow us on : https://twitter.com/NSCmumbai

High Voltage Demonstration

Nehru Science Centre, Mumbai has set up the first of its kind High Voltage Demonstration facility titled 'Sparkling High Voltage Demonstration' which is now opened for the visitors.
This new facility offers some impressive demonstrations with a 200kV AC transformer, spectacular display of sparks & sounds with a Large TESLA Coil producing up to 1.50 million-volts and many more supporting equipments like Lichtenberg Tree Formation set-up, Jacob's Ladder, Arcing Horns, etc. wherein visitors can see disruptive discharges through air, sliding discharges over a glass plate, the demonstration with Faraday's cage, artificially generated lightning, etc.

Science On a Sphere

The state-of-the-art educational visualisation tool patented by the National Oceanic and Atmospheric Administration (NOAA), USA, is the first of its own kind in the western part of India. The Science On a Sphere provides real time atmospheric and climatic data that is projected on the 1.8 metre Spherical globe. The giant animated sphere appears to be floating in mid-air, and even rotating on its axis. You can see oceans & continents in their actual colours (just as our planet appears from outer space), Tropical rain forests, Currents of the oceans in motion, Moon, Jupiter and Mars. This amazing, cutting-edge technology, the SOS, was invented by NOAA to educate the audience on earth and space systems in a three-dimensional format. This technology is now available worldwide for science centres, museums, educational institutes etc.

3D Show

The visitors to the 3D Science Show will experience an out of the world immersive experience in which the near realistic visuals will appear to come out from the static screen right in front of their eyes. The shows would be conducted every hour at the Centre for the general public & school groups.

Science Show

Exciting science demonstrations on Air, Sound, Chemistry is Fun and Fun with Physics etc. are organized regularly at the Centre thrice a day.

Sky Observation Programme

Every Saturday & Sunday after Sunset
(Weather permitting)

Motion Simulator

Motion Simulator is a machine designed to provide a realistic imitation of the controls and operation of a vehicle, aircraft, or other complex systems, mainly used for training purposes. It creates the effect of being in same conditions like driving on a rough road, moving in space etc.
It gives visitors thrilling experience through 3D viewing on a 70 LED monitor. Presently it is screening the film "The Great Wall of China". Here you are guided by a crazy old man with a rocket-powered chariot. It's a 10 minutes thrilling bumpy ride! So don't miss.
Book your date for an exciting experience at Nehru Science Centre, Mumbai

You can book online
Entry Ticket to
Nehru Science Centre
https://nscm.in/general-ticket/

Follow the Steps:

1. Book your ticket
2. Go to Cart and confirm it is of correct type
3. Go to Checkout and pay using Net Banking, Credit Card, Debit Card or UPI app

Book Online

Timing

Nehru Science Centre is open to public every day including Sundays and public holidays throughout the year

Opening hours:
09.30 AM to 06.00 PM

Ticket Counter Timing:
09.30 AM to 05.30 PM

Closed on Holi & Diwali.

Entry fee per visitor to Science Centre & its special facilities.

Particulars	Amount
Entry Ticket	
Entry Ticket to Science Centre – General Visitors	Rs.70/-
Entry Ticket to Science Centre – Group of Visitors (25 or more)	Rs.50/-
Entry Ticket to Science Centre – Students in organised group with authority letter	Rs. 20/-
Entry Ticket to Science Centre – Students from Govt./Municipal Schools with authority letter	Rs. 10/-
Entry Ticket to Science Centre – BPL card holders on producing the card	Rs. 5/-
Entry Ticket ONLY to Science Park - General Visitors	Rs.20/-
Special shows	
Science Odyssey - General visitors	Rs.75/-
Science Odyssey - Group of Visitors (25 or more)	Rs.60/-
Science Odyssey - Students in organised group with authority letter	Rs.50/-
Science Odyssey - Students from Govt./Municipal Schools with authority	Rs.25/-
Sparkling High Voltage Demonstration / 3D Science Show / Science on Sphere - General visitors	Rs.25/-
Sparkling High Voltage Demonstration / 3D Science Show / Science on Sphere - Group of Visitors (25 or more)	Rs.20/-
Sparkling High Voltage Demonstration / 3D Science Show / Science on Sphere - Students in organised group with authority letter	Rs.20/-
Sparkling High Voltage Demonstration / 3D Science Show / Science on Sphere - Students from Govt./Municipal Schools with authority	Rs.10/-
Science Film Show / Science Demonstration Lecture (on prior booking)	Rs.10/-
Combined ticket for Science Centre & Science Odyssey	
Combined ticket - General visitors	Rs.125/-
Combined ticket - Group of Visitors (25 or more)	Rs.100/-
Combined ticket - Students in organised group with authority letter (Non-Member Schools)	Rs.60/-
Combined ticket - Students in organised group with authority letter (Member Schools)	Rs.50/-
Combined ticket - Students from Govt./Municipal Schools with authority letter	Rs.25/-
Package ticket for Schools - Science Centre, Science Odyssey, 3D show & SOS show	
Combined ticket - Students in organised group with authority letter (Non-Member Schools)	Rs.90/-
Combined ticket - Students in organised group with authority letter (Member Schools)	Rs.75/-
Combined ticket - Students from Govt./Municipal Schools with authority letter	Rs.40/-
Parking Charges	
2 Wheeler	Rs.20/-
4 Wheeler	Rs.40/-

Free Entry only to Science Centre :

Children up to 3.4 feet (102 cm) of height ,Defence & Paramilitary forces in uniform
Physically challenged persons and ICOM members
For other facilities visitors have to pay specified fee as per the category.

Follow us on:

"To succeed in your mission,
you must have single-minded
devotion to your goal."

- A. P. J. Abdul Kalam

संस्कृति मंत्रालय
भारत सरकार

Ministry of Culture
Government of India

नेहरु विज्ञान केन्द्र
राष्ट्रीय विज्ञान संग्रहालय परिषद्
संस्कृति मंत्रालय भारत सरकार
डा. ई. मोजेस मार्ग, वर्ली, मुंबई-400018

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National Council of Science Museums
Ministry of Culture Government of India
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