

SCI-MAIL

A Quarterly Newsletter for Members

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NEHRU SCIENCE CENTRE

A Unit of National Council of Science Museums, Ministry of Culture, Govt. of India
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DIRECTOR'S DESK

Dear Friends,

Greetings from Nehru Science Centre Mumbai!

We all wish you a very happy, healthy and prosperous new year. Let's set some goals for ourselves for 2025. We at Nehru Science Centre are going to open the completely refurbished Hall of Nuclear Power, being renovated with the active support of Nuclear Power Corporation of India Limited (NPCIL). Stay tuned to our media pages for the announcement. Besides this, we have already opened the new facility of Biotechnology Laboratory for our student visitors and a workshop has been organised successfully in this state-of-the-art facility equipped with tools and equipment related with biotechnology. Watch for our next announcements.

We are glad to share with you all that the ever attractive exhibit Energy Ball has been further modified and made much more fun-filled and mesmerising by adding certain features and mechanisms making it a hit among visitors. This exhibit was an anniversary gift to the visiting people. A rebounding ball and weight based mechanism showing acrobatics with ball are certainly crowd pullers and attention grabbers too. This is a testimony to always trying for providing something new to our visitors. Soon, we will add a few more new interesting exhibits too.

Nehru Science Centre Mumbai also organised the National Science Seminar 2024, a flagship programme of National Council of Science Museums with remarkable success setting new milestones and references for the future organisers. It was on the theme Artificial Intelligence: Potentials and Concerns.

We also represented India at 3rd International Olympiad in Astronomy and Astrophysics held at Kathmandu in Nepal and our team won 2 Gold medals and 1 Silver. Besides winning the award for best innovative solution for a given problem.

The certificate in experimental Skill test is going on smoothly and students have shown good response for this so far. It is being conducted since 2022 onwards every month. We have also launched experiment based exercise in Innovative thinking. Here you can perform experiments under the supervision of experts and acquire experimental skills.

The Aviation day celebrated to commemorate the 1st flight of JRD Tata on 15th October 1932 got overwhelming response from students and teachers making it once again a grand success. The 39th Anniversary of Nehru Science Centre was commemorated with variety of programmes over a week during 10th to 15th November. In fact it became a memorable week of fun and learning for all of us including the participants. The western zonal Science Drama Festival was also held on 30th November for selecting two best teams for the grand National Science Drama Festival.

Umesh Kumar Rustagi
Director NSCM

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EXHIBIT AT THE CENTRE THE ENERGY BALL



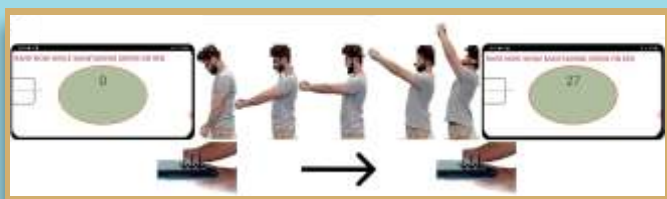
The recently upgraded version of the Energy Ball exhibit at Nehru Science Centre's reception hall, is one of the favourites for our esteemed visitors. This captivating installation with new attention grabbing features combines fun-based learning with scientific principles, thereby, making it a hit equally for children and adults.

The exhibit showcases the fascinating journey of energy transformation through a kinetic ball sculpture. Visitors can observe balls moving through creatively designed static and dynamic tracks, driven by physical entities like gravitational force, inertia, linear and rotational momentum, centrifugal force etc. As the balls are lifted using mechanical form of energy, they gain potential energy, which transforms into various forms of kinetic & rotational energy, sound energy demonstrating the law of conservation of energy in interactive and mesmerising ways for visitors.

This engaging and interactive experience, which blends education and entertainment, ensures that visitors leave with a deeper understanding of energy dynamics, leaving visitors enriched and entertained.

WHAT'S NEW?

Detect Blood Pressure Using a Smart Phone



Pittsburgh University researchers developed an application that detects pulse pressure using only your smart phone.

High blood pressure is a leading risk factor for cardiovascular diseases, making regular monitoring crucial.

However, frequent blood pressure checks are often challenging due to the limited accessibility and high cost of conventional devices. Researchers from the University of Pittsburgh have tackled this issue by developing an innovative technology that enables smartphone monitoring of blood pressure (BP) anytime, anywhere. They have created a mobile application that utilizes smartphone sensors to measure pulse pressure.

The app measures blood pressure when the user performs a hand-raising motion while holding a smartphone. It leverages built-in smartphone features, such as motion-sensing accelerometers, the front camera, and touch sensors, to take the measurement. Vishaal Dhamotharan, a graduate student at the Cardiovascular Health Tech Laboratory, explained, "Due to gravity, raising your hand above your heart causes a hydrostatic pressure change in your thumb. Using the phone's accelerometer, this change can be converted into a relative pressure reading."

Dhamotharan emphasized the app's potential in low-income settings, where access to traditional blood pressure monitoring tools is often limited. "Frequent blood pressure monitoring with this app could help individuals to track significant changes, monitor for hypertension, and better manage their health," he added. This research was published in Scientific Reports.

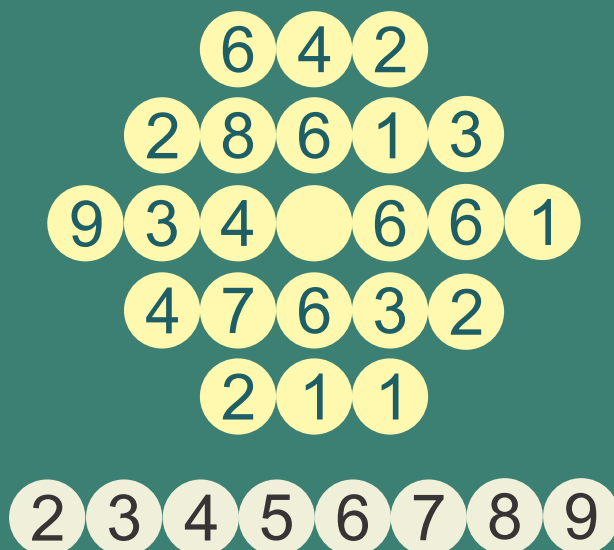
Source: University of Pittsburgh News

<https://news.engineering.pitt.edu/a-new-app-to-uncuff-blood-pressure-monitoring/>

<https://www.nature.com/articles/s41598-024-65269-w>

MATH PUZZLE

What number should be placed at the center of the grid?



Send your answers to
librarian.nscm@gmail.com

CONGRATULATIONS!

To all the winners of our Math Puzzle contest featured in Sci-Mail Vol 27 No. 4 We received an overwhelming response from hundreds of brilliant students, and we are thrilled to announce the top four winners who impressed us by submitting the correct answers within the first week of puzzle's publication.

- Arpit Purandare, 10th Std.
Orion ICSE School, Vile Parle East, Mumbai.
- Jeremy Correia, 2nd Std.
Rustomjee Cambridge International School,
Virar, Mumbai.
- Shlok Chanchlani, 9th Std.
AVM Juhu, Mumbai.
- Janki, 7th Std. CNM School,
Vile Parle West, Mumbai

Last date for Sending Answers : 31st January 2025
Best entry will be suitably awarded too.

Note : The contest is open to students up to std. X only

Architecture in Ancient India

Architecture stands as one of the most enduring and awe-inspiring achievements of Ancient Indian civilization, offering a glimpse into the creativity, spirituality, and cultural ethos of the ancient Indian subcontinent. While the Taj Mahal and other Mughal-era wonders often dominate global attention, the roots of India's architectural excellence extend far deeper, encompassing a diverse array of styles and monumental achievements.

The journey of Indian architecture begins with the master town-planning marvels of the Indus Valley Civilization, exemplified by sites like Harappa, Mohenjodaro, Dholavira, and Lothal. These ancient urban centres featured meticulously planned layouts, drainage systems, and public structures that reveal the ingenuity of their builders.

The advent of Buddhism marked a significant chapter in Indian architectural history. During and after Emperor Ashoka's reign (270–232 BCE), remarkable Buddhist structures, such as the Great Stupa at Sanchi and the rock-cut caves at Ajanta, were constructed. These sites not only showcased architectural brilliance but also reflected profound spiritual and artistic traditions. The centuries following the Gupta period witnessed the emergence of some of the most iconic Hindu temples in India. Two principal styles defined temple architecture: the Indo-Aryan (North Indian) and the

Dravidian (South Indian). The former, with its curvilinear shikhara, is exemplified by the temples of Bhubaneswar in Odisha and Khajuraho in Madhya Pradesh. The latter, characterized by towering gopurams and intricate carvings, dominates the vast temple complexes of South India.

Beyond indigenous traditions, the influence of Muslim and Christian rulers introduced new dimensions to Indian architecture. From imposing mosques and mausoleums to Gothic-style churches, these structures added layers of diversity and sophistication to the architectural landscape.

From ancient stupas and temples to medieval forts and palaces, India's architectural heritage stands as a testament to its historical depth and cultural plurality. Each structure, whether carved from rock or constructed brick by brick, narrates a story of artistic endeavour and spiritual pursuit, embodying the timeless essence of Indian civilization.



INDIAN SCIENTIST

Dr. Motilal Madan, a renowned veterinarian and regenerative biotechnologist from Haryana, was awarded the Padma Shri for his groundbreaking work in livestock research, especially in animal fertility. He led the team that performed the world's first IVF procedure on a buffalo, resulting in the birth of "Pratham," the first IVF buffalo calf.

Born on January 1, 1939, in Srinagar, Jammu and Kashmir, Dr. Madan was inspired by his grandfather to find solutions to animal infertility. He earned gold medals in B.Sc. and M.Sc. from Panjab University, followed by a Ph.D. and D.Sc. from top institutions in the U.S. and Canada respectively.

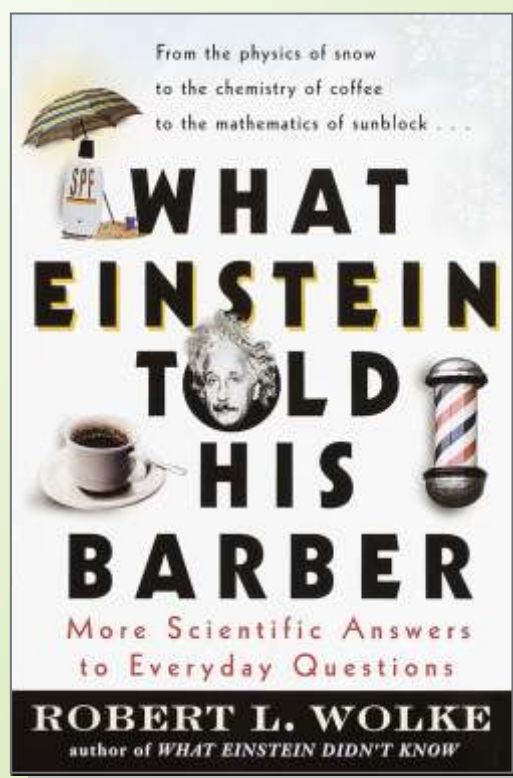
His career includes key roles at the National Dairy Research Institute (NDRI), Karnal, Haryana, where he pioneered embryo cloning and IVF techniques for buffaloes, significantly impacting animal breeding. He has held leadership positions, including Joint Director at NDRI, Deputy Director General at ICAR, and Vice Chancellor at agricultural universities in India.

With over 230 publications, Dr. Madan's work in animal physiology, reproductive biotechnology, and immuno-technology has greatly improved livestock productivity and fertility. He was also honoured with the "Haryana Vigyan Ratan" award in 2020. His pioneering research continues to inspire future scientists and veterinarians.



Dr. Motilal Madan

BOOK WORTH READING IN NSC LIBRARY



What Einstein Told His Barber

Have you ever wondered why your soda fizzes or how microwaves heat your food? "Einstein Told His Barber" by Robert L. Wolke is a delightful book exploring the science behind every day phenomena. Written in an engaging and humorous style, the book answers quirky questions with simple explanations, making complex scientific concepts easy to grasp.

Wolke, a physicist and science columnist, combines his expertise with a knack for storytelling. He uses relatable examples and clever analogies to explain topics like electricity, light, and chemistry, ensuring the book remains accessible to readers without a strong science background. The addition of hands-on experiments makes it interactive and fun for students to test the science themselves.

This book encourages curiosity and critical thinking, making it perfect for students who love to ask "why" and "how." Whether you're a science enthusiast or just someone with a curious mind, What Einstein Told His Barber is an entertaining and educational read that will leave you looking at the world with newfound wonder. It is ideal for anyone eager to uncover the science behind every day experiences.



CREATIVITY

Floating Egg (The effect of Brine)

Materials Needed: One egg, Water, Salt (1 – 2 cups), A large glass & A spoon

What to do:

1 Fill the glass halfway with fresh water. Gently place the egg into the water. The egg sinks to the bottom because fresh water does not provide enough buoyant force to support the egg.



2 Remove the egg from the glass. Add 10 tablespoons of salt to the water and stir well until the salt dissolves completely, creating a concentrated saltwater solution. Now you have brine, a highly concentrated solution of sodium chloride.



3 Place the egg back into the salt water. The egg floats because the salt water is denser than the egg.

4 Remove the egg again. Slowly pour fresh water into the glass until it is full, ensuring minimal mixing with the saltwater below. Place the egg back into the glass. The egg floats in the middle, where the denser saltwater below supports it, while the less dense fresh water above does not.



What happens?

The egg sinks because its density (mass per unit volume) is greater than that of fresh water. Dissolving salt in water increases the solution's density. When the water becomes denser than the egg, it provides enough buoyant force to make the egg float. Adding fresh water creates a layering effect. Since the freshwater is less dense, it sits on top of the saltwater. The egg floats at the boundary where the forces balance.

All substances which have a lesser density than water will float on it.

TREE TREASURE AT NSC

Monkey Puzzle Tree (Christmas Tree)

The Monkey Puzzle Tree, also known as the Christmas Tree, is a botanical wonder celebrated for its striking appearance and versatility. Known scientifically as *Araucaria cookii*, this member of the Araucariaceae family stands as a testament to nature's artistry.

This evergreen gem is renowned for its elegant, narrowly conical shape and tall stature, reaching up to an impressive 60 meters (200 feet) in its native habitat. Its shiny, needle-like green foliage forms a unique, spike-like crown, making it a standout feature in gardens, public landscapes, and along streets.

A perfect choice for warm temperate climates, the Monkey Puzzle Tree thrives in full sun, showcasing remarkable drought tolerance and the ability to withstand salt-laden coastal winds. Its resilience and beauty make it a favorite in large gardens, where it adds a touch of grandeur.

Interestingly, this tree doubles as an unusual but charming Christmas tree when young and grown in a tub. Its ornamental appeal transforms festive spaces, offering a fresh alternative to traditional choices.

Whether gracing a garden or adorning a holiday celebration, the Monkey Puzzle Tree is a symbol of enduring beauty, resilience, and adaptability—a living masterpiece of nature.



HOW THINGS WORK

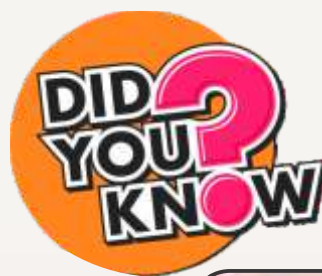


How does the vibration mode work in a mobile phone?



Vibration mode in mobile phones operates through a small motor, typically an Eccentric Rotating Mass (ERM) or a Linear Resonant Actuator (LRA). An ERM motor has a tiny off-center weight attached to its shaft. When the motor spins, the uneven weight distribution creates vibrations as it rotates. The speed and strength of these vibrations are adjusted by controlling the electrical current supplied to the motor.

Alternatively, LRA technology uses a magnetic mass suspended on a spring. When an alternating electrical current passes through the LRA, the magnetic mass oscillates, producing vibrations. LRAs are more energy-efficient and provide more precise haptic feedback compared to ERMs. The motor is activated by the phone's software whenever the device receives a notification, call, or other alerts. This allows users to receive silent alerts, making vibration mode an essential feature in situations where sound notifications may be disruptive or impractical. It combines physics and engineering to enhance the usability of mobile devices.



Enamel: A Tale of Two Identities



Enamel, the outermost layer of our teeth, is a marvel of natural engineering. It is the hardest substance in the human body. Composed primarily of calcium hydroxyapatite, a crystalline form of calcium phosphate $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$, enamel exhibits exceptional hardness and resistance to wear, far surpassing that of bone. This remarkable strength protects teeth during daily activities like biting and chewing.

Unlike bone, enamel contains no living tissues. Though it is classified as a tissue due to its organized cellular origin, these cells lose their vitality as enamel matures, leaving behind a dense structure of tightly packed mineral crystals. This unique composition makes enamel incapable of self-repair once damaged. Its translucent nature contributes to the teeth's characteristic pearly appearance, allowing the underlying dentin to influence tooth color.

Fluoride strengthens enamel by incorporating it into the hydroxyapatite lattice, forming fluorapatite ($\text{Ca}_{10}(\text{PO}_4)_6\text{F}_2$), which is more resistant to acid attack. Despite its durability, enamel lacks living cells and blood vessels, rendering it incapable of self-repair once severely damaged.

Enamel serves as the first line of defense for teeth, shielding the underlying dentin, pulp, and nerves from external threats such as acids, bacteria, and mechanical stress. Its resilience enables us to enjoy a variety of foods without harming our teeth.

In conclusion, enamel is distinct from bone due to its composition, lack of living cells, and specialized role in protecting teeth. Its unparalleled hardness and durability make it a cornerstone of oral health and functionality.

DID YOU KNOW?

From Molecules to Moisture: The Fascinating Chemistry of Diaper



Diapers are an essential tool in modern baby care, ensuring comfort and hygiene for infants and convenience for parents. At the core of their absorbent power lies the polymer sodium polyacrylate ($C_3H_3NaO_2$)_n. This remarkable substance is composed of repeating units of acrylic acid ($C_3H_4O_2$) and sodium acrylate ($C_3H_3NaO_2$), which give it, its unique ability to retain moisture.

Sodium polyacrylate functions by interacting with water molecules (H_2O). When exposed to liquid, its polymer chains stretch and straighten, creating more space for water absorption. The chains are negatively charged, enabling them to attract positively charged sodium ions (Na^+). This interaction forms a gel-like structure capable of holding hundreds of times its weight in water.

Water's molecular structure, with its positively

charged hydrogen atoms (H^+) and negatively charged oxygen atom (O^-), makes it highly attracted to substances with opposite charges. Sodium polyacrylate leverages this property to draw in and trap water molecules, ensuring that the liquid remains securely contained within the diaper.

In summary, the impressive absorbent capacity of diapers is due to the unique chemistry of sodium polyacrylate. By efficiently trapping moisture and preventing leakage, this polymer plays a vital role in keeping babies dry and comfortable, proving to be an indispensable innovation in baby care.

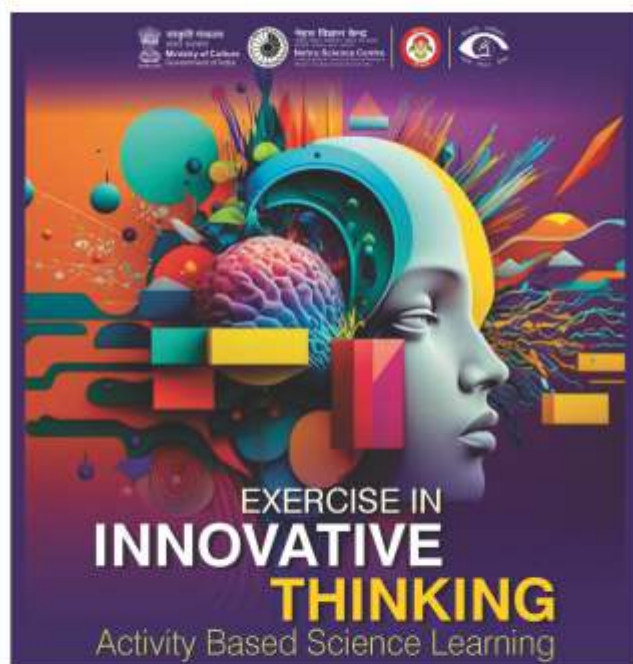
UPCOMING PROGRAMMES

Innovation Festival 5-7 February, 2025

National Science Day 28 February, 2025

International Women's Day - 8 March, 2025

World Water Day 22 March, 2025



For Details please contact -
edu.nscm@gmail.com

National Wildlife Week Celebrated at NSCM October 2–8, 2024

In collaboration with Goethe Institute, the Centre celebrated National Wildlife Week through five engaging science film screenings. The event attracted 609 children, raising awareness about wildlife conservation and the importance of biodiversity.



World Space Week Celebrations: October 4–10, 2024

The Centre celebrated World Space Week with guided Aviation & Space Gallery tours. Highlights included:

- Open House Quiz (05.10.2024): 348 attendees participated in a quiz on Space & Astronomy.
- Online Quiz (06.10.2024): Engaged 99 participants on the same theme.
- Sky Observation Program (06.10.2024): 30 participants explored telescopes and celestial objects.



Swachhata Hi Seva Campaign

- Scientific films on cleanliness and hygiene screened throughout October to promote awareness.
- Slogan contest held (10th-31st October) with creative entries collected via a drop box.
- 53 Open House Quizzes on "Swachhata" engaged 2135 participants, with prizes awarded to winners.
- Nukkad Natak on "Waste Segregation" staged by the education department (26th-31st October).
- Painting contest held on 26th October with 65 student participants.
- Popular Science Lecture on "Waste Management and Circular Economy" by Dr. A.P. Jayraman, attended by 255 students and visitors.
- "Science from Scrap" workshop on 26th October with 31 participants, and Sky Observation session enjoyed by 86 attendees.
- Over 300 files weeded in Admin, Finance, and Store sections; outdoor cleanliness drives conducted in the NSC campus.





Mobile Science Exhibitions

The Centre conducted Mobile Science Exhibitions at Dnyanganga Primary Residency Marathi School (03.10.2024), Babasaheb Deshmukh High School (09.10.2024), Gandhi Prathamik & Madhyamik Shala (10.10.2024), and Scottish Academy CBSE School (23.10.2024). The initiative aimed to foster scientific awareness among school children through engaging and interactive exhibits.

India Shines at 3rd IOAA-Jr 2024 in Kathmandu, Nepal

India participated in the International Olympiad on Astronomy and Astrophysics for Juniors (IOAA-Jr 2024) held from October 3–10, 2024. The team, selected during the Orientation Cum Selection Camp (OCSC) at Nehru Science Centre, Mumbai, performed brilliantly.

Mast. Sumant Gupta from New Sainik Sr. Sec. Public School, Noida, Uttar Pradesh, and Mast. Pranjal Dixit from Delhi Public School, Secunderabad, Telangana, secured gold medals.



Experimental Skill Test Held on 13th October 2024

In collaboration with the BASE Association, the Centre organized an Experimental Skill Test with six participants. The event aimed to enhance practical skills and deepen understanding of scientific experimental techniques.

Vigilance Awareness Week Observed at NSCM

The Centre observed Vigilance Awareness Week with staff pledging on 28th October 2024 to uphold integrity and accountability, under the theme "Culture of Integrity for Nation's Prosperity."

Highlights of the week included:

- Webinar on Cyber Security Awareness Month by Curator Sumit Chatterjee on 16th October 2024, attended by 42 participants.
- **Online Webinar:** Securing Our Online World by Mr. Amit K Ghosh on 25th October 2024, with 367 attendees.
- **Hybrid Lecture:** Unlocking Readiness Plan by Mr. Sukrit Ghosh on 26th October 2024, attended by 398 participants.



Sir C.V. Raman Birth Anniversary Celebrated on 7th November 2024



The Centre celebrated Sir C.V. Raman's birth anniversary with an online quiz contest, engaging 54 participants, and an open-house quiz focusing on his life and contributions to physics. A total of three quizzes were conducted, involving 158 participants and awarding 15 prizes. Digital certificates were given to all winners and participants.



39th Anniversary Celebration of NSC, Mumbai 10th-15th November 2024



Nehru Science Centre celebrated its 39th Anniversary with a week-long event filled with educational and engaging programs. Highlights included:

- Exhibit Inauguration: The newly modified "Energy Ball" exhibit was unveiled on 11th November 2024.
- On-the-Spot Quiz: Around 320 participants tested their science knowledge.
- Make and Take Activities: Approximately 405 attendees enjoyed hands-on science experiences.
- Open Air Demonstrations: Fascinating outdoor experiments attracted 350 participants.
- Sky Observation & Space Walkthrough Oculus: 150 participants explored celestial wonders and virtual space.
- Science K Funday Workshop: 40 family members

participated in educational fun.

- Paper Plane Model-Making Workshop: 62 participants explored aerodynamics through creative activities.
- Rangoli Contest: 20 participants showcased science-inspired designs.
- Online Quiz: 250 virtual participants engaged in science challenges.
- Nukkad Natak: A street play about science captivated 180 spectators.

The celebration brought together students, families, and science enthusiasts, making it a memorable week of fun and learning.



Science Festival India 2024: A Celebration of Clean & Green Nuclear Energy November 12-13, 2024

In collaboration with ROSATOM, Nehru Science Centre hosted the Science Festival India 2024, attracting 1,500 participants. The event focused on the theme "Nuclear Energy – Clean, Green, and Powerful," showcased nuclear energy's role in a sustainable future.

Event Highlights:

- Make & Take Workshop: 455 participants built scientific models.
- On-the-Spot Quiz: 342 participants tested their knowledge on nuclear energy.
- Nukkad Natak: 185 spectators enjoyed a street play on nuclear energy.
- Rangoli Contest: 20 students created energy-themed designs.
- Reuse & Recycle Workshop: 52 students engaged in sustainable practices.



NOVEMBER

2024

- Open Air Demonstrations: 360 attendees explored energy and physics through live demos.
- Water Rocket Demonstration: 243 participants enjoyed this thrilling activity.
- Space Walkthrough Oculus: 56 participants experienced virtual space exploration.
- Popular Science Lecture: 252 attendees learned from experts on nuclear power.
- Panel Discussion: Scientists discussed nuclear energy's role in combating climate change, attended by 252 participants.
- Nukkad Natak: 185 spectators enjoyed a street play on nuclear energy.
- Rangoli Contest: 20 students created energy-themed designs.
- Reuse & Recycle Workshop: 52 students engaged in sustainable practices.



Liquid Nitrogen Demonstration November 13, 2024

Nehru Science Centre Mumbai organized an outreach Liquid Nitrogen Demonstration for middle school students at Cathedral & John Connon School, Fort. Around 235 students and parents enjoyed various fascinating experiments based on liquid nitrogen.



Sci-Birthday Celebration on 17th November 2024

A Sci-Birthday event was held for 30 participants, with children enjoying hands-on science activities, a science demonstration, a "Science on a Sphere" show, and a gallery visit.

National Science Seminar on 26th November 2024

The National Science Seminar 2024, organized by the National Council of Science Museums (NCSM), was hosted by Nehru Science Centre, Mumbai, with 32 participants from 36 states and union territories. The event aimed to foster scientific enquiry among students in classes VIII to X.

Event Highlights:

- Inauguration: Chief Guest Prof. Ravindra D. Gudi and Guest of Honour Dr. M. Sasikumar.
- Judges: Leading experts from IIT Bombay, C-DAC, Assam Skill University, and more.
- Winner: Miss Rachna S.G. from Tamil Nadu was crowned the National Winner.
- Valedictory Session: Prof. Jayaram N. Chengalur and Prof. Shekhar C. Mande.

Additional Activities: Panel discussion "Meet the Scientists" and an AI workshop on 27th November 2024.



Inauguration of Biotechnology Laboratory 26th November 2024

The newly built Biotechnology Laboratory at Nehru Science Centre was inaugurated by Honourable Prof. Shekhar C. Mande, former Director General of CSIR, and Shri A D Choudhury, Director General of NCSM, in the presence of Shri Umesh Kumar Rustagi, Director, NSCM.



National Science Drama Festival (Western Zone) 30th November 2024

The National Science Drama Festival (Western Zone) was inaugurated by Shri Arun Nalavade, a renowned film and theatre actor, at Nehru Science Centre. The event saw enthusiastic participation from teams representing Chhattisgarh, Madhya Pradesh, Silvassa, Maharashtra, Goa, and Rajasthan, showcasing dramas based on the theme "Science & Technology for the Benefit of Mankind."

Event Highlights:

- First Prize: Children's Academy, Kandivali East, Mumbai.
- Second Prize: Musthifund High School, Goa.
- Third Prize: Govt. H.S.S. Khartuli, Dhamtari, Chhattisgarh.
- Valedictory Session: Chief Guest Shri Shivaprasad Khened, Advisor at Chhatrapati Shivaji Maharaj Vastu Sangrahalaya, Mumbai.



Principal's Meet

The Nehru Science Centre, Mumbai, hosted a Principal's Meet on December 4, 2024, in collaboration with CRDE and Seeds of Peace. The event featured addresses by Mrs. Deepa Desai, Mr. Sagar Gangurde, and chief guest Dr. Laxmi Iyer, who shared innovative teaching strategies. Highlights included engaging hands-on activities, a liquid nitrogen show, and a high-voltage demonstration, delighting the 42 participants.



DAE's Platinum Jubilee Celebration

The Nehru Science Centre, Mumbai, in collaboration with Tata Memorial Centre-ACTREC, celebrated the Department of Atomic Energy's Platinum Jubilee on 16 December 2024. Highlights included lectures on cancer research, awareness, and treatment innovations, attended by 234 students. An exhibition, Understanding Cancer for Detection and Prevention, drew around 1,100 visitors, engaging students and the public.



Teacher Training Program: Ignite STEM Passion

A one-day workshop, "Ignite STEM Passion," was held on December 20, 2024, in collaboration with the Indian Development Foundation (IDF). Attended by 200 educators and B.Ed students, the event featured interactive sessions on robotics, AI, astronomy, and more, led by renowned experts. Guest of Honour Dr. Radha Krishna Das and other distinguished guests inaugurated the program. Student Ambassador Ms. Oorja Akshara was honored for her contributions to women's hygiene initiatives. The workshop empowered teachers with innovative STEM teaching strategies.

Aviation Day Celebration:

The Nehru Science Centre, in partnership with the Aeronautical Society of India, celebrated Aviation Day on December 21, 2024, to inspire young minds and promote careers in aviation. Over 200 students participated in activities such as essay writing, elocution, and quizzes.

Highlights included a live drone demonstration, an exhibition of aviation technologies, and an information counter guiding students on aviation careers. The event sparked enthusiasm among participants and successfully showcased opportunities in this dynamic field.



National Mathematics Day Celebration: December 20–23, 2024

The National Mathematics Day celebration at Nehru Science Centre, Mumbai, supported by NCSTC, DST, and the Rajiv Gandhi Science and Technology Commission, was a resounding success, engaging over 12,000 visitors with interactive programs highlighting the beauty and relevance of mathematics in daily life.

Key attractions included exhibitions on mathematical wonders, puzzle challenges, hands-on model-making activities, an on-the-spot quiz, and a captivating scavenger hunt. Highlights also featured a workshop on practical math applications and a popular science lecture, “Mathematics Everywhere,” attended by over 550 people.

The event celebrated Srinivasa Ramanujan's legacy, inspiring curiosity and fostering a deeper appreciation for mathematics across all age groups.



Innovation Hub Activities

The Innovation Hub conducted three enriching sessions for eight students, focusing on practical skills and intellectual growth:

Electronics Workshop: Students explored NOR gates and basic circuit design.

Mathematics Session: Interactive challenges enhanced problem-solving and analytical thinking.

These sessions provided hands-on learning experiences to nurture curiosity and technical aptitude.

Biotechnology Workshop: December 26–28, 2024

The Basics of Biotechnology Workshop, held at Nehru Science Centre, Mumbai, introduced 16 students to key biotechnology concepts through hands-on activities like DNA extraction and gel electrophoresis. Topics covered included DNA structure, genetic engineering, and microbial culture. Expert facilitators led interactive sessions, and participants received certificates of participation. The workshop successfully sparked interest in biotechnology, showcasing the Centre's dedication to advancing scientific literacy in cutting-edge fields.



World Meditation Day Celebration:



On December 20, 2024, NSC and its satellite units, in collaboration with Art of Living, organized a special program for all staff members to celebrate World Meditation Day. The event aimed to promote mindfulness and well-being among employees through meditation and wellness practices.



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 Aviation & Space

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 "Australia's Great Wild North" Check our website for updates: <https://nehrusciencecentre.gov.in/>



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 Science 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**

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 to Science Centre Only	
• General Visitors	Rs.70/-
• Group of Visitors (15 or more)	Rs.60/-
• Students in organised group with authority letter	Rs. 20/-
• Students from Govt./Municipal Schools with authority letter	Rs. 10/-
• 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.80/-
• Group of Visitors (15 or more)	Rs.70/-
• Students in organised group with authority letter	Rs.50/-
• Students from Govt./Municipal Schools with authority	Rs.25/-
Motion Simulator Ride	
• General visitors	Rs.50/-
• Group of Visitors (15 or more)	Rs.40/-
3D Science Show / Science on Sphere	
• General visitors	Rs.30/-
• Group of Visitors (15 or more)	Rs.25/-
• Students in organised group with authority letter	Rs.20/-
• Students from Govt./Municipal Schools with authority letter	Rs.10/-
Science Film Show / Science Demonstration Lecture (on prior booking)	Rs.10/-
Package ticket for Science Centre & Science Odyssey	
• General visitors	Rs.130/-
• Group of Visitors (15 or more)	Rs.110/-
• Students in organised group with authority letter (Non-Member Schools)	Rs.60/-
• Students in organised group with authority letter (Member Schools)	Rs.50/-
• Students from Govt./Municipal Schools with authority letter	Rs.25/-
Special Packages	
• Science Centre, 3D show & SOS show for General visitors (Science Centre, Science Odyssey, Sparkling High Voltage, 3D show & SOS show)	Rs.100/-
• Students in organised group with authority letter (Non-Member Schools)	Rs.90/-
• Students in organised group with authority letter (Member Schools)	Rs.75/-
• Students from Govt./Municipal Schools with authority letter	Rs.40/-
Family Packages	
Science Centre, Science Odyssey, Sparkling High Voltage, 3D show, SOS show & Motion Simulator Ride.	
• Family of 4 members	Rs.600/-
• Family of 6 members	Rs.900/-
(Buy Family Ticket to Save & have lot of FUN)	
Parking Charges	
2 Wheeler	Rs.30/-
4 Wheeler	Rs.50/-
Free Entry only to Science Centre :	
Children up to 3.4 feet (102 cm) of height	
Defense & Paramilitary forces in uniform	
Physically challenged persons and ICOM members	
For other facilities visitors have to pay specified fee as per the category.	



“Great dreams of great dreamers are always transcended.”
- Dr A P J Kalam

Nehru Science Centre

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

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