SCIENCE CENTRE NEWS LETTER

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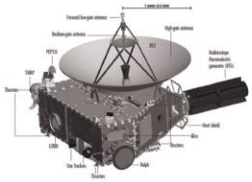
WHAT'S NEW IN SCIENCE

NASA's New Horizons Mission to Pluto



Our Solar System has three classes of planets: the rocky "terrestrial" Planets (Mercury, Venus, Earth and Mars); beyond them the giant planets (Jupiter, Saturn, Uranus and Neptune); and the third zone, of primitive icy bodies that are found principally in the Kuiper Belt beyond Neptune. These objects are believed to be representative of the material which condensed to form the other planets. There may be as many as a billion of these objects of greater than 10 km in diameter. NASA's New Horizons Mission is the first mission to investigate this class of planetary bodies. This mission will fill an important gap in our knowledge of our solar system. New Horizons have visited pluto in July 2015, which proceeded deeper into the Kuiper Belt to study one or more of the icy mini-worlds in that vast region, up to a billion millies beyond Neptune's orbit.

New Horizons was launched in 19 January, 2006 from Cape Canaveral Air Force Station, Florida with the help of Launch Vehicle "Atlas V 551". Its trajectory was - to Pluto via Jupiter Gravity Assist.

Mission Timeline:

Early Cruise:

- The First 13 months included Spacecraft and instrument checkouts, instrument calibrations, small trajectory correction maneuvers and rehearsals for the Jupiter encounter.
- New Horizons passed the orbit of Mars on April 7, 2006
- It also tracked a small asteroid, later name "APL" in June 2006

Jupiter Encounter:

- Closest approach occurred in February 28, 2007
- New Horizons came closer to Jupiter nearly 2.3 million Killometer moving with the velocity 51,000 miles per hour (23 km per second)

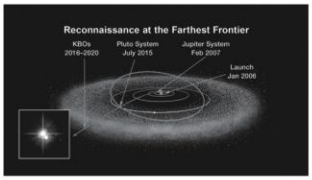
Inter Planetary Cruise:

- Activities during the approximately 8-year cruise to pluto included annual spacecraft and instrument checkouts, trajectory correction, instrument calibrations and Pluto encounter rehersal
- During the cruise, New Horizons also crossed the orbits of saturn in 8 June 2008, Uranus on 18 March 2011 and Neptune on 25th August 2014.

Pluto System Encounter

- In January 2015, New Horizons entered the first of several approach phase.
- Horizons entered the first of several approach phase.
- The first close-up Fly by of the spacecraft near Pluto was on 14 July 2015. At this closest approach, the spacecraft came about 7750 miles (12,500 km) from Pluto System and about 17,900 miles (28,800 km) from Charon.

New Horizons has the capability to fly beyond the Pluto system and explore additional Kuiper Belt Objects (KBO). New Horizons carries extra hydrazine fule for KBO flyby; its communication system is designed to work from far beyond Pluto and its Scientific instruments can work in light levels even lower than the dim sunlight at Pluto.



Courtesy : Sir V.D.T Girls High School, Surat.

SCIENTIST OF THE MONTH

Asis Dutta:

Asis Dutta was born on 2 February, 1944 at Taki in West Bengal. He did his M.sc, PhD. and D.sc from Calcutta University. He did his post doctoral research from the public Health Research Institute, New York from 1968 to 1971 and also from California, from 1971-73.

Asis Dutta was a specialist of Molecular Biology and Biotechnology. Relevant to human health and agriculture. He worked extensively on cloning and characterisation of two novel genes, which gave him international acclaim and opened up a new field of research. His other important works include cloning and sequencing of genes, of Amaranthus seeds, which would lead to development of transgenic crops with high nutritional value. His five research findings have been patented in India and abroad.

Asis Dutta received the shanti swarup Bhatnagar prize in 1980, G.D. Birla Award for Scientific work in 1991, the padma shri in 1999 and the padma Bhushan in 2008. He was the vice - chancellor of J.N.U., New Delhi. From 1996 to 2002. Presently he is working as Scientist in National Institute of plant Genome Research.

Courtesy : Sir V.D.T Girls High School, Surat.

SCIENCE FACTS AUGUST 2015

2nd August 1861	Indian Scientist Sir Prafullchandra Ray was born on this day.
4thAugust 1956	India's first Nuclear Reactor "Apsara" went critical at Trombay' (BARC Bhabha Atomic Research Centre).
5th August 1930	Neil Alden Armstrong (First person to set foot upon the moon) was born on this day.
6th August 1881	Prof. Alexander Fleming (discoverer of Penicillin) was born on this day.
7th August 1976	"Viking 2" Spacecraft of America entered into Orbit of Mars.
8th August 1901	Ernest Lawrence (inventor of Cyclotron) was born on this day.
12th August	International Youth Day. (by U.N.)
12th August 1877	Scientist Thomas Alwa Edison had discovered Gramaphone.
12th August 1919	Well known Indian Scientist Dr.Vikaram Ambalal Sarabhai was born on this day.
14th August 1888	Johan Logie Baird (inventor of colour Television) was born on this day.
17th August 1870	Frederick Russell (inventor of first successful typhoid fever vaccine) was born on this day
21st August1754	William Murdoch (inventor of Gas lighting) was born on this day.
22nd August 1920	Denten Cooley (who performed the first artificial heart transplant) was born on this day.
25th August 1989	Space Craft 'Voyager 2's closest approach to Planet Neptune was noted on this day.
26th August 1906	Albert Sabin (inventor of oral polio vaccine) was born on this day.
29th August	International Day against Nuclear Tests. (by U.N.)

U. N.: United Nations, WHO : World Health Organization

Science Quiz Answers : (1) C, (2) A, (3) D, (4) A, (5) C, (6) B (7) A, (8) A, (9) B

Timings

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday & Public Holidays
9.30 am to 6.30 pm

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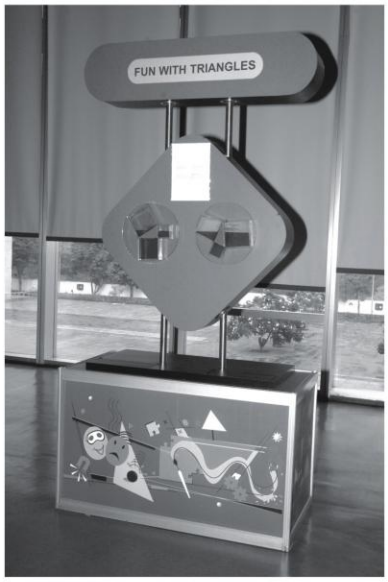
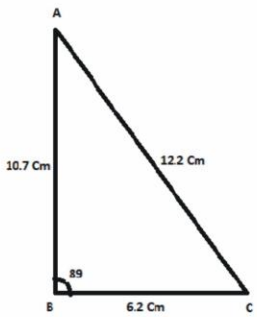
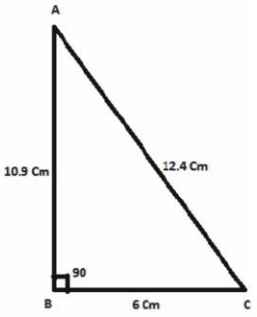
KNOW THE EXHIBITS AT FUN SCIENCE GALLERY

Fun with Triangle

Turn the disc on your right such that the entire quantity of liquid in the largest compartment trickles down to the two smaller compartments. Observe that it completely fills up both the smaller compartments. If you turn it again, the largest compartment will just completely be filled up. But the same thing does not happen for the disc your left. Why?







Left Hand Side Triangle

$AB^2 + BC^2 > AC^2$
$(10.7)^2 + (6.2)^2 > (12.2)^2$
$(114.49) + (38.44) > (148.84)$
$152.93 > 148.84$

Right Hand Side Triangle

$AB^2 + BC^2 = AC^2$
$(10.9)^2 + (6)^2 = (12.4)^2$
$(118.8) + (36) = (153.76)$
$154.8 \approx 153.76$

SCIENTIFIC QUESTION OF THE MONTH

Why carbon dioxide is used in fire extinguishers ?

Carbon dioxide, or Known by its chemical shorthand Co_2, is a naturally occurring gas which is present in the air we breathe. This gas is essential for life on Earth. It is a vital component of both photosynthesis and cellular respiration.

Properties :- Co_2 is a colorless and in normal concentrations, odorless gas. It doesn't react with burning material, so It doesn't create any toxic effect or other by products. When it is used to suppress a fire, Carbon dioxide doesn't conduct electricity, which makes it an ideal fire suppressant in computer rooms, electrical distribution stations and other locations where the possibility of large amount of electricity is present.

Co_2 acts on fires in two ways : (1) The release of the gas under pressure has a cooling effect, which can be seen by the resulting mist cloud and ice- particles.

(2) The gas also displaces the oxygen which is necessary to maintain combustion.

Carbon dioxide molecules are heavier than oxygen molecules. When the liquid carbon dioxide inside the Extinguisher expands into a gas, the carbon dioxide pushes out any oxygen surrounding the fire. As oxygen is important to fuel the chemical reaction, because of unavailability of oxygen, the fire goes out quickly.

Why we use Co_2 and not other chemicals ?

Co_2 is used because it can be kept as a liquid agent at a room temperatures in a high pressure container. At 70 degrees, the pressure will be about 750 psi (nearly stable). If we use liquid nitrogen or argon, the pressure would be immense and couldn't safely be kept in a portable container. Courtesy : Sir V.D.T Girls High School, Surat.

SCIENCE QUIZ

1. Bernoulli's Principle is based on-

A. Velocity B. Mass C. Pressure D. Length

2. Human beings can hear Sounds of a range of Frequencies -

A. From 20 Hz to 20 KHz B. From 20 KHz to 200 Khz

C. 20 Hz D. 20 KHz

3. Who was the first man to classify stars according to their brightness?

A. Aristarchus B. Pythagoras C. Copernicus D. Hipparchus

4. What causes a planet to have a magnetic field?

A. the dynamo effect B. the Doppler effect

C. the Photoelectric effect D. its rotation about its sun

5.One Jupiter day is equal to which of the following?

A. 30 hrs 40 min B. 3 hrs 20 min C. 9 hrs 50 min D. 52 hrs 10 min

6. The sunspot cycle is:

A. 3 years B. 11 years C. 26 years D. 49 years

7. On Which Planet is the 'Great Red Spot' situated?

A. Jupiter B. Neptune C. Uranus D. Saturn

8. The size of the average meteor is nearly equal to the size of which of the following objects?

A. A grain of Sand B. A Baseball C. A Basketball D. A Car

9. A device which would not work on the Moon is:

A. Thermometer B. Siphontube C. spectrometer D. spring balance

Courtesy : Sir V.D.T Girls High School, Surat.

SCIENCE CENTRE

Science Centre forms the main part of the entire complex; it displays thematic galleries in the field of Science and Technology. The ground floor of Science Centre showcases 3D Theatre and Souvenir Shop. The first floor of Science Centre showcases Fun Science Exhibits and Second floor of Science Centre showcases Diamond Gallery where as Entering into space, Textile Gallery, Power of Play Gallery, Cosmos Gallery and Polar Science Gallery are under development.

3d Show	Tuesday to Friday (Time)	Saturday, Sunday & Holidays (Time)
English	09:15, 11:20, 12:00, 02:40, 04:00	09:15, 11:20, 12:00, 02:40, 04:00
Hindi	10:00, 10:40, 12:40, 01:20, 02:00, 03:20	10:00, 10:40, 12:40, 01:20, 02:00, 03:20, 04:40, 05:20, 06:00

Science Centre + Planetarium + Museum + Diamond Gallery		**Planetarium**			
Above 18 Years	Rs. 100	**Tuesday to Friday**		**Saturday, Sunday & Public Holidays**	
3 Years to 18 Years	Rs. 65				
Science Centre + Museum + Diamond Gallery		09:30 to 10:20	English	09:30 to 10:20	English
Above 18 Years	Rs. 60	10:30 to 11:20	Gujarati	10:30 to 11:20	Gujarati
3 Years to 18 Years	Rs. 40	11:30 to 12:20	Gujarati	11:30 to 12:20	Gujarati
Science Centre + Planetarium + Museum + Diamond Gallery + 3D Show		12:30 to 01:20	English	12:30 to 01:20	English
Above 18 Years	Rs. 120	01:30 to 02:20	Hindi	01:30 to 02:20	Hindi
3 Years to 18 Years	Rs. 80	02:30 to 03:20	hindi	02:30 to 03:20	hindi
Planetarium		03:30 to 04:20	Gujarati	03:30 to 04:20	Gujarati
Above 18 Years	Rs. 50			04:30 to 05:20	English
3 Years to 18 Years	Rs. 40			05:30 to 06:20	Gujarati
3D Show					
Above 18 Years	Rs. 60				
3 Years to 18 Years	Rs. 40				