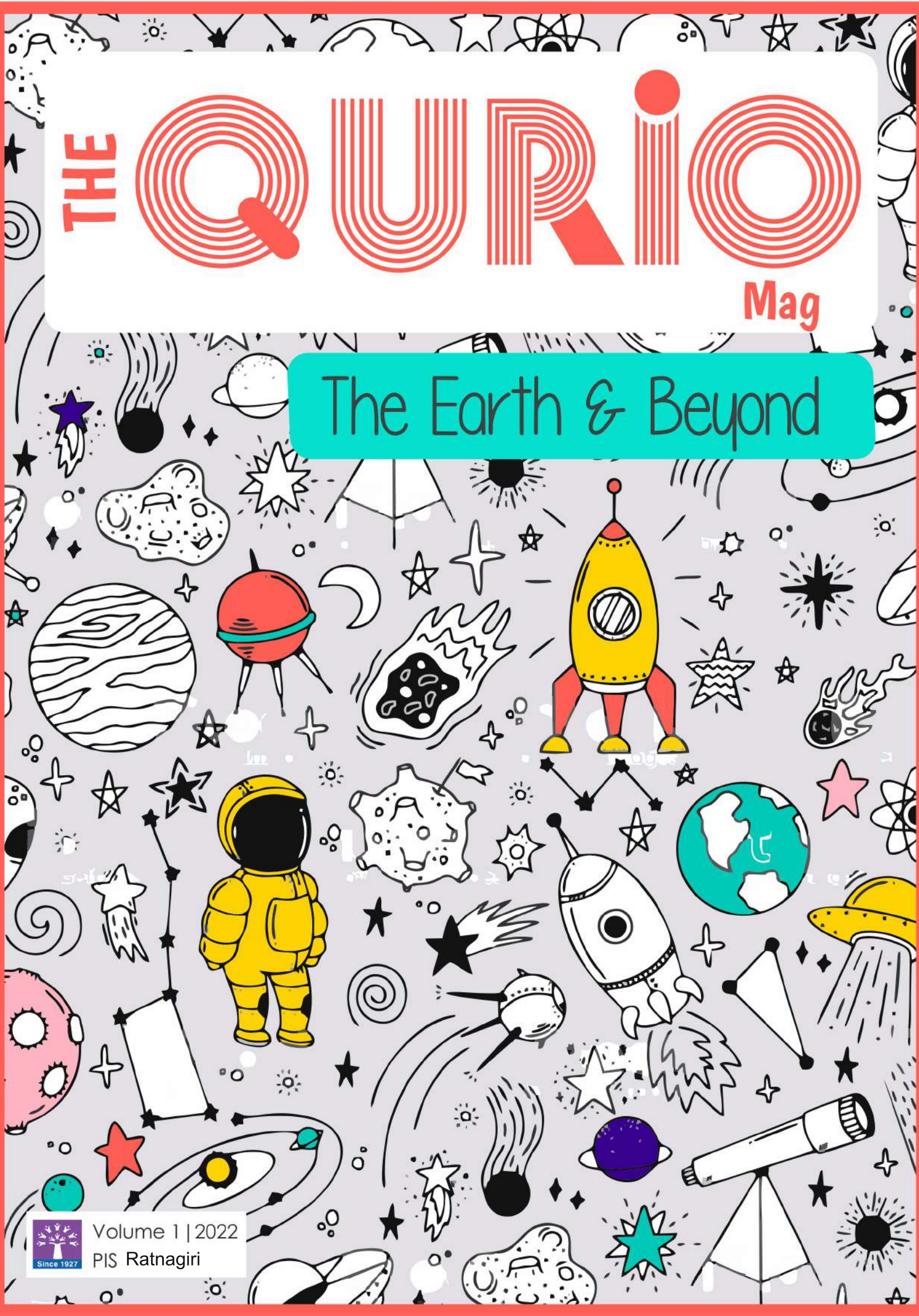
THE QURIO Mag

The Earth & Beyond



Volume 1 | 2022
PIS Ratnagiri

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FROM THE PRINCIPAL'S DESK

विध्या वितरको विज्ञानं स्मृतिः तत्परता क्रिया ।
यसैयते षड्गुणस्तस्य नसाध्यमतीवर्तते ।

" Education, Logic, Science, Memory, initiation and work, a person who has all six virtues, no thing is impossible for him."

This ancient shloka by Acharya Charak, is a reflection of education in Indian culture. Education is all about building a character, enriching minds and providing opportunities to students to understand their abilities. Today we as teachers are more like facilitators to support every student to do their best thinking and practice.

We at Podar have the mission – to develop and equip the children of India for the challenges of the 21st century. We impart quality education since 1927, and our motto is " More than Grades". We as a renowned education organization believing in holistic development of every child, we believe in pushing the minds beyond the limits and boundaries to make students confident enough to stand in tough times.

Our academic programs like Integrated English, Numeracy and Literacy Skills Development , Art Integration, Sports, Hobby, After School Clubs, leave no corner overlooked for overall development of students.

A bridge course and remedial education adds support to students with special needs in academics. Well-qualified and trained staff empowers students to be their best.

Our cultural exchange program adds advantage of being Indian with approach of 'Vasudhaiv Kutumbakam'.

School, Students and Parents are three important pillars for the students' education.

On behalf of Podar Network, I welcome you to participate in creating a better future for our students.

Jai Hind, Jai Bharat!

- Mr. Rakesh Chavan

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CHRONICLES OF SPACE

Mission to Mars

The Red Planet has had quite a year. Not only did NASA's Insight Lander detect hundreds of mars quakes shaking the planet, but ESA's Mars Express orbiter found more signs that the world has several underground saltwater lakes buried beneath its south pole. Perhaps most importantly however, 2020 saw three new spacecrafts set forth for the Red planet, taking advantage of a once-every-26-months alignment that shortens the time and distance required to get from Earth to Mars.

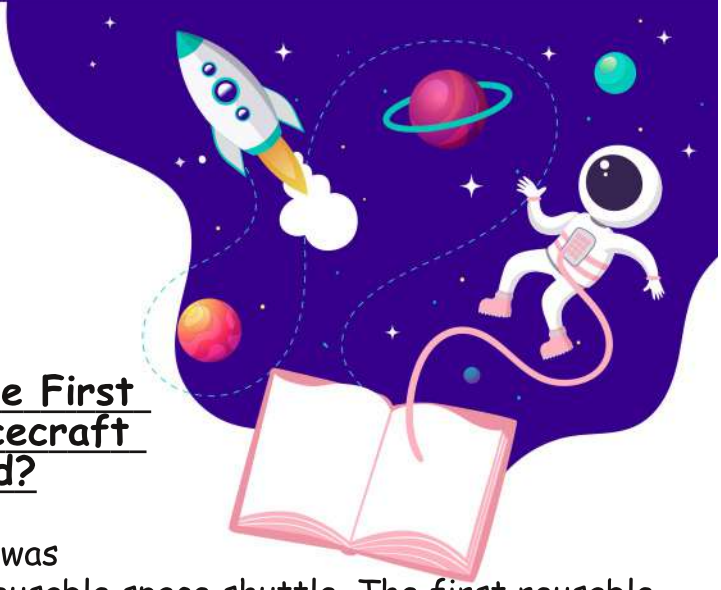
As its first interplanetary mission, the United Arab Emirates launched an orbiter named al-Amal July 19. The craft is equipped with both an infra-red and ultraviolet spectrometer – the former meant to investigate dust, water and ice in Mars's lower atmosphere and the latter meant to oxygen and carbon monoxide in the upper atmosphere. Additionally, the craft carries a multiband camera that can achieve resolutions better than 5 miles (8-kilometers) per pixel. Altogether, Hope aims to paint a more comprehensive picture of the Red Planet's atmosphere.

China jumped into the fray next, launching an orbiter, lander and rover trio to Mars on July 23. Tianwen – 1 is the country's first fully homegrown Mars Mission. Engineers plan for the orbiter to release lander and rover combo after a few months orbiting the Red Planet. It will touch down near Utopia Planitia in the Northern hemisphere to seek signs of past or present life. Then the orbiter will enter a polar elliptical orbit around Mars. There, it will serve as a communication relay between rover and lander, as well as use its seven science instruments to remotely study Mars's environment and its surface.

Finally, on July 30 NASA launched the Perseverance rover as part of its Mars 2020 mission. Its car-sized rover, based largely on Curiosity's design, has ambitious plans. Equipped with instruments that can create spatial maps showing the elemental and mineralogical composition of rocks, Perseverance will seek evidence that ancient life once existed in Mars' Jezero Crater. The rover also comes with a few proof-of-concept experiments: an oxygen-production device called Moxie and solar-povered helicopter named Ingenuity. Last but not least, Perseverance plans to find, collect and seal rock and soil samples that will ultimately be returned to Earth for closer inspection with sophistical lab equipment.

- Anvika Garde (VII Einstein)

CHRONICLES OF SPACE



When Was The First Reusable Spacecraft Launched?

Earlier rockets could be used only once which was extremely expensive. So space engineers built reusable space shuttle. The first reusable shuttle was Columbia which was built in 1981, launched by NASA. It consisted of an orbiter craft, two solid fuel rocket boosters and a giant external fuel tank47m long and 8.4 m wide.

At takeoff time, the engine of the shuttle and two booster rockets provide power equal to 130 jumbo jets. Within two minutes of launch, the boosters are emptied and they fall down. They can be recovered and used again. After completing its mission, the shuttle re-enters the atmosphere and lands on wheels like airplane.

~ FUN FACT ~

Space shuttle crews repair satellites and telescopes already in space. The Hubble Space Telescope was repaired by the crew of Space Shuttle Discovery (NASA).

- Samyak Jain (VIII J.C. Bose)

The Girl's Dream

Once upon a time there lived a girl who wanted to travel the space. In the morning when she was having a bath , she started thinking about space. She was asking questions one by one in her mind. First she asked, " What would happen if the sun was not there?". The second question was " Is the Pluto planet still there in the galaxy? " . As she was about to utter the next question, her mother commented, " You are late for school!!". She assured her that she will be ready in a few minutes. She sat in the bus and kept thinking again. She had unfortunately forgotten the third question due to the chaos. She had reached her school. It was the science period. She asked her teacher about all the doubts that had arised in her mind this morning.

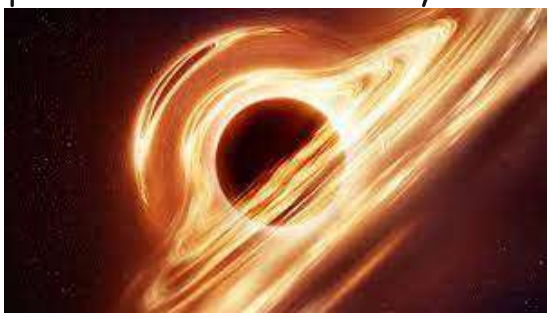
Her teacher confidently answered all the questions. She said, " if the sun wasn't there, a layer of darkness would cover the world; whether Pluto was a planet or not this still remains a mystery."School time was over and she was back home, lying on her bed. She fell asleep and got indulged into her fantasy world. She roamed around the eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. She suddenly woke up, startled and wondered if she could ever roam the beautiful universe!?

-Swara Desai (IV Rowling)

CHRONICLES OF SPACE

THE JOURNEY BLACK HOLE

The term black hole is of very recent origin. It was coined in 1969 by the American scientist John Wheeler as a graphic description of an idea that goes back at least two hundred years. At that time there were two theories about light. One was that it was composed of particles; the other was that it was made of waves. We now know that really both theories are correct. By the wave/particle duality of quantum mechanics, light can be regarded as both a wave and a particle. Under the theory that light was made up of waves, it was not clear how it would respond to gravity. But if light were composed of particles, one might expect them to be affected by gravity in the same way that cannonballs, rockets, and planets are.



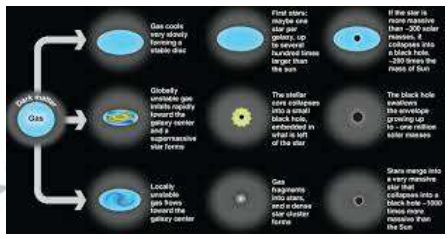
On this assumption, a Cambridge don, John Michell, wrote a paper in 1783 in the Philosophical Transactions of the Royal Society of London. In it, he pointed out that a star that was sufficiently massive and compact would have such a strong gravitational field that light could not escape. Any light emitted from the surface of the star would be dragged back by the star's gravitational attraction before it could get very far. Michell suggested that there might be a large number of stars like this. Although we would not be able to see them because the light from them would not reach us, we would still feel their gravitational attraction. Such objects are what we now call black holes, because that is what they are—black voids in space.

A similar suggestion was made a few years later by the French scientist the Marquis de Laplace, apparently independently of Michell. Interestingly enough, he included it in only the first and second editions of his book, The System of the World, and left it out of later editions; perhaps he decided that it was a crazy idea. In fact, it is not really consistent to treat light like cannonballs in Newton's theory of gravity because the speed of light is fixed. A cannonball fired upward from the Earth will be slowed down by gravity and will eventually stop and fall back. A photon, however, must continue upward at a constant speed. How, then, can Newtonian gravity affect light? A consistent theory of how gravity affects light did not come until Einstein proposed general relativity in 1915; and even then it was a long time before the implications of the theory for massive stars were worked out.

To understand how a black hole might be formed, we first need an understanding of the life cycle of a star.

CHRONICLES OF SPACE

To understand how a black hole might be formed, we first need an understanding of the life cycle of a star. A star is formed when a large amount of gas, mostly hydrogen, starts to collapse in on itself due to its gravitational attraction. As it contracts, the atoms of the gas collide with each other more and more frequently and at greater and greater speeds—the gas heats up. Eventually the gas will be so hot that when the hydrogen atoms collide they no longer bounce off each other but instead merge with each other to form helium atoms. The heat released in this reaction, which is like a controlled hydrogen bomb, is what makes the stars shine. This additional heat also increases the pressure of the gas until it is sufficient to balance the gravitational attraction, and the gas stops contracting. It is a bit like a balloon where there is a balance between the pressure of the air inside, which is trying to make the balloon expand, and the tension in the rubber, which is trying to make the balloon smaller.



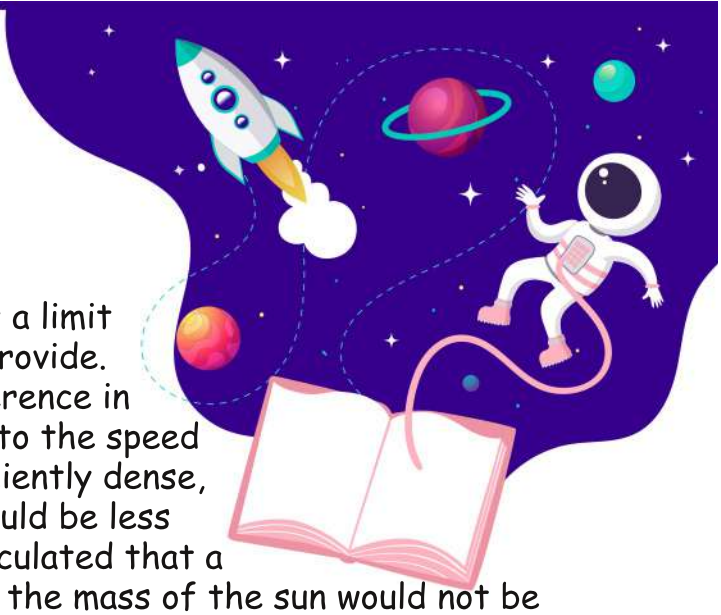
The stars will remain stable like this for a long time, with the heat from the nuclear reactions balancing the gravitational attraction. Eventually, however, the star will run out of its hydrogen and other nuclear fuels. And paradoxically, the more fuel a star starts off with, the sooner it runs out. This is because the more massive the star is, the hotter it needs to be to balance its gravitational attraction. And the hotter it is, the faster it will use up its fuel. Our sun has probably got enough fuel for another five thousand million years or so, but more massive stars can use up their fuel in as little as one hundred million years, much less than the age of the universe. When the star runs out of fuel, it will start to cool off and so to contract. What might happen to it then was only first understood at the end of the 1920s.

In 1928 an Indian graduate student named Subrahmanyan Chandrasekhar set sail for England to study at Cambridge with the British astronomer Sir Arthur Eddington. Eddington was an expert on general relativity. There is a story that a journalist told Eddington in the early 1920s that he had heard there were only three people in the world who understood general relativity. Eddington replied, "I am trying to think who the third person is."

During his voyage from India, Chandrasekhar worked out how big a star could be and still separate itself against its own gravity after it had used up all its fuel. The idea was this: When the star becomes small, the matter particles get very near each other. But the Pauli exclusion principle says that two matter particles cannot have both the same position and the same velocity. The matter particles must therefore have very different velocities.

This makes them move away from each other, and so tends to make the star expand. A star can therefore maintain itself at a constant radius by a balance between the attraction of gravity and the repulsion that arises from the exclusion principle, just as earlier in its life the gravity was balanced by the heat.

CHRONICLES OF SPACE



Chandrasekhar realized, however, that there is a limit to the repulsion that the exclusion principle can provide. The theory of relativity limits the maximum difference in the velocities of the matter particles in the star to the speed of light. This meant that when the star got sufficiently dense, the repulsion caused by the exclusion principle would be less than the attraction of gravity. Chandrasekhar calculated that a cold star of more than about one and a half times the mass of the sun would not be able to support itself against its own gravity. This mass is now known as the Chandrasekhar limit.

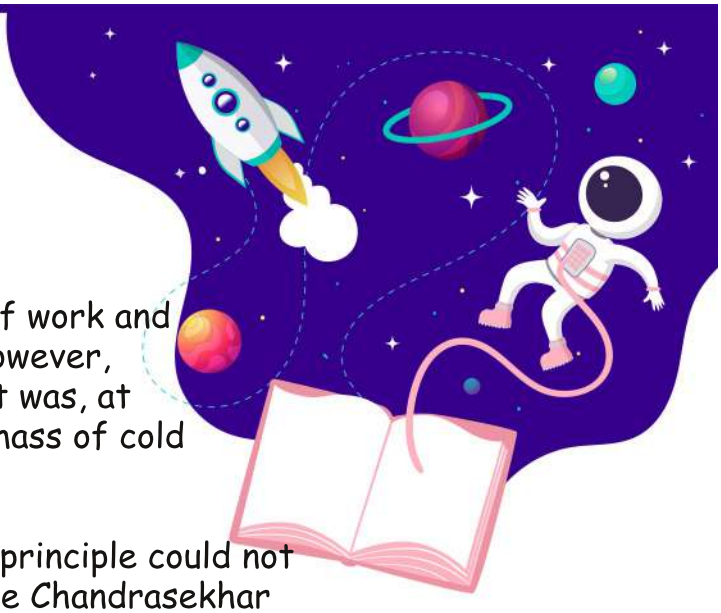
This had serious implications for the ultimate fate of massive stars. If a star's mass is less than the Chandrasekhar limit, it can eventually stop contracting and settle down to a possible final state as a white dwarf with a radius of a few thousand miles and a density of hundreds of tons per cubic inch. A white dwarf is supportedby the exclusion principle repulsion between the electrons in its matter. We observe a large number of the white dwarf stars. One of the first to be discovered is the star that is orbiting around Sirius, the brightest star in the night sky.

It was also realized that there was another possible final state for a star also with a limiting mass of about one or two times the mass of the sun, but much smaller than even the white dwarf. These stars would be supported by the exclusion principle repulsion between the neutrons and protons, rather than between the electrons. They were therefore called neutron stars. They would have had a radius of only ten miles or so and a density of hundreds of millions of tons per cubic inch. At the time they were first predicted, there was no way that neutron stars could have been observed, and they were not detected until much later.

Stars with masses above the Chandrasekhar limit, on the other hand, have a big problem when they come to the end of their fuel. In some cases they may explode or manage to throw off enough matter to reduce their mass below the limit, but it was difficult to believe that this always happened, no matter how big the star. How would it know that it had to lose weight? And even if every star managed to lose enough mass, what would happen if you added more mass to a white dwarf or neutron star to take it over the limit? Would it collapse to infinite density?

Eddington was shocked by the implications of this and refused to believe Chandrasekhar's result. He thought it was simply not possible that a star could collapse to a point. This was the view of most scientists. Einstein himself wrote a paper in which he claimed that stars would not shrink to zero size.The hostility of other scientists, particularly of Eddington, his former teacher and the leading authority on the structure of stars,

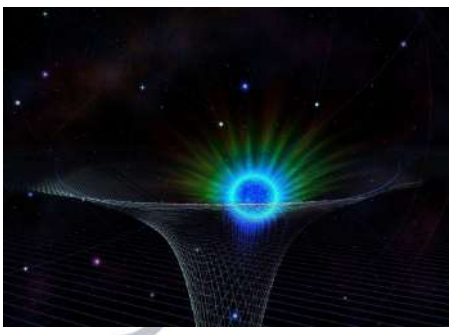
CHRONICLES OF SPACE



persuaded Chandrasekhar to abandon this line of work and turn instead to other problems in astronomy. However, when he was awarded the Nobel Prize in 1983, it was, at least in part, for his early work on the limiting mass of cold stars.

Chandrasekhar had shown that the exclusion principle could not halt the collapse of a star more massive than the Chandrasekhar limit. But the problem of understanding what would happen to such a star, according to general relativity, was not solved until 1939 by a young American, Robert Oppenheimer. His result, however, suggested that there would be no observational consequences that could be detected by the telescopes of the day. Then the war intervened and Oppenheimer himself became closely involved in the atom bomb project. And after the war the problem of gravitational collapse was largely forgotten as most scientists were then interested in what happens on the scale of the atom and its nucleus. In the 1960s, however, interest in the large-scale problems of astronomy and cosmology was revived by a great increase in the number and range of astronomical observations brought about by the application of modern technology. Oppenheimer's work was then rediscovered and extended by a number of people.

The picture that we now have from Oppenheimer's work is as follows: The gravitational field of the star changes the paths of light rays in space-time from what they would have been had the star not been present. The light cones, which indicate the paths followed in space and time by flashes of light emitted from their tips, are bent slightly inward near the surface of the star. This can be seen in the bending of light from distant stars that is observed during an eclipse of the sun. As the star contracts, the gravitational field at its surface gets stronger and the light cones get bent inward more. This makes it more difficult for light from the star to escape, and the light appears dimmer and redder to an observer at a distance.



Eventually, when the star has shrunk to a certain critical radius, the gravitational field at the surface becomes so strong that the light cones are bent inward so much that the light can no longer escape. According to the theory of relativity, nothing can travel faster than light. Thus, if light cannot escape, neither can anything else. Everything is dragged back by the gravitational field. So one has a set of events, a region of space-time, from which it is not possible to escape to reach a distant observer. This region is what we now call a black hole. Its boundary is called the event horizon. It coincides with the paths of the light rays that just fail to escape from the black hole.

- Apurv Khatu (X Apollo)

CHRONICLES OF SPACE

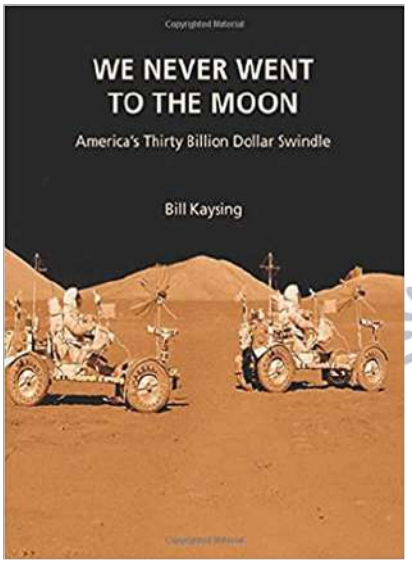
One Giant…. Lie??
We never landed on the moon?

Neil Armstrong, almost entirely known for the being the first person to step on the moon. But did he really land on the moon? Did the Greatest Leap of mankind actuallytake place? To know the truth, let's start from the origin of these suspicions.

The Roots of Accusations:

After a long span of 7 years, a self-published book titled, 'We Never Went To The Moon: America's Thirty Billion Dollar Swindle' caught everyone's eyes worldwide. The writing was so authentic and legit that the author was hired as a senior technical writer of Rocketdyne.The book claims that the chance of a successful crewed landing on the Moon was calculated to be 0.0017%, and that despite close monitoring by the USSR, it would have been easier for NASA to fake the Moon landings than to really go there. What could be the reasons for confronting such suspicions with such surety?

The believes of the people:



Many Moon-landing conspiracy theories have been put forward, claiming either that the landings did not happen and that NASA employees have lied, or that the landings did happen but not in the way that has been told. Conspiracists have focused on perceived gaps or inconsistencies in the historical record of the missions. The foremost idea is that the whole crewed landing program was a hoax from start to end. Some claim that the technology to send men to the Moon was lacking or that thesolar flares, solar wind, coronal mass ejections and cosmic rays made such a trip impossible.

Some ridiculous theories:

In 1980, the Flat Earth Society even accused NASA of faking the landings, arguing that they were staged by Hollywood with Walt Disney sponsorship, based on a script by Arthur C. Clarke and directed by Stanley Kubrick. Folklorist Linda Dégh suggests that writer-director Peter Hyams' film Capricorn One (1978), which shows a hoaxed journey to Mars in a spacecraft that looks identical to the Apollo craft, might have given a boost to the hoax theory's popularity in the post-Vietnam War era. .

SPACE PROJECTS

01. James Webb Telescope (NASA):

Time Served:
2021-present

Function: to find the first galaxies that formed in the early universe and to see stars forming planetary systems.

Findings: Jupiter's mysterious auroras, Neptune's rings, infrared view of the universe up to date, and much more!

Current Location: L2 Orbit
(1.5 million kilometers from Earth)

02. Curiosity Rover (NASA):

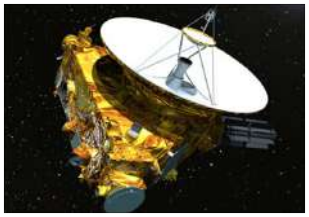
Time Served:
2011-present

Function: to determine whether the Red Planet ever was habitable to microbial life.

Findings: Abundant water & useful nitrogen found, magma and microbes support the traces of past life of Mars.

Current Location: Gale Crater (Mars)

03. New Horizons (NASA):



Time Served:
2006-present

Function: to study the dwarf planet Pluto and other objects in the Kuiper Belt

Findings: A heart-shaped region of ice on Pluto, large chasms on Charon and Kuiper Belt "Twins"

Current Location: Kuiper Belt
(4.5 to 7.4 billion kilometers) from earth

04. Tianwen-1(CNSA):

Time Served:
2021-present

Function: to conduct various scientific investigations on Mars' topography and geography

Findings: North Pole of Mars and dust dunes like Earth

Current Location: Utopia Planitia in Martian Plains

- Raj Kadam (VIII J.C.Bose)

SPACE PROJECTS

01. Chandrayaan 2 (ISRO) :

Launch Date: 22 July 2019

Function : To demonstrate the ability to soft-land and operate a robotic rover on the lunar surface.

Findings: Signatures at all latitudes on the surface of the moon.

Current Location: Orbiting the Moon on a polar orbit at an altitude of 100 km

02. Gaganyaan (ISRO):

Launch Date: 'Gaganyaan' is expected to be launched in 2024. Earlier, the mission was scheduled to be launched in 2022 but that could not be achieved due to Covid-19.

Function: demonstrating the human space flight capability.

Findings: Yet to launch

Current Location: Yet to launch

03. NISAR [NASA-ISRO Synthetic Aperture Radar] (ISRO) :

Launch Date: proposed to be launched in 2023.

Function: To measure Earth's changing ecosystems, dynamic surfaces, and ice masses providing information about biomass, natural hazards, sea level rise, and groundwater.

Findings: Yet to launch

Current Location: Yet to launch

04. ACS3 (Advanced Composite Solar Sail System) [NASA]:

Launch Date: Not earlier than 2023.

Function: To replace conventional rocket propellants by developing and testing solar sails using sunlight beams to thrust the nanosatellite.

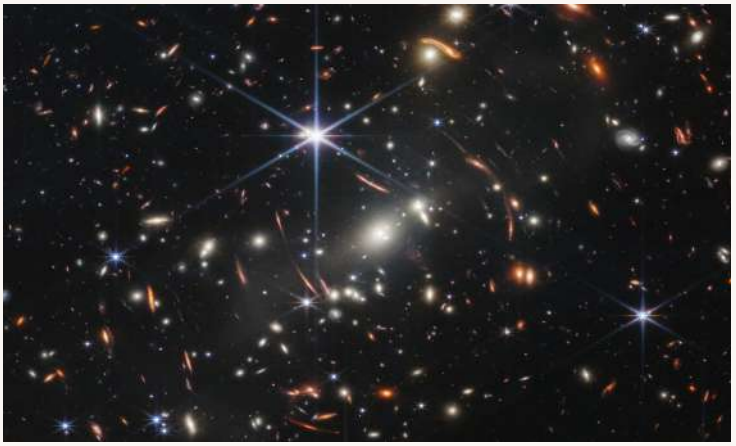
Findings: Yet to launch

Current Location: Yet to launch

- Khyati Divekar (VII Einstein)

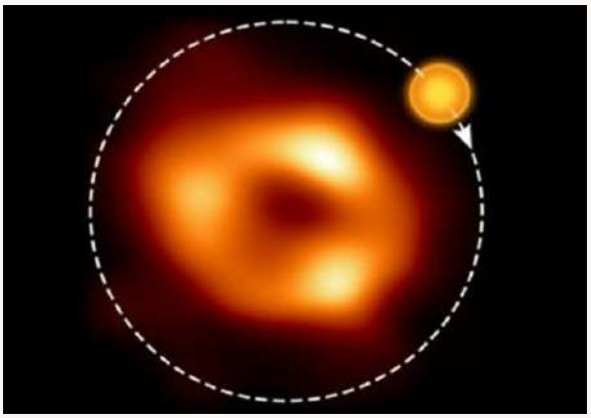
THE UNIVERSE TODAY

Space & Astronomy News



01. Hot Gas Bubble Spotted Whizzing Around Black Hole

A weird blob of hot gas was spotted orbiting the massive black hole in the centre of Milky Way Sagittarius A*, with velocity equal to almost 30% of speed of light (300,000 km/s) taking full orbit in only 70 minutes. Telescopes all over the world worked together to uncover this mysterious blob, which turned out to be a donut-shaped ring of material swirling around the black hole due to the magnetic field.

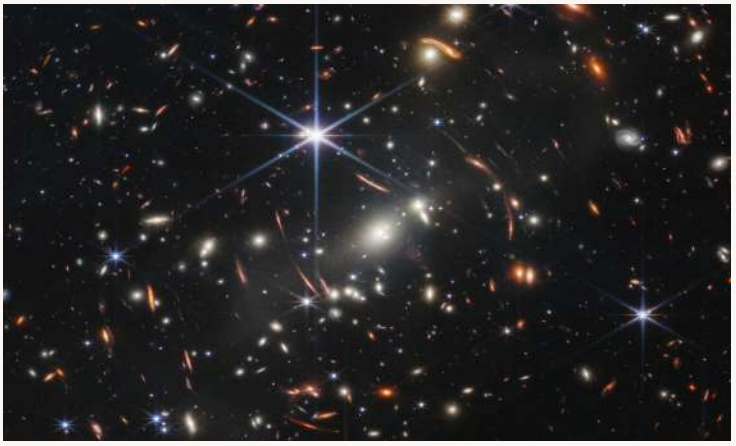


02. Neptune's New Rings Get A Makeover

James Webb Telescope by NASA captures Neptune in its perfect glory – rings and all! NASA has released new glamorous photos of our ice planet Neptune taken in July, where the pictures show Neptune's thin rings and dust bands as well as seven of its moons. No other spacecraft than Voyager 2 and Hubble have visited the icy, blue planet. So it's been more than thirty since astronomers last saw these rings with such detail and clarity. To be honest, Neptune and its rings haven't looked better in decades.

THE UNIVERSE TODAY

Space & Astronomy News



03. Spider Nebula Caught In 4K By Webb Telescope

A stellar nursery nicknamed the Tarantula Nebula has been captured in crisp detail by NASA's Webb telescope, revealing unseen features that deepen scientific understanding. The telescope's Near-Infrared Camera (NIRCam), found the cavity in the centre of the nebula which hollowed out by the radiation carried on stellar winds emitting from a cluster of massive young stars, which appear as pale blue dots.

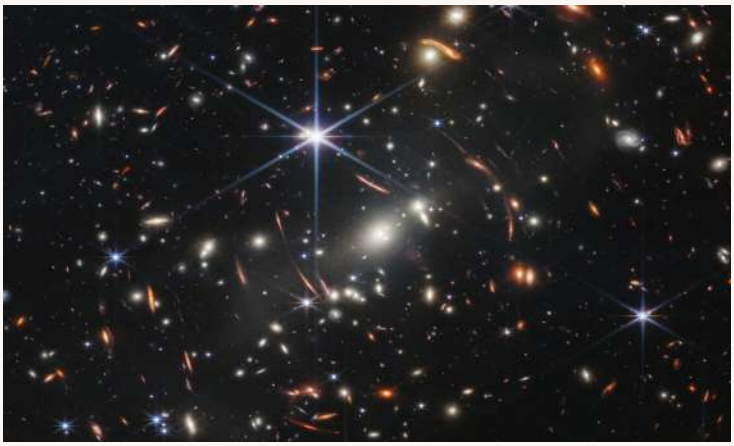
04. BOOM! Star Explosion Caught By Hubble

The Wide Field Camera 3 on the Hubble Telescope caught an enigmatic object named as IRAS 05506+2414 which was caused by an explosion of a young star system, at distance of about 9,000 light years in Taurus constellation, in Northern Celestial hemisphere.This stellar object blew up with a fan like shape rather than its usual twin bipolar jets.These observations help astronomers better understand the earliest stages in the life cycle of a star.

- Ayaan Pagarkar (VIII CARVER)

THE UNIVERSE TODAY

Space & Astronomy News



1st Russian cosmonaut to launch with SpaceX heads to space station

As its name suggests, this is SpaceX's fifth crewed mission to the ISS under NASA's commercial crew contract. The company's Dragon capsule Endurance is carrying a diverse crew — NASA astronauts Nicole Mann and Josh Cassada, Japanese spaceflyer Koichi Wakata and Russian cosmonaut Anna Kikina.

This is Wakata's fifth spaceflight, but his three crewmates are all rookies. And Mann and Kikina get to pin other firsts to their collars for this mission as well: Mann is the first Native American woman to reach space, and Kikina is the first cosmonaut to launch with SpaceX.
Kikina's ride is part of a crew-swap agreement between NASA and Roscosmos, the Russian space agency, which was signed earlier this year. The long-anticipated agreement came over this past summer, during Russia's ongoing invasion of Ukraine, which has spawned increasing tensions between Russia and much of the rest of the world. Though NASA officials cite the timing as coincidental, the agreement was announced on July 15, the same day that controversial Roscosmos director Dmitry Rogozin was removed from his post. Inflammatory tweets and other statements by Rogozin fueled controversy earlier in the year, not only over the seat swap agreement but also regarding Russia's continued partnership in the ISS program. Though NASA and Roscosmos have both stressed that space station operations continue as usual despite the ongoing war, tensions seem to have subsided since Rogozin's departure.

The first mission under the new crew-swap deal occurred last month, when NASA astronaut Frank Rubio launched to the ISS alongside two cosmonaut companions aboard a Russian Soyuz rocket. Kikina's flight wraps up this particular swap, which came about following the United State's renewed ability to launch astronauts to orbit from American soil.

The ISS is officially approved to operate only through 2024. NASA has signed on through 2030 and hopes that the other program partners will do the same; if that happens, the agency will seek to extend the seat-swap agreement with Roscosmos beyond 2024, Montalbano said.

- Riya Jain (X Apollo)

MOVIES AND BOOKS RECOMMENDATIONS

Movies

1. Apollo 13 (1995)

NASA must devise a strategy to return Apollo 13 to Earth safely after the spacecraft undergoes massive internal damage putting the lives of the three astronauts on board in jeopardy.

2. The Martian (2015)

An astronaut becomes stranded on Mars after his team assumes him dead, and must rely on his ingenuity to find a way to signal to Earth that he is alive and can survive until a potential rescue.

3. Interstellar (2014)

A team of explorers travel through a wormhole in space in an attempt to ensure humanity's survival.

4. First Man (2019)

A look at the life of the astronaut, Neil Armstrong, and the legendary space mission that led him to become the first man to walk on the Moon on July 20, 1969.

5. Gravity (2013)

Two astronauts work together to survive after an accident leaves them stranded in space.

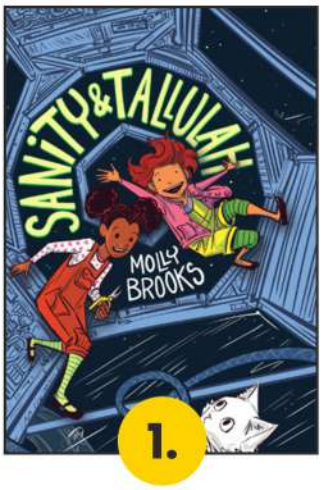
6. Fly Me To The Moon (2009)

Three young house flies stowaway aboard the Apollo 11 flight to the moon.

7. Mission Mangal (2019)

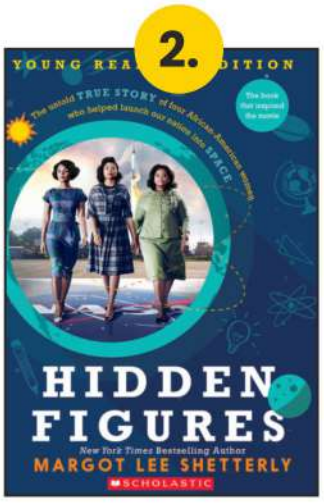
Based on true events of the Indian Space Research Organisation (ISRO) successfully launching the Mars Orbiter Mission (Mangalyaan), making it the least expensive mission to Mars.

Books



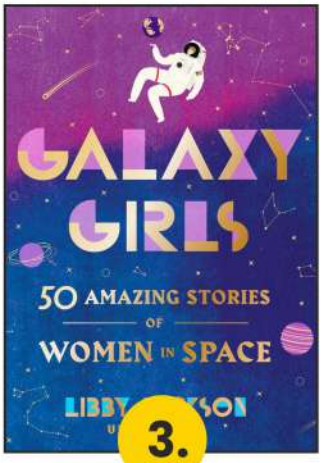
1.

Sanity & Tallulah
Molly Brooks



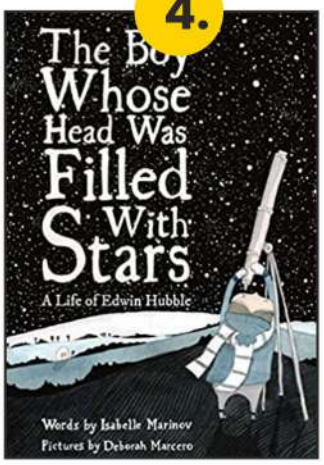
2.

Hidden Figures
Young Readers'
Margot Lee Shetterly



3.

Galaxy Girls: 50 Amazing
Stories of Women
In Space
Libby Jackson



4.

The Boy Whose Head Was Filled with Stars:
A Life of Edwin Hubble

5.

The Kid Who Came
From Space
- Ross Welford

6.

How To Be A Spcae Explorer:
Your Out Of This World
Adventure By -
Lonely Planet Kids

Review
Movies & Books

Title of the Movie:

The Core [2003]

Movie/Book Summary: Directed by John Amiel, this science fiction disaster will have you hooked up to it till the very end. This mind-gripping tale revolves around a fictional plot about the earth. A crisis strikes the world. The earth's inner core stops spinning and causes the planets electromagnetic field to rapidly deteriorate. The US government gathers a team of geophysicists and scientists to build a vessel that can drill to the centre of the earth and release nuclear weapons (bombs) to restart the rotation and save the world from catastrophic solar radiation.

How many hearts do you give this movie ?

❤❤❤❤❤

Movie reviewed by:-

- Ishita Sawant (X Apollo)

Title of the Movie:

THE MARTIAN

Movie/Book Summary: This film tells the story of NASA's manned area 3 mission to Mars, starring Matt Damson as Botanist Mark Watney. While working on Mars, Watney and rest of the crew are forced to evacuate because of a storm. But when Watney is knocked unconscious and is nowhere in sight, Mission Commander Lewis, Pilot Martinez and Specialist Beck, Vogel and Johassen , directly presume him dead . As the only on the planet Watney has no way to communicate so he must devise methods of rationing and growing food and making water as well as surviving with meagre supplies. In the mean time a NASA satellite analyst believes Watney is still alive , and when that is confirmed , the world's most brilliant minds come together to save him. The movie "The Martian" enters the theatres on 8th October, 2013. The genre of this movie is science fiction and its running time is 141 minutes.

How many hearts do you give this movie ?

❤❤❤❤♡

Movie reviewed by:-

- Gayatri Sameer Kamat (X APOLLO)

Review
Movies & Books

Title of the Movie:

John Carter: Of Mars

Movie/Book Summary: John Carter is a Civil War veteran who mysteriously lands on Mars because of a locket, and is stuck there. He slowly grows accustomed to the fights between the civilizations Helium and Thern and their inhabitants like Helium, Thern and the Tharks. The planet is on the edge of destruction due to the forced marital treatybetween the two civilizations, of the princess of Helium and prince of Thern, and the fate is in Carter's hands. There John meets the princess, Dejah Thoris, and a Thark, Sola, who join him in saving Mars and preventing the forced marriage of the prince and princess.

How many hearts do you give this movie ?

❤❤❤♡♡

Movie reviewed by:-

- Hrishikesh Kumbhare (VIII J.C. BOSE)

Title of the Movie:

Mangalyaan: The Proud of India

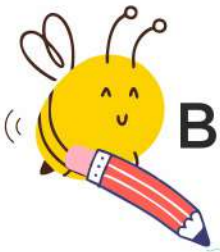
Movie/Book Summary: 'MOM' stands for- Mars orbiter mission also known as MANAGALYAN. It was launched on 5 November 2013. PSLV(Polar satellite launch vehicle) XL-C25 rocket was used for launching the managalyan. US $73 million was total expenditure for Mars mission till now. Over 17,000 scientists and engineers worked for mangalyan and made this impossible task possible. India was the first nation in the world to reach mars in its first attempt. On 24 September 2014 the dream of India was brought in reality by inserting Managalyan in Mars orbit successfully.

How many hearts do you give this movie ?

❤❤❤❤❤

Movie reviewed by:-

-Shreyas Joshi (VI Aryabhatta)



BUZZING POETS

THE STELLER MYSTERY

The beautiful everglowing skies
Lightened up by swallow's cries

But deep in space , it lies
The array of fails and tries

Where will the black hole
Truly end up my wanderlust soul

The universe is as dark as coal
In it, do I really have an
uncomprehendable role ?

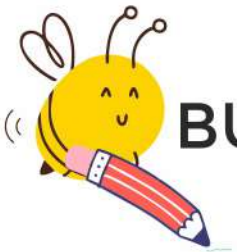
The tranquil shine of stars calm me down
As if, they are a cure for everyone's
frown

Glittering away like jewels in a crown
In your mesmerizing beauty , I drown

The unsolved mysteries of space , oh my !
Confusing like hundred decimals of pi

I wonder , when people die ,
Do they turn into stars up high .

- Anwita M. Desai (VIII Carver)



BUZZING POETS

THE SUN

High up in the sky
I marvel at you
The way you shine bright
Like nobody do .

I can't take my eyes
Off your sparkly sheen
You glitter like jewels
Studded in the crown of a queen .

You give life to all on Earth
You keep all of us warm
You never lose hope , ven if
You're hidden by a storm .

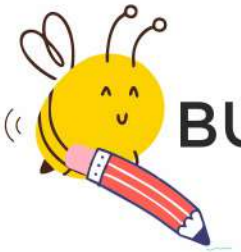
You help us grow food
Because of you plants thrive
You light up the world so
For brightness we won't have to strive .

The reason for our strength
I your existence
Your sunrays help us
Make Vitamin D immense .

A glowing ball of fire
That helps all
The savior who will
Pick you up if you fall .

The cause of population
The catalyst of evolution
Who else am I talkin' about
It is our dear Sun .

- Janhavi Sunil Gogate (VIII J.C. Bose)



BUZZING POETS

Through the Space

Through the darkness of space I fly
Beyond the reach of the human eye

Consisting of a universe having galaxies, planets
Stars and many more in it

Let us watch the space at night when we sit
There are many facts that are unknown about space

In a due course of life race
It is something that is mostly silent

But the asteroids and meteors make it violent
In the galaxy 'Milky Way ', we have our Solar System

In which the eight planets with the moon and the Sun come
Sun during day and Moon during night

Let us sit in the spaceship and have a informative flight
I know the planets in their order, one by one

Starting with the planets that are closest to Sun
Mercury, Venus, Earth and Mars

The inner planets are closest to our star
Jupiter, Saturn, Uranus and Neptune

Are the outer planets next in my tune
Pluto is the last and farthest but is a dwarf planet

As it is smaller than any other planet
Through the darkness of space I fly

Beyond the reach of the human eye.....

-Bhavik Patil (VIII Carver)

BUZZING POETS

The Space

I am the space,
I expand with a prodigious pace...
I hold few lakhs of twinkng stars,
While hosting the sun and the moon at par...

The planets I hold, can you guess?
And the super speedy light can you chase?
I am the space,
I expand with a prodigious pace...

I hold the huge shiny hull,
It looks like a human skull...
I am the space,
I exand with a prodigious pace...

Matter and motion are the fundamentals of my revolution,
And it grately impacts physics education...
I am the space,
I expand with prodigious pace...

-Aditya Kirkire (VIII Carver)

OUR BEAUTIFUL SPACE

A world full of darkness
Where the stars keep twinkling
Where the Sun and Moon clash
And meteors keep sprinkling

A destiny of planets
Which revolve around the Sun
But a planet where people live
And can be replace by none

Our world resides here
We all love this place
The ecosystem run here
It looks black but it's our beautiful space.

- Ranveer Jain (IV Rowling)

BUZZING POETS

The Heavens

Once upon a time
There came a theory

The Big Bang
Which exploded way beyondly

Going round the galaxy
Black space is all I see

Exploring the magical cosmos
Is my only fantasy

Planets and stars
All being neighbourly

Sun is the only monarch
Warming us gracefully

Comets are the cunning thieves
Striking joyfully in a beam

Arriving someday on ther mid
Running heavily in a gleam

Up in the sky
Dark and Dusky

I see the silvery moon
Shining brightly in its glittery gloom
What if we didn't know the galaxy

Full of splendors and play
Thought about it everyday

-Niral Wasave (VIII Carver)

SPACE Exploration

5 THINGS ABOUT SPACE

1. SPACE IS COMPLETELY SILENT

There is no atmosphere in space, which means that sound has no medium or way to travel to be heard.

2. THE HOTTEST PLANET IN OUR SOLAR SYSTEM IS 450°C

Venus is the hottest planet in the solar system and has an average surface temperature of around 450 degree Celsius.

3. ONE MILLION EARTHS CAN FIT INSIDE THE SUN

The Sun is large enough that approximately 1.3 million Earths could fit inside (if squashed) or if they retained their spherical shape then 960,000 would fit.

4. THERE ARE MORE TREES ON EARTH THAN STARS IN THE MILKY WAY

There are about three trillion trees on Planet Earth, and between 100-400 billion stars approximately in the galaxy.

5. THE SUN HAS MOST MASS IN THE SOLAR SYSTEM

The sun accounts for 99.86% of the mass in our Solar System with a mass of around 330,000 times that of Earth.

- Prexa Nandre III Alps

SPACE Exploration

Space

Discovery:

The Space was discovered in October 4, 1957, when the Union of Soviet Socialist Republics (USSR) launched Spuntik, the first artificial satellite to orbit Earth. This happened during the period of political hostility between Soviet Union and the United States known as the Cold War.
The First successful human spaceflight was Vostok I ("East I"), carrying the 27-year old Russian cosmonaut, Yuri Gagarin , on 12 April 1961. The Spacecraft completed one orbit around the globe lasting about 1 hour and 48 minutes.

Expansion of Space:

As reported in the Astrophysical Journal researchers using the veteran space telescope have estimated that the expansion rate of the Universe is 73 kilometres per second per megaparsec plus or minus 1.

How many stars are there?

The answer to this question is approximately 200 billion trillion stars in the Universe or to put it in another way, 200 sextillion.

Fun Fact:- Do you know there are more stars in space than the sand grains on Earth!! Now the population of stars jumps enormously to 70 thousand million, million, million stars in the observable universe (a, 2003 estimate), so that we've got multiple stars for every grain of sand – which means, sorry, grains, you are nowhere near as numerous as the stars....

How is the Space Important?

Without space programs we wouldn't have GPS, accurate weather production, solar cells, or the ultraviolet filters in sunglasses and cameras. There's also medical research happening in space right now that could cure the diseases and prolong human lives and these experiments can't be done on Earth.

Fun Fact:- The International Space Station (ISS) has been described as the most expensive single item ever constructed. As of 2010 the total cost was US $150 Billion.

Constellation:

A conservation is an area on the celestial sphere in which a group of visible stars forms a perceived pattern or outline, typically representing an animal, mythological subject or inanimate object. The origins of the earliest constellation likely go back to prehistory.

SPACE Exploration

Space :-

- The area which surrounds the planet Earth and the other planets and stars.

- Space is the boundless three-dimensional extent in which objects and events have relative position and direction. Space is everything in the Universe beyond the top of Earth's atmosphere. In space there are uncountable stars. There are eight planets in our Solar System. The first planet of our Solar System is Mercury, the smallest planet in our Solar System and closest to the sun. It's orbit around the Sun takes 87 Earth days, the shortest of all the Sun's planets. It is 57 million km far from the Sun. It's radius is 2,438km. It's orbital period is 88 days. It has 0 moons. Venus the second planet – it is the hottest planet in our Solar System. The temperature of Venus is 475°Celsius. It is named after Roman godess of love and beauty. Earth where we are living – It is the third largest planet in our Solar System and the astronomical object known to have harbour life. Earth is only planet having a life. 71% of Earth's surface is made up of ocean, dwarfing Earth's polar, ice, lakes and rivers.

-Mohammad Tahee Manga (V Aristotle)

SOME FACTS ABOUT SPACE

- Sun produces so much energy that every second the energy released is equivalent to 100 billion nuclear bombs.
- The tropics around the equator get full heat all year around and have minimal temperature change.
- The tides on our earth are caused due to the gravitational pull of the moon.
- The nearest known brown dwarf is WISE 1049-5319 about 6.5 billion lightyears away. A binary system of brown dwarfs was discovered in 2013.
- The lunar eclipse usually lasts for a few hours whereas a solar eclipse typically lasts only for few minutes.
- There is no wind or rain in space so an astronaut's footprints on the moon will remain imprinted for at least a million years.
- The first living animal in the orbit was a dog from Russia called Laika. She travelled into space on Sputnik 2 in 1957

-Krupa Patel (VIII J.C Bose)

SPACE CAREERS

Reaching for the Stars

If you're among those who dream of making their mark in the field of space, you're in luck. Space exploration and related careers is an ever-expanding area with great potential for numerous future career specializations. If your answer is yes there are many careers that you can opt to be a part of space such as:

- Astronauts
- Space Technology
- Engineering
- Space Researchers/ Scientists (Astrophysicists, Biologists, Biochemists, Biophysicist, Geoscientists, Astrobiologists)
- Space Law
- Space Tourism
- Space Architecture
- Space Medicine/Psychology

Which are the top Space Science colleges in India?

- Indian Institutes of Technology (IITs)
- Indian Institute of Science, Bangalore
- Indian Institute of Science Education and Research (IISER-TVM)
- Indian Institute of Space Science and Technology, Kerala
- Centre for Earth and Space Sciences, (University of Hyderabad)
- Aryabhatta Research Institute of Observational Sciences, Nainital
- Indian Institute of Astrophysics, Bangalore
- Inter-University Centre for Astronomy and Astrophysics, Pune
- National Centre for Radio Astronomy, Pune

What are the courses you can opt for in Space Science after 12th?

- B.Tech in Aerospace Engineering B.Tech in Avionics Engineering
- B.Tech+M.S./M.Tech (B.Tech. in Engineering Physics + M.S. in Solid State Physics, Astronomy, Earth System Science / M.Tech. in Optical Engineering)
- M.Tech in Electronics, Electrical, Mechanical and Computer Science
- PhD in relevant disciplines.

SCIENCE FUN

– @Home –

Let's make a Hovercraft

Materials:

- An old CD
- HOT GLUE gun/fevikwik
- Thumbtack/ pin
- Bottle cap
- Balloon

Steps to make a Hovercraft :

- Make holes in the plastic bottle top.
- Use a hot glue gun/feviquick and fix the bottle top over the hole of the CD. *(Please Note: Students can take help of adults while handling the fevikwik and pins.)*
- Blow up the balloon.
- Twist the neck of the balloon to keep it inflated and pull the lip of the balloon over the edges of the bottle cap.
- Let it Go - Set on a flat surface like a counter top or floor. Release the balloon and watch it glide along without any effort just over the surface.

ASTRO SNACKS

All you need to make these easy-to-assemble Fruit Rockets are:

- watermelon
- banana
- kiwi
- strawberries
- cantaloupe
- skewers

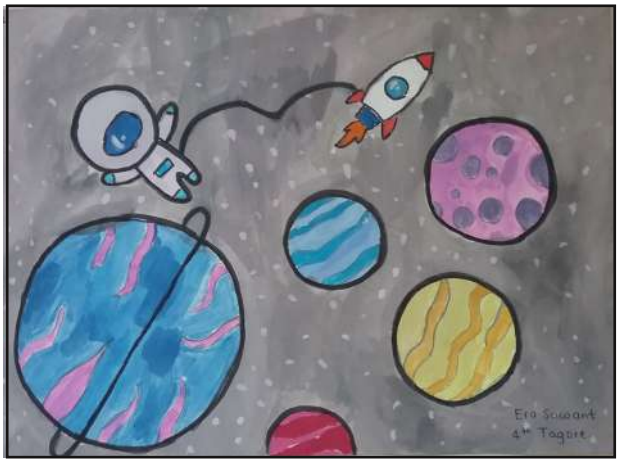
FUN FACT

Some foods like bread, fruits and nuts stay the same in space. Other foods have to be vacuum packed to keep their shape and save space.

All you need to make these easy-to-assemble Martian snackers are:

- Monaco biscuits
- Cherry tomatoes
- Cucumber
- Cheese
- Mayonnaise or Tomato sauce

INTERSTELLER ART GALLERY



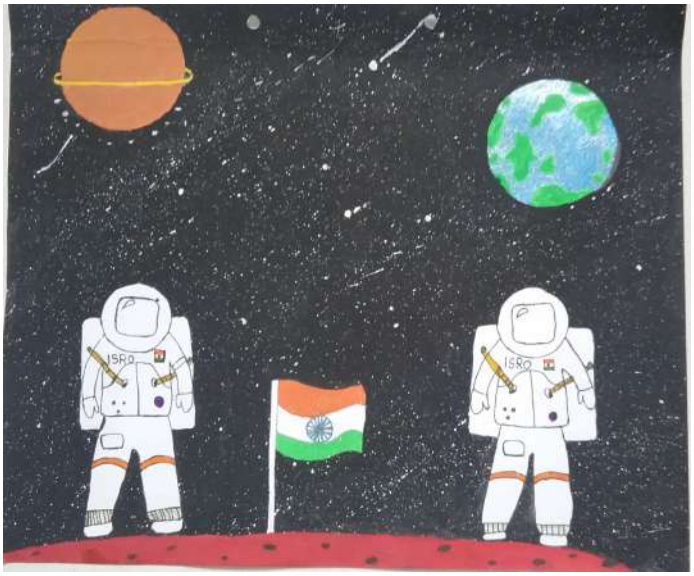
Era Sawant IV Tagore

Asmi Salunkhe III Sahayadri

Jagdish Patil IV Tagore

Parnashri Pathare IV Tagore

Swara Kambale III Sahyadri



Gargi Bandabe VIII J.C.Bose

Harshita Parihar IV Tagore

Niraj Gundecha IV Tagore

SPOTLIGHT @ PIS

Name: Rajnandini Keer
Grade: VI Pythagoras
Achievement: International Level Swimming Competition Selection (Portugal)

Name: Farheen Wadkar
Grade: V Aristotle
Achievement: Gold Medal in International English Olympiad at International Level

Name: Shayaan Mujawar
Grade: VII Einstein
Achievement: Interschool to International Level in SpellBee International

Name: Sanavi Patil
Grade: VII Einstein
Achievement: Gold Medal in SpellBee Interschool to International

Name: Shalmali Bhave
Grade: IX Pearl
Achievement: 3rd Position in Worldwide Dance Competition

Name: Aayush Sawant
Grade: IV Tagore
Achievement: Gold Medal in BDS Competition

Name: Aakansha Pawar
Grade: IV Tagore
Achievement: Bronze Medal in BDS Competition

Name: Karishma Pilankar
Grade: VI Pythagoras
Achievement: Gold Medal at Zonal Level in International English Olympiad Bronze Medal at Zonal Level in International Social Studies Olympiad

Name: Maryam Khopekar
Grade: IV Tagore
Achievement: Silver Medal at Zonal Level in International Mathematics Olympiad

Name: Vihaan Kadam
Grade: V Darwin
Achievement: Bronze Medal at Zonal Level in International Math Olympiad.

Name: Samarth Dudiye
Grade: V Darwin
Achievement: Bronze Medal in International Social Studies Olympiad

Name: Chaitanya Kadam
Grade: VI Aryabhatta
Achievement: Gold Medals in 50m & 100m freestyle and 50m & 100m breastroke

Name: Shreel Talekar
Grade: X Apollo
Achievement: Gold Medal in 50 & 100m breastroke; Silver Medal in 100m freestyle; Bronze Medal in 50m freestyle (Swim Champs 2022)

Name: Advait Singh
Grade: IX Pearl
Achievement: Gold Medal in District Level Taekwondo in under 65kg

Name: Hrishikesh Kumbhare
Grade: VIII J.C. Bose
Achievement: Gold Medal in Chess Competition District Level

Name: Anvika Garde
Grade: VII Einstein
Achievement: Gold Medal in District Level Skating

Name: Aarya Shivade
Grade: VII Einstein
Achievement: Gold medal in Taekwondo and Judo tournament

Name: Rajveer Sawant
Grade: I Noddy
Achievement: Gold medal in Taekwondo at District Level

Name: Surabhi Patil
Grade: III Alps
Achievement: Gold Medal in Under 16kg District level Taekwondo Tournament

Name: Shravani Khatavkar
Grade: X Apollo
Achievement: Gold Medal in Swimming Relay and Medley; Silver Medal in 50 & 100m breastroke; Silver Medal in 50m & 100m freestyle; Silver Medal in 50m Butterfly Stroke (Swim Champs 2022)

Name: Swaraj Patil
Grade: III Sahyadri
Achievement: Gold Medal in 'Under 9 Boys' District Level Chess Competition

Name: Rudra Shivade
Grade: III Sahyadri
Achievement: Gold Medal in 'Under 9 Boys' District Level Chess Competition

Name: Swara Kamble
Grade: III Sahyadri
Achievement: Gold Medal in 'Under 9 Girls' District Level Chess Competition

Name: Samyak Hawale
Grade: III Sahyadri
Achievement: Silver & Bronze Medals in District Level Skating

Name: Abhiraj Jadhav
Grade: IV Tagore
Achievement: Silver Medal in Swimming (Swim Champs 2022)

Name: Ratnaraj Patil
Grade: VII Raman
Achievement: Silver medal in 50m and 100m breaststroke (Swim Champs 2022)

Name: Aaradhya Sawant
Grade: IV Tagore
Achievement: Silver Medal in District Level Taekwondo

Name: Aditya Kawade
Grade: IX Pearl
Achievement: Silver Medal and Bronze Medal in Taekwondo

Name: Arhaa Aayre
Grade: III Andes
Achievement: Bronze Medal in Taekwondo at District Level

Students from Grades VIII & IX

had secured second position in Lokmanya Co-Operative Soceity LDT-VANDE MATARAM - Inter-School Patriotic Song Competition (Hindi)

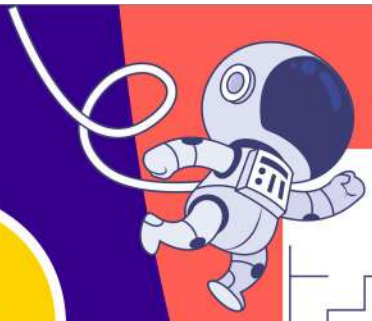
Students from Grade:- VI,VII and VIII

had secured second place in Inter-School Patriotic Song Competition, Kuwarbav Grampanchayat

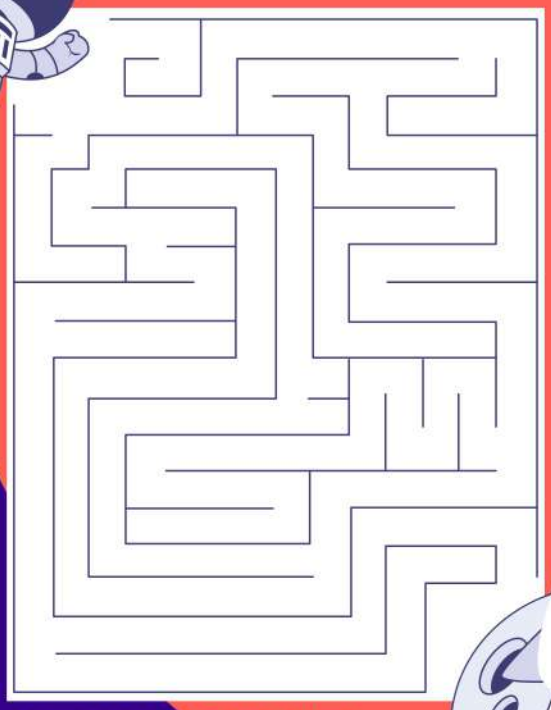
Students of Grade II and III -

had secured first place in Inter-School Patriotic Song Competition, Kuvarbav Grampanchayat

BRAIN PLAY



HELP THE ASTRONAUT



GET BACK TO HIS SHIP

SPACE PUZZLE

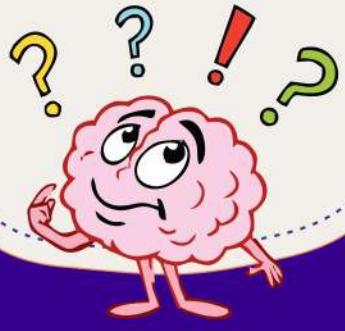
Complete the word search

Y	W	A	Z	X	H	D	G	U	F	O
X	E	G	S	T	A	R	J	Z	W	Y
A	A	Y	T	A	G	M	A	B	R	Y
S	R	H	Y	P	Y	G	Y	S	U	N
T	T	B	U	L	P	K	M	L	G	Z
R	H	D	Y	A	L	I	E	N	X	R
O	M	O	O	N	H	B	V	U	T	O
N	X	U	V	E	W	N	Z	P	J	C
A	R	H	J	T	X	R	G	X	J	K
U	N	T	E	L	E	S	C	O	P	E
T	O	G	T	W	X	Y	E	H	D	T

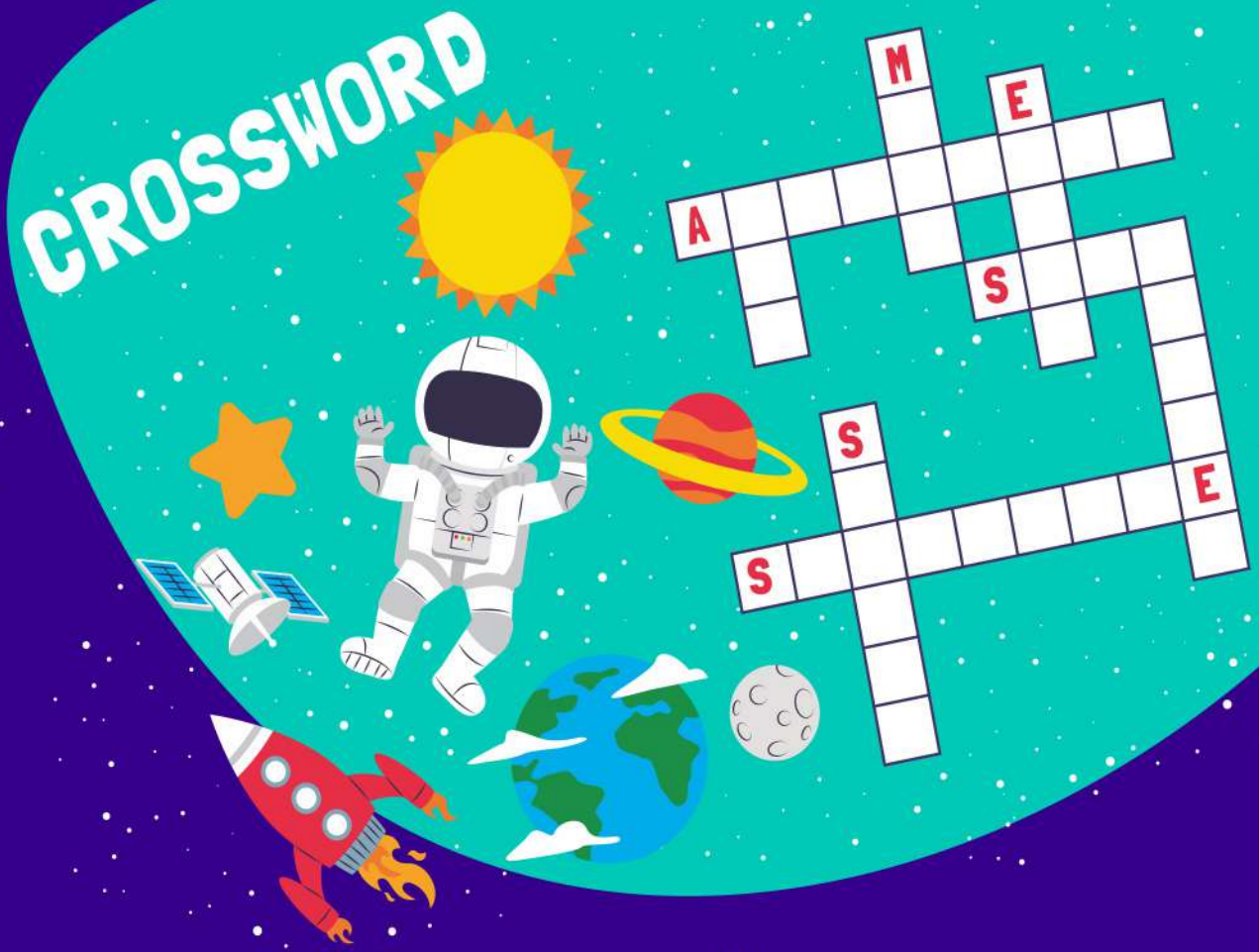
STAR SUN ALIEN ASTRONAUT MOON
UFO ROCKET PLANET TELESCOPE EARTH

What Am I?

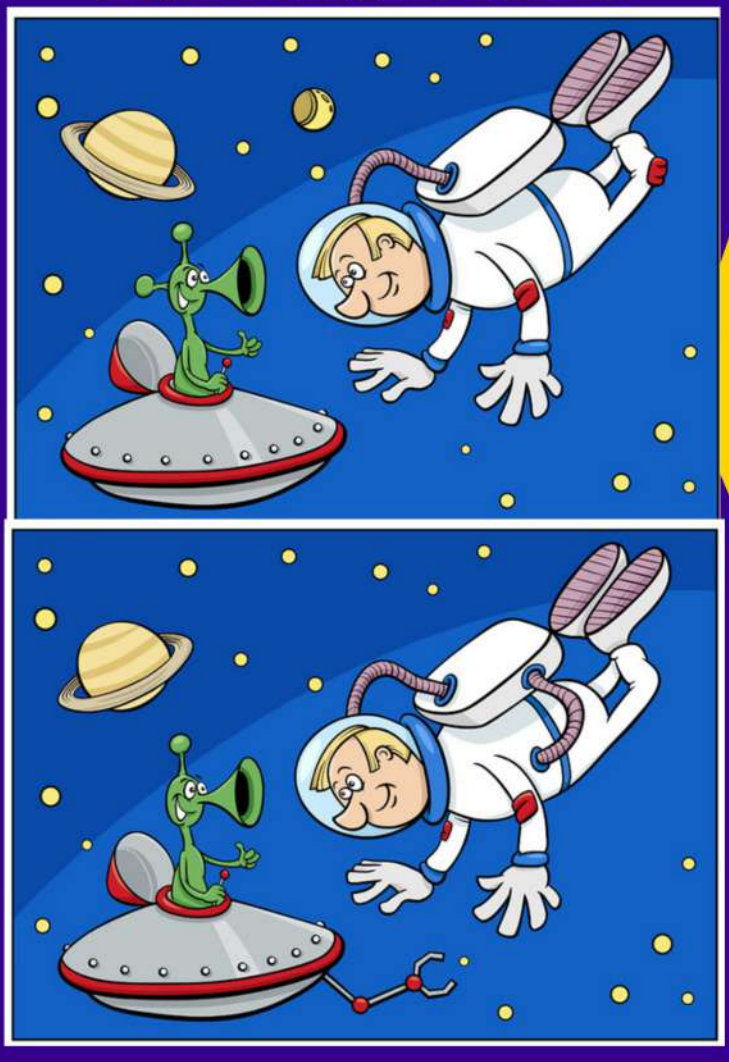
I can be looked through but
I'm not a window,
I have your eye pressed to me
but I'm not a door peephole,
I'm often placed on a tripod
but I'm not a camera,
I help you see things that are
far away but I'm not a pair of
binoculars,
I'm often pointed at the sky
but I'm not a satellite dish!



CROSSWORD



Find 6 differences



Using just the letters in the word below, can you make atleast 12 new words?

RULES: You may only use a letter as many times as it is shown in the key word. Each word must be atleast 4 letters long.

GOOD LUCK!

ASTEROID

Riddle

I am bigger than Venus
but smaller than Uranus.
I am a living rock.
What am I??


Since 1927