



GARGANTUAN GLOBES

2.36
JUPITER HAS A LOW DENSITY, ABOUT 2.36 TIMES THAT OF WATER

274
AS OF MARCH 2025, SATURN HAS 274 CONFIRMED MOONS

TYPES OF PLANETS



1 TERRESTRIAL PLANETS
Inner planets, closest to the Sun, characterised by their rocky, solid surfaces. They are relatively small in size compared to gas giants, but can be denser. They may have a thin or no atmosphere at all. Eg. Mercury, Venus, Earth, and Mars



2 GAS GIANTS
Largest planets in our solar system, primarily composed of gas, mainly hydrogen and helium. They lack a solid surface, and have a thick atmosphere and strong magnetic fields. Eg. Jupiter and Saturn



3 DWARF PLANETS
Celestial bodies that orbit the sun, which are large enough to be spherical, but have not cleared their orbital path of other objects. Eg. Pluto



4 ICE GIANTS
Similar to gas giants in size and mass, but composed of a mixture of rock, ice, and a small amount of gas, primarily methane. They are distinguished by the presence of ice-like materials in their interiors, rendering a distinct blue or greenish-blue colour. Eg. Uranus and Neptune

THEY ARE LARGE PLANETS, PREDOMINANTLY MADE OF HYDROGEN AND HELIUM, WITH NO SOLID SURFACE. AND YET, GAS GIANTS ARE AMONG THE MOST COMPLEX AND RELEVANT CELESTIAL OBJECTS EVER TO HAVE EVOLVED

GAS GIANTS IN OUR NEIGHBOURHOOD

SATURN

THE SECOND-LARGEST PLANET IN OUR SOLAR SYSTEM, WITH A DIAMETER OF 120,500 KM AT THE EQUATOR

It is also composed primarily of hydrogen and helium, with a rocky core. Saturn is famous for its prominent rings, which are made up of ice and rock particles

It has a large number of moons, including the largest moon in the solar system, Titan

It takes about 10.7 hours to rotate on its axis, and 29.4 Earth years to finish one revolution around the Sun

Its density is so low that it would float in water, and is the most oblate planet in the Solar System, meaning it is flattened at the poles

JUPITER

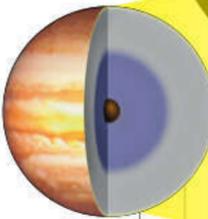
THE LARGEST PLANET IN OUR SOLAR SYSTEM, WITH A DIAMETER OF 142,984 KM AT THE EQUATOR

- It is composed primarily of hydrogen and helium, with a rocky core
- Deep in its atmosphere, pressure and temperature increase, compressing the hydrogen into liquid metallic hydrogen, which is a conductor of electricity, creating a strong magnetic field
- Known for its Great Red Spot, a giant storm that has been raging for centuries. This storm is twice the size of Earth
- The planet has a large number of moons, including the four Galilean ones of Io, Europa, Ganymede, and Callisto
- Jupiter rotates rapidly, completing a rotation in about 9.8 hours, and takes 11.86 Earth years to revolve around the Sun



LARGEST PLANET EVER DISCOVERED

The biggest planet in the known universe is likely a giant exoplanet named ROXs 42 Bb. This 'gas giant', nearly 500 light years from Earth, was discovered in 2013. According to NASA, ROXs 42 Bb has a radius that is estimated to be 1.12 times that of Jupiter's. Its mass is as much as 9 Jupiters, and takes 1,968.3 years to complete one orbit of its star, and is located 157 AU from its star



HRITHIK KIRA BAGADE

JUPITER



URANUS



NEPTUNE

- MOLECULAR HYDROGEN
- METALLIC HYDROGEN
- HYDROGEN, HELIUM, METHANE
- MANTLE (WATER, AMMONIA, METHANE ICES)
- CORE (ROCK, ICE)

MOLECULAR MODEL OF PLANETS

SCIENTISTS estimate there are ~1 septillion (1 followed by 24 zeros) planets in the observable universe. This figure is based on current research, which constantly expands with new discoveries. These celestial bodies are found across billions of galaxies, with most orbiting their own star systems, while some are also classified as rogue planets – interstellar objects of planetary mass which are not gravitationally bound to any star.

The Solar System is dominated by two planets – Jupiter and Saturn – whose imposing appearance has captivated stargazers ever since they could be viewed from Earth. If even dwarf planet Pluto was counted, Jupiter would literally find itself in the centre of all the planets put together, and accordingly, it holds much significance in the workings of the Solar System. A singular important similarity between Jupiter and Saturn is their planetary categorisation – Gas gi-



ants. Gas giants are a distinct class of planets in the Solar System and beyond, characterised by their massive size, thick atmospheres, and the lack of a solid surface. These planets, primarily composed of hydrogen, helium, and other gases, stand in stark contrast to rocky planets like Mercury, Venus, Earth and Mars, and are some of the most fascinating objects in the universe, offering scientists a wealth of knowledge about planetary formation, atmospheric science, and the possibility of life in extreme conditions.

Sometimes referred to as "giant planets", these large planets primarily consist of hydrogen and helium, with small amounts of other elements and compounds. They have a massive outer atmosphere, but lack a well-defined solid surface. While the term "gas giant" originally applied only to Jupiter and Saturn, it is now often used to refer to any large planet that is predominantly composed of gas.

In definition, both Jupiter and Saturn are enormous in size, with the former being the largest planet in the Solar System. While not technically classified as gas giants, Uranus and Neptune are also sometimes referred to as "ice giants" due to their composition, which contains a higher proportion of heavier elements like water, ammonia, and methane. Despite these differences, they share many characteristics with gas giants, especially in their massive atmospheres.

Composition and Structure

Gas giants can be significantly larger than other types of planets, including rocky ones like Earth, due to their ability to retain large amounts of gas.

As mentioned above, gas giants are predominantly composed of hydrogen and helium, the two lightest elements in the Periodic Table, with traces of other gases such as methane, ammonia, and water vapour. These elements form the bulk of their atmospheres, contributing to their low densities, compared to

rocky planets. The lower densities of gas giants are due to the fact that the materials they are made of are much lighter than rock or metal.

Their atmospheric pressure increases dramatically with depth, and the lower layers are often composed of a mixture of gases and liquids, creating complex and turbulent weather patterns. Beneath the thick atmosphere, gas giants may have a small, dense core made up of heavier elements like iron, nickel, and rock. This core is thought to be surrounded by layers of liquid hydrogen and helium, with deeper layers of metallic hydrogen, a form of hydrogen that behaves like a metal due to the intense pressure found inside these planets. While the core is small compared to the overall size of the planet, it plays an essential role in generating the planet's magnetic field.

Gas giants are often surrounded by a complex system of rings and moons. Saturn is famous for its extensive and visually striking ring system, which is primarily made of ice and rock particles. Gas giants' numerous moons may be quite large and geologically active. Jupiter's moon Europa has a subsurface ocean, while Saturn's moon Titan has a thick nitrogen atmosphere and lakes of liquid methane.

How were gas giants formed?

The formation of gas giants is a complex process that is not entirely understood, but is generally believed to follow a two-stage process:

CORE ACCRETION

The first stage involves the formation of a solid core. This process begins with the accumulation of ice, rock, and other materials in the protoplanetary disk around a young star. Over time, these particles collide and stick together, gradually building up a large solid core. Once the core reaches a certain size, it has enough gravitational pull to begin attracting gas from the surrounding disk

GAS ACCRETION

After the solid core is formed, the planet begins to capture large amounts of hydrogen and helium from the surrounding gas. This gas accumulation can happen relatively quickly, and the planet can grow to a massive size in a short period. The gas giant's core plays an essential role in this process, as it provides the gravitational pull needed to capture the surrounding gas

Gas giants play an important role in shaping the dynamics of the Solar System. They are often considered "vacuum cleaners", because their massive gravitational fields can attract and capture comets, asteroids, and other debris, preventing many of these objects from col-

liding with inner planets like Earth. Their gravity also helps to influence the orbits of other planets and objects in the Solar System.

The gravity of gas giants, particularly Jupiter, has a significant impact on the trajectories of other bodies in the Solar System. Jupiter's strong gravitational field is believed to have deflected potential cometary impacts that could have otherwise posed a threat to Earth. This has led some scientists to refer to Jupiter as the "Protector of Earth". The gas giants' gravitational forces also help stabilise the orbits of the other planets, especially in the outer regions of the Solar System.

Gas giants are also believed to have played a crucial role in the formation of the Solar System. They may have formed in the early Solar System from the remnants of the solar nebula, a cloud of gas and dust that surrounded the young Sun. Their enormous size allowed them to attract vast amounts of gas, leading to the formation of their thick atmospheres. The gas giants' presence may have also affected the distribution of material in the early Solar System, influencing the formation of the inner rocky planets and the asteroid belt.

Exploration beyond realms

Gas giants have been the subject of intense scientific study, especially since the advent of space exploration. The exploration of these planets has provided valuable insights into the nature of planetary atmospheres, weather patterns, magnetic fields, and planetary formation. The two gas giants of our solar system have been extensively studied through space missions like NASA's Galileo spacecraft (which orbited Jupiter from 1995 to 2003) and the Cassini spacecraft (which orbited Saturn from 2004 to 2017). These missions revealed important information about the planets' atmospheres, ring systems, and moons. The discovery of active volcanoes on Jupiter's moon Io and the subsurface oceans on Europa, as well as the detailed study of Saturn's moon Titan, has significantly expanded our understanding of the potential for life in extreme environments.

Meanwhile, the study of gas giants is not limited to our Solar System. Advances in telescopic technology have allowed astronomers to detect exoplanets – planets orbiting stars beyond Pluto. Many of the exoplanets discovered so far are gas giants, and the study of these distant worlds is providing new insights into planetary formation and the diversity of planetary systems in the Milky Way. Some exoplanets, known as "Hot Jupiters", are gas giants that orbit very close to their parent stars, leading to extreme temperatures and interesting atmospheric phenomena.

EVARISTE GALOIS HRITHIK KIRAN BAGADE

ALGEBRAIC LEGACY

A vast contribution to mathematics, in a very short eventful life, best describes Evariste Galois. The French mathematician's work in algebra laid the foundation for what is now known as 'Galois Theory'. Despite his brief life – he died at just 20 years old – Galois' work had a profound impact on the development of abstract algebra and the theory of equations. Galois was born on October 25, 1811, into a politically active family in Bourg-la-Reine, France, and he himself became involved in revolutionary politics during his youth. However, he is best known for his work on the solvability of polynomial equations. Before him, mathematicians had been concerned with solving cubic and quartic equations, but Galois took a more general approach. He studied the conditions under which an equation of any degree could be solved by radicals (ie., using roots). Galois developed a theory that explored how the symmetry of the roots of an equation relates to the structure of its corresponding algebraic group, now known as a 'Galois Group'. His work showed that general polynomial equations of degree five or higher could not be solved by radicals, a result that was proven rigorously much later. Meanwhile, his political engagements led to multiple arrests, and he was eventually killed in a duel in Paris, under mysterious circumstances, on May 31, 1832. However, it was his mathematical genius that earned him posthumous recognition. Galois' theory provided a deep understanding of the connection between field theory and group theory, forming the basis for much of modern abstract algebra. Galois published only a few papers during his lifetime, and his ideas were not widely understood or appreciated while he was alive. It wasn't until the 19th century that mathematicians such as Joseph-Louis Lagrange and Augustin-Louis Cauchy began to fully recognise the depth of his insights.

JANA SMALL FINANCE BANK (A Scheduled Commercial Bank) Registered Office: The Fairway, Ground & First Floor, Survey No.10/1, 11/2 & 12/2B, Off Domlur, Koramangala Inner Ring Road, Next to EGL Business Park, Challaghatta, Bangalore-560071.

E-AUCTION NOTICE

PUBLIC NOTICE FOR SALE THROUGH E-AUCTION UNDER THE SECURITISATION AND RECONSTRUCTION OF FINANCIAL ASSETS AND ENFORCEMENT OF SECURITY INTEREST ACT (SARFESI ACT) 2002, READ WITH PROVISIO RULE 8(6) & 9 OF SECURITY INTEREST (ENFORCEMENT) RULES 2002.

The undersigned as authorised officer of Jana Small Finance Bank Limited has taken possession of the following property in exercise of powers conferred under section 13(4) of the SARFESI ACT. The Borrower in particular and public at large are informed that online auction (e-auction) of the mortgage property in the below mentioned account for realisation of dues of the Bank will be held on "AS IS WHERE IS BASIS" and "AS IS WHAT IS BASIS" on the date as prescribed as here under.

Sr. No.	Loan Account Number	Name of Original Borrower/ Co-Borrower/ Guarantor	Date of 13-2 Notice	Date of Possession	Present Outstanding balance as on 24.03.2025	Date & Time of Inspection of the property	Reserve Price in INR	Earnest Money Deposit (EMD) in INR	Date and Time of E-Auction	Last Date Time & Place for submission of Bid
1	45469630000183 & 45469800000040	1) Mr. Riyaz Pasha, 2) Mrs. Jabeena J S, W/o. Mr. Riyaz Pasha	01.02.2024	30.09.2024	Rs.6,90,703.79 (Rupees Six Lakh Ninety Thousand Seven Hundred Three and Seventy Nine Paise Only)	09.04.2025 Time: 09:30 AM to 05:00 PM	Rs.5,32,000/- (Rupees Five Lakh Thirty Two Thousand Only)	Rs.53,200/- (Rupees Fifty Three Thousand Two Hundred Only)	15.04.2025 @ 02:00 PM	11.04.2025, Till 5:00 PM Jana Small Finance Bank Ltd., The Fairway, Ground & First Floor, Survey No.10/1, 11/2 & 12/2B, Off Domlur, Koramangala Inner Ring Road, Next to EGL Business Park, Challaghatta, Bangalore-560071

Details of Secured Assets: All that piece and parcel of Residential Building constructed in Site No.10/18/2 bearing Mahanagara Palike Khatha No.4492/4982 (Old Municipal Khatha No.4492) and PID No.85471 (formed in Sy.No.24 and 25) measuring East-West: 15 Feet and North-South: 20 feet is situated at Ward No.29, Maruluru Janantha Colony Extension, Tumkur and Bounded as: On the East: Gally and after site No.10/17, On the West: House Constructed in Site No.10/18/1 belongs to Rathamma, On the North: Remaining extent in same Site measuring 15'x 20' Feet belongs to Noor Jan and after Road, On the South: Conservancy and Site No.10/41.

The properties are being held on "AS IS WHERE IS BASIS" & "AS IS WHAT IS BASIS" and the E-Auction will be conducted "On Line". The auction will be conducted through the Bank's approved service provider M/s. 4 Closure at the web portal <https://bankauctions.in> & www.foreclosureindia.com. For more information and For details, help, procedure and online training on e-auction, prospective bidders may contact M/s. 4 Closure; Contact Mr. M Srinivasulu Contact Number: 814200809. Email id: info@bankauctions.in / srinivas@bankauctions.in.

For further details on terms and conditions to take part in e-auction proceedings and any for any query relating to property please contact Jana Small Finance Bank authorized officers Mr. Ranjan Naik (Mob. No.6362951653), Mr. Umesh (Mob. No.8050149617) & Mrs. Syeda (Mob. No.7400445147). To the best of knowledge and information of the Authorised Officer, there are no encumbrances on the properties. However the intending bidders should make their own independent inquiries regarding the encumbrances, title of property put on prior to submitting their bid. No conditional bid will be accepted. This is also a notice to the above named Borrowers/ Guarantors/ Mortgagees about e-auction scheduled for the mortgaged properties. The Borrower/ Guarantor/ Mortgagee are hereby notified to pay the sum as mentioned along with up to date interest and ancillary expenses before the date of auction, failing which the property will be sold and balance dues if any will be recovered with interest and cost.

Date: 26.03.2025, Place: Tumkur Sd/- Authorized Officer, Jana Small Finance Bank Limited