



JUPITER FACT FILE

Known to the ancients, the giant planet Jupiter is named after the Roman **King of the Gods**, an appropriate name for the largest planet in the Solar System. In fact Jupiter is larger and more massive than all of the other planets put together.

Jupiter is one of the gas giants and is mostly made up of **hydrogen**. The 'surface' appears as a tapestry of multicoloured stripes created by the strong winds that speed around the planet.

Jupiter, like its neighbour Saturn, has a ring system. Unlike its giant neighbour however, **Jupiter has only one ring**, which is made of micro particles much like smoke. It was discovered in 1979 by the Voyager 1 spacecraft and is only visible when backlit by the Sun.

Over 60 moons whirl around Jupiter giving it the appearance of a mini Solar System. Some of these moons are captured asteroids that have been reeled in by Jupiter's huge gravitational field. The most famous of Jupiter's moons are Io, Europa, Ganymede and Callisto. These are known as the Galilean moons after Galileo Galilei, the Italian astronomer who first observed them in 1610.

Io is the most volcanically active body in the Solar System. It is covered with volcanoes that change the surface, painting it various colours.

Europa is covered in a thick layer of ice with a possible vast ocean underneath. On Earth, resistant life survives in thick ice sheets that cover deep lakes in Antarctica.

Bacteria find microscopic melt cracks in the ice and flow along. Perhaps Europa's similar covering of ice would be no barrier to resistant life.

Ganymede is the largest moon in the Solar System. It is probably made of rock and water ice and its surface is covered with ancient craters and younger grooves and ridges. **It may even have a very thin oxygen atmosphere!**

Callisto is one of the most heavily cratered satellites in the Solar System. Its major surface feature is a 3,000 kilometre wide basin named Valhalla.

Did you know that...?

Jupiter is the fastest spinning planet. **It takes under ten hours to complete one turn.** It spins so quickly it bulges in the middle!

Jupiter is the fourth brightest object in the sky after the Sun, the Moon and Venus and can be seen with the naked eye. Look at Jupiter through a pair of binoculars or a telescope and you may be able to see its beautiful red and white stripes and maybe some of the Galilean moons.

Jupiter is **similar in composition to the Sun**. If it were eighty times more massive it would have become a star and not a planet.

In amongst the striped bands on Jupiter's surface is the Great Red Spot, a **swirling hurricane** about three times the size of Earth. This storm has been raging for over three hundred years.

JUPITER STATISTICS

Distance of Jupiter from the Sun:	778,412,000 km (average)
Distance from the Sun compared to Earth:	5.2 x
Length of Year:	11.85 years
Length of Day:	9.925 hours
Diameter:	142,984 km
Diameter compared to Earth:	11.2 x
Number of Moons:	60+

Mysteries left to solve:

How was Jupiter formed? Studying what is underneath its stripy surface may help us to solve some of the mysteries about the formation of the Solar System.

A rocky core? Does Jupiter have a rocky core underneath that swirling gas? If so how did it form? And how big is it? A good guess is that it may be about the same size as the Earth.

Is Europa a suitable site for life? The European Space Agency and NASA hope to find out by looking for evidence of life on this frozen moon. They also want to know if it has a subsurface ocean and how Europa interacts with Jupiter.

Missions: Past and Future:

There have been only a handful of missions to Jupiter, mostly fly-bys from spacecraft on their way to other planets.

Pioneer 10 was the first spacecraft to travel through the Asteroid Belt and reach the outer Solar System. The information it gathered about Jupiter was crucial to the designing of the Voyager and Galileo missions.

Voyager 1 transformed our knowledge of the giant planet and the way we look at it. It tracked wind speeds and storms in the atmosphere, discovered lightning crackling in the cloud tops and took photographs of Jupiter's faint ring system. It also furthered our understanding of the Galilean moons.

The Galileo probe discovered more new things about Jupiter including an intense radiation belt above the cloud tops, helium in the same concentration as the Sun and new facts about Io and Europa. It also carried a small probe that analysed the atmosphere of Jupiter.

In 2011 NASA hopes to launch a probe called **Jupiter Polar Orbiter** also known as JUNO. It will circle the poles of the giant planet to explore places that have never been explored before. It will find out about the baffling mysteries hidden inside this giant world.

While filling in the missing pieces of the puzzle about what Jupiter is really like, JUNO will reveal clues about the origin of this giant and give an insight into the formation of our own Solar System.