



READING PASSAGE · LEVEL 3 · ADVANCED

SATURN: WORLDS WITHIN WORLDS

A reading passage for advanced readers (Ages 10–12)

Saturn is one of the most striking objects in the solar system, instantly recognisable by its enormous ring system. While the other gas giants — Jupiter, Uranus, and Neptune — also have rings, Saturn's are by far the brightest and most extensive. They span almost 280,000 kilometres yet are remarkably thin: in most places, no more than 30 metres deep. From above they look solid, but they are really billions of separate pieces of water ice and rock orbiting the planet in formation.

Like Jupiter, Saturn is a gas giant composed primarily of hydrogen and helium. It has no solid surface; instead, its atmosphere gradually thickens with depth until it transitions, deep within, into a layer of liquid metallic hydrogen surrounding a small rocky core. Saturn's overall density is less than that of water — about 0.69 grams per cubic centimetre — meaning that, hypothetically, it would float if you could find an ocean large enough.

At Saturn's north pole sits one of the strangest features in the solar system: a vast hexagonal storm. Each side of the hexagon is roughly 14,500 kilometres long, and the whole structure has been visible since at least the 1980s, when Voyager spacecraft first photographed it. Scientists believe it is created by the way bands of wind interact at the pole, but no other planet shows anything quite like it.

Saturn has more confirmed moons than any other planet — 292 at the latest count. Titan, the largest, is bigger than the planet Mercury and is the only moon with a substantial atmosphere. Below its dense orange smog, Titan has rivers, lakes, and seas of liquid methane and ethane. Another moon, Enceladus, ejects geysers of water vapour and ice from its south pole — evidence of a global subsurface ocean and a possible home for microbial life.

The Cassini–Huygens mission, which orbited Saturn from 2004 to 2017, revolutionised our knowledge of the system. Its Huygens probe also became the only spacecraft ever to land on a moon in the outer solar system, touching down on Titan in 2005. Future missions, including NASA's Dragonfly, will fly directly through Titan's atmosphere as a rotorcraft.

★ WORDS TO KNOW 5 TERMS

hexagonal

Having six sides.

geyser

A jet of water or gas shooting up from below the surface.

rotorcraft

A flying vehicle that uses spinning blades, like a helicopter or drone.

liquid metallic hydrogen

Hydrogen squeezed so hard it flows like a liquid metal.

subsurface

Beneath the surface — under the outer layer.

★ COMPREHENSION QUESTIONS 6 QUESTIONS

1. What makes Saturn's rings stand out compared to the rings of other planets?

3. What is the hexagonal storm at Saturn's pole, and why is it so unusual?

5. What was the Cassini–Huygens mission, and why was it important?

2. Describe what scientists think Saturn looks like below its outer atmosphere.

4. Compare Titan and Enceladus. What makes each one interesting to scientists?

6. What will NASA's Dragonfly mission do that no other mission has done before?
