

10. Neptune (8th Planet)

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Distance: 4.5 billion km

Diameter: 49,244 km

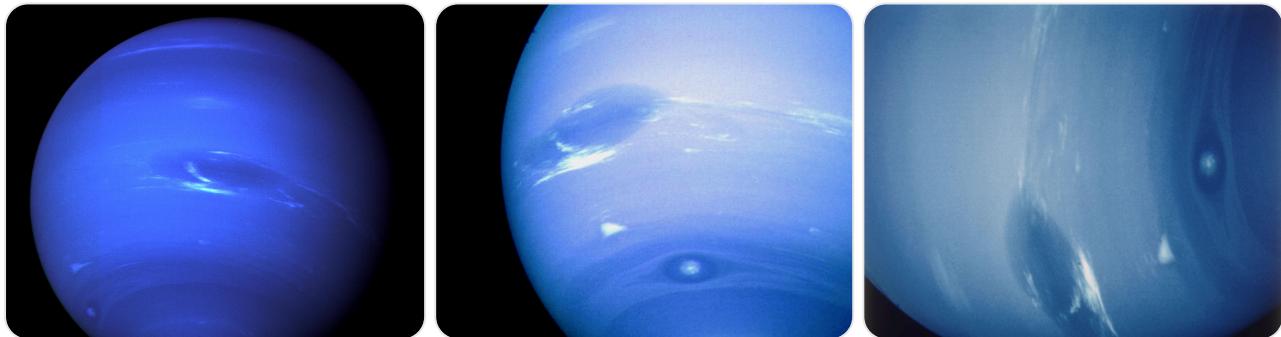
Features:

Strongest winds

Ice giant

Very cold full info on it all the info

Neptune — The 8th and farthest planet from the Sun



Basic Facts

- **Position from Sun:** 8th planet
- **Average distance from Sun:** ~4.5 billion km (30.1 AU)
- **Diameter:** 49,244 km
- **Radius:** 24,622 km
- **Mass:** 1.024×10^{26} kg
- **Gravity:** 11.15 m/s^2 (slightly stronger than Earth's gravity)
- **Length of a day:** ~16 hours
- **Length of a year:** 165 Earth years
- **Temperature:** About -214°C (very cold)
- **Planet type:** Ice giant

Discovery

- Discovered in **1846**
 - Discovered by:
 - Johann Gottfried Galle
 - Based on calculations by Urbain Le Verrier and John Couch Adams
 - Neptune was the **first planet discovered using mathematics**, not direct observation.
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Structure and Composition

Neptune is called an **ice giant** because it contains icy materials instead of mostly gas.

Main layers:

1. Atmosphere

- Hydrogen
- Helium
- Methane (gives Neptune its blue color)

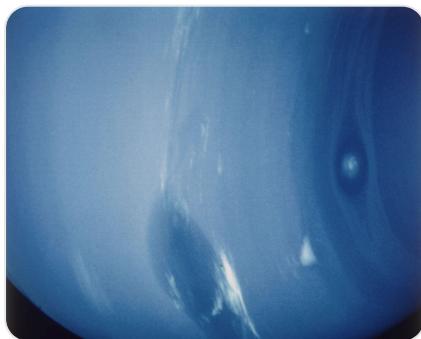
2. Mantle

- Water ice
- Ammonia ice
- Methane ice
- Very hot and dense

3. Core

- Rock and metal
 - Extremely hot (~5,000°C)
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Atmosphere and Weather



Neptune has the **most extreme weather in the solar system**.

Key features:

- Strongest winds: up to 2,100 km/h
 - Faster than the speed of sound on Earth
 - Huge storms called **Dark Spots**
 - White methane clouds move rapidly
 - Constant storms and turbulence
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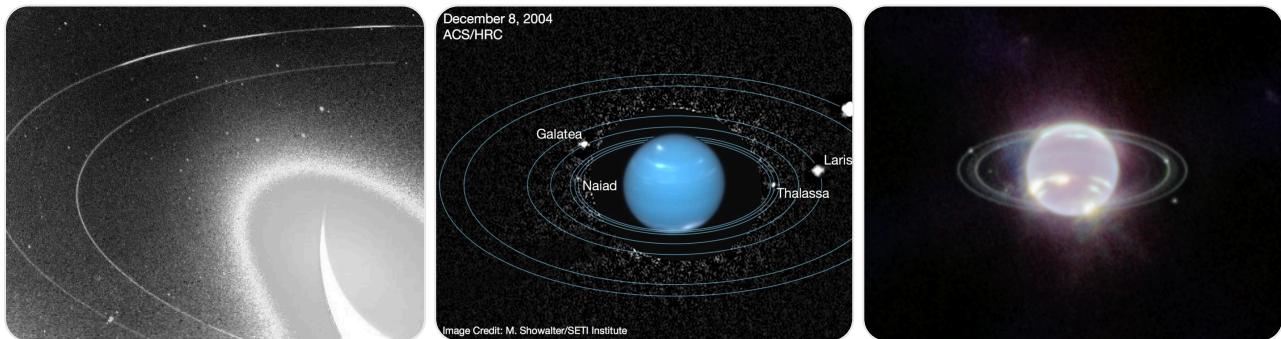
Color

- Neptune looks **deep blue**
 - This is due to **methane gas absorbing red light and reflecting blue light**
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Temperature

- Average temperature: -214°C
 - Very far from Sun \rightarrow receives little sunlight
 - Despite this, Neptune produces its **own internal heat**
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Rings

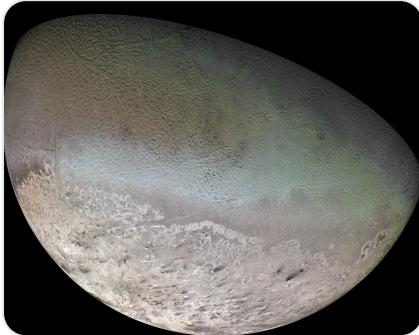


- Neptune has **5 main rings**
 - Rings are:
 - Thin
 - Dark
 - Made of ice and dust
 - Named after scientists like:
 - Galle Ring
 - Adams Ring
 - Le Verrier Ring
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Moons of Neptune

Neptune has 14 known moons

Largest moon: Triton



Triton features:

- Largest moon
- Very cold
- Has nitrogen geysers
- Orbits Neptune backward (retrograde orbit)

Other moons:

Nereid, Proteus, Larissa, Despina, Galatea, etc.

Rotation and Orbit

- Rotation speed: 16 hours per day
 - Orbit time: 165 Earth years
 - Neptune has completed only 1 full orbit since discovery
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Magnetic Field

- Neptune has a very strong magnetic field
 - Tilted and irregular
 - Causes strange auroras
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Exploration

Only one spacecraft visited Neptune:

Voyager 2 (1989)

- Took first close pictures
 - Discovered rings
 - Discovered new moons
 - Observed Great Dark Spot
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Size Comparison

- Neptune is about 4 times wider than Earth
 - About 17 times more massive than Earth
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Interesting Facts

- Farthest planet in the solar system
 - Strongest winds of any planet
 - Extremely cold
 - Has faint rings
 - Has 14 moons
 - Takes 165 Earth years to orbit Sun
 - One of two ice giants (other is Uranus)
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Summary Table

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Diameter 49,244 km

Planet type Ice giant

Temperature -214°C

Day length 16 hours

Year length 165 Earth years

Moons 14

Strong winds Yes (fastest)

Feature**Neptune**

Rings

Yes

If you want, I can also make notes, short points, or school-level answer (5 marks / 10 marks).

