

11. Kuiper Belt

4

Region beyond Neptune

Contains:

Pluto

Eris

Haumea

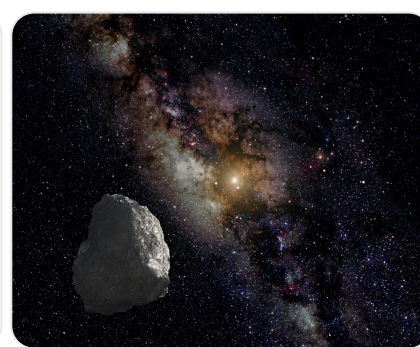
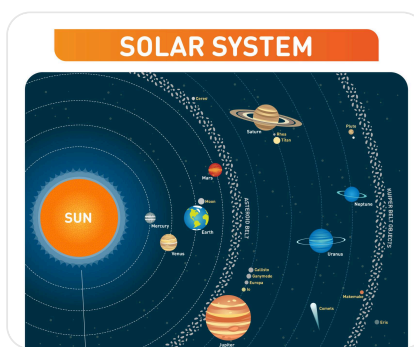
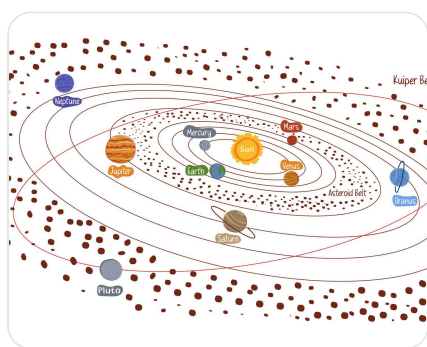
Makemake

Objects made of:

Ice

Rock full info on it

Kuiper Belt — Full Information



1. Definition

The **Kuiper Belt** is a large region of space in our Solar System located **beyond the orbit of Neptune**. It is filled with millions of small icy objects, dwarf planets, and leftover material from the formation of the Solar System.

- Distance from Sun: about **30 to 55 Astronomical Units (AU)**
- 1 AU = distance between Earth and Sun (~150 million km)

2. Location

Order of planets and regions from Sun:

1. Mercury
2. Venus
3. Earth
4. Mars
5. Jupiter
6. Saturn
7. Uranus
8. Neptune
9. Kuiper Belt
10. Oort Cloud (far beyond Kuiper Belt)

So, the Kuiper Belt lies **just outside Neptune's orbit**.

3. Composition (What objects are made of)

Kuiper Belt objects (KBOs) are mainly made of:

- Ice (water ice, methane ice, ammonia ice)
- Rock
- Frozen gases

These objects are very cold because they are far from the Sun.

Temperature: about -220°C

4. Objects found in the Kuiper Belt

Major dwarf planets in Kuiper Belt:

Dwarf Planet	Description
Pluto	Most famous Kuiper Belt object
Eris	Slightly smaller than Pluto
Haumea	Oval shaped, spins fast
Makemake	Bright dwarf planet

Dwarf Planet	Description
Quaoar	Large Kuiper Belt object

5. Size and Structure

- Width: about **7.5 billion km**
- Contains **millions of objects**
- Similar to Asteroid Belt but:
 - Kuiper Belt objects are icy
 - Asteroid Belt objects are rocky

6. Discovery

- Predicted by: **Gerard Kuiper (1951)**
- First discovered object: **1992 QB1**
- Pluto discovered earlier in **1930**

7. Importance of Kuiper Belt

The Kuiper Belt helps scientists understand:

- Formation of Solar System
- Origin of comets
- Early Solar System material

Short-period comets come from Kuiper Belt.

8. Comparison: Asteroid Belt vs Kuiper Belt

Feature	Asteroid Belt	Kuiper Belt
Location	Between Mars & Jupiter	Beyond Neptune
Temperature	Warmer	Very cold

Feature	Asteroid Belt	Kuiper Belt
Objects	Asteroids	Icy objects, dwarf planets

9. Pluto and Kuiper Belt

Pluto is:

- A dwarf planet
 - Part of Kuiper Belt
 - Not a regular planet anymore (reclassified in 2006)
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10. Simple Definition (Exam Answer)

Kuiper Belt is a region beyond Neptune that contains icy objects and dwarf planets like Pluto, Eris, Haumea, and Makemake. These objects are made of ice and rock and are leftovers from the formation of the Solar System.

If you want, I can also give:

- Short notes (2 marks)
- Medium answer (5 marks)
- Long answer (10 marks)

