

Nebula

I. Physical Characteristics

1. Define the term exoplanet.

Nebula - interstellar cloud of gas + dust
(Nebula means "cloud")

2. How does a nebula form?

An old age star sheds its outer layers (remnants of dust, gas, + debris)

3. Stars can not be formed from remnants of a nebula.

Circle One : True False

4. The Orion Nebula is visible in Orion's Belt.

Circle One : True False

5. The Andromeda Galaxy was once thought to be a nebula.

Circle One : True False

II. Types Of Nebulae

1. Define each type of nebula and give an example of each type of nebula.

Diffuse Nebula : No well defined boundaries

Example : Trifid Nebula, Eagle Nebula, Orion Nebula

Planetary Nebula : Gaseous shells of low-mass stars

Example : Helix Nebula, Ring Nebula, Dumbbell Nebula

Supernova Remnants : Remains of a high-mass star explosion

Example : Crab Nebula, SN 1987A, Veil Nebula

Dark Nebula : Blocks light from surrounding stars

Example : Horsehead Nebula, Cone Nebula, Snake Nebula

III. Nebula Discovery

1. How did each of the following advance the understanding of nebulae?

Ptolemy : (150 A.D.) - Recorded nebulosity in
Ursa Major + Leo

Chinese Astronomers : (1054) - Witnessed supernova
that created Crab Nebula

Charles Messier : (1760-1785) - Compiled catalog
of 103 nebulae

William & Caroline Herschel : (1786) - Published book
"Catalogue of One Thousand New Nebulae + Clusters
of Stars"

Great Debate : (1920) - Harold Shapley + Heber Curtis

(Milky Way = Universe) / (Separate galaxies + nebulae)
exist

↳ Andromeda part of
Milky Way

↳ Andromeda = separate
galaxy

IV. Nebula Existence

1. How do nebulae form?

- Explosion of a star

2. In what stage of stellar evolution are the presence of nebulae?

1st Stage of stellar evolution

3. With regards to stellar evolution, how long do nebulae typically exist?

100,000 - 100,000,000 years

4. What is the eventual fate of nebulae?

- Gravity eventually creates a protostar

5. What is the closest and furthest nebulae from the Sun?

Closest : Helix Nebula (700 ly years)

Furthest : MACS0647-JD (13.3 billion ly years)