



## Eclipse

### What is an Eclipse?

An eclipse is a natural astronomical event that occurs when the Sun, Moon, and Earth lie in a straight line.

- One celestial body is partially or completely hidden by another due to the casting of shadows.
- Eclipses occur due to the rotation of the Earth on its axis and its revolution around the Sun.

#### i. Solar Eclipse

A solar eclipse occurs when the Moon comes between the Earth and the Sun, blocking the Sun's light from reaching the Earth.

The Moon's shadow falls on the Earth, and the Sun appears partially or totally hidden from view.

#### Types of Solar Eclipse:

##### Total Solar Eclipse

- Occurs when the entire Sun is completely blocked by the Moon.
- Only the outermost layer (corona) of the Sun may be visible.

##### Partial Solar Eclipse

- Occurs when only a part of the Sun's disk is covered by the Moon.
- The Sun appears partially hidden.

#### Diagram Labels:

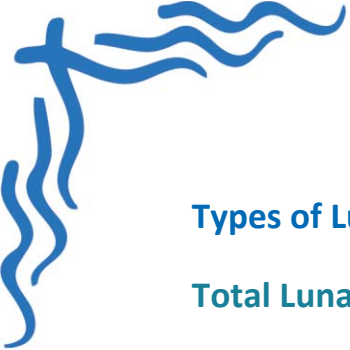
- **Umbra:** The central, darkest part of the shadow where the Sun is completely blocked.
- **Penumbra:** The outer, lighter part of the shadow where the Sun is only partially blocked.

#### ii. Lunar Eclipse

A lunar eclipse occurs when the Earth comes between the Sun and the Moon, and casts its shadow on the Moon.

The Moon passes into the Earth's shadow, causing it to appear darkened or invisible.

- Lunar eclipses occur only on a full moon night.



## Types of Lunar Eclipse:

### Total Lunar Eclipse

- The entire Moon is completely covered by the Earth's shadow.
- The Moon may appear reddish due to Earth's atmosphere bending light — known as a Blood Moon.

### Partial Lunar Eclipse

- Only a part of the Moon enters the Earth's shadow.
- The Moon is partially darkened.

#### Did You Know?

- A solar eclipse happens during the new moon phase.
- A lunar eclipse happens during the full moon phase.
- Eclipses are safe to watch only with proper protection like eclipse glasses or projection methods.
- Solar eclipses are shorter and less frequent than lunar eclipses.

### Comparison Table: Solar vs Lunar Eclipse

Feature	Solar Eclipse	Lunar Eclipse
Position	Sun – Moon – Earth	Sun – Earth – Moon
Occurs During	New Moon	Full Moon
Shadow Cast By	Moon	Earth
Visible From	Small part of Earth	Entire night side of Earth
Eclipsed Body	Sun	Moon
Eye Protection?	Yes – never look directly at the Sun	No – safe to watch with naked eyes

### Quick Summary

- An eclipse occurs when the Sun, Earth, and Moon align in a straight line.
- **Solar Eclipse:** Moon blocks sunlight from reaching Earth.
- **Lunar Eclipse:** Earth blocks sunlight from reaching the Moon.
- Eclipses can be total or partial, depending on how much of the celestial body is hidden.