

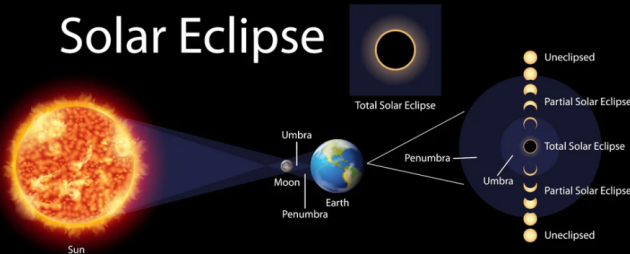


Solar Eclipse



TYPES OF SOLAR ECLIPSE

A solar eclipse occurs when, at just the right moment, the Moon passes between the Sun and Earth.



Total Solar Eclipse (TSE)

- ↳ The Moon completely covers the Sun but **corona can be witnessed**
- ↳ **Essential condition for TSE: Syzygy**
- ↳ No sunlight penetrates the umbra
- ↳ A TSE **occurs once every 1-2 years**; the longest timing recorded is 7.5 minutes



Annular Solar Eclipse (ASE)

- ↳ **Moon near its farthest point** from Earth; Sun not fully covered by the moon
- ↳ Sunlight dims, but the sky does not go dark
- ↳ Sun's **corona not visible**
- ↳ **Essential condition for ASE: New Moon**
- ↳ Moon is at (or very near) a **lunar node**, so the Earth, the Moon, and the Sun are aligned in a straight (or nearly straight) line
- ↳ Sun looks like a ring (**annulus**) of light



Partial Solar Eclipse (PSE)

- ↳ The Moon passes between the Sun and Earth, but **alignment is not perfect**
- ↳ Crescent shape as only a portion of the Sun is covered
- ↳ About 35% of all solar eclipses are PSEs



Keywords Related to Solar Eclipse

- **Syzygy:** Linear alignment of three celestial objects
- **Bailey's Beads:** Appear around Moon's edge during totality, caused by sunlight passing through valleys and between mountains on the Moon's irregular surface
- **Shadow Bands:** Solar crescent in PSE acts as an anisotropic filter resulting in bands on the ground just before and immediately after totality
- **Diamond Ring Effect:** When the Sun is fully covered by the moon and a final bright spot of sunlight called the "diamond" remains visible in TSE
- **Apogee and Perigee:** Points in the moon's orbit farthest (Apogee) and nearest (Perigee) to the earth
- **Umbra and Penumbra:** 2 parts of Moon's shadow: central region (umbra) and outer region (penumbra)
- **Eclipse Magnitude:** Fraction of Sun's diameter covered by Moon
- **Saros Cycle:** A period of ~18 years, 11 days, and 8 hours during which the Sun, Earth, and Moon return to the same relative positions in the sky



Drishti IAS

