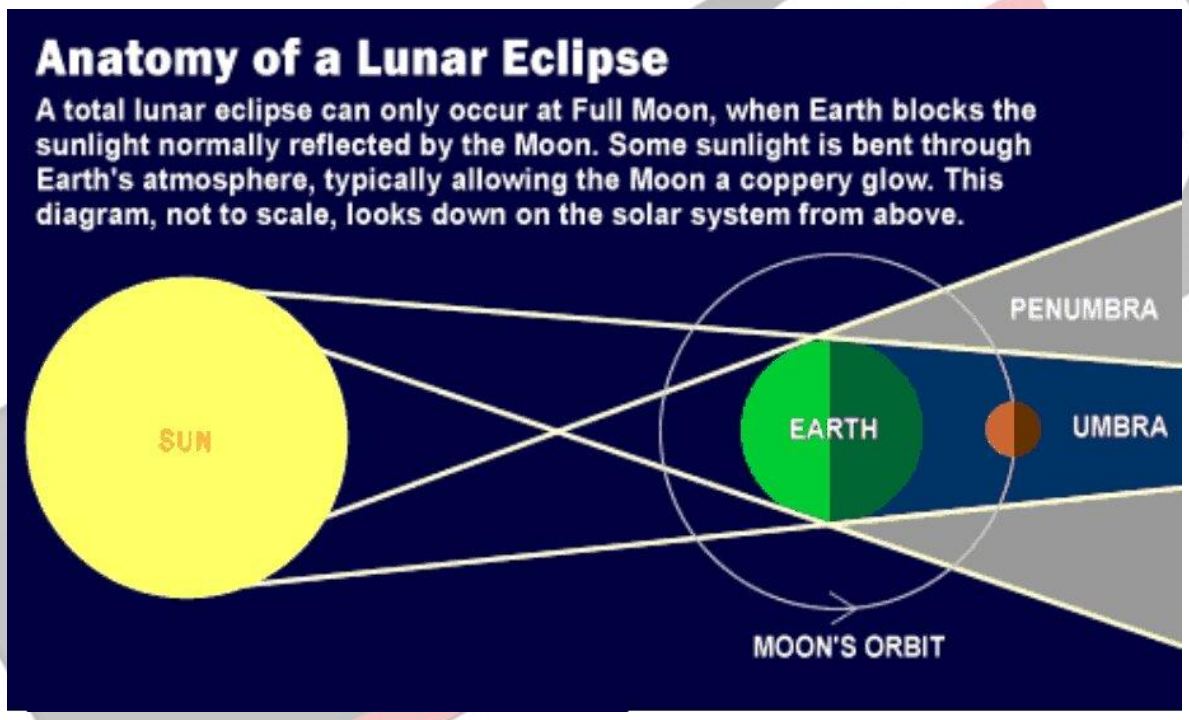
# Blood Moon

## Why in News?

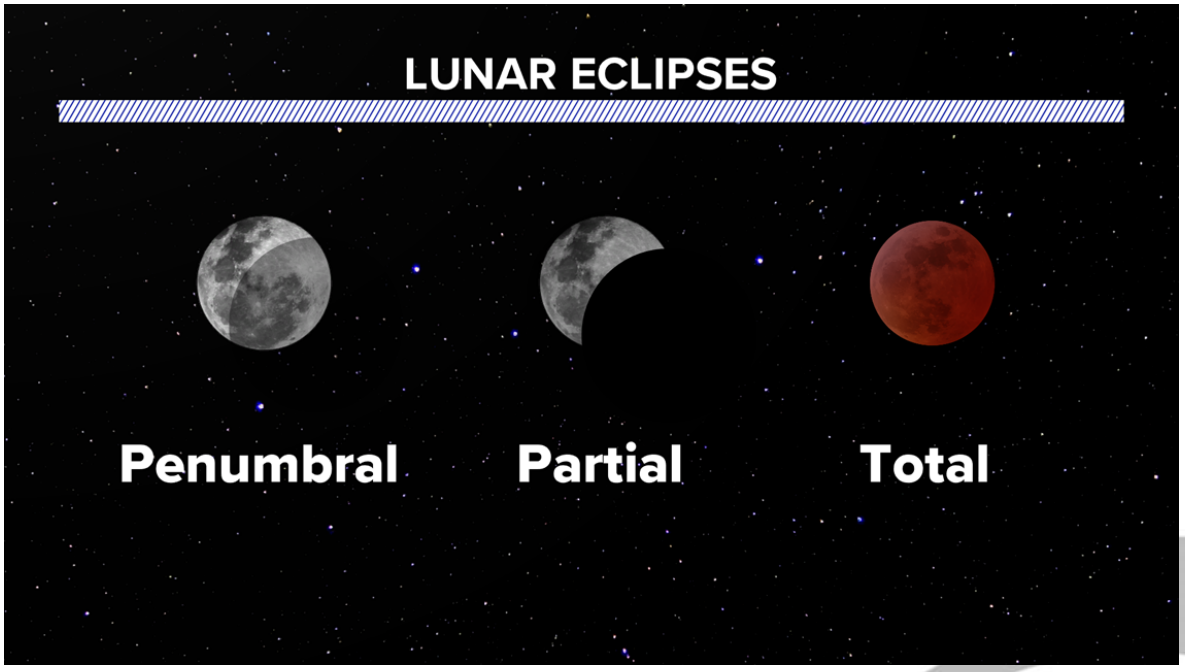
On 8th September 2025, skywatchers across **Asia, Australia, and parts of Africa** witnessed a spectacular **Blood Moon**—a total lunar eclipse where Earth's shadow turned the **Moon deep red.**

- It was the **year's second total lunar eclipse** after March 2025, lasting over five hours with 82 minutes of totality, and building anticipation for the August 2026 **solar eclipse.**
- Unlike a solar eclipse, lunar eclipses are **safe to view with the naked eye.**




## Key Points

- **Lunar Eclipse: A lunar eclipse occurs when the Sun, Earth, and Moon align in a straight line, with Earth positioned in the middle. This blocks sunlight from directly reaching the Moon.**
  - **Total Lunar Eclipse**: When the Moon passes through the Earth's inner, darkest shadow (umbra), it appears **deeply shaded or red.**
  - **Partial Eclipse**: When only part of the Moon passes through the umbra.
  - **Penumbral Eclipse**: When the Moon **enters only the outer shadow** (penumbra), the dimming is subtle and often hard to notice.




- **"Blood Moon" Effect: The** "Blood Moon" effect **happens because Earth's atmosphere filters sunlight before it reaches the Moon. When light passes through our atmosphere:**
  - **Blue light** scatters easily (this is why our sky looks blue).
  - **Red light** bends around Earth and reaches the Moon, causing it to glow red or coppery during a total eclipse.
  - A **bright red Moon** suggests clearer air with fewer pollutants.
    - A deeper red Moon signals more dust, ash, or pollution in the air, reflecting the condition of **Earth's atmosphere.**
- **Correlation: The phenomenon behind the Blood Moon is the same process that colours the sky and sunsets:** Rayleigh scattering**, first explained by physicist John William Strutt, 3rd Baron Rayleigh.**
  - **Daytime Sky**: Short-wavelength blue light scatters in all directions, making the sky appear blue.
  - **Sunrise & Sunset**: Sunlight passes through thicker layers of atmosphere, scattering away blue light. What remains are long wavelengths — red, orange, and yellow.
    - During a lunar eclipse, the Moon is essentially bathed in **all the world's sunsets at once**, projected through Earth's atmosphere.