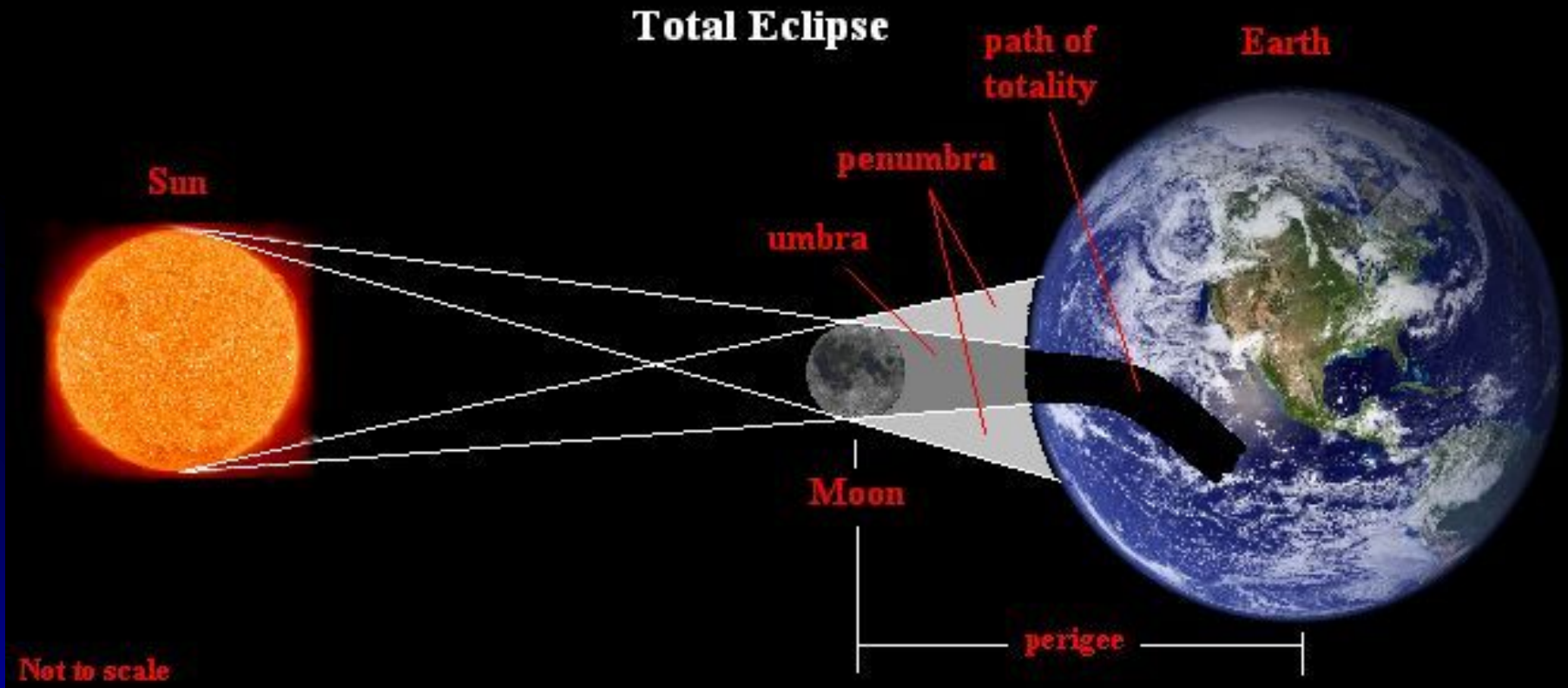


# Eclipses



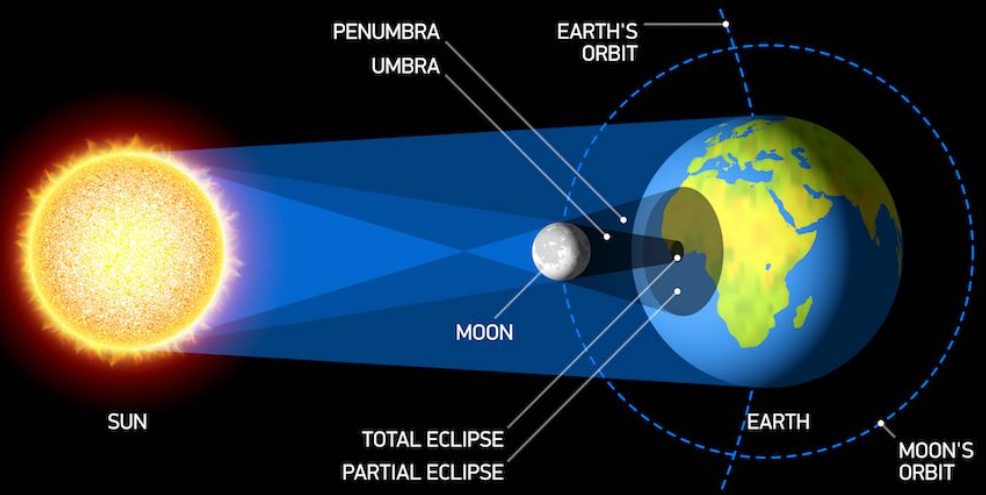
# What is an Eclipse?

One celestial body that moves in front of another, creating a shadow

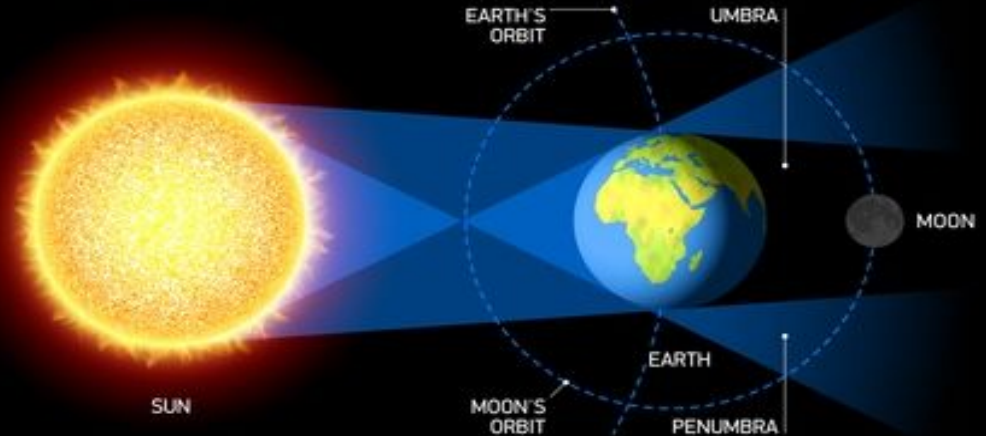


# Two Types of Eclipses

- Solar Eclipse

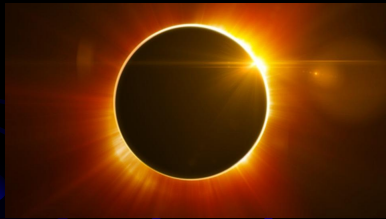


- Lunar Eclipse

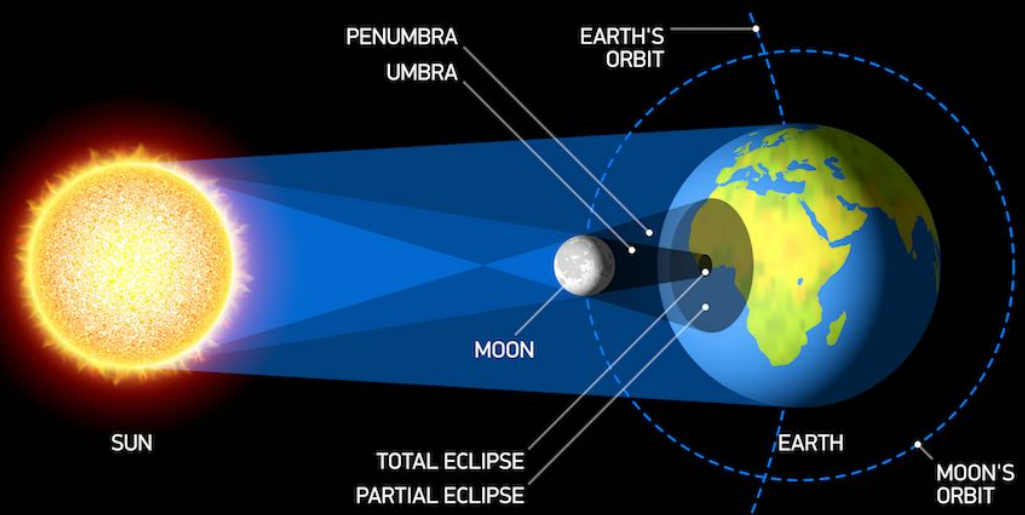


# Solar Eclipse

- the moon passes between the sun and the earth
- it casts a shadow on Earth's surface



- only happens during a New Moon
- total eclipses are rare



# Types of Solar Eclipses

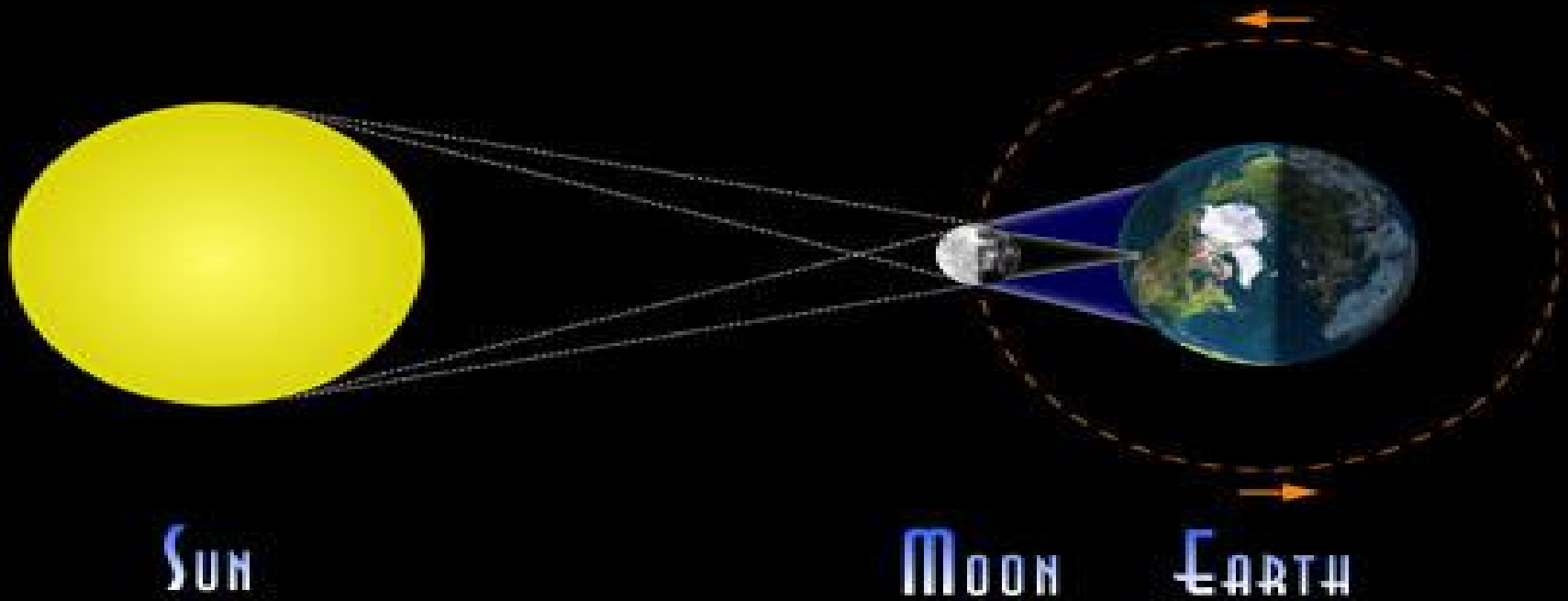
They are different depending on where you are and your location relative to the location of the moon and the sun



- **Partial Eclipse** - when a partial shadow is created

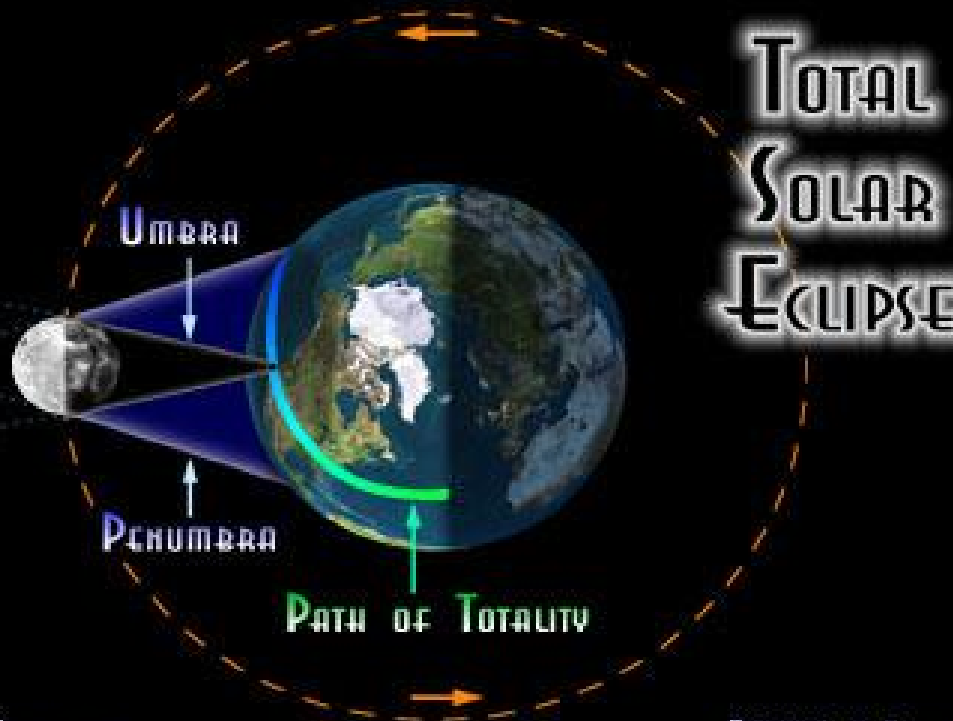
- **Total Solar Eclipse** - happens when the moon completely blocks out the sun's light

# SOLAR ECLIPSE GEOMETRY



# Total Solar Eclipse

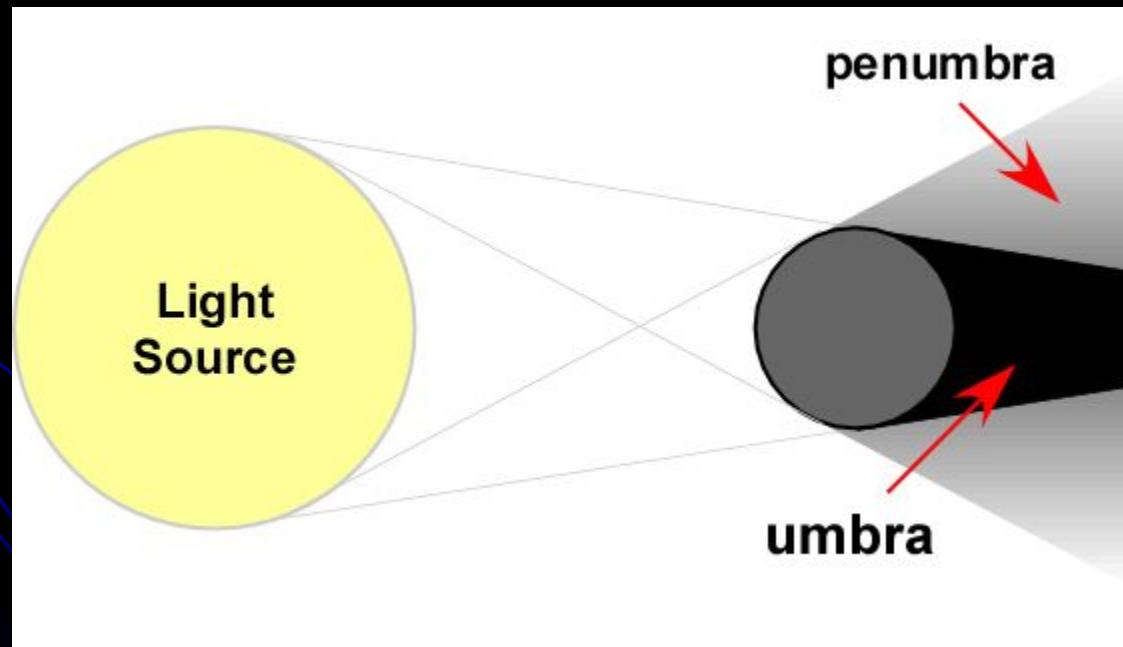
- Observers in the “**umbra**” shadow see a total eclipse
- Those in “**penumbra**” see a partial eclipse—not safe to look directly at Sun



- Only lasts a few minutes
- Path of Totality about 10,000 miles long, only 100 miles wide

# Eclipse Vocabulary

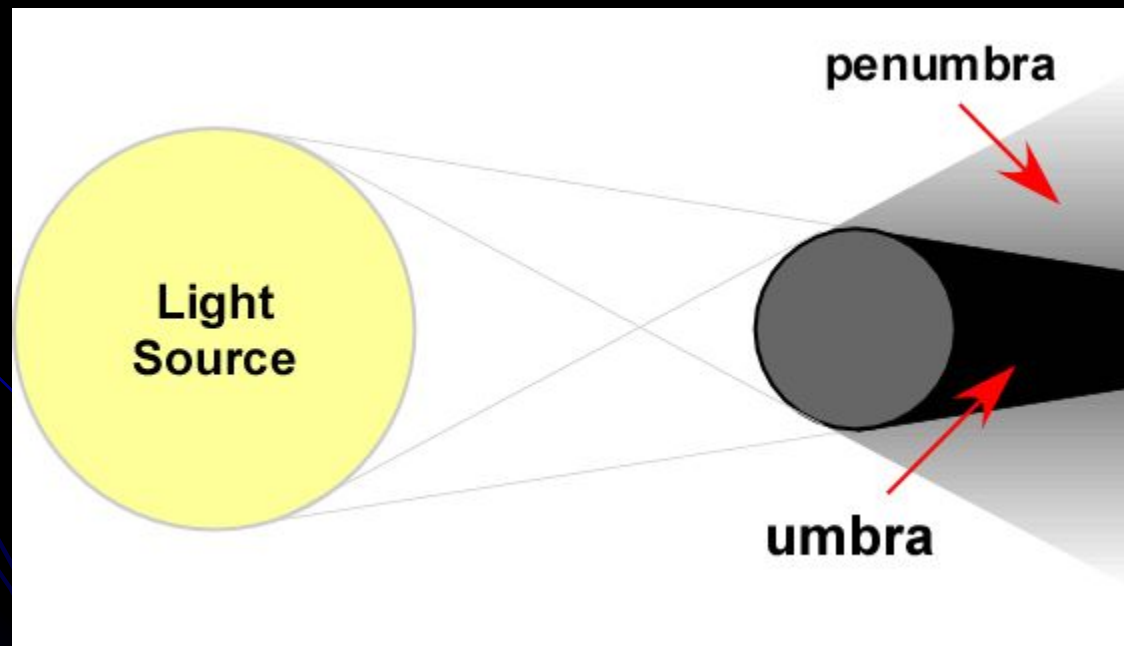
**Umbra** – darkest part of the shadow during an eclipse. People in the umbra will see a total eclipse.



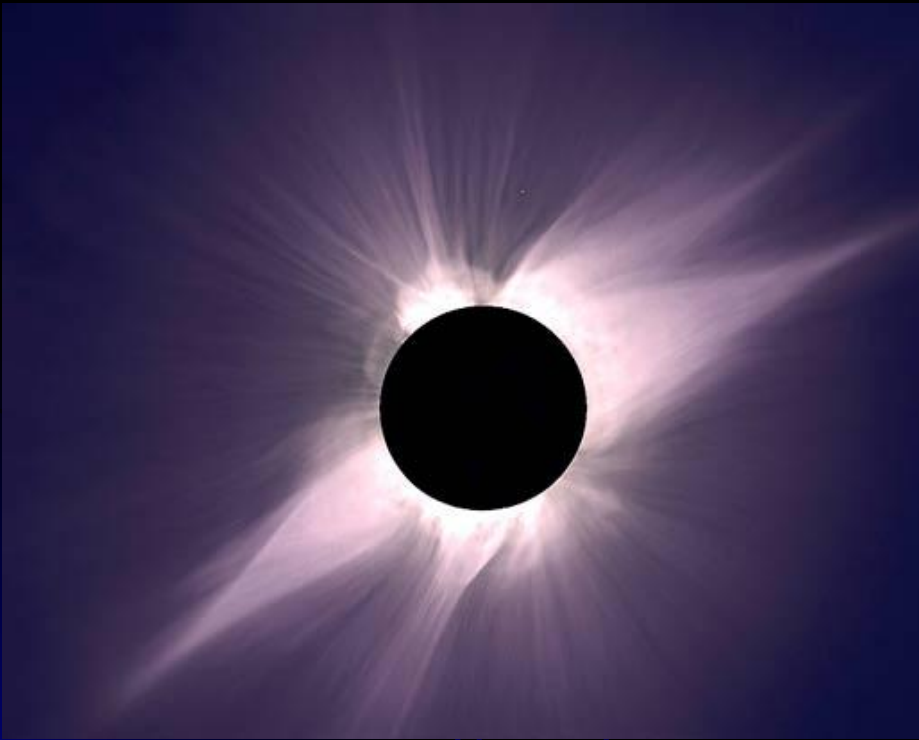


# Eclipse Vocabulary

**Penumbra** - lighter part of the shadow during an eclipse. People in the penumbra will see a partial eclipse.



## Total Solar Eclipse

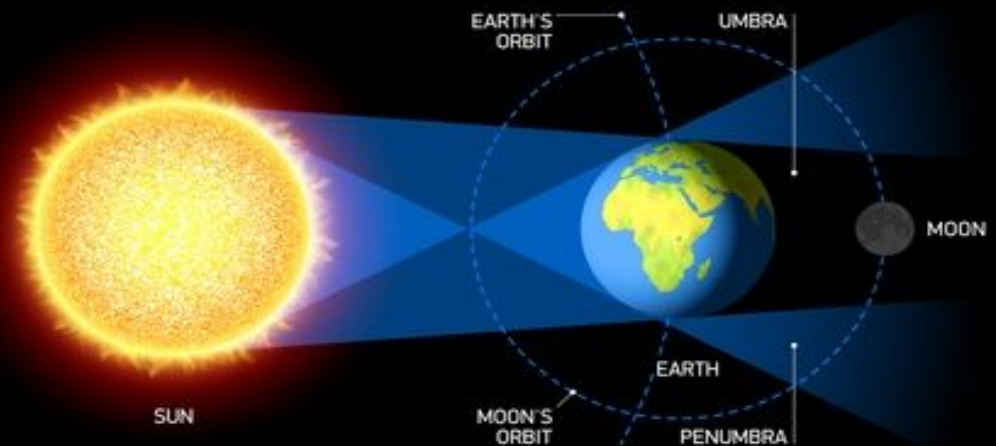


## Partial Solar Eclipse



# Lunar Eclipse

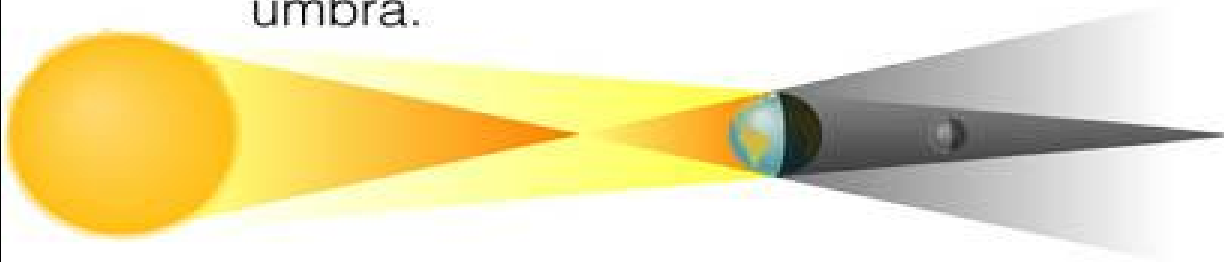
- Earth moves between the moon and the sun
- creates a shadow on the moon
- can only occur during a full moon



- about 2-3 per year
- lasts up to 4 hours

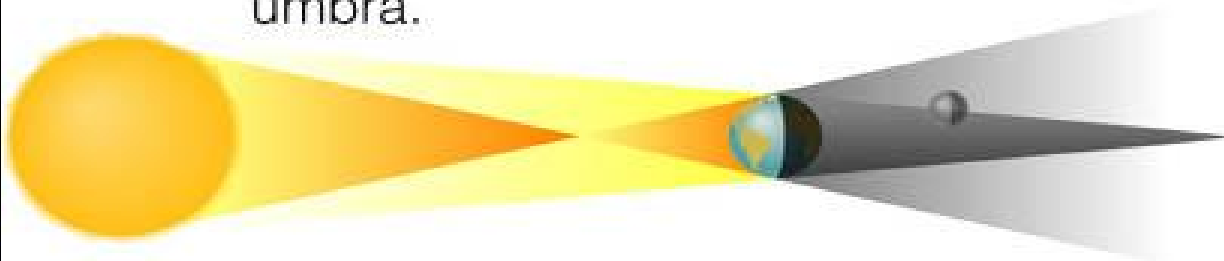
## **Total Lunar Eclipse**

Moon passes entirely through umbra.



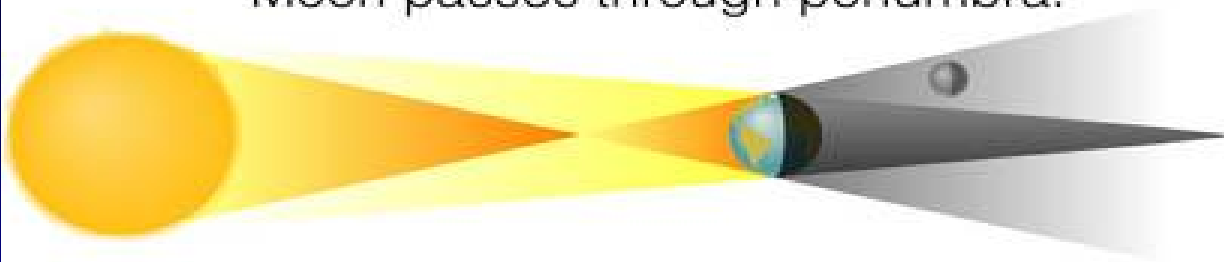
## **Partial Lunar Eclipse**

Part of the Moon passes through umbra.



## **Penumbral Lunar Eclipse**

Moon passes through penumbra.





# Checkpoint

Why do lunar eclipses occur only at full moon? Where are the Earth, the sun, and the moon located in relation to each other during a lunar eclipse?

- Earth must come between the sun and the moon during a lunar eclipse; this only happens during the full moon phase.

***The positions of the moon,  
Earth, and the sun cause  
eclipses.***

