

- I can explain a solar eclipse & state the order of the Earth, Moon & Sun
- I can explain a lunar eclipse & state the order of the Earth, Moon & Sun
- I can state what causes the tides
- I can differentiate between spring & neap tides

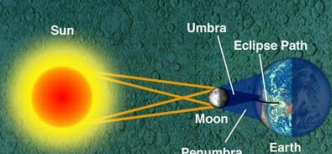
### What is a SOLAR ECLIPSE?

- When the **MOON** passes directly between the **EARTH** and the **SUN**



- Occurs during **NEW MOON PHASE**

### Solar Eclipse



**Solar EMS**

When was the last solar eclipse seen from North America, and when will the next one happen?

The last total solar eclipse viewed from North America was on July 7, 1972 whose path went from Northern Alaska to Nova Scotia. A second, more recent, total solar eclipse was visible on July 11, 1991 from Southern Baja California to Panama. After the August 2017 total solar eclipse, the next annular solar eclipse that can be seen in the continental United States will be on October 14, 2023 which will be visible from Northern California to Florida. Following this, we will have a total solar eclipse on April 8, 2024 visible from Texas to Maine.

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### Lunar Eclipse

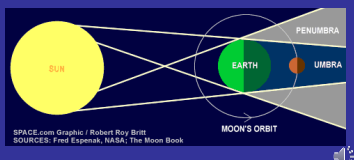
- Darkening of the moon caused by the Earth's shadow.
- **FULL MOON** phase




### Partial or Total lunar eclipses

- Caused by the different **MOON SHADOWS**

- **Umbra**- center or the darkest part of the shadow
- **Penumbra**- outside or the lighter part of the shadow



### Lunar Eclipse



**LUNAR MES**



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## TIDES

- Rise & fall of the waters of the earth

Caused by GRAVITATIONAL ATTRACTION of the:

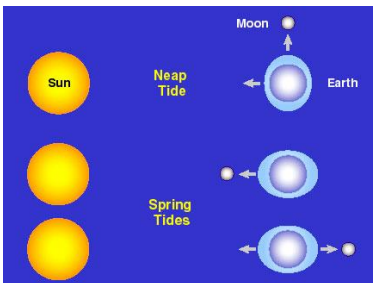
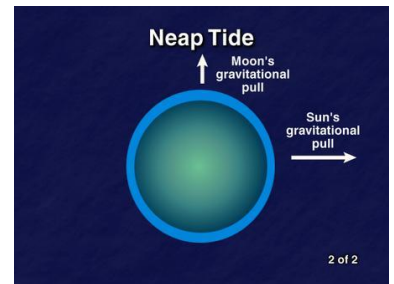
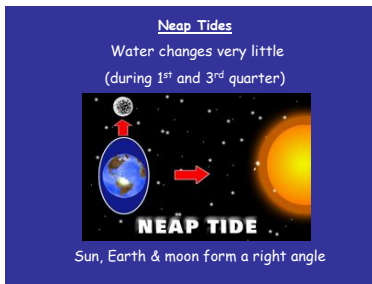
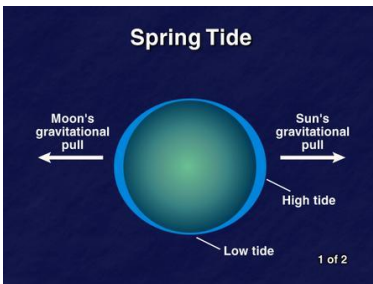
- 1) Moon
- 2) SUN

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### SPRING TIDES

Highest high tide; lowest low tide  
(During FULL and NEW moon)  
Sun, Earth & moon all in line  
- GREATEST TIDAL RANGE

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