

6th Grade Science Key Concepts

Earth in Universe (6.E.1)

6.E.1.1 Earth/Moon/Sun system

Seasons are caused by the Earth's tilt

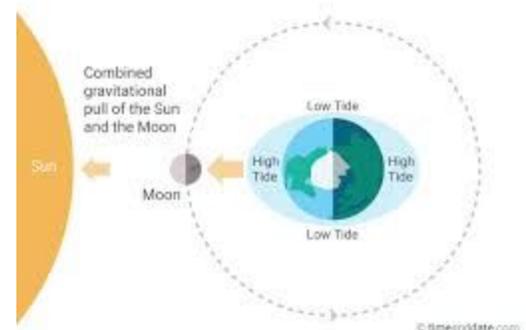
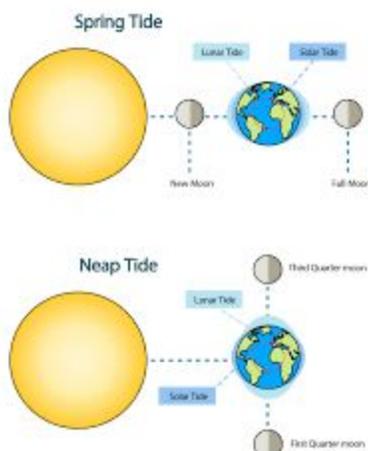
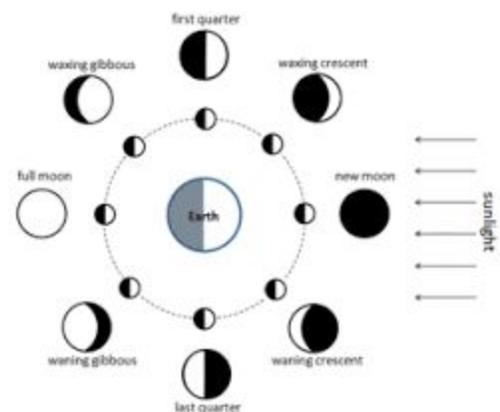
- In winter, the northern hemisphere is tilted away from the sun so the sun appears lower in the sky and the hours of daylight are shorter
- In summer, the northern hemisphere is tilted towards the sun so the sun appears higher in the sky and the hours of daylight are longer
- In spring and fall, the Earth's axis is at a 90 degree angle to the sun and the day and night are of equal length.
- Seasons in the northern and southern hemispheres are opposite of each other

The Earth moves in space in relation to the sun

- The Earth **rotates** on its axis causing day and night
- The Earth **revolves** around the sun in one year

The Moon moves in relation to the Earth.

- The Moon revolves around the Earth once a month resulting in the phases (quarter, full, new) of the moon which are caused by its relative angle to the sun as seen from the Earth
- The same side of the moon always faces the Earth
- The moon produces no light of its own but reflects light from the sun
- The alignment of the Sun, Earth and Moon can produce shadows on the Earth or Moon resulting in Lunar or Solar Eclipses.
- Ocean tides are caused by the gravitational pull of the moon and to a lesser extent of the sun.
- There are two high and two low tides each day and the tidal range is the greatest twice a month when the sun Earth and moon are lined up (**spring tide**) and the tidal range is the smallest when they are at a 90 degree angle (**neap tide**).



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6.E.1.2 Earth as a planet in the solar system

Eight planets revolve around our sun in nearly circular orbits

- There are 4 **inner planets** (Mercury, Venus, Earth, Mars). The **Inner Planets** are:
 - ❖ Made of rock
 - ❖ Small
 - ❖ Thin atmosphere
 - ❖ Two or fewer moons
- There are 4 **outer planets** (Jupiter, Saturn, Uranus, Neptune). The **Outer planets** are:
 - ❖ Large
 - ❖ Almost all atmosphere
 - ❖ Many moons
 - ❖ Rings of ice particles and some rock
- The Earth is in a perfect position where the sun's heat allows water to exist in a liquid form and life as we know it can exist.

6.E.1.3 Space exploration

Space exploration has allowed humans to learn about the solar system, the composition of planets and moons, and the effects of many types of solar radiation on the Earth and its inhabitants

- Humans have only landed on the moon but unmanned probes have landed on Mars and Venus and flown by Uranus and Neptune
- The **International Space Station** is a constantly manned satellite orbiting the Earth doing scientific research
- The best telescope is the Hubble Space Telescope which is orbiting the Earth.