Chapter 15 - Earth, Moon, and Sun

GPS: S6E1 - Students will explore current scientific views of the universe and how those views evolved.

d. Explain the motion of objects in the day/night sky in terms of relative position.

e. Explain that gravity is the force that governs the motion in the solar system.

S6E2. Students will understand the effects of the relative positions of the earth, moon and sun.

a. Demonstrate the phases of the moon by showing the alignment of the earth, moon, and sun.

b. Explain the alignment of the earth, moon, and sun during solar and lunar eclipses.

c. Relate the tilt of the earth to the distribution of sunlight throughout the year and its effect on climate.

1. The Sun and Moon seem to move across the sky each day because Earth is rotating on its axis.

2. Earth's rotation causes day and night.

3. It takes Earth about 24 hours to rotate once on its axis.

4. It takes Earth about one year to complete one revolution around the Sun.

5. Earth has seasons because its axis is tilted as it revolves around the Sun.

6. In June, the north end of Earth's axis is tilted toward the Sun and it is Summer in the Northern Hemisphere and Winter in the Southern Hemisphere.

7. Summer has more direct rays and longer days.

8. In December, the north end of Earth's axis is tilted away from the Sun and it is Winter in the Northern Hemisphere and Summer in the Southern Hemisphere.

9. In June when the Sun reaches its greatest distance north of the equator and in December when the Sun reaches its greatest distance south of the equator, it is known as a Solstice

10. Halfway between the solstices, neither hemisphere is tilted toward or away from the Sun and the day and night are each about 12 hours long. This is known as an equinox.

11. The force of gravity attracts all objects toward each other.

12. The strength of gravity is affected by the distance between two objects as well as their mass.

13. The tendency of an object to resist a change in motion (stay at rest or stay in motion) is called inertia.

14. Gravity and inertia combine to keep Earth in orbit around the Sun and the Moon in orbit around the Earth.

15. The Moon rotates once on its axis in the same amount of time as it revolves around the Earth so from Earth we see the same side of the Moon all of the time and never see the other side of the Moon.

16. The time that it takes for the Moon to rotate on its axis and revolve around the Earth is 29.5 days.

17. The amount of the lighted side of the moon that you can see is the same during the first and third phases of the moon.

18. The phase of the Moon you see depends on how much of the sunlit side of the Moon faces the Earth.

19. Solar eclipse can only be seen within the moon's umbra. (the darkest part of the moon's shadow)

20. A solar eclipse occurs when the Moon passes directly between Earth and the Sun, blocking sunlight from Earth. The moon's shadow only covers a small area on Earth's surface.

21. A lunar eclipse occurs at a full Moon when the Earth is directly between the Moon and the Sun.

22. Tides are caused by the force of gravity from the Sun and Moon acting on the Earth.

23. Water can be found on the moon near the poles.

24. Tides are highest when the sun, earth and the moon are nearly in a line.

25. The moon is about 1/4 of the Earth's diameter.

26. The temperature of the moon's surface varies greatly from day to night because the moon has no atmosphere.

27. Scientists theorize that a planet-sized object collided with Earth to form the moon.