Ohio Science Standards

Earth, Moon, and Sun (1-6)

Earth, Moon, and Sun talks about the relationship between the Earth, the Moon, and the Sun. It covers the motions of the three objects, their effect on one another, and the importance they have in our everyday lives. Earth, Moon, and Sun covers these Ohio Education Standards:

Earth and Space Science (ESS)

- ✓ **The moon, sun and stars can be observed at different times of the day or night.**
  - The moon, sun and stars are in different positions at different times of the day or night. Sometimes the moon is visible during the night, sometimes the moon is visible during the day and at other times, the moon is not visible at all. The observable shape of the moon changes in size very slowly throughout each day of every month. The sun is visible only during the day. The sun's position in the sky changes in a single day and from season to season. Stars are visible at night, some are visible in the evening or morning and some are brighter than others.

- ✓ **The sun is the principal source of energy.**
  - Sunlight warms Earth's land, air and water. The amount of exposure to sunlight affects the amount of warming or cooling of air, water and land.

- ✓ **Most of the cycles and patterns of motion between the Earth and sun are predictable**.
  - Earth's revolution around the sun takes approximately 365 days. Earth completes one rotation on its axis in a 24-hour period, producing day and night. This rotation makes the sun, stars and moon appear to change position in the sky. Earth's axis is tilted at an angle of 23.5°. This tilt, along with Earth's revolution around the sun, affects the amount of direct sunlight that the Earth receives in a single day and throughout the year. The average daily temperature is related to the amount of direct sunlight received. Changes in average temperature throughout the year are identified as seasons.
- ✓ **The sun is one of many stars that exist in the universe.**
  - The sun appears to be the largest star in the sky because it is the closest star to Earth. Some stars are larger than the sun and some stars are smaller than the sun.
- ✓ **The relative patterns of motion and positions of the Earth, moon and sun cause solar and lunar eclipses, tides and phases of the moon.**

- The moon's orbit and its change of position relative to the Earth and sun result in different parts of the moon being visible from Earth (phases of the moon). A solar eclipse is when Earth moves into the shadow of the moon (during a new moon). A lunar eclipse is when the moon moves into the shadow of Earth (during a full moon). Gravitational force between the Earth and the moon causes daily oceanic tides. When the gravitational forces from the sun and moon align (at new and full moons) spring tides occur. When the gravitational forces of the sun and moon are perpendicular (at first and last quarter moons), neap tides occur.