



## 5th Grade Space Systems: Stars and the Solar System

**5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]



-Now that we have learned that stars and suns move based on their position, let's learn more about why large objects move the way that they do.

**5-PS2-1.** Support an argument that the gravitational force exerted by Earth on objects is directed down. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]



- Now that we have learned that gravity pulls objects down towards the spherical Earth, let's learn more about how far away these objects are from each other.

**5-ESS1-1.** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.\* [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]

**Big Idea:** Things on Earth look different based on Earth's position in the Solar System.

**Storyline:** The Earth, sun, stars, and moon behave in predictable patterns. Earth's surface has a gravitational force that pulls an object toward the planet's center. The sun is a star that appears larger and brighter because it is closer to Earth but all stars range greatly in distance. Observable patterns occur when Earth orbits around the sun and the moon around Earth along with the rotation of the Earth around an axis between its North and South poles. The observable patterns include day and night; daily changes in length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year.