

## Earth and Space Systems Review

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### Lesson Overview

In this lesson, students create a concept map to demonstrate their understanding of astronomy. This lesson was used as a review of Earth and Space Systems.

### Standards Addressed

- SC 2005
- 8-4.1 Summarize the characteristics and movements of objects in the solar system (including planets, moons, asteroids, comets, and meteors).
  - 8-4.4 Explain the motions of Earth and the Moon and the effects of these motions as they orbit the Sun (including day, year, phases of the Moon, eclipses, and tides).
  - 8-4.5 Explain how the tilt of Earth's axis affects the length of the day and the amount of heating on Earth's surface, thus causing the seasons of the year.
  - 8-4.6 Explain how gravitational forces are influenced by mass and distance.
  - 8-4.7 Explain the effects of gravity on tides and planetary orbits.
  - 8-4.8 Explain the difference between mass and weight by using the concept of gravitational force.
- SC 2014
- 8.E.4B.1 Obtain and communicate information to model and compare the characteristics and movements of objects in the solar system (including planets, moons, asteroids, comets, and meteors).
  - 8.E.4B.2 Construct explanations for how gravity affects the motion of objects in the solar system and tides on Earth.
  - 8.E.4B.3 Develop and use models to explain how seasons, caused by the tilt of Earth's axis as it orbits the Sun, affects the length of the day and the amount of heating on Earth's surface.
  - 8.E.4B.4 Develop and use models to explain how motions within the Sun-Earth-Moon system cause Earth phenomena (including day and year, moon phases, solar and lunar eclipses, and tides).
- NGSS
- MS-ESS 1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
  - MS-ESS 1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

### Disciplinary Literacy Best Practices

Think-Ink-Pair-Share

Concept Map

## Lesson Plan

Time Required –One 60 minute class period

Disciplinary Vocabulary –planets, moons, asteroids, comets, earth, moon, rotate, revolve, axis, sun, spinning, high tide, low tide, gravitational force, gravitational pull, gravity, spring tides, neap tides, orbit, tilt, seasons, star, orbit, waves

Materials Needed:

- Construction paper
- Markers
- Tape

### Engage

- The teacher will review unit concepts and vocabulary terms. Concept maps created by other classes are be used to review vocabulary and discuss connections between terms.
- If this is the first class of the day, a teacher created concept map of terms might be used instead.

### Explore

- Think and Ink: Name 5 things in our solar system that have motion.
- Students pair with another student to share their response.
- Each pair of students decides on 5 terms to write on construction paper to be used on the concept map.

### Explain

- Student pairs posted their terms explaining the connections among them to the class.
- As students share their words and connections, the teacher should ask questions and clarify misconceptions.

### Teacher Reflections and Biographical Information

This was a formative assessment activity for many of the 8<sup>th</sup> grade astronomy standards. By using data from student conversations, think-ink-pair-share and the concept maps, the teacher was able to determine remediation and enrichment groups prior to the district assessment.

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