

# Unit 1: Earth and the Universe

## 6<sup>th</sup> Grade Science

10 Class Meetings

*Created July 2020*

### Essential Questions

- What is Earth's place in the universe?
- What are the predictable patterns caused by Earth's movement in the solar system?

### Enduring Understandings with Unit Goals

**EU 1:** The sun and moon interact with Earth, causing an impact to multiple Earth systems.

- Examine how the moon's force plays a role in Earth's water movement.
- Describe cyclic pattern of lunar phases, eclipses of the sun and moon, and seasons.
- Compare roles of natural and man-made satellites

**EU 2:** The Earth's movement and positioning in our solar system and pattern of movement impact our planet.

- Analyze the tilt of the Earth and its impact on earth's environment.
- Examine the role gravity plays on Earth and our solar system.

### Standards

#### Next Generation Science Standards:

- **MS-ESS1-1:** 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-ESS1-2:** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- **MS-ESS1-3:** Analyze and interpret data to determine scale properties of objects in the solar system.

#### Common Core State Standards:

- **6.NS.C.5:** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- **RST.6-8.:** Cite specific textual evidence to support analysis of science and technical texts.
- **RST.6-8.9:** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

### ISAAC Vision of the Graduate Competencies

**Competency 1:** Write effectively for a variety of purposes.

**Competency 2:** Speak to diverse audiences in an accountable manner.

**Competency 3:** Develop the behaviors needed to interact and contribute with others on a team.

**Competency 4:** Analyze and solve problems independently and collaboratively.

**Competency 5:** Be responsible, creative, and empathetic members of the community.

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**Unit Content Overview**

**1. The Moon**

- Outline the phases of the moon
- Define how an eclipse takes place.
- Examine how the moon is a satellite for Earth. Examining its role and impact on Earth.
- Vocabulary: Phase, crescent, gibbous, waxing, waning, tides, gravity.

**2. Earth and its many movements**

- Explain why the Earth's tilt is a major reason for the season.
- Illustrate Earth's movement in our solar system.
- Examine how the Earths' movement changes our planet.
- Vocabulary: Rotation, revolution, tilt, hemisphere.

**3. Earths' place in the solar system**

- Analyze the role of gravity in our solar system and planet.
- Evaluate the suns relationship with Earth.
- Vocabulary: Orbit, solar system, orbit, gravity.

**Interdisciplinary Connection:**

- Language Arts – Writing/nonfiction text
- Math– Computation/Word Problems
- Art – Illustration of systems/creating maps/models

**Daily Learning Objectives with *Do Now Activities***

**Students will be able to...**

- Diagram and explain the phases of the moon
- Develop a model which acutely details the phases of the moon and their identification markers including duration of time and visual recognition.
- Create a model of the sun, Earth, and moon to show the relationship in terms of size and position
- Examine how the solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.
- Prepare a model of the solar system that can explain eclipses of the sun and the moon.
- Compare and contrast man made vs. natural satellites and the roles they play within Earth's orbit.
- Interpret the seasons on a map based on the position of the sun
- Outline how the seasons are a result of the tilt Earth and are caused by the differential intensity of sunlight on different areas of Earth across the year.
- Draw a diagram of the Earth, sun, and moon and explain where high and low tides occurring.
- Determine the parts of an eclipse.

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### **Instructional/ ELL Strategies/Differentiated Instruction**

- Power Point Lecture with notetaking
- Guided notetaking
- Warm up activities
- Flexible grouping
- Independent reading
- Lab activities
- Exit slips
- Graphic Organizers
- Creating authentic connections for students
- Vocabulary word bank
- Rephrasing and restatement of information and concepts
- Tiered instruction
- Alternative test settings
- Reading and accountable talk discussions of texts
- Student-led instruction
- Homework assignments
- Hands-on activities
- SIOP strategies- Teachers implement SIOP strategies to introduce academic vocabulary and use multiple modes of representation including gestural, oral, pictorial, graphic and textural.

### **Assessments**

#### **FORMATIVE ASSESSMENTS:**

- Guided notes
- Homework
- Daily Think-Write-Pair-Share (TWPS) Activities
- Accountable Talk Discussions
- Oral questioning
- Exit slips
- Warm Up activities
- Close reading and interpretation of text
- Performance Task – Blast Off!
  - Future Rubrics Assessment in 2021-2022 school year

#### **SUMMATIVE ASSESSMENTS:**

- Quiz - EU 1
- Quiz – EU 2

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- Performance Task - Blast Off!
- Unit 5 Test

### Unit Task

**Unit Task Name:** Blast Off!

**Description:**

Students will create a diagram (illustration or power point) that shows the Earth and moon and their proximity to the sun in our solar system (EU1). Students will explain their findings of the moon and its relationship to Earth as if they were working for NASA and just found new information of the important role the moon plays in the workings of our magnetic fields. These NASA scientists will then elaborate on the Earth's movement in our solar system and how its movement, rotation, and tilt impact our planets daily, monthly, and yearly changes (EU2)!

**Evaluation:** Summative Assessment and Future Rubric in 2021-2022 school year

### Unit Resources

- Non-Fiction Text
- Internet databases
- Large format poster printer
- Microsoft Power Point or Prezi
- Laptops
- NOAA website
- Lab materials