



Grade 5 Science
Unit # 2 – Earth and Space Science
Topic 6 Solar System – 18 Days

Unit Overview: In Topic 3 students will learn how patterns in the natural world contribute to the interactions of Earth’s four spheres – Geosphere, hydrosphere, atmosphere, and biosphere. Water is the primary emphasis in Topic 4. Students will explore the water cycle and the interactions among water and land. Topic 5 focuses on renewable and non-renewable resources on Earth and how humans use the resources. **Topic 6** and Topic 7 both investigate the Solar System. Students will develop models to observe brightness, orbits, and object sizes. Students should be able to recognize the position of the Earth, and key characteristics of the sun, planets, and other space objects. Students will then study patterns of the moon phases, star movement, rotation and revolution of Earth.

Topic Essential Question: What is Earth’s Place in Space?

Lessons

- Topic Launch/Quest Kickoff
- Lesson 1 Brightness of the Sun and Other Stars
- Lesson 2 Inner Solar System
- Lesson 3 Outer Solar System
- Topic Close –Assessment, Quest Findings

NYSSLS Performance Expectations

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 Earth. [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).]

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Topic Opener

PE: 5-ESS1-1

SEP: Planning and Carrying Out Investigations
 CCC Scale, Proportion, and Quantity

Savvas

Highlighted labs are important to the understanding of the instructional concepts in this lesson and must be completed during Science instructional time.

- **uConnect Lab –How Big is the Sun?**
- Quest Kickoff – Keeping the Planets in Order
- Leveled Readers
- STEM Engineering Reader
- Reading Check – Use Text Features

Lesson 1 – Brightness of the Sun and other Stars

PE: 5-ESS1-1; 3-5 ETS1-1

SEP: Engaging in Argument from Evidence

DCI:

ESS1.A – The Universe and its Stars

- The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)

CCC: Scale, Proportion, and Quantity

zSpace Activities (code)

What is a Satellite? (A200)

[What is a Satellite? - Teacher Activity Plan](#)

In this activity students will learn what a satellite is, how man-made satellites get into space, why humans place satellites in space, and what materials are used to make satellites.

[What is a Satellite? - Student Worksheet](#)

[What is a Satellite? - Student Worksheet GoogleDocs](#)

Is that a Shooting Star? (A177)

[Is that a Shooting Star? - Teacher Activity Plan](#)

In this activity, students will learn about comets and meteors, compare comets, and write a story about comets or meteors.

[Is that a Shooting Star? - Student Worksheet #1 Pdf](#)

[Is that a Shooting Star? - Student Worksheet #2 Pdf](#)

Brightness of the Sun vs. Stars (A515)

[Brightness of the Sun - Teacher Activity Plan](#)

In this activity, students will learn how the Sun and stars are natural bodies in the sky that give off their own light. They will also observe how the apparent brightness of the Sun and stars are due to their relative distances from the Earth.

[Brightness of the Sun vs. Stars Graphic Organizer - Student Worksheet #1 Pdf](#)

[Brightness of the Sun vs. Stars Picture - Student Worksheet #2 Pdf](#)

[Brightness of the Sun vs. Stars Questions - Student Worksheet #3 Pdf](#)

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Guiding Objectives

- Students will recognize that many stars are as big and bright as the Sun.
- Students will explain how the apparent brightness of stars is related to their distances from Earth.

Literacy Skill

- Use Text Features

Vocabulary

- star

Academic Vocabulary

- apparent

Connect - TE/SB p. 236

- Local-to-Global Connection

Investigate - TE/SB pp. 237-238, 240

- ***Investigate Lab – How are distance and brightness related?***

- Video – Brightness of the Sun and Other Stars

- Crosscutting Concepts Toolbox – Energy and Matter

- *Be a Scientist*

Synthesize - TE/SB pp. 239, 241

- Interactivity – The Sun and Other Stars

- Reading Check- Text Features

Demonstrate – TE/SB p. 242-243

- Lesson 1 Check

- Lesson Quiz 1

- Quest Check-In – Fun in the Sun!

CLRI Literacy Connections:

Embed:

“The Boy Who Touched the Stars (parallel Spanish language version next to the English)” by José M. Hernandez

Synopsis:

This is the story of Mexican José M. Hernandez’s journey from working as a migrant worker with his family in California becoming an engineer, then a pilot, and ultimately an astronaut.

Questions:

1. How did José’s curiosity as a child set the stage for his future?
2. What “recipe” did José’s father give him to reach his goal? Did it work? Explain how.
3. What made Jose believe he could actually achieve his dream of becoming an astronaut?
4. What do you dream about that might become something you do in the future? What do you need to achieve this dream?

CLRI Literacy Connections:

Embed:

“Starstruck: The Cosmic Journey of Neil DeGrasse Tyson” by Kathleen Krull and Paul Brewer

Synopsis:

This is the story of Dr. Neil DeGrasse Tyson’s road to becoming an influential astrophysicist.

Questions:

1. What prevented Neil from being able to see the stars from the top of his childhood apartment building.
2. What experience did Neil have that changed his goal from being a baseball player to becoming an astrophysicist?
3. What tool did Neil use to view the sky?
4. How did Neil’s actions as a child move him forward in achieving his goal?
5. Some might say that Neil was a “well rounded” person. Why might someone say that about him?
6. What was the biggest decision Neil (along with some other scientist) made that changed how we view our solar system?
7. What lessons can you learn from Neil DeGrasse Tyson’s journey in life?

Lesson 2 – Inner Solar System

PE: 5-ESS1-1

SEP: Asking Questions and Defining Problems;
Developing and Using Models; Planning and Carrying Out
Investigations; Engaging in Argument from Evidence

DCI:

ESS1.A – The Universe and its Stars

- The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)

CCC: Scale, Proportion, and Quantity

zSpace Activities (code)

Introduction to the Solar System: Patterns of the Sun, Moon, and Stars (E433)

[Introduction to the Solar System Patterns of the Sun, Moon, and Stars - Teacher Activity Plan](#)

In this activity, students will observe the motion of the Sun, Moon, and stars. Students will identify their patterns of motion and make predictions about the future appearances of these objects in the sky.

[Introduction to the Solar System Pattern of the Sun, Moon, and Stars - Student Worksheet](#)

[Introduction to the Solar System Pattern of the Sun, Moon, and Stars - Student Worksheet GoogleDocs](#)

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[What is a Satellite? - Student Worksheet GoogleDocs](#)

Moon Exploration (A029)

[Moon Exploration - Teacher Activity Plan](#)

In this activity, students will explore the physical characteristics of the Moon and compare them with those of Earth. They will also observe and identify the Moon's predictable patterns of motion in the sky.

[Earth and Moon - Student Worksheet #1 Pdf](#)

[Earth vs. Moon Venn Diagram - Student Worksheet #2 Pdf](#)

[Moon Exploration - Student Worksheet #3](#)

[Earth and Moon - Student Worksheet GoogleDocs](#)

Savvas

Guiding Objective:

- Students will describe the inner planets of Mercury, Venus, Earth, and Mars.
- Students will identify common characteristics of the inner planets.
- Students will recognize the position of Earth within the solar system

Literacy Skill

- Use Text Features

Vocabulary

- solar system
- inner planets
- orbit
- moon

Connect - TE/SB p. 246

- Sports Connection

Investigate - TE/SB pp. 247-249

- Video – Inner Solar System
- ***Investigate Lab – How does a planet's distance from the sun affect its path?***
- Visual Literacy Connection – What is in our solar system?

Synthesize - TE/SB pp. 249-250

- Interactivity – The Inner Planets
- Reading check – Use Text Features
- Quest Connection
- Engineering Practice Tool Box – Evaluate Information

Demonstrate – TE/SB pp.251-25

- Lesson 2 Check
- Lesson 2 Quiz
- ***Quest Check-In Lab – What's inside the solar system?***

Brightness of the Sun vs. Stars (A515)

[Brightness of the Sun - Teacher Activity Plan](#)

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[Brightness of the Sun vs. Stars Graphic Organizer - Student Worksheet #1 Pdf](#)

[Brightness of the Sun vs. Stars Picture - Student Worksheet #2 Pdf](#)

[Brightness of the Sun vs. Stars Questions - Student Worksheet #3 Pdf](#)

Comparing Planets (A589)

[Comparing Planets - Teacher Activity Plan](#)

In this activity, students will compare physical characteristics of the planets.

[Comparing Planets - Student Worksheet](#)

[Comparing Planets - Student Worksheet GoogleDocs](#)

Super Solar System (A194)

[Super Solar System - Teacher Activity Plan](#)

In this activity, students will learn how different natural objects in space make up Earth's solar system.

[Super Solar System - Student Worksheet #1 Pdf](#)

[Super Solar System - Student Worksheet #2 Pdf](#)

[Super Solar System - Student Worksheet #3 Pdf](#)

[Super Solar System - Student Worksheets GoogleDocs](#)

Visible Venus (A199)

[Visible Venus - Teacher Activity Plan](#)

In this activity students will dive below the clouds and explore the planet Venus.

[Visible Venus Chart - Student Worksheet #1 Pdf](#)

[Visible Venus Question - Student Worksheet #2 Pdf](#)

[Visible Venus - Student Worksheet GoogleDocs](#)

CLRI Literacy Connections:

Embed:

“Hidden Figures – The True Story of Four Black Women and the Space Race” by Margot Lee Shetterly with Winifred Conkling

Synopsis:

“Katherine, Dorothy, Mary, and Christine were all good at math. Really good. And it was their understanding of numbers that helped them do what seemed impossible. They were women, and they were African American, and they lived during a time when being black and a woman limited what they could do. But Katherine, Dorothy, Mary, and Christine were hardworking and persistent and most important, smart. And that’s why NASA hired them to do the math that would one day send the United States into space for the very first time.”

<p>Questions:</p> <ol style="list-style-type: none"> 1. In the 1940's, what was a computer? 2. There were so many laws that kept black people from being able to participate equally with white people (and it was even harder if you were a black woman). Why didn't this stop Dorothy from trying to be a "computer"? 3. How did Dorothy, Katherine, and Mary become so good at math? How did this help them become successful? 4. What attitude did Dorothy, Katherine, and Mary need to have to overcome the negative attitudes and laws where they lived and worked? 5. How did Katherine's confidence help her get John Glenn into space? 6. Explain how Dorothy, Katherine, Mary, and Christine's achievements and perseverance benefits you today. 	
<p>Lesson 3 – Outer Solar system PE: 5-ESS1-1 SEP: Planning and Carrying Out Investigations; Engaging in Argument from Evidence DCI: ESS1.A – The Universe and its Stars</p> <ul style="list-style-type: none"> • The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1) <p>CCC: Scale, Proportion, and Quantity</p> <p>zSpace Activities (code) Introduction to the Solar System: Patterns of the Sun, Moon, and Stars (E433) Introduction to the Solar System Patterns of the Sun, Moon, and Stars - Teacher Activity Plan In this activity, students will observe the motion of the Sun, Moon, and stars. Students will identify their patterns of motion and make predictions about the future appearances of these objects in the sky. Introduction to the Solar System Pattern of the Sun, Moon, and Stars - Student Worksheet Introduction to the Solar System Pattern of the Sun, Moon, and Stars - Student Worksheet GoogleDocs</p>	<p>Savvas Guiding Objective:</p> <ul style="list-style-type: none"> • Students will describe the outer planets of Jupiter, Saturn, Uranus, and Neptune. • Students will identify common characteristics of the outer planets. • Students will recognize that there are moons, asteroids, and comets in our solar system. <p>Literacy Skill</p> <ul style="list-style-type: none"> • Use Text Features <p>Vocabulary</p> <ul style="list-style-type: none"> • outer planet • asteroid • comet <p>Academic Vocabulary</p> <ul style="list-style-type: none"> • characteristics <p>Connect - TE/SB p. 254</p> <ul style="list-style-type: none"> • Curriculum Connection <p>Investigate - TE/SB pp. 255-259</p> <ul style="list-style-type: none"> • Video – Outer Solar System • uInvestigate – How hard do space objects hit Earth? • Virtual Lab – Up close with the Solar System • Quest Connection • Science Practice Toolbox – Engage in Argument from Evidence • Visual Literacy Connection – How are the outer planets aligned? <p>Synthesize - TE/SB pp. 259-260</p> <ul style="list-style-type: none"> • Interactivity – The Outer Planets • uBe a Scientist <p>Demonstrate – TE/SB pp. 261-263</p> <ul style="list-style-type: none"> • Lesson 3 Check • Lesson 3 Quiz • Quest Check-In Lab – What plants are way out there?

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[Worksheet #1 Pdf](#)

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[Visible Venus Question - Student Worksheet #2 Pdf](#)

[Visible Venus - Student Worksheet GoogleDocs](#)

<p>Jumbo Jupiter (A178) Jumbo Jupiter - Teacher Activity Plan Do you know which planet in our solar system is the largest? Jupiter, of course! Come explore “Jumbo Jupiter” and see for yourself. In this activity students will learn interesting facts about Jupiter, including how it is similar to and different from other planets. Jumbo Jupiter Chart - Student Worksheet #1 Pdf Jumbo Jupiter Questions - Student Worksheet #2 Pdf Jumbo Jupiter - Student Worksheet GoogleDocs</p> <p>Stunning Saturn (A193) Stunning Saturn - Teacher Activity Plan In this activity, students will discover amazing facts about Saturn, including what its rings are made out of. Stunning Saturn Chart - Student Worksheet #1 Pdf Stunning Saturn - Student Worksheet #2 Pdf Stunning Saturn - Student Worksheet GoogleDocs</p> <p>Unique Uranus (A198) Unique Uranus - Teacher Activity Plan In this activity, students will explore Uranus and learn more interesting facts about this unique planet and how it compares to other planets in our solar system. Unique Uranus Chart - Student Worksheet #1 Pdf Unique Uranus Questions - Student Worksheet #2 Pdf</p> <p>Notable Neptune (A184) Notable Neptune - Teacher Activity Plan In this activity students will learn interesting facts about Neptune and how Neptune compares with other planets in our solar system. Notable Neptune Chart - Student Worksheet #1 Pdf Notable Neptune Questions - Student Worksheet #2 Pdf Notable Neptune - Student Worksheet GoogleDocs</p>	
<p><u>Topic Close</u></p> <ul style="list-style-type: none">● Topic Assessment and Remediation TE/SB pp. 266-269● Quest Finding and Reflection TE/SB p. 264 <p><u>CLRI Literacy Connections:</u> Enrichment: Independent Reading “The Astronaut with a Song for the Stars: The Story of Dr. Ellen Ochoa” by Julia Finley Mosca Synopsis: Read how Dr. Ellen Ochoa did not let obstacles get in her way to becoming a pioneering engineer, and eventually becoming an astronaut inspiring young girls and Latinos to reach for their dreams through study and hard work.</p>	<p><u>Topic 6 Enrichment</u> Topic 6 - Lesson 1 Enrichment<ul style="list-style-type: none">● Enrichment Activity TE p. 239Topic 6 - Lesson 2 Enrichment<ul style="list-style-type: none">● Enrichment Activity TE p. 250Topic 6 - Lesson 3 Enrichment<ul style="list-style-type: none">● Enrichment Activity TE p. 260</p>

<p>Enrichment: Independent Reading “Mars Science Lab Engineer” by Donna O’Meara</p> <p>Synopsis: “When Diana Trujilla was little, working for NASA was her greatest dream. She loved to gaze at the stars in the sky. She also enjoyed math and art. Then she learned that engineers use math and art in their work. So, Trujillo decided to be a NASA engineer. Although she didn’t speak English, she was determined to live the dream.”</p> <p>Enrichment: Independent Reading “Baseball on Mars Béisbol en Marte” by José M. Hernández</p> <p>Synopsis: This is the story of Mexican José M. Hernandez’s journey from working as a migrant worker with his family in California becoming an engineer, then a pilot, and ultimately an astronaut</p>	
<p>English Language Learners (ELL) Enhancements To access hyperlinked material, you must be logged into your BPS Google Drive</p>	<p>Listening</p> <ul style="list-style-type: none"> ● Cross- Linguistic Practices: Gives students opportunities to make connections between what they hear and their home language (For example, allow students to listen to a passage and identify cognates). ● Activating Prior Knowledge Activating prior knowledge means both eliciting from students what they already know and building initial knowledge that they need in order to access upcoming content. ● Visuals - GIFs, pictures- will assist students in understanding what they are listening to. Use visual thinking strategies to set the lens for learning. ● Video to review or introduce a topic – use closed captioning to help students see the words and pronunciations while they listen to the content. ● Word stretching / Vowel stretching when instructing allows student to listen closely to the pronunciation of the word. ● Performance Level Descriptors this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of listening. <p>Speaking</p> <ul style="list-style-type: none"> ● Sentence Stems/Frames - to begin a sentence - such as <i>Evolution is...</i> or <i>I think that evolution is...</i> ● Academic Conversation Starters: Have a visual of a list of academic sentence starters that students can refer to in a discussion. ● Choral Reading - To build fluency, self-confidence and motivation with reading/speaking. ● Create movement to go with the word. Movement can be a motivating factor, as well as a kinesthetic tool for conceptualizing the rhythm and flow of fluent reading while triggering brain function for optimal learning. ● Performance Level Descriptors This document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of speaking.

	<p><u>Reading</u></p> <ul style="list-style-type: none"> ● Supplementary Text to help reinforce concepts. ● <u>Visual Aids</u> - Pictures or models to support vocabulary words and concepts ● Video to review or introduce a topic - use <u>closed captioning</u> to help students read along while they listen to the content. ● <u>4 Square / Frayer models</u> to help students gain a deeper understanding of vocabulary. ● <u>Highlighting</u> important text to assist students in answering questions after the reading. ● <u>Chunking</u>-Break reading of text into chunks or paragraphs ● <u>Vocabulary Morphology</u>- Morphology relates to the segmenting of words into affixes (prefixes and suffixes) and roots or base words, and the origins of words. Understanding that words connected by meaning can be connected by spelling can be critical to expanding a student’s vocabulary. ● <u>Performance Level Descriptors</u> this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of reading. Scroll for grade 5. <p><u>Instructional Accommodations (depending on the student’s needs)</u></p> <ul style="list-style-type: none"> ● Extended time for tests in class, projects and assignments ● Directions read. Broken down as necessary ● Model how to complete the activity in the lesson ● Oral simplification of directions or questions ● Translated version of test when available. Student may have both version English and native language version ● Use of <u>approved bilingual glossaries</u> from NYS in each subject
<p>Special Education Modifications</p> <p>Special Education students must have accommodations as per Individual Educational Plan (IEP)</p>	<p><u>Instructional</u></p> <ul style="list-style-type: none"> ● Pre-teach vocabulary ● Use picture vocabulary ● Scaffold Depth of Knowledge questions ● Provide copy of notes/notes in “cloze” form ● Use of Think, Pair, and Share strategy to help process information ● Scaffold written assignments with the use of graphic organizers ● Allow for multiple ways to respond (verbal, written, response board) ● Provide model of performance task ● Modify informational text to fit the needs of the students ● Provide a digital or paper interactive notebook ● Present complex tasks in multiple ways ● Provide mnemonic strategies for scientific concepts <p><u>Technology:</u></p> <ul style="list-style-type: none"> ● Audio reading of text ● Text to type functions ● Videos to clarify/visualize science concepts ● Record class lecture/discussions and make accessible to student ● Nearpod- interactive presentations of notes <p><u>In Class Assessments</u></p> <ul style="list-style-type: none"> ● Provide multiple options for projects ● Use of timer in class ● Break all complex tasks into chunks

Grade 5 Unit 2 Earth and Space Science

<p>Step Up to Writing Step Up to Writing Materials can be found in BPS Science K-12 Schoology Folder Grade 5 Resources Grade 5 SUTW materials</p>	<ul style="list-style-type: none">● Easy Two-Column Notes● Breaking Down Definitions● Paragraph Frame- What I Learned● Performance Level Descriptors this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of writing.
<p>Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom</p>	<ul style="list-style-type: none">● Materials, resources, and/or discussions address diverse cultural backgrounds and real-world applications● Artifacts (posters, charts, etc.) in the science classroom are representative of the cultures of the student population● All students are given an opportunity to engage in science discourse● Teacher demonstrates high expectations for all students