



ENGLISH LANGUAGE ARTS

Essential Questions	<i>How does our planet fit into the big picture of the universe?</i>
Outcomes	Students will be able to: • Identify the objects that make up the solar system • Define the terms connected to the solar system • Describe the characteristics of the key concepts in the solar system • Answer questions regarding the information presented about each concept • Create a Google Slides presentation about one of the kinds of planets, working as a small group member • Write a poem that is reflective of one of the vocabulary words about the solar system
Standards Benchmarks identified in RED are priority benchmarks.	ES.c.1 Structures in the universe (e.g., galaxies, stars, constellations, solar systems), the age and development of the universe, and the age and development of stars (e.g., main sequence, stellar development, deaths of stars, black hole, white dwarf). ES.c.2 Sun, planets, and moons (e.g., types of planets, comets, asteroids), the motion of the Earth's motion and the interactions within the Earth's solar system (e.g., tides, eclipses). R.3.17. Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (CCSS RI.5.9)

	R.3.8. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a topic or subject area. (CCSS RI.5.4) R.3.9. Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes. (CCSS RL.5.4) R.4.5. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone. (CCSS RI/RL.6.4) W.3.6. Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (CCSS W.5.7) W.3.8. Draw evidence from literary or informational texts to support analysis, reflection, and research. (CCSS W.5.9) S.3.5. Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. (CCSS SL.5.4)
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TEACHERS: this content was designed for ABE/ASE students. Instructional scaffolding used in this lesson can be beneficial for multilingual students.

Because adult classrooms are multi-level, teachers will want to differentiate this HyperDoc by accommodating the different ways that students learn by using scaffolding strategies and appropriate leveled materials. Teachers will want to vary the instructional activities based on their student's needed skills.

For more information about collaborating and sharing on Google Drive, check out videos 36-45: [Google Junior Training series - YouTube](#).

STUDENTS: Before you begin this lesson



- Go to File > Make a copy
- Change the name to: <your name> Cosmos Language Arts
- Begin working in your document
- When completing an activity, make a copy of the document and save with your name and the title of the activity

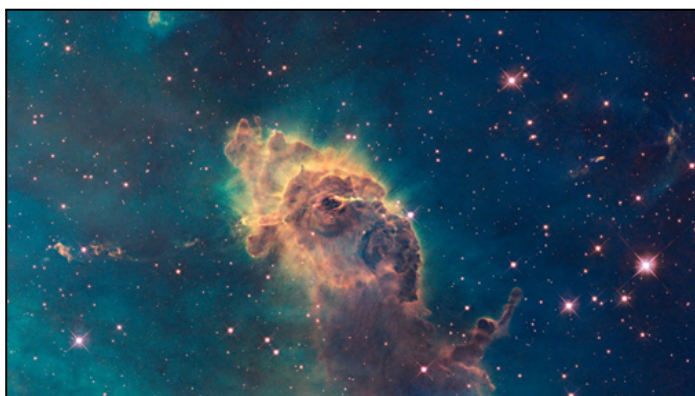
Be sure to read carefully. The green text is a prompt for reflection or activity.

ENGAGE

Space begins where the familiar world fades into silence. Beyond what we know is an immense expanse of not simply empty darkness. It is a realm filled with stars, galaxies, invisible forces, ancient light, and mysteries that continue to challenge humanity's understanding of reality itself.

Adapted from: Space: Everything You Need to Know About the Infinite Universe

<https://www.sciencenewstoday.org/space-everything-you-need-to-know-about-the-infinite-universe>

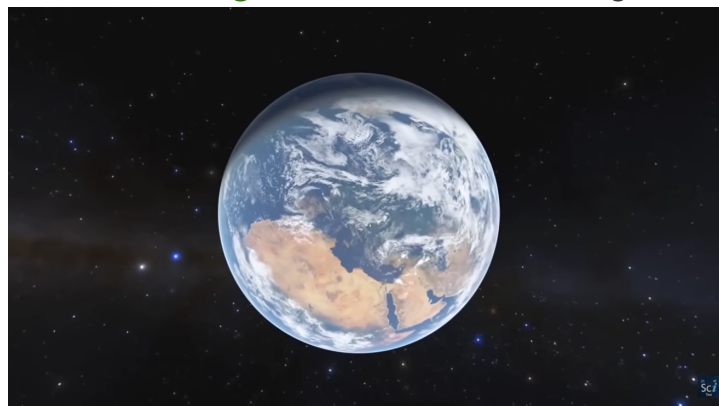


The above image is Carina Nebula, taken by NASA, SA and the Hubble SM4 ERO Team

<https://esahubble.org/images/heic0910e/>

People often get confused about the terms **space**, **cosmos**, and **universe** because they sound similar but can mean different things when used in science and philosophy. Let's get started learning together!

Click on the image below to watch: *How Big is the Universe?*



(11:09) Science Time

Read: [What is the Universe?](#)

Read: [Difference between space cosmos and universe meaning origins and usage](#)

Read: [What is the difference between cosmos and universe?](#)

After reading the articles and watching the video, jot down the characteristics of each of these concepts in the boxes below. Five characteristics are listed but write as many as needed to convey what you learned.

Characteristics of space	Characteristics of cosmos	Characteristics of universe
•	•	•
•	•	•
•	•	•
•	•	•
•	•	•

As you discover more about the universe, there will be many bold terms that you will want to include into your expanding vocabulary. **Use the [Solar System Vocabulary Chart](#) to record this information. Write a concise definition of the term, then find an image (picture) online for each word, cite the source of the image. Finally, use the word in a sentence to help you remember how this word fits into your study of the universe. Complete each term as it is found in the lesson.**

Have you ever wondered about the universe?



May Swenson, considered one of the most important and original poets of the 20th century, also wondered about the universe. She wrote *The Universe*, a profound meditation on humanity's search for meaning within the vast cosmos. This abstract poem uses repetition and introspective questioning to create a sense of rhythm and a circular sensation that thinking about the universe can produce.

Adapted from: Poetry Explorer
<https://www.poetryexplorer.net/explanation26.php?eid=10207341>

The Universe

What
is it about,
the universe,
the universe about us stretching out?
We within our brains
within it
think
we must unspin
the laws that spin it.
We think *why*
because we think
because.
Because we think,
we think
the universe about us.

But does *it* think,
the universe?
Then what about?
About us?
If not,
must there be cause
in the universe?
Must it have laws?
And what
if the universe
is *not* about us?
Then what?
What
is it about?
And what
about *us*?

Voetica Poetry Spoken

Listen to a reading of the poem [here](#).

EXPLORE

Studying the **solar system** can be an exciting journey into the mysteries of the universe, and it offers a deeper understanding of our place in the cosmos. The solar system consists of the Sun, planets, their moons, and other objects such as asteroids and comets that orbit the Sun. It is located in the **Milky Way galaxy** and is a fascinating subject of study in astronomy. Let's explore some of the key concepts related to our solar system.

Milky Way Galaxy

Read [10 Facts You May Not Know About the Milky Way](#)

Read [Is the Milky Way Unique?](#)

Click on the image below to watch *How Do We Know What the Milky Way Looks Like?*



(3:51)

Solar System

Read [Solar System Facts](#)

Click on the image below to watch *Solar System 101*

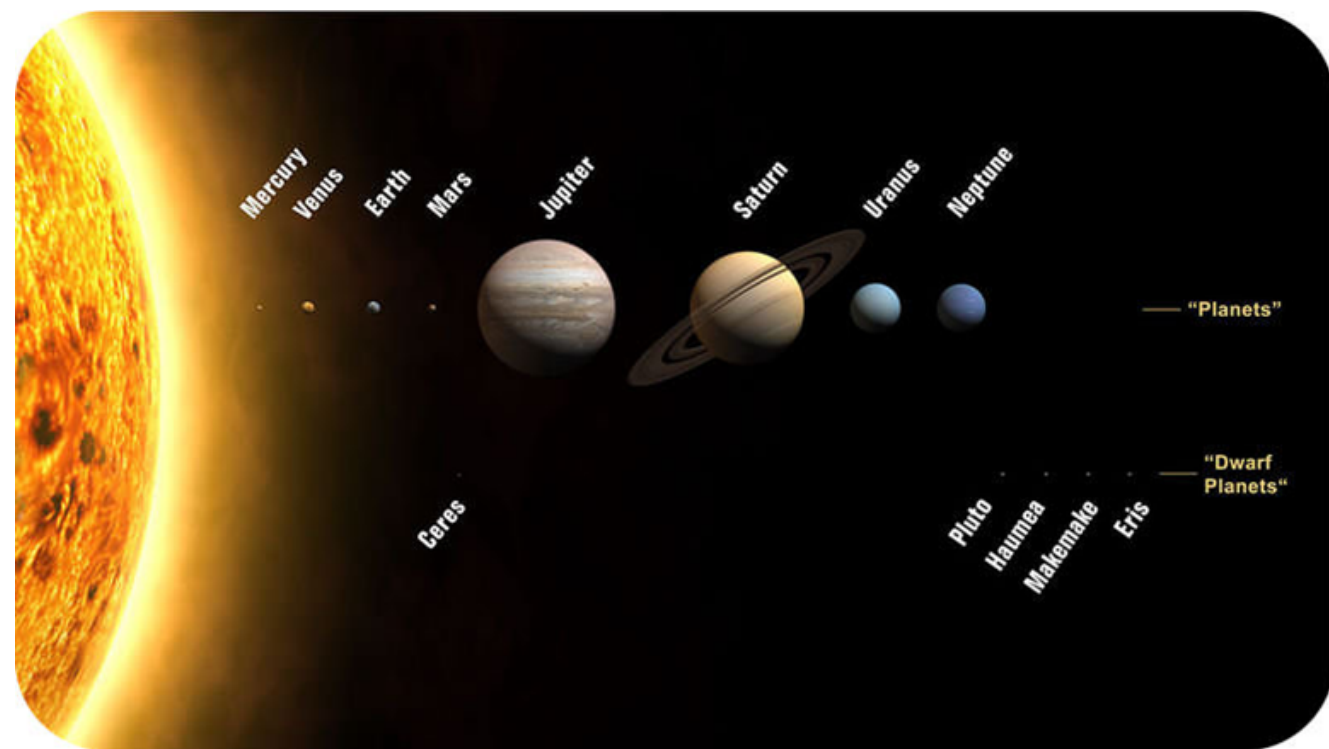


(4:10)

After reading the articles and watching the videos, jot down the characteristics of each of these concepts. Five characteristics are listed but write as many as needed to convey what you learned.

Characteristics of Milky Way Galaxy	Characteristics of solar system
• • • • •	• • • • •

EXPLAIN



Who is in the Sun's family?

The family includes the Sun, its eight planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune), and the five known dwarf planets (Ceres, Pluto, Makemake, Haumea, and Eris). In the image above, relative sizes of the Sun, planets, and dwarf planets and their positions relative to each other are correct, but the relative distances are not.

Source: *Planets of the Solar System*

https://www.ck12.org/earth-science/Planets-of-the-Solar-System/lesson/Planets-of-the-Solar-System-HS-ES/?referrer=featured_content

The Sun

The **Sun** is a **star** at the center of our solar system.

Read [Star Basics](#)

Read [What are Stars and Galaxies?](#)

In the box below, describe the structure, characteristics, and significance of the Sun in the solar system:

Planets of the Solar System

A **planet** is a celestial body that orbits a star, is spherical in shape due to its own gravity, and has cleared its orbital path of other debris. In our solar system, there are eight recognized planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. These planets vary in size, composition, and other characteristics.

Read [Jovian Planets vs. Terrestrial Planets](#) and [Planets in Order From the Sun](#). In the table below, the planets in our solar system are categorized by type. List characteristics for each type of planet. Four characteristics are listed but write as many as needed to convey what you learned.

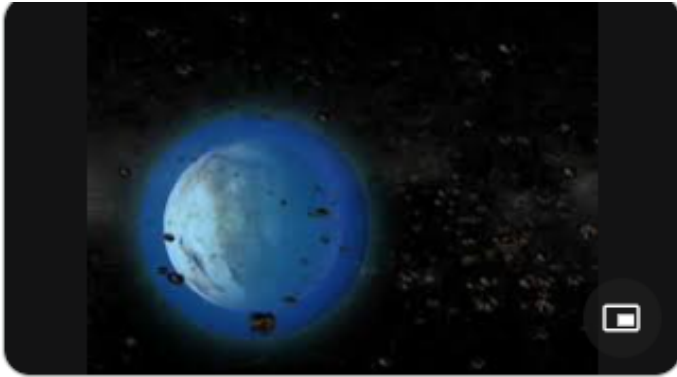
Terrestrial Planets (rock)	Jovian Planets (gas giants)	Dwarf Planets
- Mercury, Venus, Earth, Mars	- Jupiter, Saturn, Uranus, Neptune	- Ceres, Pluto, Haumea, Makemake, Eris

Read [Planets of Our Solar System](#)

Read [Planet Sizes and Locations in Our Solar System](#)

Read [About the Planets](#)

Watch *The Solar System*



(4:19)

While reading articles and watching the video about the planets, download and save the [Planets Graphic Organizer](#). Collect information about the characteristics of each planet and answer questions to build your knowledge of the thirteen planets.

Planets Graphic Organizers

Directions While reading articles and watching videos about the planets, collect information about the characteristics of each planet and answer questions to build your knowledge of the thirteen planets. The first category for Mercury has been completed in italics as an example.

TERRESTRIAL PLANETS

	Characteristics	Questions to help you study and understand each planet
M e r c u r y	Size & Distance <i>Equator Diameter: About 3,032 miles</i> <i>Average Distance from the Sun: Approximately 36 million miles</i>	Where does Mercury rank in terms of size among the eight planets? <i>Mercury is the smallest planet and ranks 8th. For comparison, it is only a little more than one-third the width of Earth.</i>
	Orbit & Rotation	How long does it take Mercury to complete one full revolution around the Sun?
	Moons & Rings	Why is it difficult for a planet like Mercury to have a moon?
	Structure & Surface	What are the primary elements that make up Mercury's core?
	Atmosphere & Magnetosphere	Does Mercury have a thick atmosphere to protect its surface?

ELABORATE

Moons

Many of the planets in our solar system have **moons**, or natural satellites, that orbit around them. For example, Earth has one moon, while Jupiter has over 70 known moons, including the four largest ones known as Galilean moons.

Read [Moon Facts](#)

Click on the image below to watch *Moon 101 | National Geographic*



(3:05)

Reflect on this question:

How many moons are currently confirmed in our solar system?

[Moons Answer](#)

Complete the [Ultimate Moon Quiz](#) from the latest data about the moons in our solar system
Check your answers [here](#)

Asteroids, Comets, and Meteors

In addition to the planets and dwarf planets, the solar system contains other objects such as **asteroids**, **comets**, and **meteors**. These objects provide valuable insights into the formation and evolution of our solar system.

Read [Asteroids, Comets, and Meteors](#)

Click on the image below to watch *Difference Between Comets, Asteroids, And Meteors*



(8:13)

In the box below, explain the roles of meteors, asteroids, and comets in the solar system:

Reflect on this question: *How do meteorites differ from meteors and meteoroids?*
[Meteorites Answer](#)

Our cosmic neighborhood is rich with dynamic forces, ancient debris, and mysterious boundaries. Learn more about the **Kuiper Belt**, **Oort Cloud**, and **Asteroid Belt**.

Read [Kuiper Belt](#)

Read [Oort Cloud](#)

Read [Asteroid Belt](#)

Click on the image below to watch *Kuiper Belt And Oort Cloud Explained*



(3:46)

Click on the image below to watch *Asteroid Belt 101: What You Need to Know*



(4:54)

After reading the articles and watching the videos, jot down the characteristics of each of these concepts. Five characteristics are listed but write as many as needed to convey what you learned.

Characteristics of Kuiper Belt	Characteristics of Oort Cloud	Characteristics of Asteroid Belt
•	•	•
•	•	•
•	•	•
•	•	•
•	•	•

Reflect on this question: What prevents the asteroids in the belt from plunging towards the Sun and hitting the inner planets in the process?

[Asteroids Answer](#)

From smallest to largest, can you put the following celestial bodies in order?

Celestial Bodies Words: solar system, moon, galaxy, star, universe, planet

[Celestial Bodies Answer](#)

Rebecca Elson's poem "Astronomy" takes us on a profound journey through space and time. It explores the interconnection between the vastness of the universe and our own existence. Elson reminds us that, despite our smallness in comparison to the cosmos, we carry within us the same elements that make up the stars. This poem invites us to reflect on our place in the universe and the wonder that lies within each of us.

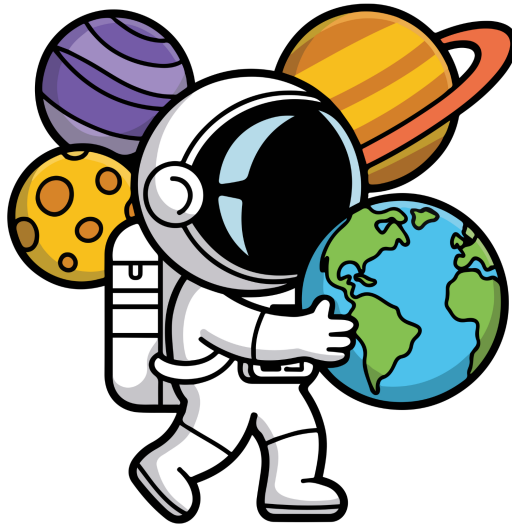
Source: Poems That Capture the Vastness of the Universe <https://poemverse.org/poems-about-the-universe/>



*"The world's a tangled knot, a web, a mesh,
a snare, a trap that holds us fast,
and yet it's words that set us free,
that let us loose to fly, to spin,
to twist, to turn, to dive, to swim,
to breathe, to be, to dream, to dare,
to touch, to feel, to love, to care."*

– excerpt from "Astronomy"

COLLABORATE



PLANETS PRESENTATION ASSIGNMENT

Read the information below to complete the assignment:

Everyone has just completed researching the three categories of planets – Terrestrial, Jovian, and Dwarf. You have found out how many planets are included in each type, their characteristics and answered multiple questions about each. All this information has been collected on your Planets Graphic Organizer. This is where you'll collaborate with your group and pull your information from. There are also readings and videos that you can use as resources.

Now, it's time to work in small groups to create a presentation highlighting these unique features. Your teacher will divide your class into three groups.

Group 1 – Terrestrial Planets (4 planets)

Group 2 – Jovian Planets (4 planets)

Group 3 – Dwarf Planets (5 planets)

Each group will create a Google slideshow to present to your class. Your presentation should consist of at least 10 slides. Discuss the main characteristics for each planet, explain where it is located, find an image online as an example of each planet, and give three facts about the planet.

An excellent example of a Solar System slideshow can be found at

<https://docs.google.com/presentation/d/1h2bL44kFGjYfi5wDfn66Mm6cQ0-W-0kOsQL1NUhefds/edit?usp=sharing> (used with permission from student).

Remember to save your document and rename using your group number and planet type.

Example: group 1 terrestrial planets

REFLECT

Think about everything you've learned about our Solar System. We started our lesson wondering about the universe when we read the poem *The Universe* by May Swenson. Now it's your turn to write a poem using one of the vocabulary words from the Solar System Vocabulary chart.

Choose one of the vocabulary words from the chart and review all the information you've collected about that term. Write a poem that reflects what you've learned, using the [Poetry Rubric](#) to guide you as you compose your poem. Discuss your poem with a peer using the rubric to evaluate your writing. When you have revised your poem, either write or type your finished poem.

You can either draw your word or find a picture online to add to your poem. Your teacher will want to display your poem in your classroom for everyone to enjoy.

EXTEND

Freya Holloway, Eclipse Ambassador for the Astronomical Society of the Pacific (ASP), Ambassador for the NASA Lucy Mission, and former Aspire director, discusses the formation of the solar system and how it has changed in the Ask the Ambassador article.

Students can explore an interactive map of the solar system and diagram the distance between planets. **Read** [Our Local Cosmic Neighborhood: The Story of Our Solar System](#) **to discover more about the solar system. Complete the** [vocabulary](#) **list to support your learning.**

Your program received the **Guess10 All About Space** game. **Get together with some friends to play the game.** Great time to show-off what you've learned about the solar system!