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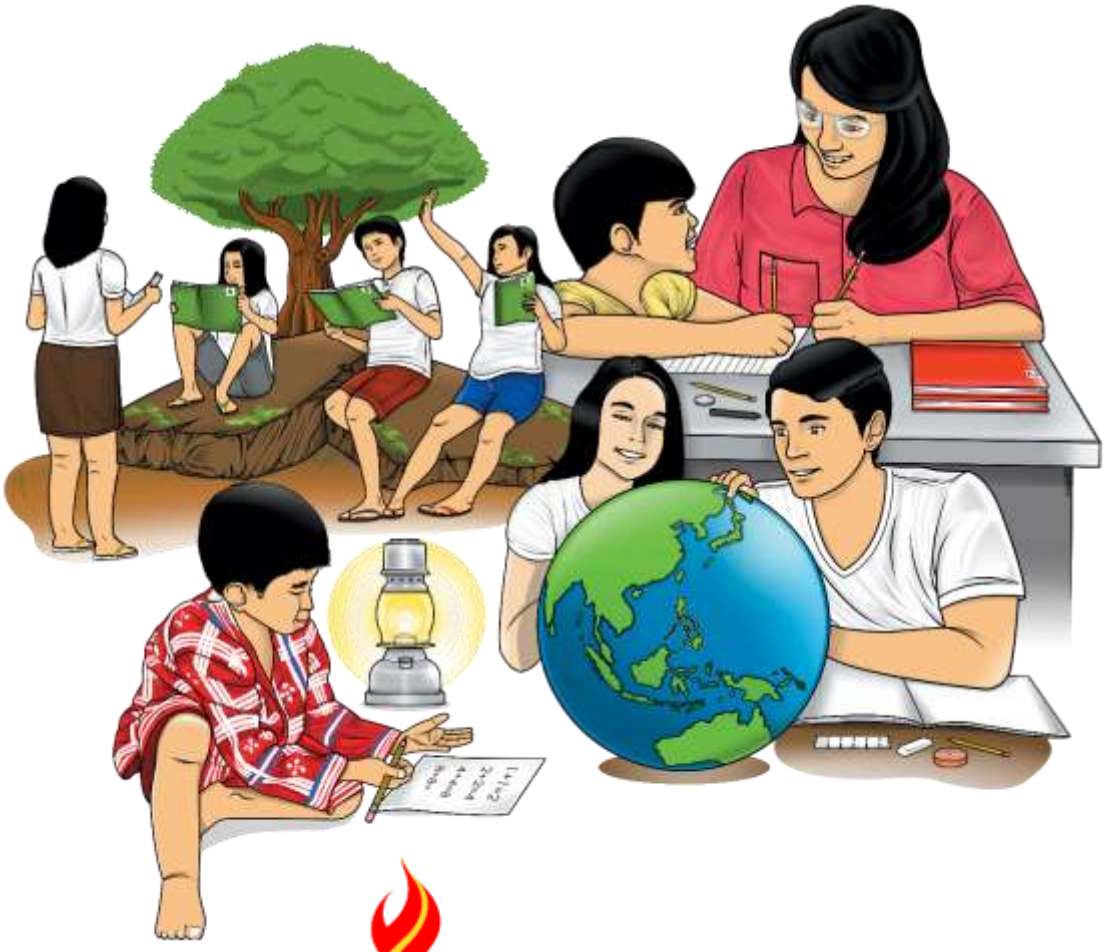
Science

Quarter 4 – Module 6: Compare Planets in the Solar System



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Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.

What I Need to Know

This module was designed and written with you in mind. It is here to help you compare the planets in the solar system. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

The module focuses on achieving this learning competency:

Compare the planets of the solar system (LC S6ES-IVg-h-6).

After going through this module, you are expected to

1. identify the planets in the solar system,
2. describe the characteristics of the inner planets and outer planets,
3. compare the relative distances, surface temperature and sizes of the inner planets with the outer planets, and
4. show appreciation of the characteristics of planet Earth to support life.

What I Know

Let us check what you know about the solar system and its planets. Read each item carefully. Write the letter of the correct answer in your answer sheet.

1. Which of the following statements describe the outer planets?
   A. They are large and made of rocks.
   B. They are small and made of ice and gas.
   C. They are large and made up mostly of gas.
   D. They are solid and made up of rocks and metals.

2. Which of the following planets has the highest average surface temperature?
   A. Mars
   B. Venus
   C. Jupiter
   D. Mercury

3. How are Earth and Venus similar to each other?
   A. Venus and Earth are Jovian planets.
   B. Venus and Earth have almost the same size.
   C. Venus and Earth have almost the same temperature.
   D. Venus and Earth have the same distance from the Sun.

4. Which of the terrestrial planets is the biggest?
   A. Mars
   B. Earth
   C. Venus
   D. Mercury

5. Which of the following planets is farthest from the Sun?
   A. Venus
   B. Jupiter
   C. Uranus
   D. Neptune

6. Which among the four is the smallest?
   A. Saturn
   B. Jupiter
   C. Uranus
   D. Neptune

7. Which planet is the largest?
   A. Mars
   B. Earth
   C. Jupiter
   D. Uranus

8. Which planet in the solar system supports life?
   A. Earth
   B. Saturn
   C. Jupiter
   D. Uranus

9. Which among the planets have extensive and complex rings?
   A. Saturn
   B. Jupiter
   C. Uranus
   D. Neptune

10. Which of the following are inner planets?
   A. Mercury, Venus, Earth, Mars
   B. Venus, Mars, Saturn, Uranus
   C. Earth, Jupiter, Uranus, Neptune
   D. Jupiter, Saturn, Uranus, Neptune

Lesson 1 Compare Planets in the Solar System

The solar system orbits the center of the Milky Way Galaxy. It is composed of the Sun and the eight planets. These are **Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus,** and **Neptune**. The eight planets of the solar system can be described by their size, distance from the sun, composition and other characteristics. There is more to learn about the planets than just their arrangement in the solar system and their name.

After going through this module, you will learn to compare the planets in the solar system (LC S6ES-IVg-h-6).

What's In

A. Identify the movement of the Earth in the illustration below by writing the letter of the correct answer on your answer sheet.

_____1. Which movement of the Earth shows rotation?

_____2. Which movement of the Earth shows revolution?

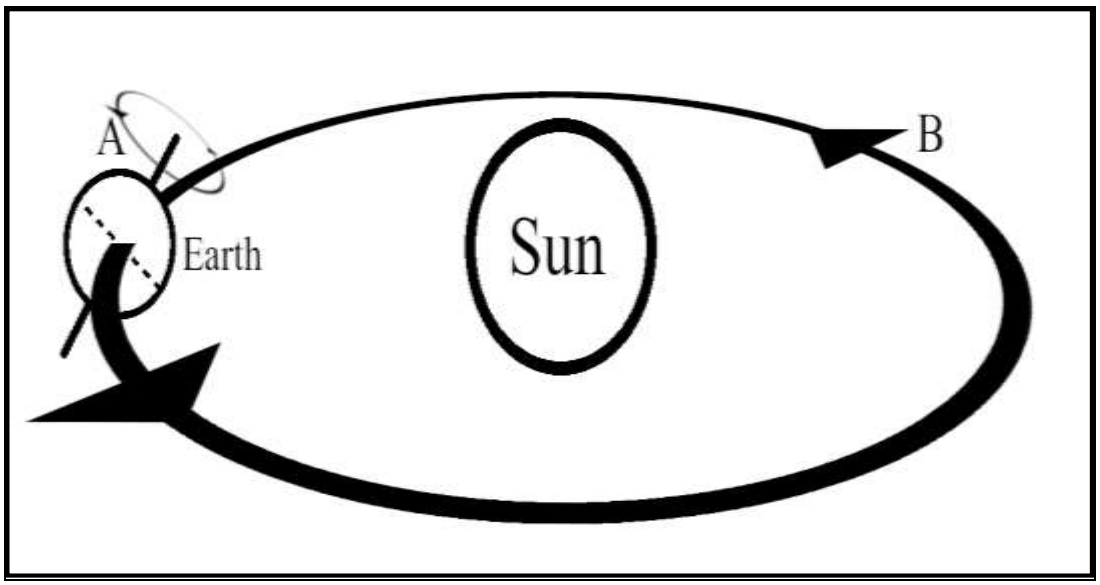


Figure 1. Rotation and Revolution of the Earth
Illustrated by Luke D. Granada

B. Are there other heavenly bodies that revolve around the Sun?

All the words listed below revolve around the sun. Find the words in the word search grid and mark them with a line. The direction of the words can be up, down, to the left, to the right or diagonal.

Venus	Saturn	Mars
Earth	Uranus	Jupiter
Neptune	Mercury	Planets

M	J	T	P	X	C	O	M	S	I	P
A	O	U	Q	O	E	E	A	R	T	H
R	X	U	W	E	X	B	M	R	J	C
S	A	T	U	R	N	E	E	D	F	K
X	A	R	E	O	R	T	V	C	I	T
F	C	U	W	C	I	X	E	C	L	G
A	B	S	U	P	L	A	N	E	T	S
G	D	R	U	R	A	N	U	S	H	E
I	Y	J	V	Q	P	W	S	X	O	X
Z	E	H	E	N	U	T	P	E	N	C

What's New

Our very own planet is one of the members of the solar system. We must understand our neighboring planets in the solar system.

The solar system is composed of the Sun and the eight planets, ~~such as~~ **Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus,** and **Neptune**. These planets are classified as **inner planets** and **outer planets**.

Each of the planets has different characteristics. They differ in their distance from the Sun, size, temperature, and composition. Some planets are rocky and small and do not have rings. Other planets are gaseous and have rings. They even differ in color, as seen on Earth.

Activity 1: Planets of the Solar System

A. Identify the planets and write their names in the box then answer the questions that follow in your answer sheet.

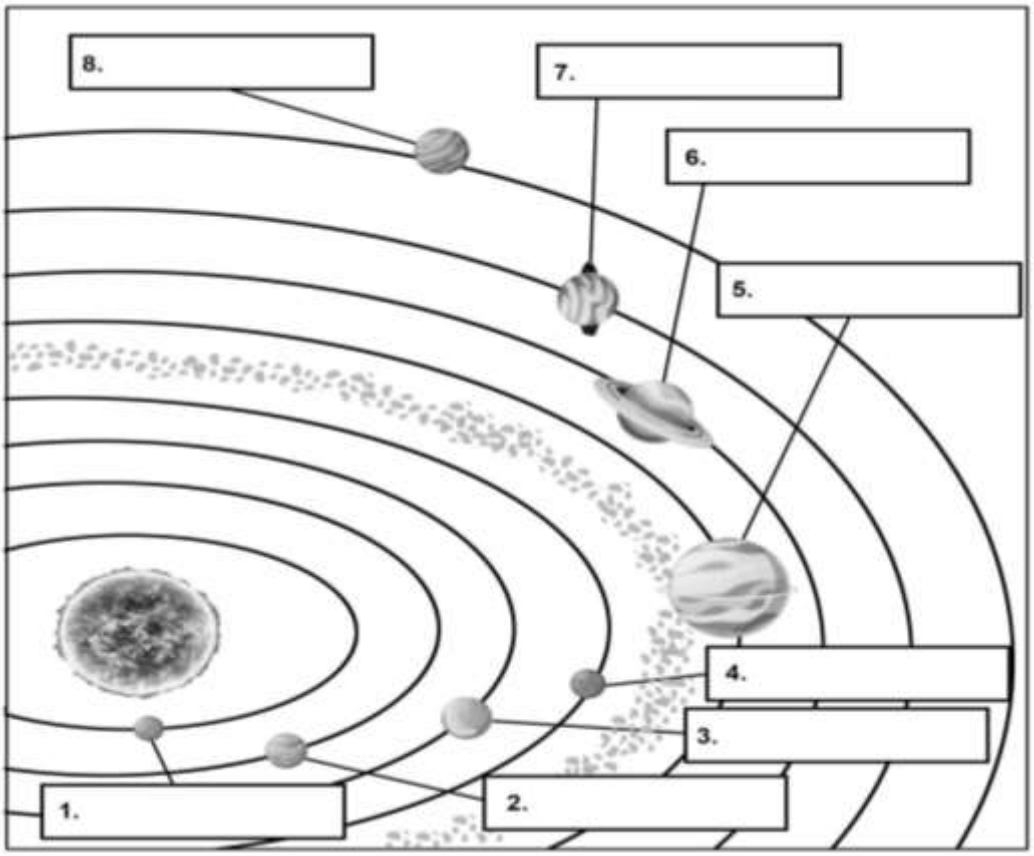


Figure 2. Model of the Solar System
Illustrated by Orencio D. Estrera

B. Answer the following analysis questions.

1. Which are the inner planets?

_____

2. Which are the outer planets?

_____

3. Which planet is closest to the Sun?

_____

4. Which two planets are almost of the same size?

_____

5. Compare the temperature of Saturn and Uranus. Which of the two is colder?

_____

6. What is the largest planet?

_____

7. Which among the inner planets is the hottest?

_____

8. Which planet is the coldest?

_____

9. Which group of planets are smaller?

_____

10. Which group of planets are large and sometimes called gas giants?

_____

Activity 2: Let's Compare and Contrast

Using the T-chart, compare and contrast the characteristics of the inner and outer planets. Choose your answer from the box. Answer the activity in your answer sheet.

Table 1: Comparison of Inner and Outer Planets

Inner Planets	Features	Outer Planets
1.	**Distance from the Sun**	5.
2.	**Sizes**	6.
3.	**Temperature**	7.
4.	**Composition**	8.

A. small, dense, rocky	E. farther from the Sun
B. closer to the Sun	F. large, gas giants
C. silicate mantle, metallic core	G. hydrogen and helium
D. most planets are hot/warm	H. all planets are cold

What is It

What are the components of the solar system?

The solar system is composed of the Sun and all the objects that travel around it. The Sun is orbited by planets and their moons, asteroids, comets and other heavenly bodies.

What are the eight planets in the solar system?

The eight planets in the solar system are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

What are the inner planets?

The first four planets, Mercury, Venus, Earth and Mars are called terrestrial or inner planets. They are solid and are mostly made up of rocks and metal; they do not have rings. These are the planets closer to the Sun. Among the four terrestrial planets Earth has one moon, Mars has two moons, Mercury and Venus has none. The terrestrial planets have common features such as mountains and volcanoes.

What are the outer planets?

The last four planets Jupiter, Saturn, Uranus, and Neptune are outer or Jovian planets. They are called gas giants. These gas giants are so-called because they are much larger than other planets and are mostly made up of gas. They are set-apart from the terrestrial planets by the **asteroid belt**. All of these gas giants have rings and moons. Of the four gas giants Saturn has the most prominent ring.

What are the compositions of the planets?

The terrestrial or inner planets have **solid surfaces**. These planets are small and mostly made up of **rock and metal**. They have **silicate mantle** surrounding a **metallic core** composed mostly of **iron**.

The Jovian or outer planets are made up of **hydrogen** and **helium** and they have small **rocky core**. Aside from being called gas giants, Uranus and Neptune are also called **ice giants**. The ice giants have interior composition of compounds like **water**, **methane** and **ammonia**.

To further understand the characteristics of each planet, study the table below.

Table 2: Table Characteristics of the Eight Planets

Name of Planets (In order from the Sun)	**Average Distance from Sun ($x10^7$km.)**	**Size/ Diameter ($x10^3$km.)**	**Average Temperature**	**Distinct Characteristics**
Inner Planets				
Mercury	5.79	4.878	-183 °C to 427 °C	barren; crater-covered surface
Venus	10.82	12.104	480 °C	the brightest object in the sky; almost the same size with Earth
Earth	14.96	12.756	14 °C	a planet where life exists; has water on its surface and atmosphere that allowed life to flourish
Mars	22.28	6.794	-63 °C	red planet
Outer Planets				
Jupiter	77.84	142.984	-130 °C	has an ever-changing whirlpool of storms known as Great Red Spot
Saturn	142.70	120.536	-130 °C	has an extensive and complex ring system
Uranus	287.07	51.118	-195 °C	sideways planet
Neptune	449.70	49.532	-201 °C	a blue planet made up of methane

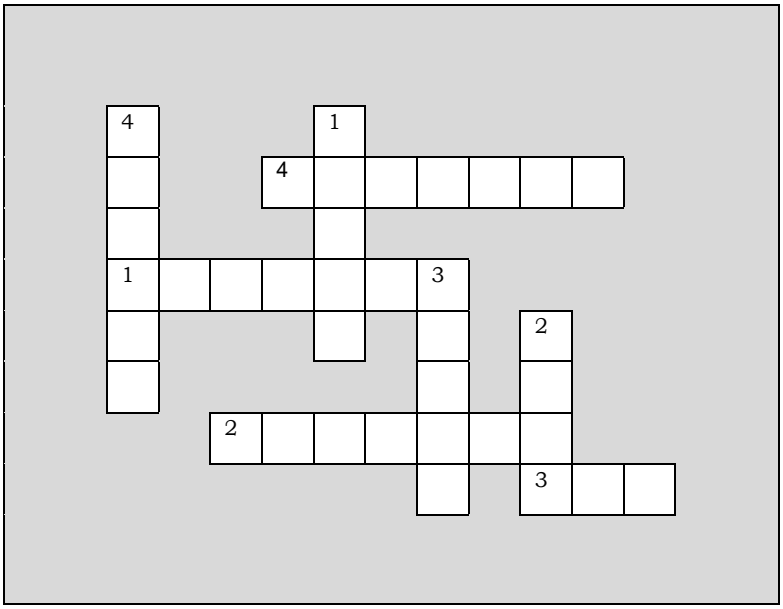
What's More

Know your solar system

Answer the cross word puzzle below in your answer sheet.

Across:
1. the blue planet made up of methane
2. the largest planet in the solar system
3. the center of the solar system
4. the smallest planet

Down:
1. the twin planet of Earth
2. the red planet
3. the planet where we live in
4. the seventh planet from the Sun



What I Have Learned

Fill in the blanks below to complete the first four statements. Underline the correct answer inside the parenthesis to complete the last four statements.

I learned that:

size	atmosphere	water	temperature
Earth	distance from the Sun	Mars	Characteristics

1. The different planets in the solar system have different _____.
2. The different characteristics of the planets are _____, _____, _____.
3. The planet in the solar system that can support life is _____.
4. Earth is unique because it has _____ and _____.
5. The inner planets are **(smaller, bigger)** than the outer planets.
6. The inner planets are **(nearer, farther)** from the Sun.
7. The outer planets are **(smaller, bigger**) than the inner planets.
8. The outer planets are **(nearer, farther)** from the Sun

What I Can Do

Earth is the only planet in the solar system where human beings live. This is the only planet we can call our home. There are water, oxygen, and the right condition that can support life, which other planets do not have.

How can you show appreciation to our very own planet Earth? How will you take care of the Earth?

Make a poster that shows your appreciation of the planet Earth to support life and how to take care of it. Use one whole sheet of long bond paper and any coloring materials of your choice. Be guided by the following rubrics:

Rubrics for Poster Making

CRITERIA	5 Points	4 Points	3 Points
Content	Shows great understanding of concept/great appreciation of the Earth to support life	Shows a fair understanding of concept/ fair appreciation of the Earth to support life	Hardly shows an understanding of concept/ hardly shows appreciation of the Earth to support life
Clarity	Easy to understand	Make sense	Hardly make sense
Creativity	Quality of work is competent showing great creativeness and originality	Quality of work is fair showing little creativeness and originality	Quality of work is poor showing no creativeness and originality
Total			

Assessment

Read each item carefully and answer the following questions by writing the letter of the correct answer.

1. Which planet in the solar system has the characteristics that can support life?
   A. Earth
   B. Jupiter
   C. Mercury
   D. Neptune

2. Which of the following statements describes the inner planets?
   A. They are small and made of ice and gas.
   B. They are large and made up mostly of gas.
   C. They are large and made of gases and metal.
   D. They are solid and made up of rocks and metals.

Table 3: Characteristics of Planets in the Solar System

Name of Planet	Average Distance from Sun ($x10^7$km.)	Diameter ($x10^3$km)	Average Temperature	Distinct Characteristics
Mercury	5.79	4.878	-183 °C to 427 °C	barren; crater-covered surface
Venus	10.82	12.104	480 °C	the brightest object in the sky; almost the same size with Earth
Earth	14.96	12.756	14 °C	a planet where life exists; has water on its surface and atmosphere that allowed life to flourish
Mars	22.28	6.794	-63 °C	red planet
Jupiter	77.84	142.984	-130 °C	has an ever-changing whirlpool of storms known as Great Red Spot
Saturn	142.70	120.536	-130 °C	has extensive and complex ring system
Uranus	287.07	51.118	-195 °C	coldest planet
Neptune	449.70	49.532	-201 °C	blue planet made up of methane

3. Which one has the highest average temperature among the inner planets?
   A. Mars
   B. Earth
   C. Venus
   D. Mercury

4. Which planet is farthest from the Sun?
   A. Venus
   B. Uranus
   C. Mercury
   D. Neptune

5. Based on Table 2, what is the smallest planet in the solar system?
   A. Earth
   B. Jupiter
   C. Mercury
   D. Neptune

6. Which of the following is the largest planet?
   A. Mars
   B. Jupiter
   C. Uranus
   D. Neptune

7. Which planet has a surface temperature of -63 C?
   A. Mars
   B. Earth
   C. Venus
   D. Neptune

8. Which among the planets has extensive and complex ring system?
   A. Saturn
   B. Jupiter
   C. Uranus
   D. Neptune

9. Which planet is the brightest object in the sky?
   A. Venus
   B. Uranus
   C. Mercury
   D. Neptune

10. Which of the eight planets is known as the blue planet?
   A. Earth
   B. Jupiter
   C. Mercury
   D. Neptune

Additional Activities

Use the Venn diagram to compare the inner and outer planets. The middle section represents the characteristics of the inner and the outer planets have in common. **A** represents the characteristics of the inner planets that are different from the outer planets. **B** represents the characteristics of the outer planets that are different from the inner planets. Choose your answer from the box.

A. gaseous planets	E. without rings
B. made up of rocks	F. closer to the Sun
C. with rings	G. farther from the Sun
D. revolve around the sun	H. rotate on its axis

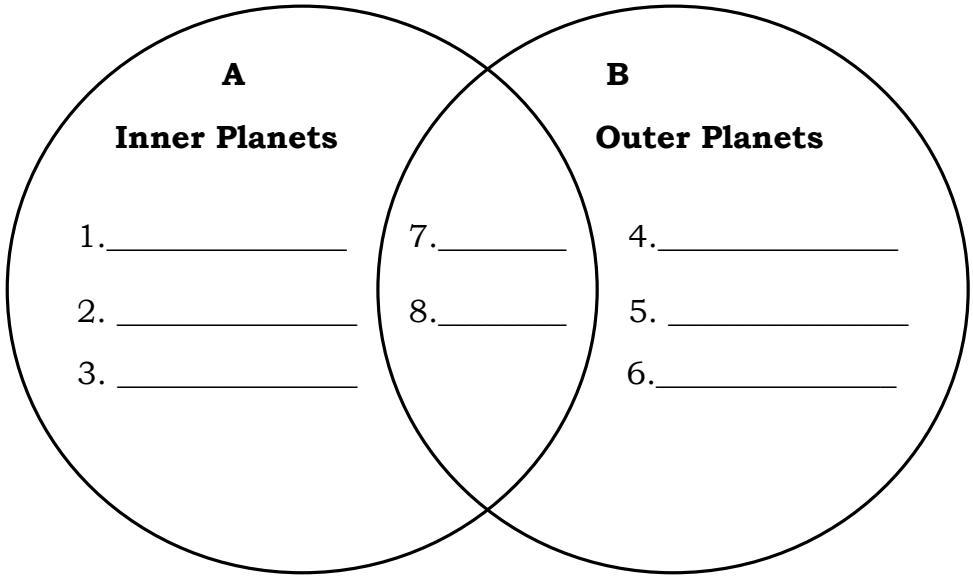


Figure 3. Similarities and Differences of the Inner and Outer Planets

Answer Key

Lesson 1: Compare Planets in the Solar System

What I Have Learned 1. characteristics 2. size, distance, Temperature 3. Earth 4. water and atmosphere 5. smaller 6. nearer 7. bigger 8. farther **What I Can Do** (Rate poster based on Rubrics) **Assessment** 1. A 2. D 3. C 4. D 5. C 6. B 7. A 8. A 9. A 10.D **Additional Activities** 1. B 2. E 3. F 4. A 5. C 6. G 7. D 8. H	**B.** 1. Mercury Venus Earth Mars 2. Jupiter Saturn Uranus Neptune 3. Mercury 4. Earth and Venus 5. Uranus 6. Jupiter 7. Venus 8. Neptune 9. Inner Planets 10. Outer Planets **Activity 2: Let's Compare and Contrast** 1. B 2. A 3. D 4. C 5. E 6. F 7. H 8. G **What's More** **Across** 1.Neptune 2.Jupiter 3.Sun 4.Mercury **Down** 1.Venus 2. Mars 3. Earth 4. Uranus	**What I Know** 1. C 2. B 3. B 4. B 5. D 6. D 7. C 8. A 9. A 10. A **What's In** **A.** 1. A 2. B **B.** **What's New** **Act. 1- Planets of the Solar system** **A.** 1. Mercury 2.Venus 3. Earth 4. Mars 5. Jupiter 6. Saturn 7. Uranus 8. Neptune

References

A. Book

Tan, C. T. (2012).*Science for Daily Use 5*.Marikina City: JICA Enterprises

B. Electronic Sources

DepEd Learning Portal, (2014).EASE Module 15: Planets in the Solar System

DepEd Learning Portal, (2014).MIMOSA 5 Module 25: Inner Planets

DepEd Learning Portal, (2014).MIMOSA 5 Module 26: Outer Planets

https://solarsystem.nasa.gov/planets/overview/:NASA Science Solar System Exploration

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