



What is the solar system?

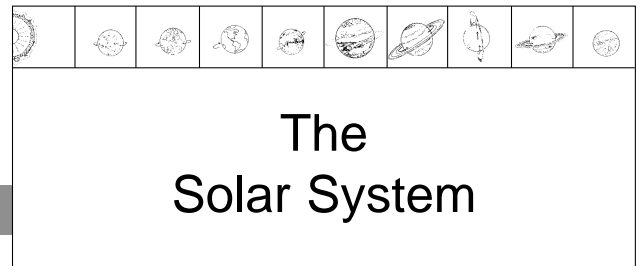
Space Concepts:

- The planets, moons, and asteroids orbiting the Sun make up our solar system.
- The first four planets are the solid, inner planets: Mercury, Venus, Earth, and Mars.
- The next four planets are the gaseous, outer planets: Jupiter, Saturn, Uranus, and Neptune.
- Distant Pluto is a very small solid planet.
- All planets revolve around the Sun and rotate on their own axis, while the entire solar system circles the Milky Way in a counterclockwise motion.

Vocabulary: solar system planet moon axis orbit rotate *asteroid
 *revolution *rotation

Read: *Lots of Science Library Book #6.*

Activities:



The Solar System – Graphics Organizer

Focus Skill: recording data

Paper Handouts: 12 sheets of 8.5" x 11" paper a copy of Graphics 6A–J

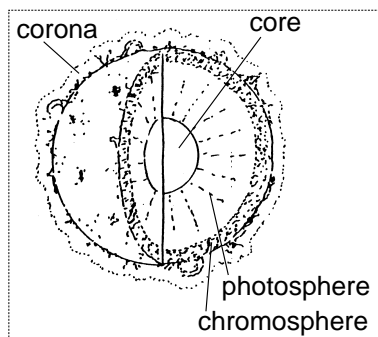
Graphic Organizer: Make a 10 Tab Book, using the directions on page 5. Glue Graphic 6A, the Sun, on the first tab on the left. Glue Graphics 6B–J on the remaining tabs in the correct order.

The Sun – Graphic Organizer

Focus Skills: research, organizing information

Paper Handouts: Solar System Tab Book a copy of Graphics 6K–L

Graphic Organizer: On the Sun page of the Solar System Tab Book, glue Graphic 6 on the left side. Label the parts of the Sun, using information from the Lab Book. Glue Graphic 6L on the right side. Fill in the information about the Sun using *Lots of Science Library Book #4.*



Diameter: 865,000 miles/1,392,000 km
 Core Temperature: 30 million °F/16,600,000 °C
 How heat and light are produced: Inside the core, the transformation of hydrogen into helium produces heat and light.
 How long it takes light to travel to Earth: 8 minutes and 20 seconds

Fruity, Seedy Planets

Focus Skill: illustrating a concept

Activity Materials: grapefruit large orange two plums three peppercorns two peas index cards

Activity: Write the name of each planet on an index card. Arrange the items in the following order and place the correct index card next to it.

Peppercorn – Mercury	Large orange – Saturn	Pea – Venus
Plum – Uranus	Pea – Earth	Plum – Neptune
Peppercorn – Mars	Peppercorn – Pluto	Grapefruit – Jupiter

Observation Questions: Which planet is the largest? How many Earths do you think it would take to make one Jupiter? How many Mercurys do you think it would take to make one Saturn?

Distances From the Sun

Focus Skills: measuring, illustrating a concept

Paper Handouts: a copy of Graphic 6M

Activity Materials: basketball tape measure
Activity materials used in the Fruity, Seedy Planets activity

Activity: Place the basketball Sun at the end of a large field or parking lot. Use the chart of Graphic 6M to create a model of the Solar System.

<u>Fruity, Seedy Planet</u>	<u>Distance from the basketball Sun</u>
Peppercorn – Mercury	5 inches (12 cm)
Pea – Venus	9 inches (22 cm)
Pea – Earth	12 inches (30 cm)
Peppercorn – Mars	18 inches (46 cm)
Grapefruit – Jupiter	61 inches (156 cm)
Large orange – Saturn	112 inches (286 cm)
Plum – Uranus	226 inches (574 cm)
Plum – Neptune	354 inches (900 cm)
Peppercorn – Pluto	465 inches (1180 cm)

My Monster Named Zanet – Story and Graphic Organizer

Focus Skill: memorizing information

Read the poem: *Hungry Space Monster* by Dinah Zike

*I imagine a monster whom I call Zanet,
Whose favorite snacks are moons and their planets!
My monster's as fierce as Godzilla or worse.
He spends his days traveling the Universe.
He is seeking a delicious, crunchy treat,
But in outer space there isn't much to eat.
So this monster gets hungrier every day.
If he doesn't eat something, he'll waste away.
He's too small to eat galaxies or their stars
But to him, the planets look like candy bars.
Help! Our Solar System comes into his view!
He's eating the planets and all their moons, too!
To remember the order of each planet,
Memorize this nine word phrase about Zanet:
My Very Empty Monster Just Swallowed Up Nine Planets.*



Paper Handouts: 8.5" x 11" sheet of paper a copy of Graphic 6N

Graphic Organizer: Make a Half Book. Glue Graphic 6N on the cover. Inside, write/copy this humorous mnemonic to remember the planets in order from the Sun:

My Very Empty Monster Just Swallowed Up Nine Planets

My – Mercury

Very – Venus

Empty – Earth

Monster – Mars

Just – Jupiter

Swallowed - Saturn

Up - Uranus

Nine - Neptune

Planets - Pluto

Experiences, Investigations, and Research

Select one or more of the following activities for individual or group enrichment projects. Allow your students to determine the format in which they would like to report, share, or graphically present what they have discovered. This should be a creative investigation that utilizes your students' strengths.



1. To get an idea of our solar system's size, investigate *Voyager 2's* journey through our solar system and beyond.



2. Use the Internet to investigate the discovery of other "solar systems" in our galaxy. Use what you learn to compare and contrast our solar system with another solar system.



3. Define "heliocentric" and describe a heliocentric solar system.



4. Hypothesize as to why all the inner planets are solid and the outer planets are gaseous.



5. <http://www.jpl.nasa.gov/>

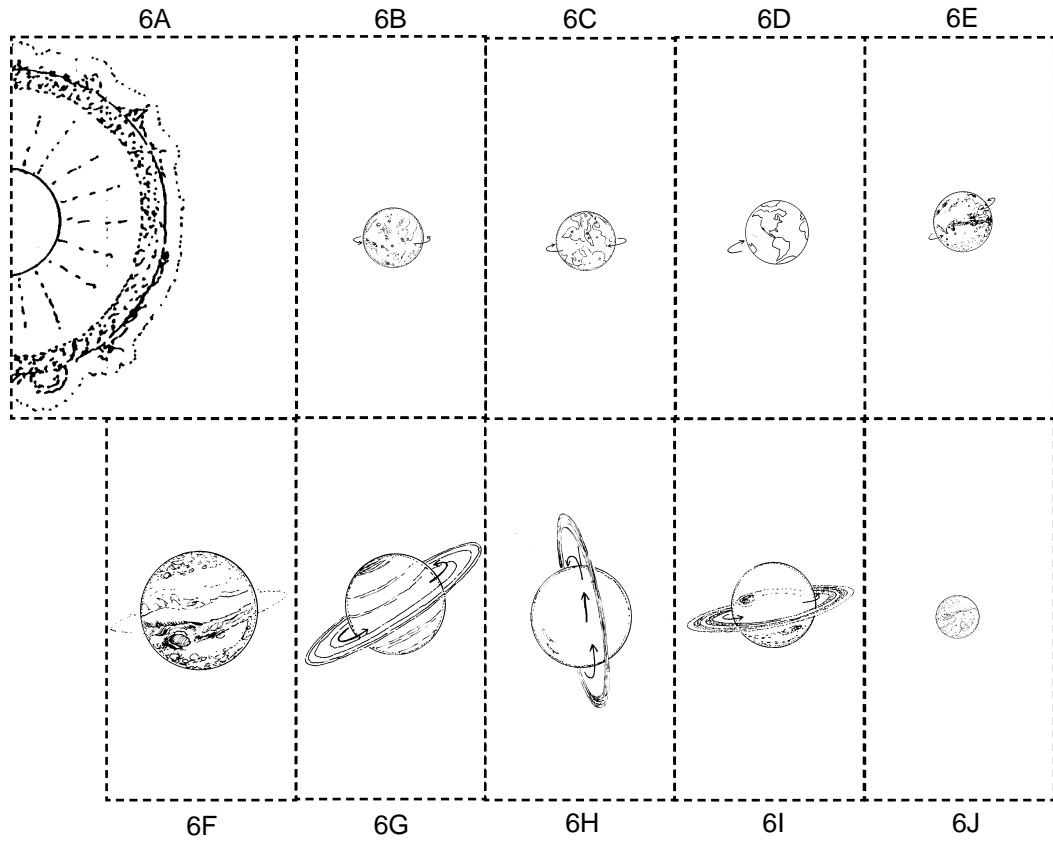


6. <http://www.seds.org/nineplanets/nineplanets/nineplanets.html>

Notes

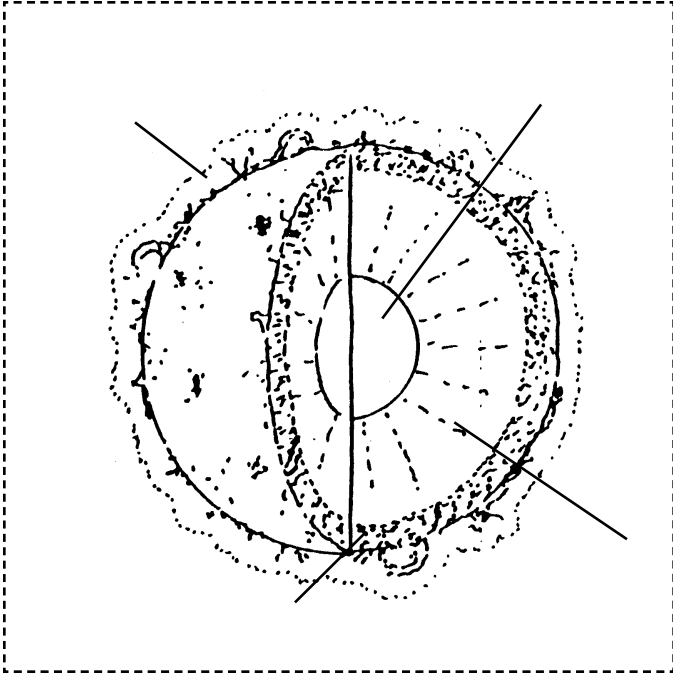


The Solar System



The Sun

6K



6M

<u>Fruity, Seedy Planet</u>	<u>Distance from the basketball Sun</u>
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The Sun

6L

Diameter: _____

Core Temperature: _____

How heat and light are produced: _____

How long it takes light to travel to Earth: _____

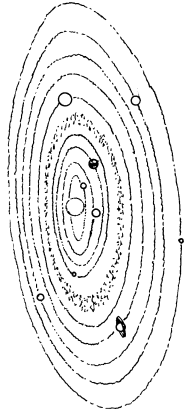




Although Mercury is the closest planet to the Sun, Venus is the hottest planet in our solar system. Pluto is the farthest from the Sun and is the coldest planet. All the planets except Mercury and Venus have at least one moon. Saturn and Uranus have rings around their surface.

The planets, moons, and asteroids orbiting the Sun make up our solar system. These heavenly bodies orbit the Sun in a counterclockwise motion. The solar system is one small part of our galaxy, the Milky Way.

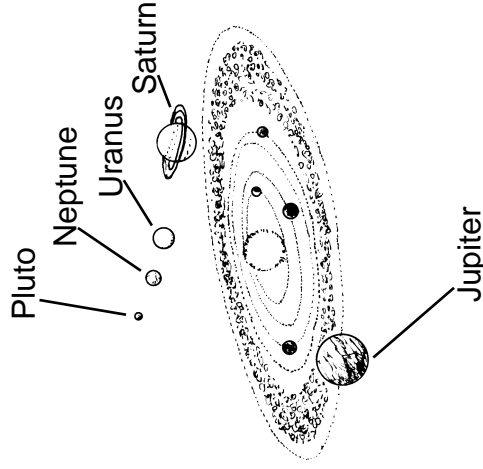
One trip around the Sun is called a revolution, and is measured as a year. It takes $365 \frac{1}{4}$ days for Earth to complete one revolution. The planet with the shortest revolution in the solar system is Mercury at about 88 Earth days. Pluto has the longest revolution, is about 248 Earth years.



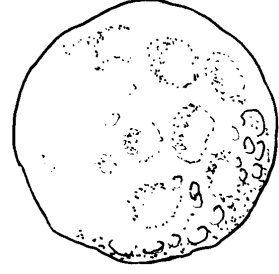
As planets orbit the Sun, they also spin on their axis. This is called rotation, and one rotation equals a day. It takes Earth 24 hours to complete one rotation.



The planet with the shortest rotation is Saturn at about 10 $\frac{1}{2}$ Earth hours. Venus has the longest rotation at about 243 Earth days.



He named the asteroid Ceres. At about 623 miles (1002 km) across, it is the largest known asteroid.





Asteroids are small, rocky bodies found orbiting the Sun. In 1801, Italian astronomer Father Giuseppi Piazzi observed an unknown light between Mars and Jupiter. At first he thought it was a comet, but he had actually discovered the first asteroid.

6 Lots of Science Library Book #6

The next four planets, Jupiter, Saturn, Uranus, and Neptune, are called the gaseous planets or the jovian planets. They are also called the “outer planets” because they are distant from the Sun. Distant Pluto is a very small solid planet.



11

The Sun’s gravity prevents the planets and other heavenly bodies from hurling into space. The word “planet” comes from the Greek word *planetes*, meaning “wanderer.”

2 Lots of Science Library Book #6

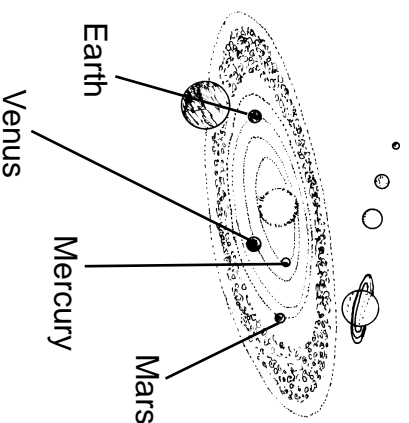
While the planets are orbiting the Sun and revolving on their axis, the entire solar system is circling the Milky Way in a counterclockwise motion.



15

The Sun is at the center of our solar system. The first four planets, Mercury, Venus, Earth, and Mars, are called the rocky or solid planets.

These terrestrial planets are also called “inner planets” because of their locations near the Sun.

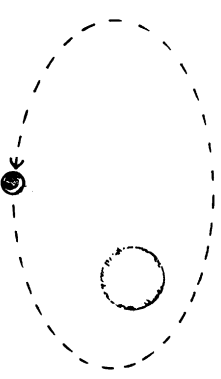


8

Lots of Science Library Book #6

In ancient Greece, the circle was believed to be a perfect geometric form. Ptolemy believed the Universe was perfect; therefore, objects moved in perfect circular orbits. In the 16th century, Johannes Kepler determined that planets moved in elliptical or oval orbits.

4 Lots of Science Library Book #6



13