



The Planetarium at Raritan Valley Community College
118 Lamington Road, Branchburg, NJ 08876
Planetarium: 908-231-8805
www.raritanval.edu/planetarium

Rockin' Rocket Ride Teacher Resource Guide

The Planetarium at Raritan Valley Community College is a 40-foot wide theater with 100 seats and room for 4 wheelchairs. Using multiple projection systems, the Planetarium can create virtually any environment. You can be seated in the interior of a spacecraft, witness the birth of a star, stargaze at the night sky over New Jersey (or anywhere else on Earth), or travel faster than light through the Milky Way Galaxy.

About the Show

Rockin' Rocket Ride is a fun and exciting interactive program where the kids get a chance to explore the planets of the solar system, as well as the Sun, Moon, and constellations. We start in a rocket ship and travel through our solar system visiting our Sun and hearing songs about the planets and moon rocks. Then we stop to look at the stars and discover a constellation or two that we can see tonight from our own backyards. On our journey back from space, we pass the Moon before safely landing home on Earth. Children get the opportunity to learn basic elements of the solar system in a fun and exciting manner which won't soon be forgotten.

This show is appropriate for

Grade levels	PreK-K
Program Length	40 minutes

New Jersey Student Learning Standards

All shows address the **New Jersey Student Learning Standards: Science**. This program supports **NJSLS-Science: 1-ESS1-1**, patterns of the Sun, Moon, and Stars; **5-ESS1-1**, the Sun is brighter because it is closer to us.

We welcome any suggestions, comments, or tips on these activities and resources, so we can improve these resources for you and your students. Thanks again for choosing the Planetarium at Raritan Valley Community College!

Contact us: Planetarium at Raritan Valley Community College
118 Lamington Road
Branchburg, NJ 08876
Phone: 908-231-8805
www.raritanval.edu/planetarium

Amie Gallagher, Planetarium Director

Kevin Schindler, Planetarium Associate

Rockin' Rocket Ride Program Objectives

Upon completion of this program, students will be able to:

1. Identify different types of objects in the solar system, including planets, moons, and the Sun
2. Identify the planets in order from the innermost to the outermost.
3. Explain differences between the planets.
4. Recognize that the Sun supplies light and heat to the Earth.
5. Describe Earth as one of several planets that orbit the Sun, and the Moon as a satellite of the Earth.
6. Observe that stars are many, scattered, and different in brightness.
7. Observe that stars are not all the same in brightness, size, and color.
8. Understand that the Sun is a star and that it shares characteristics with other stars.

Pre-visit Activities

Questions for you and your students to ponder before your visit...



Q. What are the planets?

A. Once thought to be gods, the planets (from the Ancient Greek word for “wanderer”) are worlds made of either solid matter (terrestrial or Earth-like) or Gas Giants (consisting of hydrogen, helium and other gases) Terrestrial planets include Mercury, Venus, Earth and Mars; while the gas giants include Jupiter, Saturn, Uranus and Neptune. Pluto has been reclassified, put into a new category of objects called “dwarf planets.” Dwarf planets are smaller, spherical objects that orbit the Sun.



Q: How many of the planets of the Solar System can I see without a telescope?

A: Five planets in our solar system can be seen in your backyard without the aid of a telescope or binoculars. Mercury, the closest planet to the Sun, is the hardest to see. Mercury never wanders very far from the brilliant light of the Sun, and can only be seen just before sunrise or just after sunset. Venus, 2nd closest planet, is the brightest planet by far. Venus does move a little farther away from the Sun, but can only be seen within several hours before sunrise or after sunset. Mars, Jupiter, and Saturn can be easily found, if they are not near the Sun as seen from the Earth. Check out web sites such as skyandtelescope.com or heavens-above.com for assistance in finding the visible planets in your night sky



Q. How do you tell planets from stars?

A. You can tell a planet from a star by watching the object and its location among the stars every clear night. Stars will remain in a relatively fixed place, rising in the east and setting in the west, while a planet will move among the stationary stars over the passing of days and weeks. The further the planet is from the Sun, the slower it will move in the sky.



Q: Where did the planets' names come from?

A: Thousands of year ago, humans did not know what to think of the wandering lights that appeared among the stars. Superstition led our ancestors in places like Babylonia (ancient Iraq) to think the wandering lights were gods, and knowing where they appeared in the sky would help predict the future. This is how the practice of astrology began. The names we use today are names of Roman gods.



Q: Have humans traveled to another planet?

A. No one from our planet has traveled to another planet in our Solar System. The farthest anyone has traveled is to our closest neighbor, the Moon. Starting in 1969 through 1972, 27 American astronauts have traveled to the Moon, with 12 astronauts landing on the surface. NASA announced plans for new manned missions to the Moon, and then on the Red Planet – Mars, sometime in the next decade. Will *you* be the next lunar astronaut?



Q. What is in the Solar System?

A. The Solar System refers to our system of one star (The Sun), and the planets that orbit it, the moons that orbit the planets, over 10,000 asteroids, millions of comets, and uncounted bits of dust and rock (meteoroids).



Q. What is outside the Solar System?

A. The Solar System is part of a collection of stars that are in an arm of a galaxy that we call the Milky Way. The stars that we can see all belong to our arm, and our ancestors organized the stars into pictures that we call constellations.

Activity 1

Paper Plate Sun

Materials: paper plates, yellow paint, yellow construction paper

1. Paint one side of a paper plate yellow.
2. Trace child’s hand on yellow construction paper about seven times.
3. Cut out the tracings.
4. Glue or staple handprint tracings to painted paper plate. The fingers will be the Sun’s rays.
5. Color a mouth and nose onto the Sun and either draw eyes or glue on googly eyes.

Activity 2

Big and Small, Near and Far

Is the Sun big or small when it’s in our sky? Is it bigger than your finger? Is it smaller than your house? The Sun looks very bright, but small in our sky. If we could get close to it, we would discover that it is huge!

1. Tape your Paper Plate Sun to the wall. Standing in front of it, compare your Sun to your fist. Which is bigger?
2. Walk across the room. Turn and look back at your Sun. Which is bigger now, your Sun or your fist? Did your fist really get bigger? Did the paper plate Sun get smaller? Why does it look smaller?

Activity 3

Songs

If you have a copy of Jane Murphy’s “Journey into Space” CD, be sure to share it with the children. We use “Rocket Ride,” “The Planet Song,” and “Moon Rock Rock” during our program. The children enjoy the show so much more when they recognize the songs during the show and can sing along.

The CD is sometimes available in the RVCC Planetarium’s gift shop, or can be purchased online from Kimbo Educational Music & Movement CD’s for Children. www.kimboed.com.

Post-Visit Activities

Activity 1

Paper Mache Planets

You can make and display these planets as a solar system or fill them with candy or toys and use as piñatas for an end-of-unit party.

Materials: flour, water, mixing bowl, wooden spoon, balloons of different sizes, newspaper to cover the floor and more to rip in strips, paint.

1. This is messy! Put down newspaper to protect your work area.
2. Add equal parts of water and flour to the mixing bowl.
3. Mix thoroughly with the spoon. Be sure to smooth out all the lumps.
4. The consistency should have a glue-like texture.
5. Inflate about ten balloons, one for the Sun, 8 planets, Pluto, and more if you want to include moons.
6. Rip newspaper into strips. Saturate the strips and lay them on your inflated balloons.
7. Allow each layer to dry completely before adding another layer. No more than 4 layers should be applied.
8. When completely dry, paint the balloons to look like the planets.

Activity 2

Traveling from planet to planet in just one day is only possible in our imagination. Walk part of The Thousand Yard Model to get a feel for just how far apart the planets are from each other. First introduce the concept of scaled sizes. You can do that by showing them a toy car. It's just like the real thing in the parking lot, but shrunken down so you can hold it in your hand.

The Thousand Yard Model

Prep:

1. This activity stretches about a half mile from the Sun to Pluto. Find a place where you've got a straight line of sight for as long as possible, and plan to go at least to Jupiter or Saturn.
2. Print the name of each planet on cardstock and tape a wooden skewer to the back. As you get to each planet, plant the skewer into the ground so the group can keep going but still see where the previous planets were located.

If we could shrink the Sun down to be an 8" ball (e.g., soccer ball), how big is the Earth? Have a variety of round objects for children to choose from, like a super ball, a marble, a tennis ball, and a peppercorn. The answer: a peppercorn.

How far away from the Sun (the ball) would our Earth Peppercorn be on the same scale? About 26 yards (giant steps) away. That's out of the classroom! Let's go outside.

Tape the Sun-ball to a lamp post or wall, so that it can be seen from a distance.

Take 10 giant steps (about 1 yard each) to get to Mercury.

Take 9 more steps to get to Venus.

Take 7 more steps to get to Earth.

Take 14 more steps to get to Mars.

Take 48 more steps to get to the Asteroid belt

Take 47 more steps to get to Jupiter.

Take 112 more steps to get to Saturn.

Take 249 more steps to get to Uranus. (We're half way to Pluto!)
Take 281 more steps to get to Neptune.
Take 242 more steps to get to Pluto.

Discussion points

- If you don't walk all the way to Pluto, just how far away from your ending point would it be?
- The nine planets can never line up in a straight line like this. They are in different places in their orbits around the Sun.
- Where is the nearest star? If you are in New Jersey, the nearest star, Proxima Centauri, would be in the State of Washington. Wow!

Activity 3

Planet Puzzle Word Search

Attached is an activity sheet that can be done whenever you'd like. Students can circle or highlight the planet names as they find them. As a small-group activity, you can make another copy on a transparency and project it onto the blackboard. As a student finds a word, he or she can circle it on the blackboard to help the others in the group. When they are finished, erase the blackboard and the next group is ready for the same activity.

Astronomy & Space Exploration Web Sites

<http://whitepages.amsky.com/#USA>

The Astronomy White Pages, a list of amateur astronomy clubs around the country. Amateur clubs hold regular meetings, host lecture series, and run star-gazing events. Many amateurs also volunteer to visit classrooms or bring a telescope to a school function. Contact the clubs for more information.

<http://www.nasa.gov> - *NASA HQ's* Web Site.

A great place to start your research!

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

NASA's Jet Propulsion Laboratory (JPL) supplies a master list of web sites for astronomy and space exploration!

<http://www.stsci.edu> - *Hubble Space*

Telescope (HST) HQ. Movies & pictures!

<http://amazing-space.stsci.edu/> -

Amazing Space a site with lots of Web-based activities designed for classroom use and for the general public.

<http://origins.stsci.edu> - *The Origins Program*

studies events starting at the birth of the universe in the Big Bang, the forming of galaxies, stars, & planets, & the start of life on Earth and possibly elsewhere.

<http://www.stsci.edu/exined> - Welcome to

Exploration in Education Stop and take a look at our latest electronic offerings of Macintosh, Windows, and DOS software available for downloading!

<http://photojournal.jpl.nasa.gov> @ NASA's

Jet Propulsion Laboratory (JPL) - *The Planetary Photojournal* will provide you with easy access to the images from various Solar System exploration programs.

<http://imagine.gsfc.nasa.gov/index.html>

NASA's *Imagine the Universe* is a learning center for **high school students** 14 years and up.

<http://starchild.gsfc.nasa.gov/docs/StarChild/StarChild.html>

Starchild is a learning center for **Elementary or Middle school** astronomers.

<http://www.skyandtelescope.com> - Home site for *Sky and Telescope magazine*, started in 1936.

S&T is the oldest and longest running astronomy magazine in the US.

<http://www.astronomy.com> - *Astronomy*

magazine, started in 1973, and is published by Kalmbach Publishing.

<http://saturn.jpl.nasa.gov/kids/index.cfm> *Cassini*

for Kids, a site just for kids where they can explore the beautiful ringed planet Saturn and learn about the spacecraft currently on their way there!

<http://solarsystem.nasa.gov/kids/index.cfm> *Solar*

System Exploration for Kids. "Extreme Space" facts, build-a-spacecraft, and art gallery, as well as links to information about the solar system.

<http://www.esa.int> *European Space Agency*. The main web site for ESA missions and activities.

<http://www.astronomy.com/asy/default.aspx?c=a&id=1091>

- *Astronomy Magazine's* web site for Astronomy for Kids. Find out what it's like on other planets. Learn how far away the stars are. Try a fun, space-themed project.

* * * * *

Book suggestions

There are so many books available on the solar system, Moon, and constellations. Here are several we like.

[There's No Place Like Space](#), by Tish Rabe. Random House.

[Me and My Place in Space](#), by Joan Sweeney. Dragonfly Books.

[The Big Dipper \(Let's-Read-and-Find-Out Science 1\)](#) by Franklyn M. Branley and Molly Coxe

[The Moon Seems to Change \(Let's-Read-and-Find-Out Science 2\)](#) by Franklyn M. Branley and Barbara & Ed Emberley

Planet Puzzle

Name _____

All the planet names are hidden in the puzzle. Can you find five that go across?
Can you find four that go down? Circle the names of each planet in the puzzle.

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

Mercury

Venus

Earth

Mars

Jupiter

Saturn

Uranus

Neptune

Pluto

