

Mindy's Wheel of Planets

Children will craft a paper wheel and play a game to learn about the planets in our solar system.

LEARNING GOALS

- Learn the names and order of the planets in our solar system
- Learn some of the characteristics of the planets in our solar system

GET READY

With your group, view **The Solar System Song** and the video clip from the episode **Round and Round** available from pbskids.org/learn.

Ask children to tell you what they know about the planets in our solar system. How many planets are there? What are the names of the planets?

Show the children the picture of the solar system with the planets in order. Then show them the individual pictures of the sun and planets and talk about some of the facts associated with each. Be sure to talk through any new vocabulary such as diameter, terrain, and orbit.

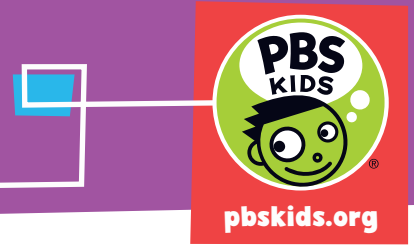
Point out that even though the planets all look the same size in the printed pictures, they are not. The pictures are enlarged so that the children can see details of the planets. For example, Mercury is tiny compared to Jupiter. You can print and show this picture from NASA to show the size differences between the planets:

jpl.nasa.gov/infographics/infographic.view.php?id=10749.

ITEMS NEEDED

- Print outs of the two parts of *Mindy's Wheel of Planets*, enough for each child to have 1 set; if possible print on card stock
- One brad for each child
- Crayons or colored pencils
- Scissors for each child or several pairs to share
- A printed picture of the solar system showing the order of the planets
- A printed picture of the sun and eight planets in our solar system with basic information about each; laminate the pictures for long term use.
- Space to play an active game

If the children mention Pluto, be prepared to talk about why Pluto is now considered a dwarf planet. You can find information nasa.gov/audience/forstudents/k-4/stories/nasa-knows/what-is-pluto-k4.html.



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EXCELSIOR! LET'S HAVE FUN!

1. Give each child a copy of both the top and bottom of *Mindy's Wheel of Planets*.
2. Instruct children to use crayons or colored pencils to color in the planets on the bottom of the wheel. Children can reference the colors of the planets in the pictures that you showed in the *Get Ready* introduction.
3. Encourage children to color Mindy and her telescope on the top section of the wheel.
4. Once both the top and bottom parts of the wheel are colored, help the children cut out the wheels so that each child has two circles of the same size.
5. As children are cutting out the top circle, remind them to cut along the dotted lines so that they have a viewing window for Mindy to 'see the planets' using her telescope.
6. Using a pencil or scissors, punch a hole through the center X on both the top and bottom of the wheel. Younger children may need help or additional supervision with this task. Make sure the hole is not larger than needed to support a brad.
7. Place the top and bottom plates together so that Mindy is on the top plate and can "see" a planet through the cut triangle. Use a brad to secure the two pieces of paper together.
8. Show the children how to spin the wheel slowly so that they can see one planet at a time through the triangle opening.



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TAKE IT FURTHER: Play a game of Place the Planets

This active game is best played after children have some base knowledge of the planets, either learned through the *Get Ready* section or from *Mindy's Wheel of Planets*.

1. Assign each child in the group to represent the Sun or one of the eight planets in our solar system and then give that child the picture of their assigned planet to hold. If there are more than 9 children in the group, pair up the children or put them into small groups or run the game more than once with children taking turns.
2. After each child is assigned to be the Sun or a planet, ask the children to line up in order of distance from the Sun. Mercury would stand closest to the Sun, followed by Venus, Earth, etc. After children have sorted themselves this way, use the facts on the printed pictures to call out parameters for how else they can sort themselves. Sometimes the children will end up in a line and sometimes they will end up sorted into groups.
 - Terrain (rocky planets vs gaseous planet groups)
 - Time it takes to orbit the sun (shortest to longest)
 - Diameter (smallest to largest)
 - Number of moons (fewest to most)
 - Average surface temperature (coldest to hottest)

Children can look at the pictures of the planets to help sort themselves. If the children are younger, it might be good to pair children who have stronger reading skills with children who are newer readers.

FOR MORE FUN!

View a clip from Ready Jet Go episode 101: **Tour of the Solar System** or episode 103: **Round and Round**. Talk about how the planets orbit around the sun. Then, similar to the *Place the Planets* activity, assign one child be the sun and assign each of 8 other children to be the planets. Give each child the picture of their assigned planet to hold while he/she orbits around the sun. If there are more than 9 children in the group, they could take turns or some could pretend to be moons or asteroids. Scale the difficulty of the activity based on the age/ability of the group.

- Easy: All children orbit the sun at a similar pace
- Medium: Have each child look at the facts on the picture to find out if the planet moves quickly around the sun (Mercury) or really slowly around the sun (Neptune). The children can then orbit around the "sun" at a pace relative to their assigned planet.
- Difficult: Have the children orbit around the sun and rotate on their axis at the same time!

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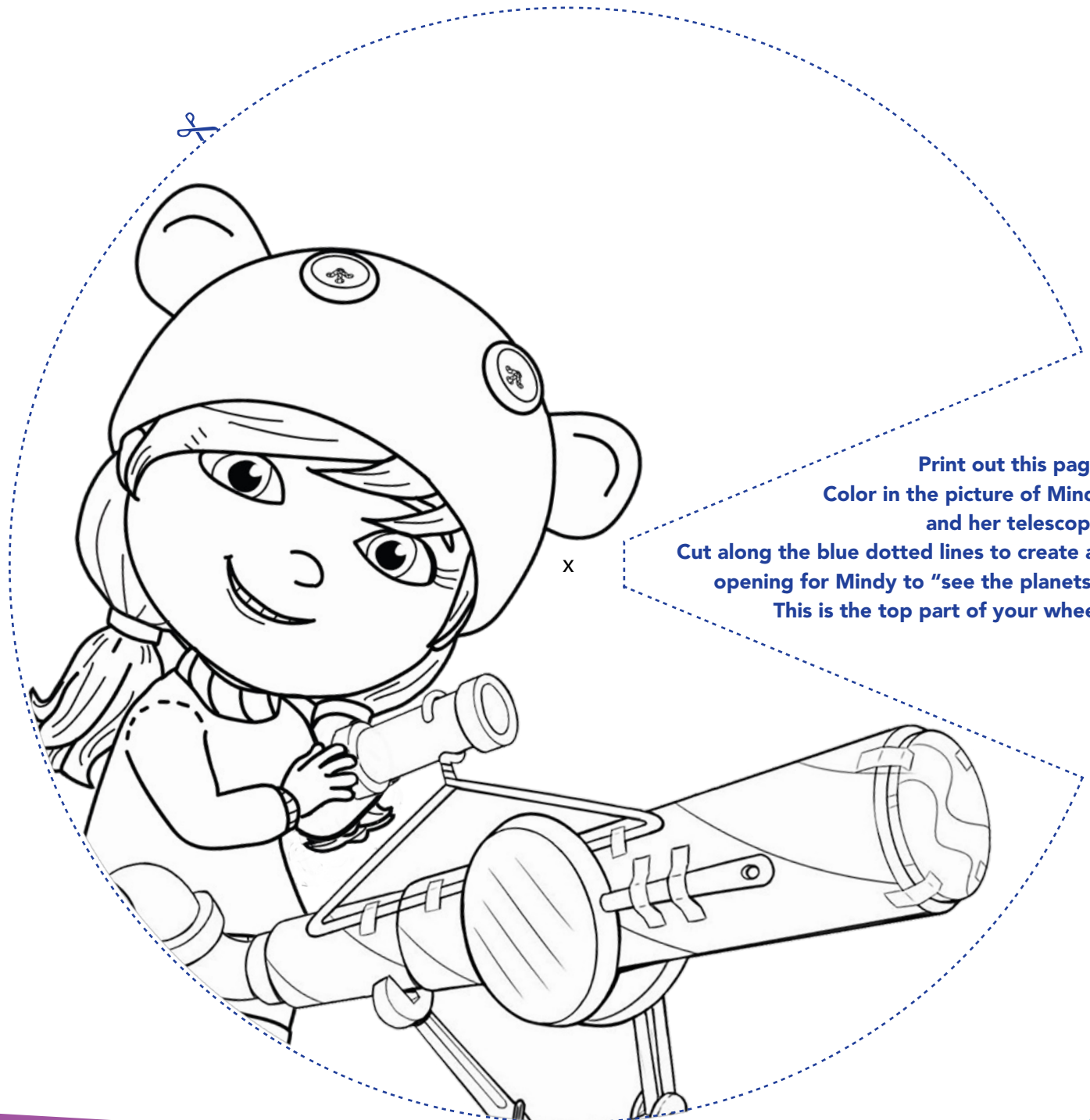
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WIND DANCER
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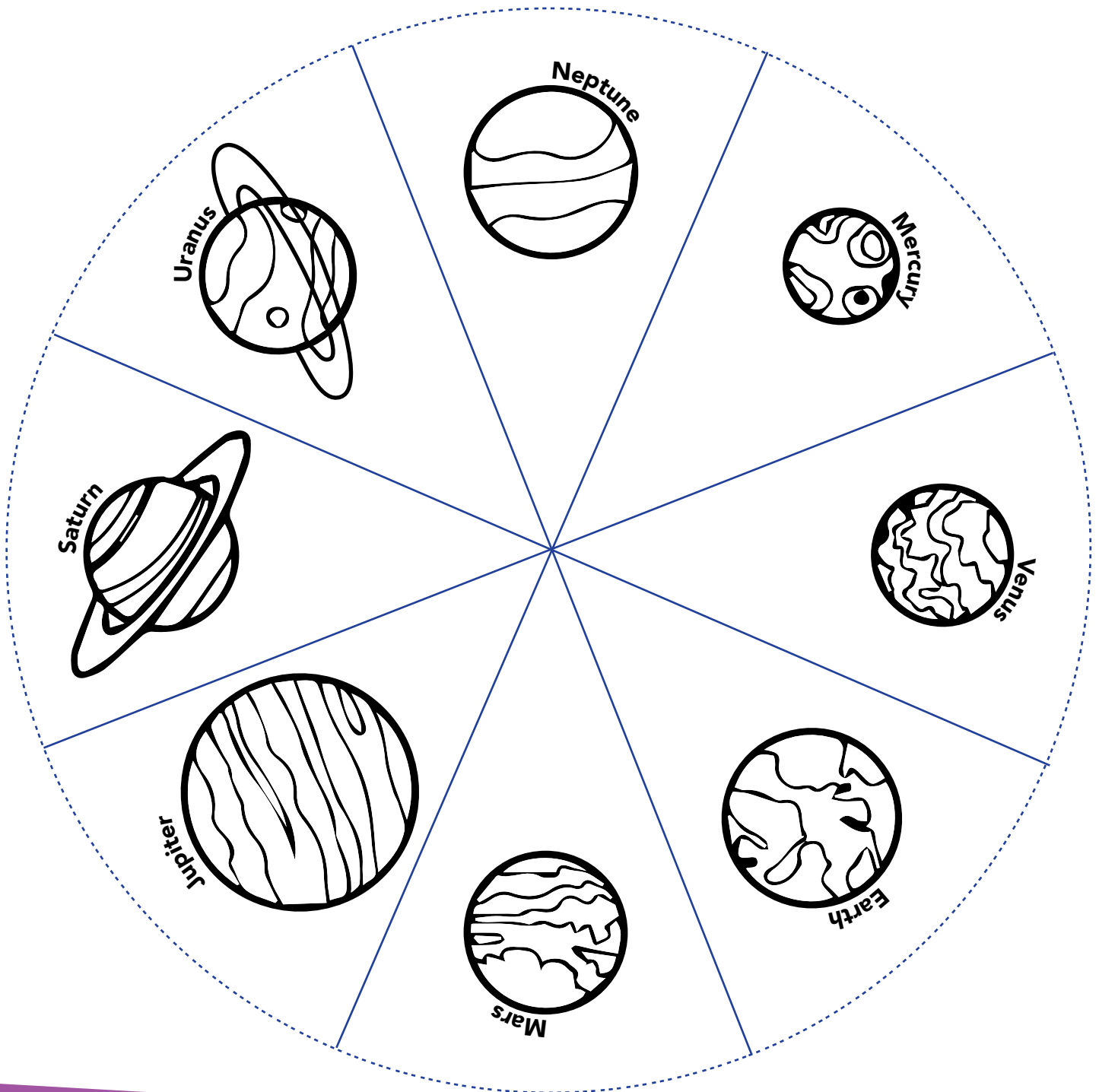
Mindy's Wheel of Planets



Print out this page.
Color in the picture of Mindy
and her telescope.
Cut along the blue dotted lines to create an
opening for Mindy to "see the planets."
This is the top part of your wheel.

Mindy's Wheel of Planets

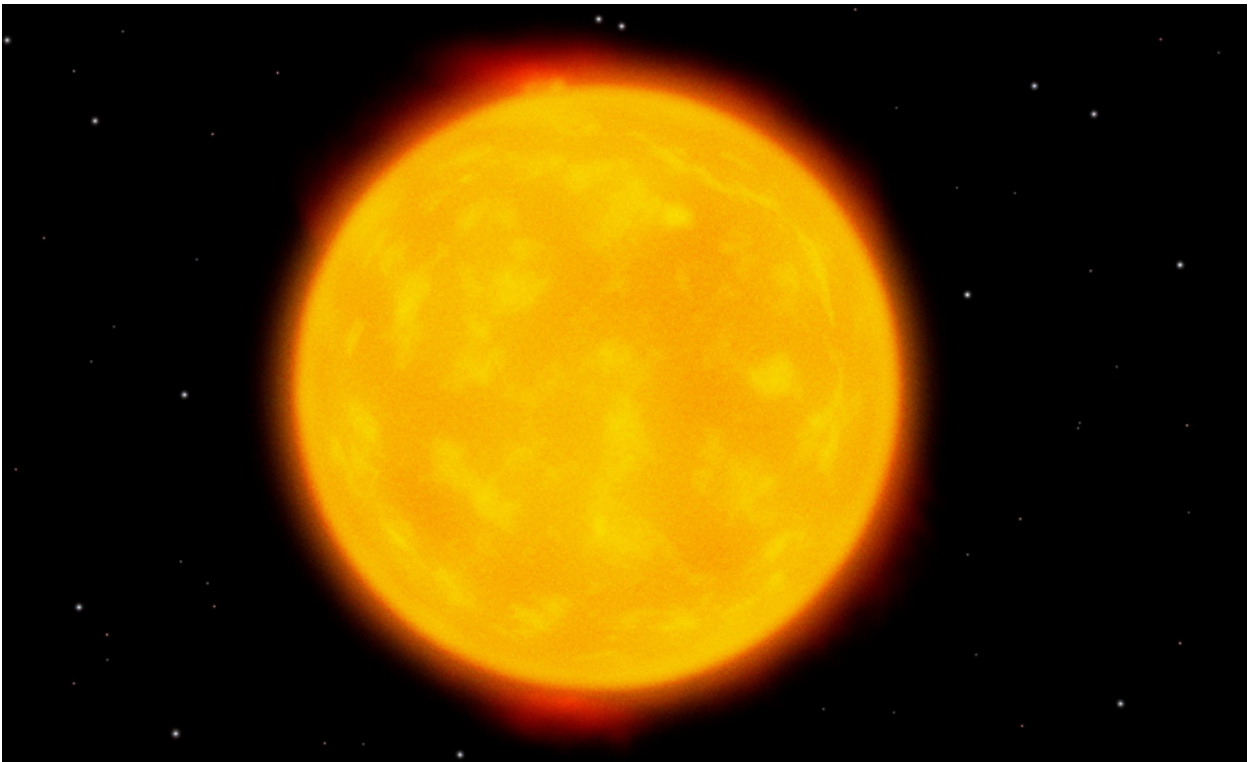
Print out this page. Color in the planets and then cut along the dotted lines to cut out the circle. This is the bottom of your wheel.
Use a brad to attach the top of the wheel to the bottom of the wheel.



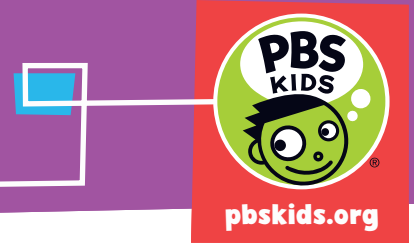


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The Sun



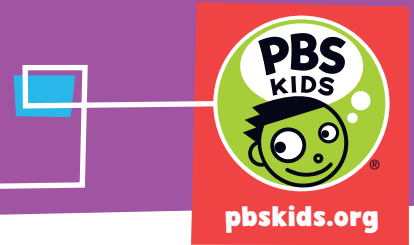
What is the Sun made of?	The Sun is made up of mostly hydrogen and helium gas plus smaller amounts of other gases.
How big is the Sun?	The Sun is 865,000 miles in diameter.
How far is the Sun from Earth?	The Sun is 92.96 million miles from Earth.
How hot is the Sun?	<ul style="list-style-type: none">• The core or middle of the Sun is about 27 million degrees Fahrenheit.• The photosphere or surface of the Sun is about 10,000 degrees Fahrenheit. This is the part of the Sun that sends heat and light to Earth.



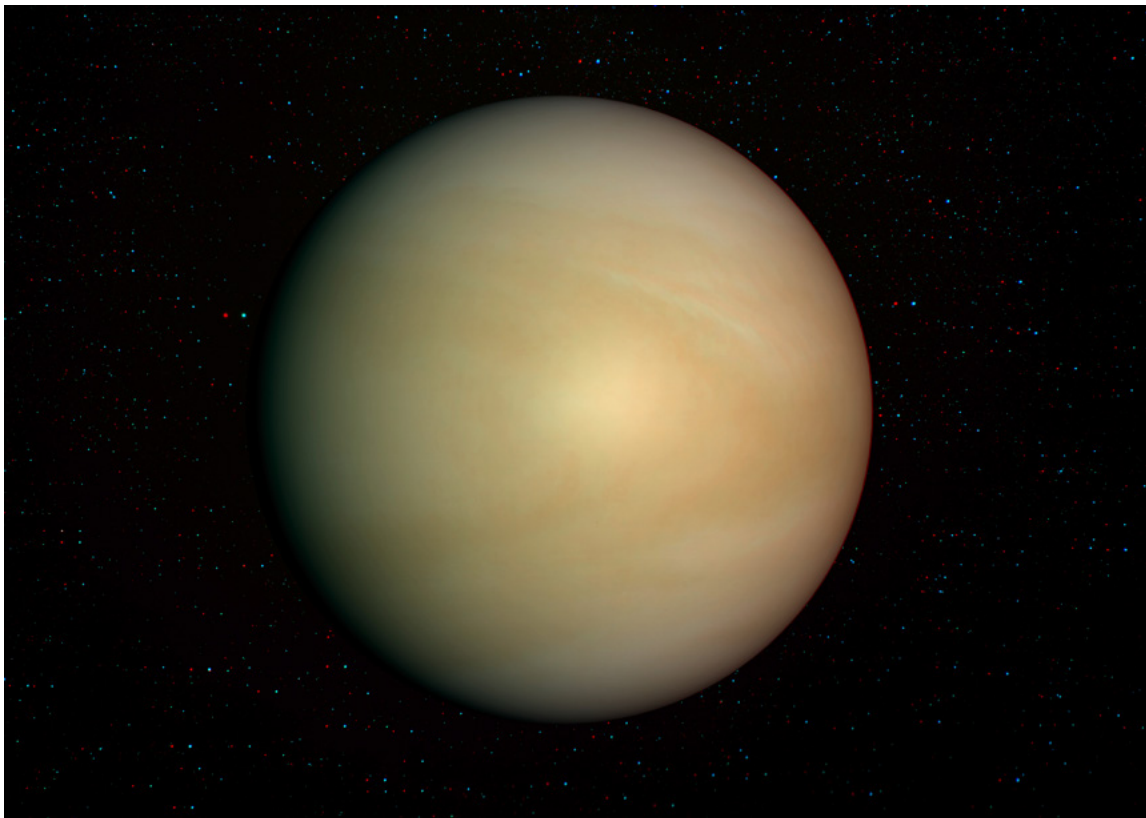
Mercury



Terrain	Rocky terrestrial (land)
Time it takes to orbit the Sun	88.0 Earth days
Diameter	3,032 miles
Position from the Sun	1st
Number of moons	Zero
Average surface temperature	333 degrees Fahrenheit



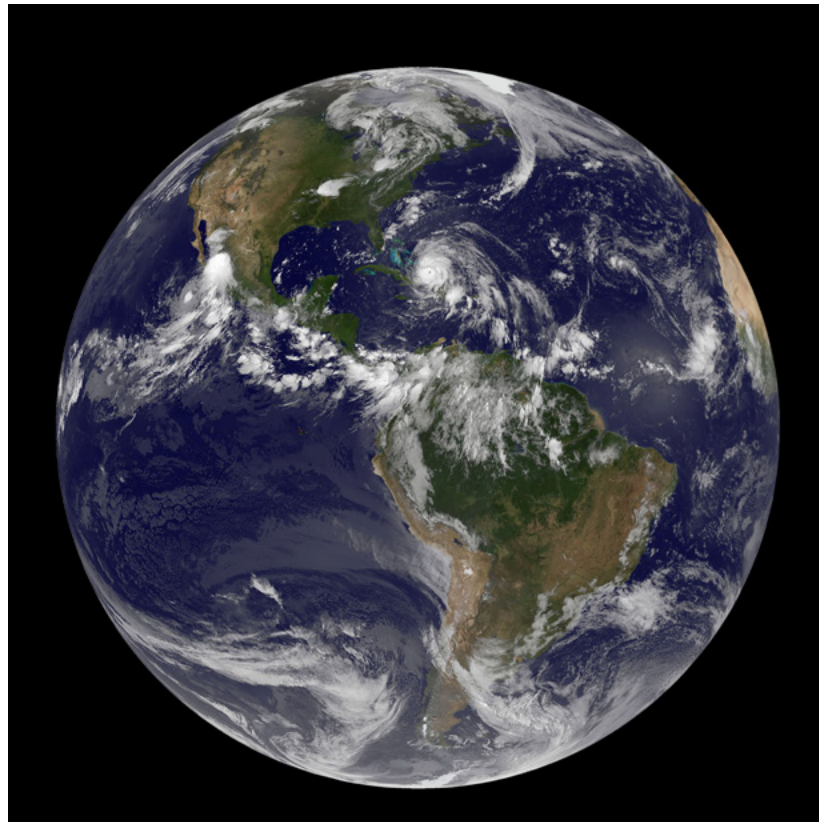
Venus



Terrain	Rocky terrestrial (land)
Time it takes to orbit the Sun	224.7 Earth days
Diameter	7,521 miles
Position from the Sun	2nd
Number of moons	Zero
Average surface temperature	867 degrees Fahrenheit



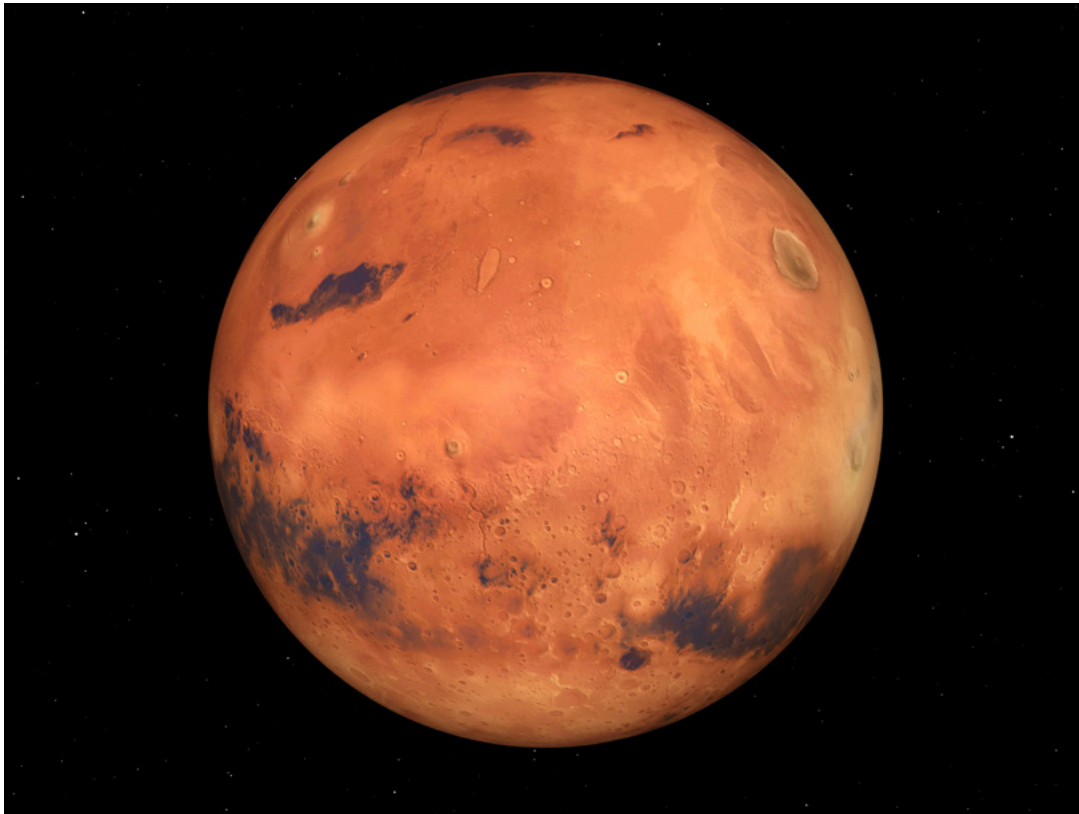
Earth



Terrain	Rocky terrestrial (land)
Time it takes to orbit the Sun	365.2 Earth days
Diameter	7,926 miles
Position from the Sun	3rd
Number of moons	One
Average surface temperature	59 degrees Fahrenheit



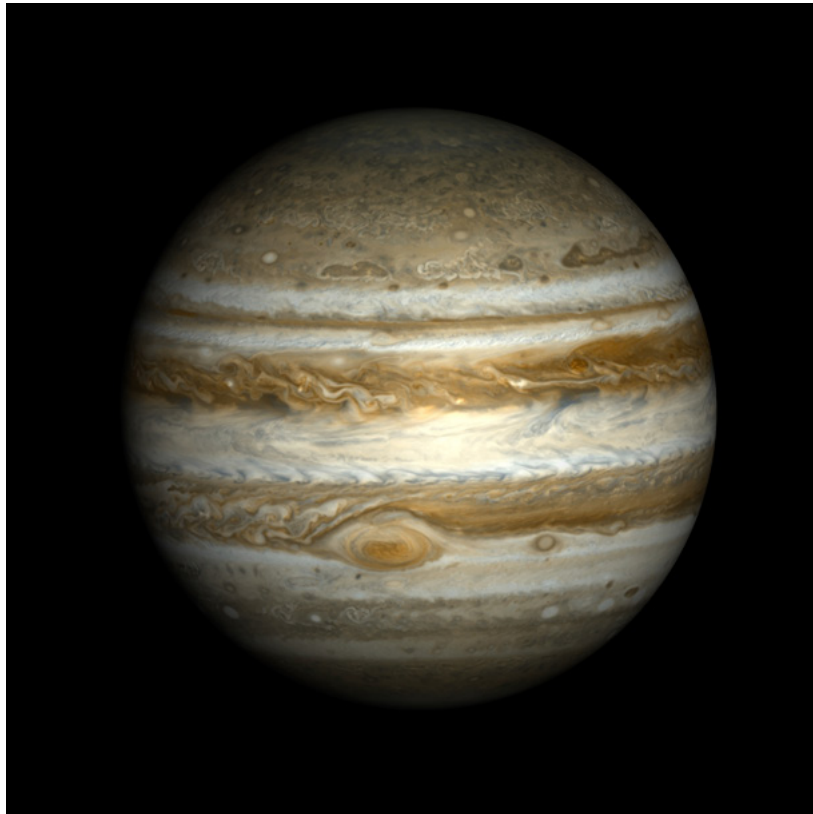
Mars



Terrain	Rocky terrestrial (land)
Time it takes to orbit the Sun	687.0 Earth days
Diameter	4,221 miles
Position from the Sun	4th
Number of moons	Two
Average surface temperature	-85 degrees below zero Fahrenheit



Jupiter



Terrain	Gas – no solid surface
Time it takes to orbit the Sun	4,331 Earth days (more than 11 Earth years)
Diameter	88,846 miles
Position from the Sun	5th
Number of moons	67
Average surface temperature	-166 degrees below zero Fahrenheit



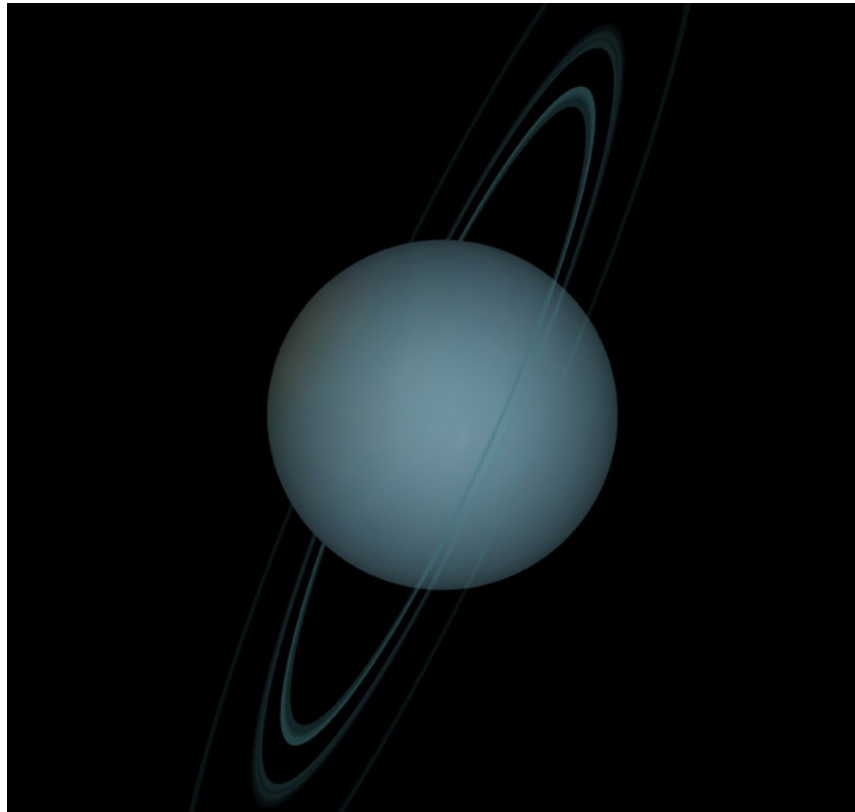
Saturn



Terrain	Gas – no solid surface
Time it takes to orbit the Sun	10,747 Earth days (more than 29 Earth years)
Diameter	74,897 miles
Position from the Sun	6th
Number of moons	62
Average surface temperature	-220 degrees below zero Fahrenheit



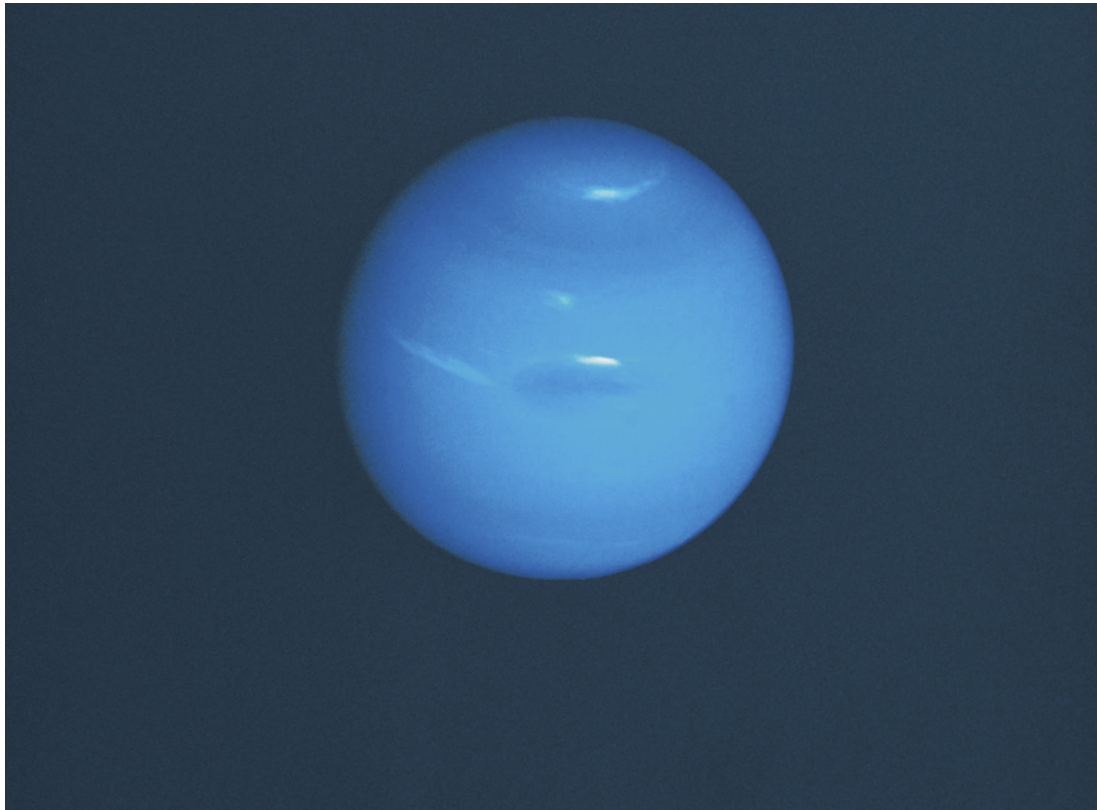
Uranus



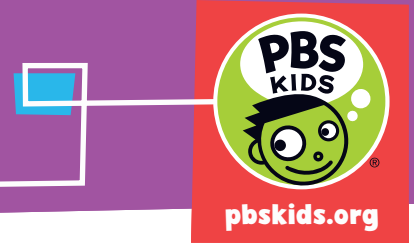
Terrain	Gas – no solid surface
Time it takes to orbit the Sun	30,589 Earth days (more than 83 Earth years)
Diameter	31,763 miles
Position from the Sun	7th
Number of moons	27
Average surface temperature	-320 degrees below zero Fahrenheit



Neptune



Terrain	Gas – no solid surface
Time it takes to orbit the Sun	59,800 Earth days (more than 163 Earth years)
Diameter	30,775 miles
Position from the Sun	8th
Number of moons	14
Average surface temperature	-220 degrees below zero Fahrenheit



Our Solar System

Print out these images to share with children during the activity.
Laminate the pictures for long-term use.

