Sudekum Planetarium's

Our Place

In Space

A Study Guide Produced by the Staff of Craigmont Planetarium

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Our Place In Space

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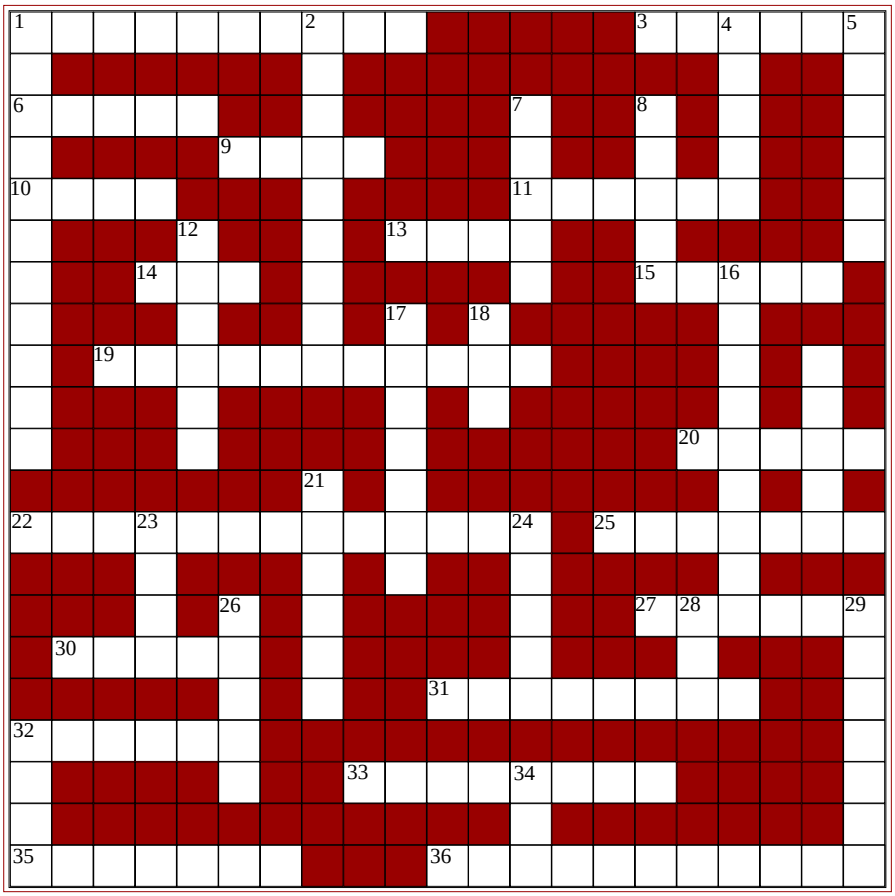
Our Place In Space

Crossword Puzzle

Our Place in Space Crossword Puzzle



ACROSS

1 Machines that travel in space
3 Planet with the largest rings
6 Opposite of dark
9 Red planet
10 Some planets are made of this
11 Planet with dark rings
13 Our Sun gives off ____
14 Opposite of night
15 The final frontier
19 A fun place to learn about space
20 Path a planet travels around the Sun
22 A star picture
25 Largest planet
27 Go see exhibits in a _____
30 Planet we live on
31 Earth's _____ makes the Sun seem to move
32 Where teachers work
33 Galaxy we live in
35 Farthest planet with rings
36 Where astronomers study the sky

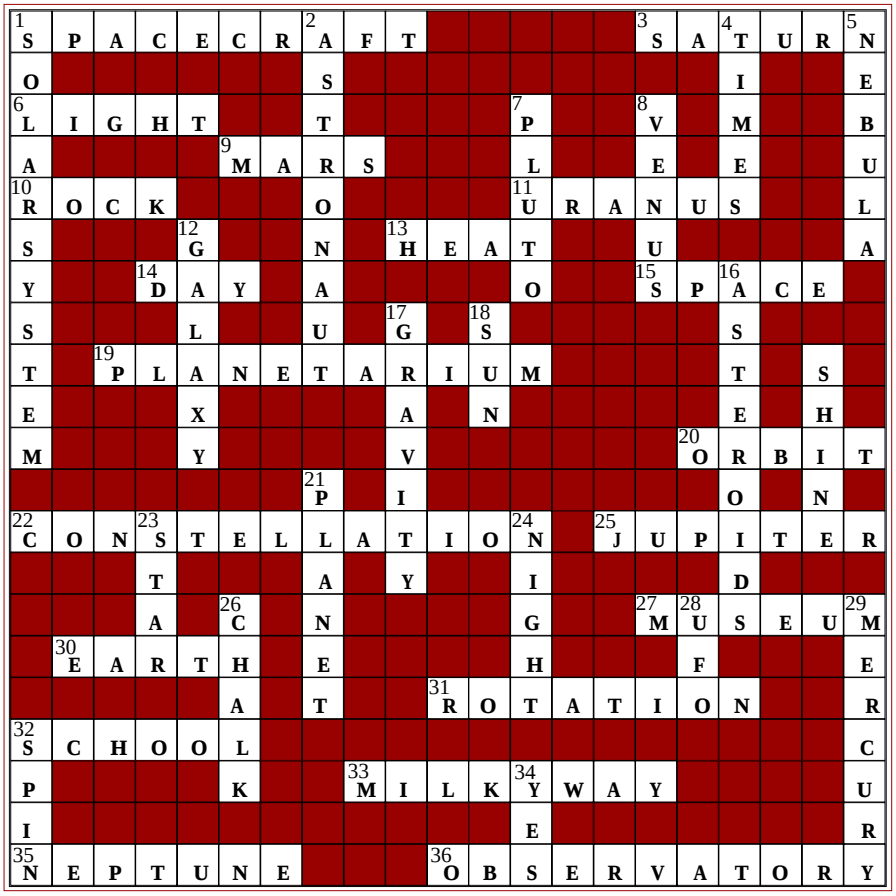
DOWN

1 A star and its planets
2 Person who works in space
4 3 ___ 2 equals 6
5 Great cloud of gas and dust
7 Smallest planet
8 Planet covered with a blanket of clouds
12 Milky Way that is not a candy bar
16 Building blocks of a planet that never formed or of a planet that broke apart
17 Weighty subject
18 What makes it daytime
21 Ball of gas, rock, and metal that orbits a star
23 The Sun is one
24 Opposite of day
26 What we use to write on a blackboard
28 Unidentified Flying Object (abbr.)
29 Closest planet to the Sun
32 Turn like a merry-go-round
34 Opposite of no

Our Place In Space

Crossword Puzzle Solution

Our Place in Space Crossword Puzzle solution



Our Place In Space

Word Search Puzzle

Our Place in Space Word Search Puzzle, Junior version

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

Asteroids
Constellation
Day
Earth
Galaxy
Gravity
Jupiter
Mars
Mercury
Neptune
Night
Planet
Planetarium
Pluto
Rotation
Saturn
Star
Sun
Uranus
Venus

Our Place In Space

Word Search Puzzle

Our Place in Space Word Search Puzzle, senior version

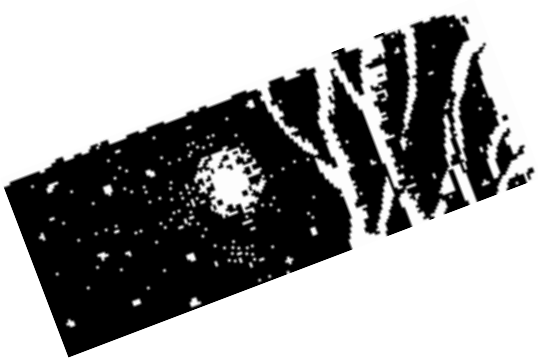
S U N A R U H T E I S M U I R A T E N A L P
Y K J N V E G L F O K A S T R O N A U T R A
P R G L A R Z R L A E C N R U T A S N N A S
Z A O T G Z L A I M R N L R S H Y I O O Y T
S W T T U R R C G J U C U O A U P K I I X E
V F A P A S A S H E F E E T U S N M T T A R
O N L Y Y V O V T J A A S C P D L G A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

Asteroids
Astronaut
Clouds
Constellation
Day
Earth
Galaxy
Gas
Gravity
Heat
Jupiter
Light
Mars
Mercury
Metal
MilkyWay
Museum
Nebula
Neptune
Night
Observatory
Orbit
Planet
Planetarium
Pluto
Puzzle
Rock
Rotation
Saturn
School
Shine
SolarSystem
Space
Spacecraft
Spin
Star
Sun
Uranus
Venus
Wind

Our Place In Space

Jigsaw Puzzle

Our Place in Space Jigsaw Puzzle



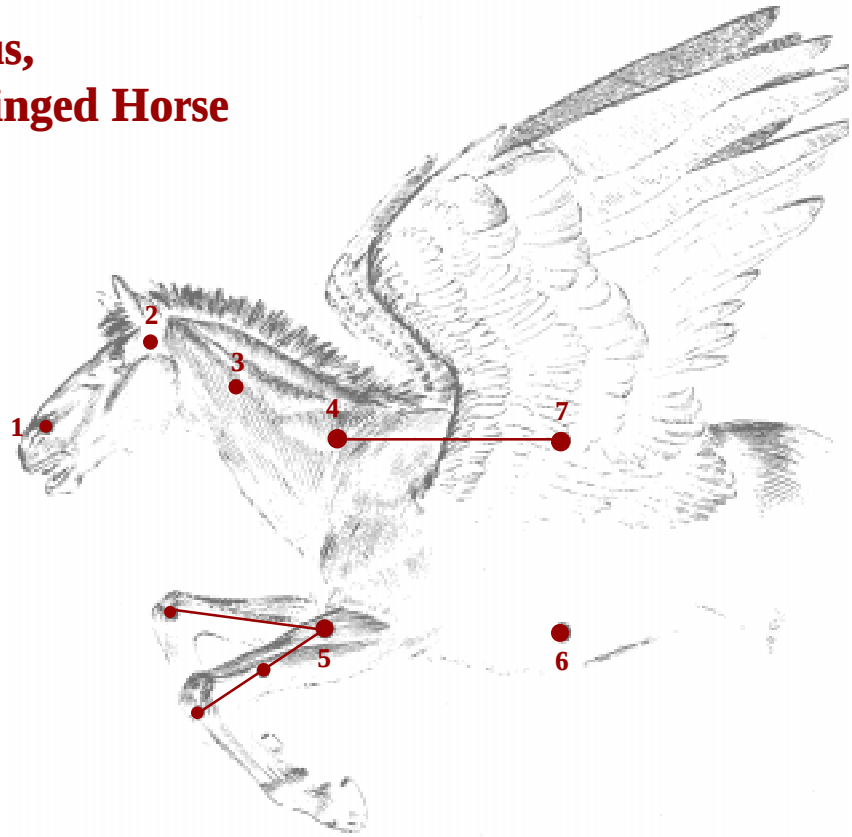
Scarlett, Indy, Paula, and Crusty have become separated. Can you help them get back together? Cut out the puzzle pieces above. Glue them in the right position in this space. Use the picture on the front of this booklet as your guide.

Our Place In Space

Dot-to-Dot Star Picture

Fall Sky Constellation

Pegasus,
the Winged Horse



Pegasus was a frisky, flying horse tamed by Bellerophon with the aid of a golden bridle given to him by Athena. Bellerophon thought this wonderful horse could take him to heaven.

When Zeus found out about his journey to heaven, he was outraged. Zeus sent a gadfly to sting Pegasus. This made him rear up and kick, throwing Bellerophon from the sky.

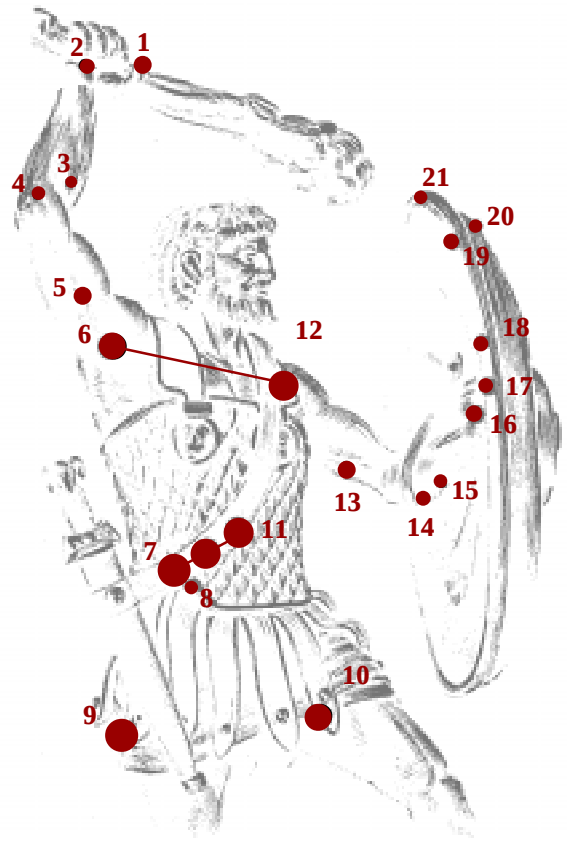
Pegasus continued the journey to heaven alone, becoming the star picture we call the Winged Horse.

Our Place In Space

Dot-to-Dot Star Picture

Winter Sky Constellation

Orion,
the Hunter



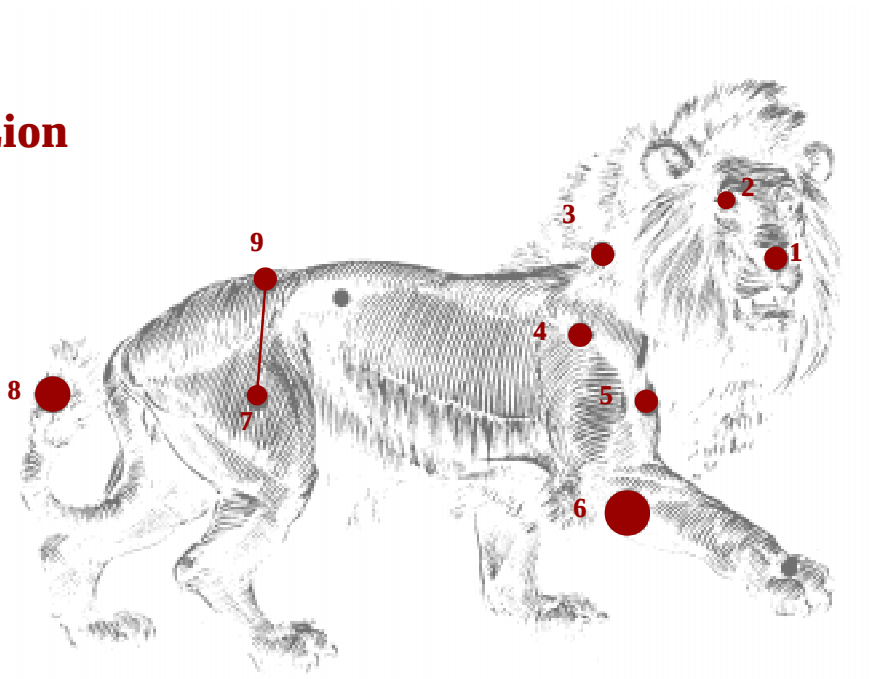
Orion, the Hunter boasted about his hunting skills. A jealous goddess was outraged by his bragging. She sent a scorpion to sting Orion's heel, and he died. The king of the gods put Orion and the scorpion on opposite sides of the sky so they could never get into trouble again. An archer aims his arrow at the scorpion to keep him from sneaking away to sting Orion again. The scorpion is seen in the summer sky, and Orion is seen in the winter sky. When one rises, the other sets. The two shall never meet again.

Our Place In Space

Dot-to-Dot Star Picture

Spring Sky Constellation

Leo,
the Lion



Leo, the Lion once lived on our Moon. One day Leo came down to Earth in the form of a beautiful shooting star. He tore up the countryside where he landed. Hercules tried with all his might to stop the lion. He wrestled with the lion with his bare hands.

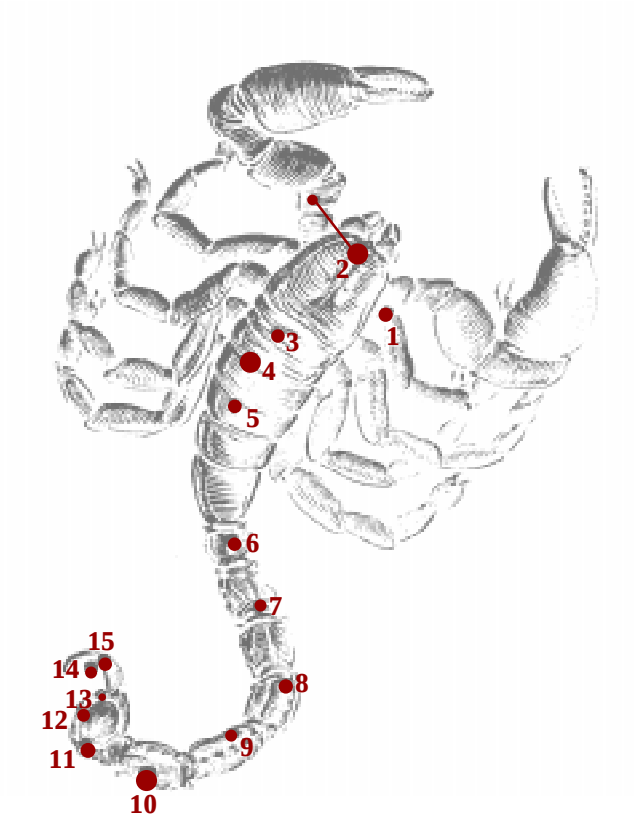
Hercules' strength began to run out. He grew weaker and weaker. Finally, Jupiter came to assist Hercules. Between them Hercules and Jupiter successfully put the lion back into the heavens from which he came. Look for Leo, the Lion on the next clear spring evening.

Our Place In Space

Dot-to-Dot Star Picture

Summer Sky Constellation

Scorpius,
the Scorpion



A hunter boasted of his skill at capturing animals. A jealous goddess was outraged by his bragging. She sent Scorpius, the Scorpion to sting his heel. The king of the gods put Scorpius and the hunter on opposite sides of the sky so they could never get into trouble again.

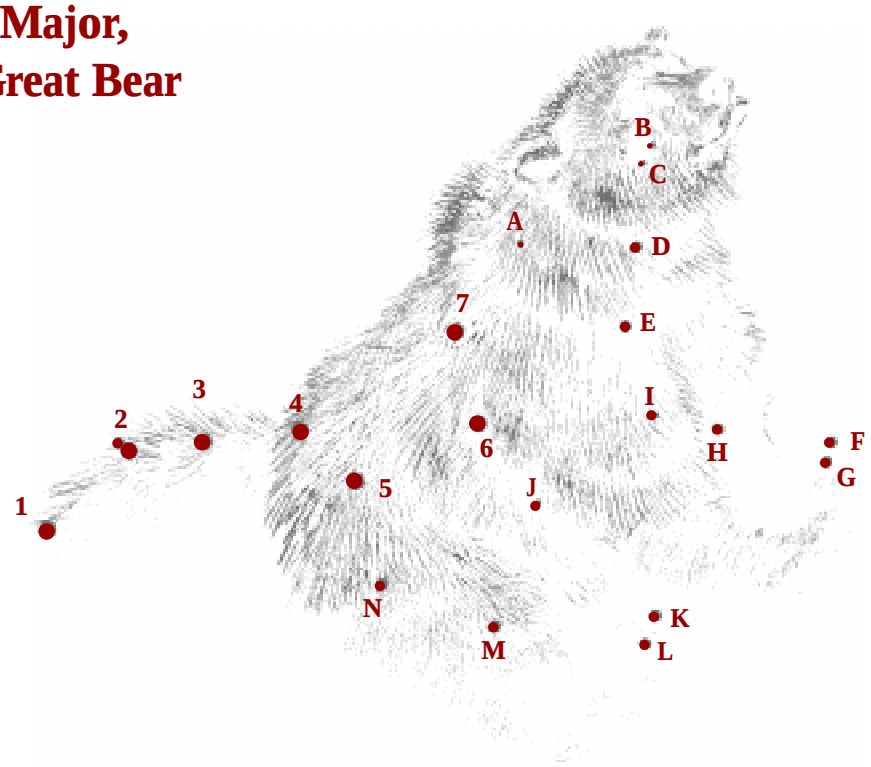
An archer aims an arrow at Scorpius to keep him from sneaking away to sting the hunter again. Scorpius is seen in the summer sky; the hunter, in the winter sky. When one rises, the other sets. The two shall never meet again.

Our Place In Space

Dot-to-Dot Star Picture

Circumpolar Constellation

Ursa Major,
the Great Bear



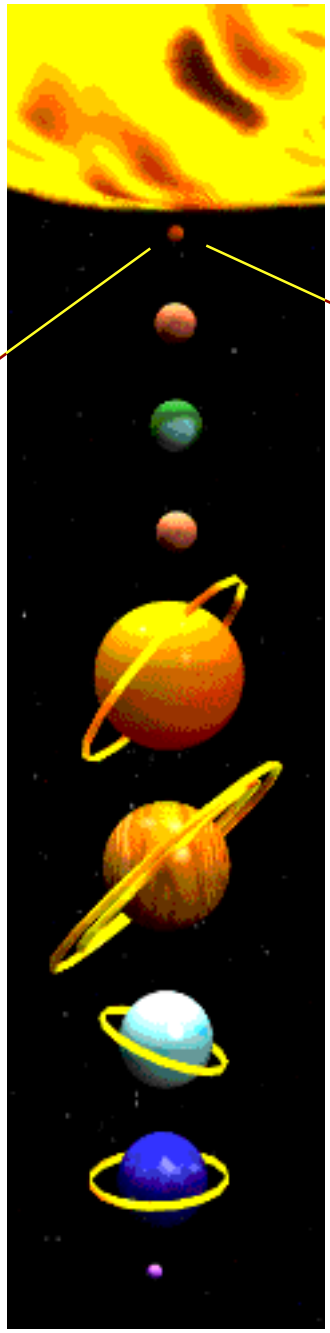
The great bear once had the most beautiful tail of all the forest animals. A fox tricked him by telling him he could catch fish even when the top of the pond froze in winter. Following the fox's instructions, the bear cut a hole in the ice. He sat on the hole and dropped his long tail into the cold water. Eventually the icy water froze around the bear's tail, and it pinched him. The bear thought he had caught a fish. When he stood up, his tail snapped off in the ice. The bear now hides every winter, embarassed to have lost his tail. The bear in the sky has a long tail to remind him of how he was tricked by the fox.

Our Place In Space

Matching Game

A Mnemonic Device

Draw lines to connect each planet with the words at the left. The words of this nonsense sentence help you remember the names of the planets in order from the Sun. Hint: the first letter of each word in the sentence matches the first letter of each planet's name. Write the silly sentence at the bottom of the page. Then try to match each planet with its description at the right. The first one is done for you.



us	Seventh planet; dark rings
educated	Closest planet to the Sun
My	Largest planet; thin ring
mother	Planet covered with a blanket of clouds
just	Farthest planet with rings
pizzas	The planet we live on; our place in space
very	The red planet
served	Smallest planet
nine	Second largest planet; biggest rings

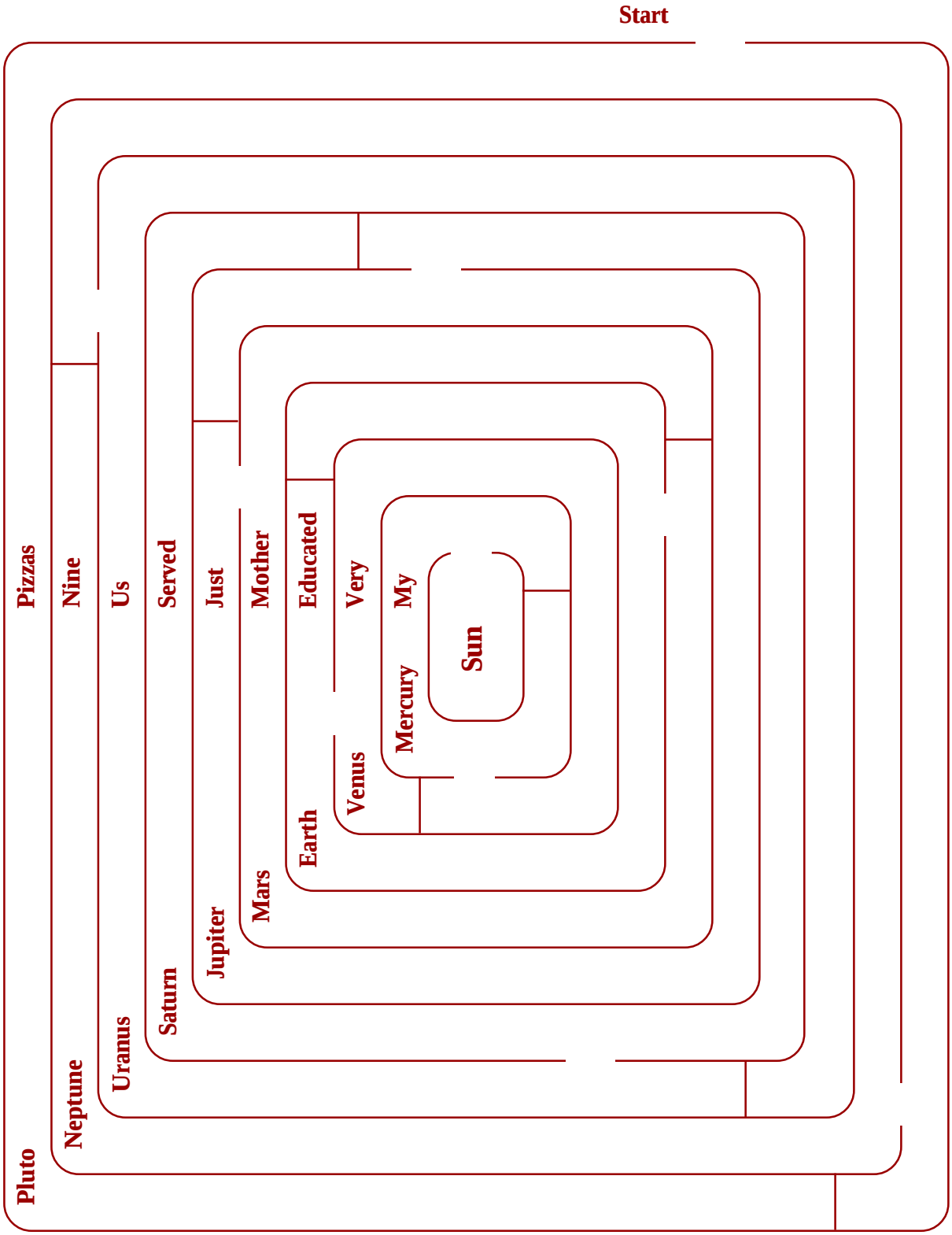
My _____ _____ _____ _____ _____ _____ _____ _____ _____

Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Pluto

Our Place In Space

Solar System Maze

Solar System Maze



Our Place In Space

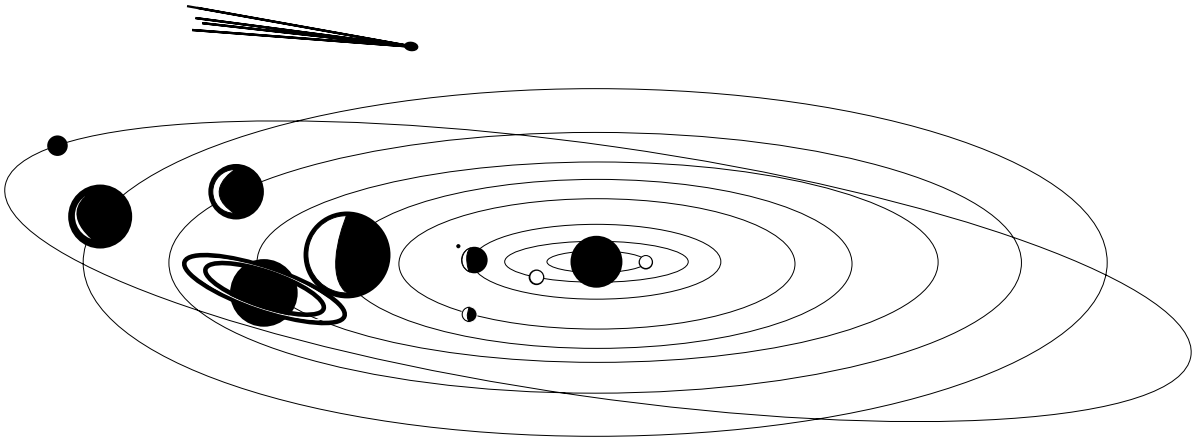
Solar System Song

Solar System Song

Here's a musical way to learn the names of the planets, their order of appearance in the solar system, and the concepts of *rotation* and *revolution*. Begin the activity by explaining that there are nine known planets in our solar system, all of which *revolve* around the Sun. As each planet *revolves*, it also *rotates*, or turns on its *axis*.

Talk about each planet and some of its unusual characteristics, for example, Mars' reddish color, Saturn's rings, Jupiter's red spot, etc. Point out where each planet is in relation to the Sun.

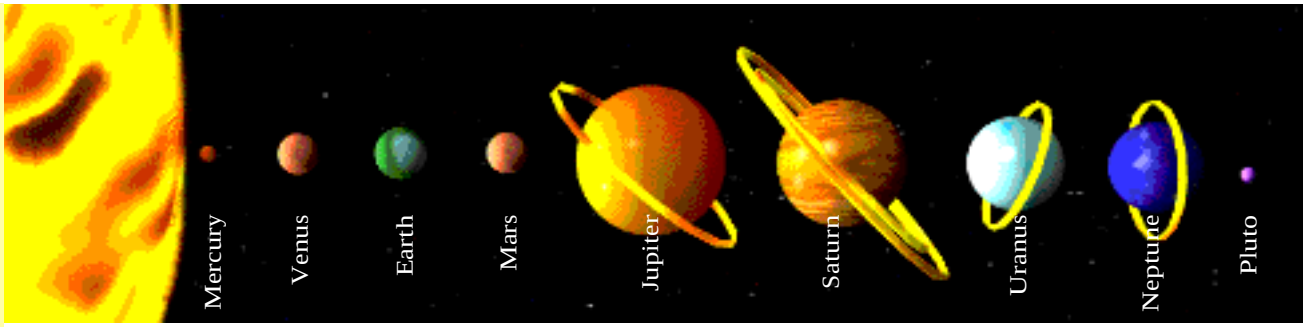
When you've finished talking about the planets, have the children form a big circle. Have them act out the following song, which is sung to the tune of *When Johnny Comes Marching Home Again:*



WORDS	MOVEMENT
The planets revolve around the Sun, hurrah, hurrah. The planets revolve around the Sun, hurrah, hurrah. The planets revolve around the Sun, And spin on their axis, every one. And they all go spinning, Around and around they go.	Children form a big circle, join hands, and walk around in a circle. (Have someone act as the Sun and stand in the middle.) Children drop hands and turn around in a small circle.
Mercury, Venus, Earth, and Mars, hurrah, hurrah. Mercury, Venus, Earth, and Mars, hurrah, hurrah. Mercury, Venus, Earth, and Mars All whirling and twirling among the stars. And they all go spinning, Around and around they go.	Children join hands and continue walking around the circle. Children drop hands and turn around in a small circle.
Jupiter and Saturn are next in line, hurrah, hurrah. Jupiter and Saturn are next in line, hurrah, hurrah. Jupiter and Saturn are next in line. Uranus, Neptune, and Pluto make nine. And they all go spinning, Around and around they go.	Children join hands and continue around in a circle. Children drop hands and turn around in a small circle.

Our Place In Space

Scale Model Solar System



Scale Model Solar System

Drawing a scale diagram of the solar system is diffficult. If the planets' relative sizes are depicted accurately, then you cannot show the proper spacing between the planets on a single page. If the distances are to the same scale, then the inner planets' orbits are too crowded together.

One solution is to use a large enough piece of paper to show the sizes of the planets and their distances from the Sun to the same scale. A roll of adding machine tape is the proper length to make a very impressive scale model of the solar system. Use a meter stick, not a yard stick, to do your measuring. The chart below will show the proper relative sizes of the planets and their distances from the Sun. Even on this large scale some of the planets' sizes will have to be represented by the smallest dot your pencil can make.

Solar System Object	Approximate Diameter in Millimeters	Approximate Distance in Meters
Sun	10.00	0.00
Mercury	0.04	0.40
Venus	0.10	0.70
Earth	0.10	1.00
Mars	0.05	1.52
Asteroid Belt	0.01	2.80
Jupiter	1.00	5.20
Saturn	1.00	9.50
Uranus	0.50	19.20
Neptune	0.50	30.10
Pluto	0.03	39.40

Our Place In Space

An Overview of the Solar System

Mercury, Venus, Earth, and The Moon

Mercury

Average distance from Sun: 57,900,000 kilometers or 0.39 AU
Length of year: 88 Earth days — Length of day: 59 Earth days
Diameter: 4,880 kilometers — Gravity: 0.38 of Earth's (0.38g)
Composition: Basaltic (dark volcanic material) dust and rocks
Atmosphere: Virtually none
Satellites: None
Surface temperature: "Afternoon" temperature can rise well above 227 degrees K (441 degrees F) while at night the temperature can drop to -173 degrees C (-279 degrees F).
Surface appearance: Battered by meteorites, comets, asteroids; covered with craters, dust, and rock

Venus

Average distance from Sun: 108,200,000 km or 0.72 AU
Length of year: 224.7 days — Length of day: 243 days (5,832 hours)
Diameter: 12,100 km — Gravity: 0.91g
Composition: Basaltic (dark volcanic material) and granitic (hard volcanic) rocks
Atmosphere: Carbon dioxide, some hydrogen sulfide, sulfuric acid; dense cloud covering completely enveloping the planet, constant lightning displays; 90 times thicker than Earth's
Satellites: None
Surface temperature: Day and night temperature of 460 degrees C (860 degrees F), which is hot enough to melt lead; Cloud temperature ranges from 13.3 degrees C (56 degrees F) at the top to 220 degrees C (428 degrees F) at the bottom.
Surface appearance: Lighting is like an overcast day on Earth; landscapes rocky rubble or dusty, flat rock outcrops

Earth

Average distance from Sun: 149,000,000 km or 1.00 AU
Length of year: 365.25 days — Length of day: 23 hours, 56 minutes
Diameter: 12,756 km — Gravity: 1.00g
Composition: Basaltic (dark volcanic material) rock, dust
Atmosphere: Nitrogen, oxygen
Satellites: 1 moon
Surface temperature: Daytime range of -20 degrees C (-4 degrees F) to 45 degrees C (113 degrees F) depending on season and location
Surface appearance: Rocky, top soil; mostly covered with water; ice caps at the north and south poles

The Moon

Average distance from Earth: 384,000 km or 239,000 miles
Orbital period: 27 days, 7 hours, 44 minutes
Diameter: 3,476 km/2,160 miles — Surface gravity: 0.16g
Composition: Basaltic (dark volcanic material) dust and rocks
Atmosphere: None
Surface temperature: Daytime can exceed 93 degrees C (200 degrees F); night temperature can drop to -129 degrees C (-200 degrees F)
Surface appearance: Battered by meteorites, comets and asteroids; covered with craters, dust and rock

Mars, Phobos, and Deimos

Mars

Average distance from Sun: 227,900,000 km or 1.52 AU
Length of year: 687 days Length of day: 24 hours, 37 minutes
Diameter: 6,787 km Gravity: 0.38g
Composition: Basaltic (dark volcanic material) rock, dust
Atmosphere: Carbon dioxide, very thin
Satellites: 2 moons
Surface temperature: Usually below 0 degrees C (32 degrees F) but occasionally up to 27 degrees C (80 degrees F)
Surface appearance: Rocky, dusty; ice caps at north and south poles growing larger and smaller with seasons; many dry channels—perhaps left over from a time when water flowed freely on the surface

Phobos

Average distance from Mars: 9,400 km or 5,850 miles
Orbital period: 7 hours, 40 minutes
Diameter: 21 km/13 miles Gravity: 0.0008g
Composition: Basaltic (dark volcanic material) rocks
Atmosphere: None
Surface temperature: -100 degrees C (-148 degrees F) on sunlight side, -150 degrees C (-238 degrees F) on night side
Surface appearance: Entirely covered with craters and rock

Deimos

Average distance from Mars: 23,500 km or 14,600 miles
Orbital period: 1 day, 6 hours, 19 minutes
Diameter: 12 km/7.3 miles Gravity: 0.0003g
Composition: Basaltic (dark volcanic material) rocks
Atmosphere: None
Surface temperature: -100 degrees C (-148 degrees F) on sunlight side, -150 degrees C (-238 degrees F) on night side
Surface appearance: Entirely covered with craters and rock

Jupiter and its Galilean Satellites

Jupiter

Average distance from Sun: 778,300,000 km or 5.2 AU
Length of year: 11.9 years Length of day: 9 hours, 55 minutes
Diameter: 142,800 km Gravity: 2.54g
Composition: Scientists do not agree whether Jupiter has a rocky core. Some believe Jupiter consists only of gases that condense in the middle to form liquids. The primary constituents of the interior ocean are hydrogen and helium.
Atmosphere: Hydrogen, helium, some methane and ammonia
Satellites: 16 moons, one ring; Some of the moons are twice as large as Earth's Moon
Surface temperature: About 127 degrees C (261 degrees F) in its interior ocean, -123 degrees C (-189 degrees F) at the cloud tops, 13,500-35,000 degrees C (24,300 – 63,000 degrees F) in the center; Jupiter radiates twice as much heat as it receives from the Sun.
Surface appearance: Probably a hydrogen ocean

Io

Average distance from Jupiter: 422,000 km or 262,000 miles
Orbital period: 1 day, 18 hours, 28 minutes
Diameter: 3,630 km/2,250 miles Gravity: 0.188g
Composition: Basaltic (dark volcanic material) rocks and dust
Atmosphere: None a
Surface temperature: -150 degrees C (-238 degrees F) on sunlight side, -190 degrees C (-310 degrees F) on night side
Surface appearance: Craters, rock; known to have active volcanoes releasing sulfur onto surface

Europa

Average distance from Jupiter: 671,000 km or 417,000 miles
Orbital period: 3 days, 13 hours, 13 minutes
Diameter: 3,140 km/1,950 miles Gravity: 0.137g
Composition: Water ice and carbon dioxide ice
Atmosphere: None
Surface temperature: -150 degrees C (-238 degrees F) on sunlight side, -190 degrees C (-310 degrees F) on night side
Surface appearance: Entirely covered with ice, possibly an ocean layer under the ice

Ganymede

Average distance from Jupiter: 1,070,000,000 km or 665,000 miles
Orbital period: 7 days, 3 hours, 43 minutes
Diameter: 5,260 km/3,270 miles Gravity: 0.15g
Composition: Basaltic (dark volcanic material) rocks and ice
Atmosphere: None
Surface temperature: -150 degrees C (-238 degrees F) on sunlight side, -190 degrees C (-310 degrees F) on night side
Surface appearance: Entirely covered with craters and rock

Callisto

Average distance from Jupiter: 1,885,000 km or 1,170,000 miles
Orbital period: 16 days, 16 hours, 32 minutes
Diameter: 4,800 km/2,930 miles Gravity: 0.13g
Composition: Basaltic (dark volcanic material) rocks and ice
Atmosphere: None
Surface temperature: -150 degrees C (-238 degrees F) on sunlight side, -190 degrees C (-310 degrees F) on night side
Surface appearance: Entirely covered with craters and rock

Saturn, Titan, Uranus, and Miranda

Saturn

Average distance from Sun: 1,427,000,000 km or 9.5 AU
Length of year: 29.5 years Length of day: 10 hours, 40 minutes
Diameter: 120,000 km Gravity: 1.08g
Composition: Again, scientists are not sure if the planet has a rocky core. The entire planet has a density less than water — Saturn would float if you could find a big enough ocean.
Atmosphere: Hydrogen, helium, some ammonia and methane
Satellites: 22 moons, 23 major rings. The entire ring system is only about half mile thick when viewed edge on, but is 275,000 km in diameter. The ring particles are either composed of water or coated with it. Most of them are from the size of marbles to basketballs, but a few reach sizes as large as 60 miles across.
Surface temperature: At the cloud tops, the temperature is -190 degrees C (-300 degrees F). Like Jupiter, Saturn also radiates more heat than it receives from the Sun.
Surface appearance: Probably covered with an ocean of hydrogen

Titan

Average distance from Saturn: 1,221,000 km or 759,000 miles
Orbital period: 15 days, 22 hours, 41 minutes
Diameter: 5,150 km/3,200 miles Gravity: 0.141g
Composition: rock and ice
Atmosphere: Extensive nitrogen atmosphere with a surface pressure 1.6 times that of Earth. Atmosphere is colored orange by a smog of organic material
Surface temperature: -320 degrees C (-544 degrees F)
Surface appearance: Uncertain; possibly methane oceans, ice, and rock

Uranus

Average distance from Sun: 2,870,000,000 km or 19.2 AU
Length of year: 84 years Length of day: 17 hours, 14 minutes
Diameter: 51,200 km Gravity: 0.91g
Composition: Possible rocky core overlaid with methane, water, and ammonia ice covered with a liquid hydrogen ocean
Atmosphere: Helium, hydrogen, methane
Satellites: 15 moons, 9 rings
Surface temperature: At cloud tops -195 degrees C (-320 degrees F); definitely very cold
Surface appearance: Possibly a liquid surface, but no one knows for sure

Miranda

Average distance from Uranus: 129,900 km or 80,700 miles.
Orbital period: 1 day, 9 hours, 55 minutes.
Diameter: 485 km/300 miles. Gravity: 0.0089g
Composition: Rock and ice.
Surface temperature: -195 degrees C (-320 degrees F).
Surface appearance: One of the most varied surfaces, with features including mountains, craters, and giant cliffs.

Neptune

Average distance from Sun: 4,497,000,000 km or 30.1 AU
Length of year: 165 years — Length of day: 18 hours, 25 minutes
Diameter: 48,600 km — Gravity: 1.19g
Composition: Ice, hydrogen, helium
Atmosphere: Hydrogen, helium, methane
Satellites: 2 large moons, 4+ smaller moons, possibly rings or ring arcs
Surface temperature: At cloud tops -205 degrees C (-340 degrees F).
Surface appearance: Possibly a liquid surface, but no one knows for sure

Triton

Average distance from Neptune: 354,000 km or 220,000 miles.
Orbital period: 5 days, 21 hours, 3 minutes.
Diameter: 2,720 km/1,690 miles. Gravity: Uncertain.
Composition: Rock and ice.
Surface temperature: -200 degrees C (-340 degrees F).
Surface appearance: Many craters and bright patches of ice. A few geysers of nitrogen gas.

Pluto

Average distance from Sun: 5,900,000,000 km or 39.4 AU
Length of year: 248 years — Length of day: 6 days, 9 hours
Diameter: 2,300 km — Gravity: .05g
Composition: Probably rock covered with methane ice
Atmosphere: Perhaps a thin atmosphere of methane produced by warmer temperatures when Pluto is closest to the Sun
Satellites: One moon
Surface temperature: About -215 degrees C (-360 degrees F)
Surface appearance: Scientists suppose Pluto's rocky surface to be covered with ice. There are no plans to send a probe to discover what it's really like.

Charon

Average distance from Pluto: 19,100 km or 12,000 miles.
Orbital period: 6 days, 9 hours, 17 minutes.
Diameter: 1,285 km/800 miles. — Gravity: Uncertain.
Composition: Probably ice and rock.

Our Place In Space

Glossary

Asteroid – Hydrogen

Asteroid	Small rocky worlds of the Solar System, most in orbit between Mars and Jupiter. There are about 7,000 known asteroids.
Atmosphere	Gases surrounding a world, held close to the world by its gravity.
Astronaut	A person who travels and works in space
Axis	An imaginary line between the poles of a world around which a planet rotates.
Carbon dioxide (CO_2)	A colorless, odorless, tasteless gas found on Earth, Venus, Mars, and other worlds.
Ceres	The largest asteroid, spherical in shape, and the size of Texas.
Charon	The icy moon of Pluto, about half the diameter of Pluto.
Coma	Evaporated gas and dust from the surface of a comet nucleus that can expand to more than the size of a planet.
Comet	"Dirty snowball," a few miles across, made of water, carbon dioxide, ice, rock, and dust similar to the early Solar System, with a highly elliptical solar orbit.
Constellation	A group of stars that form an imaginary picture in the sky
Day	One rotation of a planet on its axis; the opposite of night
Earth	The third planet from the Sun and the only one known to sustain life.
Evaporate	The process of changing a liquid into a gas.
Galaxy	A giant island of stars that contains many billions of solar systems
Gas	A phase of matter where atoms are far apart.
Gravity	The gravitational attraction of a world that accelerates or pulls another mass to it.
Great Dark Spot	A major feature of Neptune's atmosphere, a hurricane-like storm the size of Earth.
Great Red Spot	A major feature of Jupiter's atmosphere, a hurricane-like storm more than twice the size of Earth.
Heat	Energy due to a temperature difference between a source and a destination.
Helium (He)	Chemical element number 2, a colorless gas, the second most common atom in the Universe.
Hydrogen (H)	Chemical element number 1, a colorless gas, the lightest and the most common atom in the Universe.

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Io	The closest of the four large moons of Jupiter. It has active volcanoes that erupt sulfur compounds and give it a multicolored appearance
Jupiter	The fifth planet from the Sun and largest in the Solar System. Composed mostly of hydrogen,helium, methane, and ammonia.
Light	Energy from the Sun humans can see; opposite of dark
Mars	The fourth planet from the Sun, also known as the Red Planet.
Mercury	The first planet from the Sun; a cratered moon-like world.
Methane (CH_4)	A colorless, flammable gas found on Earth, Jupiter, and other worlds.
Milky Way	The name of the galaxy of which our solar system is a small part
Miranda	A moon of Uranus thought to have been shattered and reformed long ago.
Moon	A natural satellite orbiting a planet.
Museum	A place where you can see collections and exhibits of natural phenomena
Nebula	A great cloud of gas and dust
Neptune	The eighth planet from the Sun; a gas giant composed mostly of hydrogen and helium.
Night	The time when one side of a planet faces away from its Sun; opposite of day
Nitrogen (N)	Chemical element number 7, a colorless and odorless gas forming 78% of our atmosphere.
Observatory	A building where astronomers use a telescope to study the sky
Olympus Mons	A large active volcano on the planet Mars.
Orbit	The path of one world held in its revolution around another world by the force of gravity.
Planet	Any large, non-luminous body that revolves about a star.
Planetarium	A theatre used to simulate and study the night sky
Pluto	The ninth planet from the Sun and the smallest; an icy moon like world covered with red methane ice, polar ice caps and a thin ten-mile high atmosphere of methane gas.
Revolution	The completion of a world's orbit. Earth revolves about the Sun once a year.
Rings	Debris composed of ice or rock orbiting a world.

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Rotation – Weather

Rotation	Spinning on an axis.
Saturn	The sixth planet from the Sun; a world with prominent rings.
School	A building used for instruction and training of students in many subjects, skills, and activities
Solar System	The Sun, or any star, and all planets, moons, asteroids, and comets orbiting it.
Space	The environment in which celestial objects exist; where astronauts work
Spacecraft	A robot machine that explores celestial objects or phenomena; a vehicle that astronauts use to travel in space
Star	A hot, luminous body of gas held together by its own gravity.
Sulfuric Acid (H_2SO_4)	A strong mineral acid which is a colorless, oily liquid chemical found in some planets' atmospheres.
Sun	The star at the center of our Solar System.
Sunlight	Visible energy emitted from the Sun.
Tail	The trailing gas and dust in a comet, swept away by the Sun's energy. It can be 100 million miles in length.
Tilt	The leaning of a world's axis with respect to its orbital motion.
Titan	The largest moon of Saturn; it has a thick nitrogen atmosphere and possibly lakes of liquid methane.
Triton	The largest moon of Neptune; Triton has a thin atmosphere of methane and nitrogen.
Uranus	The seventh planet from the Sun; a gas giant planet composed mostly of hydrogen and helium.
Venus	The second planet from the Sun; cloud covered and the size of Earth.
Viking	A robot space probe that traveled to Mars to study its features from orbit and from the surface.
Voyager	The two space probes that explored the gas giant planets.
Water (H_2O)	A colorless liquid essential to known life.
Weather	The environmental condition of a world's atmosphere.

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