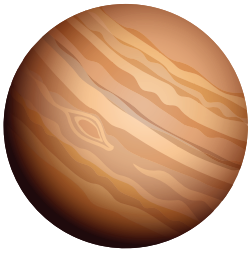
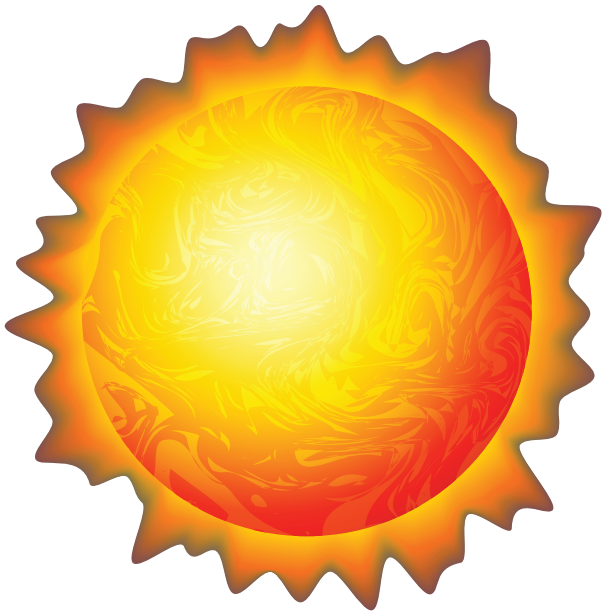
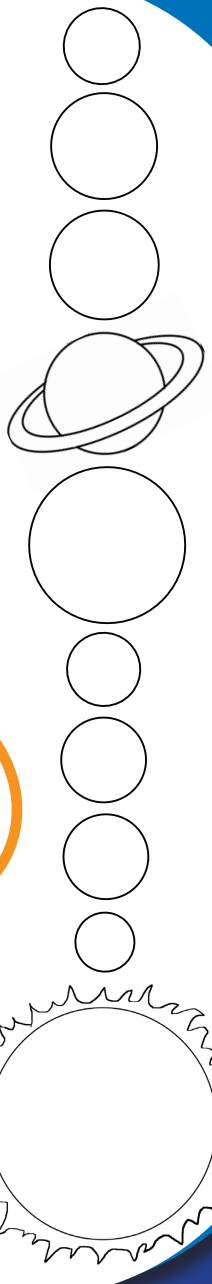
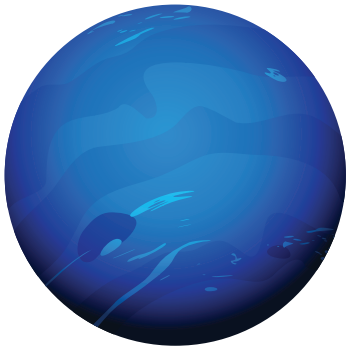
BLAST OFF:
The Solar System

3RD Grade









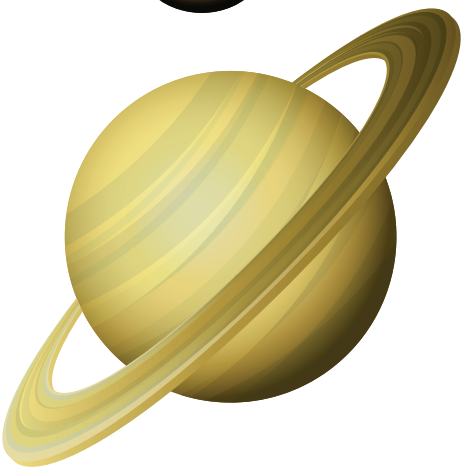


Table of Contents

Blast Off: The Solar System

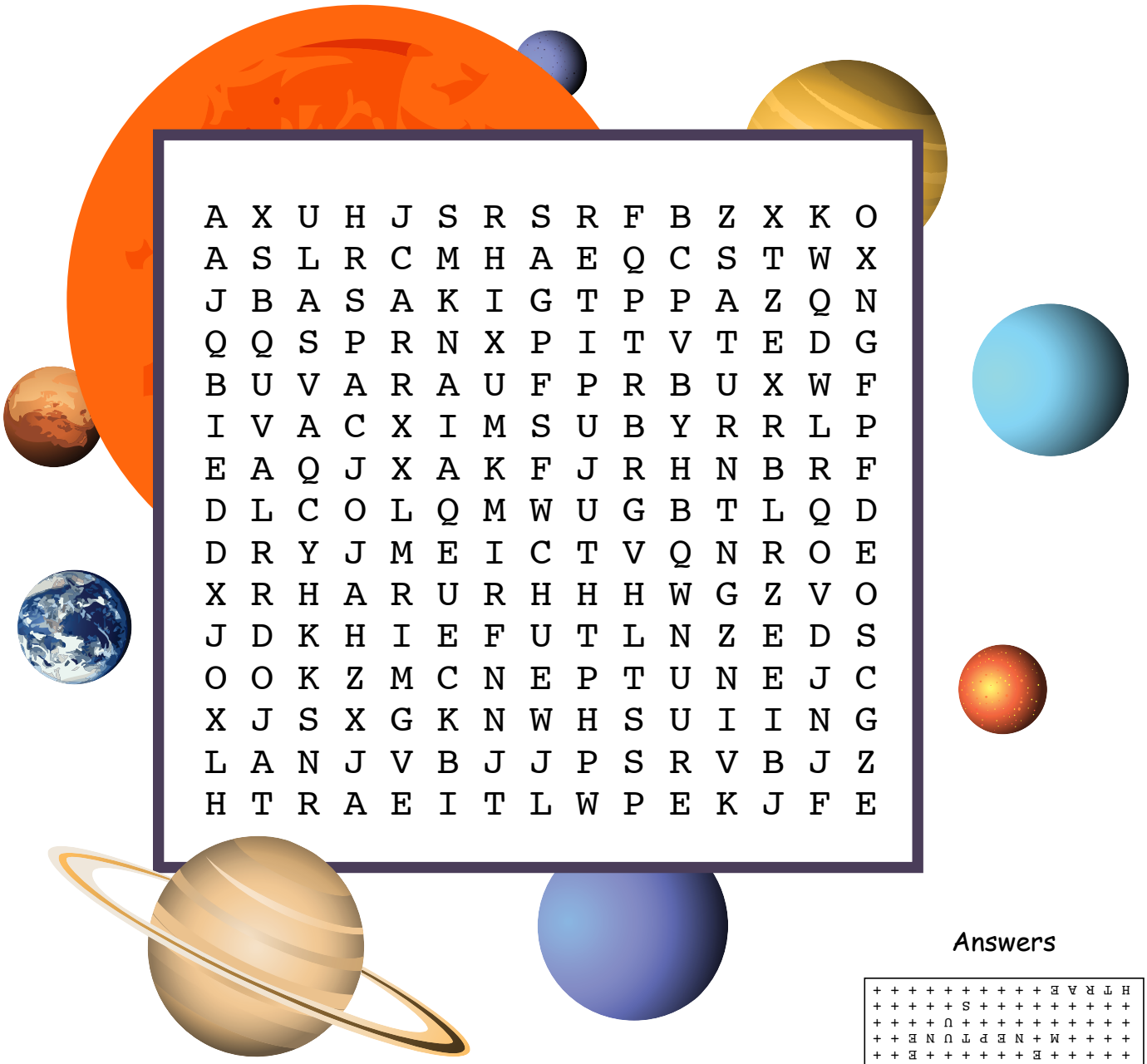
** Has an Answer Sheet*

Solar System Word Search

Search for the planets in our solar system.

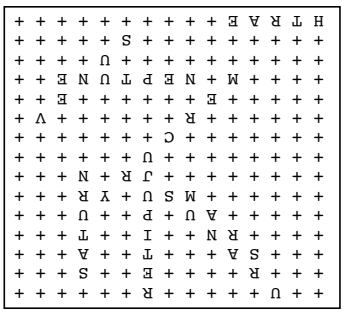
The names can be horizontal, vertical or backward.

JUPITER URANUS VENUS MERCURY EARTH NEPTUNE MARS SATURN



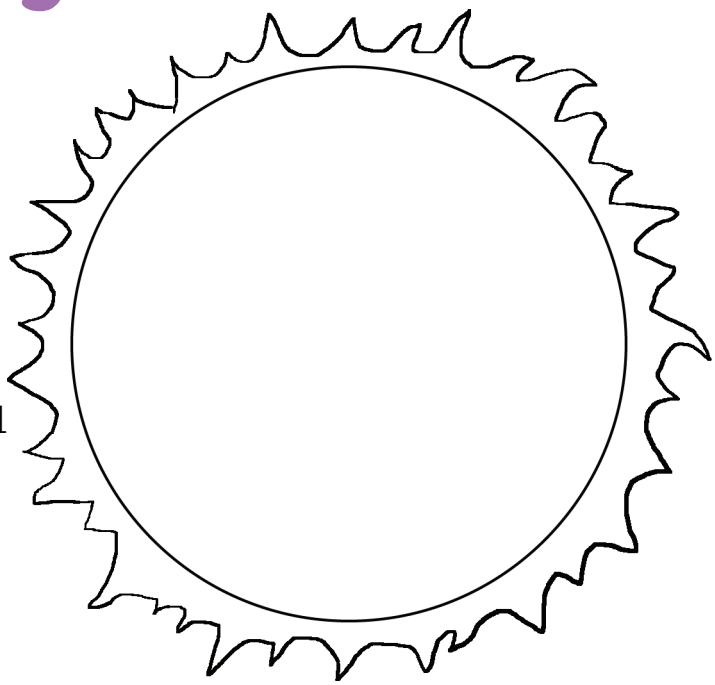
A X U H J S R S R F B Z X K O
A S L R C M H A E Q C S T W X
J B A S A K I G T P P A Z Q N
Q Q S P R N X P I T V T E D G
B U V A R A U F P R B U X W F
I V A C X I M S U B Y R R L P
E A Q J X A K F J R H N B R F
D L C O L Q M W U G B T L Q D
D R Y J M E I C T V Q N R O E
X R H A R U R H H H W G Z V O
J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

Answers



Learning The Moon's Phases

Did you know that the moon is different every night? It grows from a thin crescent to full moon then shrinks back to a crescent every month! That's because the moon rotates around the Earth, and the sun's light gets reflected off of the moon at different angles.



There are eight phases of the moon, labeled below. In the empty circles, draw how the moon looks in that phase. Then color in the sun and Earth!

New

Crescent

Crescent

Half

Half

Three Quarters

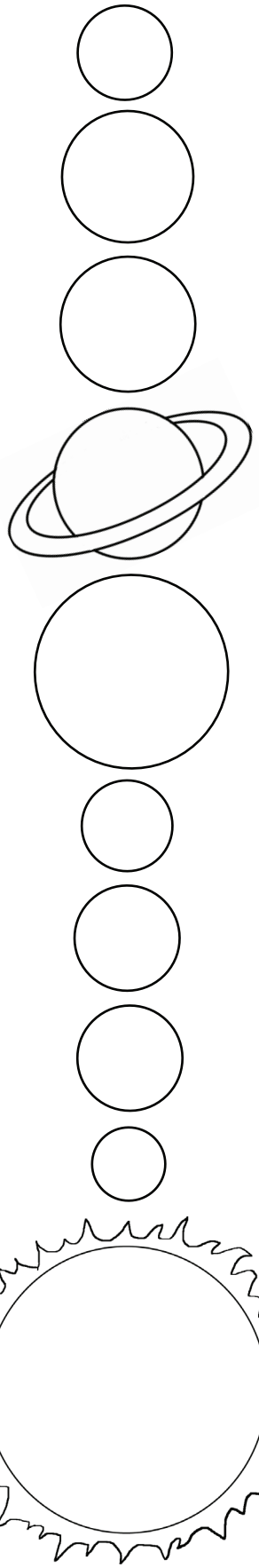
Three Quarters

Full

THE PLANETS

Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Earth is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



EARTH

"The Blue Planet" and 3rd from the sun

How much of Earth's surface is covered by water?

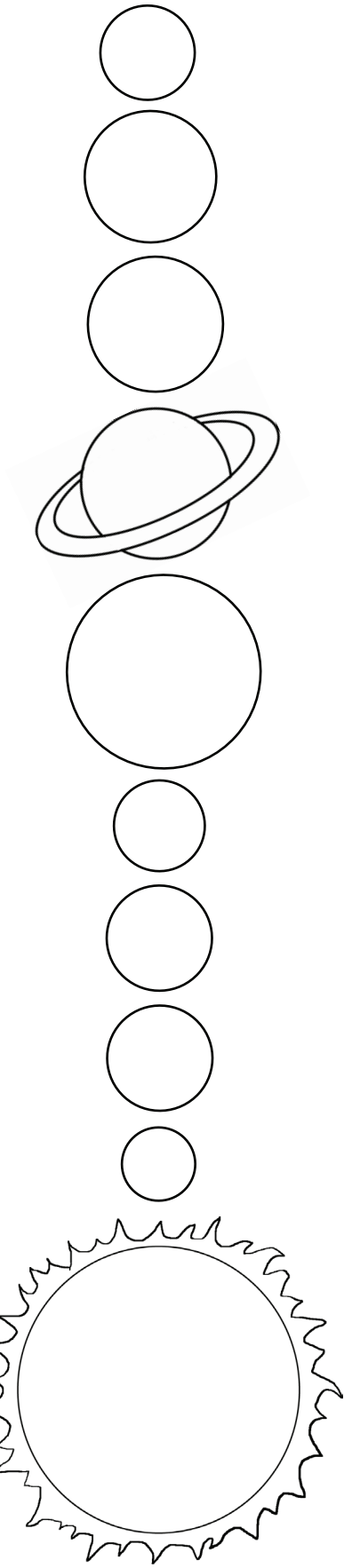
a) 50%
b) 25%
c) 71%

the answer is c

THE PLANETS

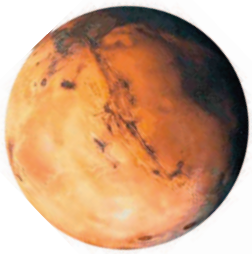
Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Mars is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



MARS

"The Red Planet" and 4th from the sun



All of the water on the surface of Mars is...

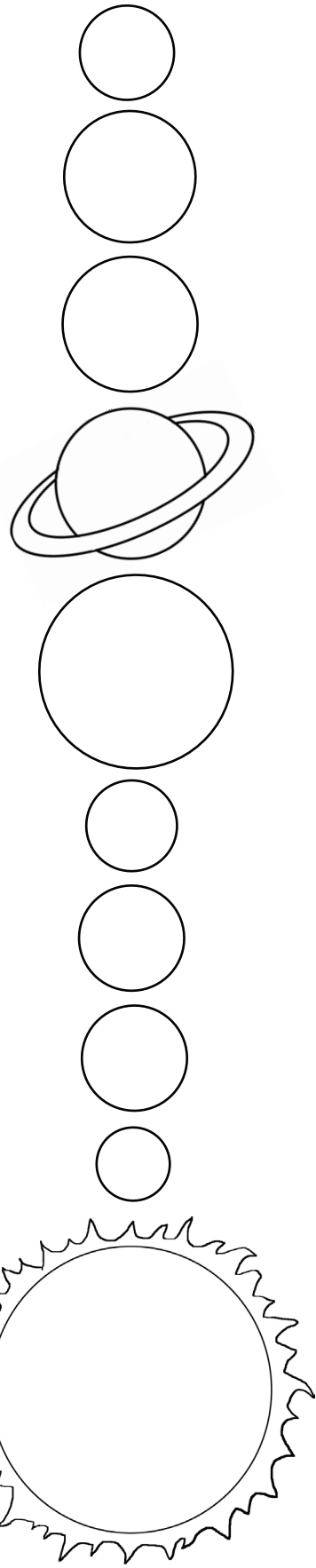
a) gone
b) frozen
c) liquid

the answer is b

THE PLANETS

Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Jupiter is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



JUPITER

"The Biggest Planet" and 5th from the sun

How many moons have been discovered around Jupiter?

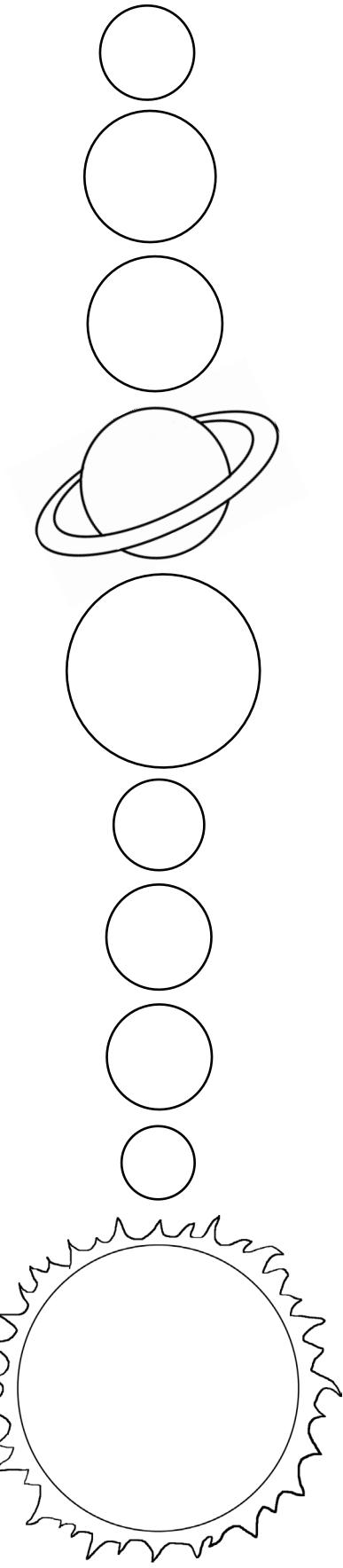
a) 63
b) 155
c) 1

the answer is a

THE PLANETS

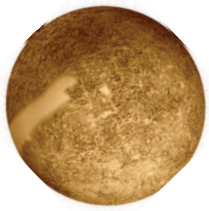
Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Mercury is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



MERCURY

"The Smallest Planet" and closest to the sun.



What is the core of Mercury made of?

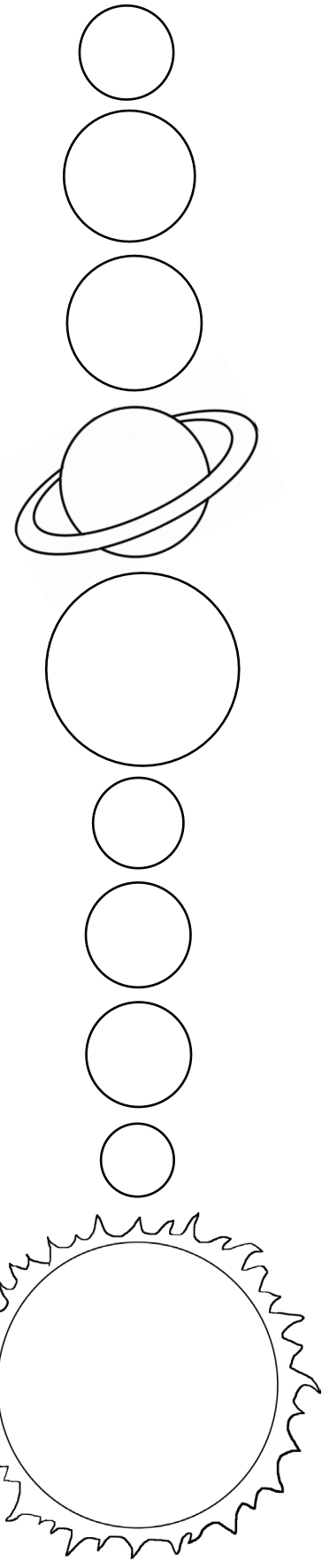
a) iron
b) glass
c) stone

the answer is a

THE PLANETS

Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Uranus is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



URANUS

"Neptune's Twin" and 7th from the sun

How long is one day on Uranus?

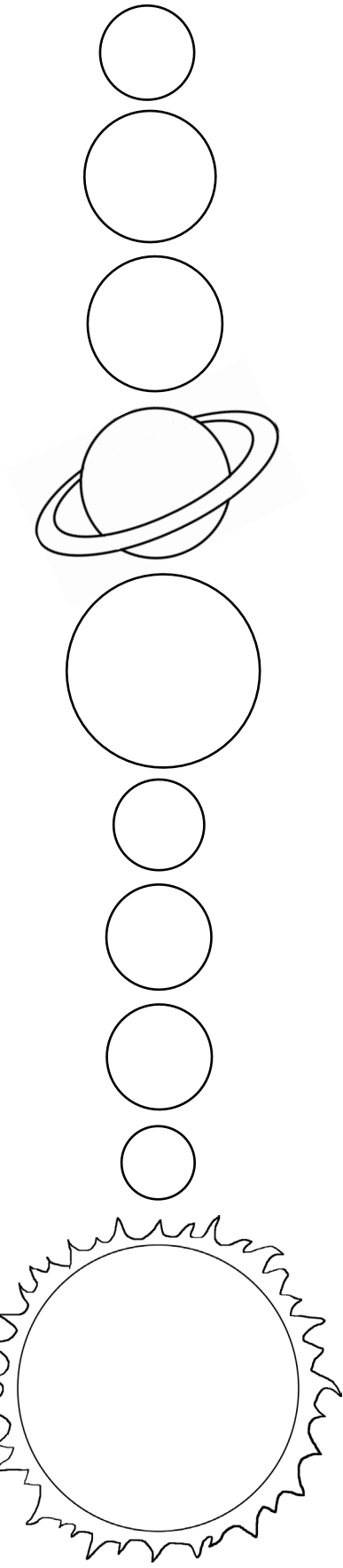
a) 50 hours
b) 112 hours
c) 17 hours

the answer is c

THE PLANETS

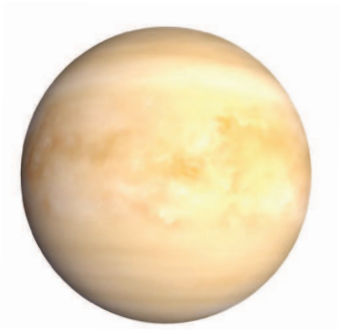
Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Venus is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



VENUS

"Earth's Twin" and 2nd from the sun



What is the average temperature on Venus?

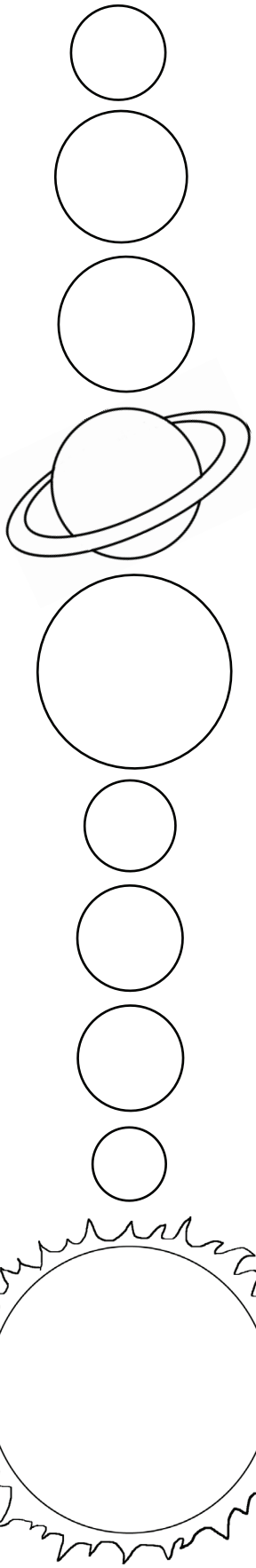
a) 850 degrees F
b) -100 degrees F
c) 75 degrees F

the answer is a

THE PLANETS

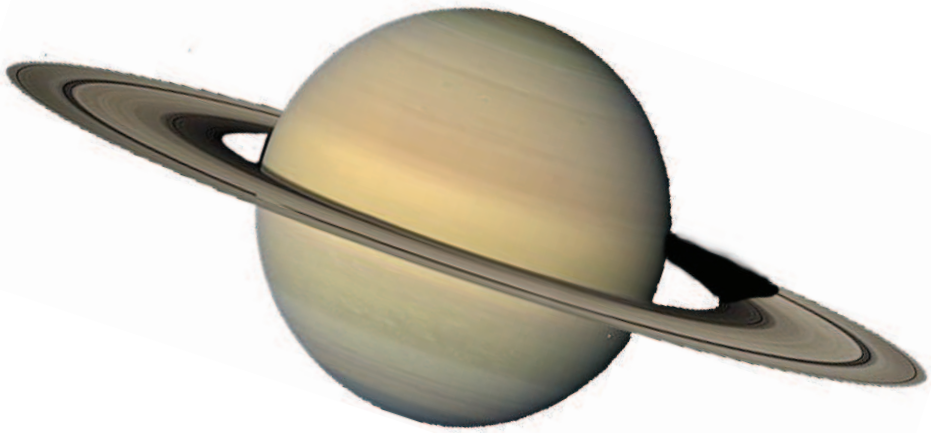
Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Saturn is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



SATURN

"The Ringed Planet" and 6th from the sun



What are the rings of Saturn mostly made of?

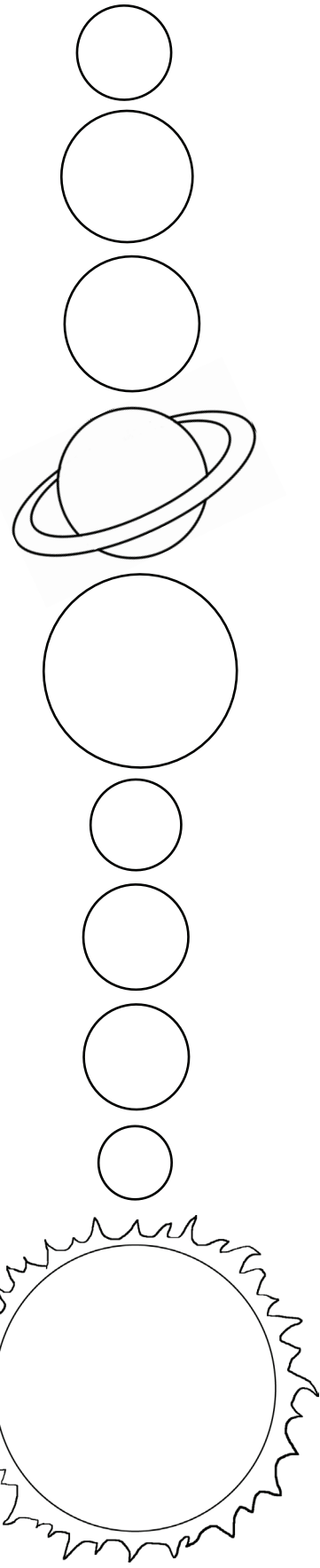
a) lava
b) metal
c) ice

the answer is c

THE PLANETS

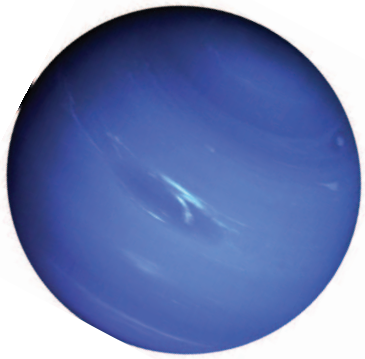
Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Neptune is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



NEPTUNE

"The Ice Giant" and 8th from the sun



What year was Neptune discovered?

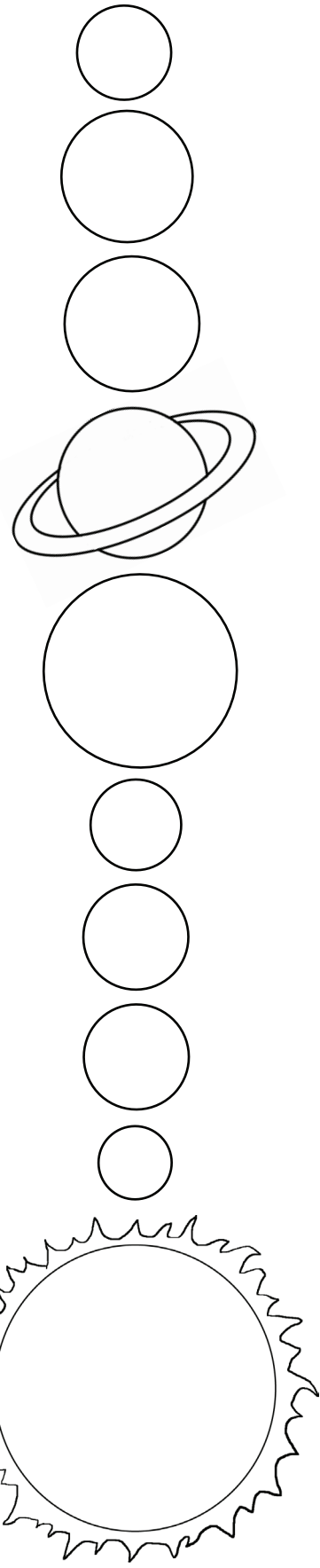
a) 2008
b) 1846
c) 5000 BC

the answer is b

THE PLANETS

Where are they?

All of the planets in the Solar System revolve around the Sun. Some are close to the Sun, while others are farther away. Color in the circle where Pluto is on the diagram to the right. Then, cut out the planet image below and add it to your own diagram of the Solar System.



PLUTO

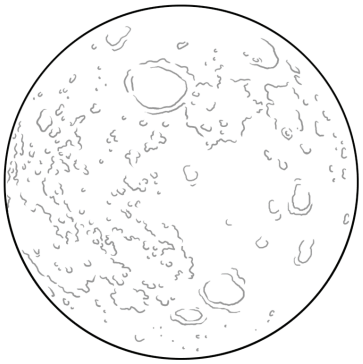
"The Dwarf Planet" and last from the sun

How many Earth days does it take Pluto to orbit around the sun?

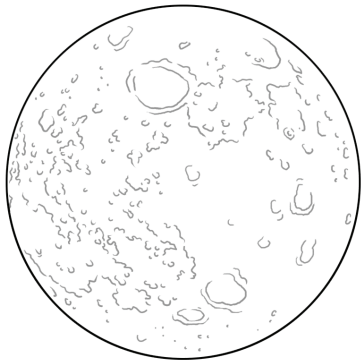
a) 3
b) 90,500
c) 365

the answer is b

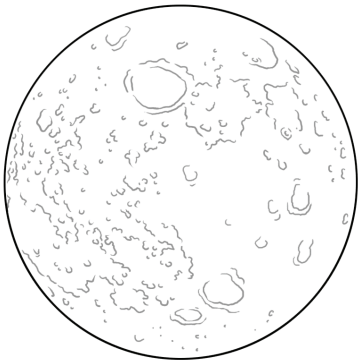
MOON PHASES



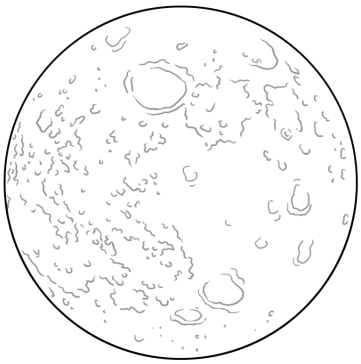
1. NEW MOON
The moon is facing
the same way as the sun,
so it looks dark.
Shade the entire moon.



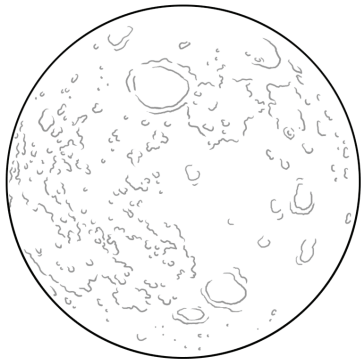
2. WAXING CRESCENT
The moon is becoming visible
from Earth, but we can only see
a small piece of it.
Draw a tiny crescent shape on
the right, then shade the rest.



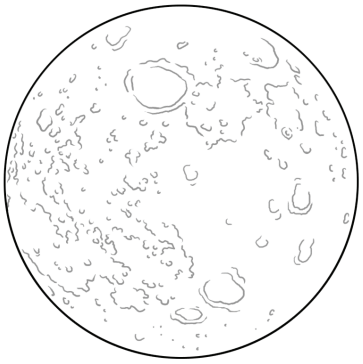
3. QUARTER MOON
The moon is now 1/4 of the way
around the Earth, and
we can see the right half of it.
Shade in the left half.



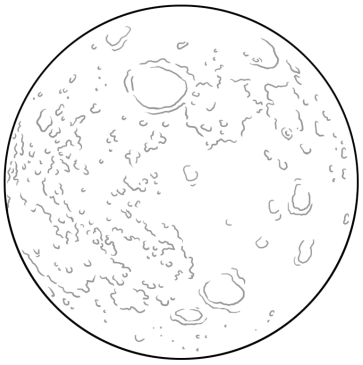
4. WAXING GIBBOUS
The moon appears almost full.
Draw a crescent on the left,
then shade it in.



5. FULL MOON
We can see the entire
side of the moon.
Leave the moon blank.



6. WANING GIBBOUS
The moon begins to darken again.
Draw a crescent on the right,
then shade it in.



7. LAST QUARTER
We can see a "half moon"
again, with the visible side
on the left.
Shade in the right half.

8. WANING CRESCENT
The moon is almost back to
its New phase.
Shade in everything but
a tiny crescent on the left .

U.S. SPACE MISSIONS

Mercury-Redstone 3: Freedom 7

Alan Shepard in the capsule before liftoff

Mercury-Redstone 3, known better by its military call sign, Freedom 7, was the first U.S. space mission to have a human on board. It was part of the Project Mercury space program.

Piloted by Alan Shepard, Freedom 7 launched from Cape Canaveral, Florida at 9:34 a.m. on May 5, 1961. Shepard became the first American in space. Three weeks earlier, the Soviet Union had launched a flight with Yuri Gagarin, who was the first person in space. Over 45 million people in the U.S. watched the Freedom 7 liftoff on television.

A rocket carried the Freedom 7 capsule with Shepard. During the liftoff, the rocket reached a speed of 5,134 miles an hour.

Launch of Freedom 7

The goals of the mission were to test the manual controls and to observe the earth. Shepard completed both goals successfully.

The flight lasted 15 minutes. Freedom 7 traveled 303 miles and reached an altitude of 116 miles. As the capsule rentered the Earth's atmosphere, parachutes opened to slow down the capsule before it landed in the ocean, called the splashdown. Shepard left the capsule while it was floating in the water. A waiting helicopter from a U.S. Navy aircraft carrier lifted Shepard and flew him to the carrier.

Recovery of the Freedom 7 capsule after splashdown

Freedom 7 started a new time of space exploration for the U.S. Alan Shepard continued as an astronaut and in 1971 became the fifth person to walk on the moon.

Mission Math

Number who watched the liftoff on television: _____

Number of miles flown: _____

Time length of flight: _____

Highest altitude: _____

Q&A

What year was the Freedom 7 mission?

_____

Who was the first person in space?

_____

Who was the pilot on Freedom 7?

_____

What is the word for a capsule landing in the ocean?

_____

U.S. SPACE MISSIONS

GEMINI 4

Part of Project Gemini, Gemini 4 launched on June 3, 1965. Project Gemini was part of the U.S. space program to explore space. The project followed Project Mercury, which introduced manned space flight. The Gemini missions were important, as they had two astronauts on board each flight.

Astronauts Edward White and James McDivitt

The astronauts on Gemini 4 were Edward White and James McDivitt. The Gemini 4 mission performed many things for the first time:

Launch of Gemini 4

- The first flight to go over one day. It was important for scientists to know if humans could stay in space long enough to travel to the moon.
- The first flight to be managed from the new Mission Control Center in Houston, Texas.
- The first flight to try and meet up with another spacecraft. While this was not successful, it gave scientists valuable information.
- Most importantly, Gemini 4 was the first flight where an astronaut would leave the capsule and go into space. Called a space walk, this was a dangerous, but important, objective of the mission. On June 3, for 20 minutes, Edward White left the capsule and floated in space. He was attached to the capsule by a cord. White took photographs of Earth during his space walk.

Gemini 4 splashed down safely on June 7, 1965 after four days in space. It had orbited the earth 66 times.

Q&A

How many astronauts were on board Gemini 4?

_____

What is it called when an astronaut leaves the command module and floats in space??

_____

What year was Gemini 4 launched?

_____

How many days was the Gemini 4 in space?

_____

Astronaut Edward White during his space walk.

U.S. SPACE MISSIONS

Apollo 11

Apollo 11 astronauts Neil Armstrong, Michael Collins and Edwin Aldrin

Apollo 11 was the historic U.S. space mission where the first man walked on the moon. The mission completed the goal established by President John F. Kennedy in 1961 to put a man on the moon before the end of the 1960s.

Apollo 11 launched on July 16, 1969 from the Kennedy Space Center in Florida. On board the command module, called Columbia, was the crew of three astronauts: Edwin Aldrin, Neil Armstrong and Michael Collins.

Launch of Apollo 11

On July 19, Apollo 11 reached the moon and orbited 30 times. The next day, Armstrong and Aldrin went on board the lunar module, named Eagle. Eagle would take them to the moon's surface. Collins remained on board Columbia and continued to orbit the moon.

Eagle landed on the moon's surface on July 20, 1969. Neil Armstrong was the first person to walk on the moon. Aldrin followed Armstrong and the two began a series of scientific experiments. They also placed a U.S. flag on the moon surface. The astronauts reported that walking on the moon, which has 1/6 the gravity of earth, was not difficult.

After almost 22 hours on the moon, Aldrin and Armstrong returned to Eagle and left the moon surface to rejoin Collins in Columbia. They then began the trip back to Earth.

Apollo 11 landed safely in the Pacific Ocean on July 24, 1969. A total of 12 men would walk on the surface of the moon before the Apollo program ended in 1972.

Q&A

What year did Apollo 11 launch?

_____

Who was the first man to walk on the moon?

_____

What was the name of the lunar module?

_____

The gravity of the moon is what fraction of the Earth's gravity?

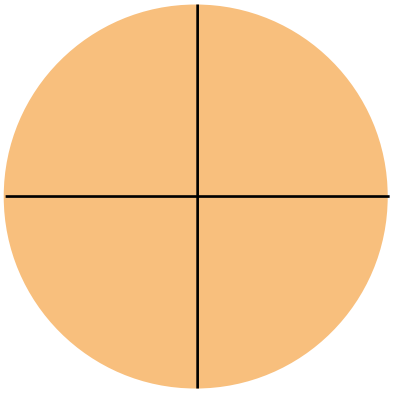
_____

Astronaut Neil Armstrong on the moon

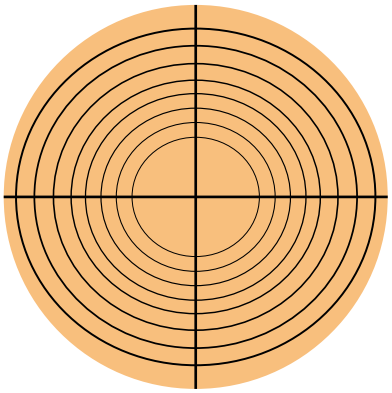
Make a Solar System Mobile

You will need:

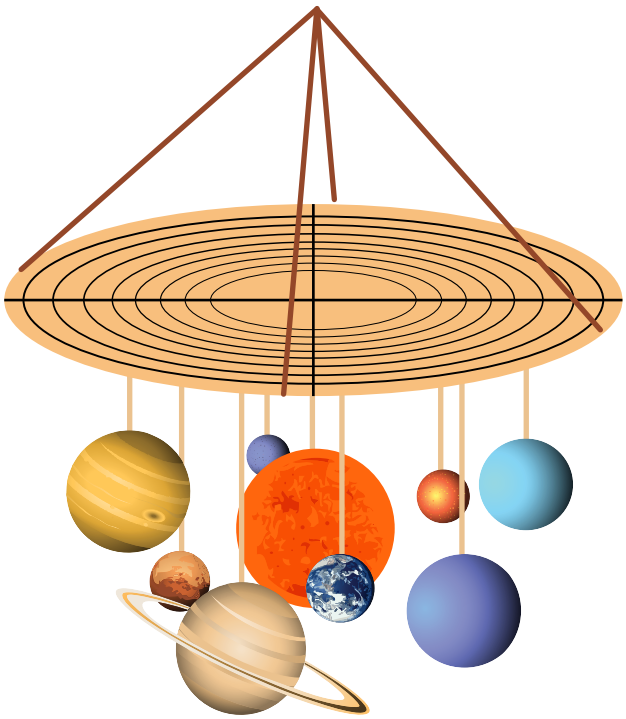
- String or yarn
- Tape or glue
- Scissors
- Hole punch or large nail
- Cardboard circle (one from a pizza works great)



1. Print out the sun and 8 planets on the following pages. Cut out each planet. (If you want, print out two of each planet and glue them together so that each planet has two sides.) Attach a piece of string to each with a piece of tape.



2. Draw a cross down the center of a round piece of cardboard.Then, using a compass, draw 8 circles, each bigger than the last. These will be the orbits of your planets.



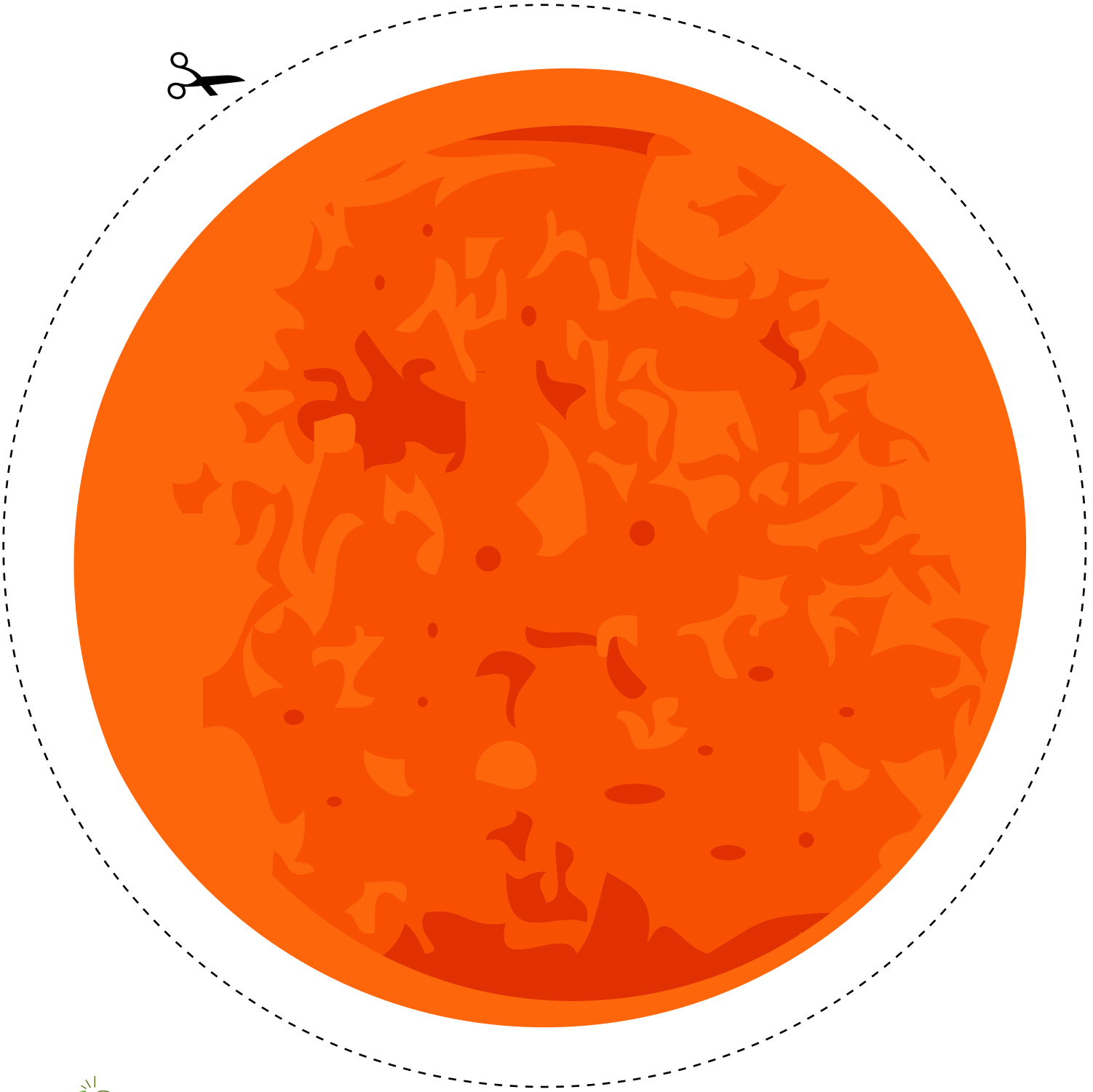
3. With a hole punch or a large nail, make holes in the middle of the cardboard for the sun. Then punch a hole on each orbit, spacing them out. Attach the sun in the middle, and each planet on its orbit in this order, from closest to the sun to farthest: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and

4. To hang your solar system mobile, make four holes on the edge of the cardboard circle and tie on four pieces of string, then tie them together.

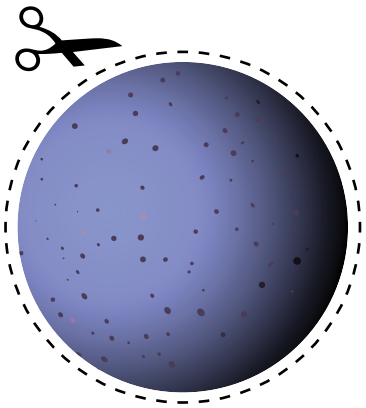
Make a Solar System Mobile

The Sun

The sun is much too big to show in accurate proportion to the planets, so we will just make it the biggest. Without the warmth and light of the sun, nothing could survive on our planet.



Make a Solar System Mobile

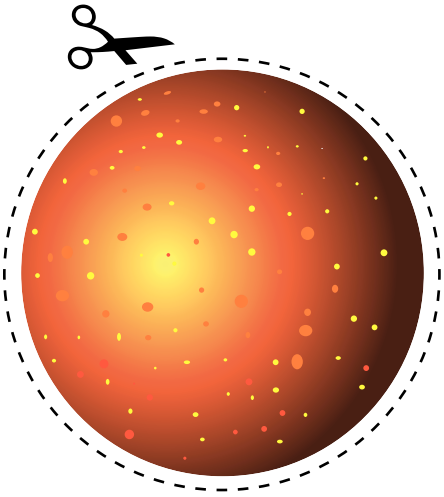


Mercury

Mercury is the closest planet to the sun. The surface of this barren planet is covered with craters. These craters have been created by thousands of years of being hit with asteroids and comets. There is no atmosphere on Mercury.

Venus

Venus is second closest to the sun. It is the hottest planet in the solar system. It is the brightest of all the planets, and is also known as the evening star and the morning star.



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Earth

The Earth is the third planet from the sun, and the fifth largest of the eight planets in our solar system. It was formed 4.5 billion years ago, and life appeared on its surface within 1 billion years. Earth is home to millions of species, including humans — and that means you!

Mars

Mars has three moons, and has the nickname "The Red Planet." Mars is the only planet whose surface can be seen in detail from the Earth. Mars is the fourth closest planet to the sun.

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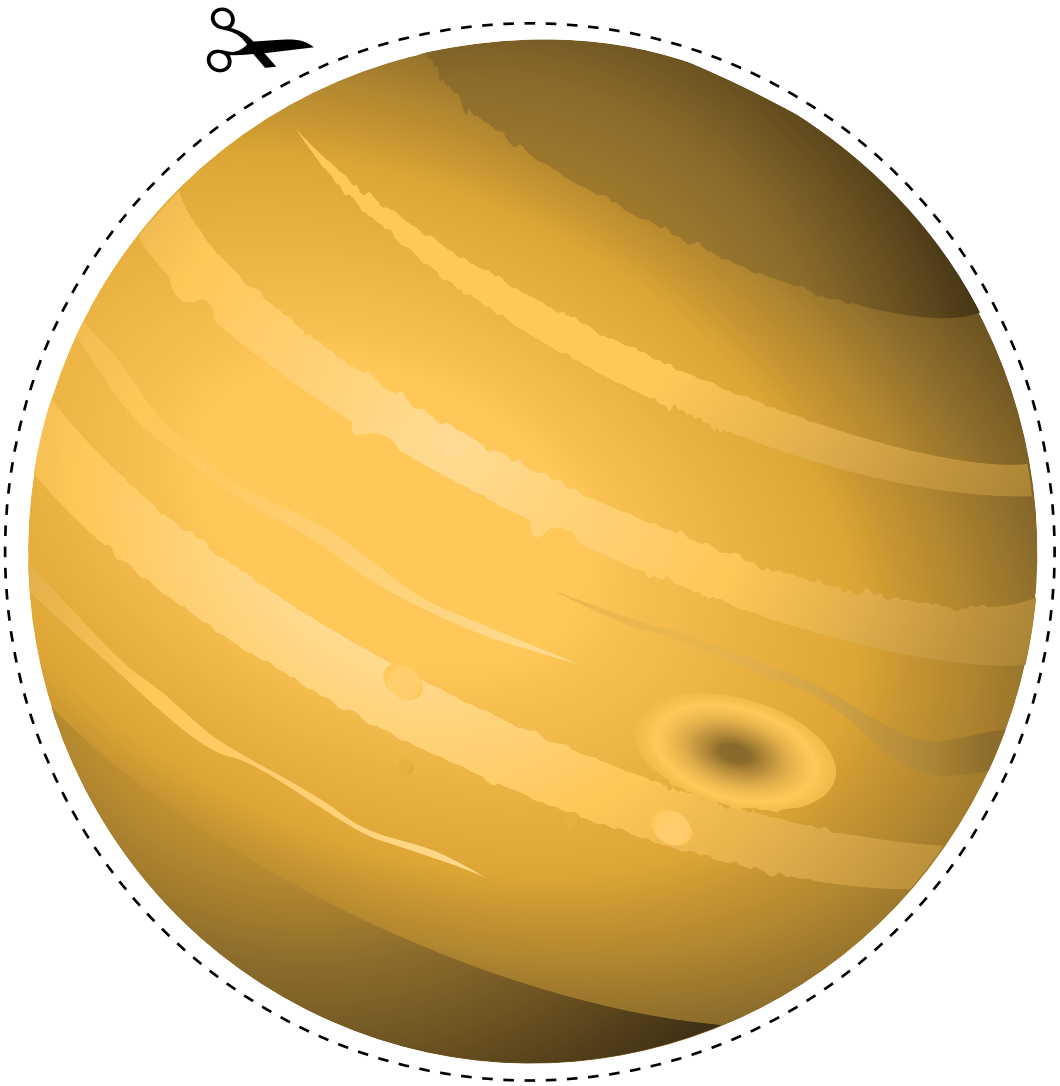
Jupiter

Jupiter is the largest planet in the solar system, and the fifth closest planet to our sun. If you weigh 100 pounds on Earth, you would weigh 264 pounds on Jupiter. Jupiter rotates faster than any other planet. It rotates so quickly that the days are only 10 hours long. The great red spot on Jupiter is a storm that has been going on for over 300 years.



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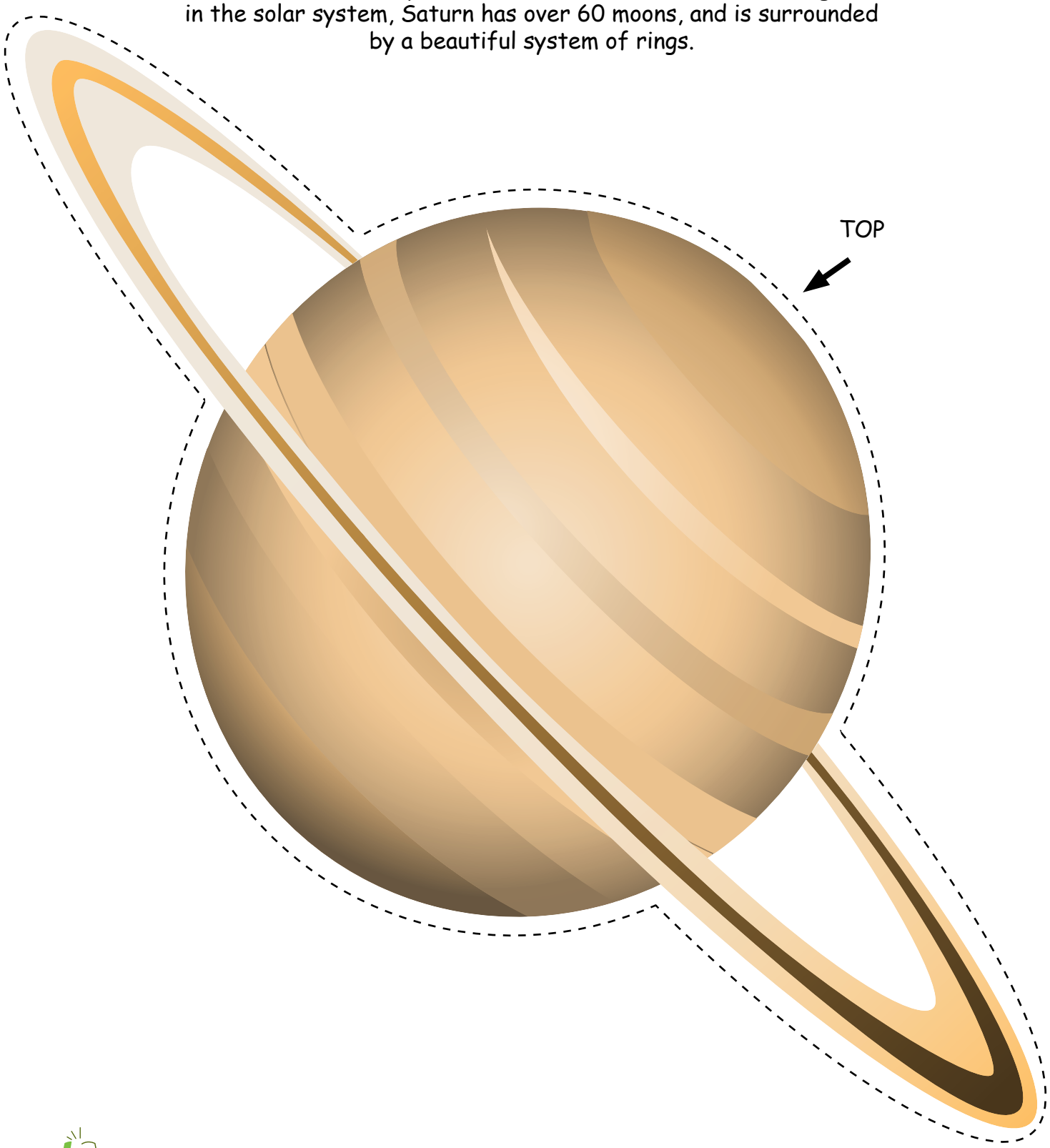
Saturn

Saturn is the sixth planet from the sun and the second largest in the solar system, Saturn has over 60 moons, and is surrounded by a beautiful system of rings.



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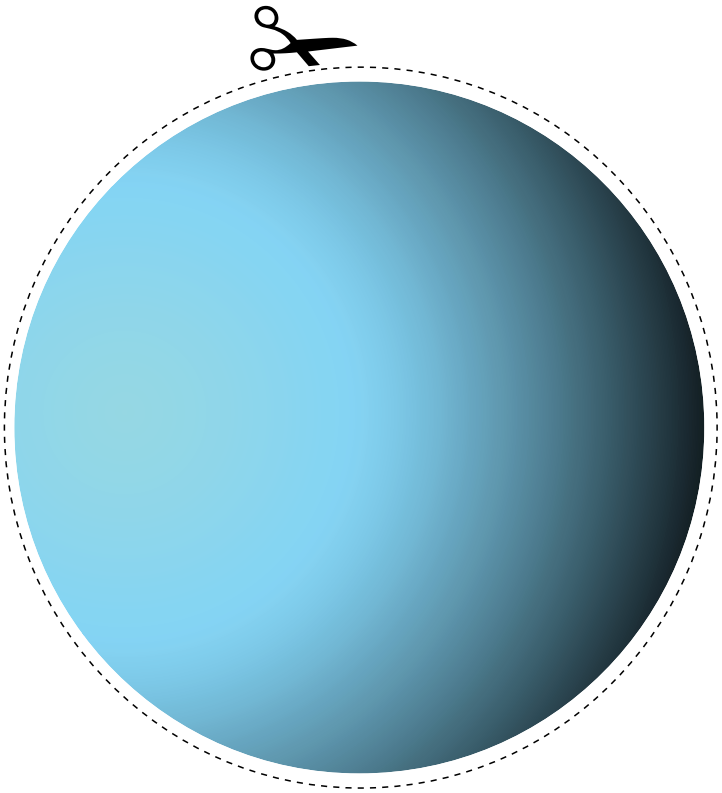
Uranus

Uranus is the seventh planet from the sun. Because of the strange way it spins, nights on some parts of Uranus can last for more than 40 years. Uranus is a very cold planet. It is made up of rock and ice and has a large rocky core. It has the nickname "Ice Giant." It is possible there are diamonds on the surface of this planet.



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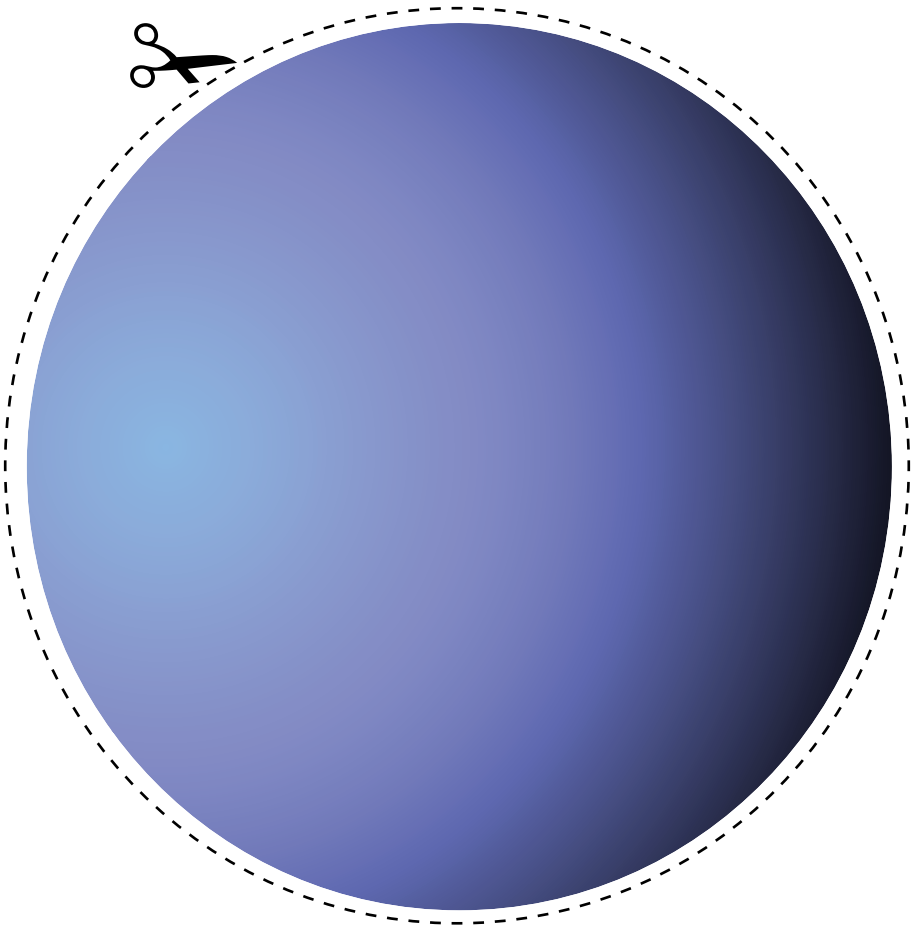
Neptune

Neptune is the eighth planet. It is the farthest planet from the sun.
It is the fourth largest planet. The interior of Neptune,
like that of Uranus, is made mostly of ice and rock.
A gas called methane causes Neptune to look blue.



Great job!

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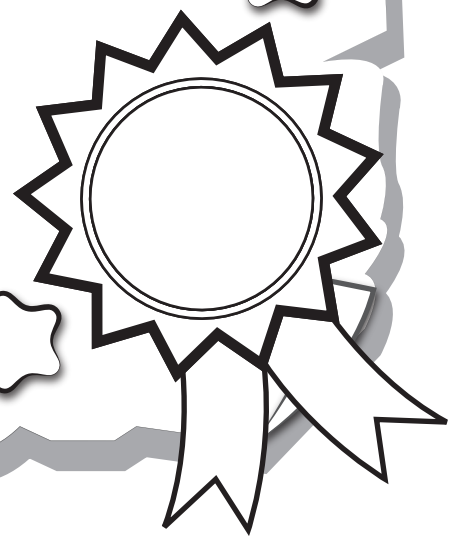

Answer Sheets

Blast Off: The Solar System

U.S. Space Missions: Freedom 7
U.S. Space Missions: Gemini 4
U.S. Space Missions: Apollo 11

Answer Sheet

U.S. SPACE MISSIONS

Mercury-Redstone 3: Freedom 7

Alan Shepard in the capsule before liftoff

Mercury-Redstone 3, known better by its military call sign, Freedom 7, was the first U.S. space mission to have a human on board. It was part of the Project Mercury space program.

Piloted by Alan Shepard, Freedom 7 launched from Cape Canaveral, Florida at 9:34 a.m. on May 5, 1961. Shepard became the first American in space. Three weeks earlier, the Soviet Union had launched a flight with Yuri Gagarin, who was the first person in space. Over 45 million people in the U.S. watched the Freedom 7 liftoff on television.

A rocket carried the Freedom 7 capsule with Shepard. During the liftoff, the rocket reached a speed of 5,134 miles an hour.

The goals of the mission were to test the manual controls and to observe the earth. Shepard completed both goals successfully.

Launch of Freedom 7

The flight lasted 15 minutes. Freedom 7 traveled 303 miles and reached an altitude of 116 miles. As the capsule rentered the Earth's atmosphere, parachutes opened to slow down the capsule before it landed in the ocean, called the splashdown. Shepard left the capsule while it was floating in the water. A waiting helicopter from a U.S. Navy aircraft carrier lifted Shepard and flew him to the carrier.

Recovery of the Freedom 7 capsule after splashdown

Freedom 7 started a new time of space exploration for the U.S. Alan Shepard continued as an astronaut and in 1971 became the fifth person to walk on the moon.

Mission Math

Number who watched the liftoff on television: **over 45 million**

Number of miles flown: **303**

Time length of flight: **15 minutes**

Highest altitude: **116 miles**

Q&A

What year was the Freedom 7 mission?

1961

Who was the first person in space?

Yuri Gagarin

Who was the pilot on Freedom 7?

Alan Shepard

What is the word for a capsule landing in the ocean?

splashdown

Answer Sheet

Part of Project Gemini, Gemini 4 launched on June 3, 1965. Project Gemini was part of the U.S. space program to explore space. The project followed Project Mercury, which introduced manned space flight. The Gemini missions were important, as they had two astronauts on board each flight.

Astronauts Edward White and James McDivitt

The astronauts on Gemini 4 were Edward White and James McDivitt. The Gemini 4 mission performed many things for the first time:

Launch of Gemini 4

- The first flight to go over one day. It was important for scientists to know if humans could stay in space long enough to travel to the moon.
- The first flight to be managed from the new Mission Control Center in Houston, Texas.
- The first flight to try and meet up with another spacecraft. While this was not successful, it gave scientists valuable information.
- Most importantly, Gemini 4 was the first flight where an astronaut would leave the capsule and go into space. Called a space walk, this was a dangerous, but important, objective of the mission. On June 3, for 20 minutes, Edward White left the capsule and floated in space. He was attached to the capsule by a cord. White took photographs of Earth during his space walk.

Gemini 4 splashed down safely on June 7, 1965 after four days in space. It had orbited the earth 66 times.

Q&A

How many astronauts were on board Gemini 4?

2

What is it called when an astronaut leaves the command module and floats in space??

a space walk

What year was Gemini 4 launched?

1965

How many days was the Gemini 4 in space?

4

Astronaut Edward White during his space walk.

Answer Sheet

U.S. SPACE MISSIONS
Apollo 11

Apollo 11 astronauts Neil Armstrong, Michael Collins and Edwin Aldrin

Apollo 11 was the historic U.S. space mission where the first man walked on the moon. The mission completed the goal established by President John F. Kennedy in 1961 to put a man on the moon before the end of the 1960s.

Apollo 11 launched on July 16, 1969 from the Kennedy Space Center in Florida. On board the command module, called Columbia, was the crew of three astronauts: Edwin Aldrin, Neil Armstrong and Michael Collins.

Launch of Apollo 11

On July 19, Apollo 11 reached the moon and orbited 30 times. The next day, Armstrong and Aldrin went on board the lunar module, named Eagle. Eagle would take them to the moon's surface. Collins remained on board Columbia and continued to orbit the moon.

Eagle landed on the moon's surface on July 20, 1969. Neil Armstrong was the first person to walk on the moon. Aldrin followed Armstrong and the two began a series of scientific experiments. They also placed a U.S. flag on the moon surface. The astronauts reported that walking on the moon, which has 1/6 the gravity of earth, was not difficult.

After almost 22 hours on the moon, Aldrin and Armstrong returned to Eagle and left the moon surface to rejoin Collins in Columbia. They then began the trip back to Earth.

Apollo 11 landed safely in the Pacific Ocean on July 24, 1969. A total of 12 men would walk on the surface of the moon before the Apollo program ended in 1972.

Q&A

What year did Apollo 11 launch?

1969

Who was the first man to walk on the moon?

Neil Armstrong

What was the name of the lunar module?

Eagle

The gravity of the moon is what fraction of the Earth's gravity?

1/6

Astronaut Neil Armstrong on the moon