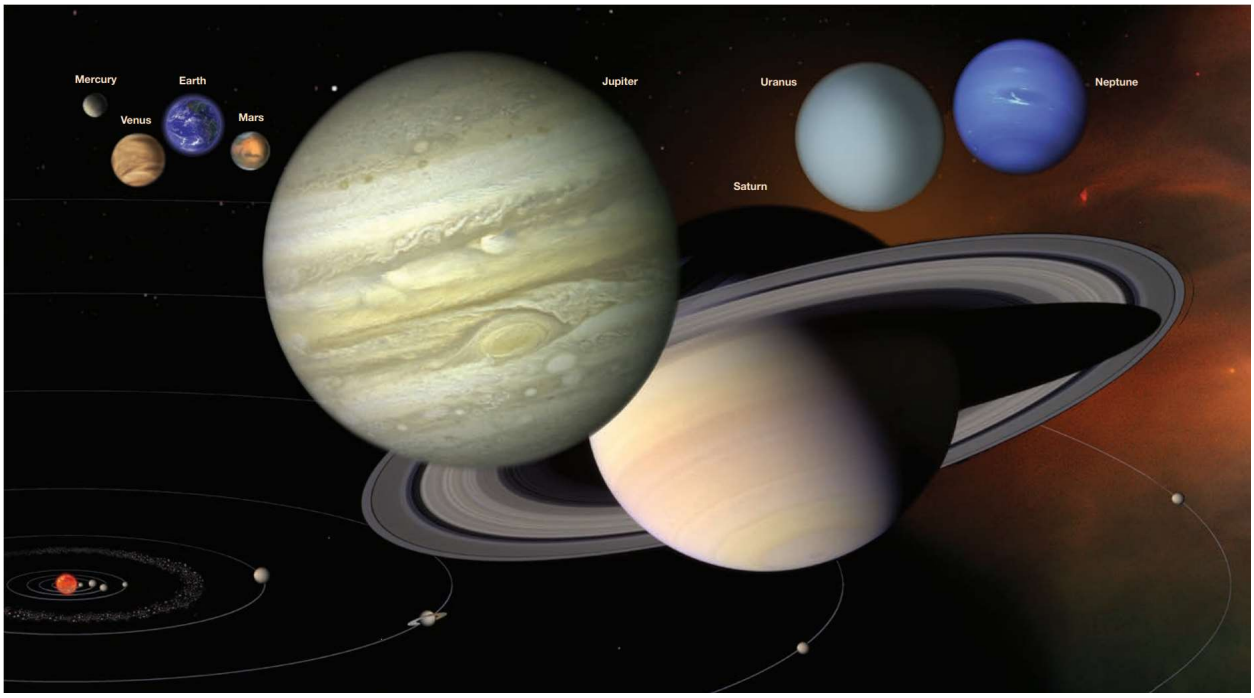
SOLAR SYSTEM

MIRUS TOYS

www.mirustoys.com

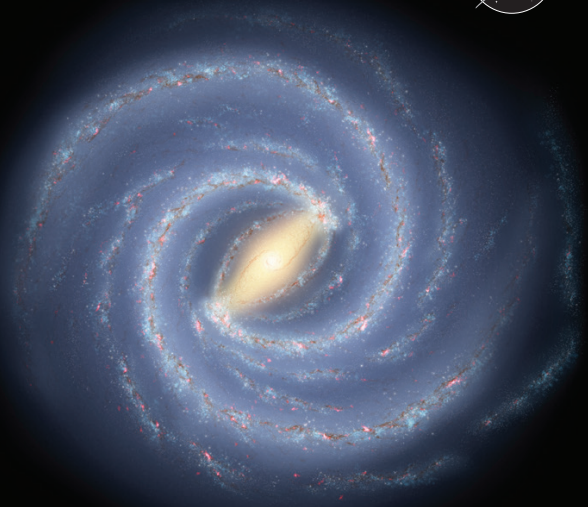


The planets are shown in the upper part of the illustration in their correct order from the Sun and to the same relative size scale. If the distances between the planets were shown at the same scale, the illustration would be miles wide! The correct distance scale between planets is shown in the lower part of the illustration, but the sizes of the planets have been greatly exaggerated (even the Sun would be too small to see at the scale shown). The faint rings of Jupiter, Uranus, and Neptune are not shown. Dwarf planets Pluto, Eris, Haumea, and Makemake do not appear in the illustration. The dwarf planet Ceres is not shown separately; it resides in the asteroid belt between Mars and Jupiter (Source NASA)

Introduction: Humans have gazed at the heavens and tried to understand the cosmos for thousands of years. Ancient civilizations placed great emphasis on careful astronomical observations. Early Greek astronomers were among the first to leave a written record of their attempts to explain the cosmos. For them, the universe was Earth, the Sun, the Moon, the stars, and five glowing points of light that moved among the stars. The Greeks named the five points of light — called planetes, or wanderers — after their gods. The Romans later translated the names into Latin — Mercury, Venus, Mars, Jupiter, and Saturn — and these are the names astronomers use today

Most of the information, activities and pictures are from NASA. I have just organized them in a unit study fashion.

National Aeronautics and Space Administration

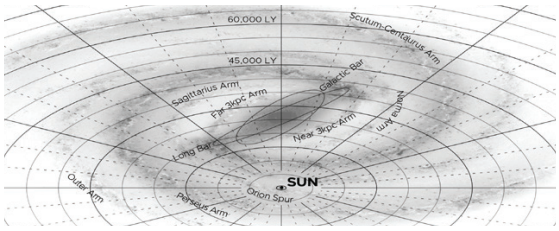


BEYOND
OUR SOLAR SYSTEM

explore at **solarsystem.nasa.gov/beyond**

www.nasa.gov

On the front: An artist's concept illustrating the spiral structure of the Milky Way.



The Milky Way is a spiral galaxy about 100,000 light-years across. Our Sun lies far from its center.

Beyond Our Solar System

Our Sun is one of over 100 billion stars in the Milky Way, and our galaxy is just one of countless billions in the universe, each having millions – or billions – of stars of their own.

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National Aeronautics and Space Administration

ASTEROIDS

explore at **solarsystem.nasa.gov/asteroids**

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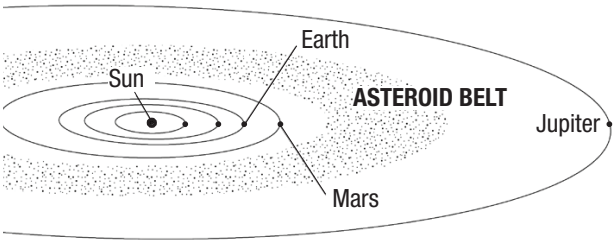
On the front:
Asteroid 243 Ida from NASA's Galileo spacecraft.



Most asteroids are found in the main asteroid belt between Mars and Jupiter. There are also many asteroids with orbits that pass through the space near Earth.

Asteroids are giant hunks of rock and metal that orbit the Sun. Like comets, they are remnants from the formation of our solar system more than 4 billion years ago.

NASA EXPLORES

ASTEROIDS

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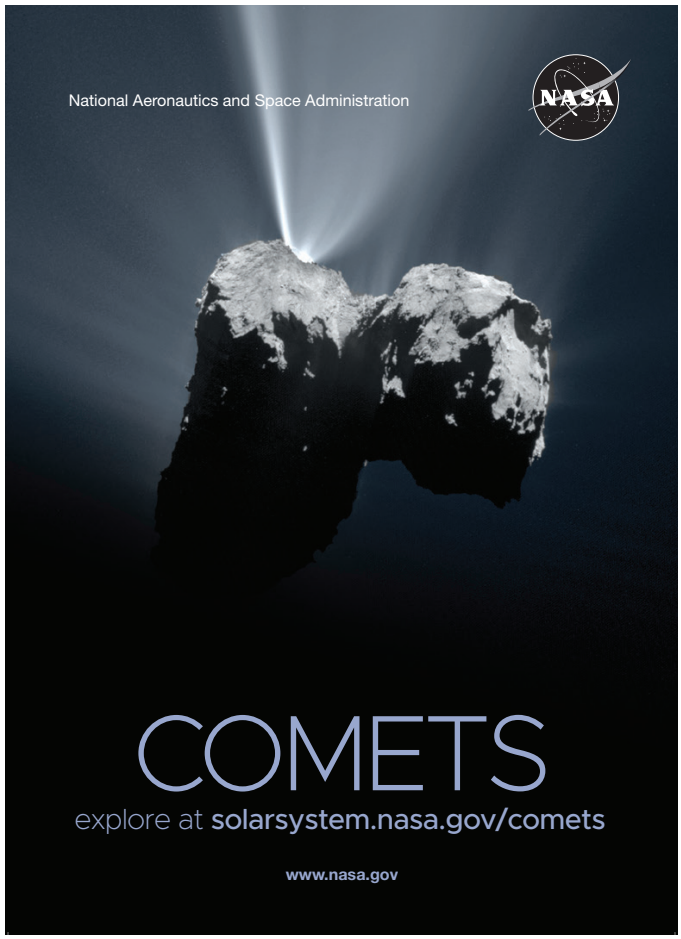
National Aeronautics and Space Administration

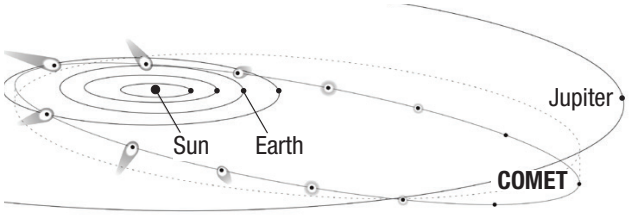


COMETS

explore at **solarsystem.nasa.gov/comets**

www.nasa.gov

On the front: Comet 67P/ Churyumov-Gerasimenko based on two images by ESA's Rosetta mission.



This example of a comet's orbit (for Comet 67P) shows how its activity increases as it nears the Sun.

Comets are icy balls of dust and frozen gases that orbit the Sun. When a comet's orbit brings it close to the Sun, it heats up and spews dust and gases, creating a giant, fuzzy head, called a coma, and a long tail.

NASA EXPLORES

COMETS

explore at **solarsystem.nasa.gov/comets**

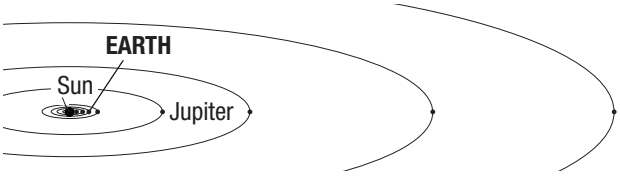
National Aeronautics and Space Administration

EARTH

explore at **solarsystem.nasa.gov/earth**

www.nasa.gov

On the front: A view of Earth made using data collected by NASA's Terra satellite.



Earth is one of the four inner, rocky planets of our solar system. It is close enough to the Sun that, with some help from our atmosphere, the planet is warm enough to have liquid water on its surface.

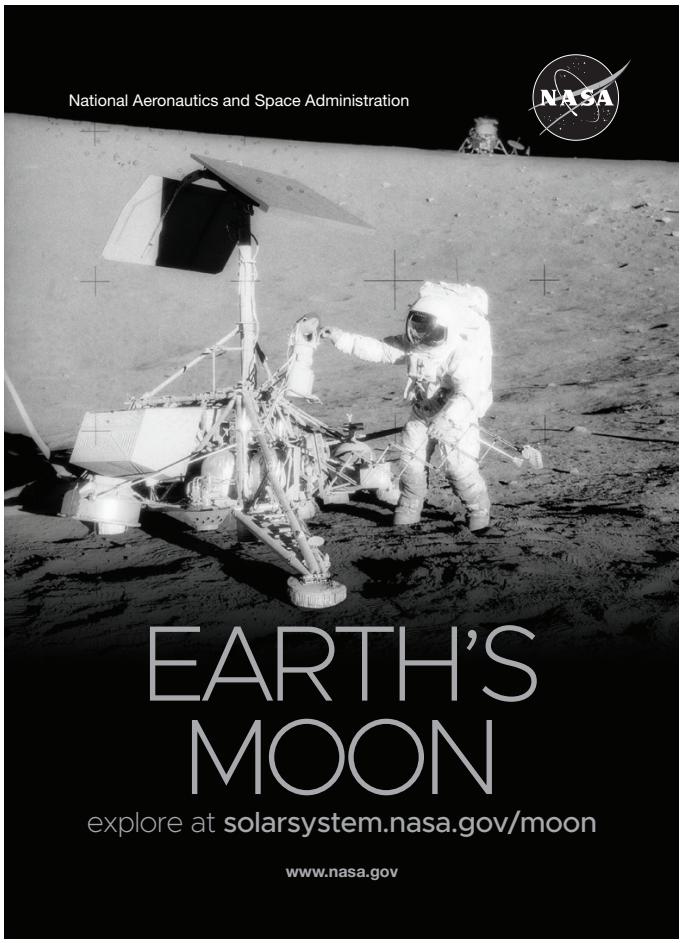
Earth — our home planet — is the third planet from the Sun, and the only place we know of so far that's inhabited by living things. It is the only world in our solar system with liquid water on the surface.

Earth is 0.09x (or 9%) the size of Jupiter and 0.009x (or ~1%) the size of the Sun

NASA EXPLORES

EARTH

explore at **solarsystem.nasa.gov/earth**



On the front: Photo from the Apollo 12 mission, showing an astronaut with the Surveyor 3 spacecraft.

The Moon is farther away than people often think, at a distance of 239,000 miles (385,000 kilometers).

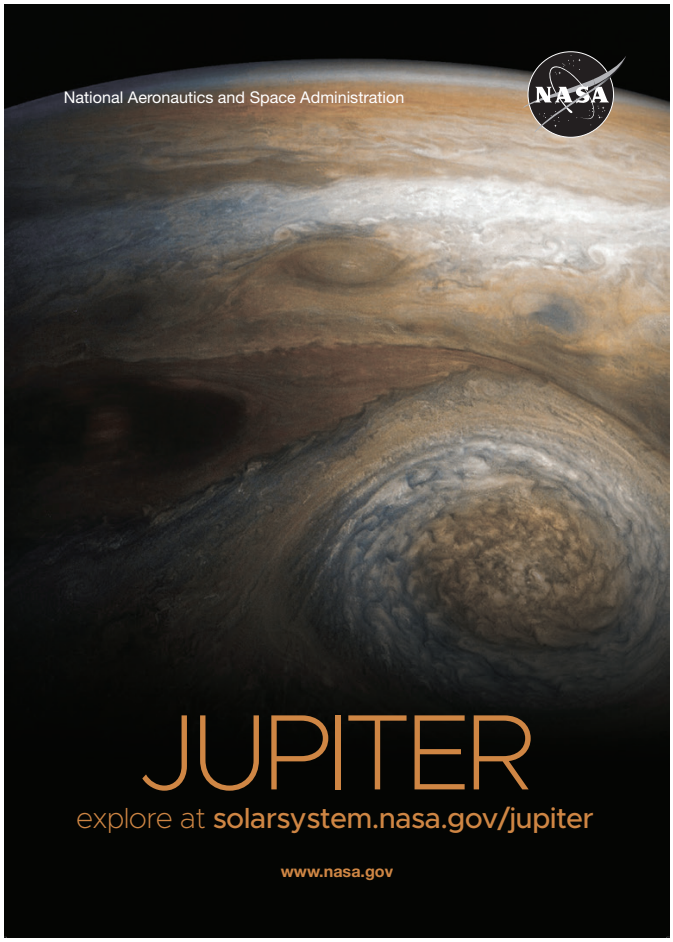
Earth's Moon was likely formed after a Mars-sized body collided with Earth several billion years ago. Earth's only natural satellite is simply called "the Moon" because people didn't know other moons existed until Galileo Galilei discovered four moons orbiting Jupiter in 1610.

Earth's Moon is 0.27x (or 27%) the size of Earth

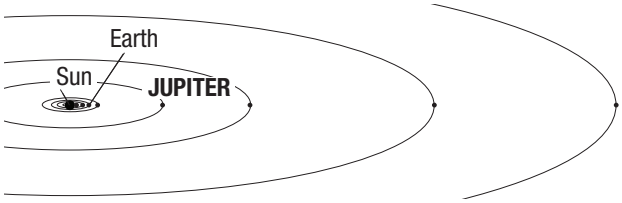
NASA EXPLORES

EARTH'S MOON

explore at **solarsystem.nasa.gov/moon**

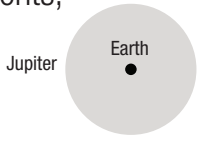


On the front: Image from NASA's Juno spacecraft showing a Jovian cloudscape. Image processing by Gerald Eichstädt and Seán Doran.



Jupiter orbits the Sun at a distance five times farther than Earth does. It's one of four giant planets in the outer solar system.

Jupiter is the largest planet in the solar system – more than twice as massive as all the other planets combined. Despite its huge size, the planet is made almost entirely of the lightest elements, hydrogen and helium.

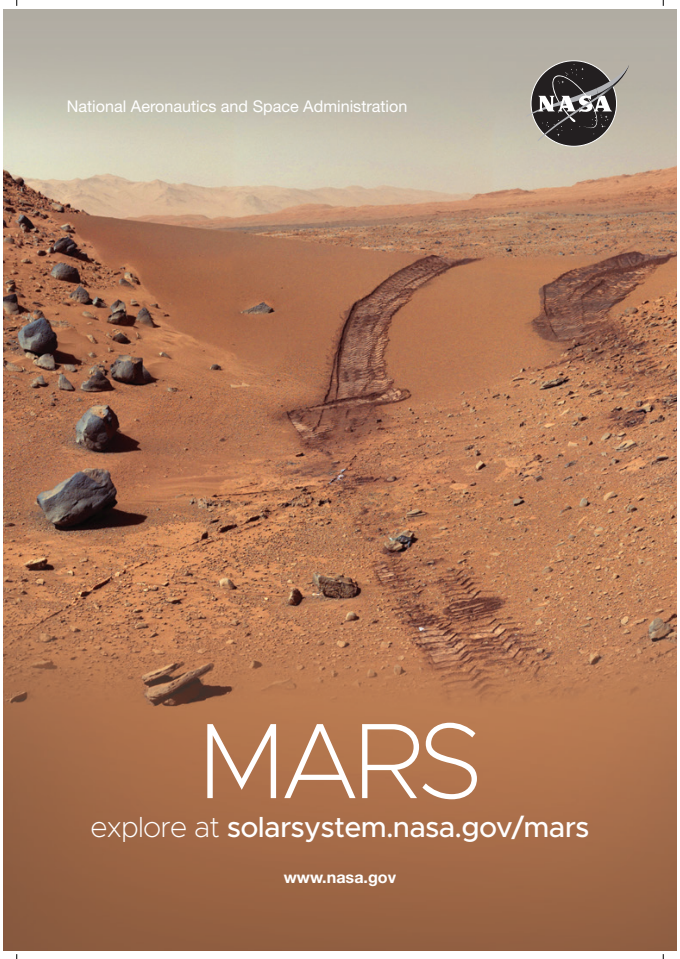


Jupiter is 11.1x larger than Earth

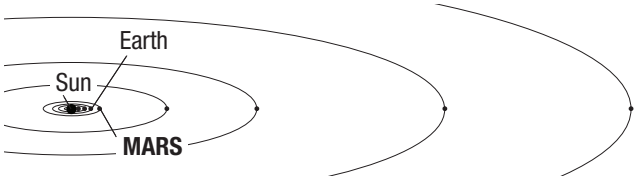
NASA EXPLORES

JUPITER

explore at **solarsystem.nasa.gov/jupiter**

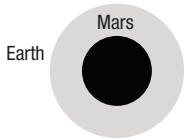


On the front: A view from NASA's Curiosity Mars rover showing the rover's tracks on the Martian surface.



Mars orbits a bit farther away from the Sun than Earth does — on average its distance is about 1.5 times Earth's distance from the Sun.

Mars is a cold desert world with a thin atmosphere. NASA missions have found lots of evidence that Mars was much wetter and warmer, with a thicker atmosphere, billions of years ago.

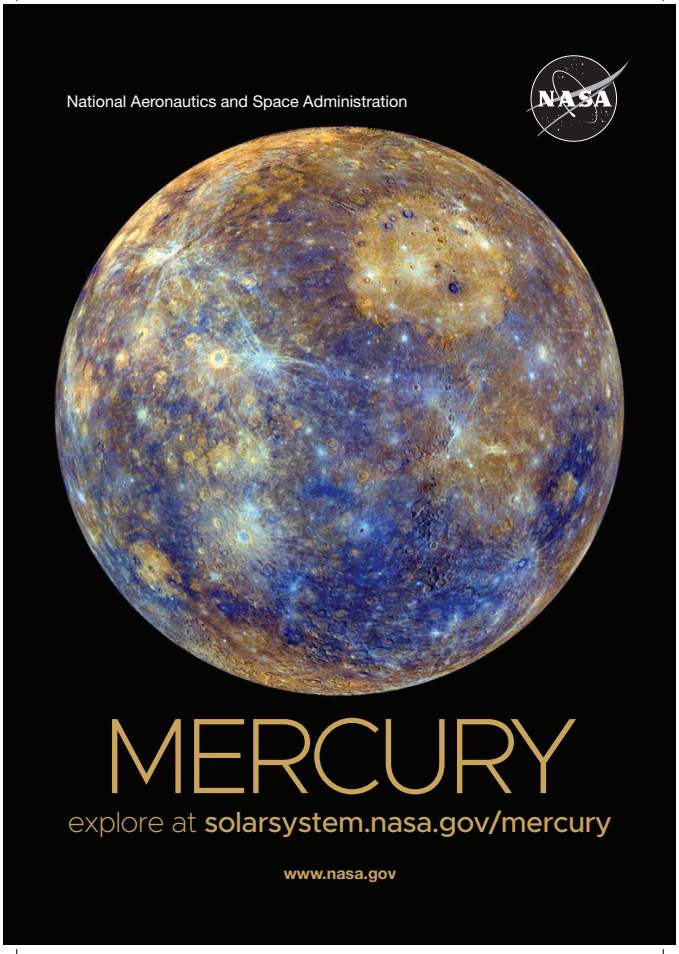


Mars is 0.53x (or 53%) the size of Earth

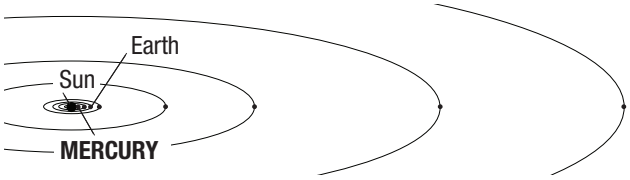
NASA EXPLORES

MARS

explore at **solarsystem.nasa.gov/mars**

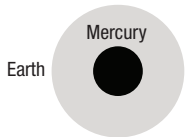


On the front: An enhanced-color map of Mercury's surface from NASA's MESSENGER spacecraft.



Although Mercury is extremely close to our Sun, there are other solar systems with multiple planets orbiting even closer to their stars.

Mercury is the smallest of our solar system's major planets (only slightly larger than Earth's Moon), and the closest to the Sun. Mercury is also the fastest planet, zipping around the Sun every 88 Earth days.



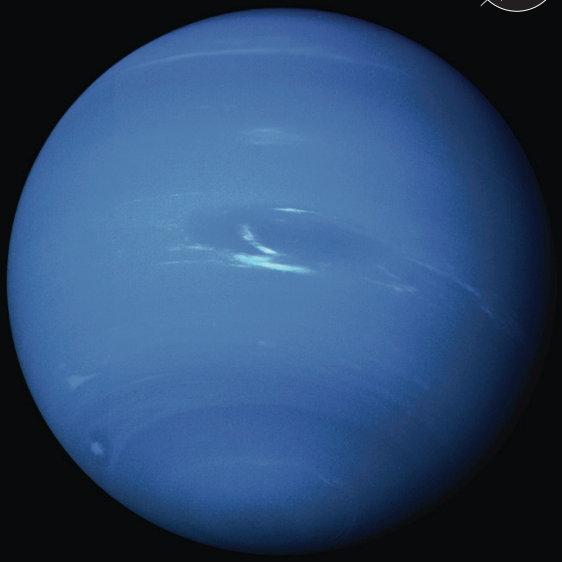
Mercury is 0.38x (or 38%) the size of Earth

NASA EXPLORES

MERCURY

explore at **solarsystem.nasa.gov/mercury**

National Aeronautics and Space Administration

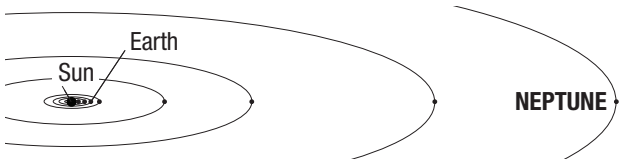


NEPTUNE

explore at **solarsystem.nasa.gov/neptune**

www.nasa.gov

On the front: A view of Neptune from NASA's Voyager 2 spacecraft in 1989.



Neptune orbits the Sun about 30 times farther out than Earth. In 2011, Neptune completed its first 165-year orbit since its discovery in 1846.

Neptune is the most distant of the eight major planets orbiting our Sun. It is dark, cold and whipped by supersonic winds. Like Uranus, Neptune gets its bluish color from methane gas in its atmosphere.

Neptune is 3.9x larger than Earth

NASA EXPLORES

NEPTUNE

explore at **solarsystem.nasa.gov/neptune**

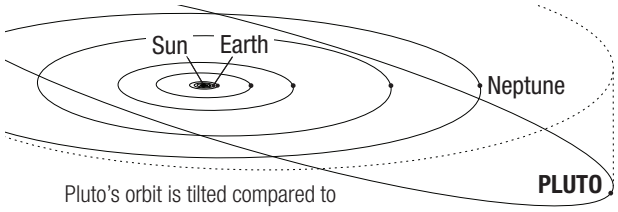
National Aeronautics and Space Administration

PLUTO

explore at **solarsystem.nasa.gov/pluto**

www.nasa.gov

On the front: An enhanced-color view of Pluto from NASA's New Horizons spacecraft.



Pluto's orbit is tilted compared to the other planets. Decades after its discovery, astronomers came to understand it's not a lone oddball, but one of many icy worlds that orbit beyond Neptune.

Pluto is a complex world with mountains, valleys, plains and glaciers. Long considered our solar system's ninth major planet, after the discovery of similar worlds in the space beyond Neptune, Pluto was reclassified as a dwarf planet.

Pluto is 0.19x (or 19%) the size of Earth

NASA EXPLORES

PLUTO

explore at **solarsystem.nasa.gov/pluto**

National Aeronautics and Space Administration

SATURN

explore at **solarsystem.nasa.gov/saturn**

www.nasa.gov

On the front: The final full-planet mosaic of Saturn captured by NASA's Cassini spacecraft in 2017.

Saturn orbits about twice as far from the Sun as Jupiter, and about 10 times farther out than Earth. It takes about 30 Earth years to make each orbit around the Sun.

Saturn is the second largest planet in our solar system. Adorned with a dazzling system of icy rings, Saturn is the farthest planet from Earth that was discovered by the unaided human eye, and has been known since ancient times.

Saturn is 9.4x larger than Earth

NASA EXPLORES

SATURN

explore at **solarsystem.nasa.gov/saturn**

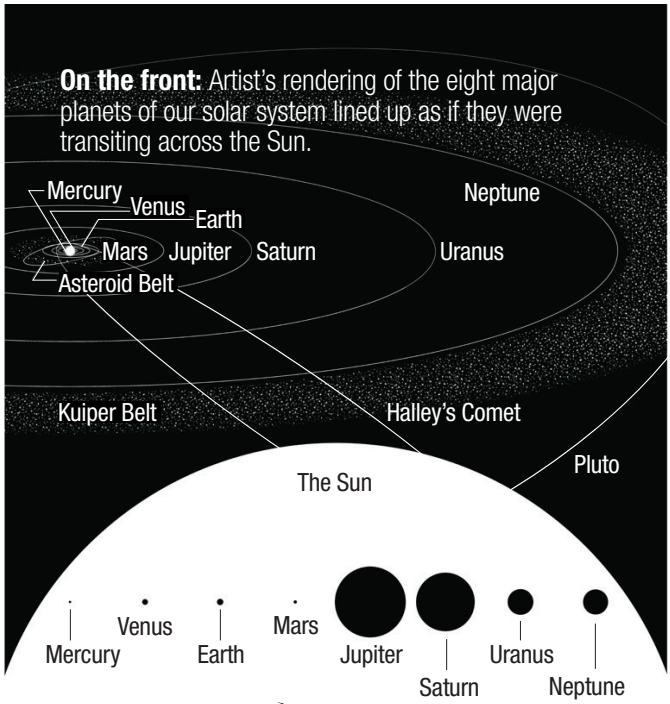
National Aeronautics and Space Administration

OUR SOLAR SYSTEM

explore at **solarsystem.nasa.gov/solar-system**

www.nasa.gov

On the front: Artist's rendering of the eight major planets of our solar system lined up as if they were transiting across the Sun.

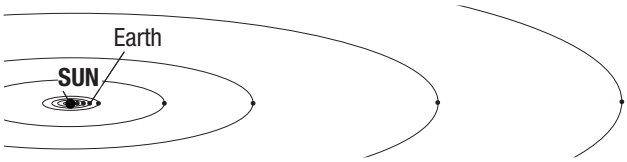


NASA EXPLORES

OUR SOLAR SYSTEM

explore at **solarsystem.nasa.gov/solar-system**

On the front: The Sun emits a solar flare, as seen by NASA's Solar Dynamics Observatory in 2015.



The Sun formed from a swirling disk of gas and dust, billions of years ago. The planets and their orbits are remnants of that disk, formed from the leftover material that went into making the Sun.

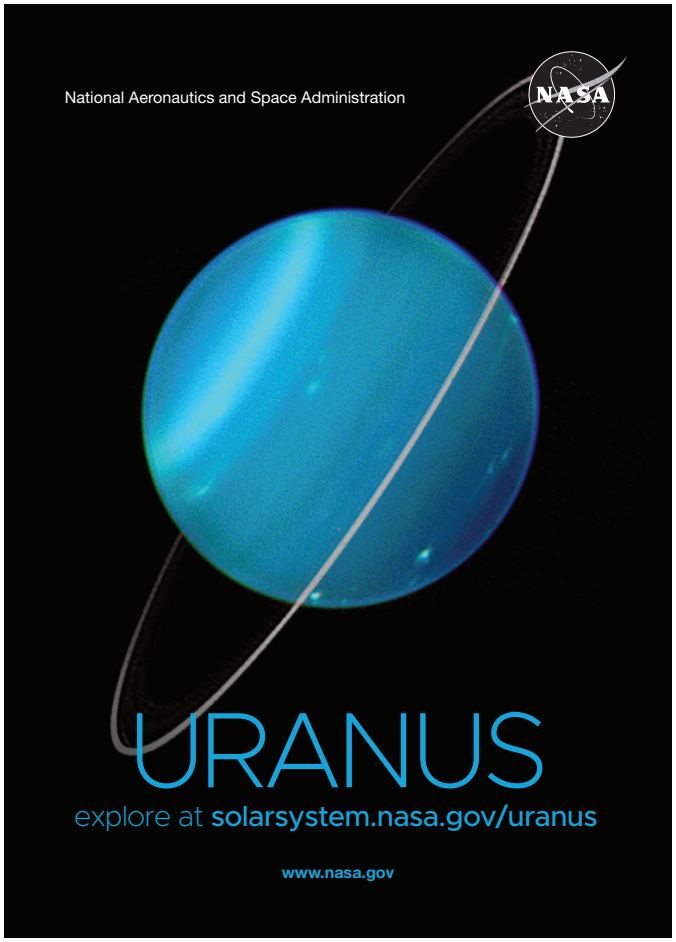
The **Sun** is the star at the heart of our solar system. Its gravity holds the solar system together, keeping everything in its orbit. Almost all (99.8%) of the mass in the solar system is contained within the Sun.

The Sun is 109x larger than Earth

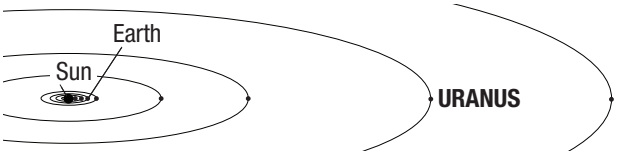
NASA EXPLORES

THE SUN

explore at **solarsystem.nasa.gov/sun**



On the front: An infrared view of Uranus and its rings from the Keck Telescope (with support from NASA).



Uranus orbits about twice as far from the Sun as Saturn, and about 20 times farther out than Earth. It takes 84 Earth years to complete a single orbit.

Uranus is a giant planet surrounded by faint rings and more than two dozen small moons. Rotating at a nearly 90-degree angle from the plane of its orbit, its unique tilt makes Uranus appear to spin on its side.

Uranus is 4x larger than Earth

NASA EXPLORES

URANUS

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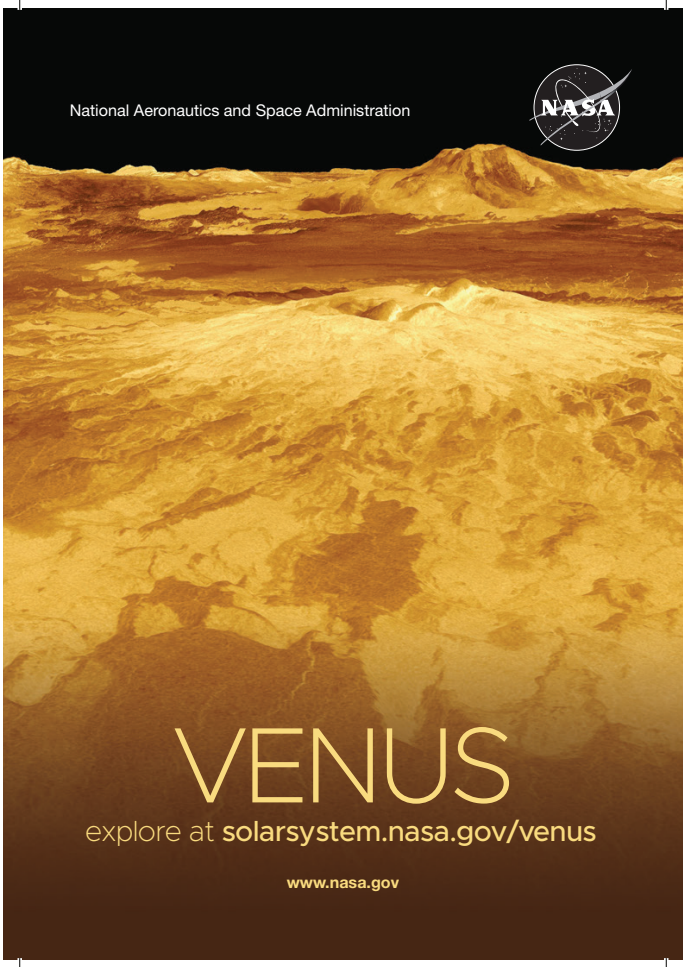
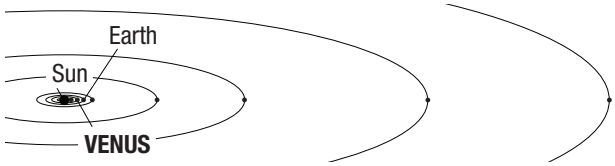
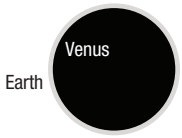


On the front: A computer-generated, 3D view of Venus, using radar data from NASA's Magellan mission.



Venus orbits closer to the Sun than Earth, which would tend to make it warmer there anyway, but the planet's dense carbon dioxide atmosphere is the main factor in creating its extreme heat.

Venus is our closest planetary neighbor. Its thick atmosphere traps heat in a runaway greenhouse effect, making it the hottest planet in our solar system. Glimpses below the clouds reveal volcanoes and deformed mountains.



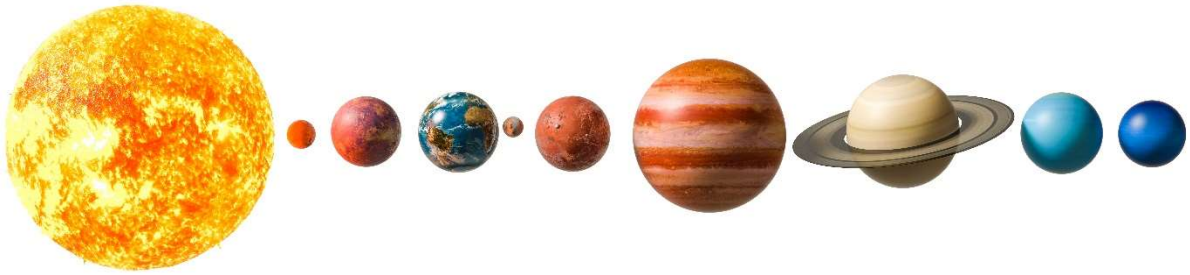
Venus is 0.95x (or 95%) the size of Earth

NASA EXPLORES

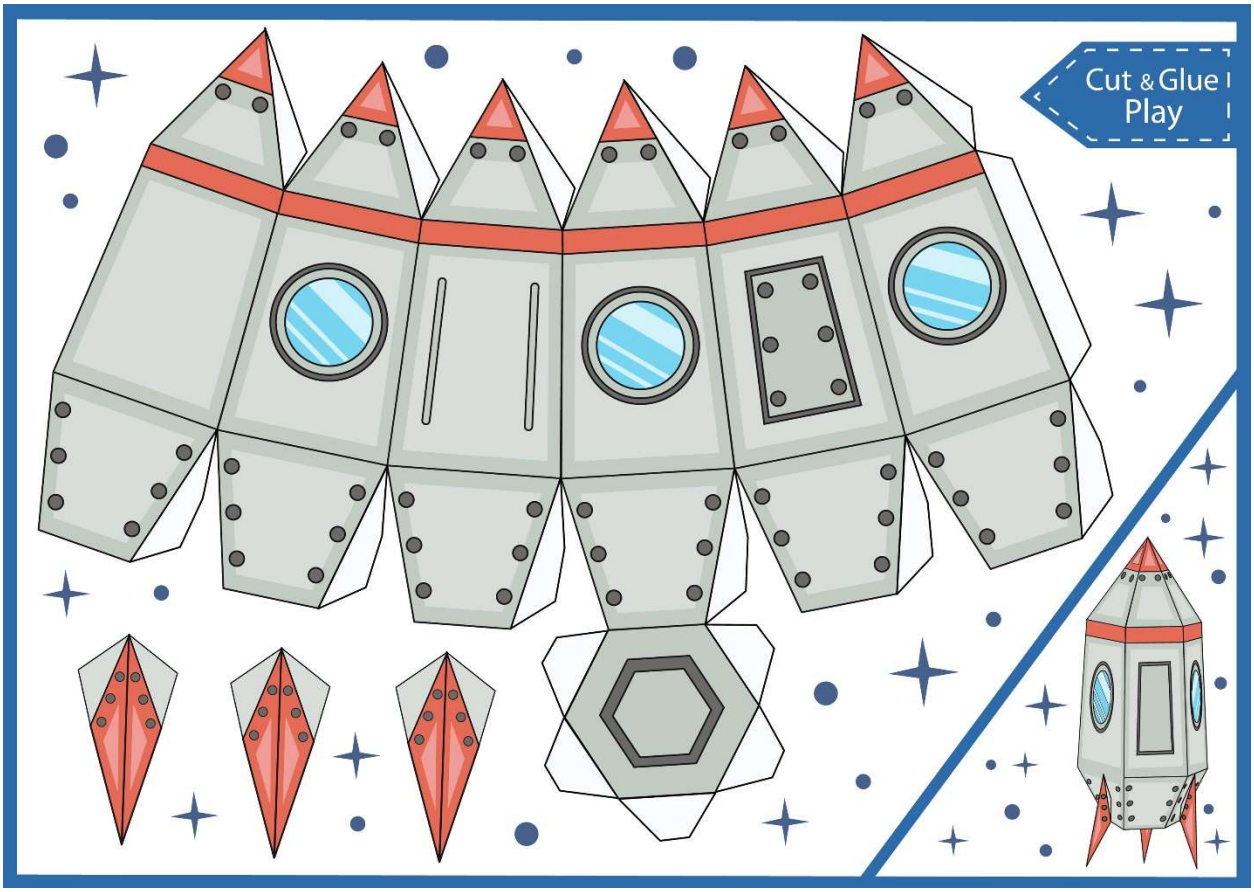
VENUS

explore at **solarsystem.nasa.gov/venus**

Activity 1: Cut out the Sun and all the planets. On the floor arrange them in order.



Activity 2: Cut and Glue. Make a 3D rocketship



Activity 3: Make an Earth mask

Pretend to be...

EARTH

a printable planet mask

National Aeronautics and Space Administration

(See instructions for assembly on the next page)

Tell your friends a few fun facts about yourself:

- You are a rocky, terrestrial planet
- Water covers 70% of your surface
- You have an atmosphere that is made mostly of nitrogen and oxygen

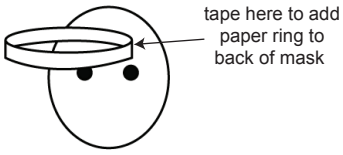
National Aeronautics and Space Administration

Instructions

What you'll need:
-Planet mask activity (pages 1 and 2)
-Scissors
-Tape

Safety Note: Adult scissors (i.e. scissors with a sharpened edge) should not be used by children under the age of 10 without adult supervision.

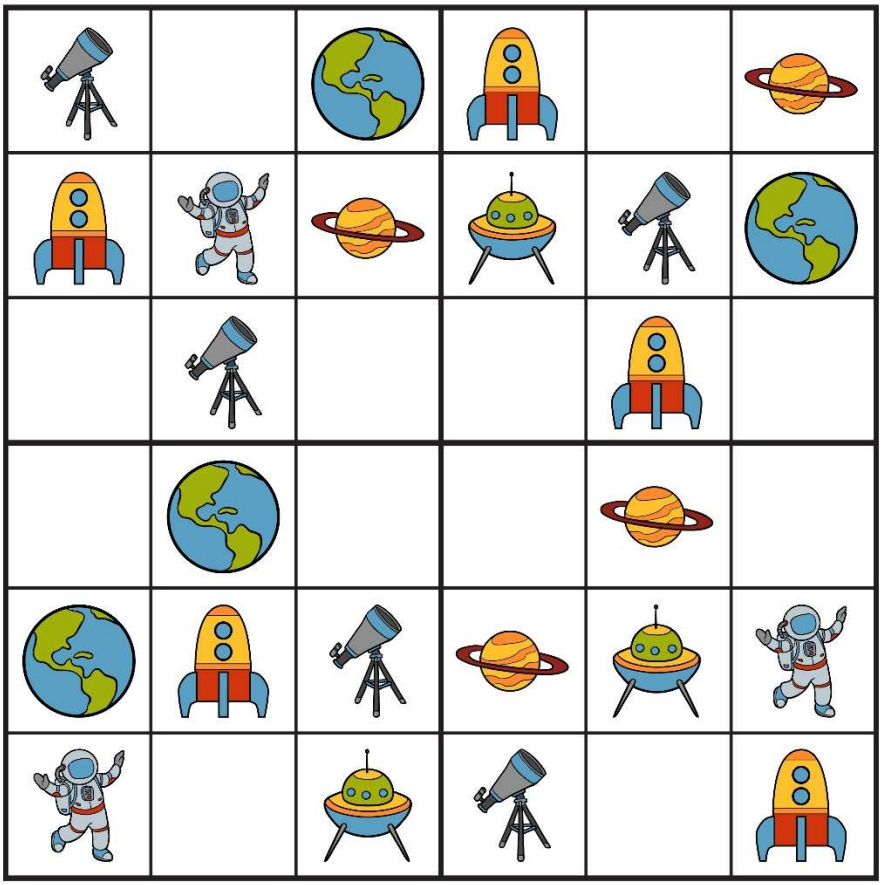
What to do:
1. Use scissors to cut out planet shape (page 1) on the dotted line.
2. Use scissors to cut out the mask's eye holes on the dotted lines.
3. Cut out 3 strips of paper (page 2) on the dotted lines.
4. Tape ends of paper strips together to make one long strip.
5. Place center of long paper strip on the back of your head.
6. Wrap the long strip around your head until you have a snug fit. The strip should form a ring around your head. Tape the ends of the paper strip so that the ring will stay the right size.
7. Take paper ring off of head. Tape it to the back of the planet cutout near the center and top of the planet.

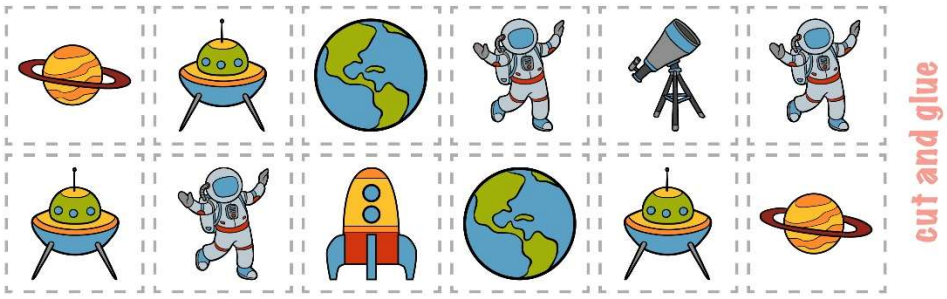


8. Place the paper ring on top of your head and see the world through a planet's eyes!

NASA Space Place
spaceplace.nasa.gov

Activity 4: Complete this space Sudoku





Activity 5: Complete this NASA solar system puzzle kit

Instructions for Puzzle Assembly

Materials

Solar System Puzzle Patterns*
Cellophane tape
Colored marker pens or pencils
Scissors
Razor blade craft knife
Butter knife
Cutting surface
Metal edge ruler
White glue (optional)

* If possible, copies of the puzzle patterns should be printed on 60 to 100 pound weight white paper or could be glued on poster board. Otherwise, have the patterns duplicated at a commercial copier business on heavy paper stock.

Instructions

1. Carefully cut out each cube pattern.
2. Using the razor blade knife and a cutting surface beneath, cut the center of the small slots on each pattern. Matching tabs will be inserted into these slots.
3. With the metal edge ruler for a guide, use the butter knife to score the white dashed lines on each pattern. Be sure not to press down so hard that the paper is cut. The score lines will make it easy to fold the patterns precisely. Also score the tabs and flaps.
4. Pre-fold each pattern piece on the score lines to make sure the folds are square.
5. Each pattern page forms a single cube. Join the corresponding tabs and slots (A to A, B to B, etc.) of the puzzle pieces to begin forming cubes. Use tape on the inside of the cube joint to hold these pieces together firmly.
6. Join the edges of the cubes together by inserting tabs into the corresponding slots cut into the flaps. Work your way around the cube until all sides are joined. You may wish to use the point of the razor blade knife to assist you in getting the last tabs in place. (Assembly gets easier with practice!) After assembling each cube, you can make them stronger by pulling the tabs slightly from their slots and placing a small drop of glue on the tabs. Push the tabs back in and set the cube aside to dry.
7. When all cubes are assembled, put the puzzle together. Starting with one side of the puzzle at a time, begin coloring the images of the objects pictured. Use the coloring instructions as a guide or have students find images of the planets and Sun in astronomy books and try to match the colors in the puzzle. You can also color the captions.

Alternate Construction Techniques

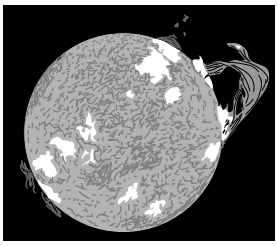
A more rugged puzzle can be constructed by gluing the squares to blocks of wood or other materials. Reduce or expand the patterns on a copy machine to fit the blocks. Be sure to place the squares in the proper positions so that properly oriented puzzle faces will be created.

Activities and Questions

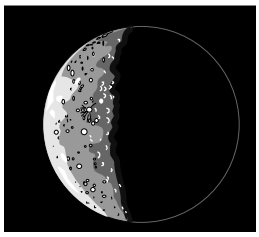
1. Assemble the puzzle cubes so that all sides match. The exterior faces of the puzzle picture the Sun and five planets. The other objects are visible when the inside faces are opened.
2. Based on the information contained in the chart on page 8, discuss the different sizes of the objects pictured in the puzzle. Because of vast differences between the Sun and the planets, no consistent scale has been used for the images. Have students draw a circle on the chalkboard one meter in diameter. Then have the students draw other circles to represent the planets to scale. Use the chart on page 8.
3. Discuss the distances between the planets. Make a scale model of the distances of the planets using the distance between Earth and the Sun as a reference. Let that distance equal one meter.
4. Why is it difficult to create a scale model of the solar system with both distance and diameters to the same scale?
5. Why are only the rings of Saturn shown on the puzzle and not the rings of Jupiter, Uranus, and Neptune?
6. Why is only half of Mercury pictured?
7. Have other nations sent spacecraft to study the planets? Which ones?
8. What spacecraft made the picture of Pluto?
9. Why is Pluto shown with its single moon Charon?
10. If you were the first explorer to travel to the other planets, what would you want to learn about them?

Color Guide

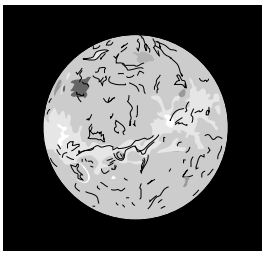
Sun:
Color the entire disk of the Sun yellow. Add orange and red over the mottled areas of the Sun's surface. Leave the white areas yellow. Color the prominences shooting out from the surface red.



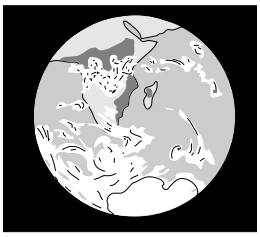
Mercury:
Color the entire planet light gray.



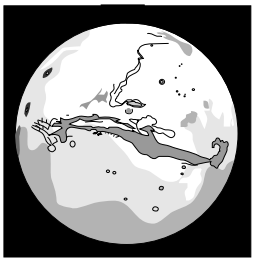
Venus:
Color the entire planet orange. Darken the shaded areas with tan or light brown.



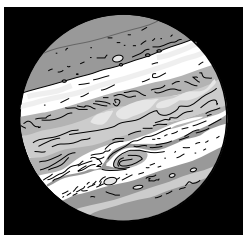
Earth:
Color the oceans blue. Leave the clouds and the ice of Antarctica white. Color Africa and Madagascar tan with a green tint. Make the darker shaded areas slightly more brown.



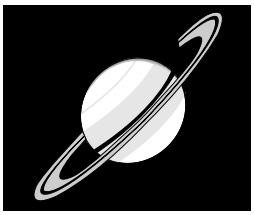
Mars:
Color the entire planet orange.



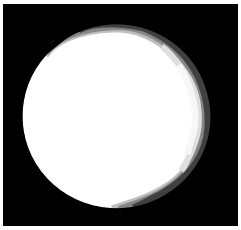
Jupiter:
Color the light areas yellow. Make the Great Red Spot and the shaded band near it reddish. Color all shaded bands orange with a slight red tint.



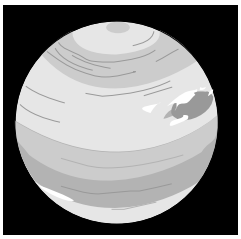
Saturn:
Color the entire planet and its rings tan or light orange.



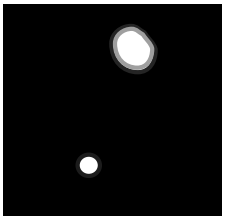
Uranus:
Color the entire planet blue green.



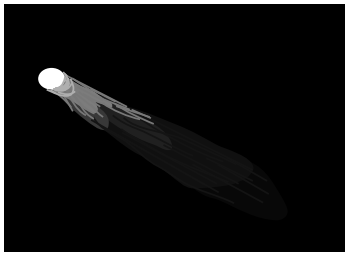
Neptune:
With the exception of some white clouds near the Great Dark Spot, color the entire planet light blue. Make the spot and the shaded bands darker blue.



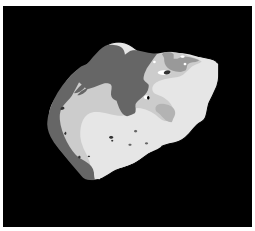
Pluto and Charon:
Color the fuzzy outer edges light blue. Leave the centers white.



Comet:
Leave white.

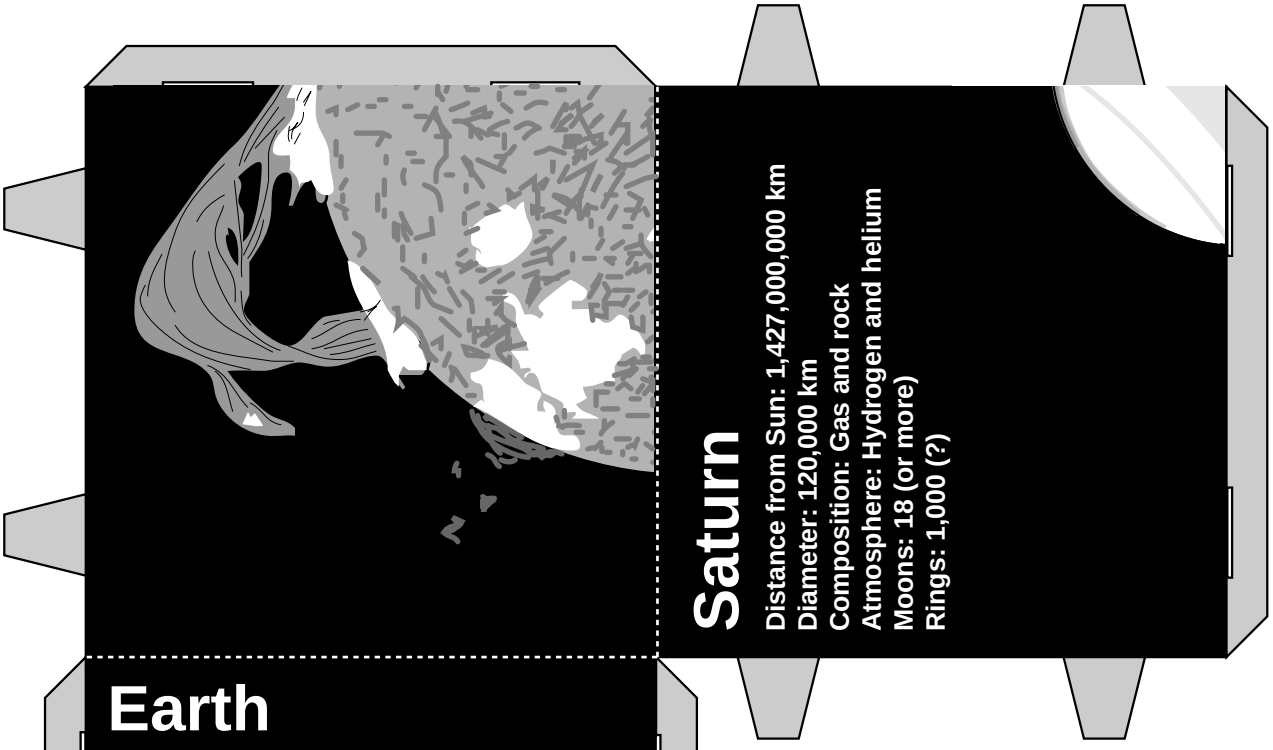


Asteroid:
Color the entire asteroid light gray.



Mars
Distance from Sun: 227,900,000 km
Diameter: 6,786.8 km
Composition: Rock and metal
Atmosphere: Carbon dioxide
Moons: 2
Sun
Diameter: 1,392,000 km
Rotation: 27 days
Composition: Hydrogen and Helium
Surface Temperature:
About 5,800 degrees C
A
A
A
Neptune
Distance from Sun: 4,497,000,000 km
Diameter: 49,528 km
Composition: Gas and rock
Atmosphere: Hydrogen, helium,
and methane
Moons: 8
Rings: 4

12

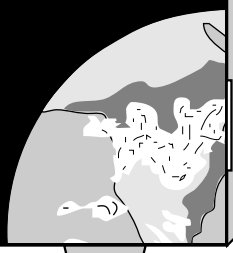


Saturn

Distance from Sun: 1,427,000,000 km
Diameter: 120,000 km
Composition: Gas and rock
Atmosphere: Hydrogen and helium
Moons: 18 (or more)
Rings: 1,000 (?)

Earth

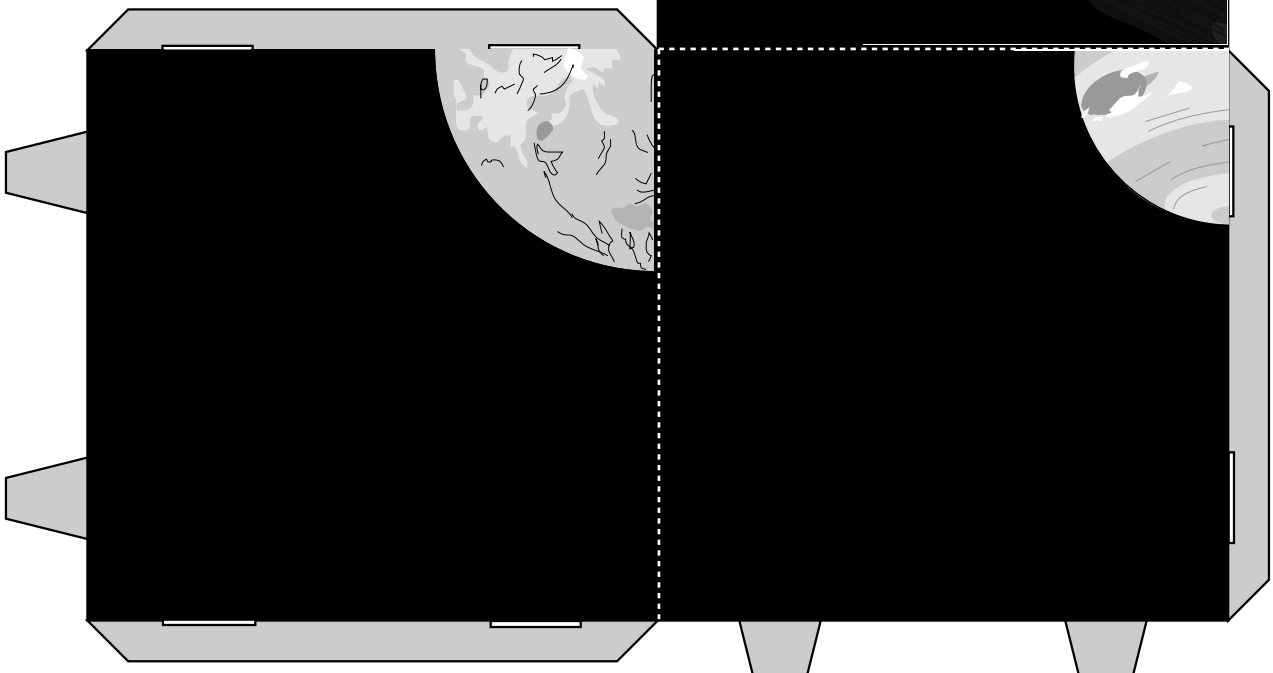
Distance from Sun: 149,600,000 km
Diameter: 12,756 km
Composition: Rock, metal, water
Atmosphere: Nitrogen and oxygen
Moons: 1

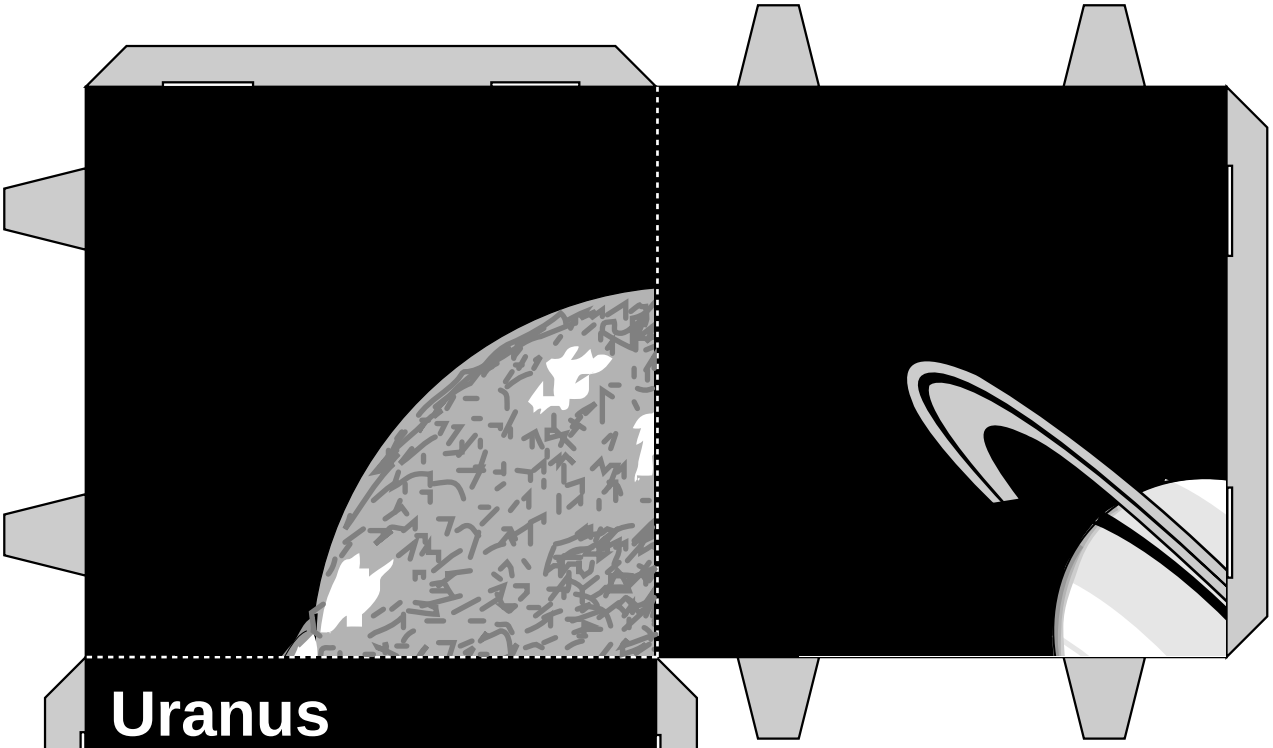


B

B

B





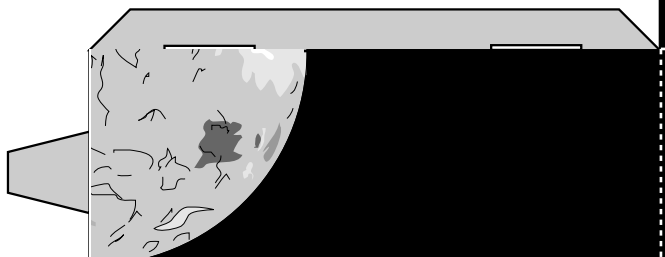
Uranus

Distance from Sun: 2,871,000,000 km
Diameter: 51,800 km
Composition: Gas and rock
Atmosphere: Hydrogen, helium, and methane
Moons: 15
Rings: 11?

C

C

C



Venus

Distance from Sun: 108,200,000 km
Diameter: 12,100 km
Composition: Rock and metal
Atmosphere: Carbon dioxide
Moons: None

16

D

D

D

Comets

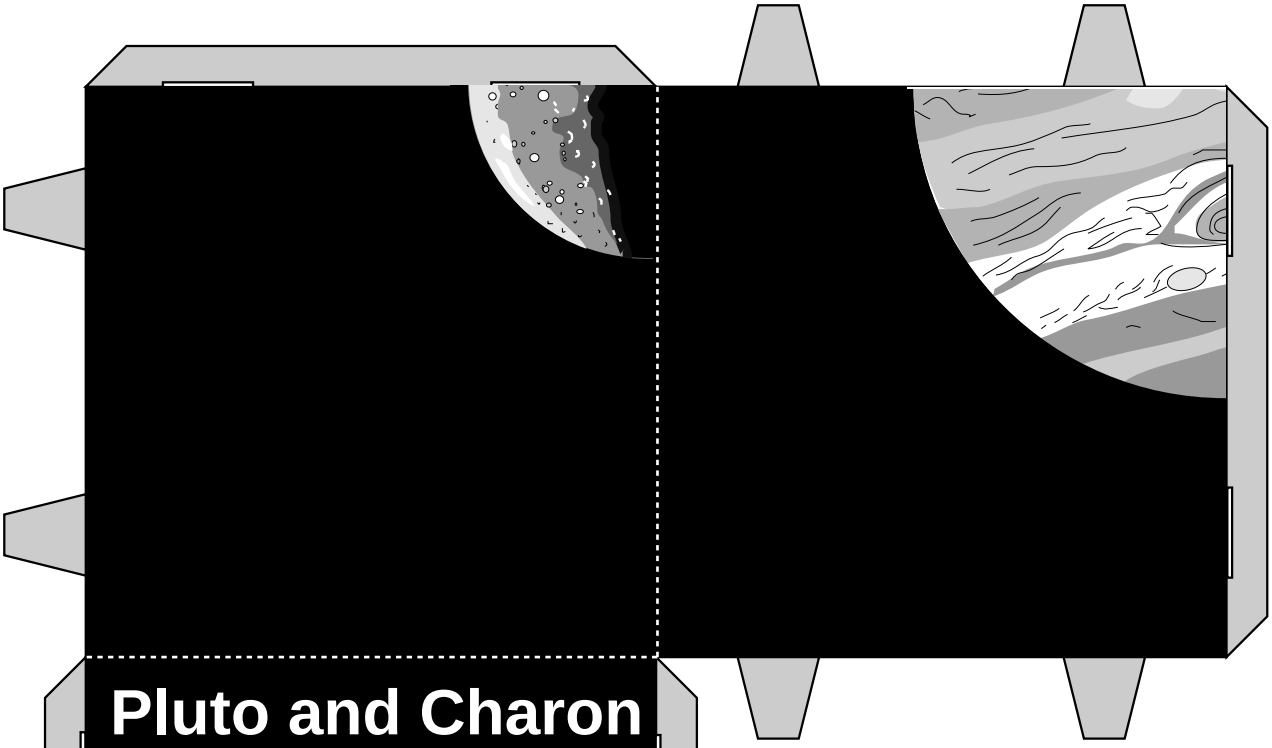
Distance from Sun: Ranging from millions to trillions of km
Diameter: 1-10 km
Composition: Dust and ice
Atmosphere: Water ice turns to gas when warmed by Sun

Mercury

Distance from Sun: 57,9,000,000 km
Diameter: 4,880 km
Composition: Rock and metal
Atmosphere: None
Moons: None

Jupiter

Distance from Sun: 778,300,000 km
Diameter: 143,200 km
Composition: Gas and rock
Atmosphere: Hydrogen and helium
Moons: 16
Rings: 1



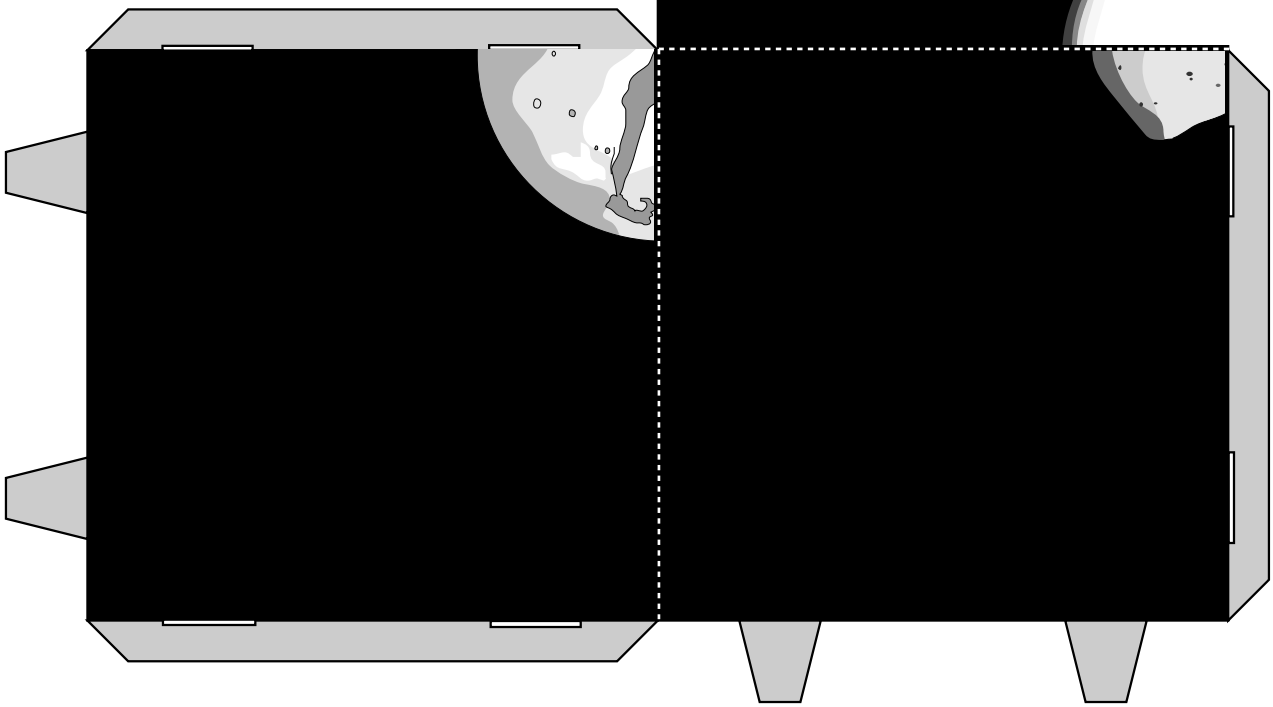
Pluto and Charon

Distance from Sun: 5,913,000,000 km
Diameter: ~ 2,330 km
Composition: Ice and rock
Atmosphere: Methane
Moons: 1

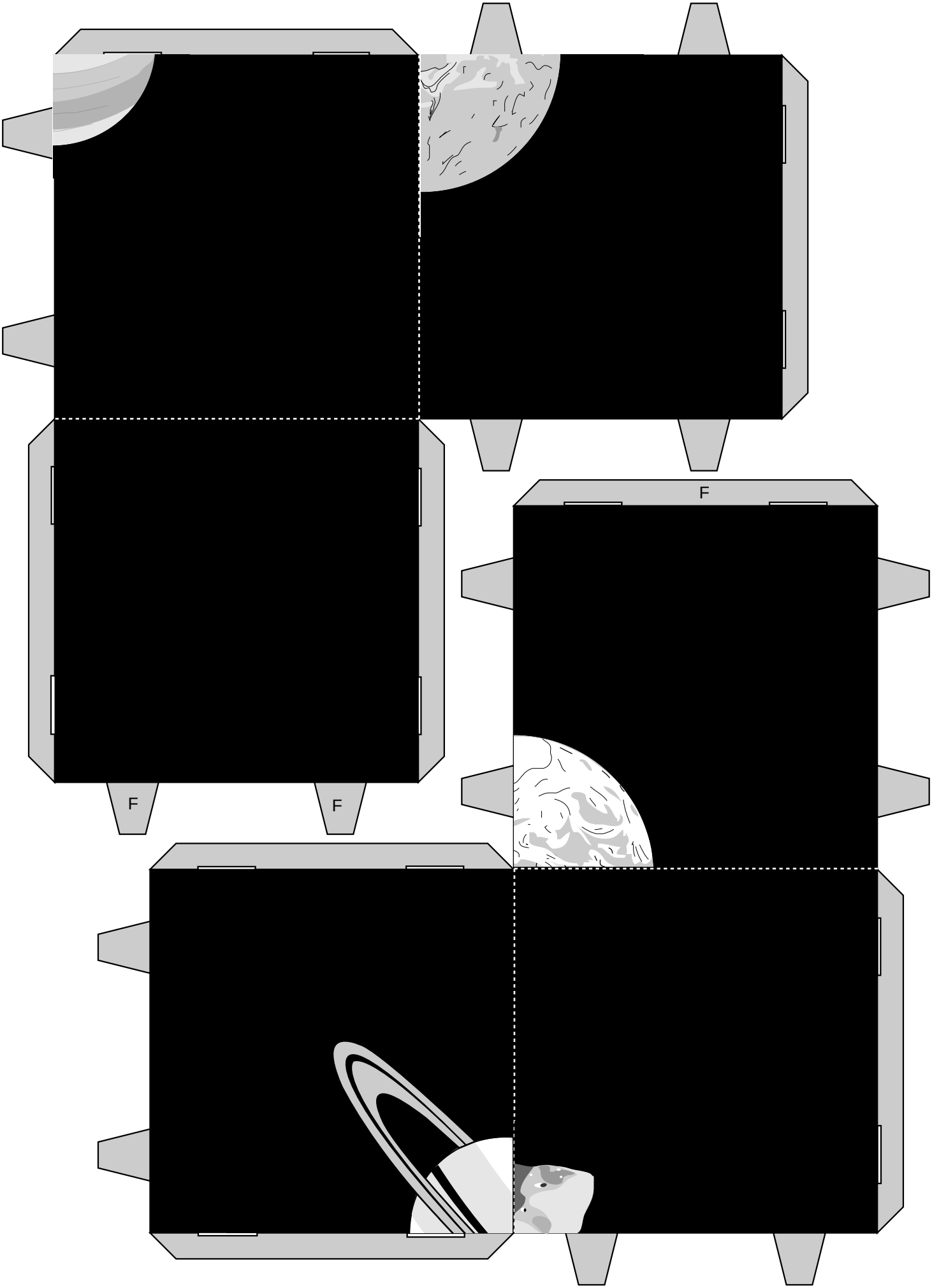
E

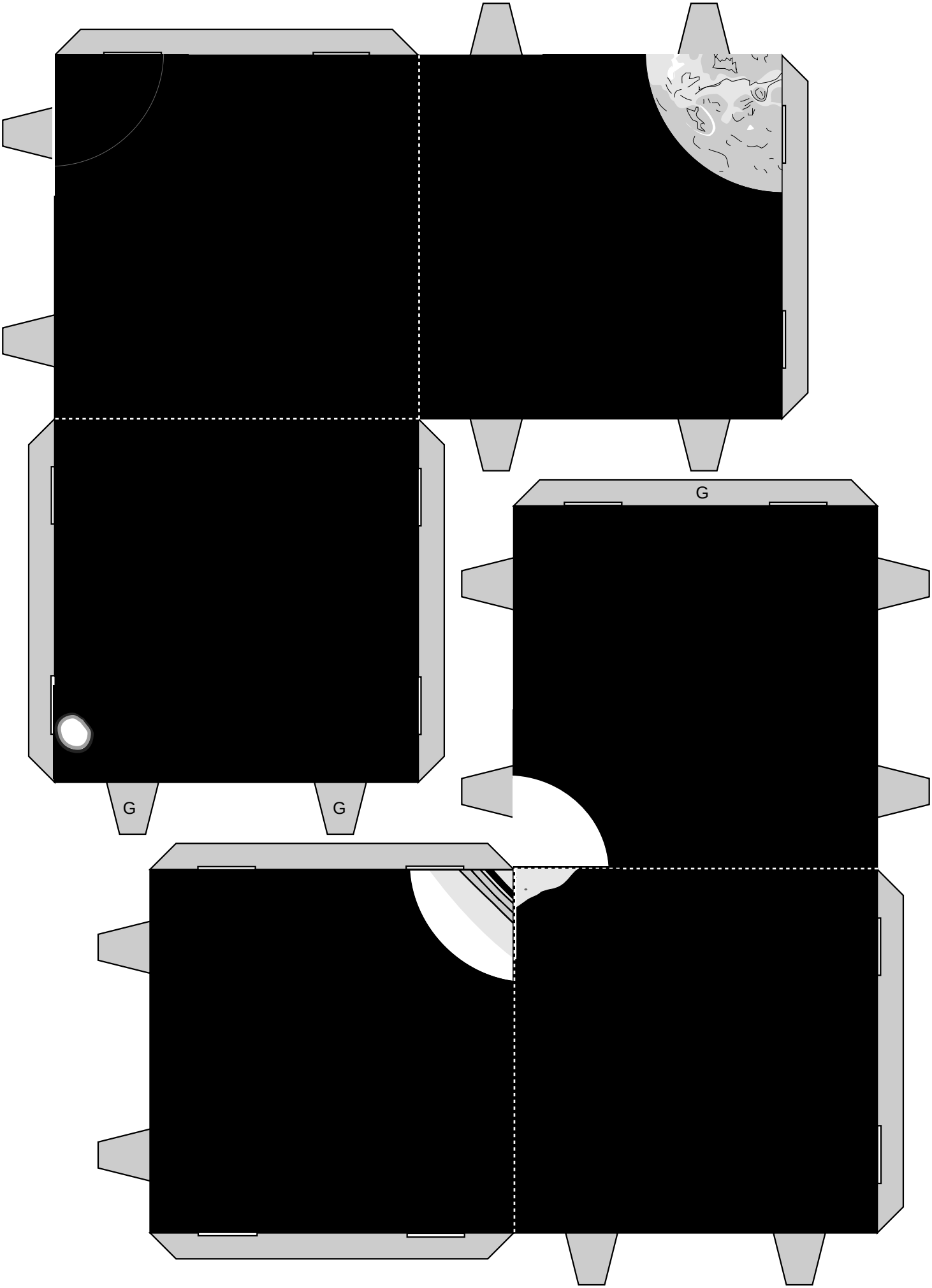
E

E



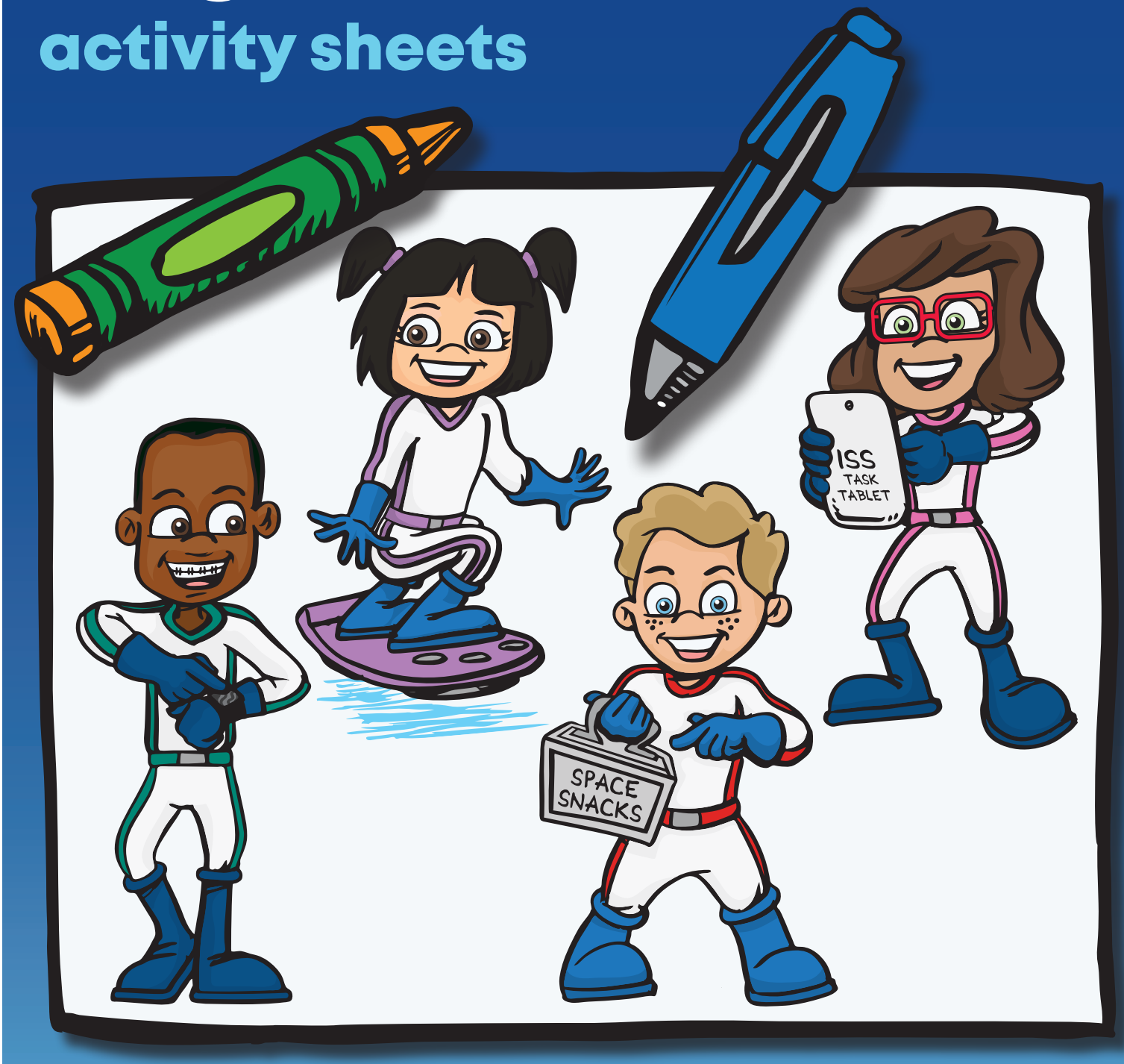
20


F
F
F


G
G
G

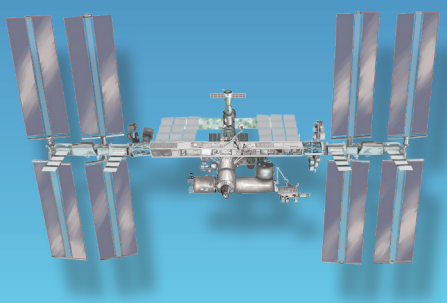
Aa-Zz
activity sheets

National Aeronautics and Space Administration



COMMERCIAL
CREW

COMMERCIAL CREW PROGRAM
NASA STEM



www.nasa.gov

SP-2018-10-1532-KSC

Aa

for astronaut

National Aeronautics and Space Administration

astronaut

A a A a

On Earth and in space, an **astronaut** needs air, food, and water to survive.

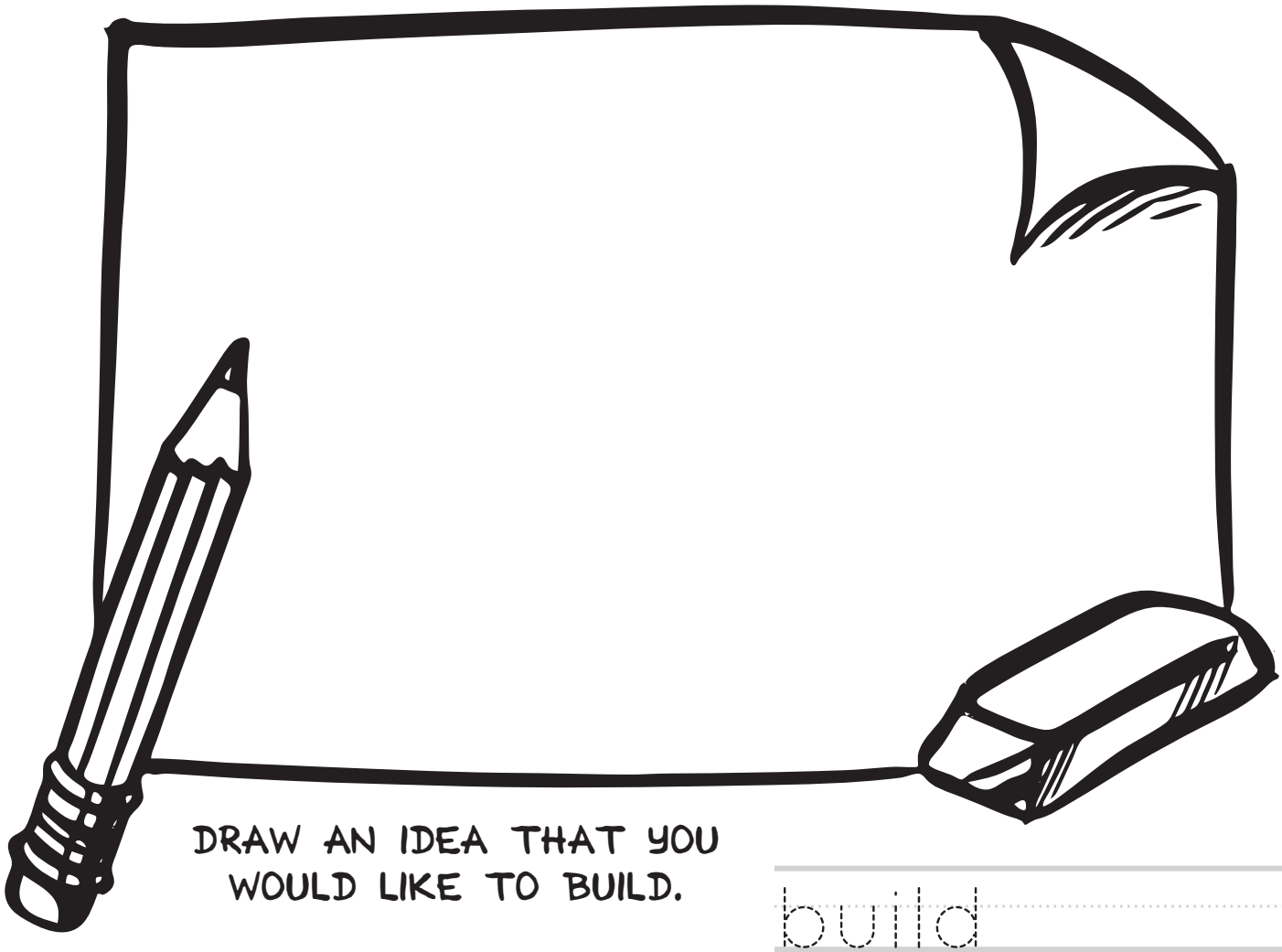
COMMERCIAL CREW

www.nasa.gov

SP-2018-12-1821-KSC

Bb
for build

National Aeronautics and Space Administration



DRAW AN IDEA THAT YOU WOULD LIKE TO BUILD.

build

B b B b

What type of rocket would you **build** to help NASA bring people to space?

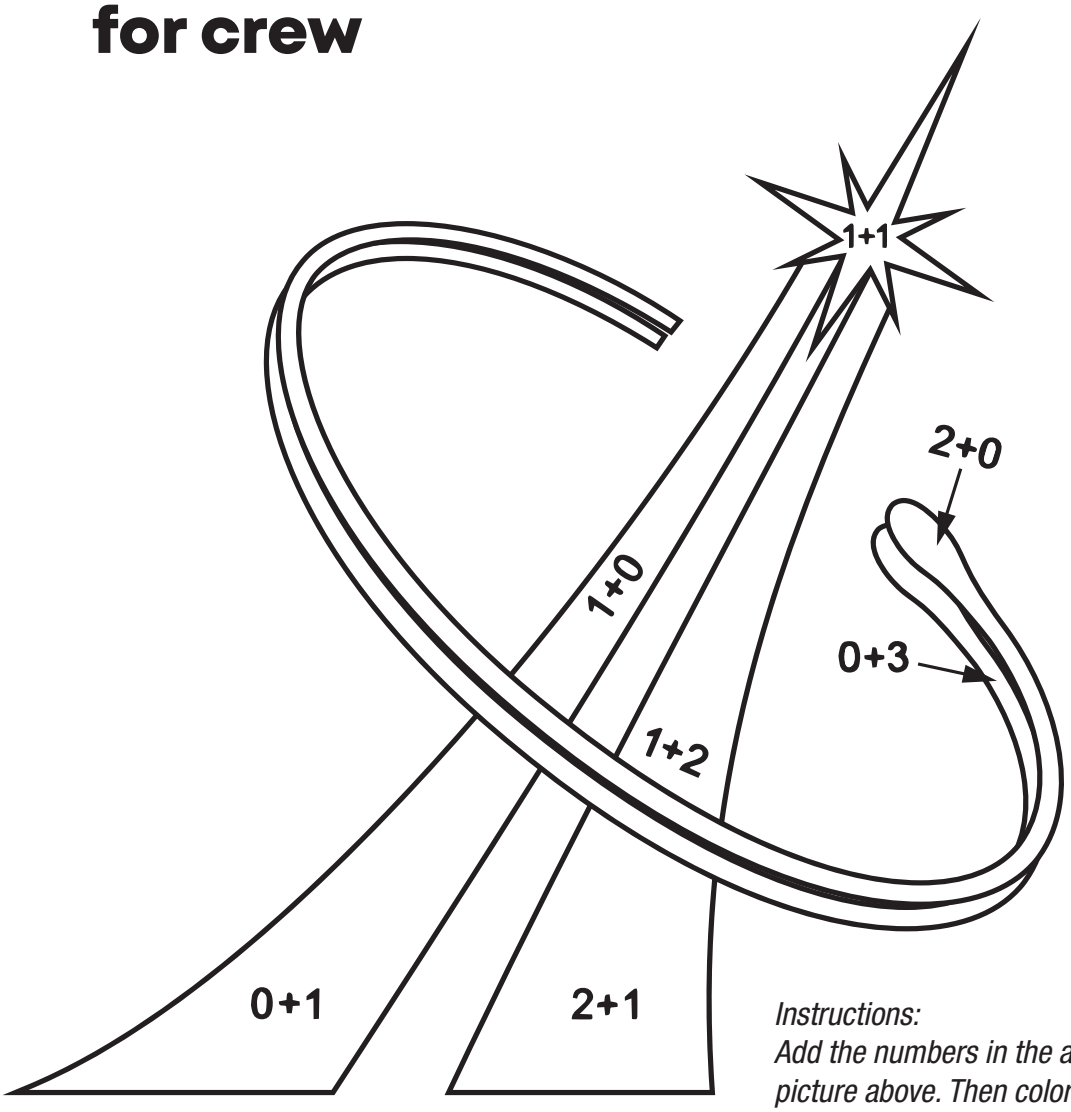
COMMERCIAL
CREW

www.nasa.gov

SP-2019-01-018-KSC

Cc
for crew

National Aeronautics and Space Administration



3 = blue

2 = yellow

1 = red

Instructions:
Add the numbers in the addition problems in the picture above. Then color each part of the picture using the color that matches the sum.

crew

C c C c

COMMERCIAL
CREW

Commercial **Crew** Program will launch astronauts to space on American rockets.

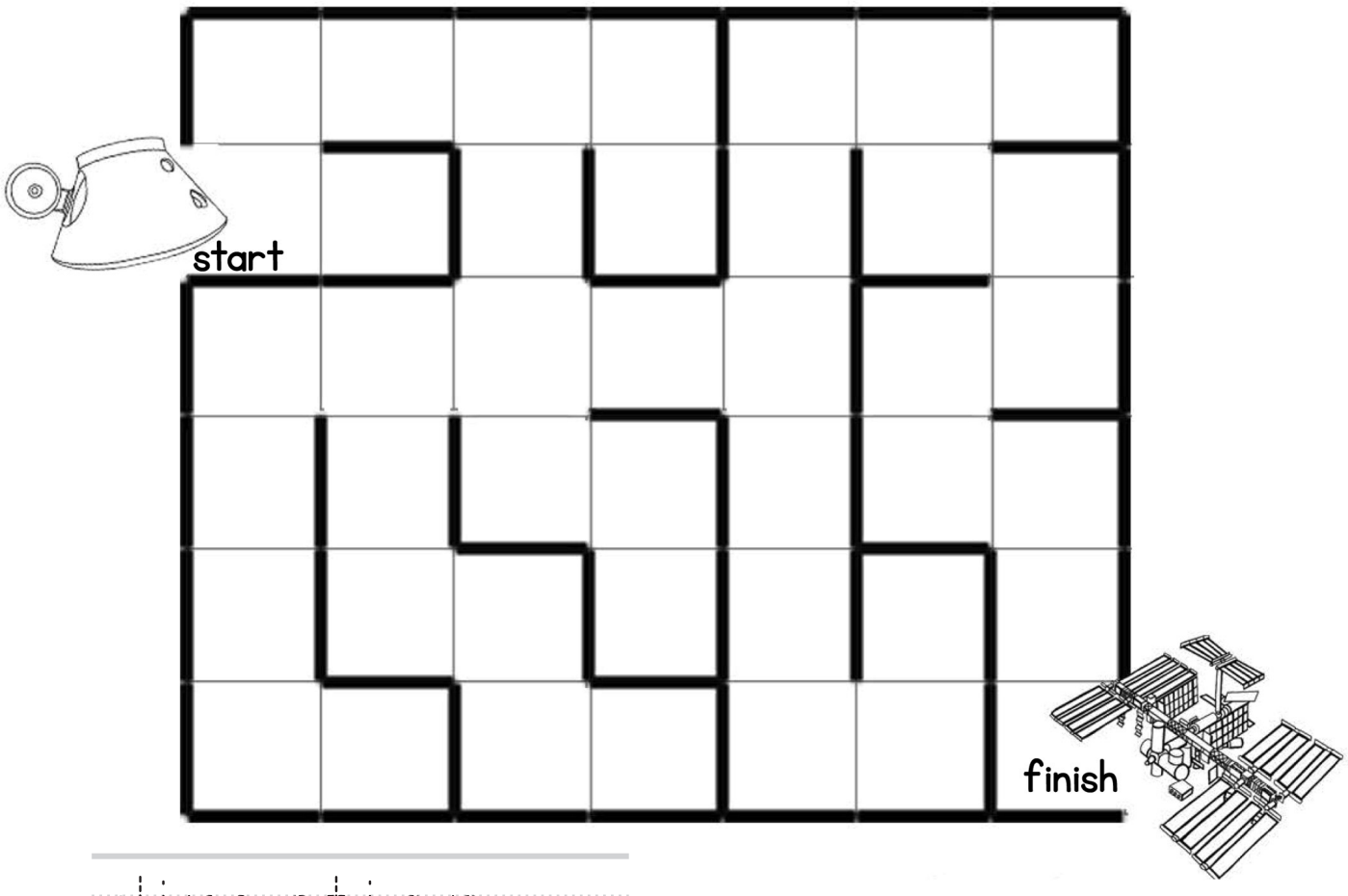
www.nasa.gov

SP-2019-02-258-KSC

Dd
for direction

National Aeronautics and Space Administration

Instructions:
As you travel the maze, try writing out the directions that the crew should take to successfully complete the journey.
(For example: move up two squares, then right two squares.)



direction

D d D d

COMMERCIAL
CREW

Help provide the right **direction** through the maze so the crew can arrive safely to the International Space Station.

www.nasa.gov

SP-2019-02-259-KSC

Ee

for exercise

National Aeronautics and Space Administration

exercise

E e E e

Exercise is important for health and fitness. What types of exercises do you think astronauts do in space?

COMMERCIAL CREW

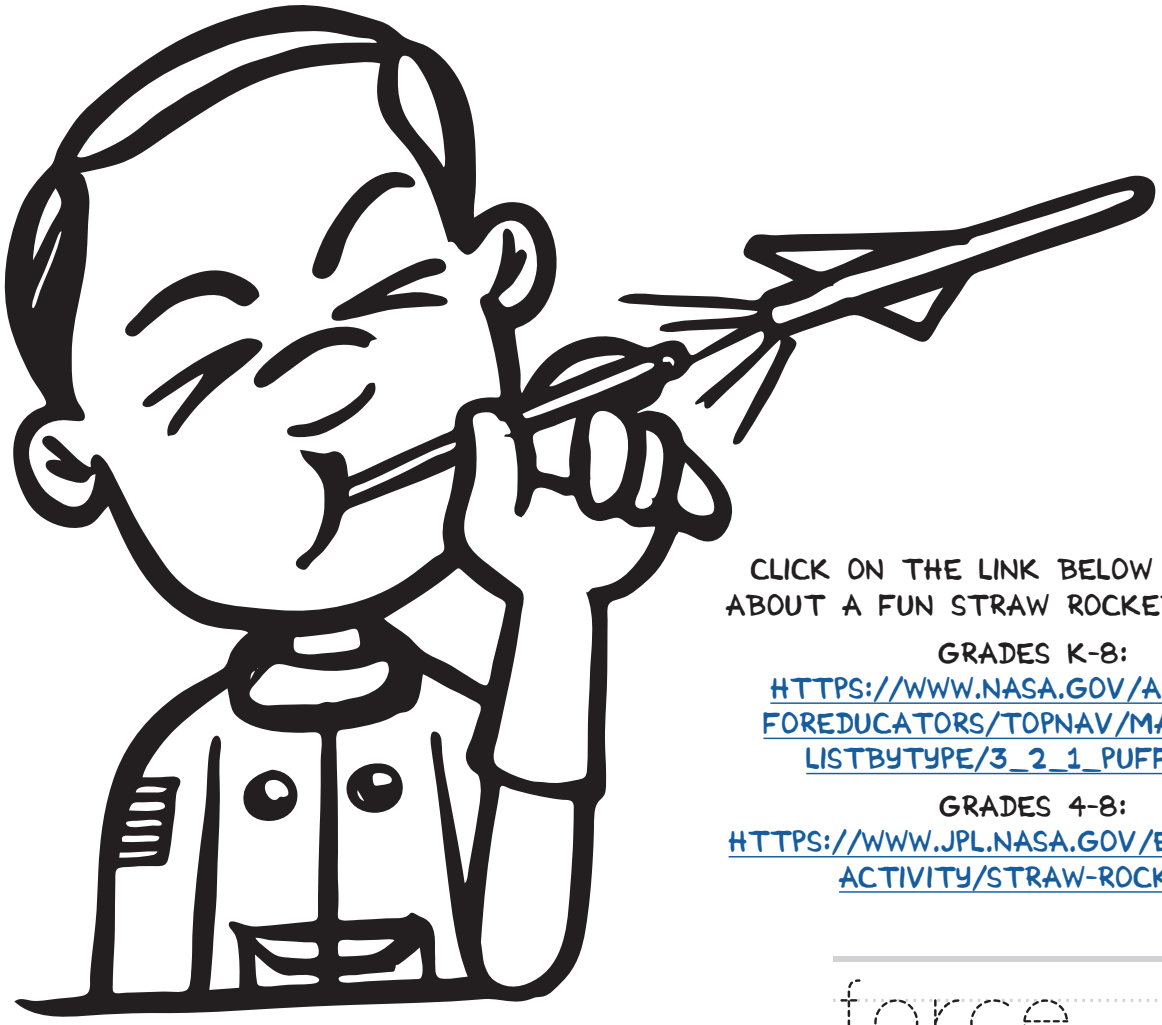
www.nasa.gov

SP-2019-01-019-KSC

Ff

for force

National Aeronautics and Space Administration



CLICK ON THE LINK BELOW TO LEARN ABOUT A FUN STRAW ROCKET ACTIVITY:

GRADES K-8:
HTTPS://WWW.NASA.GOV/AUDIENCE/FOREDUCATORS/TOPNAV/MATERIALS/LISTBYTYPE/3_2_1_PUFF.HTML

GRADES 4-8:
HTTPS://WWW.JPL.NASA.GOV/EDU/TEACH/ACTIVITY/STRAW-ROCKET/

force

F f F f

A push or pull is a **force** that makes things move. Experiment with **force** by building your own straw rocket.

COMMERCIAL CREW

www.nasa.gov

SP-2019-02-156-KSC

Gg

for gravity

National Aeronautics and Space Administration

gravity

G g G g

When you jump in the air, **gravity** is a force that pulls you back down toward Earth.

COMMERCIAL CREW

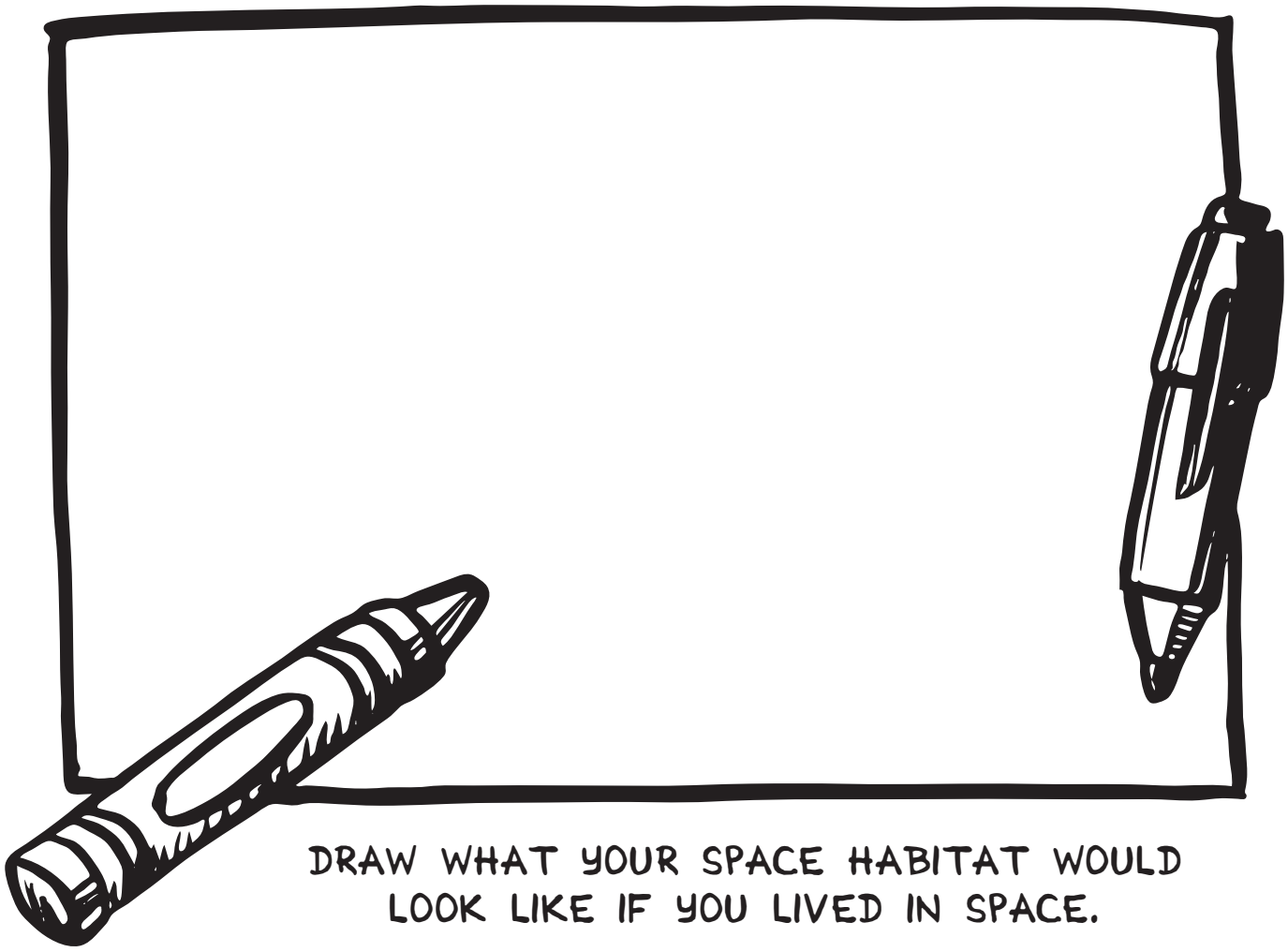
www.nasa.gov

SP-2019-01-021-KSC

Hh

for habitat

National Aeronautics and Space Administration



DRAW WHAT YOUR SPACE HABITAT WOULD LOOK LIKE IF YOU LIVED IN SPACE.

habitat

Hh Hh

A **habitat** is a place to live. What would you bring with you?

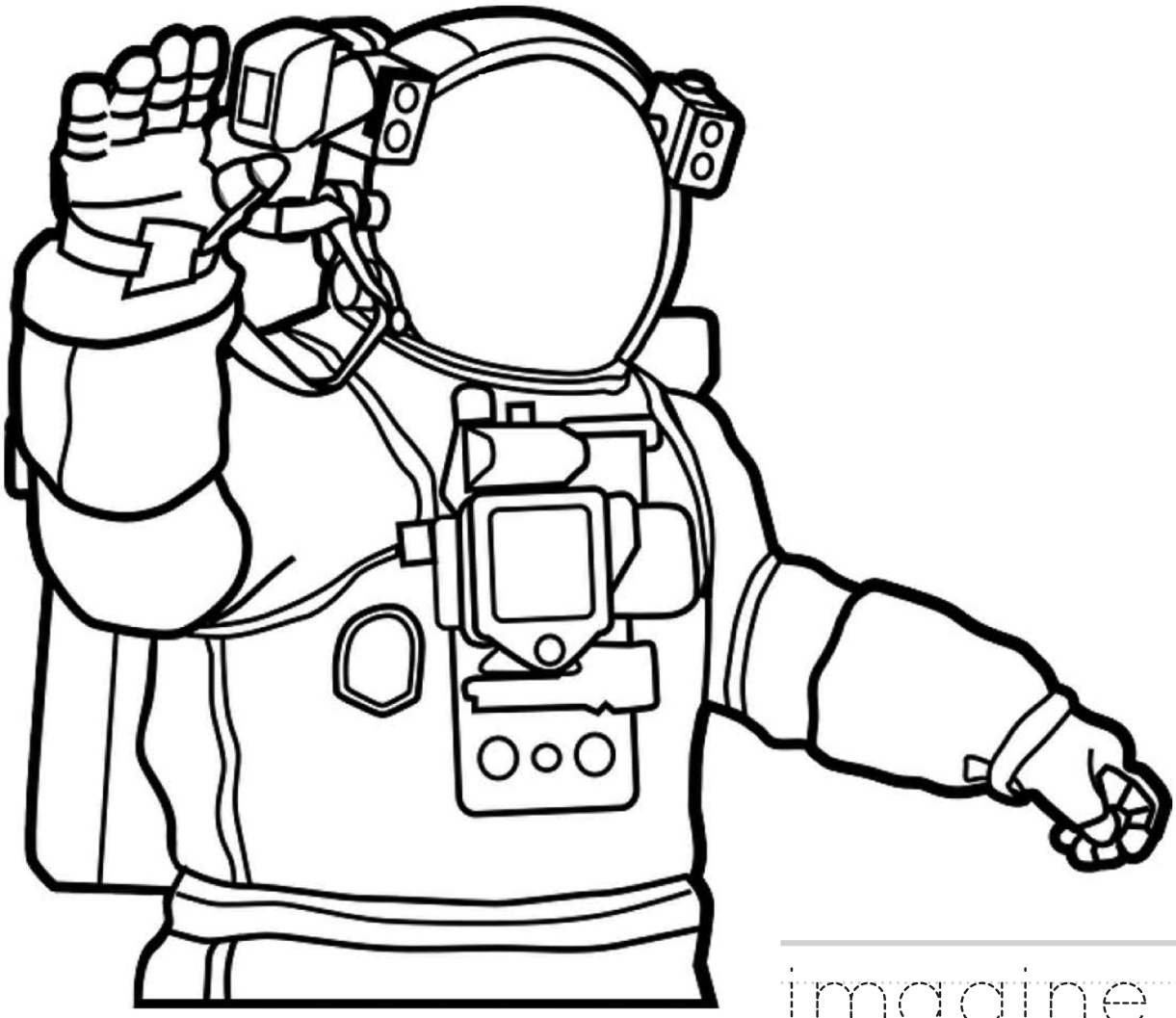
COMMERCIAL CREW

www.nasa.gov

SP-2019-02-284-KSC

Ii
for imagine

National Aeronautics and Space Administration



imagine

I i I i

Imagine yourself as an astronaut. Draw your own face in the helmet above to show how you look in a spacesuit.

COMMERCIAL
CREW

www.nasa.gov

SP-2019-02-260-KSC

Jj

for jobs

National Aeronautics and Space Administration

jobs

J j J j

Scientists, engineers, teachers, lawyers, nurses and even artists can get jobs at NASA.

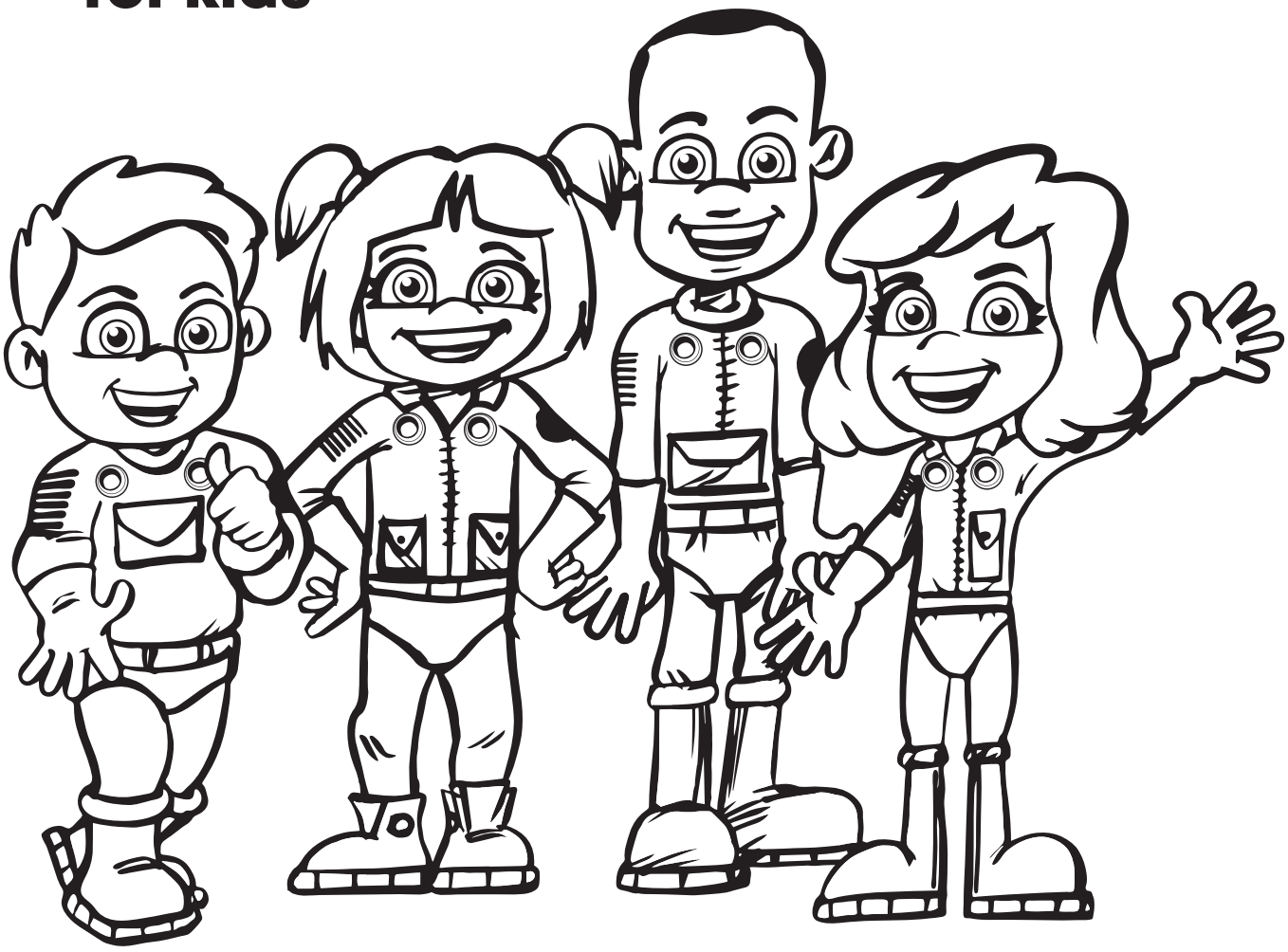
COMMERCIAL CREW

www.nasa.gov

SP-2019-01-022-KSC

Kk
for kids

National Aeronautics and Space Administration



kids

K k K k

COMMERCIAL
CREW

NASA Kids' Club is a website for **kids** to explore and learn more with NASA.
Join in on the fun, go to nasa.gov/kidsclub.

www.nasa.gov

SP-2019-02-064-KSC

Ll

for Launch

National Aeronautics and Space Administration

launch

L l L l

NASA does a countdown before **launch** to make sure the rocket and crew are ready to liftoff into the sky.

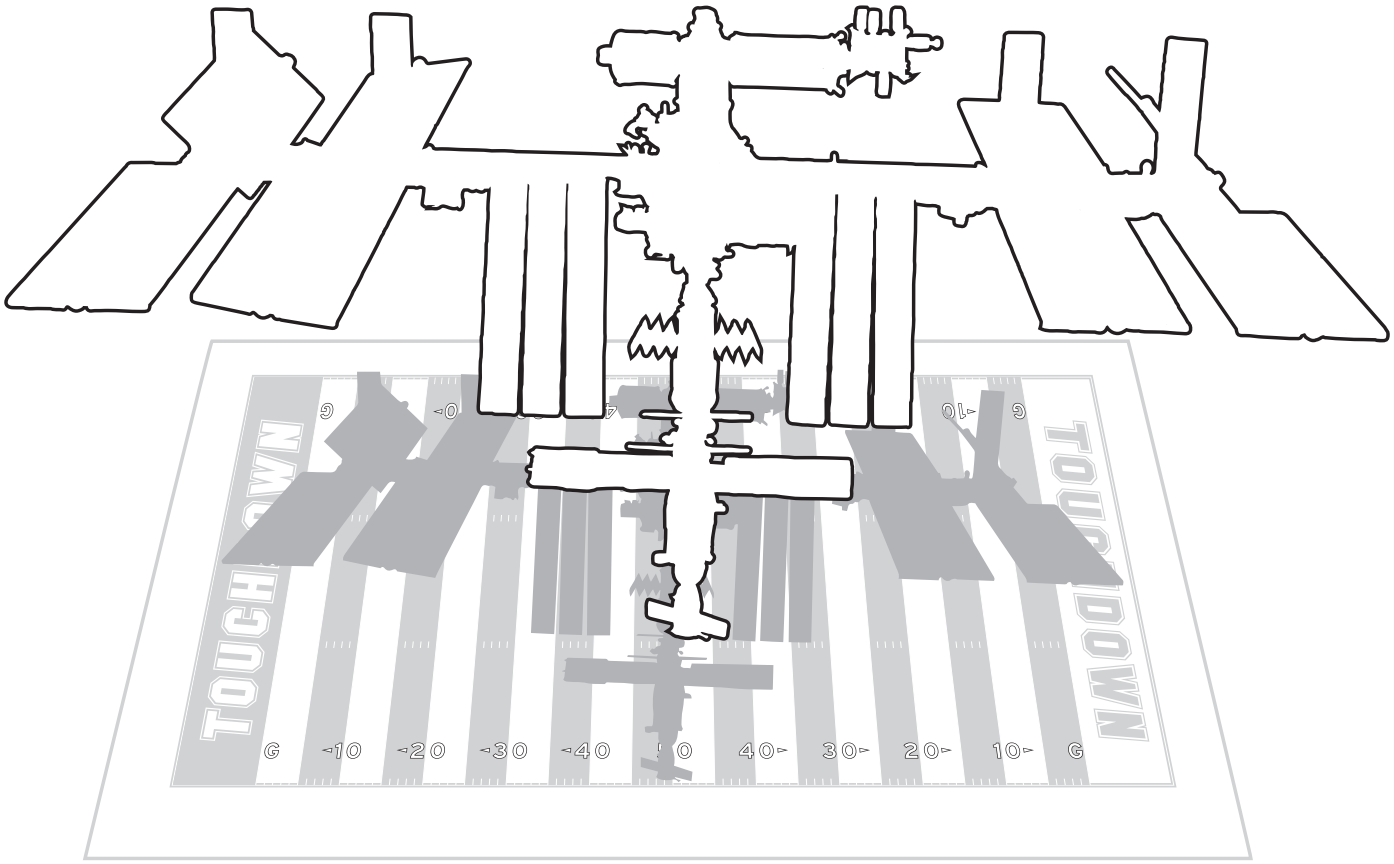
COMMERCIAL CREW

www.nasa.gov

SP-2018-10-1532-KSC

Mm
for measure

National Aeronautics and Space Administration



measure

Mm Mm

The International Space Station has a **measure** of 357 feet long, nearly the full length of an American football field.

COMMERCIAL CREW

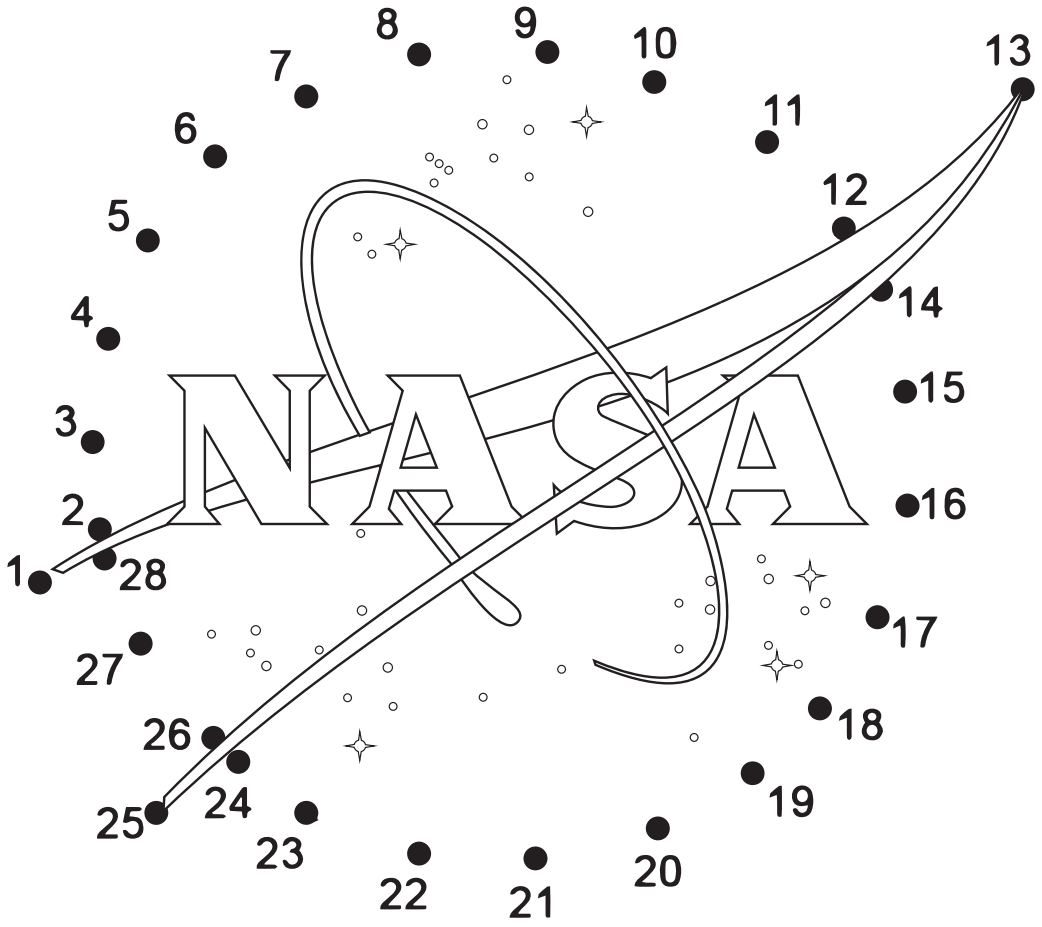
www.nasa.gov

SP-2019-02-285-KSC

Nn
for NASA

National Aeronautics and Space Administration

Instructions:
Connect-the-dots to complete the sphere then color it blue. Color the vector (wing shape) red, and color the stars, letters, and the spacecraft orbit circle that flies around them white.



NASA

N n N n

COMMERCIAL
CREW

Founded in 1958, the National Aeronautics and Space Administration is commonly known as **NASA**. The blue logo is sometimes called, “the meatball!”

www.nasa.gov

SP-2019-02-261-KSC

Oo

for observe

National Aeronautics and Space Administration

observe

O o O o

COMMERCIAL CREW

NASA uses many tools to **observe** Earth, our solar system and deep space.

Check out "Earth Observatory for Kids" at https://earthobservatory.nasa.gov/blogs/eokids

www.nasa.gov

SP-2019-02-066-KSC

Pp

for parachute

National Aeronautics and Space Administration

CLICK THE LINK TO TRY YOUR HAND AT A FUN PARACHUTE ACTIVITY:
HTTPS://WWW.JPL.NASA.GOV/EDU/TEACH/ACTIVITY/PARACHUTE-DESIGN/

parachute

P p P p

A **parachute** canopy is large and made of fabric that can trap lots of air to slow down the speed of a person or spacecraft.

COMMERCIAL CREW

www.nasa.gov

SP-2019-02-067-KSC

National Aeronautics and Space Administration

Qq

for questions

questions

Q q Q q

A scientist is a person who asks **questions** and follows steps to find answers. Name some question words.

COMMERCIAL CREW

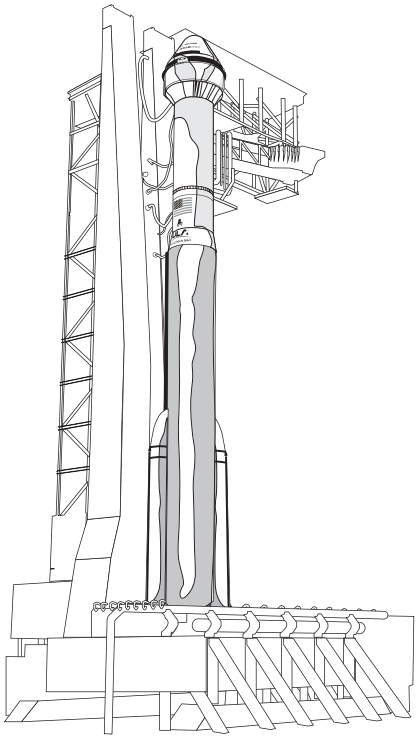
www.nasa.gov

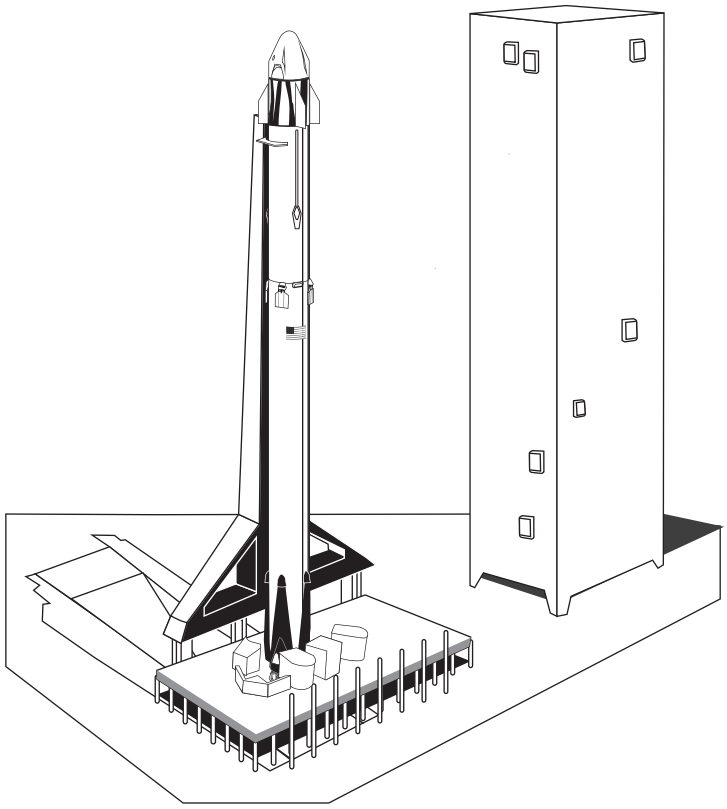
SP-2019-02-286-KSC

Rr

for rocket

National Aeronautics and Space Administration





rocket

R r R r

COMMERCIAL CREW

NASA uses different **rocket** types to transport people and supplies to the International Space Station.

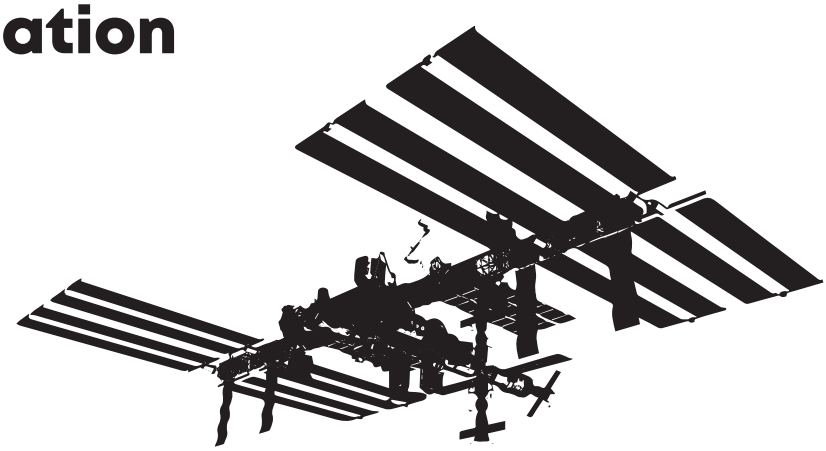
www.nasa.gov

SP-2019-02-262-KSC

Ss

National Aeronautics and Space Administration

for station



station

spotthestation.nasa.gov

S s S s

COMMERCIAL
CREW

www.nasa.gov

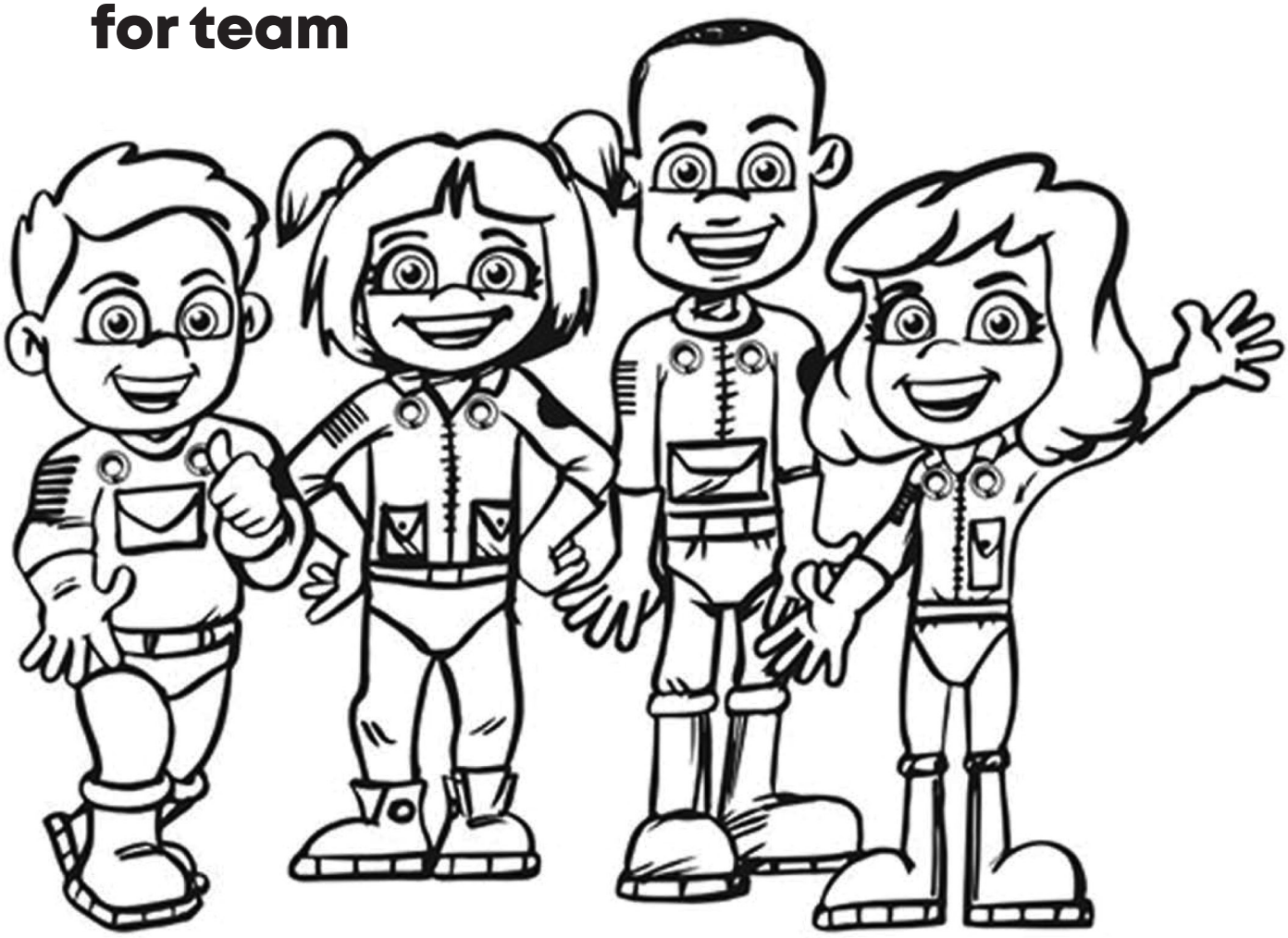
SP-2019-02-287-KSC

The International Space **Station** is an orbiting habitat where astronauts can live and work. Go to spotthestation.nasa.gov and view the **station** in your night sky.

Tt

for team

National Aeronautics and Space Administration



team

T t T t

COMMERCIAL
CREW

The NASA **team** designs and builds spacecraft, plans missions, launches rockets, and recovers space capsules after they land back on Earth.

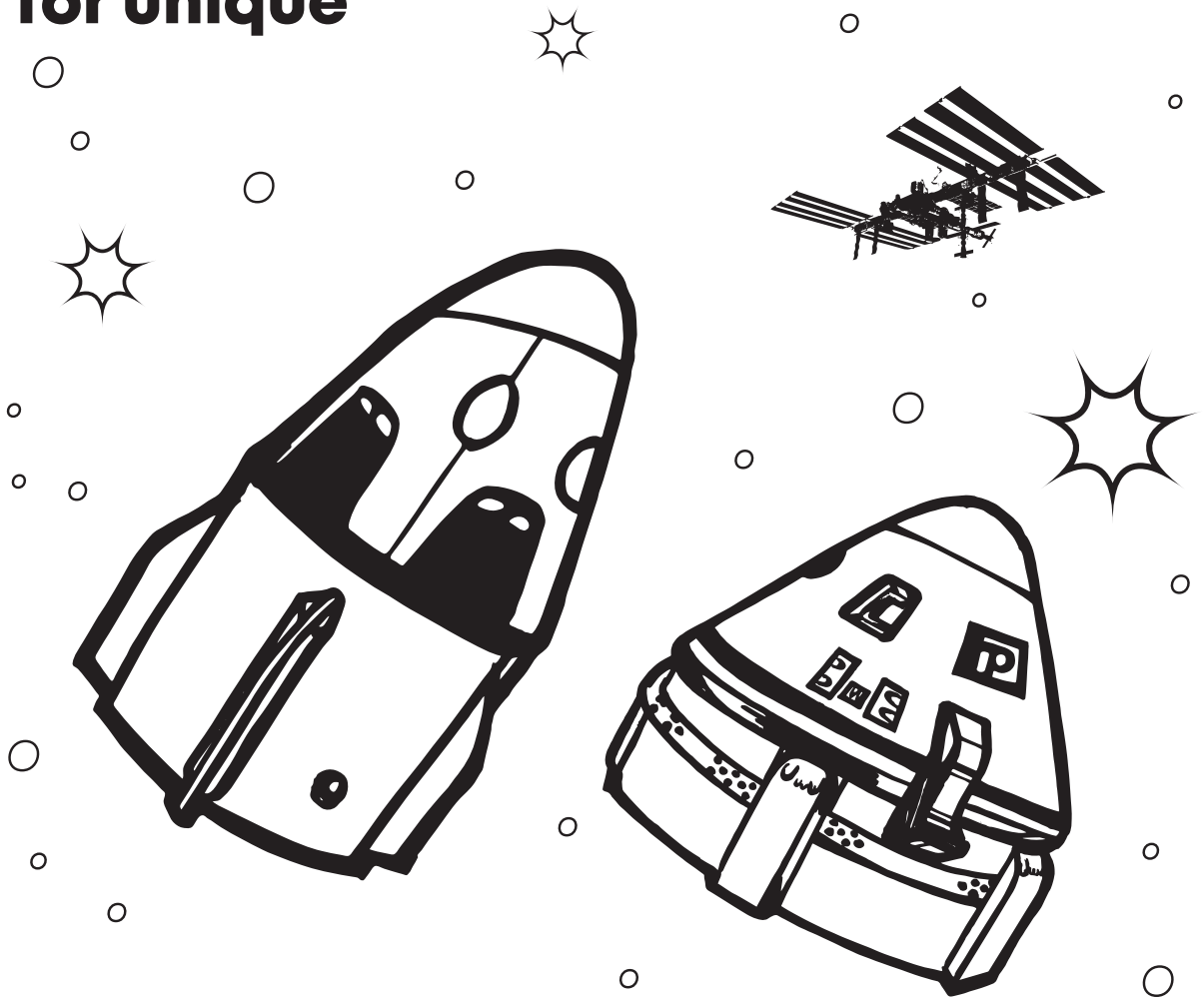
www.nasa.gov

SP-2019-02-263-KSC

Uu

National Aeronautics and Space Administration

for unique



unique

U u U u

COMMERCIAL CREW

Engineers at Boeing and SpaceX imagined and designed **unique** crew vehicles that can transport astronauts to the International Space Station.

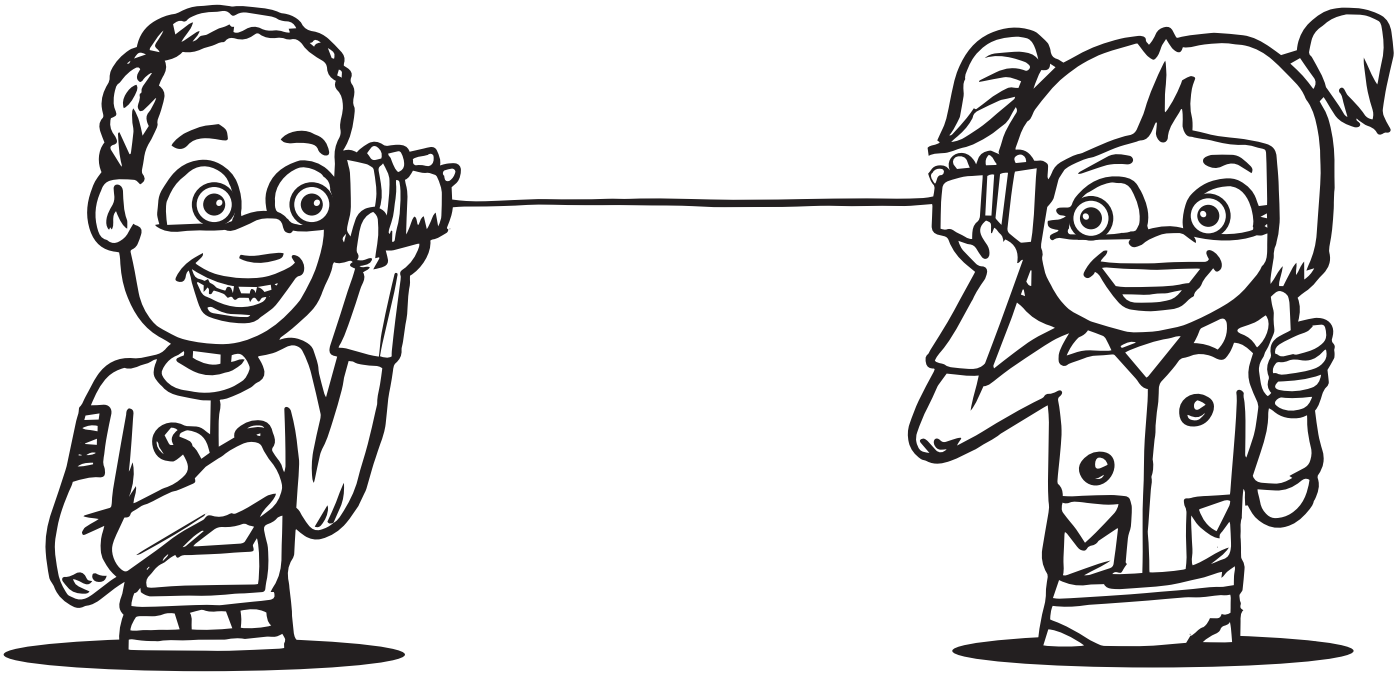
www.nasa.gov

SP-2019-02-288-KSC

Vv

for vibration

National Aeronautics and
Space Administration



Hey kids, try your hand at the Astro-Not-Yets: Sound on a String Activity:

www.nasa.gov/education.ccp

vibration

V v V v

Sound is a **vibration** that travels through the air and can be heard when it reaches a person's or animal's ear.

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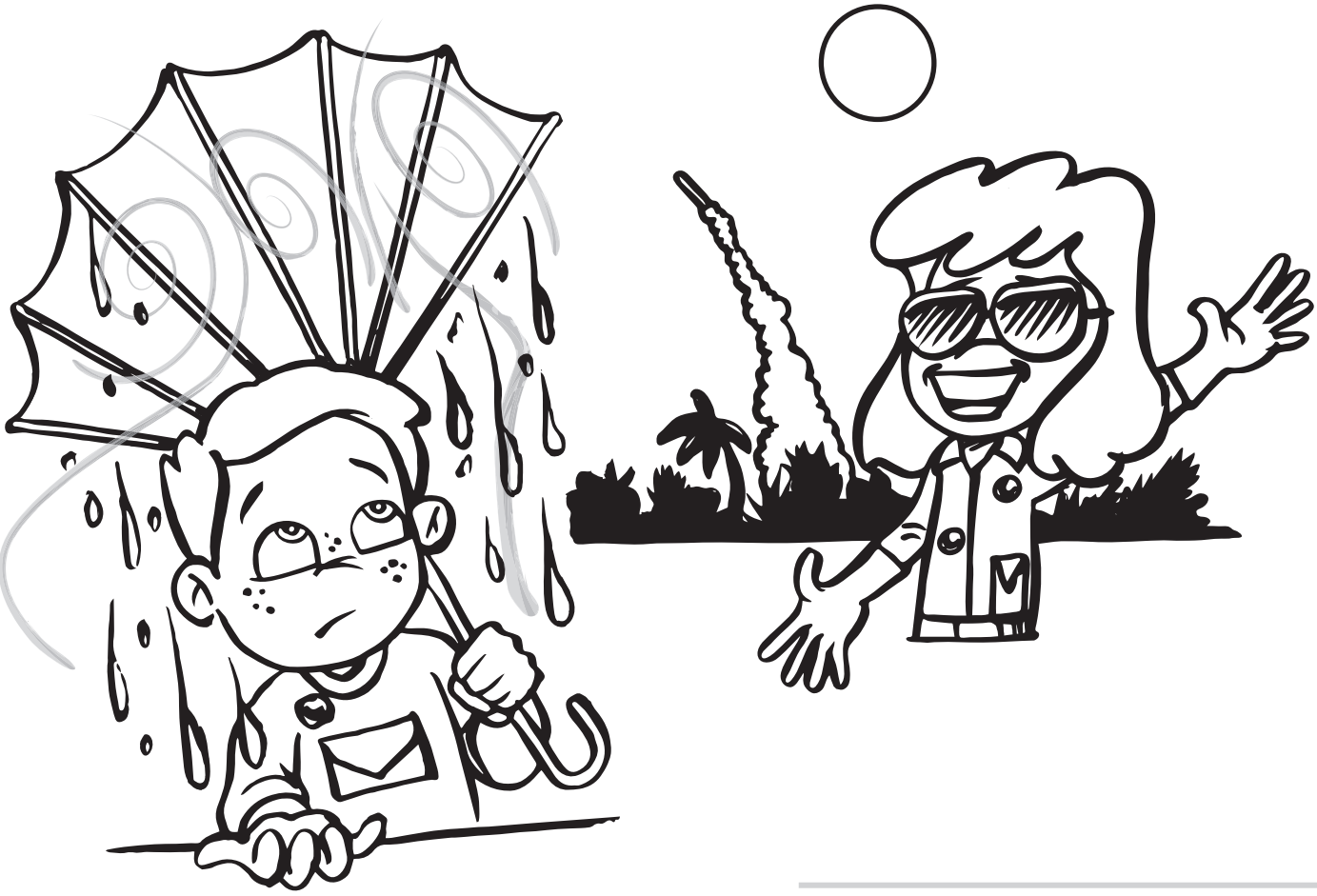
www.nasa.gov

SP-2019-02-289-KSC

Ww

for weather

National Aeronautics and Space Administration



weather

Ww Ww

NASA monitors the **weather** before every rocket launch. What's the weather like in your neighborhood? Is it GO for launch?

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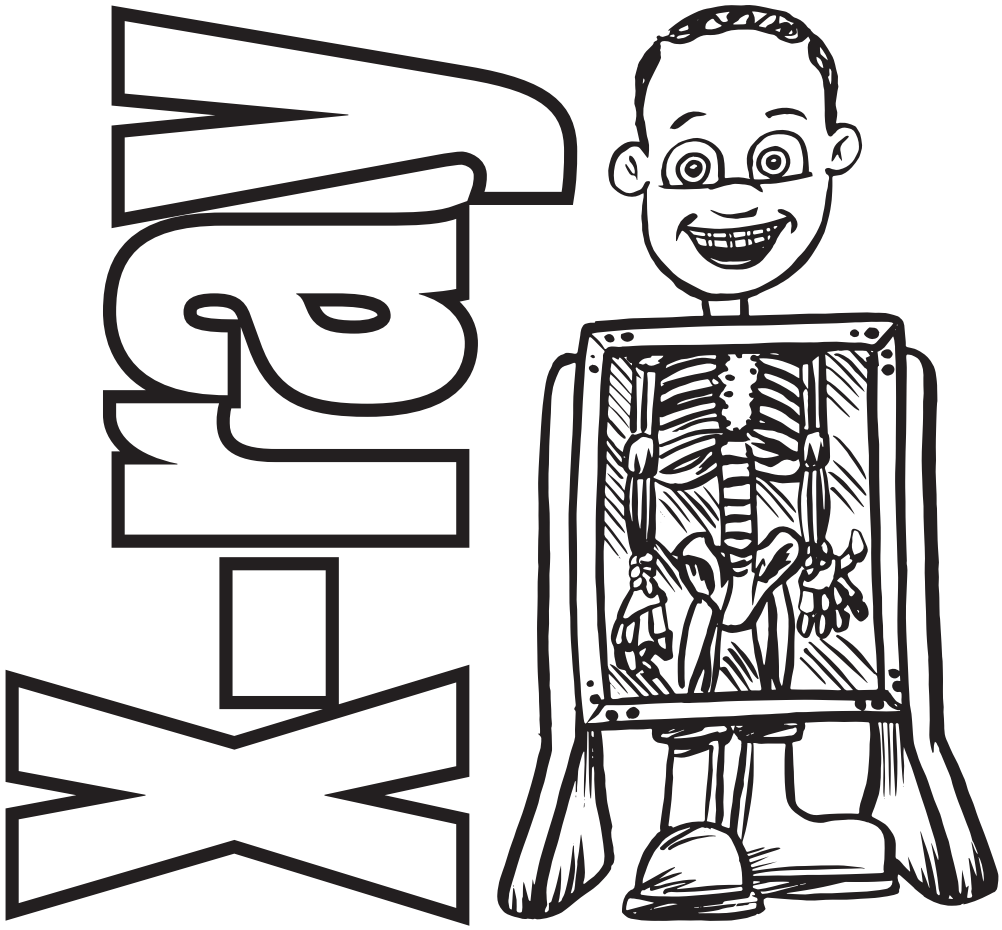
SP-2019-02-290-KSC

Xx

National Aeronautics and Space Administration

for X-ray



X-ray

Xx Xx

An **X-ray** can be used to examine bones on Earth and in space. Astronauts must maintain a healthy diet and exercise because bones can weaken in space.

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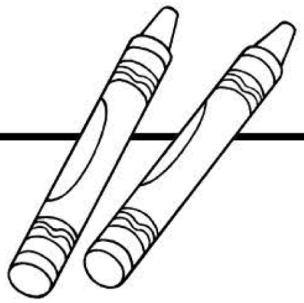
SP-2019-02-291-KSC

Yy

for you

National Aeronautics and Space Administration



you

Yy Yy

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NASA needs **you**! Engineers design and build things to solve problems on Earth and in space. Think of a problem **you** want to solve and draw yourself as an engineer!

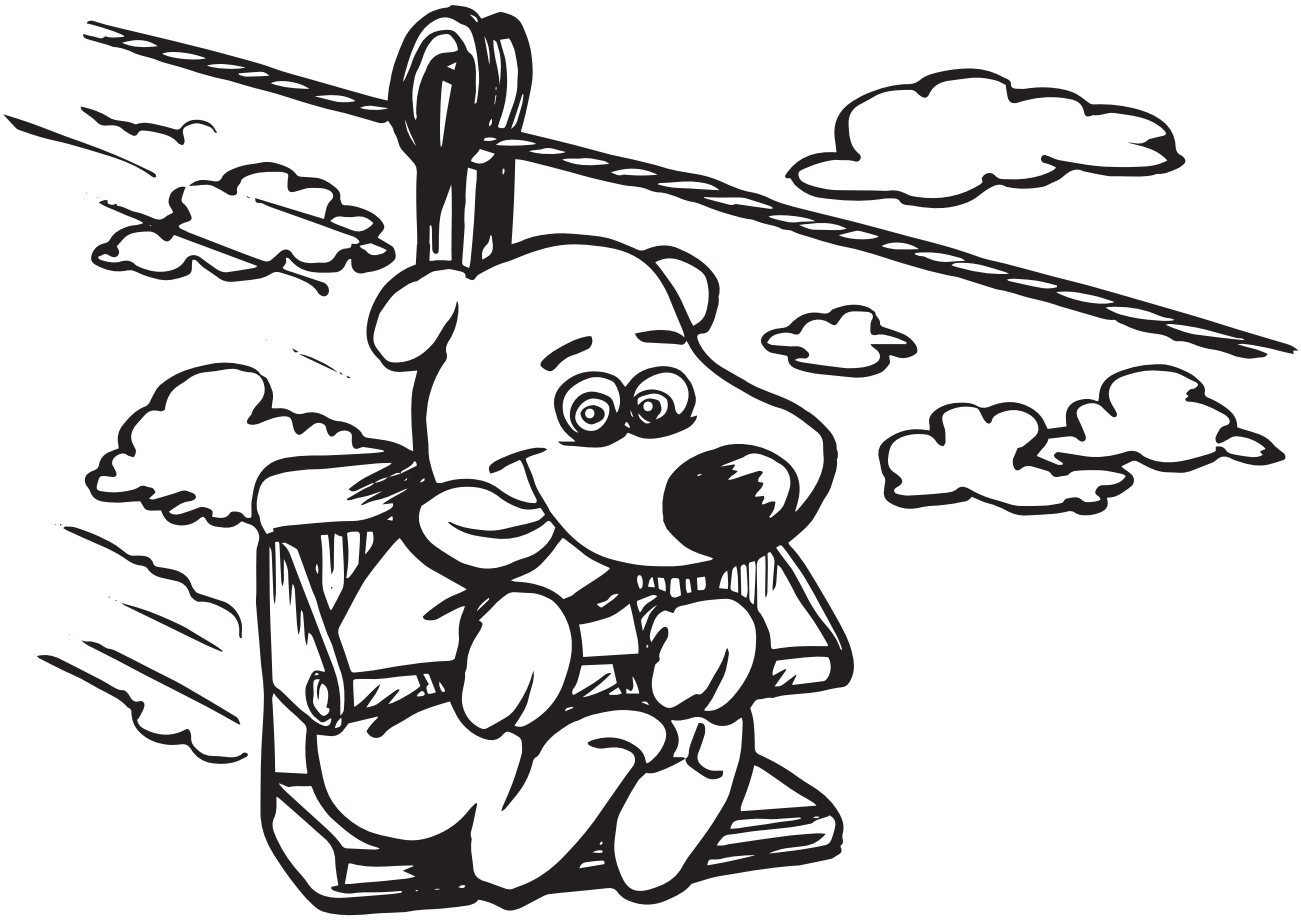
www.nasa.gov

SP-2019-02-292-KSC

Zz

for Zipline

National Aeronautics and
Space Administration



Zipline

Z z Z z

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In the event of an emergency, astronauts can use an escape system, that works like a **zipline**, to quickly exit the launch pad.

www.nasa.gov

SP-2019-03-324-KSC

Activity 6: Using paper cut outs (rounds), make different layers of the Earth. Largest round will be the outer most layer and the smallest will be the core.

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