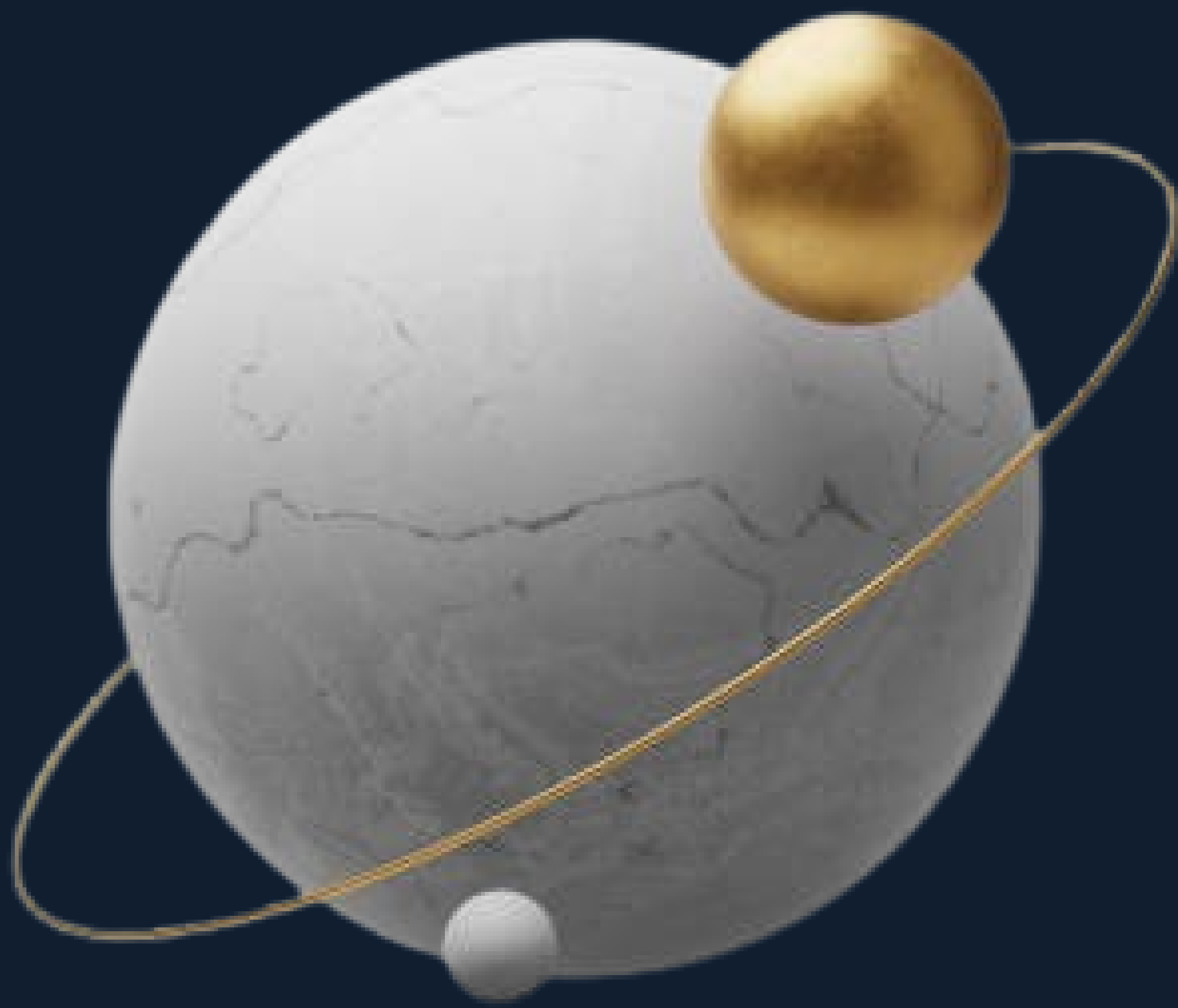


A decorative header featuring various celestial bodies: a ringed planet with yellow and orange stripes, a reddish planet with brown spots, a green planet with white patterns, and several small yellow and cyan stars scattered across a dark blue background.

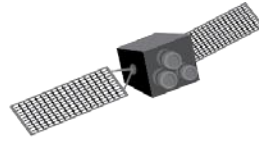
# ***SPACE TECH FUN PAD***



**INDIA SPACE WEEK**

# NASA In Your World

NASA develops helpful tools and systems that make it possible for us to learn more about our planet to outer space, but many of NASA's technologies can be found improving your everyday life. Next time you brush your teeth, go skiing, drive on the road, or check the weather forecast, you're using a bit of NASA space technology.



# Spacecraft Search

Find the names of these NASA Spacecraft

QWERTYUIOASDFGHJKL  
ERTYUIOASDFGHJKL  
WSXEDCRFVJNBVMZ  
TGVYHBUJNEDSZA  
P  
ORLIONREWSDFGHJKL  
WERTYUIOASDFGHJKL  
QWERTYUIOASDFGHJKL  
ASDFGHIJKL  
IKJMNOPQRSTUVWXYZ  
WERTYUIOASDFGHJKL  
WERTYUIOASDFGHJKL  
EDCRFGHJKL  
WERTYUIOASDFGHJKL  
SDGASDFGHJKL  
WERTYUIOASDFGHJKL  
MATERIALESCIENCE  
QAZWXSDFGHJKL  
PNBYEUIOASDFGHJKL  
POIUYTREWQASDFGHJKL  
NHGBVCKJHGFDSAZ  
TGBEUIOASDFGHJKL  
OLMNOPIJKL  
LGBYHUIOASDFGHJKL  
LSDFGHJKL  
ODFGHJKL  
P  
ASDFGHIJKL  
WSPACESHUTTLE

APOLLO

KEPLER

PATHFINDER

CASSINI

MARINER

PIONEER

DAWN

MESSENGER

SPACE SHUTTLE

GEMINI

NEW HORIZONS

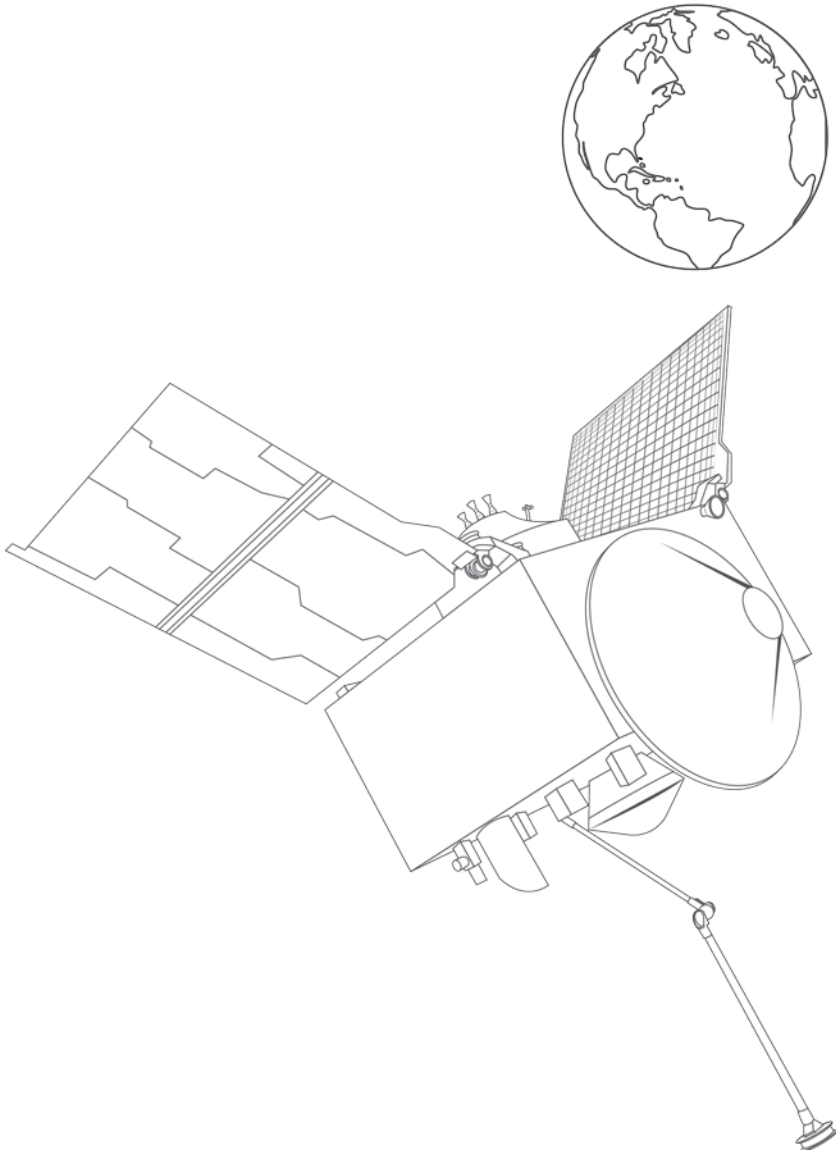
VIKING

JUNO

ORION

VOYAGER

# OSIRIS-REX



OSIRIS-REX is an uncrewed spacecraft that will travel to the asteroid Bennu and bring samples of it back to Earth. It will use cameras, lasers, spectrometers, and other instruments for viewing different wavelengths of light, to help us learn more about how planets formed and how life began.

# Computer Whiz

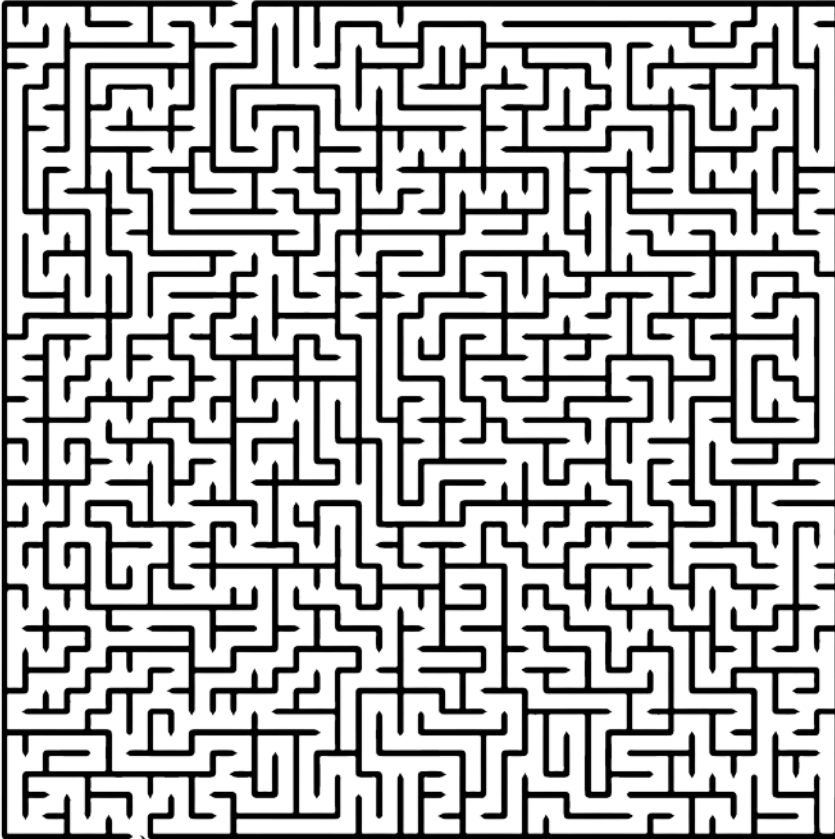
Find and circle these shapes



# Lead JUNO



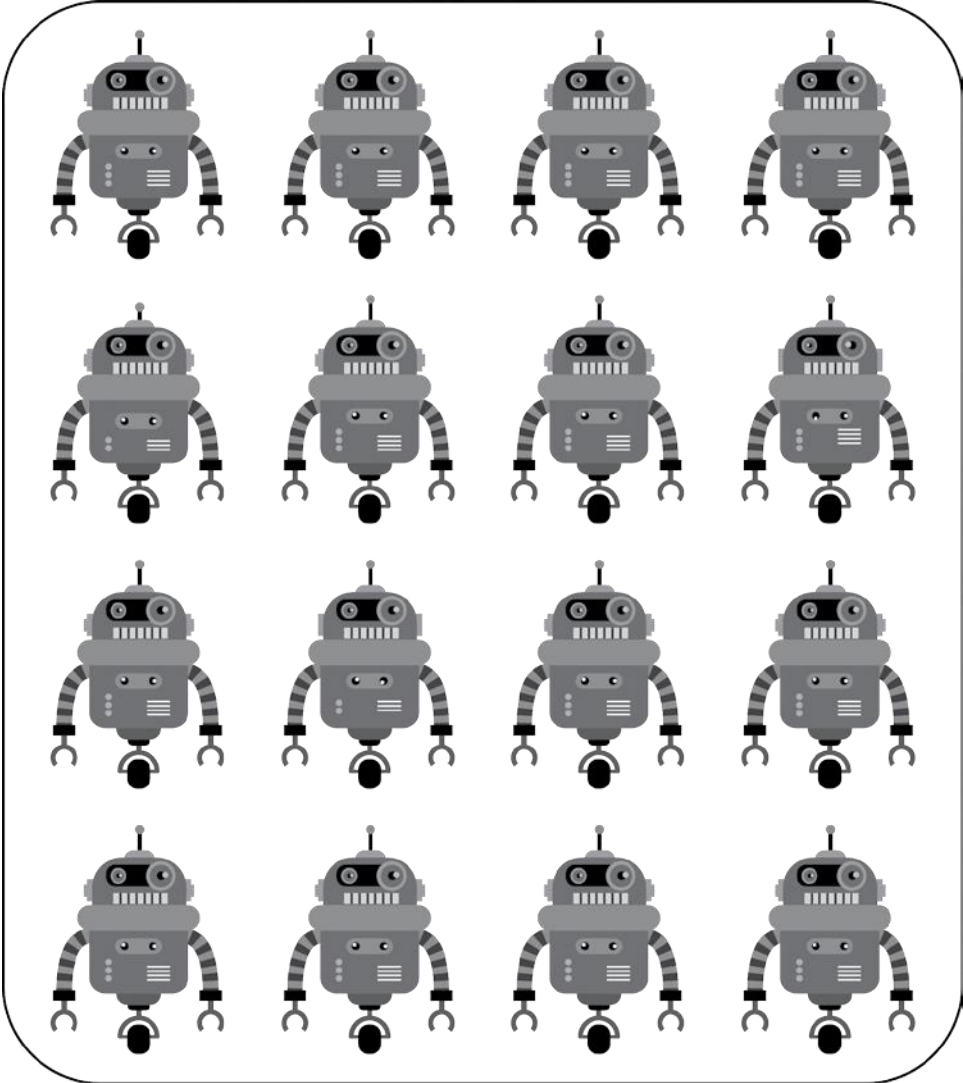
◆ Safely through the dangerous radiation belts of Jupiter!



◆ Juno is a space probe that will orbit and study Jupiter. This will tell us important information about how our solar system formed. Juno's sensitive electronics must be protected from Jupiter's radiation by a titanium container.

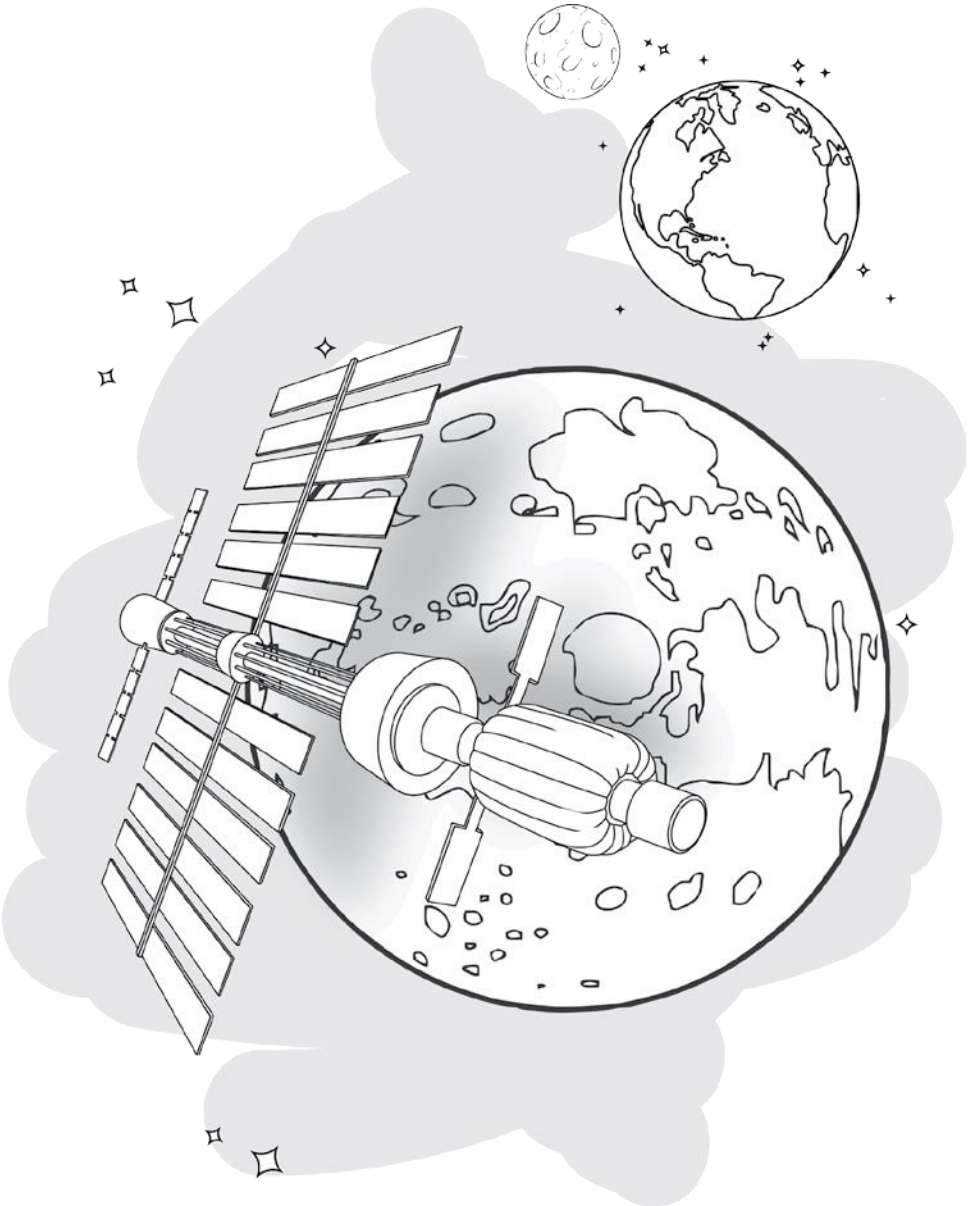
# OUT of PLACE

Circle the robot that is different from the others.



# Solar Electric Propulsion

Coloring the Worlds



Solar electric propulsion (SEP) is a project to create technology that can push spacecraft to far-off destinations. SEP would collect the Sun's energy through solar panels so that less fuel is required for the spacecraft and it can reach much more distant worlds.



# Planetary Explorer

Fill in the blanks with words of your choice to create a story.

As a newly trained \_\_\_\_\_ for NASA, you get  
occupation

travel in the \_\_\_\_\_ spacecraft to visit \_\_\_\_\_ !  
constellation planet

The mission will take \_\_\_\_\_ years, so bring \_\_\_\_\_  
number book/movie

to pass the time. When you get to \_\_\_\_\_ , you will  
same planet

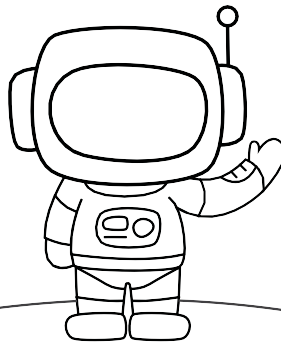
live in a \_\_\_\_\_ wear a special \_\_\_\_\_ that will  
building clothing

help you survive the \_\_\_\_\_ environment. You will  
adjective

take samples of \_\_\_\_\_ so scientists on Earth can  
noun

\_\_\_\_\_ them. The best part is that you will be the  
verb

first person to \_\_\_\_\_ on \_\_\_\_\_ !  
verb same planet



# How High Can You Go?

How many words can you make from the letters in

## TECHNOLOGY?

Write your words here: \_\_\_\_\_

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1–9 words: Flying high in the atmosphere

10–19 words: Low-Earth orbit

20+ words: The Moon and beyond!

# DRAW NASA

Draw a picture to represent what each letter in NASA stands for.

**N**ational



**A**eronautics



and

**S**pace



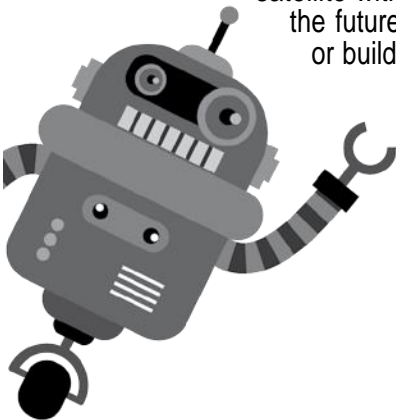
**A**ministration



# NASA's Restore-L

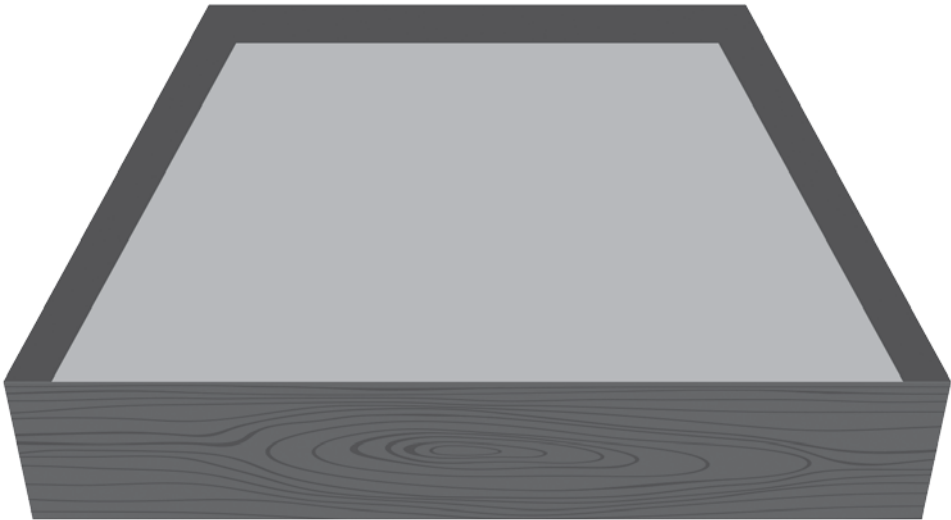
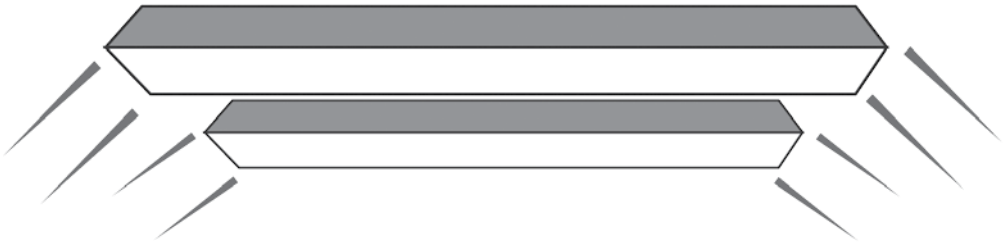


Restore-L is a mission to use robotic spacecraft to refuel a satellite that is already in space. The spacecraft must know how to grasp the satellite with its robotic arm without humans controlling it. In the future, similar robotics could help fix damaged satellites or build new ones.



# VEGGIES

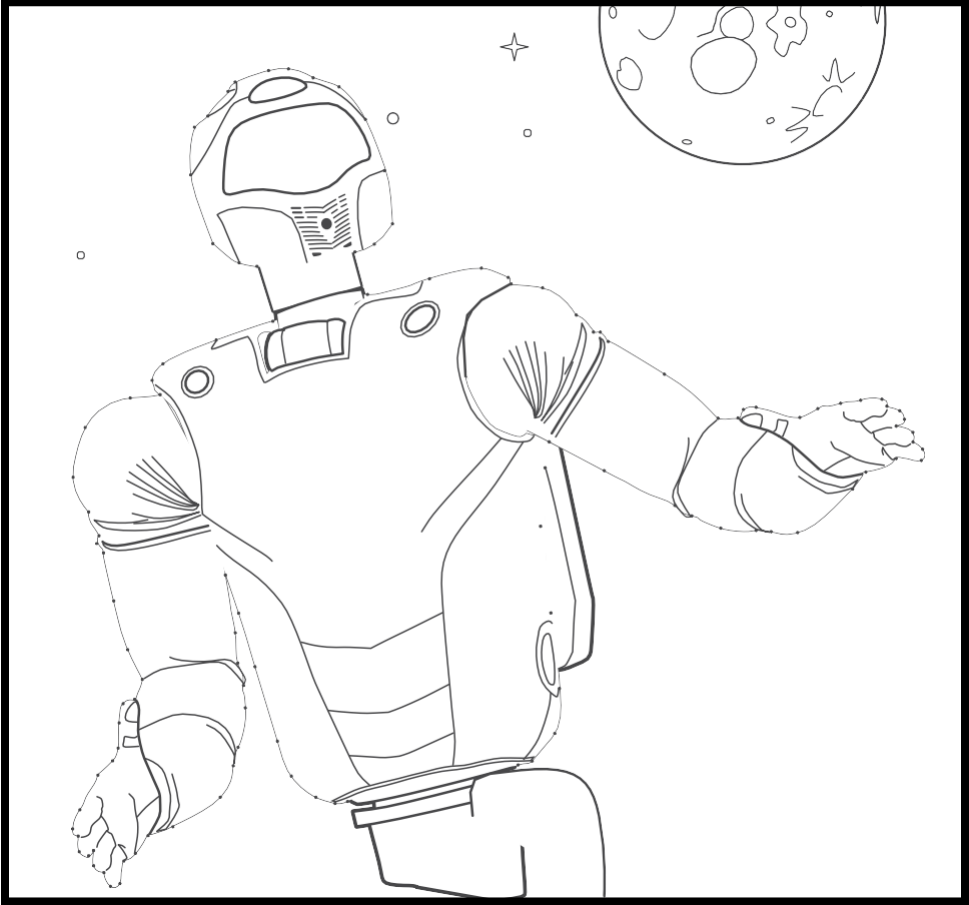
Astronauts on the International Space Station used a special Vegetable Production System (VEGGIE) to grow lettuce that they could eat.



Draw your own garden of food for astronauts to harvest and eat.

# NASA's Outer Space Assistant

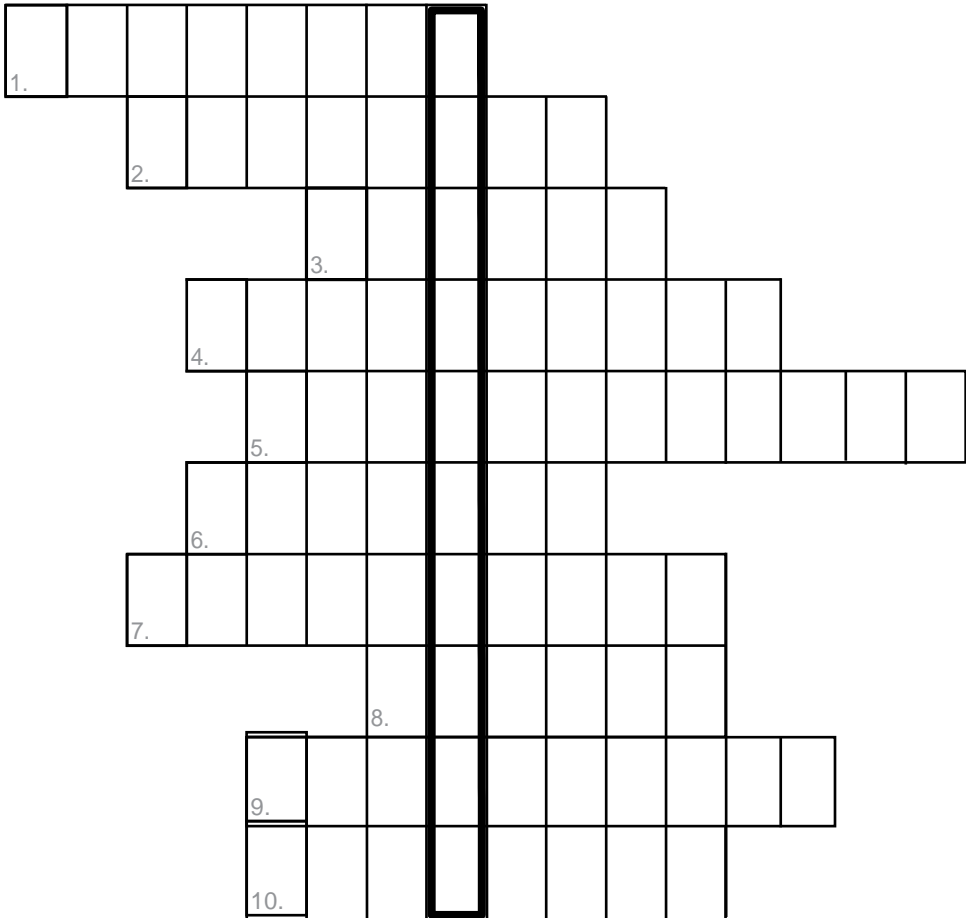
Connect the dots to see who's helping astronauts on the International Space Station.



Robonaut 2 (R2) is a humanoid robot that works aboard the International Space Station. It can perform tasks in microgravity and uses special climbing legs to help anchor it while it uses its hands. R2 will help astronauts make repairs to the Station.

# Hidden Word

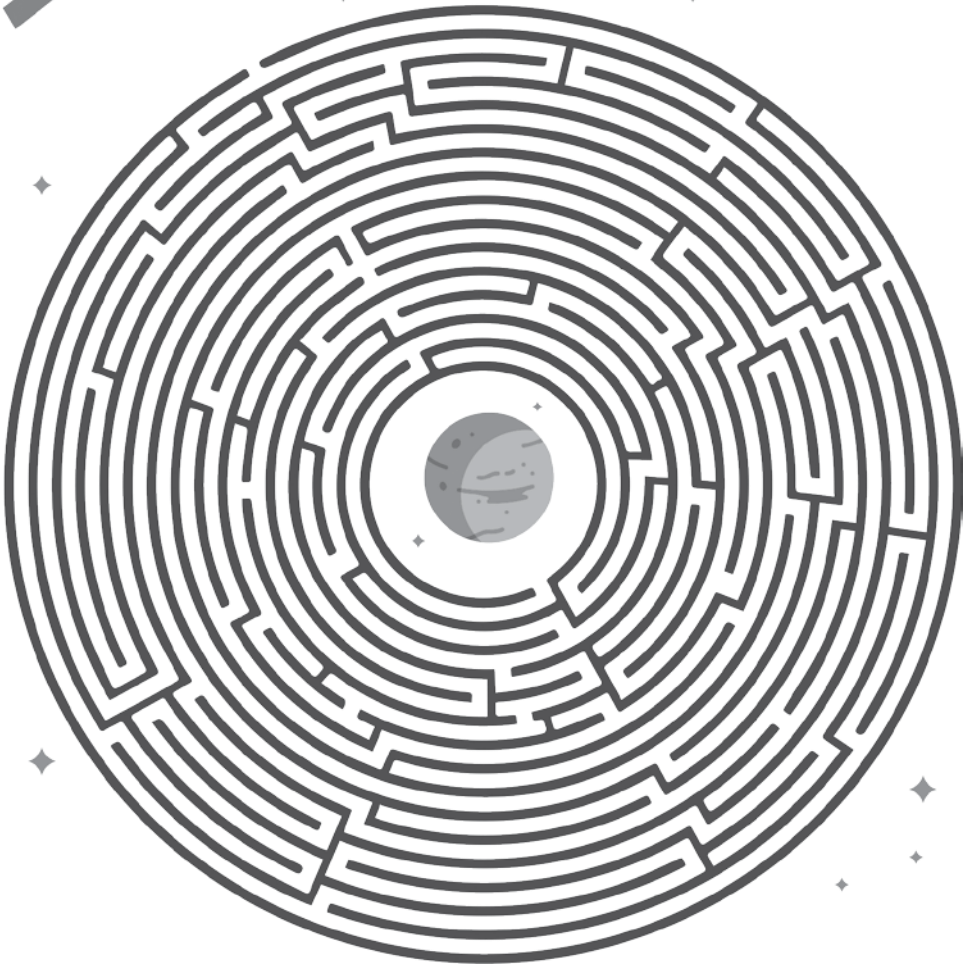
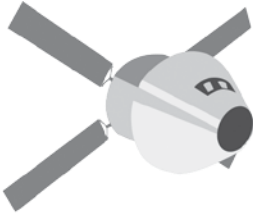
Fill in the spaces with the names of everyday objects that NASA technology has impacted. Clues to the items are below. The letters in the bold box make a secret word.



1. Worn to the pool or beach
2. What your bed sheets cover
3. A noisy machine that cleans floors
4. Squeezed from a tube to freshen your breath
5. Used to hit a ball back and forth across a net
6. Footwear used for a sport that takes place on snowy slopes
7. Tool to provide light in dark places
8. Storage box for keeping food and drinks cold
9. Protects your eyes from brightness
10. Soft, easy-to-eat food for infants

# ORION MAZE

Help Orion Find Mars



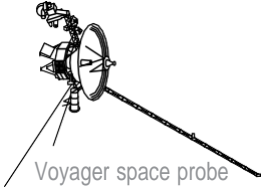
Orion is a spacecraft that will carry astronauts to Mars and beyond. It will be NASA's most advanced spacecraft in order to keep crew safe during their mission. It is designed to support long periods of space travel and to withstand the harsh environment of reentry into atmosphere.



# HOW FAST

Match the spacecraft and speed in order from fastest to slowest

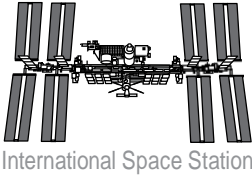
A.



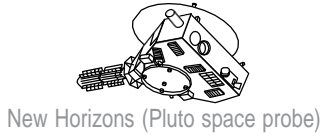
B.



C.



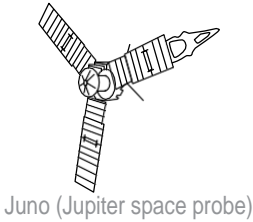
D.



E.



F.



G.



36,373 mph (launch)

4,520 mph (fasted piloted aircraft)

24,791 mph (fastest piloted spacecraft)

17,150 mph

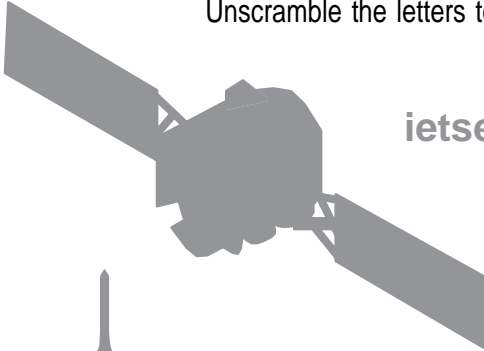
448 mph

38,610 mph

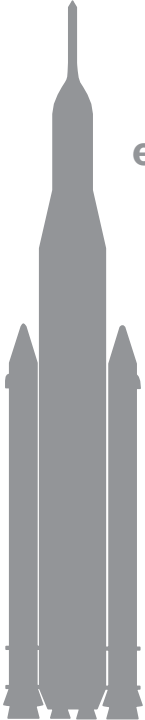
165,000 mph

# Mystery Shadows

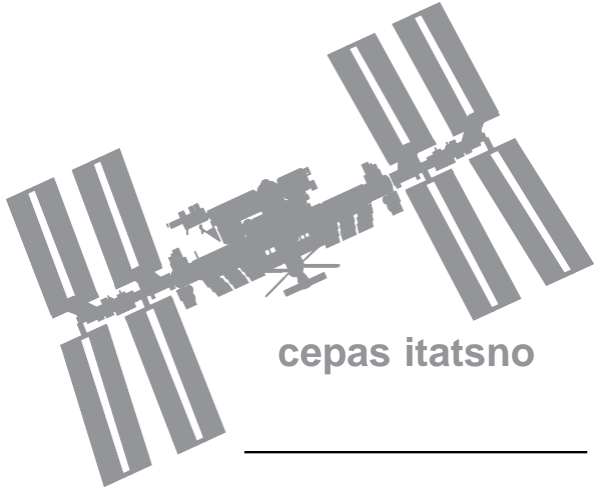
Unscramble the letters to name the shadow.



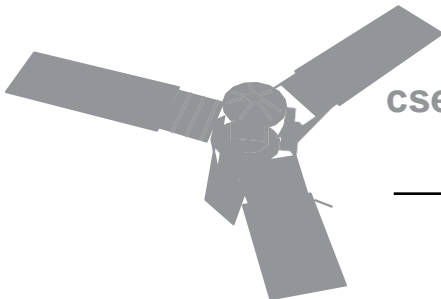
ietaselalt \_\_\_\_\_



eortck \_\_\_\_\_

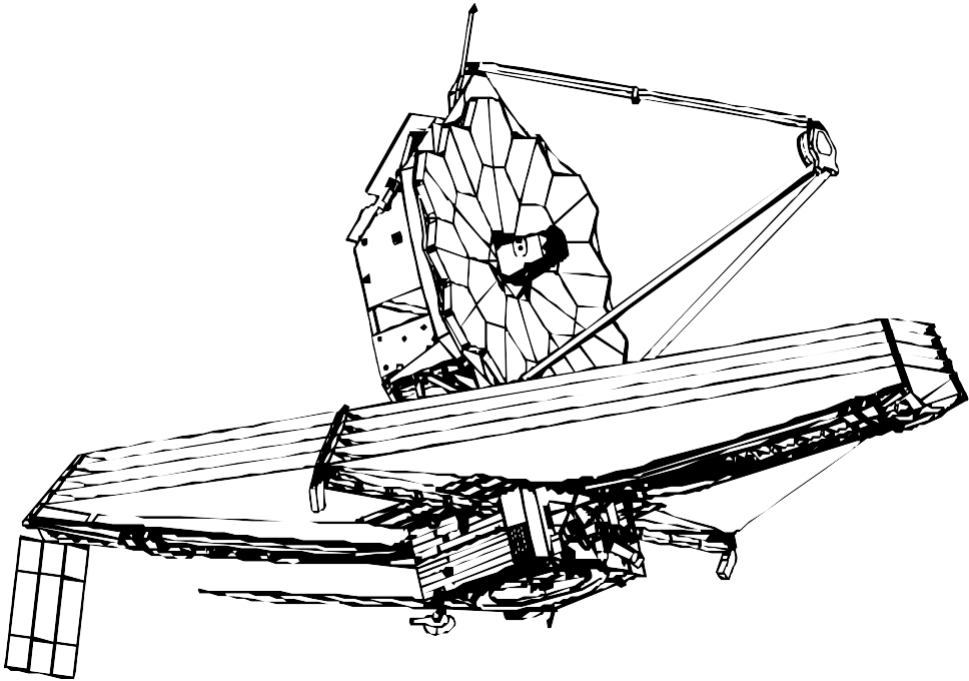


cepas itatsno  
\_\_\_\_\_



cseap robpe  
\_\_\_\_\_

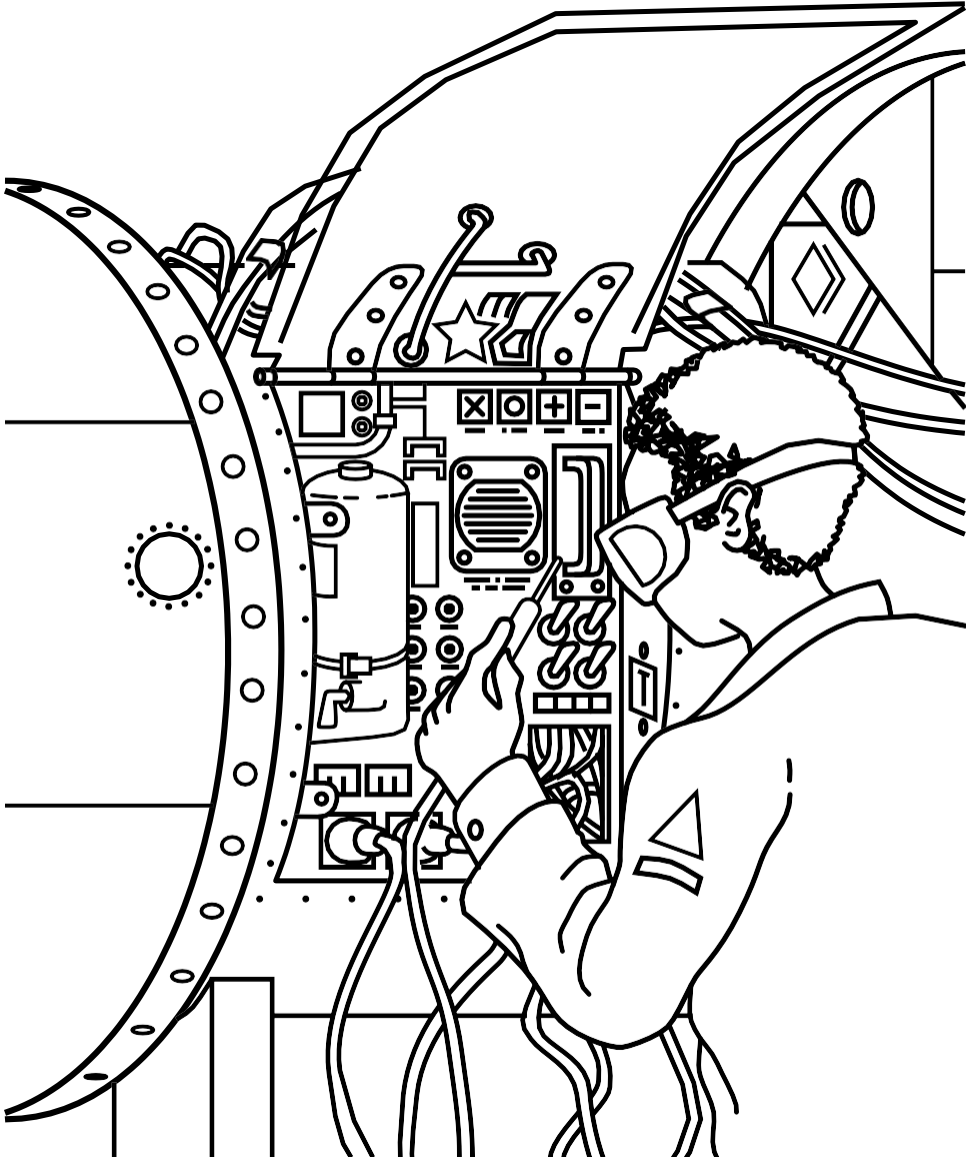
# Color the James Webb Space Telescope



The James Webb Space Telescope (JWST) is an infrared telescope that will look deep into space to study the earliest stars and galaxies in the universe. It is more sensitive than the Hubble Telescope, with much larger mirror optics that have a highly reflective gold layer to gather lots of light.

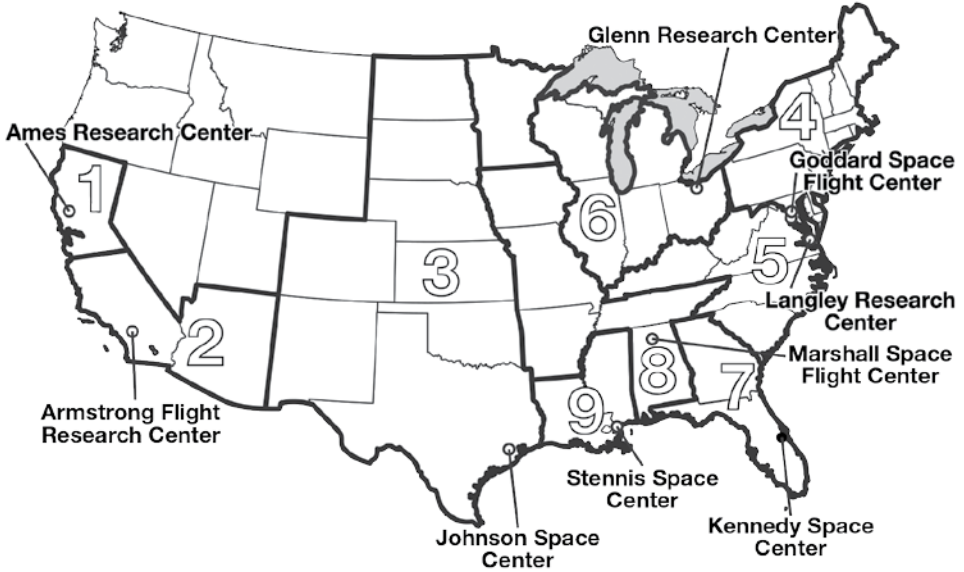
# Building Technology

Find and circle these hidden shapes.



# Where Is NASA?

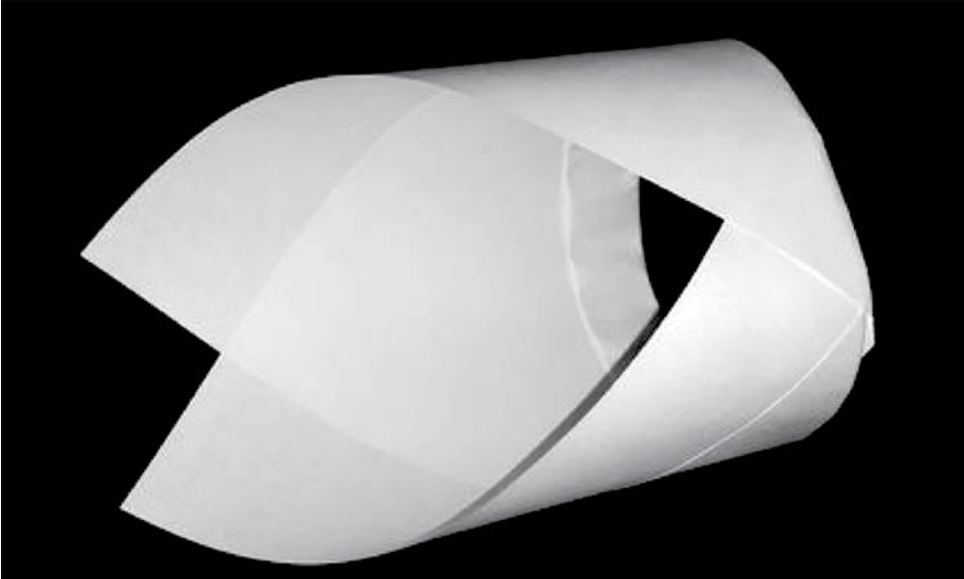
NASA has many Centers across the United States that study Earth and space and build technology for exploration. Which ones are near you?



Each Center has its own region for educational programs. Color the regions by number.

- 1 = Yellow (Ames)
- 2 = Orange (Armstrong)
- 3 = Purple (Johnson)
- 4 = Red (Goddard)
- 5 = Dark Green (Langley)
- 6 = Blue (Glenn)
- 7 = Pink (Kennedy)
- 8 = Light Blue (Marshall)
- 9 = Light Green (Stennis)

# Build the NASA Ring Wing Glider



## Procedure

1. Fold a piece of 8.5- x 11-inch paper diagonally as shown in diagram 1.
2. Make a 1/2-inch fold along the previously folded edge. See diagram 2.
3. Make a second 1/2-inch fold. See diagram 3.
4. Curl the ends of the paper to make a ring and tuck one end into the fold of the other. See diagram 4.
5. Gently grasp the “V” between the two “crown points” with your thumb and index finger.
6. Toss the glider lightly forward.  
Note: The folds in the paper make the airplane’s front end heavy and the back end light. Curling the ends to make a ring changes the shape of the wing and improves the wing’s flight performance.

Diagram 1

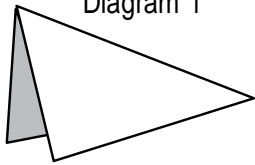


Diagram 2

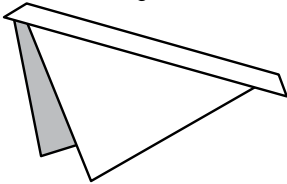


Diagram 3

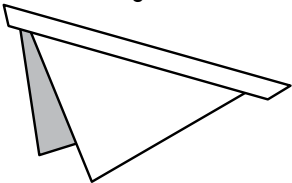
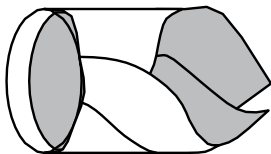
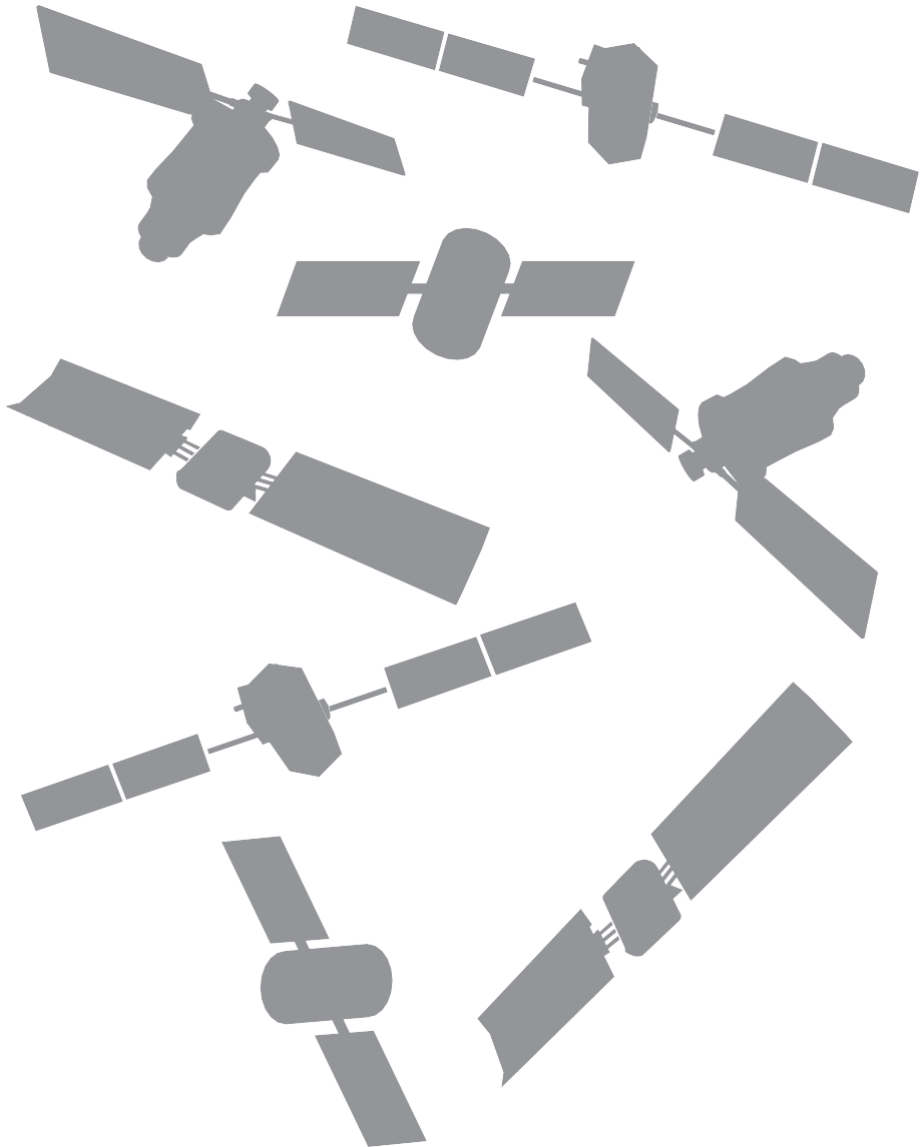


Diagram 4



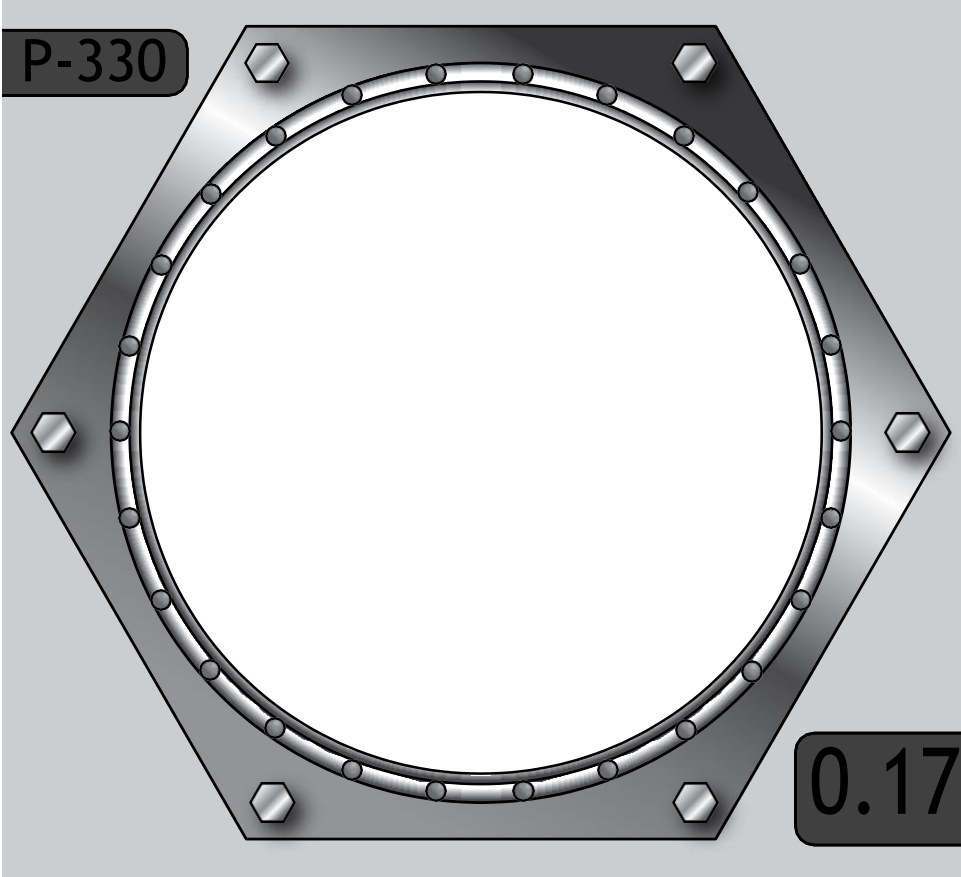
# Match the Satellites

Draw a line from each satellite to its twin.



# What do you see?

Draw what is outside the window of your deep-space habitat on Mars.



New life support technology will allow astronauts to live and work in habitats on Mars. The variable oxygen regulator keeps oxygen and pressure at a safe and comfortable level, and the rapid cycle amine swing bed takes carbon dioxide and water out of the air.



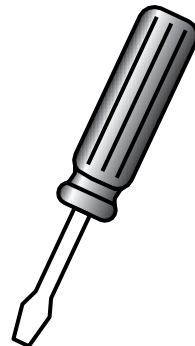
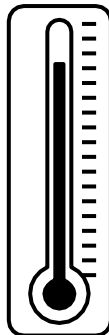
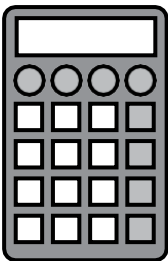
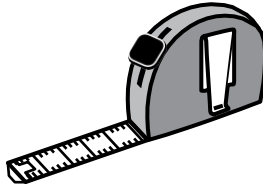
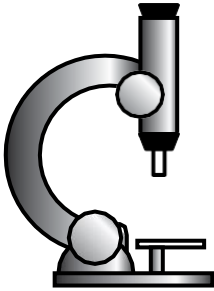
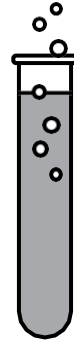
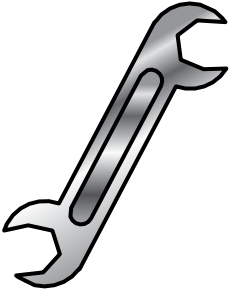
# Green Propellant Infusion Mission



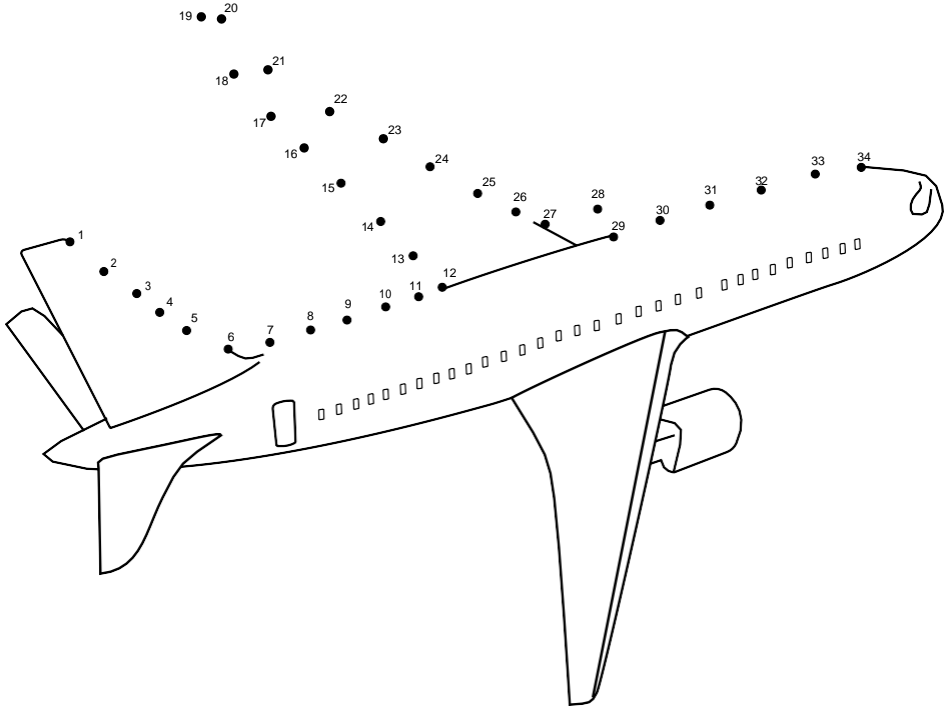
The goal of the Green Propellant Infusion Mission is to test new types of spacecraft fuel. The fuel that NASA currently uses, called hydrocine, is toxic and dangerous to handle. The new fuel will be much less harmful and will be much more environmentally friendly.

# Lab Tech

Can you name these common tools used by scientists and engineers?



# Connect the Dots



The design of aircraft has changed a lot over the years. NASA has helped improve airplanes with technology that saves fuel, makes flights quicker, helps pilots train better, and makes taking off and landing safer.

# With You When You Fly

How is NASA technology improving flights at your local airport?

\* NASA is developing a coating that will keep bugs from sticking to the surface of planes. This improves the planes' speed because stuck bugs slow them down.

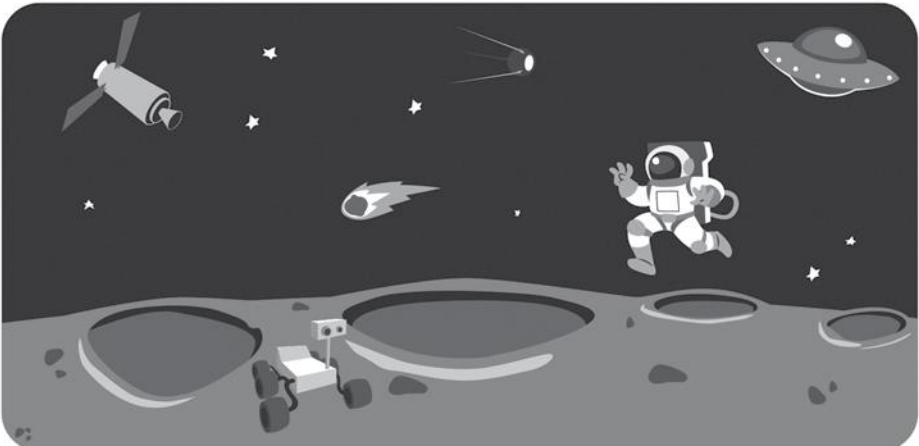
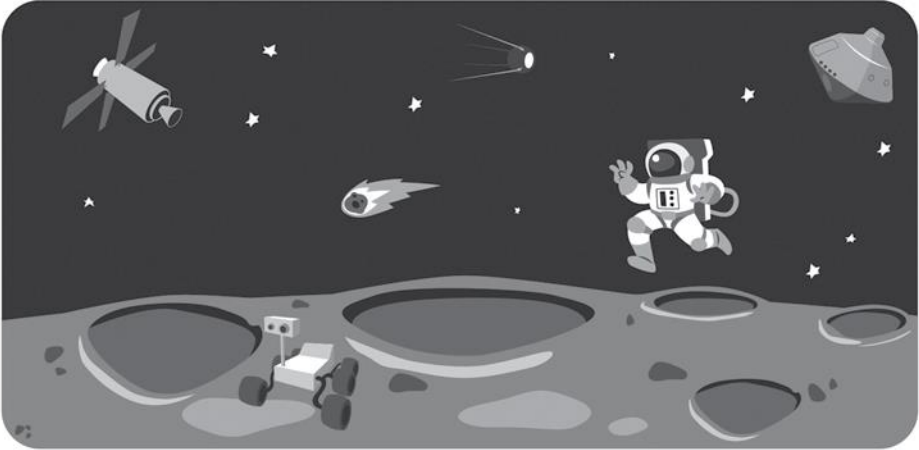


\* Many of today's air traffic control systems, which tell planes when it is safe to land and when to take off, are based on NASA-developed software.



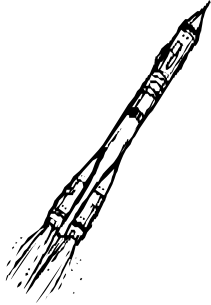
# Life on Mars

Circle 8 things that are different in the images of astronauts on Mars.

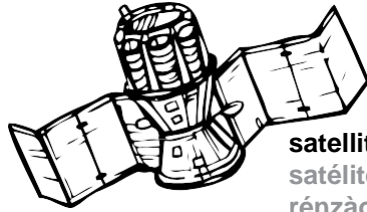


NASA is making new tools and systems to support astronauts going to Mars. Things they need include advanced life support systems to help them breathe; an updated space suit design; technology to produce water, oxygen, and fuel on the surface of Mars; and better ways to communicate with Earth.

# Learn how to say these words in Spanish, Chinese, French, and Russian.



**rocket**  
cohete  
huǒjiàn  
fusée  
raketa (paketa)



**satellite**  
satélite  
rénzào weixing  
satellite  
sputnik



**galaxy**  
galaxia  
xingxi  
galaxie  
galaktika



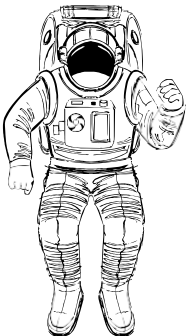
**star**  
estrella  
xīng  
étoile  
zvezda



**planet**  
planeta  
xingxing  
planete  
planet



**airplane**  
avion  
fēist  
avion  
samoleb



**astronaut**  
astronaut  
yǔhángyuán  
astronaut  
kozmonaut



**technology**  
tecnologia  
gōngyixué  
technologie  
tehnologii

# LCRD

## Laser Communications Relay Demonstration



The Laser Communications Relay Demonstration (LCRD) is demonstrating a new way of sending information between Earth and space. Satellites will use lasers instead of radio waves to communicate, because lasers can send much more data than radio waves. With this new and powerful system, NASA can gather more knowledge than ever, faster, on Earth and in space.

# Spinoff Fun Facts

Every year, NASA develops new technology that helps Earth research and space exploration. These innovations often go on to change life on Earth, too. What are some inventions in your life that got their start at NASA?

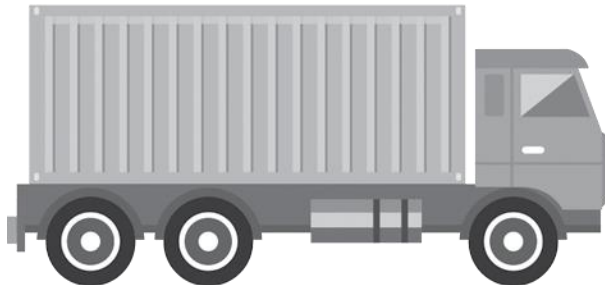
Ski boots came from the boots in an astronaut's spacesuit that let the wearer move around while the feet remained attached to the surface.



Today's baby formula was created when scientists discovered a healthy ingredient for babies in algae that they were using to develop life support.



Modern big rig trucks are designed with curves that help air move past the vehicle better. This is based on NASA's research on making vehicles faster and more aerodynamic.





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# SPACE TECH FUNPAD



