

HOW TO DRAW

ARTS

NASA'S GATEWAY – FIRST COMPONENT

POWER AND PROPULSION ELEMENT (PPE)

THE PPE IS THE GATEWAY'S POWER HOUSE, MAINTAINING ITS POSITION IN LUNAR ORBIT AND POWERING OTHER GATEWAY SPACECRAFT. IT ALSO PROVIDES POWERFUL MOON-TO-EARTH COMMUNICATIONS.

HABITATION AND LOGISTICS OUTPOST (HALO)

THE HALO—THE INITIAL CREW CABIN FOR ASTRONAUTS VISITING THE GATEWAY—IS WHERE ASTRONAUTS WILL LIVE AND WORK ABOARD THE GATEWAY. IT HAS MULTIPLE DOCKING PORTS FOR VISITING SPACECRAFT AND CARGO SPACE FOR SCIENCE EXPERIMENTS AND STORAGE.

National Aeronautics and
Space Administration





WE ARE GOING!

WITH THE *ARTEMIS* PROGRAM, NASA WILL LAND THE FIRST WOMAN AND NEXT MAN ON THE MOON BY 2024, USING INNOVATIVE TECHNOLOGIES TO EXPLORE MORE OF THE LUNAR SURFACE THAN EVER BEFORE.

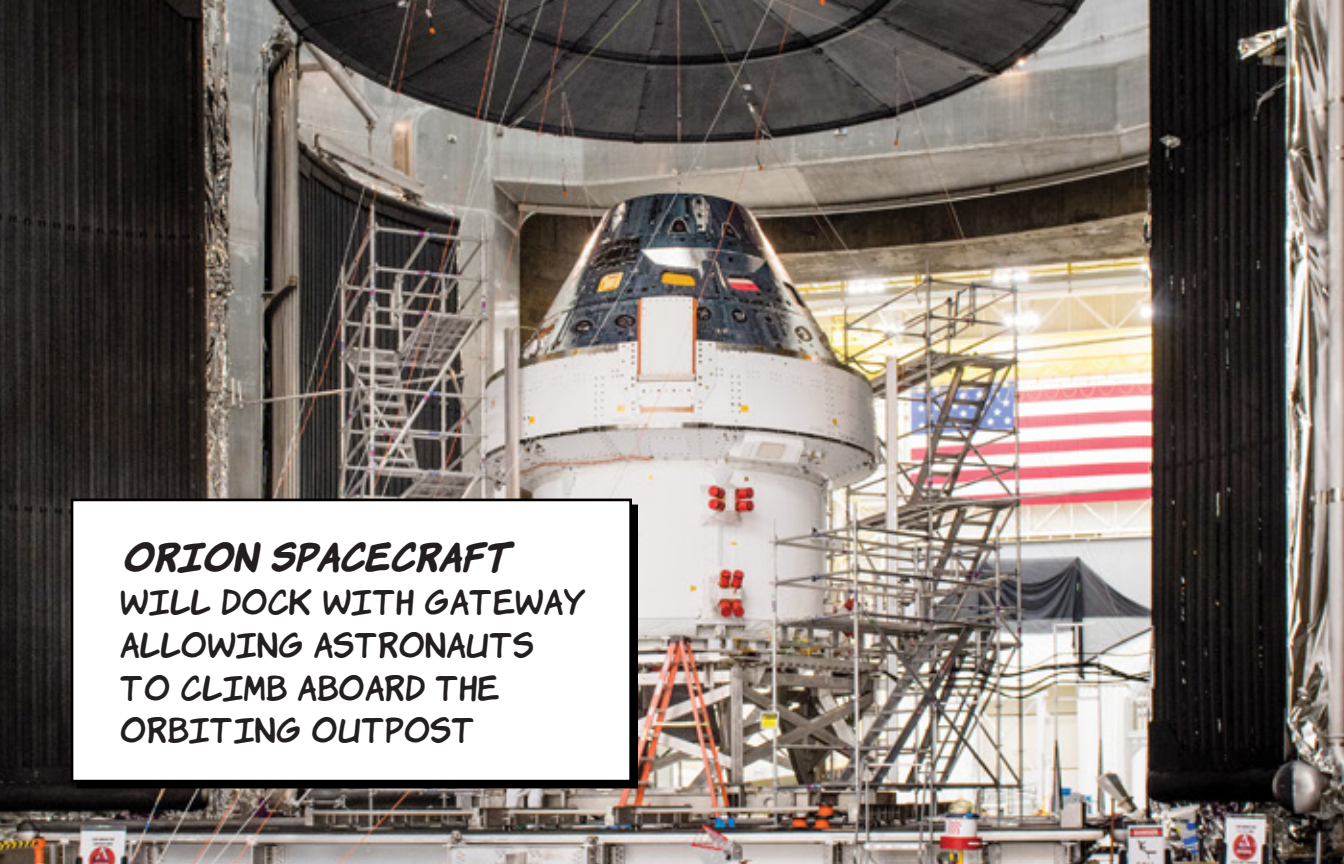
LEARN MORE: [NASA.GOV/ARTEMIS](https://www.nasa.gov/artemis)



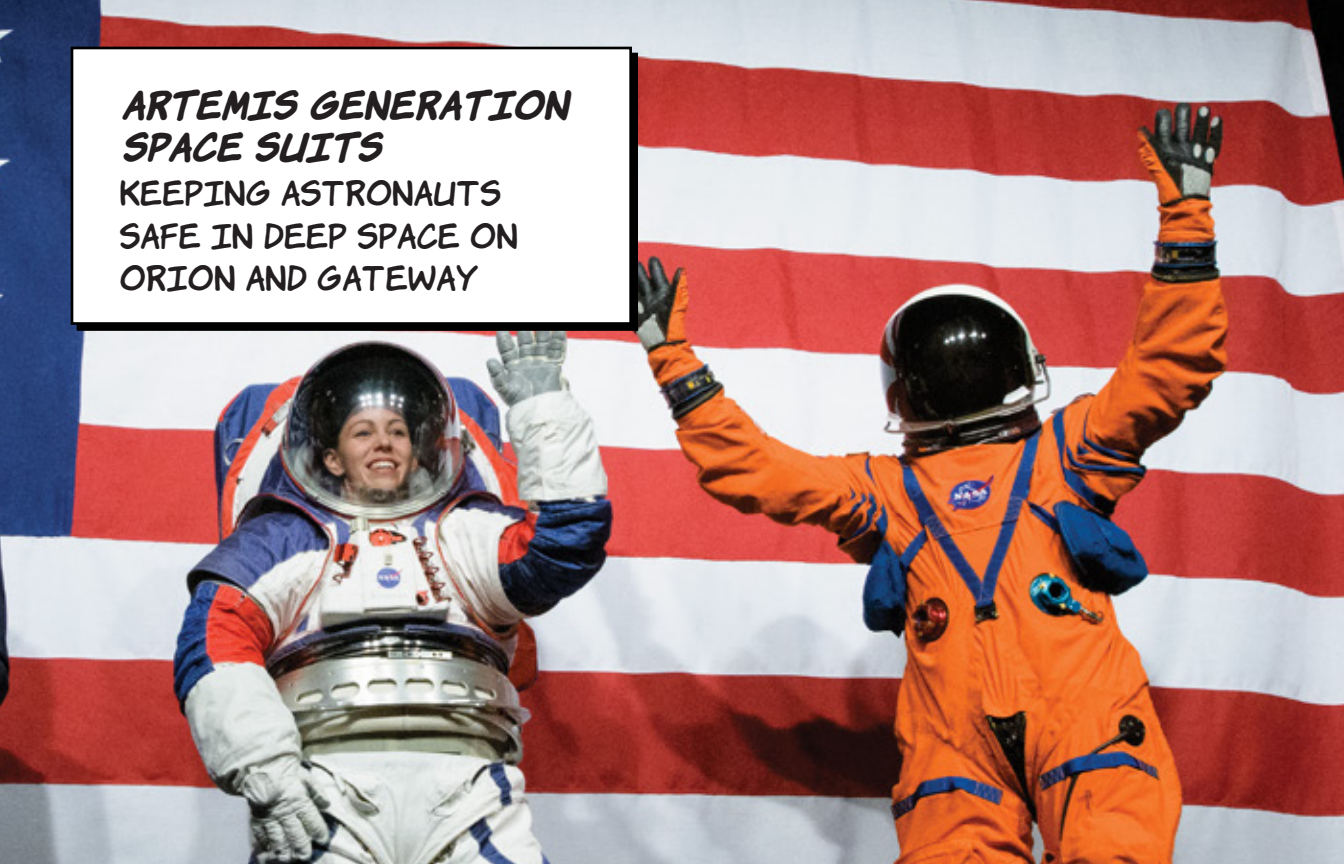
THE SPACE LAUNCH SYSTEM
DEEP SPACE ROCKET THAT WILL SEND ORION AND ITS CREW TO THE LUNAR ORBIT



THE GATEWAY
OUTPOST ORBITING THE MOON

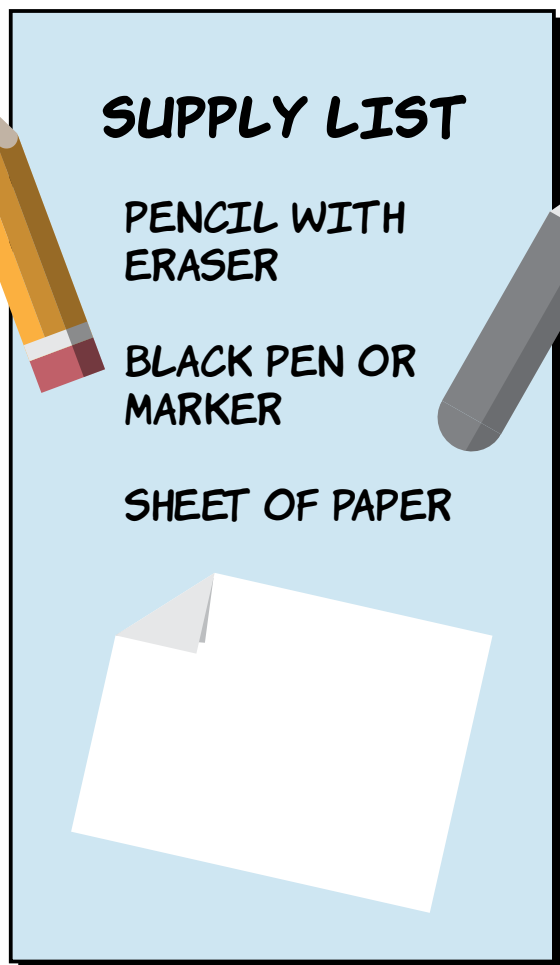


ORION SPACECRAFT
WILL DOCK WITH GATEWAY ALLOWING ASTRONAUTS TO CLIMB ABOARD THE ORBITING OUTPOST



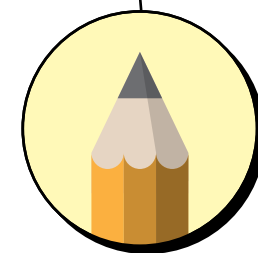
ARTEMIS GENERATION SPACE SUITS
KEEPING ASTRONAUTS SAFE IN DEEP SPACE ON ORION AND GATEWAY

1. LET'S DRAW THE GATEWAY!



THIS ACTIVITY REQUIRES A **PENCIL** AND A **BLACK PEN OR A MARKER**. FOR EVERY STEP, YOU WILL USE THE PENCIL TO DRAW THE GUIDELINES AND THE MARKER TO DRAW THE FINAL SHAPES. THE CURRENT SHAPES TO BE DRAWN ARE SHOWN IN **RED**.

ARTIST HINT:
USE A RULER TO
HELP WITH YOUR
LINES.



DRAW RED SHAPES
USING A PENCIL

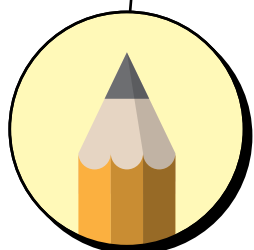
THE GATEWAY CAN BE DRAWN
USING SIMPLE SHAPES.

USING THE PENCIL, DRAW TWO INTERSECTING DIAGONAL LINES, TWO SMALL SQUARES THAT WILL BE USED TO CREATE THE SHAPE OF THE POWER AND PROPULSION ELEMENT (PPE), TWO ELONGATED RECTANGLES FOR THE SOLAR ARRAY PANELS, AND A SERIES OF OVALS THAT YOU WILL USE TO CREATE THE SHAPE OF THE HABITATION AND LOGISTICS OUTPOST (HALO).

2. DRAW THE OUTER BOUNDARY LINES AND THE DOCKING PORTS

DRAW THE OUTLINES OF THE PPE, ITS SOLAR ARRAY PANELS, AND THE HALO TO COMPLETE THE BASIC SHAPES THAT MAKE UP THE GATEWAY.

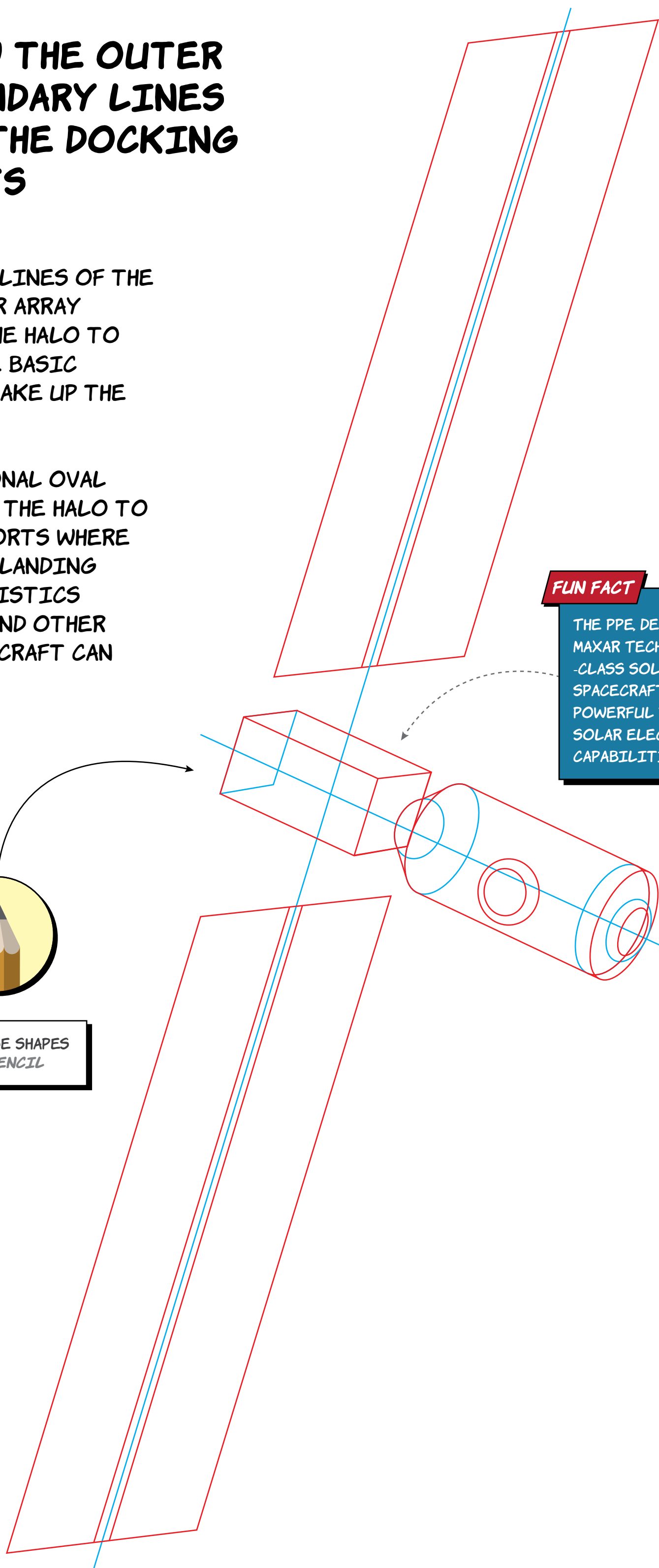
DRAW ADDITIONAL OVAL SHAPES ALONG THE HALO TO CREATE THE PORTS WHERE ORION, HUMAN LANDING SYSTEMS, LOGISTICS DELIVERIES, AND OTHER FUTURE SPACECRAFT CAN DOCK.



DRAW THESE SHAPES
USING A *PENCIL*

FUN FACT

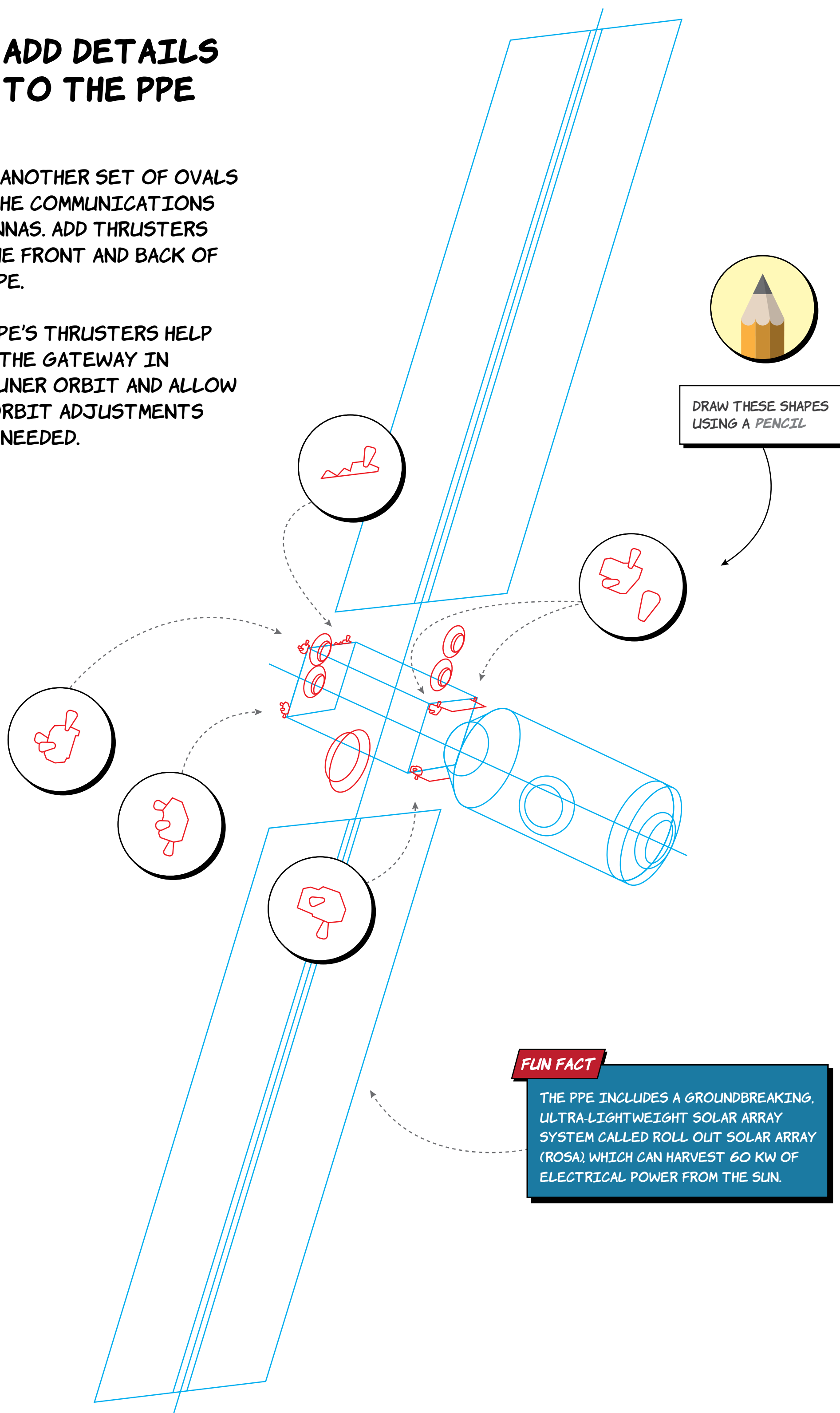
THE PPE, DESIGNED AND BUILT BY MAXAR TECHNOLOGIES, IS A 50KW-CLASS SOLAR ELECTRIC POWER SPACECRAFT - THREE TIMES MORE POWERFUL THAN CURRENT COMMERCIAL SOLAR ELECTRIC PROPULSION CAPABILITIES.



3. ADD DETAILS TO THE PPE

DRAW ANOTHER SET OF OVALS FOR THE COMMUNICATIONS ANTENNAS. ADD THRUSTERS TO THE FRONT AND BACK OF THE PPE.

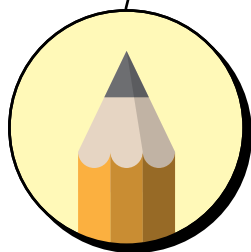
THE PPE'S THRUSTERS HELP KEEP THE GATEWAY IN CIS-LUNER ORBIT AND ALLOW FOR ORBIT ADJUSTMENTS WHEN NEEDED.



4. ADD MORE DETAILS TO THE PPE

DRAW THE LINES CONNECTING THE COMMUNICATIONS ANTENNAS TO PPE.

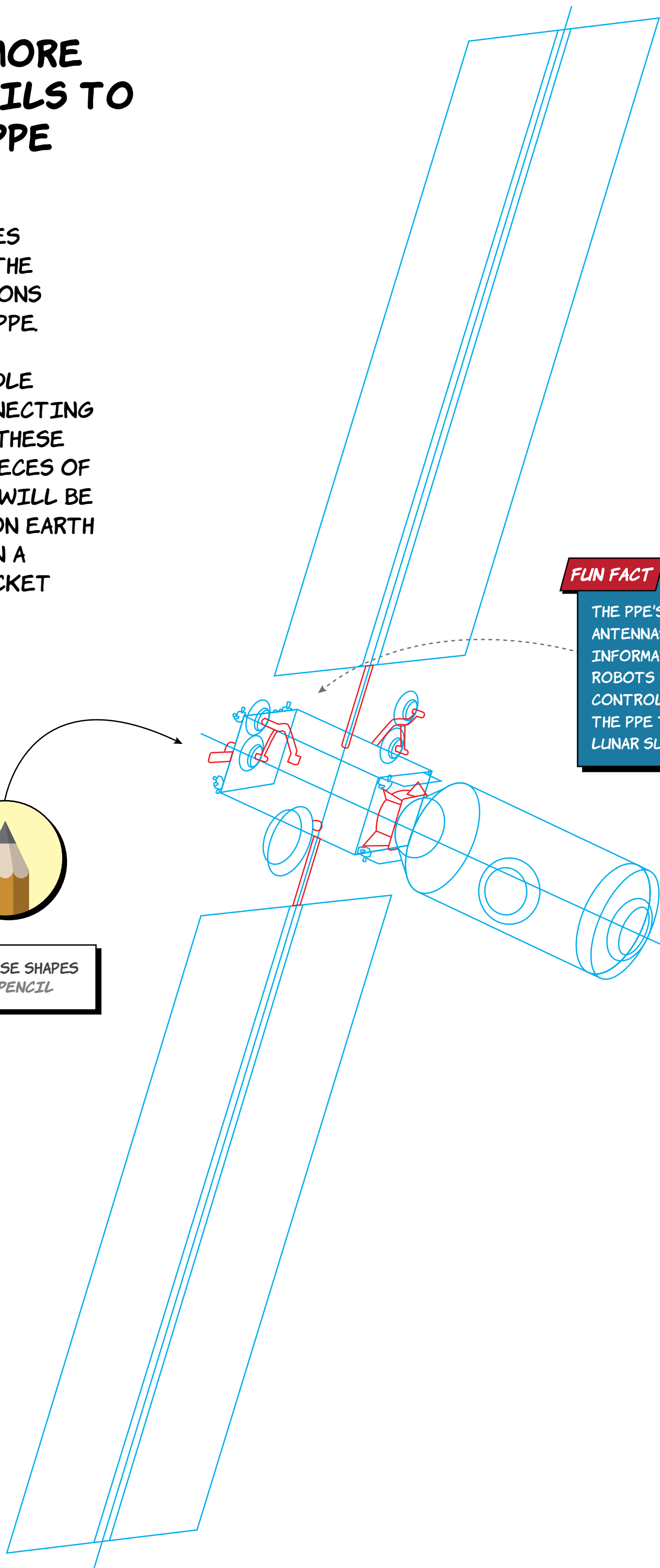
DRAW THE MIDDLE SECTION CONNECTING PPE AND HALO. THESE FIRST TWO PIECES OF THE GATEWAY WILL BE INTEGRATED ON EARTH FOR LAUNCH ON A POWERFUL ROCKET IN 2023.



DRAW THESE SHAPES USING A PENCIL

FUN FACT

THE PPE'S POWERFUL COMMUNICATIONS ANTENNAS WILL RELAY IMPORTANT INFORMATION FROM ASTRONAUTS AND ROBOTS ON THE MOON BACK TO EARTH. CONTROLLERS ON EARTH CAN ALSO USE THE PPE TO CONTROL ROVERS ON THE LUNAR SURFACE!

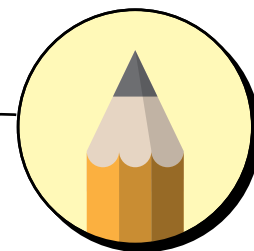


5. ADD DETAILS TO THE HALO

DRAW THREE ADDITIONAL OVALS AND THREE STRAIGHT LINES WITHIN THE TUBED HALO OUTLINE. THESE LINES WILL HELP SECTION OFF THE HALO'S EXTERNAL DETAILS.

FUN FACT

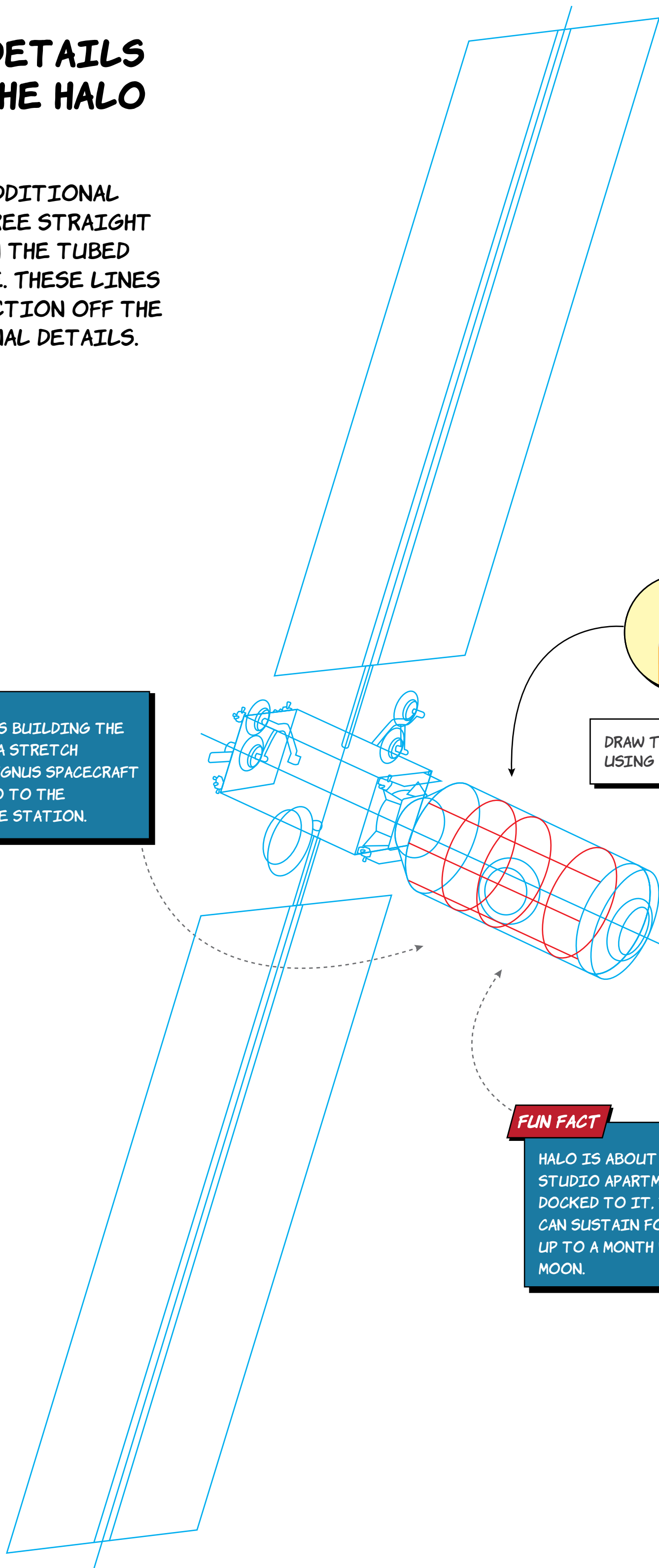
NORTHROP GRUMMAN IS BUILDING THE HALO, WHICH WILL BE A STRETCH VERSION OF THEIR CYGNUS SPACECRAFT THAT DELIVERS CARGO TO THE INTERNATIONAL SPACE STATION.



DRAW THESE SHAPES USING A PENCIL

FUN FACT

HALO IS ABOUT THE SIZE OF A SMALL STUDIO APARTMENT. WHEN ORION IS DOCKED TO IT, THE TWO SPACECRAFT CAN SUSTAIN FOUR ASTRONAUTS FOR UP TO A MONTH WHILE ORBITING THE MOON.

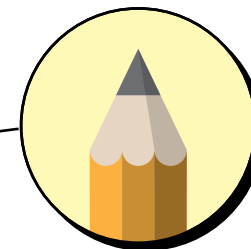


6. ADD MORE DETAILS TO THE HALO

CONTINUE ADDING EXTERNAL DETAILS TO THE HALO.

FUN FACT

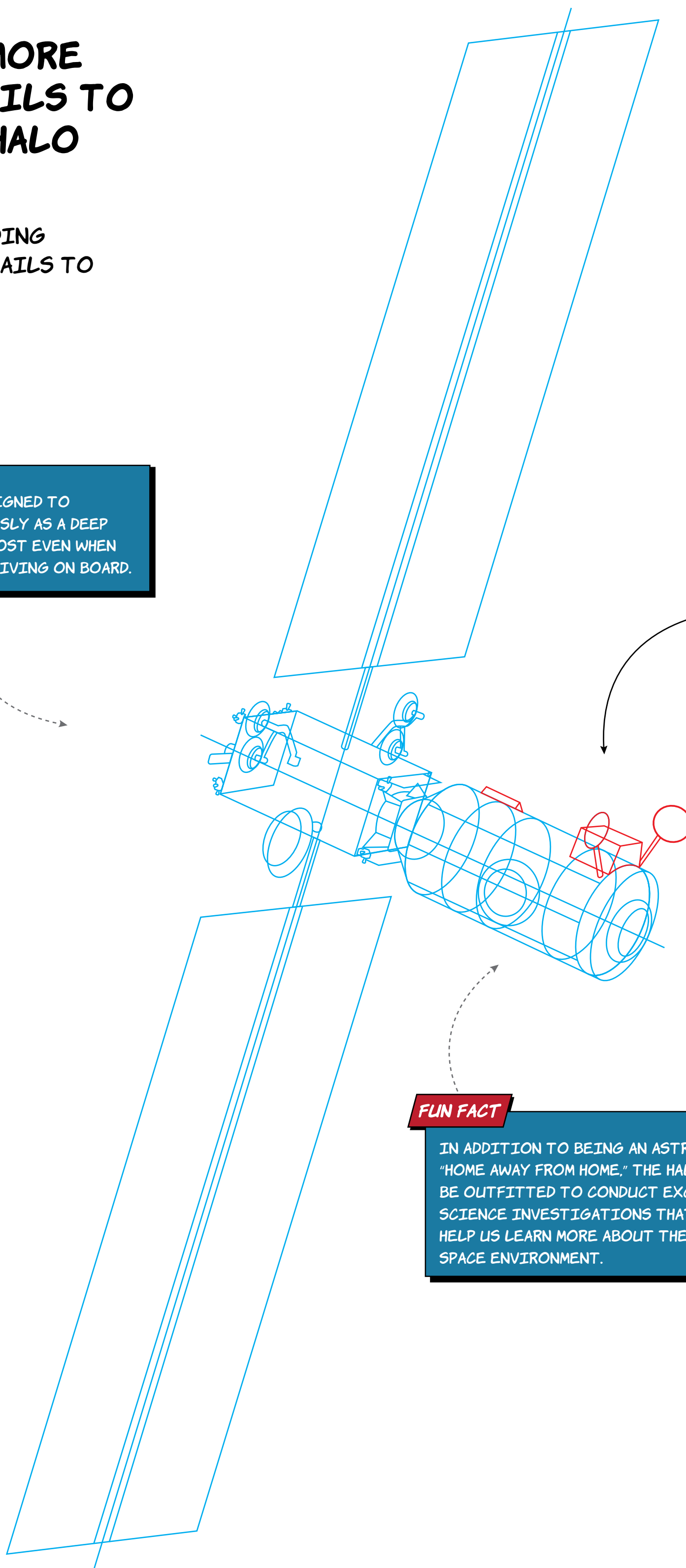
THE GATEWAY IS DESIGNED TO OPERATE AUTONOMOUSLY AS A DEEP SPACE SCIENCE OUTPOST EVEN WHEN ASTRONAUTS AREN'T LIVING ON BOARD.



DRAW THESE SHAPES USING A PENCIL

FUN FACT

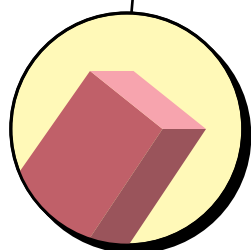
IN ADDITION TO BEING AN ASTRONAUT "HOME AWAY FROM HOME," THE HALO WILL BE OUTFITTED TO CONDUCT EXCITING SCIENCE INVESTIGATIONS THAT WILL HELP US LEARN MORE ABOUT THE DEEP SPACE ENVIRONMENT.



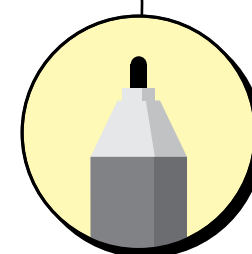
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INK OUTLINES AND ERASE THE GUIDELINES

INK THE FINAL OUTLINES
AND ERASE ALL PENCIL
GUIDELINES. YOU'RE NOW
READY TO ADD SHADING OR
COLOR!



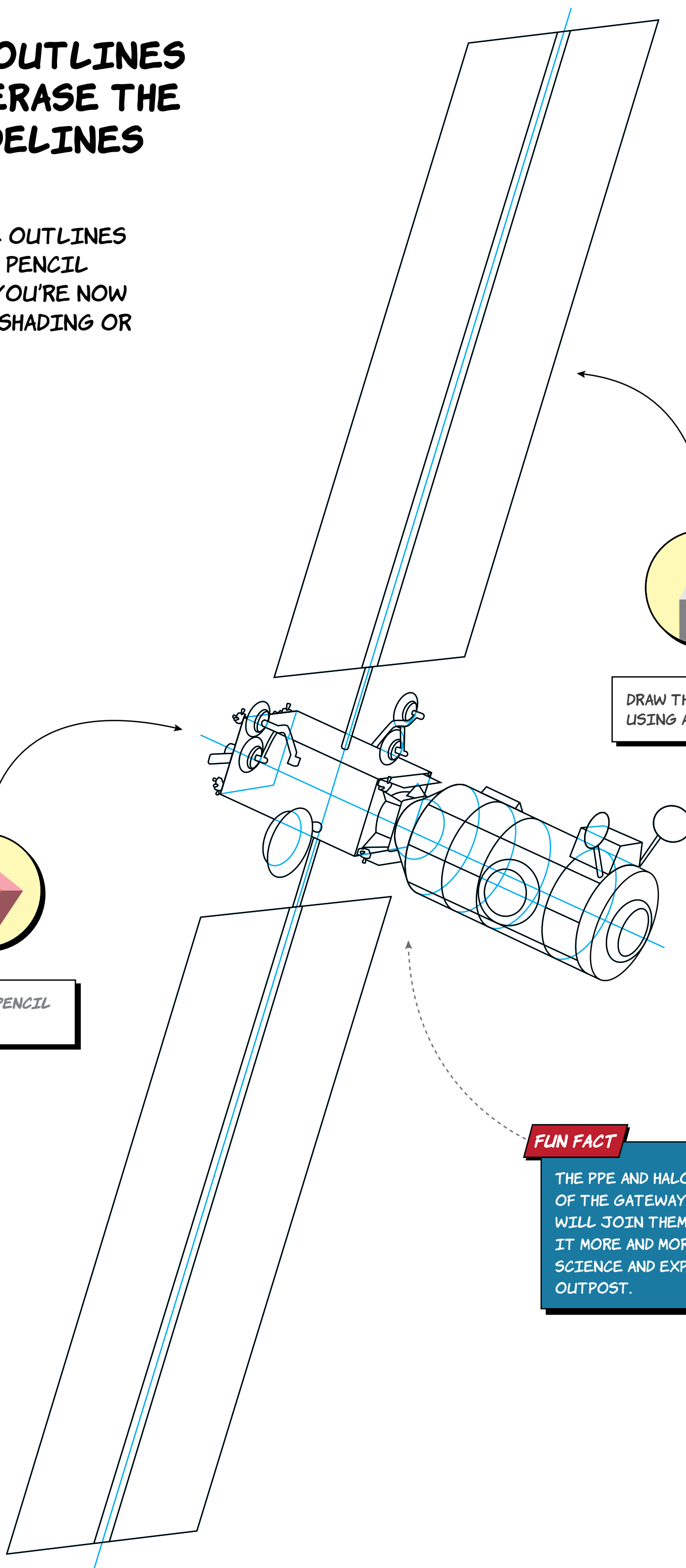
ERASE THE *PENCIL*
LINES



DRAW THESE SHAPES
USING A **BLACK PEN**

FUN FACT

THE PPE AND HALO ARE JUST THE START OF THE GATEWAY. OTHER SPACECRAFT WILL JOIN THEM OVER TIME, MAKING IT MORE AND MORE CAPABLE AS A SCIENCE AND EXPLORATION LUNAR OUTPOST.



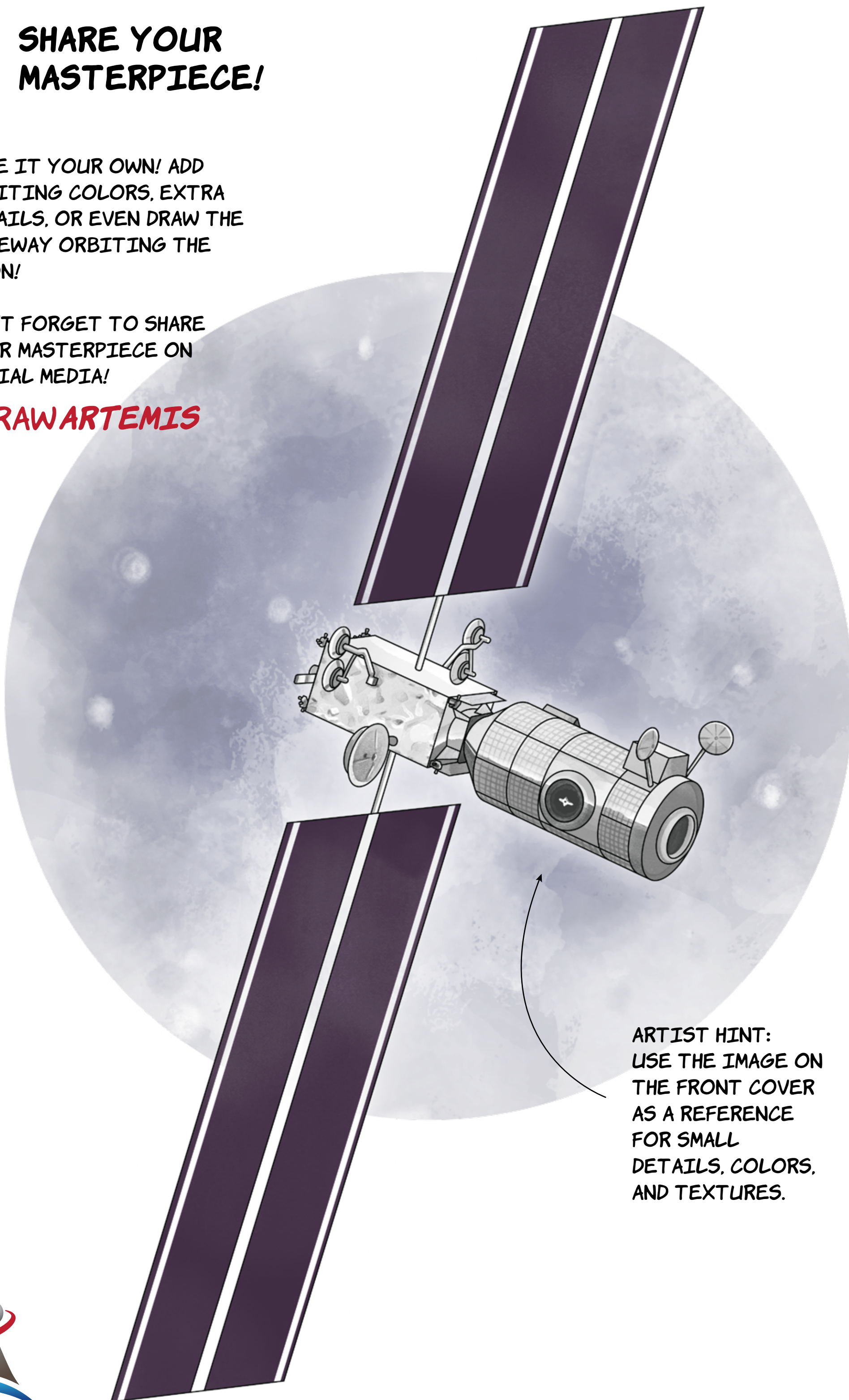
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SHARE YOUR MASTERPIECE!

MAKE IT YOUR OWN! ADD EXCITING COLORS, EXTRA DETAILS, OR EVEN DRAW THE GATEWAY ORBITING THE MOON!

DON'T FORGET TO SHARE YOUR MASTERPIECE ON SOCIAL MEDIA!

#DRAWARTEMIS



ARTIST HINT:
USE THE IMAGE ON
THE FRONT COVER
AS A REFERENCE
FOR SMALL
DETAILS, COLORS,
AND TEXTURES.

