

# Space

*Written By:*

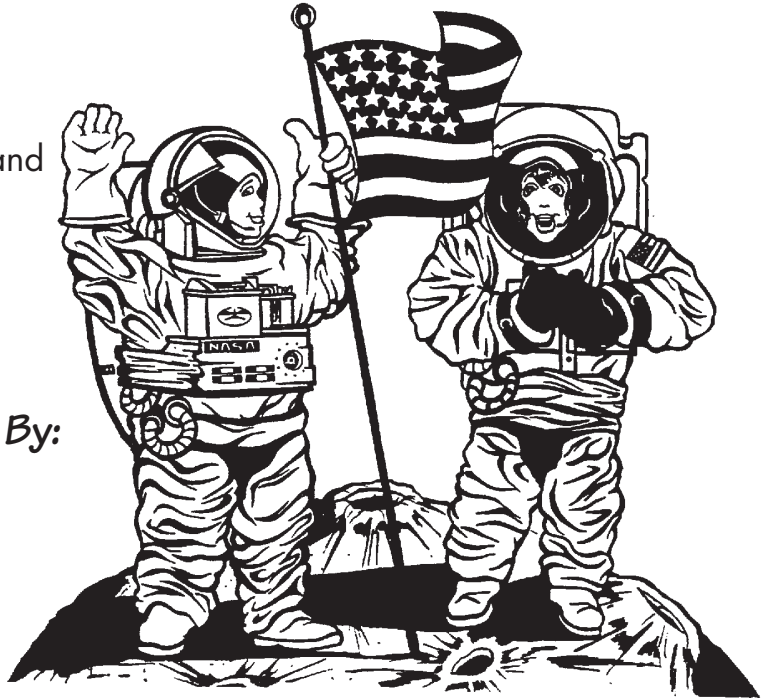
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Parents and teachers: Please read the information pages aloud to help children learn more about space history, famous astronauts, and the future of space travel.

# When I Grow Up

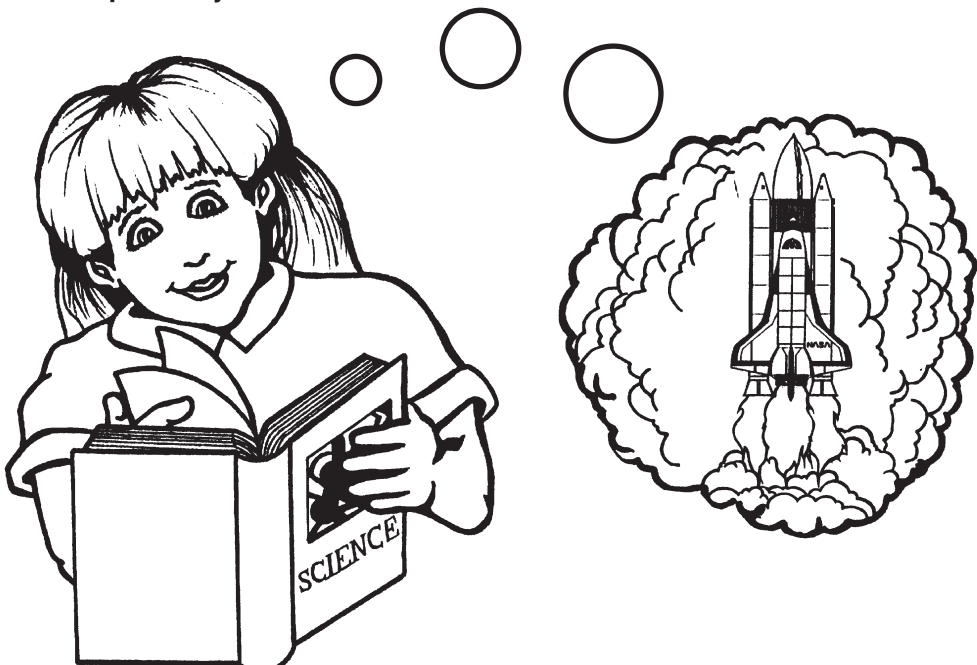
**When I grow up, I want to be something very interesting.  
The job I'll do will help a lot of people, and I'll like the work that I do.  
Each day will be adventurous, and I'll strive to learn a lot.  
Then I'll share what I know and my knowledge will grow.  
It's the perfect, perfect job!**

*Space travel has always been fascinating to me, so when I grow up I want to be an astronaut. I know I'll need to study hard in school, be in good health, and work well with others. I either want to be a pilot astronaut or a mission specialist. If I'm a pilot astronaut, I will first have to become a jet pilot. If I choose to become a mission specialist, I will learn to do space walks, satellite launches and repairs, and experiments in space.*

Now, science is important, so I'll study hard when learning about biology. Experiments in chemistry will help me learn to develop good hypotheses. Then I'll read and I'll read and I'll read some more, and I'll share just what I learn, 'cause when I grow up I want to be something very interesting.

**(Chorus)**

**Yes, I'll share what I know and my knowledge will grow.  
It's the perfect, perfect job!  
The perfect, perfect job!**



# Many Jobs To Choose From

*There are two kinds of shuttle astronauts. One is a **pilot astronaut** and the other is a **mission specialist**. The pilot astronaut actually flies the space shuttle. The mission specialist is a scientist or engineer who does space walks and satellite launches and repairs. A mission specialist also conducts experiments in space.*

There are many jobs to choose from. There are many things to do. If you think you'd like to fly, this job is right for you. A pilot astronaut spends many hours to prepare for the challenge of flying a space shuttle in the air.

Now, training can be difficult, their survival course profound. They practice parachuting into water and on the ground. To feel the sense of weightlessness they fly up in a jet, and down they dive extremely fast. This trip they won't forget.

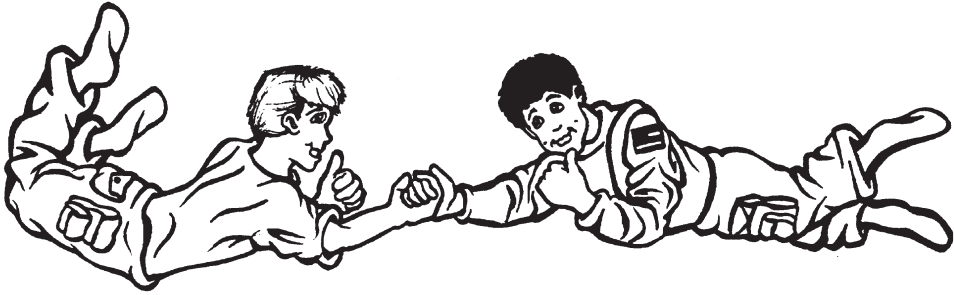
There are many jobs to choose from. There are many things to do. If you think you'd like to fly, this job is right for you. A mission specialist will conduct experiments or fix a satellite in space, a great accomplishment.

A mission specialist will practice what it's like in space by going in a water tank to simulate the place where weightlessness is all around. It helps them to pretend. The feeling they will get in space for now they comprehend.

*A space shuttle usually will carry a cargo, which is called a payload. A **payload specialist** is a person who knows all about the payload, which might be a satellite or experiments that need to be tested in space.*

There are many jobs to choose from. There are many things to do. If you think you'd like to fly, these jobs are right for you. So learn about space travel and give it a lot of thought, and one day you might become a famous astronaut!

# It's Called Cooperation



Working well with others, solving problems, you will see, are things that NASA looks for in a person who will be an astronaut who'll learn and share knowledge in a way that will help our country learn new things each and every day.

**It's called cooperation. I think you will agree that if we work together it will just become routine to talk about the problems working as a solid team. For finding new solutions will make everyone succeed!**

Learning is important and you must participate. In classes such as math and science, really concentrate. For learning quickly is a must when new things come your way. And remember the importance of the word "cooperate."

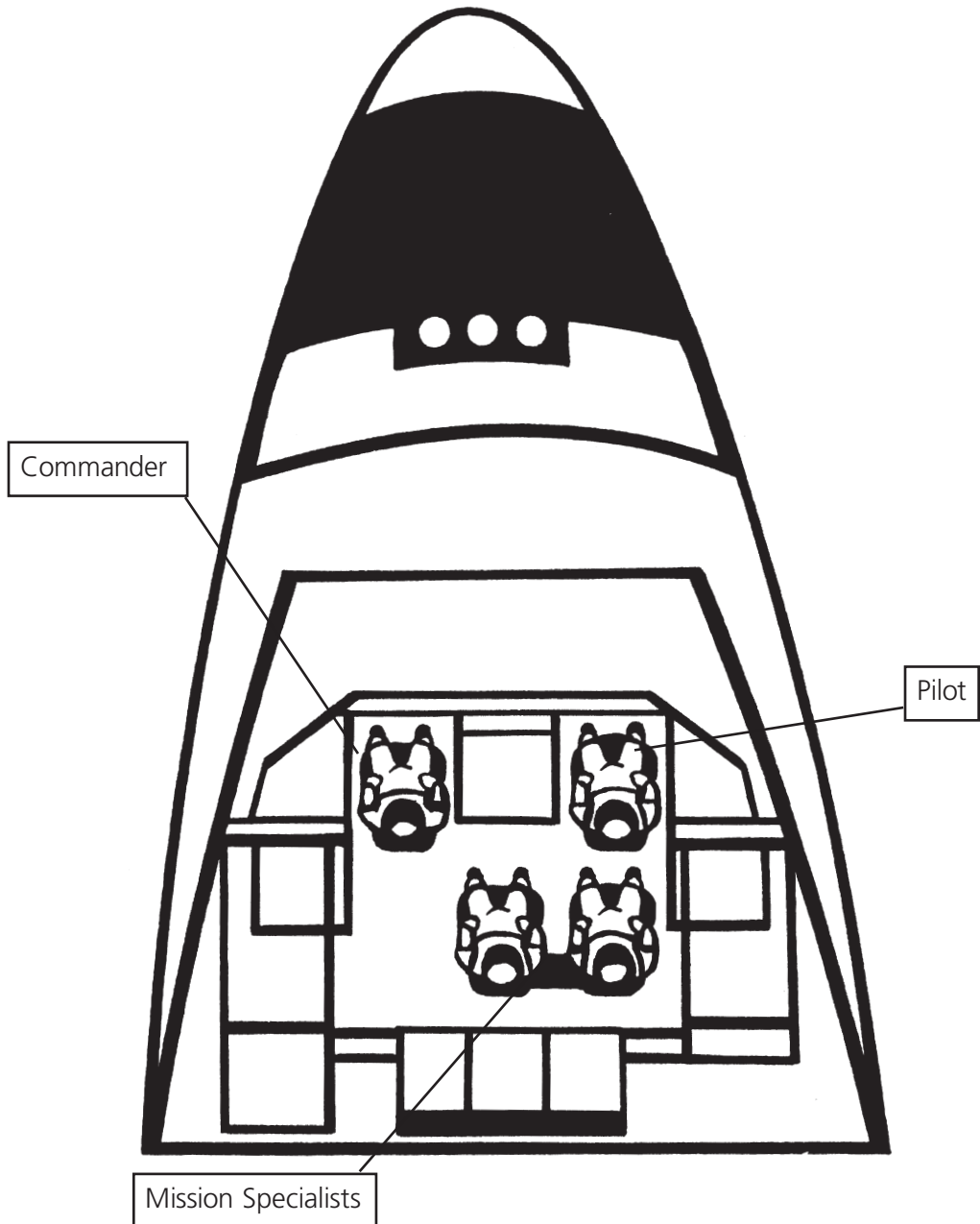
**(Chorus)**

Now, if you want to be an astronaut, you'll need to keep your body in good health and make sure that you get good sleep. For exercise and eating right are important, don't forget, so take good care of yourself. And let me just suggest...

**(Chorus)**

# Special Seats For Everyone

Where would you like to sit? Depending on the job you might do, there is a special seat for you. Below is an illustration that shows where the astronauts sit during take and landing.



# I'm Feeling Light As A Feather

My friends and I are having so much fun a-way up high.  
We float around the space deck turning somersaults. Oh, my!  
For weightless we have become as the Earth is far behind.  
The feeling is so funny that it's quite hard to describe.

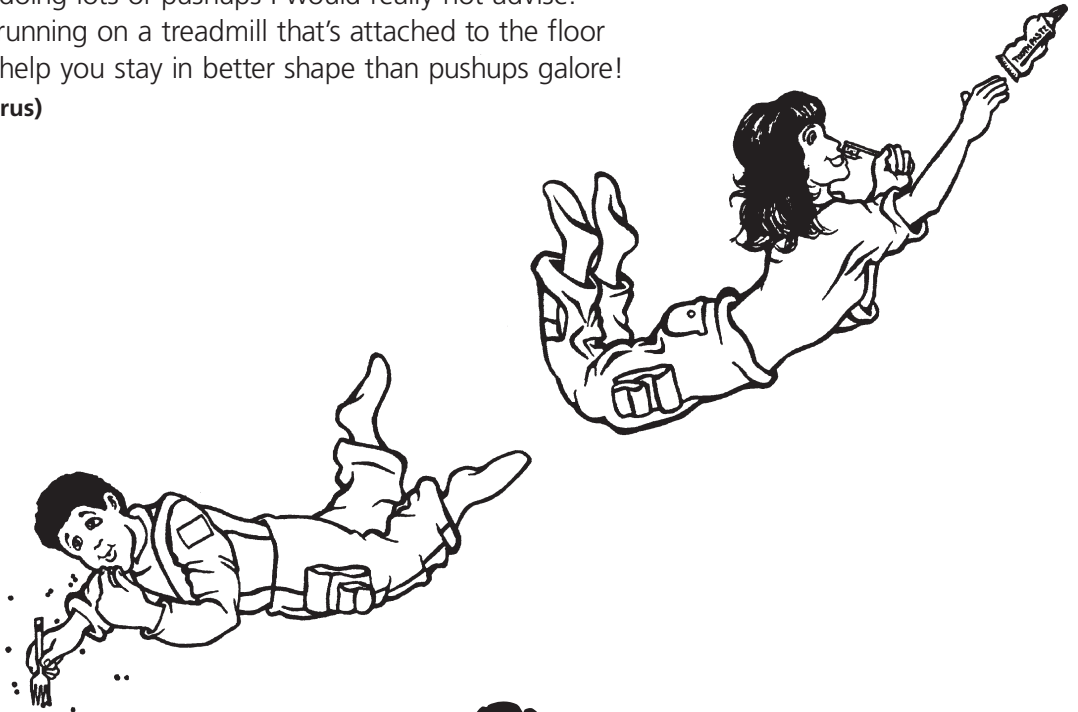
**I'm feeling light as a feather, bouncy as a ball,  
really topsy-turvy, and really, really tall.  
For now, my face is puffy and my voice a little stuffy,  
but I like what I am feeling. It is weightlessness.**

Now eating is a challenge as the food will float away,  
so every single item is secured to the tray.  
And going to the bathroom, well let me just say this:  
a seatbelt helps you stay in place, for you don't want to miss.

**(Chorus)**

It's really quite important every day to exercise,  
but doing lots of pushups I would really not advise.  
For running on a treadmill that's attached to the floor  
will help you stay in better shape than pushups galore!

**(Chorus)**



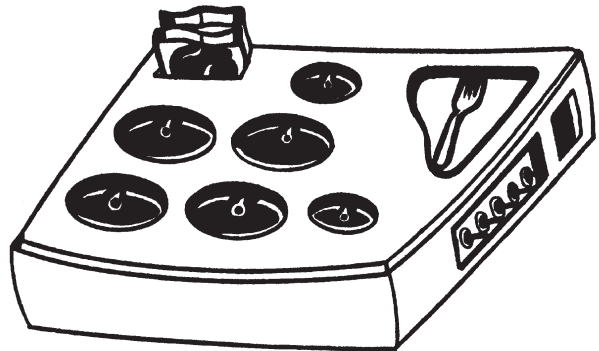
# Weightlessness In Space

Gravity is the force on Earth that keeps things from floating into space. If we drop a dish, it will fall to the ground. If we jump into the air, we will come back down.

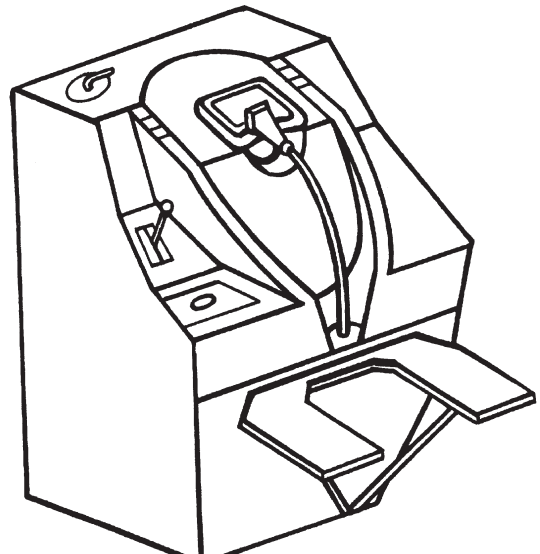
In space, however, astronauts experience weightlessness. They feel puffy in the face. They may even experience space sickness. They can turn somersaults in the air and float around the space deck. They actually become one to two inches taller.

The following tools help astronauts adapt to living in a weightless environment.

Special Food Tray



Bathroom Facilities





# Special Tools

Sleeping Facilities



Exercise Equipment



# Can We Live In Space?

The U.S. launched a lab up in the sky—  
they named it Skylab, I'm sure you've guessed why—  
a space station that would let us know  
if we could live in space for very long; and “yes” they all agreed.

The astronauts wanted to learn more about the sun—  
the source of heat and light it provides for everyone.  
So with special telescopes they were able to explore  
and learn new facts about the sun, and a whole lot more.

**It's called Skylab—a lab up in the sky.  
A place to learn the answers, a place to verify  
that we can live in space. It was evident,  
for Skylab was a successful experiment.**

*Yes, Skylab did let us know that it is possible to live in space for long periods of time. Skylab was launched on May 14, 1973 without any astronauts aboard. The crew was scheduled to blast off and board the Skylab the next day. But, because the shield that protects Skylab from the heat of the sun ripped away, another plan was needed. Eleven days later, the “Fix-it Crew” went up and repaired Skylab. It was then used over the next nine months by three separate crews. We learned a lot about the Earth, the sun, and that it's possible for us to live in space.*

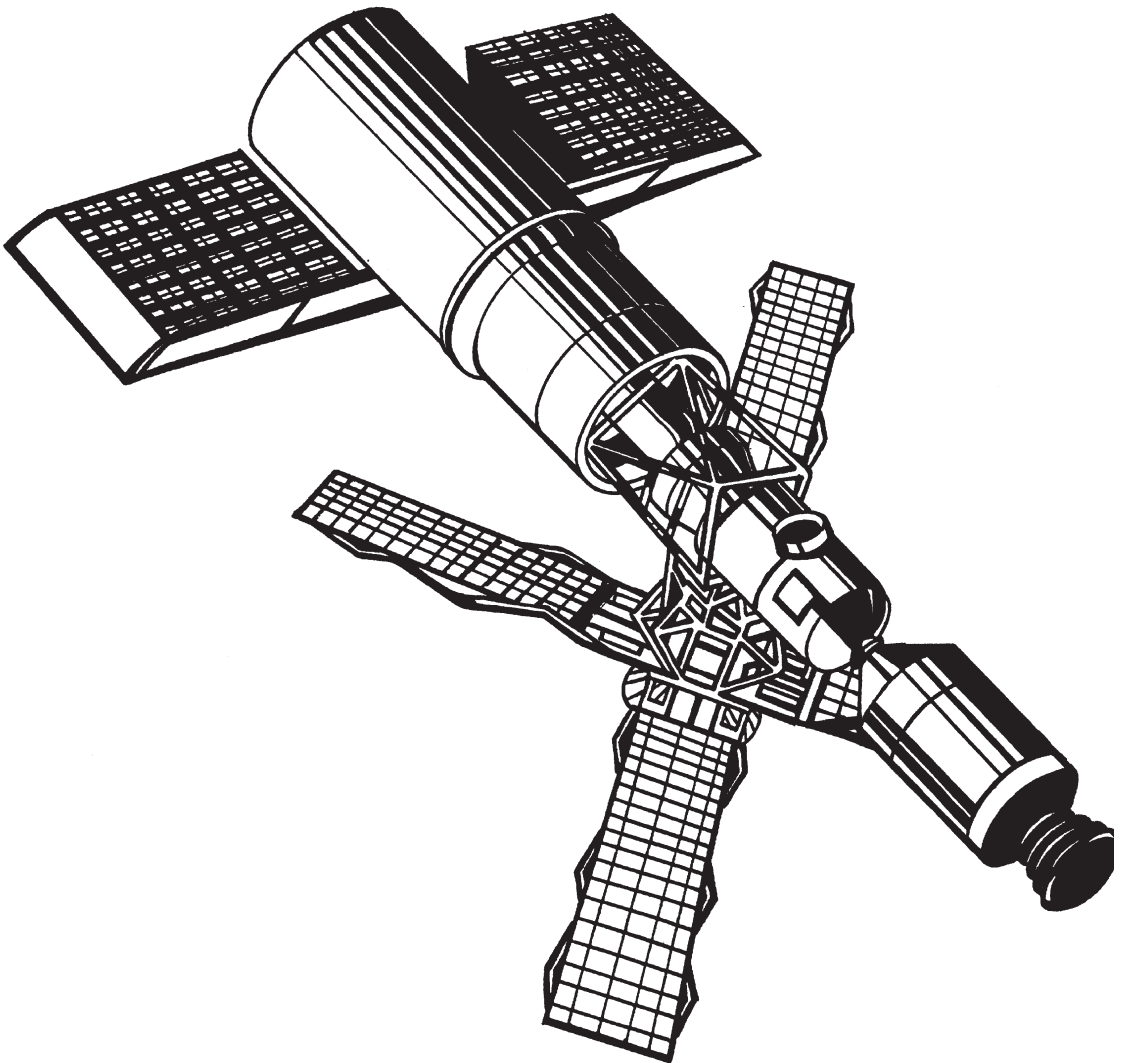
Then on February 8th of '74,  
the last Skylab crew quickly climbed aboard  
and returned to earth, for their job was done.  
A tiresome trip, but the crew they still had fun.

The United States kept Skylab in the sky.  
After more than five years, it fell from way up high.  
Parts landed in Australia and in the ocean blue,  
but most would say that Skylab was successful, too.

**(Chorus)**

# Skylab

Skylab was a 118-foot-long laboratory that was launched into space on May 14, 1973. Before this, astronauts from the United States had made six trips to the moon. Although the trips to the moon were successful, they only lasted a few days. Skylab was designed to see if humans could live in space for longer periods of time. It was also a way for us to learn more about the Earth and the sun.



# You're An Astronaut

**You're an astronaut exploring a new place.**  
**You're an astronaut, an astronaut in space.**  
**You're an astronaut. You've studied long and hard.**  
**You're an astronaut in space.**

Let's take a trip to learn and to explore a different place.  
Let's float in "zero g" on our mission to outer space.  
The shuttle is arriving on the back of a jumbo jet.  
As an astronaut you are ready. With applause you are met.

The flight plans you have studied. You feel ready for this mission.  
The months of training have prepared you for this exciting expedition.  
As you climb into your seat, the commander's voice is heard.  
The crew attentively listens to the commander's every word.

The noise is heard for miles. You sit so quietly in your seat  
as you hear the famous countdown. You are ready for this feat.  
Three engines and two rocket boosters lift the shuttle into the sky.  
The smoke is all around. The sense of pride could make you cry.

**(Chorus)**

*10, 9, 8, 7, 6, 5, 4, 3, 2, 1, ignition*

In two short minutes, the shuttle is twenty-eight miles from the USA.  
As the rocket boosters fall to earth, in the sea they will lay.  
A ship will spot their parachutes and tow them back to shore,  
while the fuel tank now is empty after six minutes or slightly more.

Two small engines are fired to boost the shuttle, just as planned.  
Eleven minutes have passed since the lift-off count began.  
The shuttle is in space as you sigh and look around.  
As you orbit around the earth, the commotion has died down.

You read the information from the miniature TV screens.  
Over 2,000 knobs and dials with some levers in between  
will help to navigate as you venture weightlessly.  
You realize this trip was conducted successfully.

**(Chorus)**

You're tired and you're hungry so you grab some prepacked food  
and strap yourself into your bed and enjoy some solitude.  
Space travel can be tiring as great work still lies ahead.  
You enjoy this special time alone snuggled in your bed.

The time has come to work, so you put your space suit on.  
Connected by a cord, you explore this great phenomenon.  
Your partner works the robot arm to help the satellite.  
With needed parts, it must be fixed and ready by tonight.

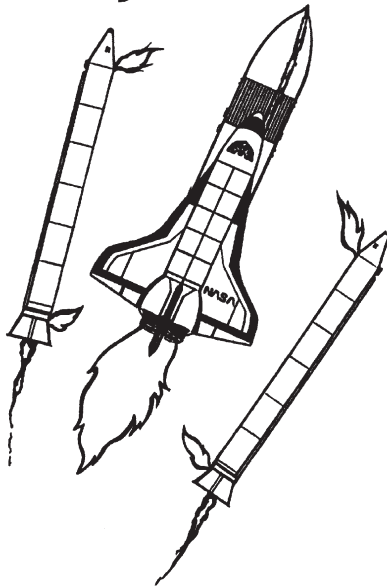
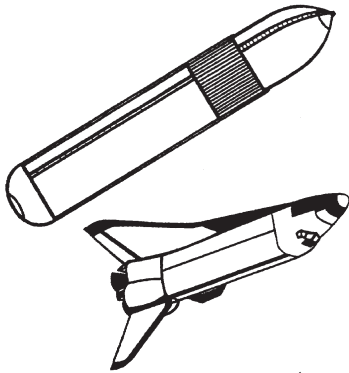
You move back into the shuttle as the others, too, retreat.  
The crew agrees this mission is successfully complete.  
The shuttle travels back to Earth. You're home without delay,  
and proud to be a citizen of the great US of A!

**(Chorus)**

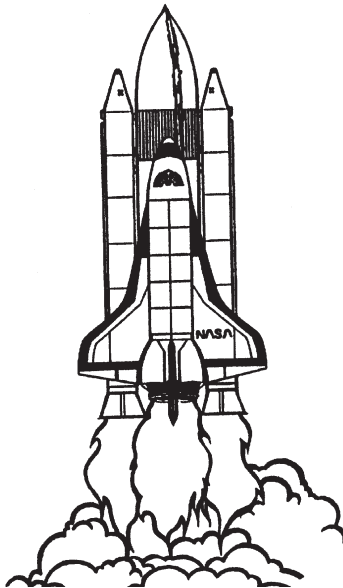


# How Does The Shuttle Work?

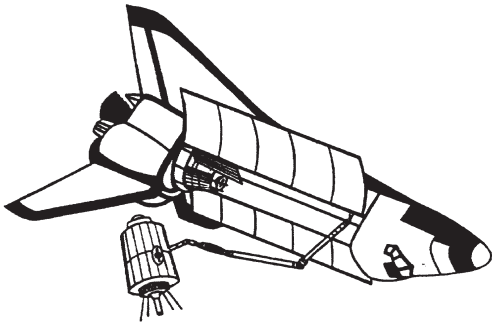
When a fuel tank is empty, it will not be used again. Instead, it will burn up in the atmosphere and fall to Earth.



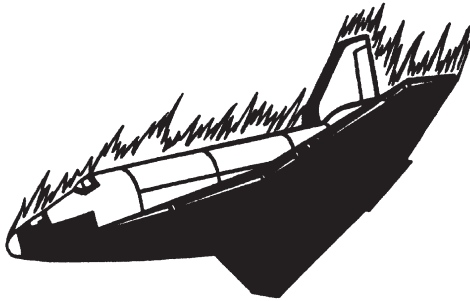
**Solid rocket boosters**, however, are used again. They fall away after their fuel has been used up, land in the sea, and are towed to shore by a ship.



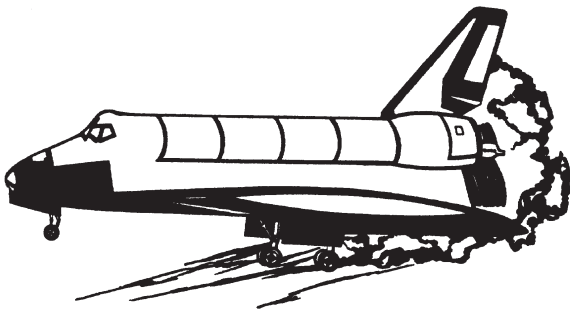
There are five main engines that help the space shuttle lift off.



Once the shuttle is in orbit, the cargo bay doors can be opened. They can release a satellite, laboratory, or anything else the shuttle is carrying for its mission.



Because the shuttle is moving faster than 17,000 mph when it re-enters the Earth's atmosphere, the shuttle's surface temperature can reach above 2,370 degrees Celsius. There are special tiles that help protect the shuttle.



The shuttle glides towards Earth. Wheels are lowered as it approaches the runway.

# Famous Astronauts

**They're famous astronauts with the courage to explore the unknown mysteries of outer space and more. With knowledge and determination, they all climbed aboard to learn about a place mankind has never gone before.**

*The first space traveler was a dog named Laika. The Russians sent Laika into space in 1957. It wasn't until April 12, 1961 that a human being traveled in space. The first space traveler was a Russian jet pilot named Yuri Gagarin. He orbited the earth one time. Russian space travelers are called cosmonauts.*

**They're famous cosmonauts with the courage to explore the unknown mysteries of outer space and more.**

*The first American in space was Alan Shepard. He flew for fifteen minutes on May 5, 1961. Then, on February 20, 1962, John Glenn became the first American astronaut to orbit the Earth. His flight lasted 4 hours and 55 minutes.*

**With knowledge and determination, they all climbed aboard to learn about a place mankind has never gone before.**

*The first woman to orbit the earth was Valentina Tereshkova, a Russian cosmonaut. She spent three days in space orbiting the earth forty-five times in 1963. Then, in 1965, the United States started its Gemini program. The first American astronaut to walk in space was Edward White.*

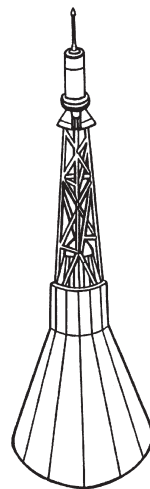
*The United States began its Apollo program in 1966. By 1968, pictures and sounds from outer space were collected and analyzed. Apollo 8 was the first manned spacecraft to orbit the moon. Frank Borman, James Lovell, and William Anders orbited the moon ten times.*

**(Chorus)**

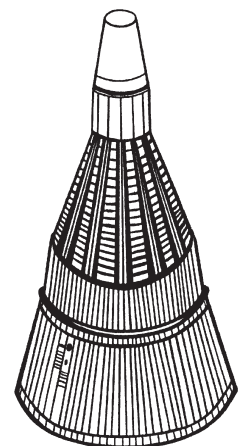
*On July 20, 1969, the United States sent Neil Armstrong, Buzz Aldrin, and Michael Collins to the moon on Apollo 11. As the entire world watched, Neil Armstrong became the first man to set foot on the moon. His famous words as he touched the moon were, "That's one small step for (a) man, one giant leap for mankind."*

*And how true. Since 1969, men and women have made numerous trips into space to do scientific experiments and to learn how the body functions in space. The future of space travel is exciting. Living on the moon or traveling to Mars might be adventures for future space travelers.*

**(Chorus)**



Mercury Capsule

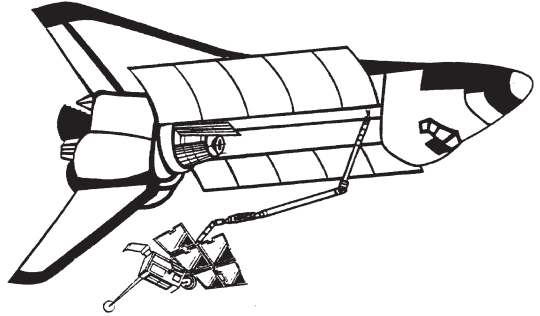


Gemini Spacecraft



# Stepping Out In Space With The MMU

Steppin' out in space with the MMU,  
the "Manned Maneuvering Unit."  
Steppin' out in space to enjoy the view,  
that's what the MMU can do.

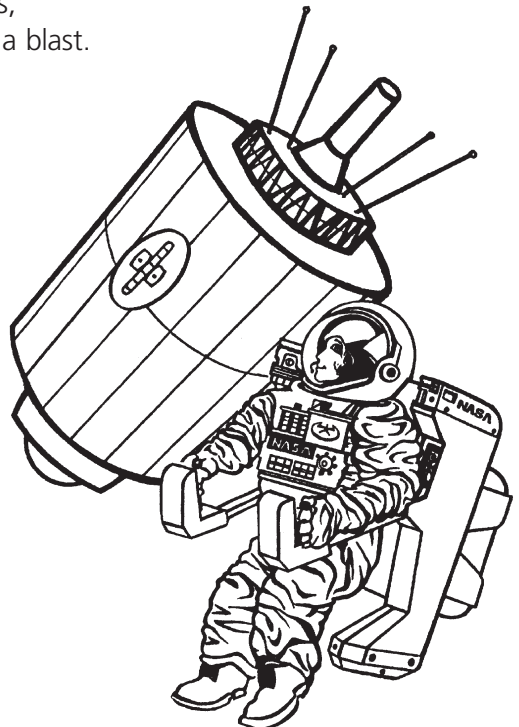


The life support system it snaps onto—onto the astronaut's back,  
so the astronaut can move about. It's like a very large backpack.  
Some say it looks like a comfy chair that the astronaut sits into.  
The handgrips help to operate and move the MMU.

**(Chorus)**

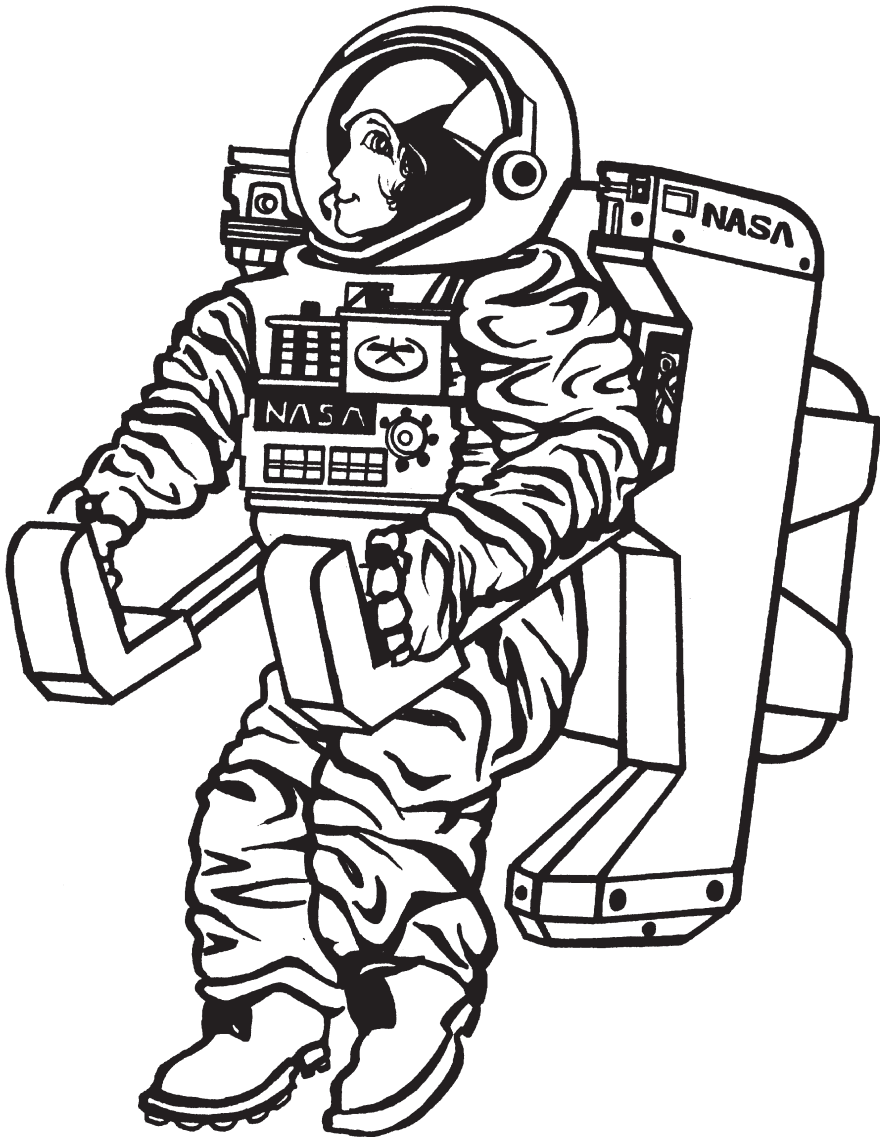
The astronaut wears a special suit to supply the oxygen.  
It keeps the temperature just right. It is the astronaut's true friend.  
Powered by jet thrusters that release nitrogen gas,  
the astronaut moves all around. I'm sure she has a blast.

**(Chorus 2x)**



# The Manned Maneuvering Unit

Years ago, when astronauts needed to leave the spacecraft, they used the *manned maneuvering unit (MMU)*. Even though this piece of equipment is no longer used, it is still interesting. The MMU is a jet-propelled backpack with a life-support system for the astronaut. The MMU is controlled by handgrips on the armrests.



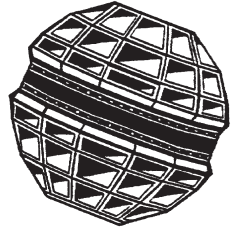
# What Is A Satellite?

The Earth revolves around the sun, so the Earth is a satellite.  
The moon revolves around the Earth, so the moon is a satellite.

**What is a satellite?**

**What is a satellite?**

**Any object that revolves around a larger object in space is called a satellite.**



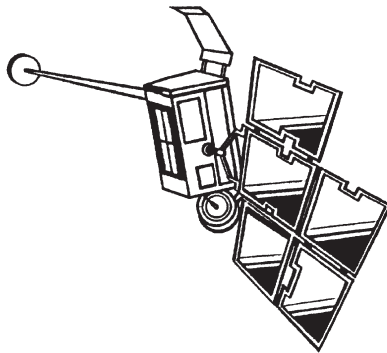
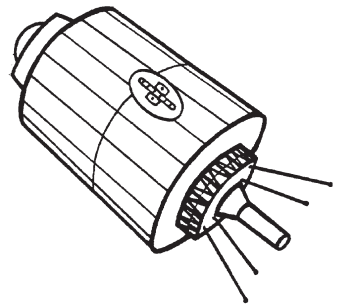
There are two kinds of satellites, artificial or natural.  
Satellites made by man are artificial satellites.

**(Chorus)**

*There are many different artificial satellites today. Weather satellites help us learn more about the weather. Navigational satellites help different types of aircrafts and ships to navigate about the earth. Scientific satellites help us learn more about our solar system and Earth, while communication satellites enable people to see and talk to each other from all over the world.*

A satellite will travel in a special path.  
This path is called its *orbit*. The Earth orbits the sun.

**(Chorus)**



# Heroes Of Our Time

*On January 28, 1986, the space shuttle Challenger exploded just 73 seconds after lift-off. This unexpected disaster took the lives of seven people. Let's not forget the dream that they had.*

Let's not forget the dream. The dream for which they strived:  
to learn about and explore the mysteries above the skies.  
Let's search for answers knowing that our work and excellence  
will help gain the knowledge these brave people wanted to keep alive.

**They are heroes, heroes of our time,  
the ones who made a difference, the ones who changed our lives.  
They are heroes that we won't forget.  
Their thirst for knowledge will live on forever in our minds.**

Let's not forget the dream. The dream for which they strived:  
to learn about and explore the mysteries above our skies.  
For challenge is never easy, but they never compromised.  
With courage and determination they were recognized.

**(Chorus 2x)**



# Space Colonies

Will the Earth get too crowded?  
Will we need another plan?  
Is pollution a problem  
on our precious land?

Is outer space the answer?  
Can we live in colonies  
and build a home for everyone  
to live in harmony?

**Space colonies—a home up in the sky.  
Space colonies—a home that would supply  
all the needed services and all the needed goods.  
This future home is possible, a potential likelihood.**

Now, will we live somewhere in space  
or live right on the moon?  
Is gravity a problem  
if new homes we pursue?

Though scientists would need to know  
just how this would be done,  
to live in space colonies  
I think would be great fun.

**(Chorus 3x)**



# I'll Be An Astronaut Medley

*(It's Called Cooperation)*

Working well with others, solving problems, you will see,  
are things that NASA looks for in a person who will be  
an astronaut who'll learn and share knowledge in a way  
that will help our country learn new things each and every day.

It's called cooperation. I think you will agree  
that if we work together it will just become routine  
to talk about the problems working as a solid team.  
For finding new solutions will make everyone succeed!

*(Many Jobs to Choose From)*

There are many jobs to choose from. There are many things to do.  
If you think you'd like to fly, these jobs are right for you.  
So learn about space travel and give it a lot of thought,  
and one day you might become a famous astronaut!

*(Famous Astronauts)*

They're famous astronauts with the courage to explore  
the unknown mysteries of outer space and more.  
With knowledge and determination, they all climbed aboard  
to learn about a place mankind has never gone before.

*(Heroes of Our Time)*

They are heroes, heroes of our time,  
the ones who made a difference, the ones who changed our lives.  
They are heroes that we won't forget.  
Their thirst for knowledge will live on forever in our minds.

*(I'm Feeling Light as a Feather)*

I'm feeling light as a feather, bouncy as a ball,  
really topsy-turvy, and really, really tall.  
For now, my face is puffy and my voice a little stuffy,  
but I like what I am feeling. It is weightlessness.

*(When I Grow Up)*

When I grow up, I want to be something very interesting.  
The job I'll do will help a lot of people, and I'll like the work that I do.  
Each day will be adventurous, and I'll strive to learn a lot.  
Then I'll share what I know and my knowledge will grow.  
It's the perfect, perfect job!

Yes, I'll share what I know and my knowledge will grow.  
It's the perfect, perfect job.  
The perfect, perfect job.  
When I grow up, I wanna be an astronaut!

# Space Quiz

True or false? Read each sentence below. If it is true, put a "T" in the blank. If the sentence is false, put an "F" in the blank.

- \_\_\_\_\_ In space, astronauts are weightless.
- \_\_\_\_\_ Payload specialists are the astronauts who fly the shuttle.
- \_\_\_\_\_ Skylab is still in orbit around the Earth.
- \_\_\_\_\_ In the future, people may live in space colonies.
- \_\_\_\_\_ The first space traveler was a cat named Sarja.
- \_\_\_\_\_ The first human to walk on the moon was Neil Armstrong.
- \_\_\_\_\_ MMU is short for "manned moon unit."
- \_\_\_\_\_ The "Challenger" is a space shuttle that exploded 73 seconds after lift-off.
- \_\_\_\_\_ Astronauts can eat regular food in space.
- \_\_\_\_\_ An object that revolves around a larger object is called a satellite.



Answers: T, F, F, T, F, T, F, T, F, T

# You Can Be An Astronaut

Dear Friends:

My name is Dr. Lynn Bondurant. I work at the NASA Lewis Research Center\* in Cleveland, Ohio. My job lets me create programs for students to learn about space.

Sometimes I get to work with an astronaut. Astronauts are wonderful people. They like to learn and explore. They study a lot of books. They have fun too! Some of the astronauts like to scuba dive. Others enjoy mountain climbing, parachuting, or flying an airplane.

Most of all, the astronauts are willing to take risks. Astronauts train hard for their flights.

To be an astronaut you must go to college. Many times astronauts have more than 4 years of college. Some of the astronauts have even gone to medical school.

Astronauts' jobs are exciting and challenging. I hope you decide to learn more about becoming an astronaut.

Sincerely,  
Dr. R. Lynn Bondurant, Jr.

\* today called NASA Glenn Research Center.

