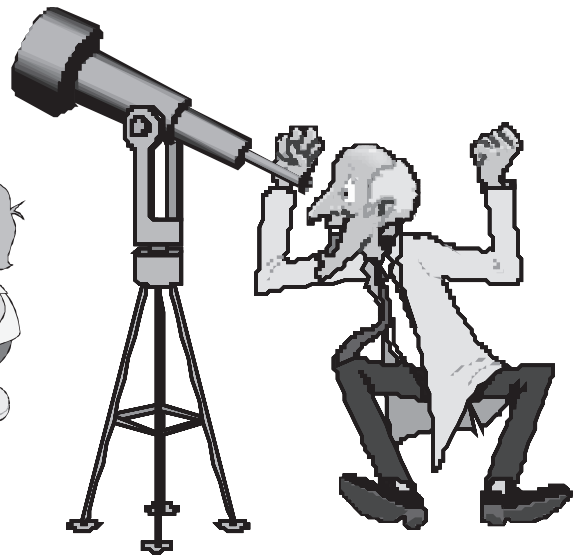
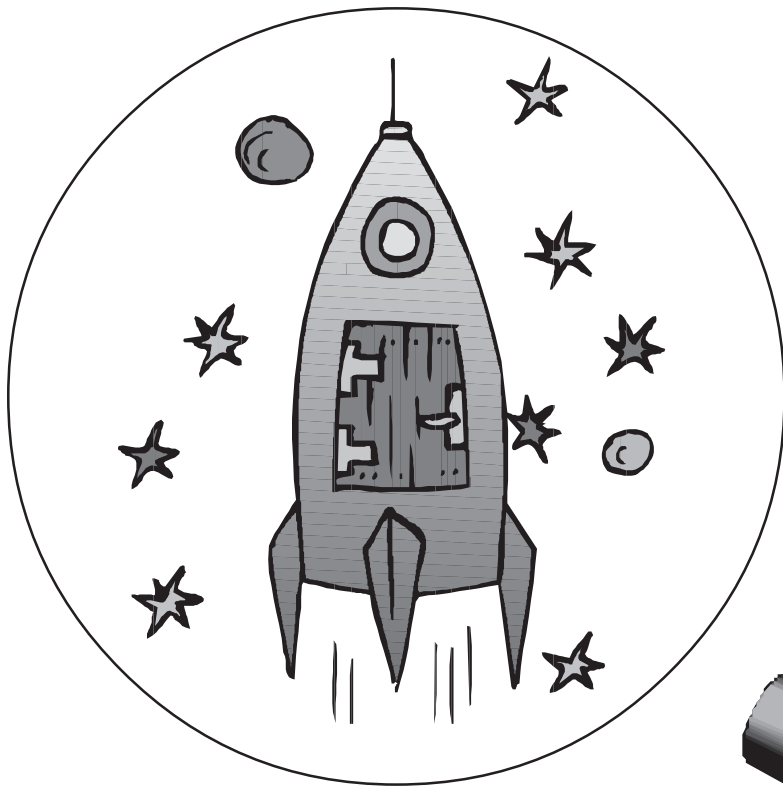


# Mini 4-H Space



## Acknowledgments:

We would like to thank the following people for their dedication to positive youth development:

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The Zaner-Bloser font used in this manual was chosen because it closely resembles children's writing style.

#### Initial Development Team (1996-1997):

A debt of gratitude is owed to the following people for their persistence and foresight in compiling the initial project activity manuals:

David Caldwell, Natalie Carroll, John Crites, Jonathan Ferris, Jeanette Findley, Brian Gauck, Dan Kirtley, Anita Krug, Leanne McGiveron, Carolyn Miner, RaeAnn O'Neill, Sue Provost, Scott Ripberger, Debra Searcy, and Susan Trutner.

### Contact your local Extension office for a list of available project activity manuals.

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# Mini 4-H Helper's Page

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Welcome to the Mini 4-H Program! Mini 4-H is designed for children in grades K-2 to explore a variety of project activity areas and to interact with caring adults and other children.

Children receive this project activity manual when they enroll in Mini-4-H. This manual, and the manuals on various other topics, will provide fun, age-appropriate learning activities throughout their year(s) in Mini 4-H.

As a Mini 4-H adult helper, your job will be to guide and encourage each child through the activities. A wide range of activities is provided to allow you to choose the ones most appropriate for the children you are working with. It is strongly suggested that you do not complete the activities for them. Instead, help them, guide them, work with them, and let them do all that they possibly can. 4-H believes in allowing children to learn by doing. The Mini 4-H project activities are hands-on learning opportunities designed to provide a meaningful educational experience for youth.

Additionally, the Mini 4-H program is set up to allow children to display a project activity that is based upon information in this manual. Some children may want to exhibit at the 4-H Fair. The 4-H Fair is an exciting week that allows community youth to showcase their enthusiasm for learning. Children may choose to display a project activity they did by themselves or one they did with a group. Other children may choose to showcase their work in other ways, such as displaying it in a special place in their own home.

Mini 4-H is fun! Children will certainly enjoy it. You can have fun too, by guiding and helping as children participate in the program. Encourage and praise the children as they have fun learning and sharing with you. If you have any questions regarding Mini 4-H or other 4-H programs, please contact the Extension office in your county.

# Helper's Tips

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The Mini 4-H program can be used with individual children, but it works best when used in a group of 2 or more children. Children working cooperatively in groups develop positive images of themselves and their ideas. Other ways adult helpers can maximize the benefits of Mini 4-H are to:

- **Work on a subject interesting to the child by encouraging children to choose the content area.** Look through this manual and choose the project activities based on the interests and skill levels of the children.
- **Relax and have fun.** Some children will want to finish their activities, others may not. There is no need to pressure children of this age to finish an activity, because the real learning takes place while they participate in the activity and interact with others. The finished product should not be the main focus. The knowledge children gain while they explore new areas and experiment with new ideas should be the primary goal.
- **Remain flexible and adapt to the changing needs of the children.** Restlessness or boredom may indicate a need to stop the activity and come back to it later.
- **Encourage children to talk and work with each other.** Children learn best when they are encouraged to freely share their reactions and observations. You may want to ask the children about what they did during an activity, what happened, what was the most difficult, what was the easiest, and what they liked the most.

This manual contains activities for children that allow for a wide range of abilities and provide practice for developing a variety of skills. Many of the projects have additional things to do listed after the activity in the **STRETCHERS** section. This section provides ideas to adapt the activity to better match children's individual skill levels and also provides additional skill practice.

# Mini 4-Hers Page

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Mini 4-Hers have lots of fun! There are many activities for you to explore. You can try new things. You can share them with your friends and family.

Here are some things to know about 4-H.

The 4-H symbol is a four-leaf clover with an "H" in each leaf. Clover is a plant that grows in fields, yards, and along roadsides. Most clovers have three leaves. Sometimes, if you look very carefully, you may get lucky and find a special clover with four leaves. A four-leaf clover is used as the symbol for 4-H to let everyone know 4-H is a special kind of group.



The 4-H colors are green and white. The four-leaf clover is green and the "H" in each leaf is white.

A group motto is a saying that tells people what is important to the group.

The 4-H motto is "To make the best better." When something is better than all of the others, it is the best. Think about a time when you did your best. Maybe you threw a ball farther than you have ever thrown it before. Now, think about some ways you could do better. You may be able to throw farther by practicing for a while or by watching someone who can throw farther than you to see how they throw so far. Even if you throw the ball farther than you have ever thrown it before, there are still ways that you can do better the next time. 4-H encourages you to always try to do better, even if you are doing the best you have ever done.

# The 4-H Pledge

---

A pledge is a promise you make to yourself and to the people around you. The 4-H pledge is in bold print below. Under each line of the pledge there are words telling what the pledge means.

I pledge my **Head**  to clearer thinking.

I promise to use my head to make good choices.

my **Heart**  to greater loyalty,

to use my heart to be a good friend.

my **Hands**  to larger service, and

to use my hands to do helpful things for others.

my **Health**  to better living.

to take care of my body and to show others how to live in a healthy way.

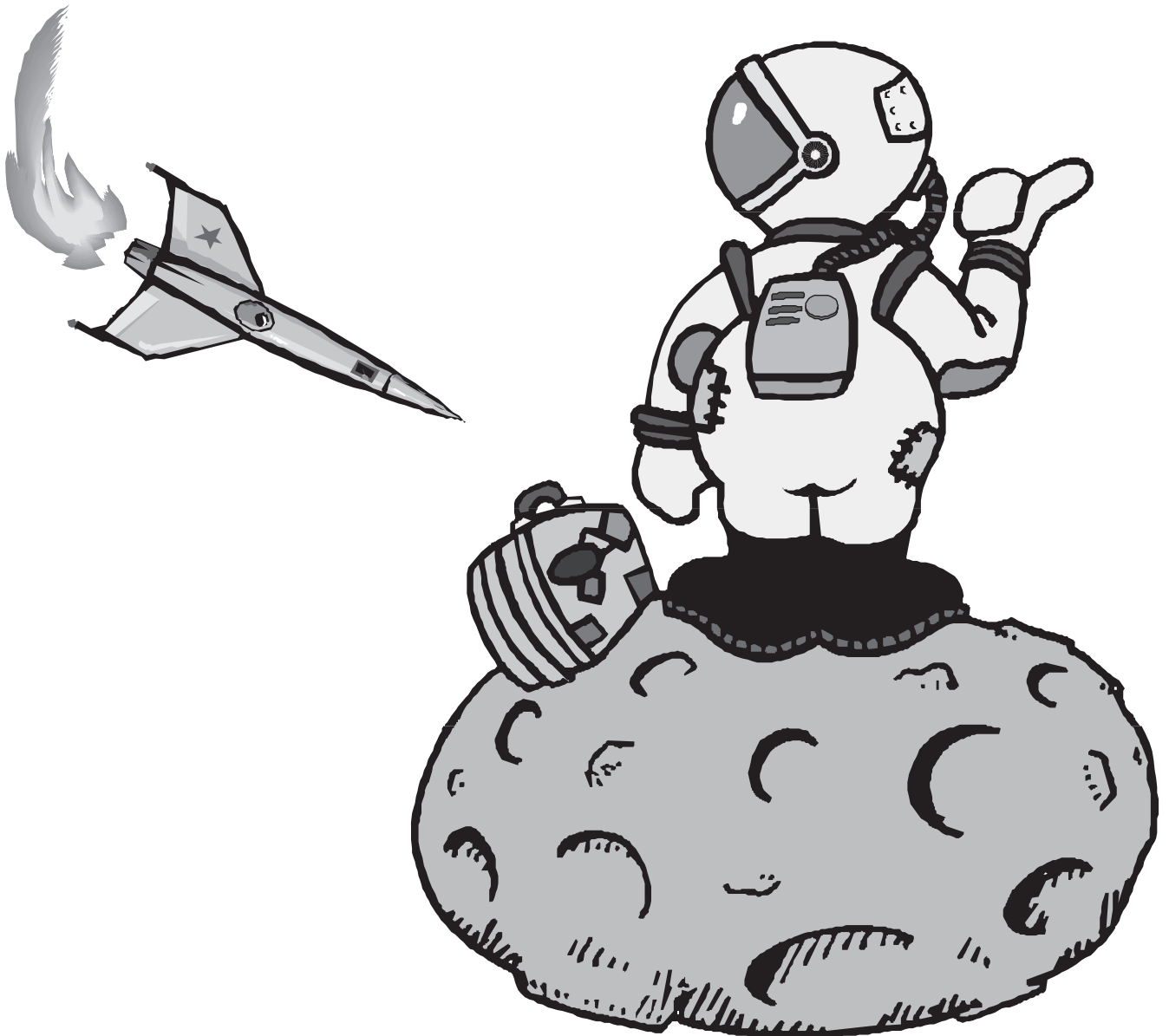
for my club, my community,  my country, and my world.

to help my group, my community, my country, and my world be happy and safe for everyone.

# Space: A Great Place to Visit?

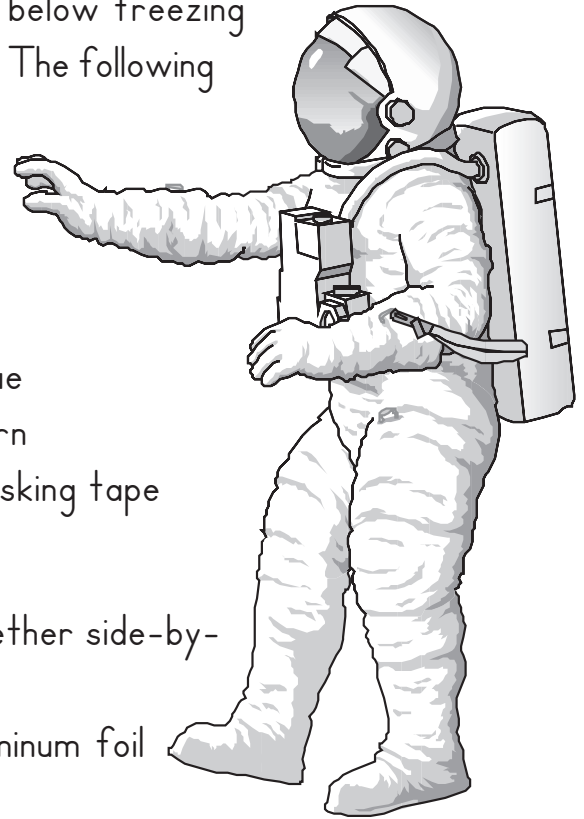
Have you ever thought about what you want to be when you grow up? Have you ever thought about being an explorer? Does it sound like fun to travel to places that few people have ever been before? If so, have you ever thought about going into space? In this manual you will find out some things about exploring space. Get ready.

10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - Turn the page!



# Activity 1 – Design Your Own Space Gear

Have you ever wondered what it would be like to be an astronaut? Astronauts have to wear a lot of equipment when they go out into space. In outer space there is no air to breathe, so the astronauts have to carry their own air in tanks on their back. The space suit that the astronaut wears has to be able to hold the air in so it will not get out. The suit has to be able to protect the astronaut from getting too hot or too cold because space can be way below freezing and way above boiling depending on where you are. The following activities show you some ways to make your own space gear.



Things you need:

- Aluminum foil or construction paper
- 2 oatmeal containers
- Markers
- Scissors
- Glue
- Yarn
- Masking tape

What you do:

1. Fasten two oatmeal containers together side-by-side using masking tape.
2. Cover oatmeal containers with aluminum foil or construction paper.
3. Make backpack type handles by connecting yarn to the top and bottom of each oatmeal container.
4. Decorate the tanks.
5. Have fun wearing your space gear.

## **STRETCHERS**

1. Use assorted boxes, empty paper tubes, ribbon, etc. to make radios, walkie talkies, and other space gear.



# Activity 2 – Design Your Own Helmet

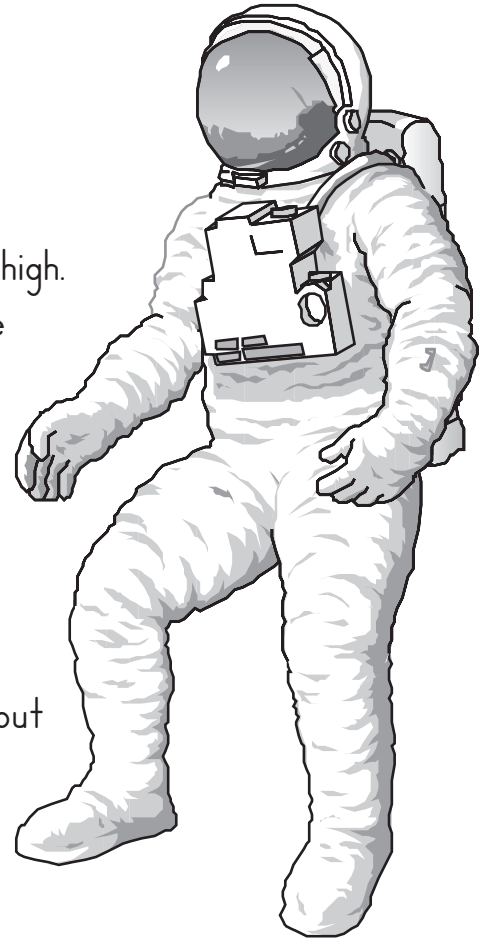
Each suit has a helmet. One of the face shields on the helmet is tinted like sunglasses to protect the astronaut's eyes from too much light. The other face shield on the helmet is clear so the astronaut can see in the darkness of space.

Things you need:

- Large paper sack
- Scissors
- Markers

What you do:

1. Cut off the paper sack until it is about 18" high.
2. Put the sack over the child's head with the front of the sack covering the child's face.
3. Draw half circles on both the pleated sides of the sack to be cut out to allow room for the child's shoulders. Remove the sack from the child.
4. Cut out the half circles.
5. Draw an oval shape for a face shield. Cut out the oval.
6. Invite children to decorate their helmets.  
*Remember: Keep plastic bags out of the reach of children. Never use plastic bags for this activity or any activity where there is a possibility children may use them around their face.*



## STRETCHERS

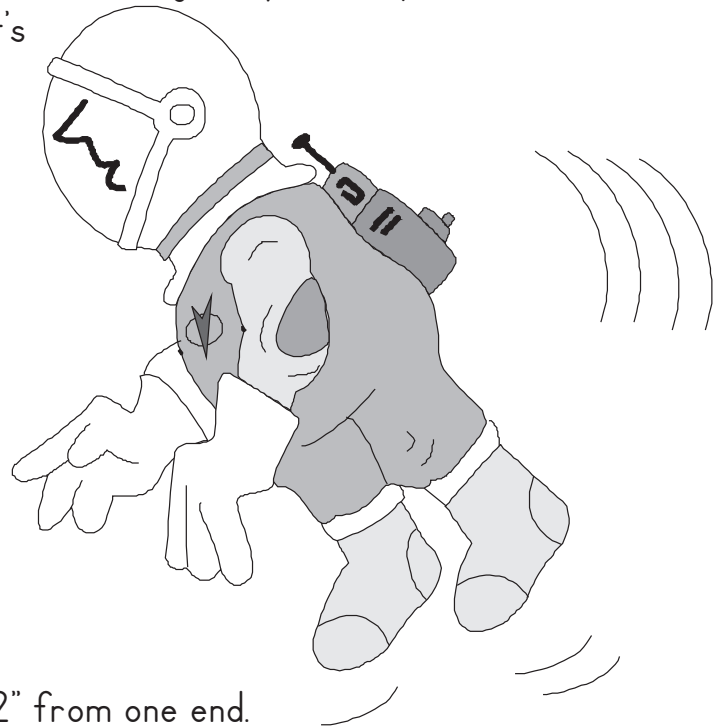
1. Encourage children to use blankets, boxes, and pillows to make their own places to explore. Once they create the landscape, turn off the lights, give each child a flashlight, and let them explore.

# Activity 3 – Design Your Own Space Boots

Here on Earth there is a force called **gravity** that keeps you on the ground and keeps you from floating away. In space there is no gravity. The space suit has magnetic boots that help keep the astronaut's feet attached to the spaceship.

Things you need:

- 2 shoeboxes with lids
- Glue
- Paper for stuffing
- Masking tape
- Scissors
- Aluminum foil
- Markers



What you do:

1. Cut a 5" hole in each lid about 2" from one end.
2. Replace the lids on the shoeboxes and help child put his or her feet into the shoeboxes like boots.
3. Lift lids just enough to stuff papers around their feet until the shoebox is full. Replace lid and tape it securely to the box using masking tape.
4. Have children use foil and markers to decorate shoeboxes and lids to resemble boots.
5. Invite children to walk around in their new space boots.

## **STRETCHERS**

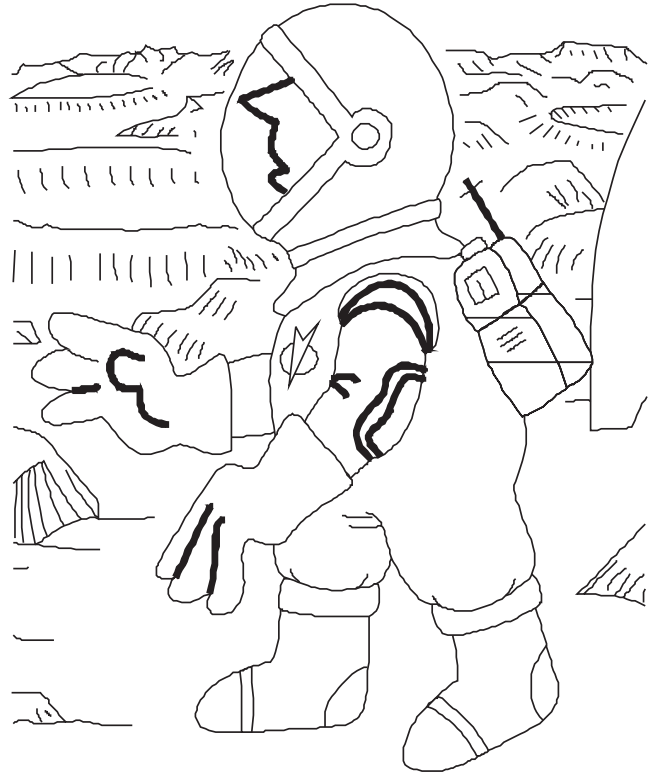
1. Encourage children to take a pretend trip into outer space. Talk them through suiting up, entering the rocket, counting down for blastoff, walking in space, re-entering the Earth's atmosphere, and finally a hero's welcome. Help children think through how they might move in space with no gravity, how they might eat in space, and how they might sleep. Be sure to allow for all kinds of answers while letting the children know how astronauts have solved these problems.

# Activity 4 – Training to Be an Astronaut

To be an astronaut, your mind and your body have to be well trained. Astronauts study a long time to be able to go into space. Men and women who want to travel into space have to be healthy and strong. They must learn how to fly a plane and how to do things while they are hanging upside down. When people study to be an astronaut they must learn how to repair things that are broken and how to solve problems. Astronauts must be good at math and must be able to live and work in small spaces for a long time. Astronauts must learn to be good at many things. If you think it would be fun to be an astronaut, you might enjoy going through the training below.

Things you need:

- Four different styles of tongs (ice tongs, slotted spoons, pliers, salad tongs, etc.)
- Four different things to pick up (ball of aluminum foil, a marble, a rock, a button, a ping pong ball)
- Pair of workgloves (optional)
- Two baskets or bowls
- Ribbon
- Markers
- Glitter
- Scotch tape
- Glue
- Scissors



What you do:

1. Place the 4 items to be picked up in a basket or bowl.
2. Line all of the “trainees” up along the edge of the activity so they can see each person run and can cheer each person on.

# Activity 4 – Astronaut Training (cont'd)

3. Call one trainee's name and have them stand about 15 feet from the basket of items. Place an empty basket beside the "trainee" getting ready to run, skip, or hop.
4. Give the running "trainee" a pair of tongs (using the gloves makes the tasks more difficult) and tell them what item they must bring back from the full basket and put in the empty basket beside them.
5. When you say go, have the trainee run (or hop, or skip) with the tongs to the full basket and use the tongs to get out the item you requested.
6. The trainee brings the item back while holding it with the tongs and drops the item in the empty basket.
7. The trainee then uses the next set of tongs to pick up the next item you request. This trainee continues until all the items are moved from one basket to the other.
8. Once the first trainee finishes, the second child is called to repeat the exercise. This continues until all trainees have done the exercise. (*This type of "training" is non-competitive and allows all children to participate and each child to receive cheers. Many different kinds of obstacle type courses can be set up for "Astronaut Training."*)
9. Cut out and color the medal and the certificate on the following page when finished with training. Sprinkle the stars with glitter, add decorative ribbon to create a necklace, and present the medal and certificate in an official ceremony.

Astronaut Training Medal and Certificate



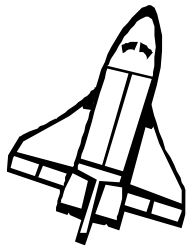
This is to certify that



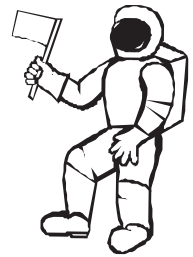
First name

Last name

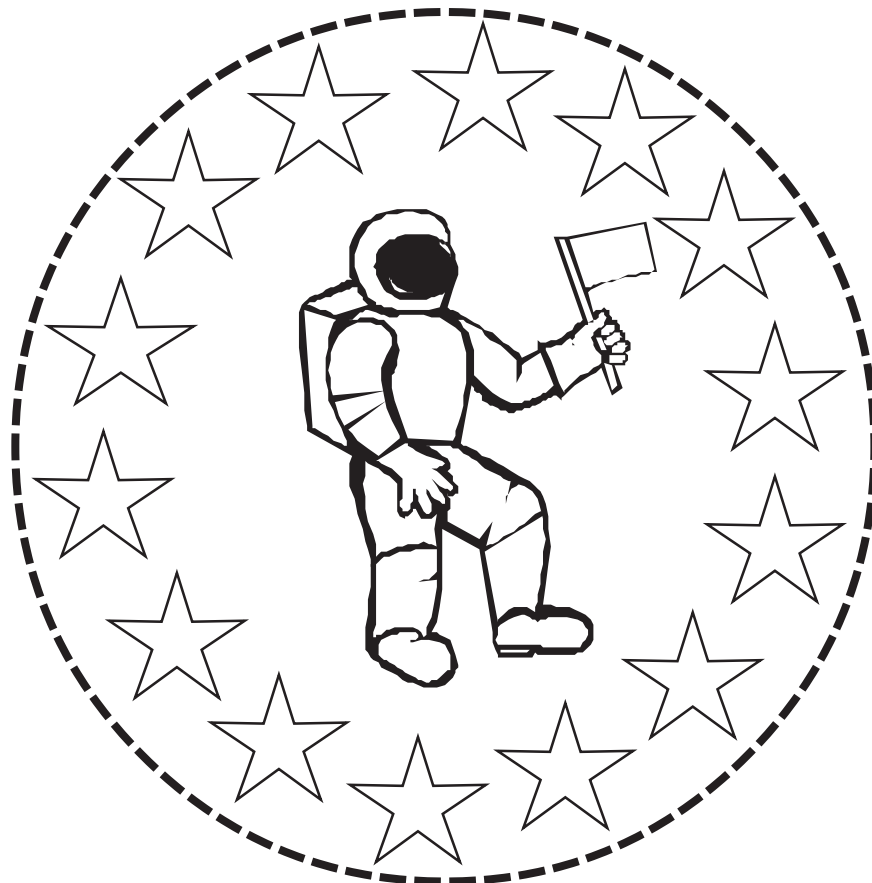
has successfully completed



Mini 4-H

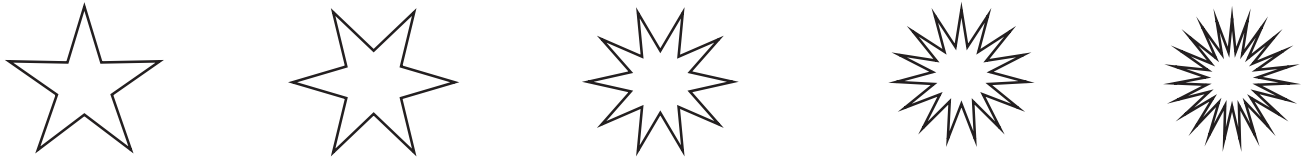


Astronaut Training



# Activity 5 – The–Shape and Color of Stars

Do you know what shape a star is? Some people think a star has five, six, or more points on it and looks sort of like the ones below.



Stars do not really have points on them like pictures show. The pictures of stars with points are just symbols of the way people think stars look. When you look at stars in the sky, the air that surrounds the Earth “twists” the light coming from the stars, causing them to look like they have points. Stars are really round balls of burning gas. Our sun is a star. The burning gas is what produces the light and the heat we get from the sun.

Stars can be several different colors even though from Earth the colors are hard to see. The color of a star gives **astronomers**, or scientists that study things in space, clues to the star’s age and how hot the star is burning. Stars can be blue, white, yellow, orange, or red. Some stars are a mixture of colors. Make your own star in the activity below.

Things you need:

- 8 1/2” x 11” sheet of black or dark blue construction paper
- Red, orange, yellow, white, or blue tissue paper
- Hole punch - Glue - Colored chalk - Hairspray

What you do:

1. Fold the construction paper into fourths.
2. Use the hole punch to punch several holes in the folded paper.
3. Unfold the paper. Tear small pieces of tissue paper and glue them on the back of the paper to cover all the holes.
4. Add planets and other things to your picture using colored chalk. Spray your picture lightly with hairspray to keep the chalk from smearing. Hang your picture in a window so the light can make your “stars” shine. Notice that the stars are round like balls and not pointed.

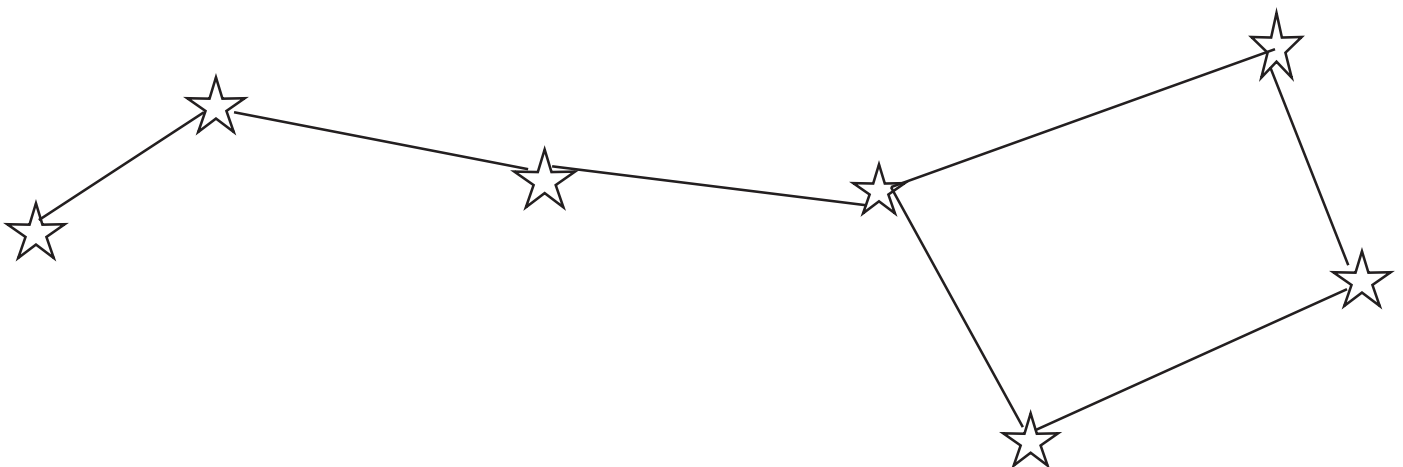
# Star Pictures

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Have you ever lain on the grass at night and looked up at the sky? You probably saw lots and lots of stars. A long time ago when people looked up at the sky at night they saw lots of stars just like you do, but they also saw something else. They saw pictures that the stars made. When they looked at the stars they imagined that there were lines connecting some of the brightest stars to create a sort of dot-to-dot picture. They called the pictures the stars made **constellations**. Look at the stars below and see if you can see a picture.



Are you having trouble seeing a picture? Look at the same stars below with lines connecting them. Now can you see a picture? What does the picture look like? The picture below is a real constellation called the "Big Dipper." Why do you think they called it the "Big Dipper"?



# Activity 6 – Make a Constellation

---

Things you need:

- 11" x 17" white paper
- Pencil with eraser
- Star-shaped stickers
- Several newspapers
- 11" x 17" black piece of construction paper
- Black marker
- Safety pin
- White crayon

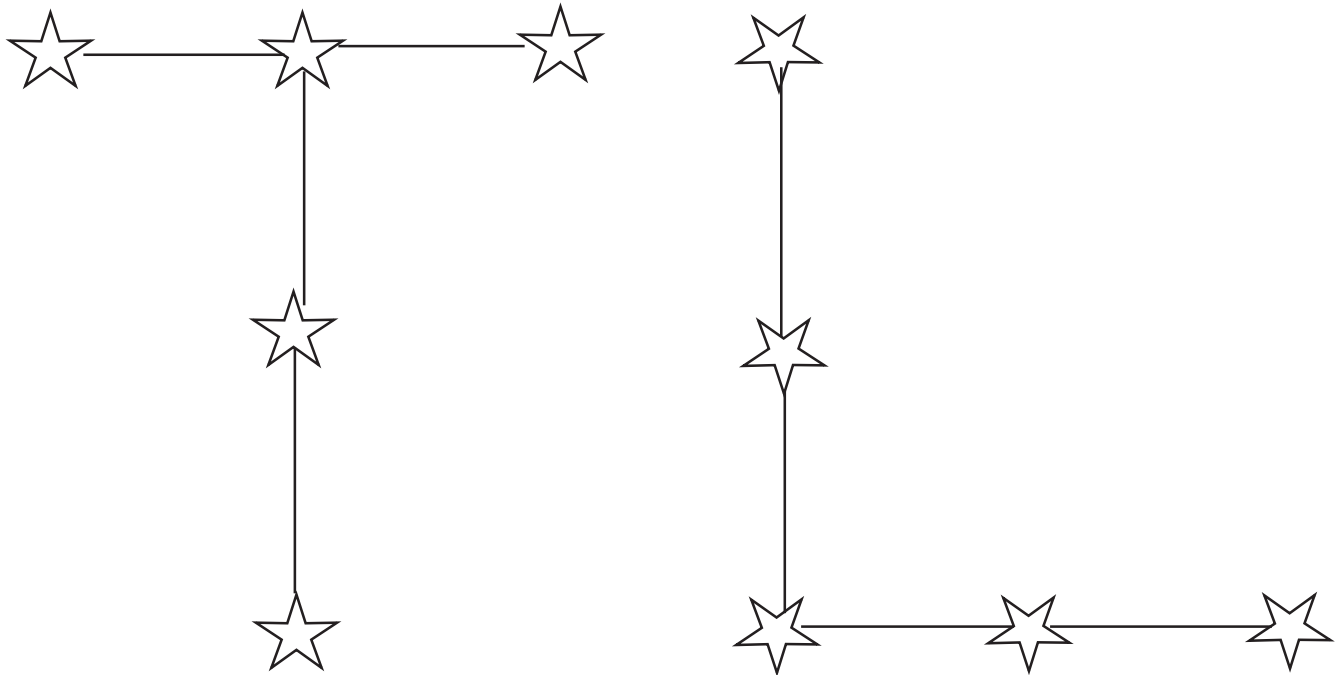
What you do:

1. Child prints his or her name on the white paper using a pencil. Depending on the child's skill level, you may want to write their name on another piece of paper so the child can use it to copy from, or you may need to write the child's name for them. Be sure to make the letters big enough to fill the paper.
2. Encourage the child to carefully trace over the penciled letters with a black marker.
3. Lay several layers of newspaper on a flat surface. Next lay the black paper over the newspaper. Finally, lay the white paper with the child's name on it over the black piece of paper. Be sure the name is facing up.
4. Stick the safety pin through both papers into the layers of newspaper approximately every 2" along the lines of the letters that spell out the child's name. Be sure to poke a hole where all the points of the letters are and where all the lines making the letters end.
5. Close up the safety pin and lay it aside.
6. Have child remove the white paper and place a star sticker over every hole in the black paper.
7. Instruct the children to use the white crayon to connect the stars (stickers) to make their own name constellations. You may want to use the children's initials to make constellations as a way of making the activity the same length for everyone when working with a group. This would also make it easier when working with children with less writing skill. (*Example of initial constellation on next page.*)



# Activity 6 – Make a Constellation (cont'd.)

Example of an initial constellation above.



Constellations or star pictures were named after things that people were familiar with. Some constellations were named after animals like bears or lions. Some were named after the characters in **myths** or stories that the people had heard like Orion, the hunter, or Gemini, the twins. What kinds of names do you think people today might give some of the constellations? Do you think they might name them after cars or sports heroes? What kinds of things would you name the constellations after?

## **STRETCHERS**

1. Use Q-tips to dab dots of paint onto black or dark blue paper to make stars. Now look closely at the stars. Do you see a star picture? Use a white crayon to connect the stars and create a constellation. Be sure to name your constellation.

# Activity 7 – Match the Constellations

The activity below uses cards that have six popular constellations on them. The cards have dots where the stars are supposed to be. The lines show the lines the people imagined to make the dot-to-dot pictures. Can you see the star pictures the people long ago saw?

In the constellation called **Hercules** can you see the mythical strong man? The constellation named **Canis Major** is a star picture of a dog. Can you guess what the constellation **Leo** might be a star picture of? **Orion** is a star picture of a great mythical hunter who used a bow and arrow to get his prey. **Gemini** is a constellation showing twins. Can you see two people in the star picture? The constellation called **Taurus** is a star picture of a bull. Can you see the long horns?

Things you need:

- **Constellation Cards Activity Page**
- **Constellation Cards Activity Page 2**
- 2 sheets same color construction paper
- Scissors
- Glue

What you do:

1. Glue **Constellation Cards Activity Page** and **Constellation Cards Activity Page 2** to the pieces of colored construction paper.
2. Next, cut along the dotted lines on both sheets. You should end up with 12 cards.

To play the game:

1. Mix up all the cards and lay them face down in rows.
2. Turn over any 2 cards. If the constellations match, you keep them and you take another turn. If they don't match, turn both cards back over so the next person can take a turn. Play continues until all cards are matched.

Constellation Cards Activity Page



Hercules



Canis Major



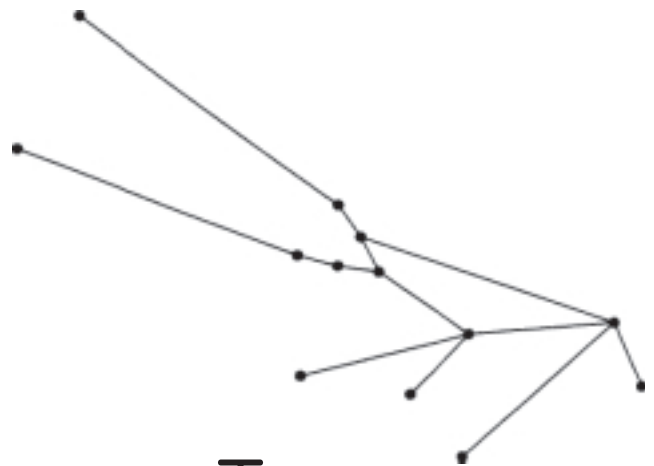
Leo



Orion



Gemini



Taurus

Constellation Cards Activity Page 2



Hercules



Canis Major



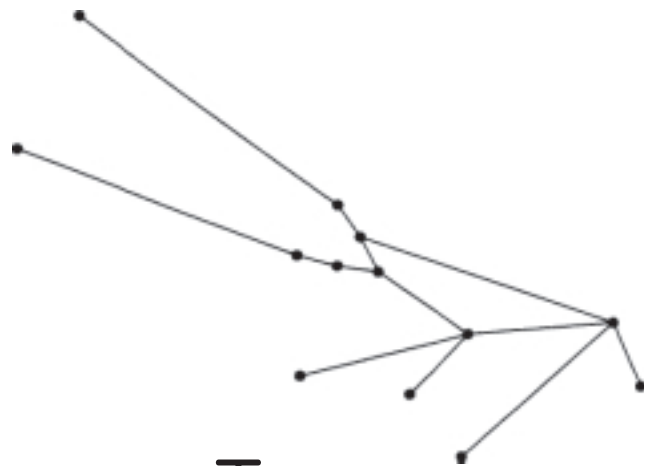
Leo



Orion



Gemini



Taurus

# Activity 8 – Connect the Stars

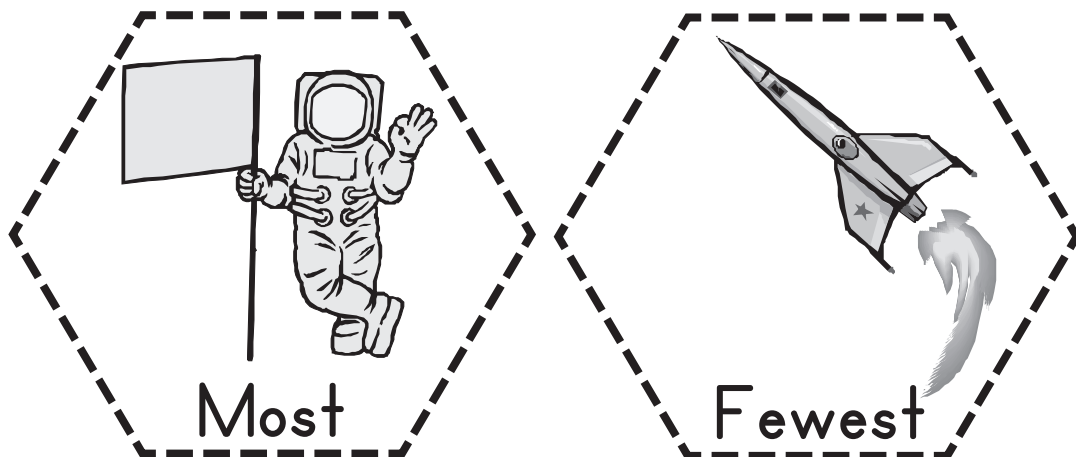
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Things you need:

- Several copies of the **Star Connect Activity Page**
- Game pieces at bottom of this page
- 2 different color markers
- Glue
- Scissors

What you do:

1. Cut out the hexagon game pieces at the bottom of this page and glue them back to back.
2. Two people share the **Star Connect Activity Page** and each person gets one of the markers.
3. The players take turns making one line and connecting 2 of the stars with their marker. Only stars directly above, below, or across from each other can be connected. Stars diagonally from one another cannot be connected.
4. Every time the line drawn completes a square, the person making the line puts an "X" in the square.
5. Play continues until all the stars are connected and all the squares are filled with a colored "X."
6. One person then tosses up the game piece and lets it land on the floor. The person with the most colored "X"s goes first for the next game of Star Connect if the astronaut lands facing up. The person with the fewest colored "X"s goes first for the next game of Star Connect if the rocket lands facing up.



Star Connect Activity Page



# Activity 9 – Take a Walk in Space

Astronauts train a long time to be able to travel into space. The astronauts must get used to having no gravity and to floating around. Floating in water is like floating in space so they do some of their training underwater. Sometimes when the astronauts are in space they need to go outside the shuttle to fix something or to do regular maintenance on the spacecraft.

When astronauts leave the spacecraft, they can't walk because there is no gravity to hold them where they want to be, so they float. A special hose keeps them attached to the spacecraft and keeps them from floating away into space. The hose brings the astronauts oxygen, water, and electric power while they are working outside the spacecraft. You will be able to help an astronaut walk in space in the activity below.



Things you need:

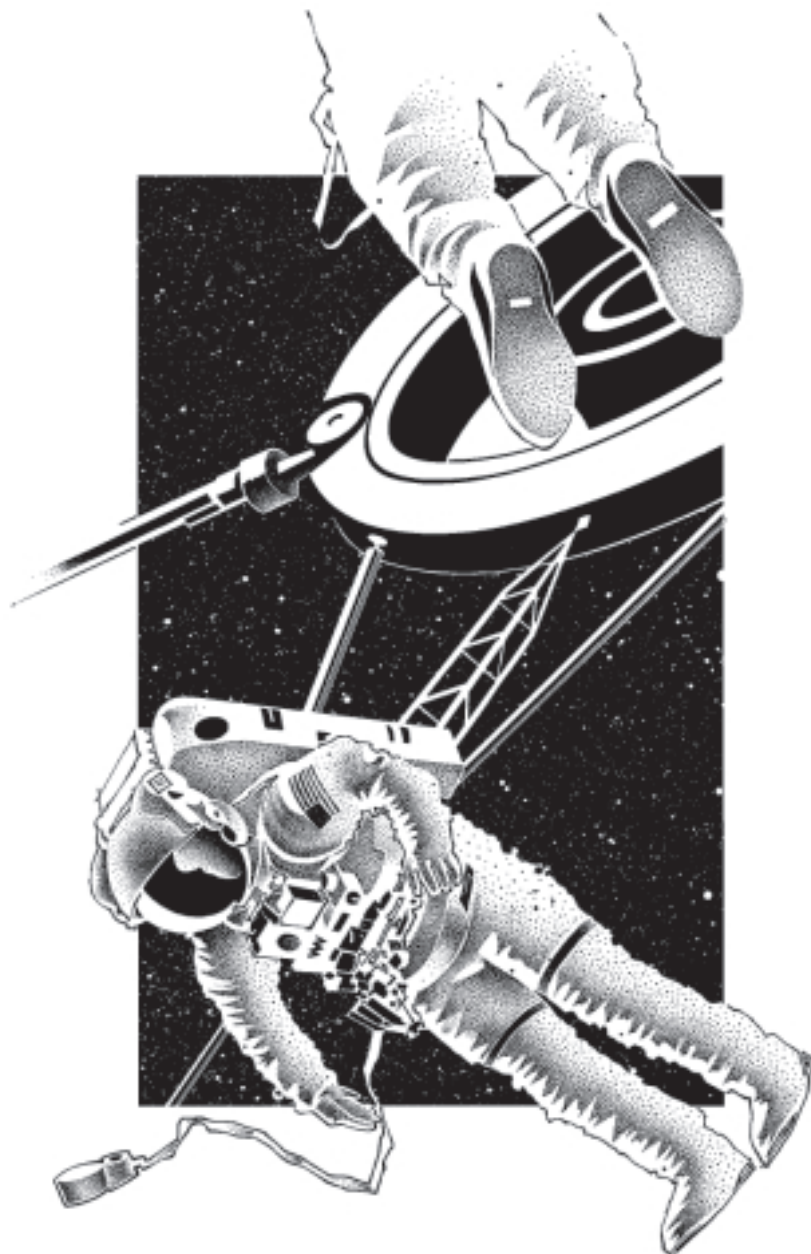
- **Space Walk Activity Page**
- One 4" x 6" piece of cardboard
- Two 8" pieces of yarn
- Scissors
- Hole punch
- Glue

What you do:

1. Cut out both pictures on **Space Walk Activity Page** along dotted lines.
2. Glue the shuttle on one side of the cardboard.
3. Lay the cardboard with the shuttle picture up. Be sure to have the shuttle toward the bottom and on the left side of the square. Grab the top of the cardboard and flip it over from top to bottom.
4. Glue the astronaut on the other side of the cardboard.

# Activity 9 – Take a Walk in Space (cont'd)

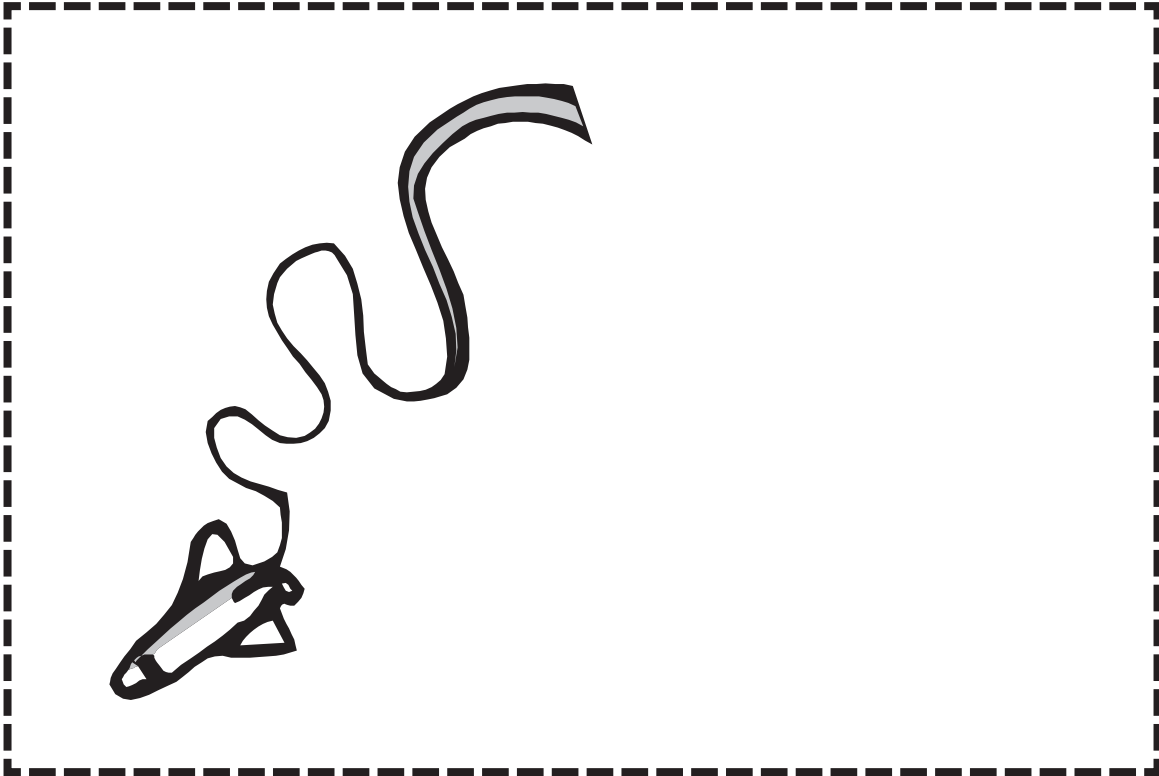
5. Punch a hole in the center of both short sides of the cardboard.
6. Tie a piece of yarn onto both sides of the cardboard.
7. Hold the yarn and wind up the cardboard by spinning the cardboard between your hands.
8. Let go of the cardboard and pull the yarn slightly so the cardboard spins very fast.
9. What happens to the individual pictures of the shuttle and the astronaut?



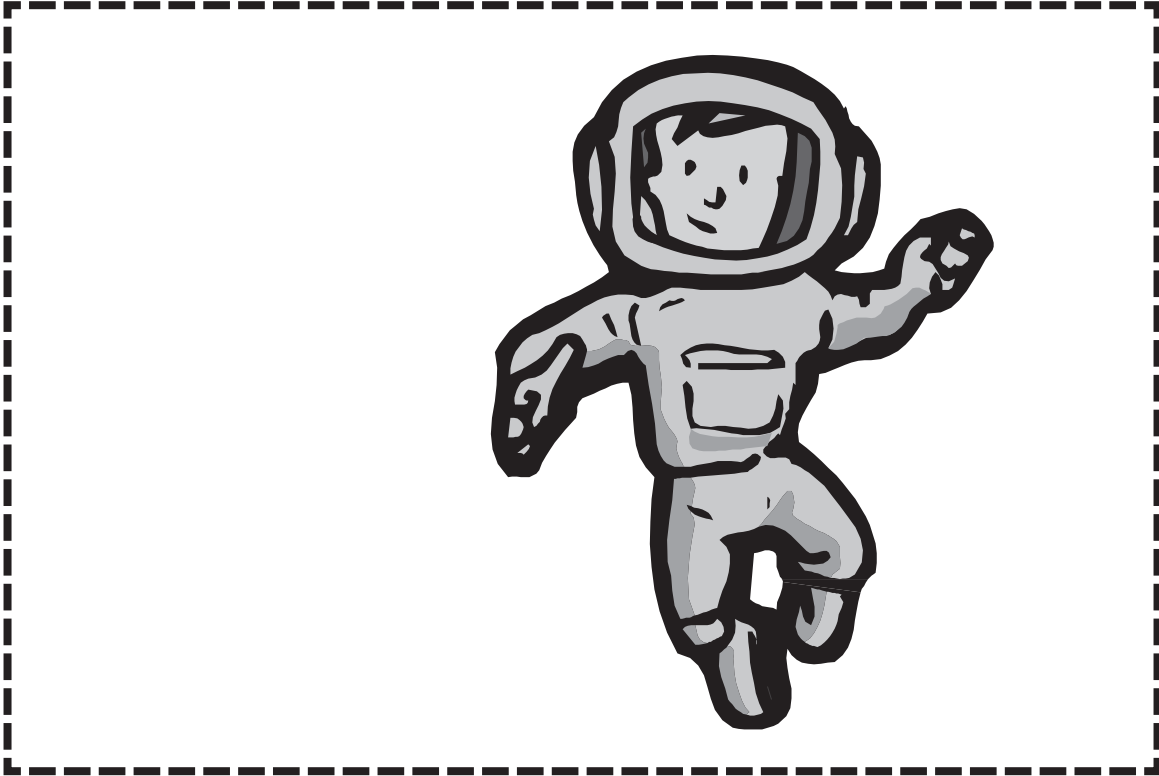


# Space Walk Activity Page

TOP



TOP



# Activity 10 – Blast Off!

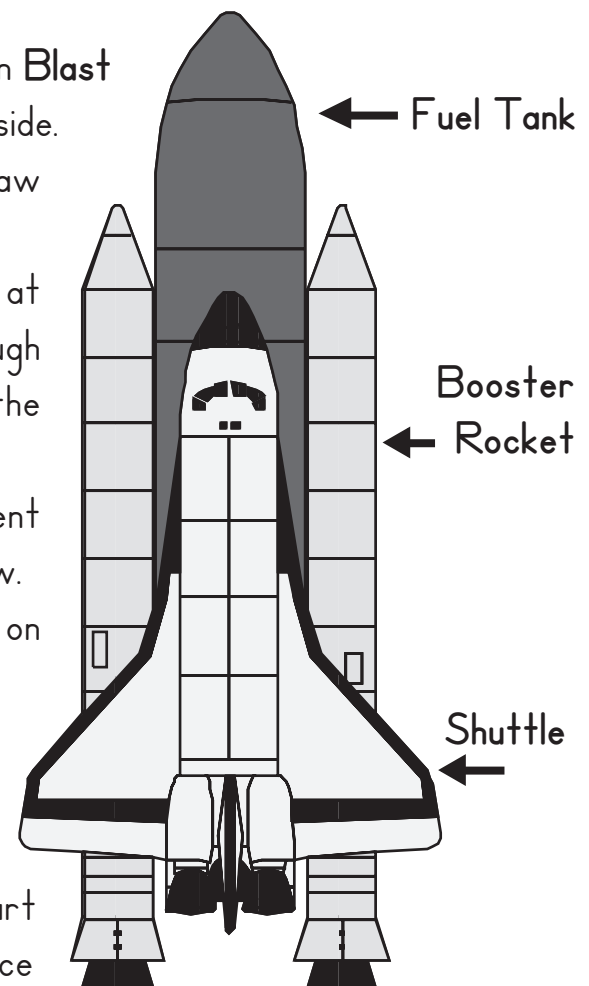
It takes a lot of push to get the shuttle off the ground and into space. The shuttle can't just take off by itself. The shuttle has to be hooked to a large fuel tank. There are two booster rockets next to the tank. The booster rockets are dropped into the sea after the shuttle takes off from the launch pad. The fuel tank falls off the shuttle once the shuttle is in space. Do the activity and fly your own shuttle.

Things you need:

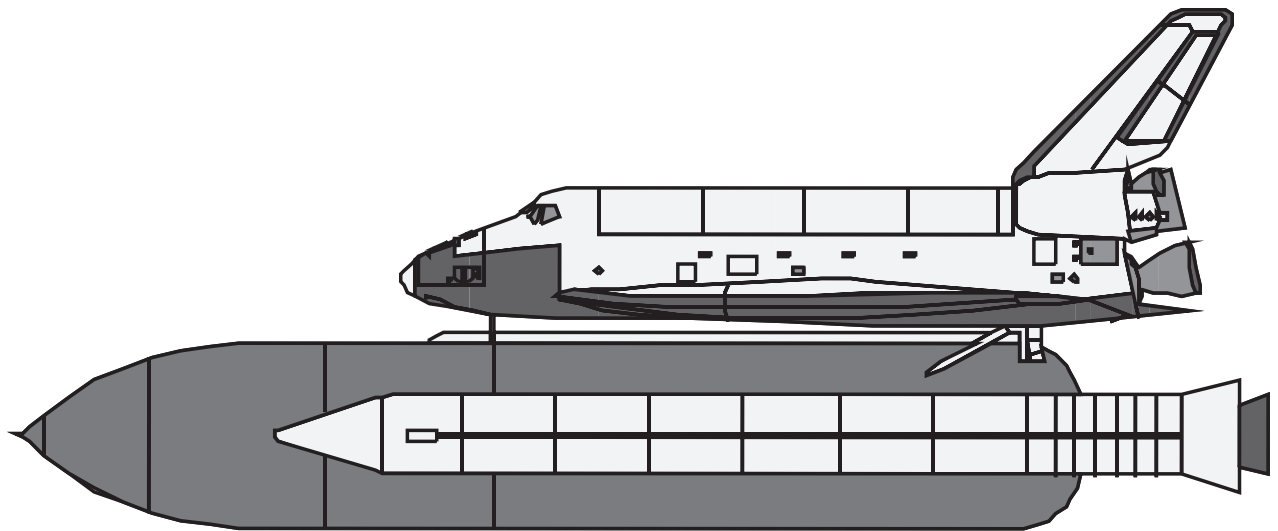
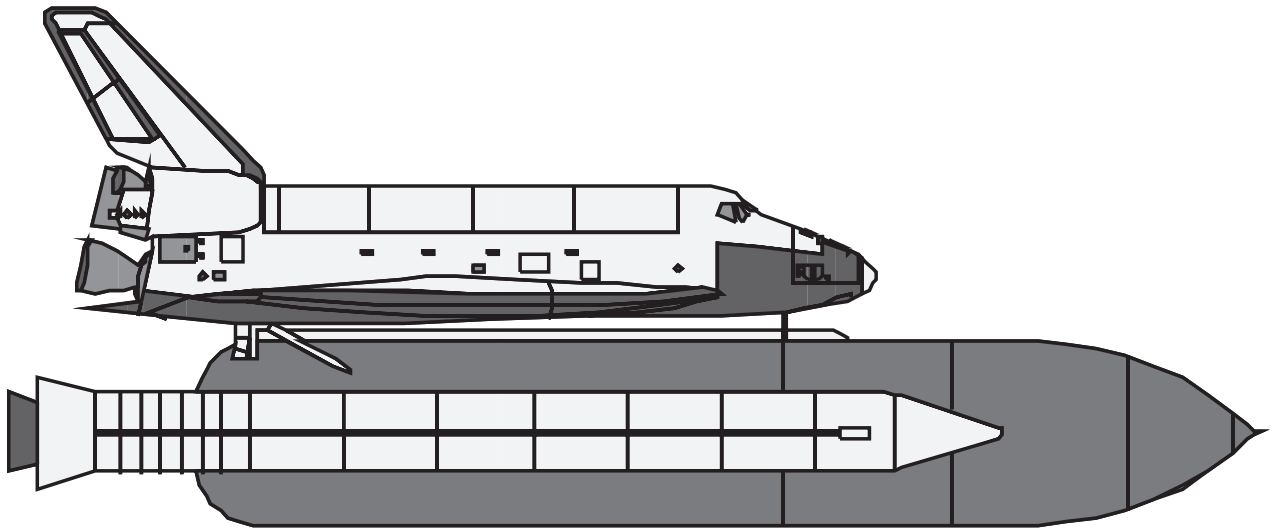
- **Blast Off! Activity Page**
- Plastic straw about 8 inches long
- Scissors
- 2 ten-foot pieces of string
- Scotch tape
- 4 washers

What you do:

1. Cut out both pictures of the shuttle on **Blast Off! Activity Page** and lay them to the side.
2. Wrap tape around each end of the straw to reinforce the edges.
3. Tape the two pieces of string together at one end so they can be threaded through the straw. Thread the strings through the straw, then remove the tape.
4. Tie each string end to a washer to prevent the string from slipping out of the straw.
5. Scotch tape the pictures of the shuttle on both sides of the straw.
6. Have one person hold one set of strings and another person hold the two strings on the other side of the straw.
7. Have one person gently but firmly pull apart the strings on their side. This should force the shuttle up the string toward the other person. Have the other person repeat.



# Blast Off! Activity Page



# What to Exhibit

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This is a list of project activities that can be shown at the 4-H fair or other places. Pick a project activity you would like to try. You do not have to make them in any order. If you have any questions, please call the Extension Office. There are people there who can help you.

- Make a poster or a group mural of space. Be sure to include some constellations.
- Design and make your own rocket using materials around your house like paper towel tubes and construction paper.
- Make a poster or a book showing some things you have discovered about astronauts.
- Make a project activity as a group and take it to the fair to show the kinds of things your group has been doing.
- Make a scrapbook of pictures showing your group having fun while making the project activities in this manual.
- Make the star constellation of your choice using two different techniques from this manual or make up your own method.
- Write a short poem about what you think it would be like to explore space. Design a space cover for your poem.

For information on when to take your project to the fair and where it needs to go, please contact your Extension Office.

# More Places to Look

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*Astronauts Today* (Random House, 1998) by Rosanna Hansen is a picture book that tells the story of space exploration by the United States and the Soviet Union.

*Floating in Space (Let's-Read-And-Find-Out Science Series)* (Harpercollins Juvenile Books, 1998) by Franklyn Mansfield Branley covers a space shuttle mission from beginning to end with a focus on the lives of the astronauts in space.

*The Best Book of Spaceships* (Kingfisher Books, 1998) by Ian Graham is a book, with clear illustrations and easy-to-understand text, that tells about many kinds of spacecraft and other equipment used in space.

*The Big Dipper* (Harpercollins Juvenile Books, 1991) by Franklyn Mansfield Branley explains facts about stars in the night sky with a focus on the Big Dipper.

*The Space Shuttle (Eye on the Universe)* (Crabtree Pub., 1998) by Jacqueline Langille and Bobbie Kalman introduces children to living and working on the space shuttle through words and pictures.

*What's Out There? A Book About Space (All Aboard Books)* (Price Stern Sloan Pub., 1993) by Lynn Wilson answers all kinds of questions about the sun, moon, and planets.

