



# Astronaut Adventure

## Goals of this lesson:

Youth will:

- Develop positive attitudes about science and technology.
- Understand how science and technology relates to their 4-H projects.
- Understand the relationship between careers and their 4-H projects.
- Expand their imaginations about how astronauts live in outer space.



## What You Need to Know:

Preschool children love to talk and pretend about what it would be like to go to outer space. Through participation in this workshop, youth will expand their imaginations by learning about the space shuttle and foods that astronauts eat.

**Astronaut** – A person trained to pilot, navigate, or otherwise participate as a crew member of a spacecraft.

## What Astronauts Eat

Travelers have known for a long time that condensing food will make their journey easier. It is no different in the space program. Hikers use rehydratable foods so they do not have to carry very much weight with them. This makes it easier to travel. All weight going into space raises the fuel consumption at liftoff. It is important to eliminate as much weight as possible.

Because the fuel cells on the Space Shuttle produce water as a byproduct, water is easily attainable. Therefore, taking foods along that can be rehydrated with this water make sense because this reduces the amount of weight on liftoff. The rehydrated foods also take up much less space, and space is a valuable commodity onboard the Space Shuttle.

## Space Shuttle:

On April 12, 1981, the United States space shuttle Columbia blasted off for the first time. The shuttle was the first reusable spaceship and the first spacecraft able to land at an ordinary airfield. To date there have been five space shuttles. Below is a listing of those space shuttles along with the first and last launch dates (updated 11/15/2010):

- Columbia – April 12, 1981 to January 16, 2003
- Challenger - April 4, 1983 to January 28, 1986
- Discovery – August 30, 1984 to April 5, 2010
- Atlantis – October 3, 1985 to May 14, 2010



Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

The 4-H Youth Development program abides with the nondiscrimination policies of the University of Nebraska–Lincoln and the United States Department of Agriculture.

- Endeavour – May 7, 1992 to Feb 8, 2010

The Columbia and Challenger both were destroyed during missions, the remaining three space shuttles are still in service.

### Materials Needed:

- Space Shuttle
  - Star base (4” star cut out of 1” scrap lumber, painted yellow w/ small hole in center)
  - Wire stand
    - 10” of 18 gauge wire
    - Old magic marker
    - Needle Nose Pliers
    - Glue gun/sticks
  - Color print out of paper airplane (2 per youth) - <http://www.amazingpaperairplanes.com/ShuttlePattern.pdf>
  - Folding instructions for paper airplane - [http://www.amazingpaperairplanes.com/Folding\\_STS.html](http://www.amazingpaperairplanes.com/Folding_STS.html) or follow the instructions listed below.
- Astronaut food
  - Freeze dried astronaut food - <http://safetycentral.com/assnac.html>
  - Water
  - Cups
  - Napkins

### Prep Needed:

Star Base for Space Shuttle:

1. Cut stars out of 1” thick scrap lumber.
2. Paint stars yellow
3. Use a finishing nail to tap a small hole in the center of the star and set stars aside.
4. Wrap one end of the 18 gauge wire around the end of a magic marker two complete revolutions.
5. Use the needle nose pliers to grip both the long and short end of the wire near the marker. Hold pliers firm and rotate the marker to twist ends together.
6. Use the needle nose pliers to make sure the short end of the wire is not sticking out dangerously.
7. Hot glue the wire into the star stand.

### Learning Activity:

1. Anticipatory Set: “Have you thought about what you might want to be when you grow up? (Wait for answers) “What are some of the things that you have thought about being when you grow up?” (Wait for answers...give everyone a chance to speak here) “Have you ever wondered what it would be like to be an astronaut?” “What do you think

it would be like to be an astronaut?” “Today we are going to talk a bit about what it might like to be an astronaut. We will be making a paper airplane that looks like a space shuttle and eating what astronauts eat.”

2. Paper Airplane Space Shuttle: In small groups fold the paper airplane. Working in small groups, show the kids how to make each fold for the paper airplane. If you are completing the supplemental activity you may want to have youth fold two paper airplanes, one for display and one for play.
  - a. “The space shuttle we are making today is the first ever space shuttle. We have had five different space shuttles. If you were going to design a space shuttle for you to fly as an astronaut, how would you design your space shuttle? If you are an astronaut when you grow up, where would you like to fly your space shuttle?”
  - b. Place paper airplane base between the two circles of the wire on the star stand.
3. Transition: “All this designing and flying around has made me hungry. Are you hungry? Should we try some astronaut food? What do you think astronauts eat in space? How might their food be the same or different from what we eat?”
4. Astronaut Food: Have youth select which type of food they would like to try. Give youth a glass of water to drink along with their astronaut food. Encourage youth to explore the food with their senses.
  - a. “Which food did you select and why? How are the foods similar/different from the ie mint ice cream bought from the store? What does the food look like? What does your food smell like? Does it feel the same? Does it taste the same as the ie mint ice cream that we eat? If you ate a lot of it, would you get thirsty?”
5. Wrap Up:
  - a. “What would it be like to be an astronaut? How would being an astronaut be the same/different from what it’s like to be a student? Do you think you would like it? Why? Do you like the food?”

## **Other Fun Things to Do:**

### **Play Planetary Golf:**

This game is played like golf, however, instead of swinging with a golf club, they are throwing their space shuttle like a paper airplane. Have them count the number of throws it takes them to make each location (hole). The space shuttle has landed or docked on earth, with the space station, and on the moon. Put a tag on items in the room such as a rug, chair or other item that indicates the destination (earth, space station or moon). Have youth count how many throws it takes them to get from the earth to the space station to the moon and back to earth.

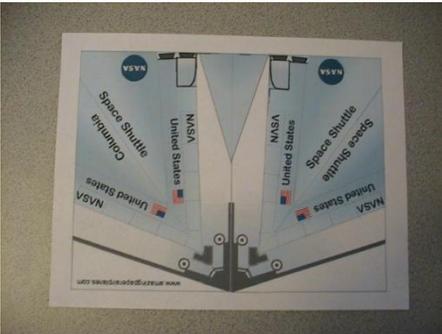
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Reviewed by:

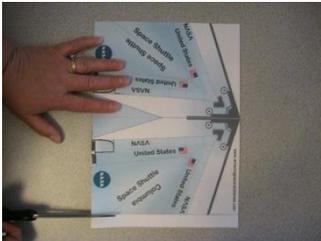
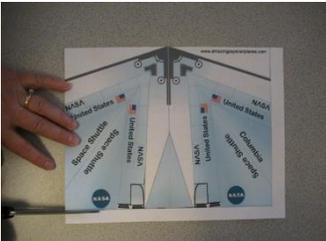
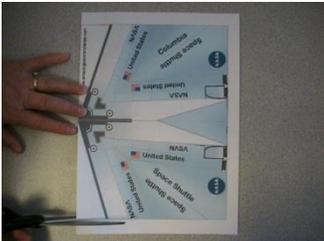
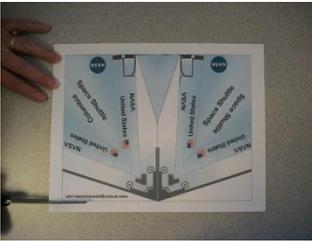
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# Space Shuttle Folding Instructions

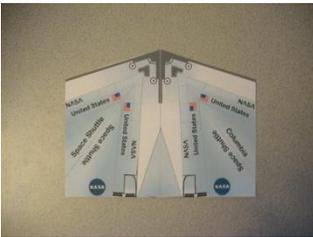
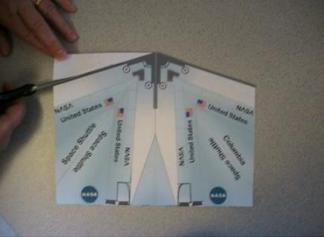
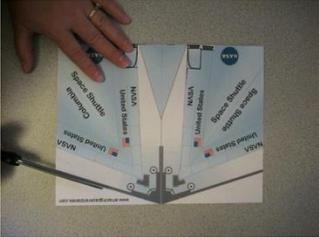
Print space shuttle in color.



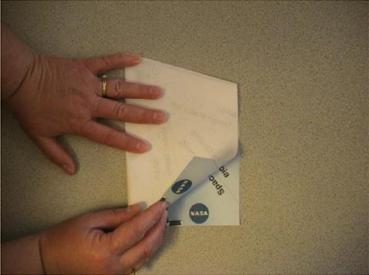
Trim off the excess all the way around the space shuttle.



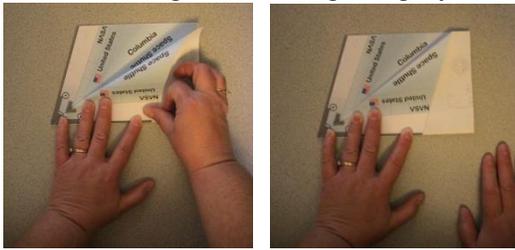
Trim off excess near the front of the space shuttle.



Fold in half lengthwise with printed side together.



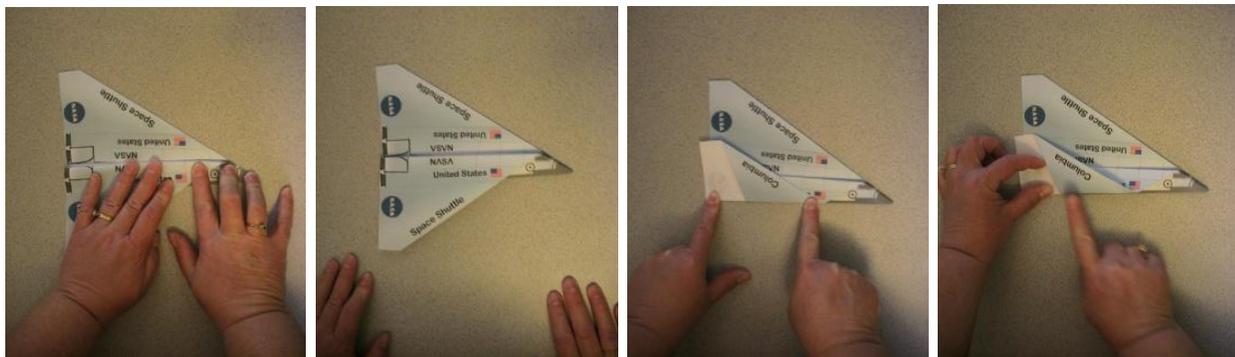
Fold one wing down along the grey line between the words Columbia and Space Shuttle.



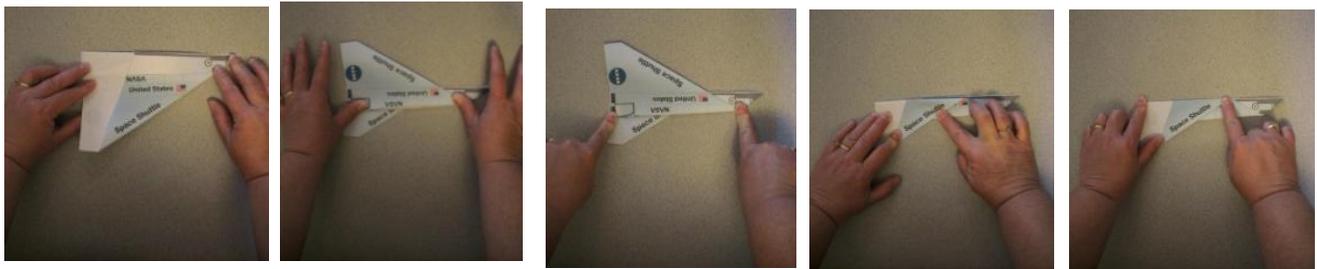
Flip the space shuttle over and repeat on other side.



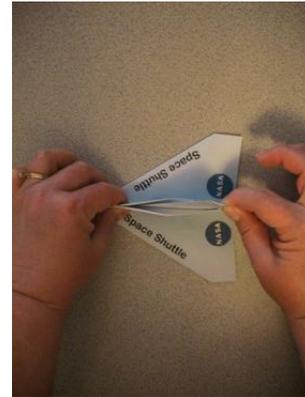
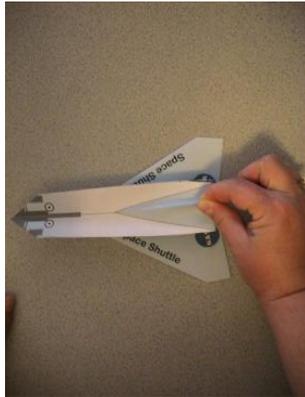
Fold wing down on solid grey line just above NASA, and then back up just below the United States.



Now flip the space shuttle over and repeat on other side.



Optional: Pull up the tail fin. Working from the top of the space shuttle, pull the tail up and out. Lines indicate the fold area. An adult may need to do this step.



Make sure that the tail fin is well pressed.



Place the space shuttle on its stand by putting the body of the space shuttle between the two holder rings.

