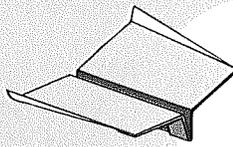


Family Flyers

Making and flying paper airplanes is fun. Paper airplanes can help you learn a lot about how airplanes fly, too. In this activity you will build an airplane and have the chance to test fly it on your own runway!



Work and Life Skill: Participates as member of a team
Aerospace Skill: Making a paper airplane

Science Skills: Experimenting, building models, observing, measuring

What To Do: Make and fly a paper airplane in a family fly-off contest

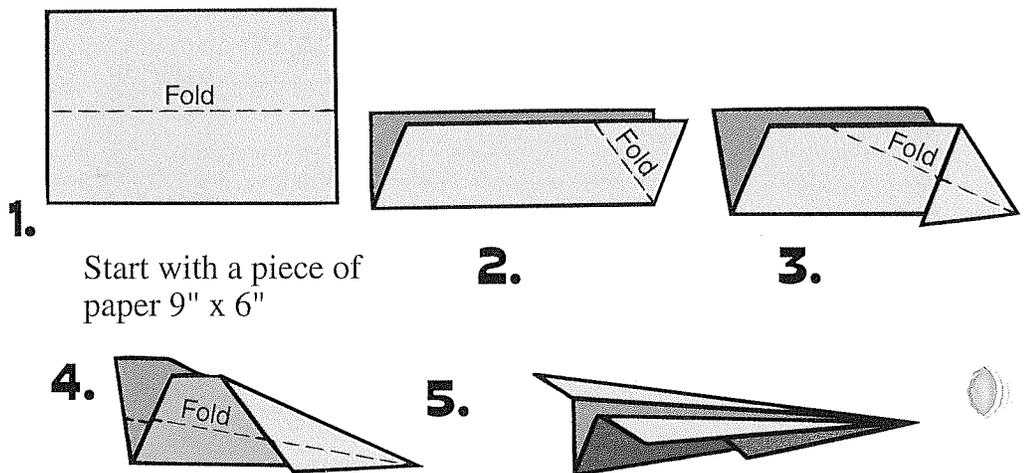
Materials: Standard typing paper, paper clips, masking tape, marker or crayon



Blast Off

1. With one or more family members, work together to make several kinds of paper airplanes. Examples of different types of airplanes are shown on these pages. Directions for making one popular paper airplane are also included. Print tail numbers on the airplanes to tell them apart.
2. After you finish your airplanes you'll need somewhere to land them. Use masking tape to make a runway about one foot wide and six feet long. Stand back 10 to 15 feet. Each pilot chooses his or her favorite airplane. You are all members of the flight team and everyone takes turns trying to land airplanes on the runway. Record five points on the chart below each time an airplane lands on the runway. Add up the points and congratulate your ace pilot!

Folder Paper Glider



1.

Start with a piece of paper 9" x 6"

2.

3.

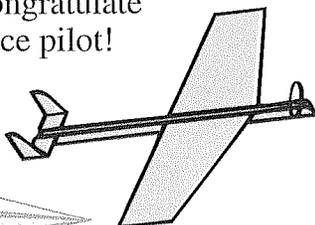
4.

5.

The finished glider can be held together at the bottom with a paper clip. The clip also helps the balance.

Runway Record

	Flight #1	Flight #2	Flight #3	Total
Pilot #1				
Pilot #2				
Pilot #3				
Pilot #4				



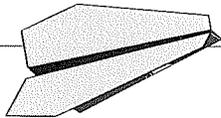
Debriefing

Ground to Ground (Share)

- Q. How did you build your airplanes?
- Q. Why was this activity fun to do with your family?

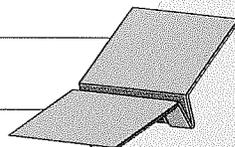
Climb Out (Process)

- Q. Which airplane flew the longest? Fastest? Straightest? Highest? Why?
- Q. How did your team change an airplane design to make it fly better?



Level Off (Generalize)

- Q. When are other times you have been a member of a team?
- Q. What do you do when members of a team do not agree?



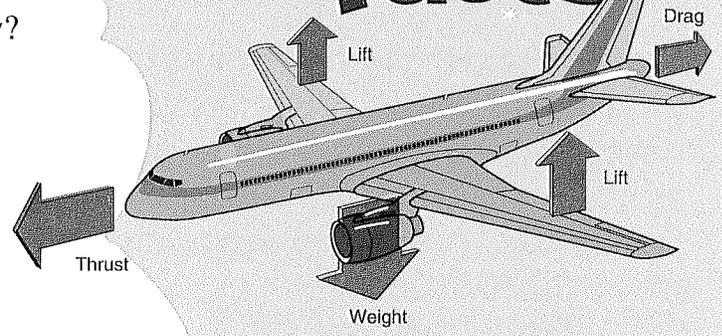
Cross Country (Apply)

- Q. How could you be a better team member in the future?



Here's your target!

AeroSPACE Facts



- **Four forces of flight** - Forces acting on an object during flight:
 - Lift** - The force opposite of weight; upward force created by airflow as it passes over and under a wing.
 - Weight or Gravity** - The force that is opposite of lift; causes an object to be pulled downward.
 - Thrust** - Opposite of drag; force which moves an object through the air.
 - Drag** - Opposite of thrust; limits the speed of an object.

Solo Flight

1. Conduct a neighborhood fly-in, class fly-in or friend fly-in. Which airplanes fly longest, highest and straightest?
Date _____ Initial _____
2. Check Newton's Apple Television/KTCA/PBS. See Prop Shop, page 36.
Date _____ Initial _____