

AIR OF THE WOLF

ELECTIVE ADVENTURE



SNAPSHOT OF ADVENTURE



It's time to take flight. Do you know the secret to making a paper airplane fly longer or farther? In this Adventure, you will have fun making different types of airplanes and other flying objects.

REQUIREMENTS

1. Make a paper airplane and fly it five times. Record the flight distance and time.
2. Make a paper airplane of a different design and fly it five times. Record the flight distance and time.
3. Compare and contrast the two paper airplanes by distance and flight times.
4. Build a flying machine that is not a paper airplane.



- Elective Adventure
- Scan for this Adventure page

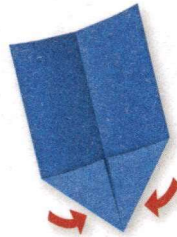
REQUIREMENT 1

**Make a paper airplane and fly it five times.
Record the flight distance and time.**

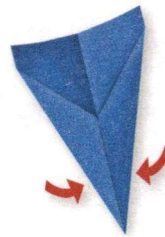
With a single sheet of 8½-by-11-inch paper, you can make an awesome airplane. Look at the diagrams. Follow the steps and be sure your creases are precise. See how far your airplane will fly on five separate flights. Now look at your plane. How could you slightly change it to make it go farther? With the help of an adult, look online for free paper airplane patterns that you can print out.



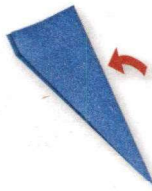
1. Fold paper in half.



2. Fold in corners.



3. Fold bent corners to meet in center.



4. Fold in half.



5. Fold down wings.



6. Fly!

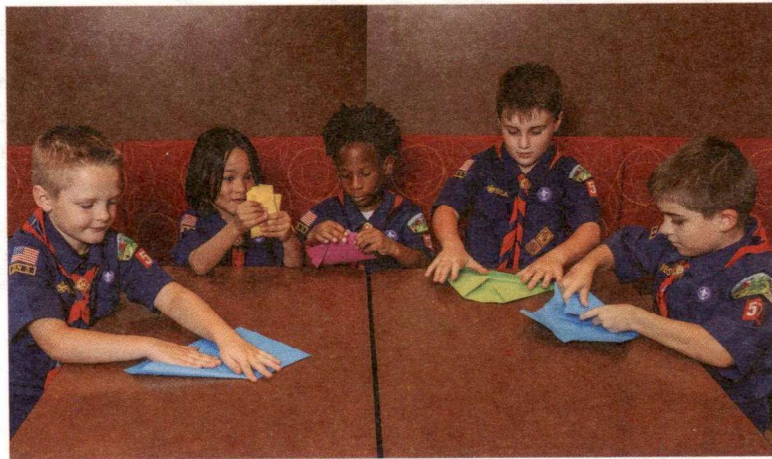


Date _____

Adult's Signature _____

REQUIREMENT 2

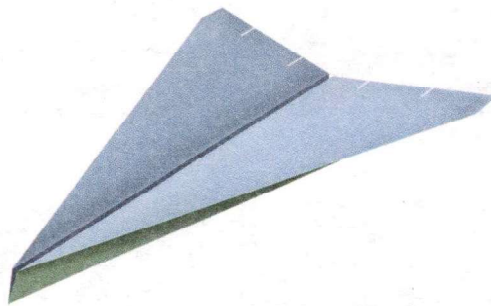
Make a paper airplane of a different design from requirement 1 and fly it five times. Record the flight distance and time.



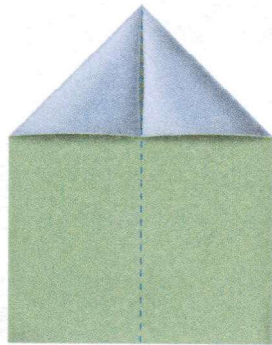
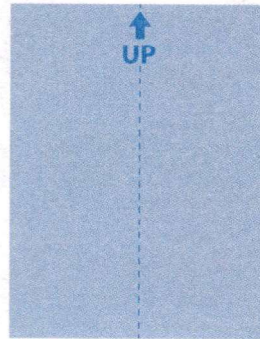
Here are some other paper airplanes you can make.



ARROW

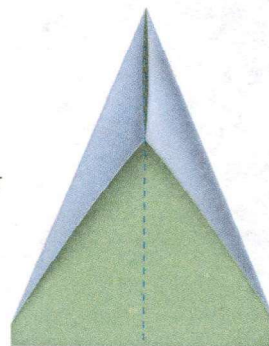


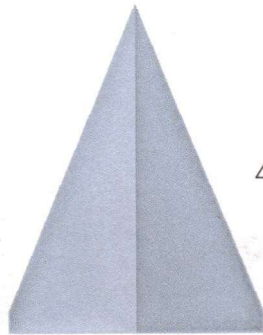
1. Place the paper as you see in the drawing. Fold the paper in half down the center and unfold.



2. Fold down each top corner so the edges line up along the center crease.

3. Fold each side over again to meet in the center. This will make a sharper point at the top of your plane.





4. Flip the paper over.

5. Fold the plane in half down the center. You should see the folds on the outside.

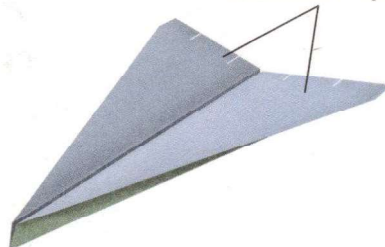


6. Starting 1 inch from the tip, make a crease straight to the back of the plane to create the wing. Repeat on the other side to match. Then lift the wings up so they are flat.

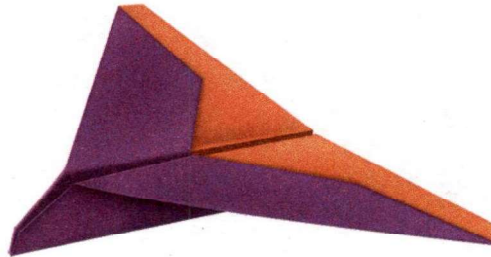
7. You might choose to cut two slits about 1 inch apart on each wing to create elevators. Angle the wings so you see a "V" from the front. This can make the plane more stable. Flip the elevator flaps up to make the plane rise. Flip them down to make the plane drop. Try flipping one elevator up to make the plane turn.

Get ready for takeoff, Wolf!

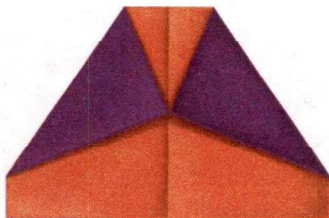
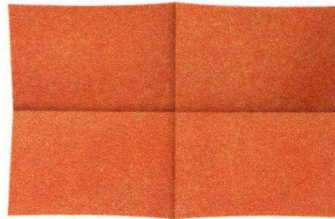
Elevator Flaps



DELTA

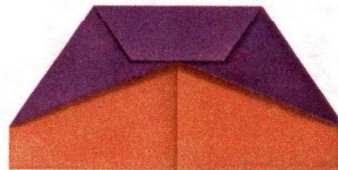


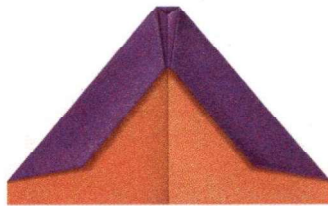
1. Place the paper as you see in the drawing. Fold the paper in half down the center and unfold. Now fold it in half in the other direction and unfold. You should have four boxes from the creases.



2. Fold down the top corners so they meet in the center.

3. Fold the top edge down to the center.



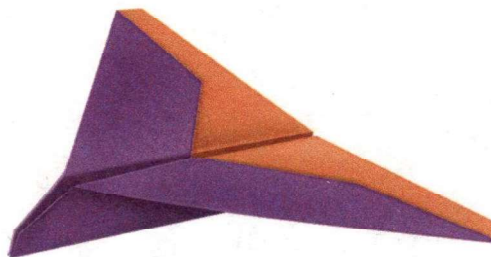


4. Fold each top corner to the center along the crease running from top to bottom.

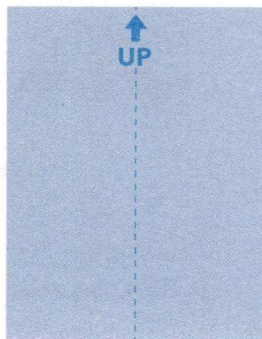
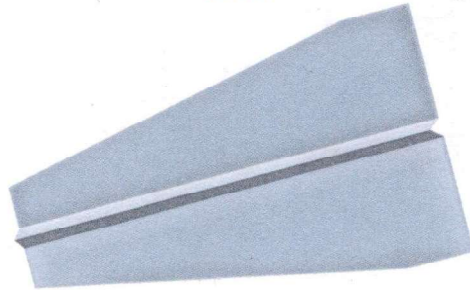
5. Fold the left side over the right side so the folds are hidden.



6. About 1 inch from the nose, start to fold down the wings in a straight line to the back of the plane. When both wings have been folded, lift them up to a slight "V" shape.

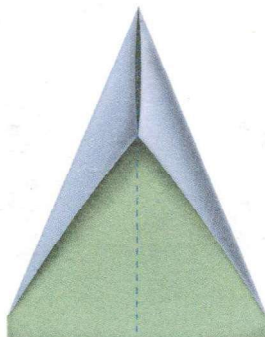
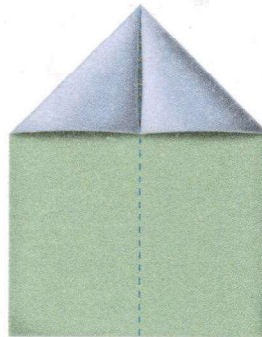


DART

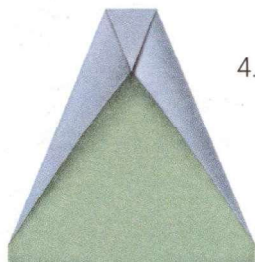


1. Place the paper as you see in the drawing. Fold the paper in half down the center and unfold.

2. Fold down each top corner so the edges line up along the center crease.

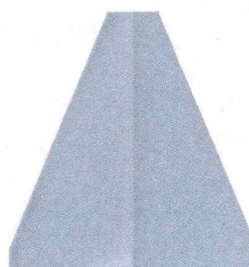


3. Again, fold the outside edges to the center crease. This will create a sharper point at the top.



4. Fold down the point to the edge of the folded flaps.

5. Flip over your paper so the flat side is up.



6. Fold the plane in half.



7. On one side, fold the tip in half at a slight angle. Make a crease to the back of the plane to create the wing. Repeat on the other side. You can add elevators if you choose (see page 123).

You are ready to fly!

Before you fly your three planes, guess how far each will go. Measure the distance after each first flight and see how close you came to guessing the distance each plane traveled. Share the results with your den.



Date

Adult's Signature

REQUIREMENT 3

Compare and contrast the two paper airplanes by distance and flight times.

Paper airplanes, like real planes, rely on lift and thrust to stay in the air. A real plane has an engine that gives it thrust. A paper airplane gets only one thrust, and that is when you throw it. Lift is based on how the air flows over the wings of the plane.

Some paper airplanes require you to use more thrust, meaning you must throw harder, for them to fly their best. Other paper airplanes require less thrust and rely more on lift for them to fly their best.

Gravity and drag are two things that will cause a plane to not fly. A way to reduce the impact of gravity is to keep your plane light. Real airplanes are made from lightweight materials like aluminum. The type of paper you use to make your paper airplane will make a difference. Drag is caused by the plane pushing the air to go around it. The smoother the plane, the less drag it will have.

- ▶ Which paper airplane flew the farthest?
- ▶ Which paper airplane stayed in the air the longest?
- ▶ What changes to your plane could you make to make it go farther?
- ▶ What changes to your plane could you make to keep in the air longer?



Date

Adult's Signature

REQUIREMENT 4

Build a flying object that is not a paper airplane.

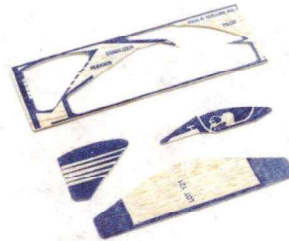
Now it is time to build something that can fly that is not a paper airplane. You may use a kit made from balsa wood or plastic foam, or you can make something out of items you may have around your house.

BALSA WOOD AIRPLANE



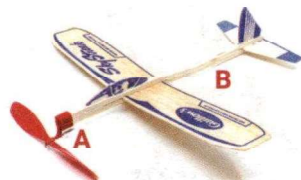
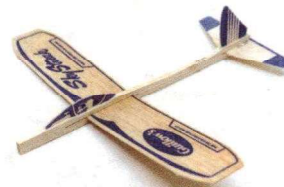
These instructions are for the plane shown. Refer to the instructions that come with the plane you choose to build.

1. Carefully press balsa parts from die-cut sheet.



2. Slip stabilizer into tail slot and rudder and pilot into slots on top of body.

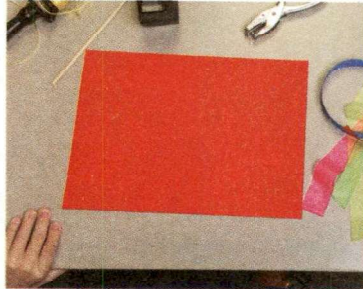
3. Insert end of wing into slot and pull through until centered.



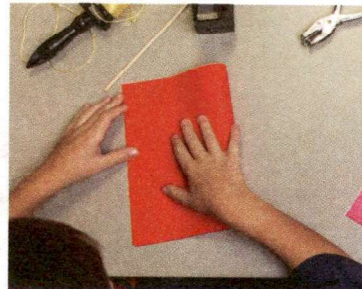
4. Push propeller onto nose and attach rubber band between points A and B.

SIMPLE STREAMER KITE

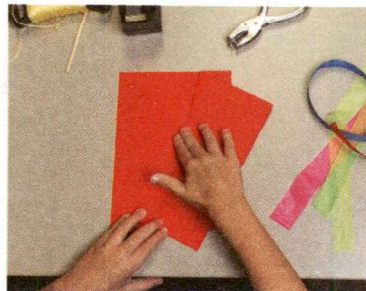
1. Start with an 8½-by-11-inch sheet of paper.



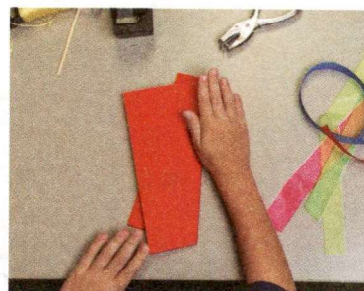
2. Fold it in half along the long edge.



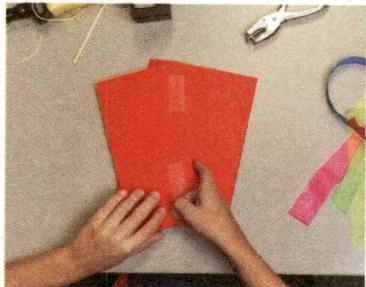
3. Fold one of the edges back at an angle toward the center fold.



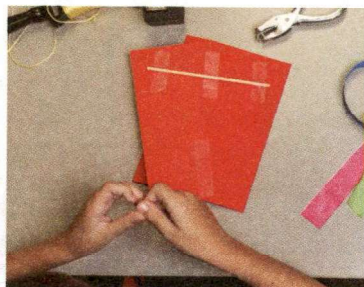
4. Flip the paper over and fold back the second flap at an angle to match the first flap.



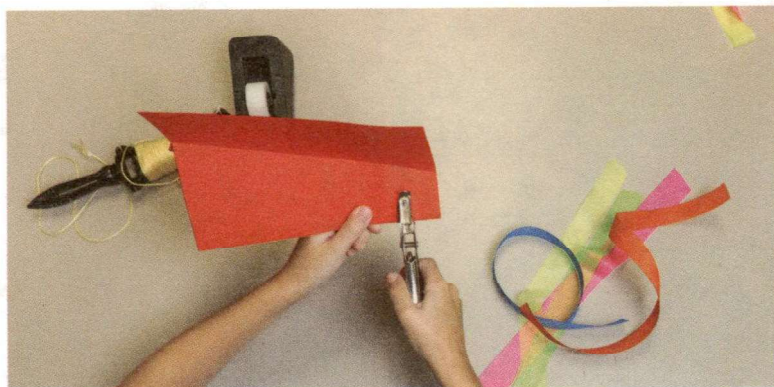
5. Unfold the first flap and tape the two flaps together.



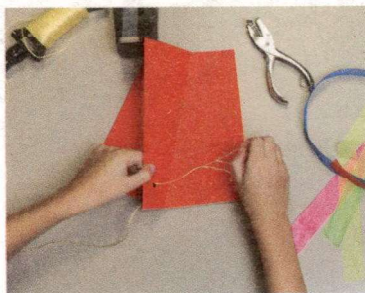
6. Cut a wooden skewer to fit across the top of the kite and tape it in place.



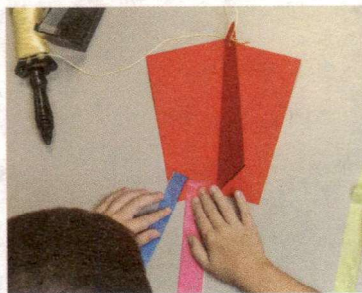
7. Use a hole punch to punch a hole in the paper on the other side of the flaps about 2 inches from the edge and under where the skewer is located.



8. Attach your kite string through the hole and tie a knot.



9. Tape a couple of crepe paper streamers to the back end of each flap.



You're ready to fly!



Date

Adult's Signature