



#FontanaTogether

## Hoop Glider

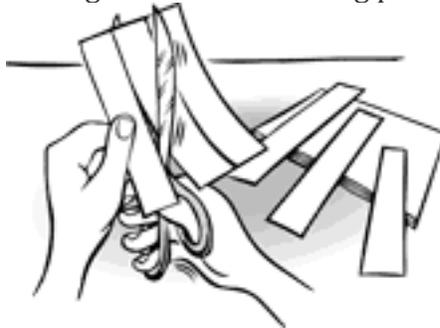
You have probably seen planes; all with flat wings. But, have you seen anything flying with curly or round wings. Can a curled wing plane fly in the air? This is a new twist on a paper airplane using paper and a straw. This is a fun activity that helps you learn about airplanes, thrust, lift and aerodynamics.

### Materials:

- Piece of Cardstock
- Drinking Straw
- Scissors
- Tape
- Ruler

### Instructions:

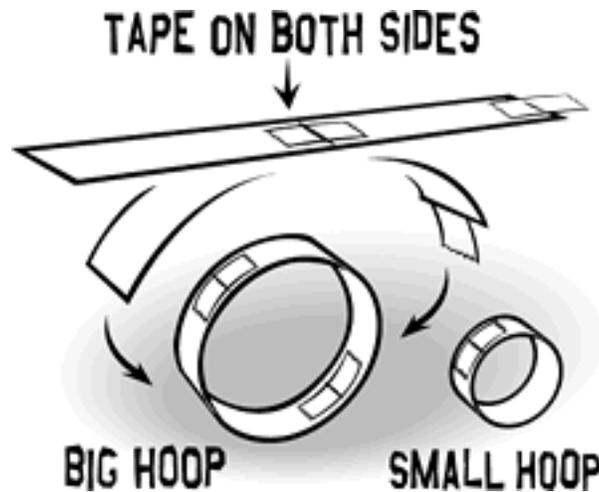
1. You have probably seen planes; all with flat wings. But, have you seen anything flying with curly or round wings. Can a curled wing plane fly in the air?



2. Put a piece of tape on the end of one strip. Curl the paper into a little hoop and tape the ends together.



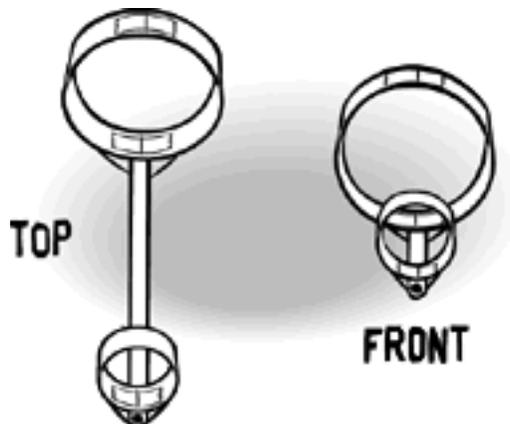
3. Put the other two strips end to end, so they overlap a little. Tape them together to make one long strip, and put another piece of tape on one end. Curl the strip into a hoop and tape the ends together.



4. Put one end of a straw onto the middle of a strip of tape. Put the big hoop on top of the straw and fold the tape up the sides of the hoop.



5. This part can be a little tricky. Put another strip of tape at the other end of the straw. Press the small hoop very gently onto the tape. Move it around until it lines up with the big hoop, then press the tape down firmly. Your Hoopster should look like the picture below:



6. Now comes the fun! Hold the Hoopster in the middle of the straw, with the little hoop in front. Throw it like a spear. It may take a little practice, but once you get the hang of it, your Hoopster will really fly!
7. If you want to experiment with Hoopsters, here are some other things you can try:

- Put a paper clip at the bottom of the small hoop.

- Make a really long Hoopster with two straws. Cut a little slit at the end of one straw and pinch it so it fits inside the other straw, then tape them together.
- Make a double Hoopster with two little hoops side by side on one end and two big hoops side by side on the other. (You'll need two file cards.)

### **How it Works:**

There are four forces that affect how objects fly: thrust, drag, lift, and gravity.

**Thrust:** The force that moves the airplane forward. When launching a straw and paper airplane, thrust is provided by a person throwing it forward.

**Drag:** Sometimes referred to as air resistance, drag slows the airplane down as air pushes against the airplane.

**Lift:** Air moves through both the straw and the paper circles to enable the straw and paper airplane to fly.

**Gravity:** As the airplane slows down because of drag, there is less air moving through the straw and paper to provide lift. As the airplane slows down, the force of gravity pulls it back down to the ground.