Fun with Flight

GRADES K-2

Explore how airplanes work and build your own straw flyer!

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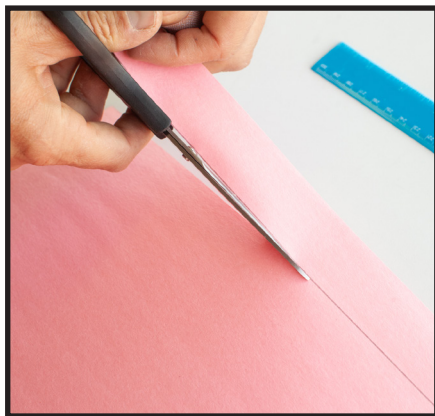
Fun with Flight
HOOP GLIDER

What You Need:
- Paper
- Tape or Glue Dots
- Long Straw
- Scissors (not included)
- Ruler and Pencil (optional)

Try it

1. Cut two strips out of a sheet of construction paper or copy paper. **Cut the longest edge first,** a little over 1" wide. Then cut the shortest edge, about 1" wide as well.
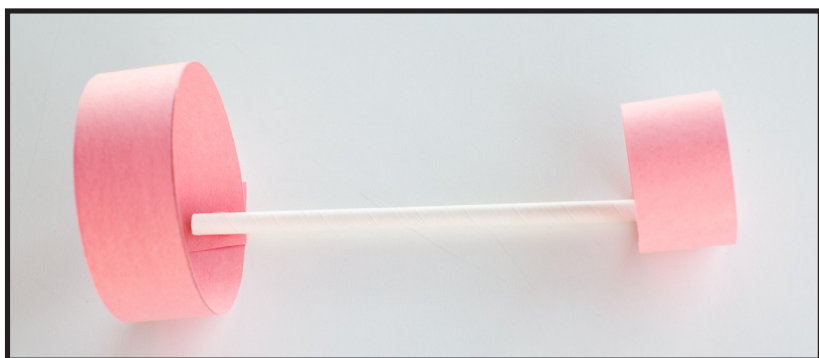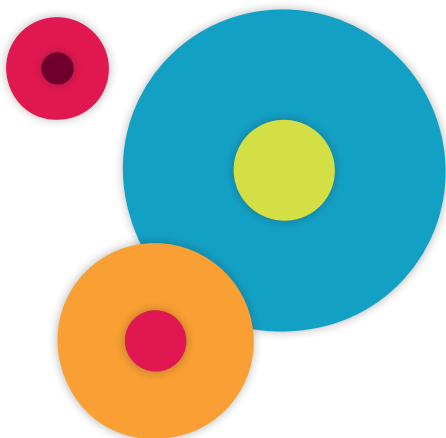

2. Use the glue dots or a piece of tape and overlap one end of the strip over the other, attaching where they overlap.

3. Attach the larger loop to the **long straw** with a glue dot or piece of tape.

4. Attach the smaller loop on the opposite end of the straw with a glue dot or piece of tape.


5. Launch the hoop glider by throwing it through the air.

Experiment with making bigger or smaller loops with other pieces of paper.
- What happens when you throw it with the smaller loop in the back?
- What about with the straw on top instead of closest to the ground?
- What happens if you add an extra loop in the middle?
- What about taping another straw to the one you have to make it twice as long?

Try different designs to see how they fly differently.

Lift

Thrust

Drag

Gravity
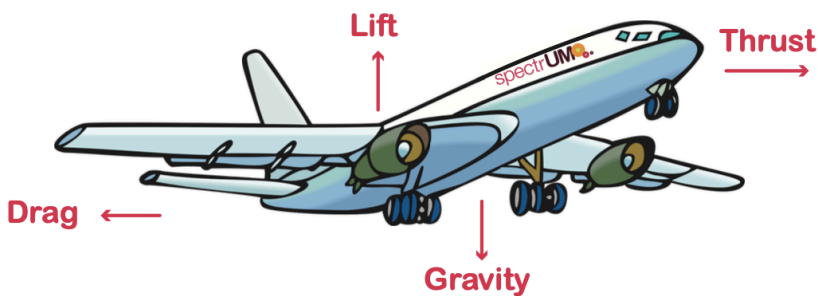
What's going on here?
This doesn't look like a paper airplane?

It may look weird, but you will discover it flies pretty well. The two sizes of hoops help to keep the straw balanced as it flies. When you throw the plane, you are giving it **thrust**. The big hoop creates **drag,** or air resistance, which helps keep the straw level. The smaller hoop at the front keeps your hoop plane stable and flying on a straight path. When you throw it there is just enough **lift** to keep the plane gliding along and slow its fall to the ground as **gravity** pulls it towards the Earth. These are the four forces of flight, and how these forces interact determines how different designs of aircraft fly through the air.

For more information on designs to try, questions to think about, and examples see our Instructable at **tinyurl.com/funflighthoop** or scan this QR code:

Fun with Flight
BOUNCY ROCKET

What You Need:

- Bouncy Ball
- Stick
- Short Straws
- Scissors (not included)
- Foam or Paper
- Hex Nut
- Tape, Glue dots or hot glue

Try it

1. Push the dowel into the hole that is drilled into the bouncy ball to make your launcher - but make sure to not poke it through too far!

2. Cut out a few fins for your rocket from a piece of paper, cardboard, or craft foam. What shape would you like to try?

3. Attach the fins to a **short straw** using some glue dots, tape, or hot glue. It's easiest to add the adhesive or tape to the fin, then stick it on the straw. Triangles and squares work well, but so do mustaches, butterflies and leaves!
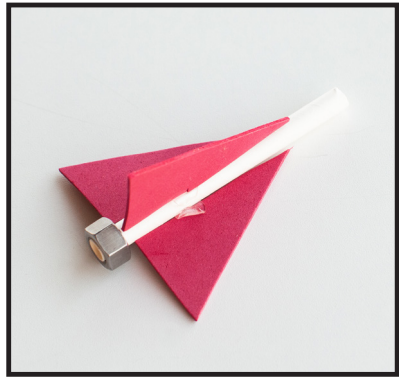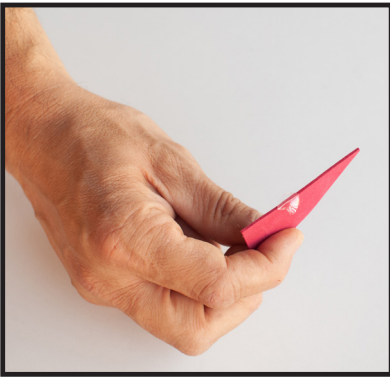
4. Attach a hex nut to the rocket anywhere you'd like by twisting it onto the straw clockwise. If it's too loose, add some tape or glue but don't get any inside the straw!

5. Launch the rocket by putting it on the ball and stick launcher, pinching the top of the stick, and dropping it straight down. Be careful - they can fly pretty fast and far!

These rockets work by transferring the energy of the bouncy ball when it hits the ground into the rocket, shooting it upward.

How does this work?

These rockets transfer the energy of the bouncy ball when it hits the ground into the rocket, shooting it upward.

Experiment with making bigger or smaller rockets, adding more fins, or trying different shapes.
- What can you do to make the rocket tumble more?
- What other items might you add to the rocket to make it more stable?

For more information on designs to try, questions to think about, and examples see our Instructable at **tinyurl.com/bouncyrocket** or scan this QR code:

Directions

spectr**UM Discovery Area** is located on the Children's
Floor of the new Missoula Public Library at
455 East Main Street, in downtown Missoula.

Science. Try it.