What You Need

- paper
- ruler
- scissors
- pencil
- nonbendable, plastic drinking straw
- tape

Engineering Scoop

If you throw a **plain straw**, it doesn't go very far. But when you add **paper hoops**, the straw glides through the air. That's because the hoops act like **wings**. Things that **fly**—like insects, birds, and airplanes—all have wings. But wings are not all the same **shape** and **size**. Different wings can be better for different kinds of flight. For example, an eagle has **long, wide** wings that help it glide. An airplane has wings with small flaps that move up and down to turn the plane. Try **changing** the wings on your glider. How does it **fly** with different wings?

Hoop Glider I Cut two strips of paper. Make one strip I inch wide and 5 inches long. Make the second strip I inch wide and 10 inches long.

2 Curl each paper strip into a hoop. Tape the ends together. Now you have a big hoop and a small hoop.

3 Tape the small hoop to one end of the straw. **4 Tape** the big hoop on the other end of the straw. Make sure the big hoop **lines up** with the small hoop.

5 Hold your Hoop Glider in the middle of the straw, with the small hoop in front. **Throw** it gently like a spear. It might take some **practice** to get the hang of it. How **far** does your glider fly?



Engineering

Change your glider so that it flies the longest possible distance. What happens if you make the straw smaller? What happens if you change the size of the hoops? Or, what happens if you add a third hoop? Choose one thing to change (that's the **variable**), and make a prediction. Then test it and **send** your results to ZOOM.







ZOOM INTO ENGINEERING is a partnership of WGBH and National Engineers Week. National Engineers Week 2002 chairs: DuPont and the American Society of Civil Engineers. ZOOM is produced by WGBH Boston. Funding for ZOOM is provided by the National Science Foundation, the Corporation for Public Broadcasting, the Arthur Vining Davis Foundations, and public television viewers. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation

TM / © 2002 WGB H Educational Foundation

Engineers Wanted!

My Prediction

Imagine going to school in a car that travels through the air! Some day you might see "air-cars" everywhere. **Air-cars** will have wings that can change shape, depending on how fast you are flying. That's because you need one kind of wing shape when traveling at low speeds, and you need a different wing shape for high speeds. Engineers are designing new materials to make these self-bending wings. Engineers like **you** could design the first air-schoolbus of the future!



Send It to ZOOM

Tell us about your results at **pbskids.org/zoom/sendit**