

TOUCH THE SKY

EXPERIMENT: STOMP GLIDERS



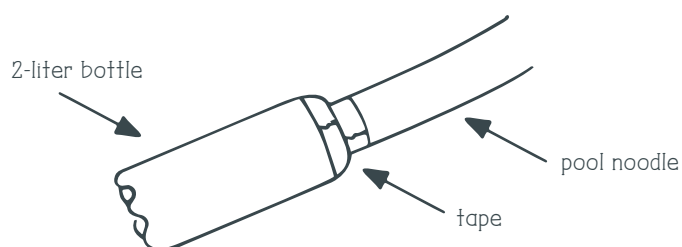
Explore the physics of flight! You'll harness the power of compression to launch a glider through the sky.

MATERIALS

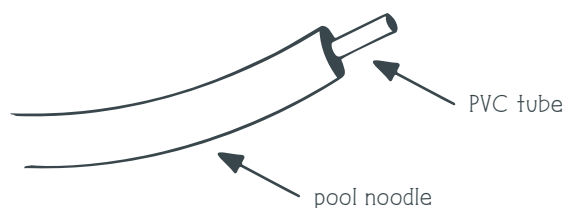
- ☐ PVC pipe (short piece that's 1 inch in diameter or less), or another tube of similar size
- ☐ Ping pong ball ☐ Pool noodle ☐ Two-liter bottle ☐ Markers
- ☐ Cardstock ☐ Scissors ☐ Duct and clear tape ☐ Paper (8.5 by 11 inches)
- ☐ Hula hoops or other rings (optional) ☐ Small toy figure (optional)

INSTRUCTIONS

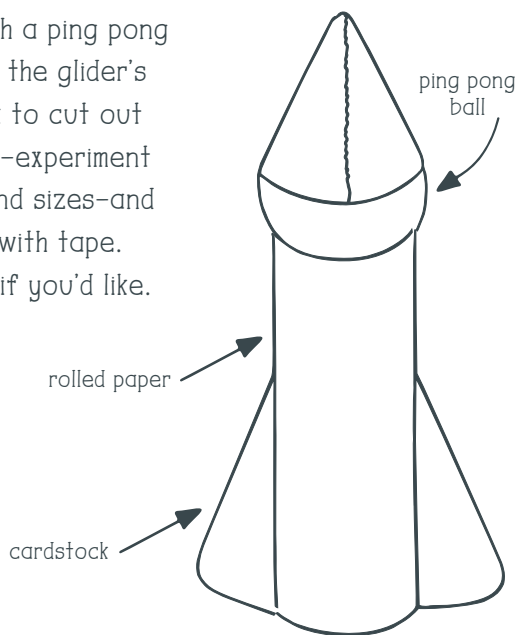
Build the stomp launcher by inserting the mouth of the two-liter bottle into one end of the pool noodle. Secure it thoroughly with duct tape, trying to make it as airtight as possible.



Insert the PVC piece or other tube into the other end. Make your glider by rolling a piece of 8.5 by 11 inch paper so that it fits around the outside of the tube. Don't make it tight, it should slide on and off. Tape the paper so it holds its shape. This is the fuselage of your glider.



Use clear tape to attach a ping pong ball to one end to make the glider's nose. Use the cardstock to cut out some wings and rudders—experiment with different shapes and sizes—and attach to the fuselage with tape. Decorate with markers if you'd like.



Load the glider onto the tube. Place the two-liter bottle on the ground and aim the launcher. It may be easier to ask a partner to hold the launcher for you. Stomp on the bottle to watch the glider fly! To launch again, just blow into the tube until the bottle re-inflates.



WHAT'S HAPPENING?

When you stomp on the bottle you compress, or squish, the air inside. This compressed air has to go somewhere, so it escapes through the easiest way out—which is the other end of the launcher. By placing the glider over the other opening, this escaping air pushes it out of the way. If the compressed air didn't have an escape route, like the launching tube, the container would burst. That's why compressed air or gas containers like pressure cookers and propane gas cylinders always have a safety valve that keeps the pressure from getting too high. The wings help the glider gently drift back to the ground.

GAME ON

Experiment with different wing shapes to see if you can make your glider fly farther. Try adjusting the launch angle, or improve your accuracy and aim your glider at a hula hoop that a friend holds at a distance. Can you design a glider that will carry a payload or even a passenger, like a small toy figure?

TIPS

The duct tape or bottle will eventually wear out from all the stomping. When that happens, just cut off the end of the pool noodle and attach a new bottle.

LEARN MORE

Explore how people have flown, soared, sped and chugged through the years in MSI's Transportation Gallery.

RECOMMENDED READING

Planes, Gliders and Paper Rockets: Simple Flying Things Anyone Can Make—Kites and Copters, Too!
by Rick Schertle and James Floyd Kelly

Explore Flight! by Anita Yasuda,
illustrated by Bryan Stone

