Ring glider

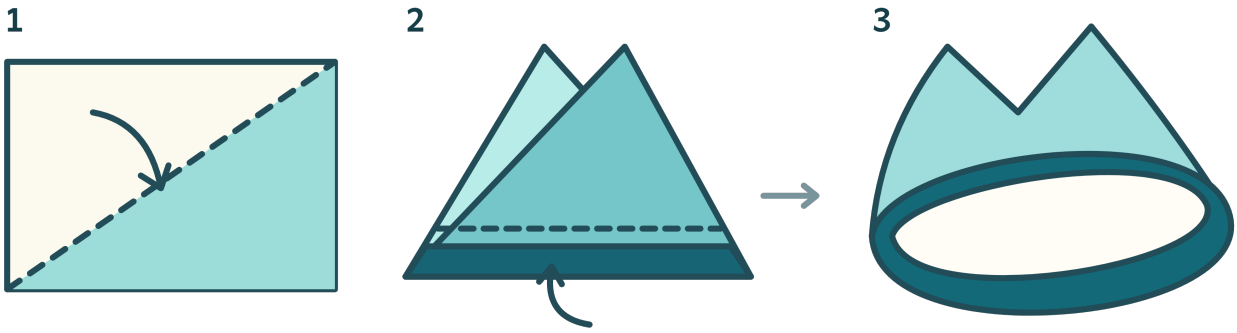
Can a loop of paper glide farther when you make the ring smaller?

Print single-sided at 100%. Check the 50 mm line with a ruler. 50 mm

Materials No printing needed: one plain A4 or US Letter sheet (write down which) and a ruler. A small piece of tape is optional.

1. Lay the sheet sideways. Fold along the diagonal between opposite corners. The other two corners form two separate peaks.
2. Fold the long folded edge over by about 13 mm, then once more by the same width. NASA/JPL folds it once; the second fold adds weight at the front.
3. Bend that thick edge into a ring with the folded strip on the inside. Tuck one end into the fold of the other, or add a small piece of tape.
4. Hold the ring at the bottom of the V between the peaks, two fingers inside and your thumb outside, rim forward. Reach your arm back, swing it up and let go gently beside your ear.

Folding guide · Use a separate plain sheet for the glider.



Flight trial

Measure across the opening. Try five level tosses and mark the first landing of each. Tuck the ends a little farther in, measure again and repeat from the same spot.

Opening (mm) / first landing (cm)

Diameter _____ mm _____ _____ _____ _____ _____

Diameter _____ mm _____ _____ _____ _____ _____

The folds put more paper in the front rim. The curved sheet forms a wing around an opening. Changing the overlap changes both diameter and seam stiffness.

If it goes wrong Dives: unroll one rim fold. Climbs and falls back: launch more gently. If the ends slip apart, tuck them deeper or tape them, the same way for both sets.

Reference NASA/JPL Education

SVG attached

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Maple spinner

Can you make one paper wing spin just by letting it fall?

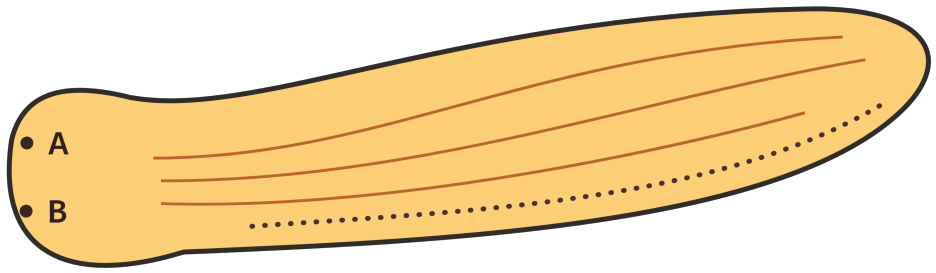
Print single-sided at 100%. Check the 50 mm line with a ruler.

50 mm

Materials The maple wing template, scissors and one small metal paper clip. A helper can cut the outline.

1. Cut along the solid line around the printed wing. Keep the wing and its rounded root in one piece.
2. Slide the clip onto the short edge at dot A. Its long side should lie flat on the paper.
3. With the printed side up, lift the dotted long edge slightly with your fingers to give the wing a shallow curl.
4. A tall helper holds the wing tip as high as they can, about 2 m and never lower than 1.5 m, clip pointing down, and opens their fingers. Watch for complete turns.

Full-size template · Cut along the solid outline.



Flight trial

Drop five times from the same height. Count full turns, including zero. Move the same clip to B and repeat. Keep the curl and release the same.

Clip position / full turns

Clip A	_____	_____	_____	_____	_____
Clip B	_____	_____	_____	_____	_____

The clip shifts the balance toward the root. As the wing falls, air pushes on its curved surface and makes it spin around its balance point, near the clip, tracing a cone.

If it goes wrong If it falls straight, try a little more curl. Start both sets again with that curl.

Reference Gregory Vogt · NASA Glenn

SVG attached

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Williams tandem glider

What happens when you raise all four wingtips just a little?

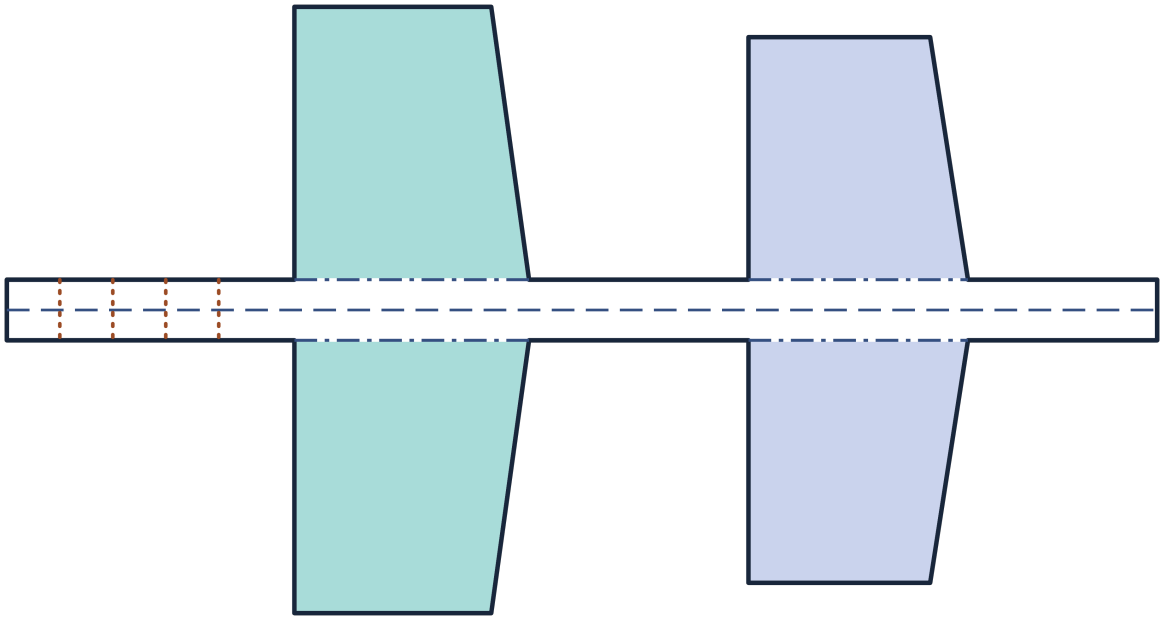
Print single-sided at 100%. Check the 50 mm line with a ruler.

50 mm

Materials One printed sheet of ordinary paper, scissors, a ruler and one small paper clip. Cutting is easier with a helper.

1. Print at 100% and cut around the solid outline.
2. With the printed side up, find the four dotted lines on the left. Fold the nose inward at each line, starting at the end.
3. Fold the long dashed center line so the printed faces meet. Turn the folded edge down. Open all four wings along the dash-dot lines until they sit level.
4. Slide the clip onto the keel just behind the nose. Look from behind: the back wings must line up with the front wings, left and right at the same height.

Full-size template · Cut along the solid outline.



Flight trial

Give it five gentle, level pushes indoors from the same line and height. Then raise the tips slightly and try five more.

Mark the first landing each time. Compare distance and how far the glider drifted sideways.

Level					
Tips raised					

The two wing pairs share the lift. Raising both sides may help the glider roll back toward level after a small tilt.

If it goes wrong Sinks flat: slide the clip forward. Plunges: move it back, or unroll one nose fold. Turns: line up the wings again. Williams's rules, 1918.

Reference Archibald Williams · Things To Make · Paper Gliders, Fig. 128 (Model B) SVG attached

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