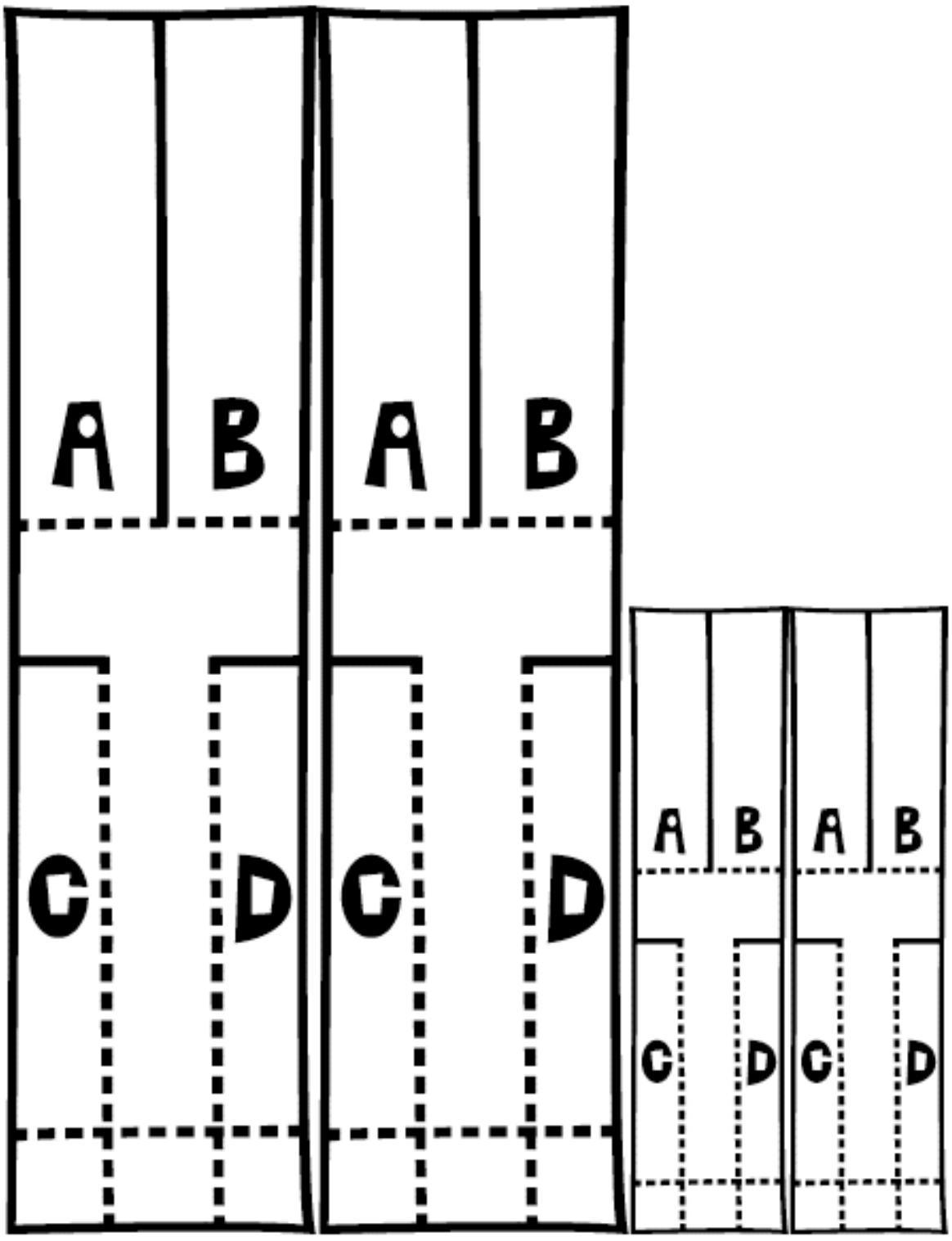
ROTO-COPTER PATTERNS

Does a big Roto-Copter spin differently than a little one? Here are two sizes for you to try. Print this page out and then return to the Roto-Copter activity.

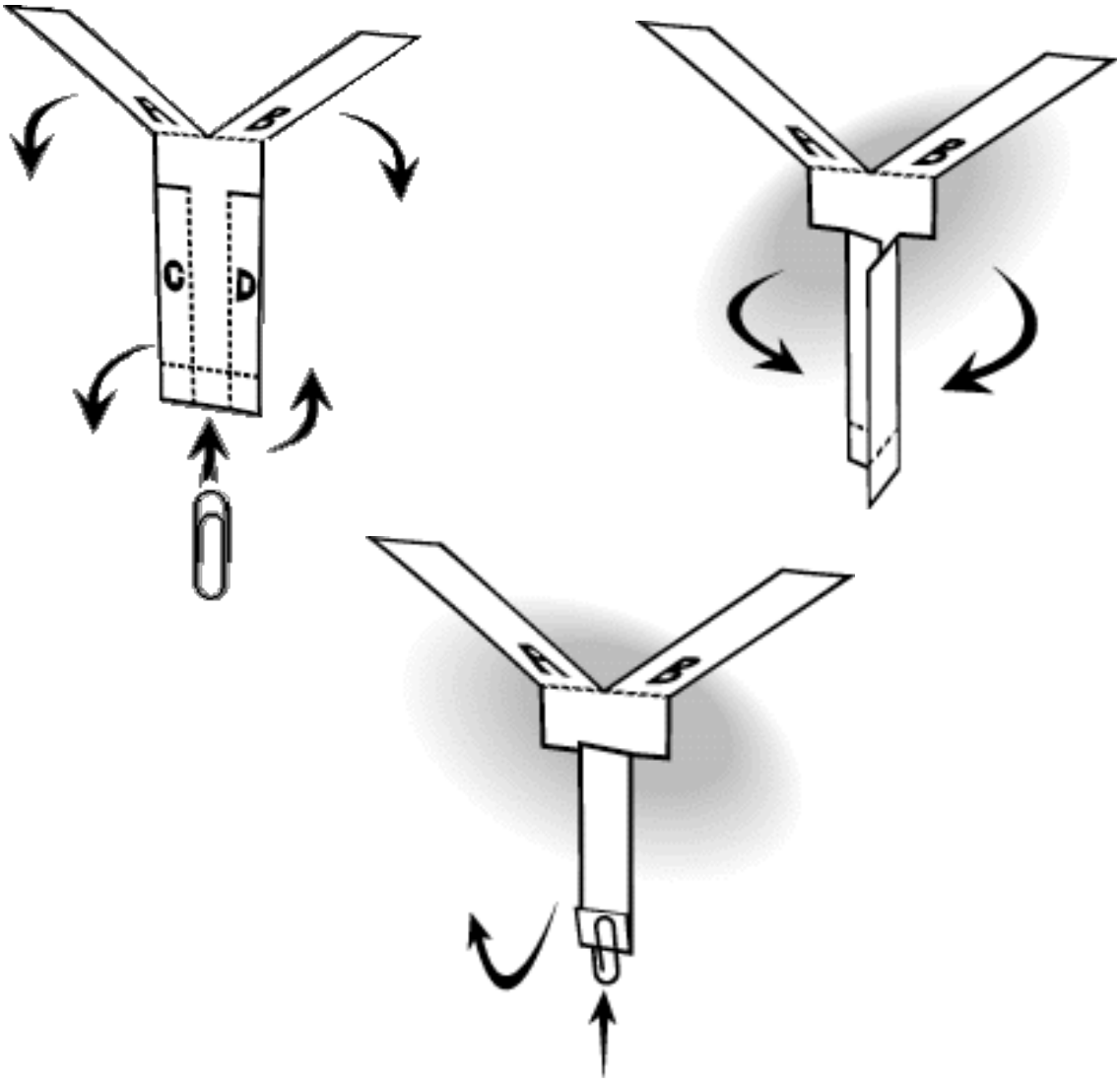


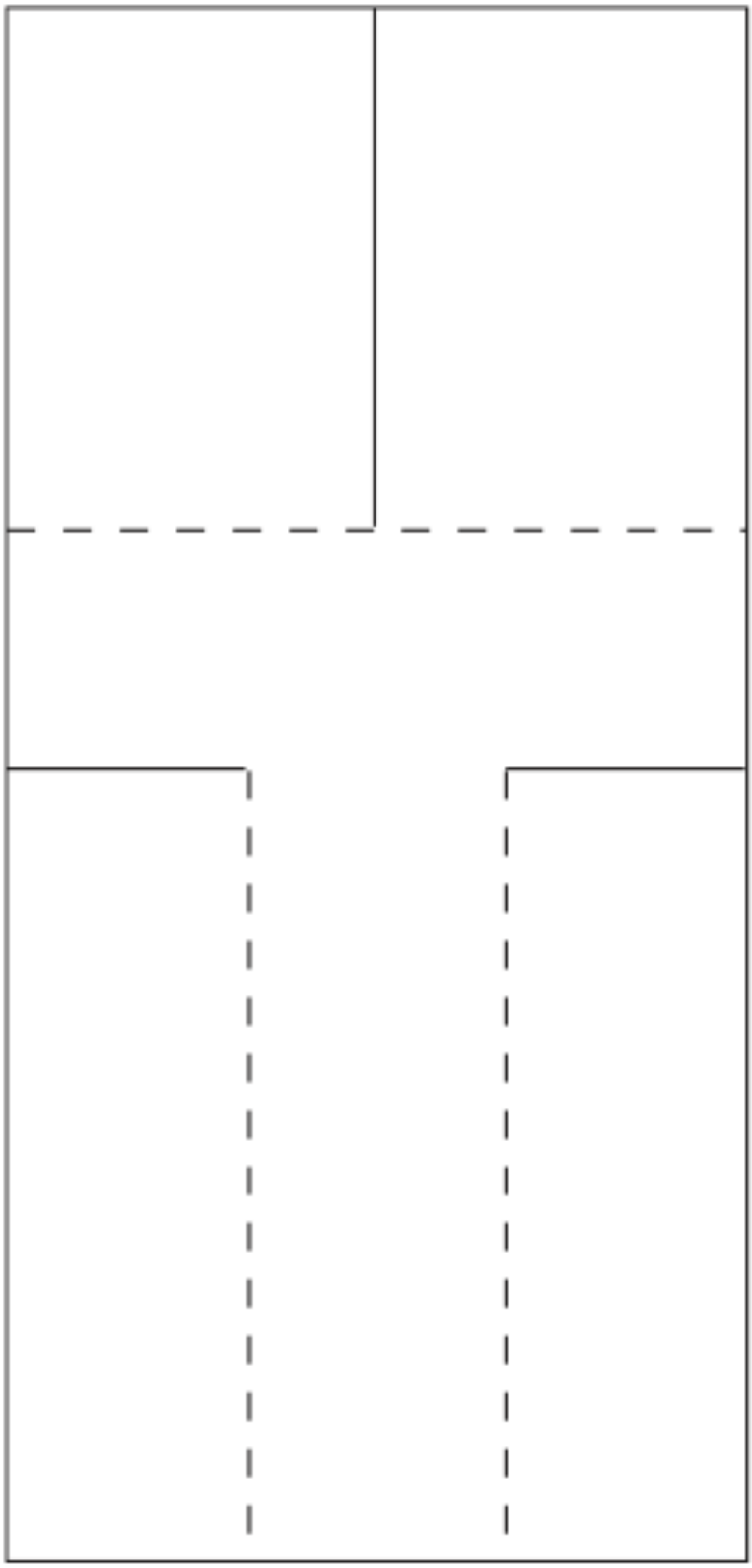
Cut a strip of paper 20 cm in length and 3 cm wide.
Copy the design shown in the diagram on the left.
Cut along the solid line between A and B and cut the two little slits above C and D. (Do not cut the dotted lines - they show folds.)

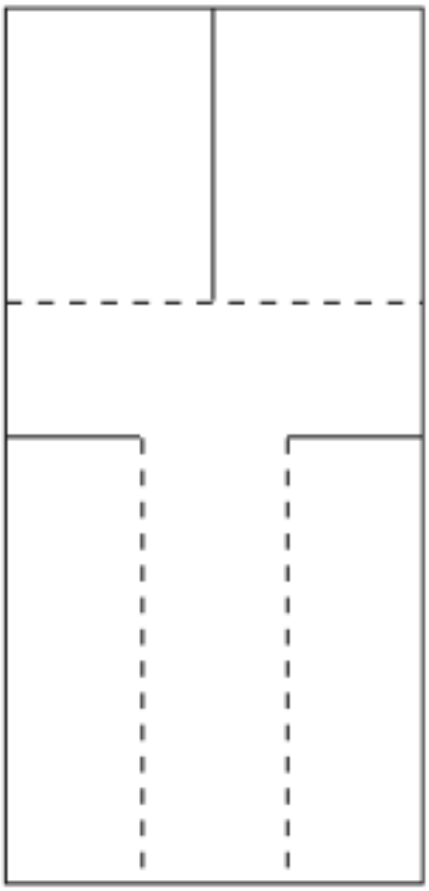
Fold up the bottom flap (underneath C and D) and press it flat against the helicopter's "body".
Fold flap C over until it lies flat on top of the centre part of the helicopter's "body".
Turn the paper over.
Fold flap D over until it lies flat on top of the centre part of the helicopter's "body".
Hold flaps C and D in place with a paperclip.

Fold helicopter blade A towards you and fold helicopter blade B away from you.

Your helicopter is ready to fly!





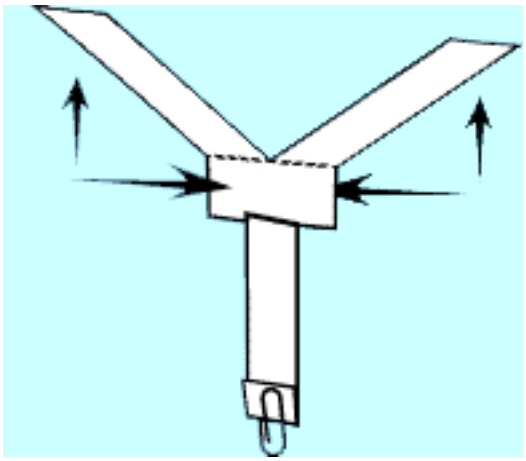


What's Going On?

Why does the Roto-Copter spin?

When the Roto-Copter falls, air pushes up against the blades, bending them up just a little. When air pushes upward on the slanted blade, some of that thrust becomes a sideways, or horizontal, push.

Why doesn't the copter simply move sideways through the air? That's because there are two blades, each getting the same push, but in opposite directions. The two opposing thrusts work together to cause the toy to spin.



Next time you drop your copter, notice which direction it spins as it falls. Is it clockwise or counterclockwise? Now bend the blades in opposite directions-if blade A was bent toward you and blade B was bent away, bend B toward you and A away. Drop the copter again. Now which way does it spin?

In the Spinning Blimp, air pushes up on the flat sides of the strip of paper. When the flat side of the paper strip is parallel to the ground, the blimp drifts down like a flat piece of paper. But if the blimp tilts so that the flat side of the strip is at an angle to the ground, the paper strip gets a sideways push, just like the blade of the copter, sending the blimp spinning. Each time the flat strip comes around, it gets another push and goes for another spin.