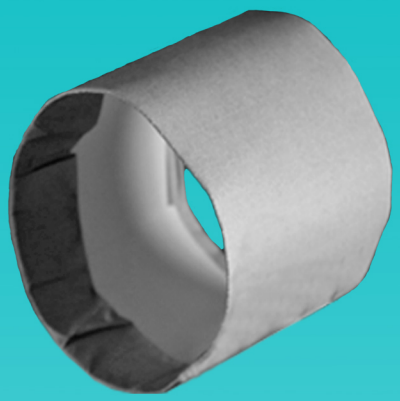
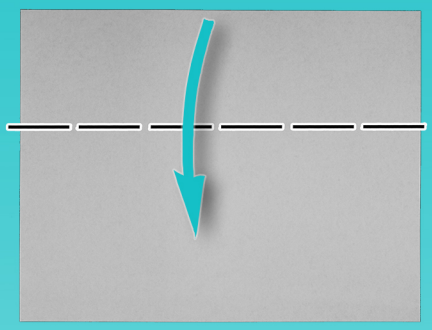
The Tube

The more spin you give it, the straighter it flies. Let it roll off your fingertips. Put some strength into the throw.

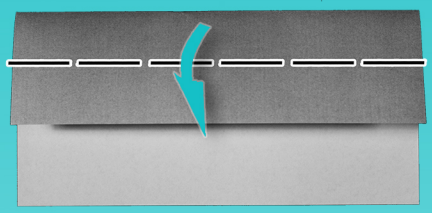


1



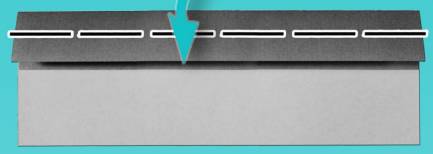
Start with a long side up.
Fold 1/3 down. That means the layered part will end up the same size as the unlayered part. It's okay for layered part to be just a little bigger than the unlayered part.

2



Fold the layered part in half.

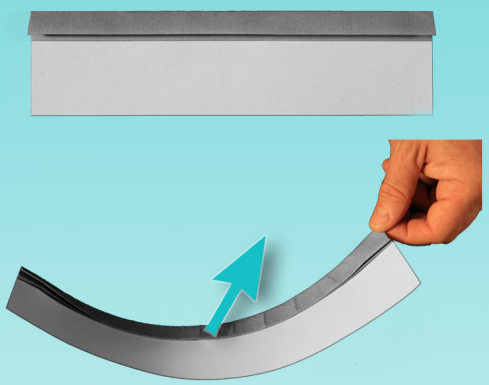
3



Again, fold the layered part in half.

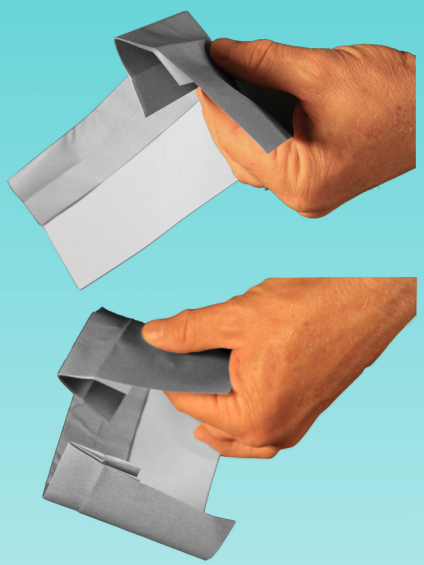
4

Rub the layered part over edge of a table to bend the thick layers into a curve. Then unfold step 3.



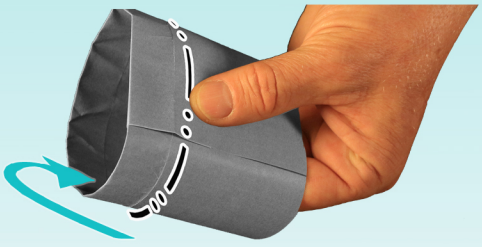
5

Put the left side inside the right end. The loop of paper stays in front, the two corners go behind. If you're left handed, put the right side inside the left end. The overlap should be 1" to 1.5".



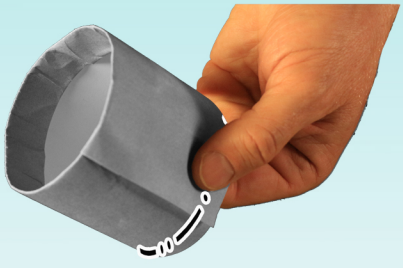
6

Remake the step 3 crease. It will get ugly for a moment before it looks nice.



7

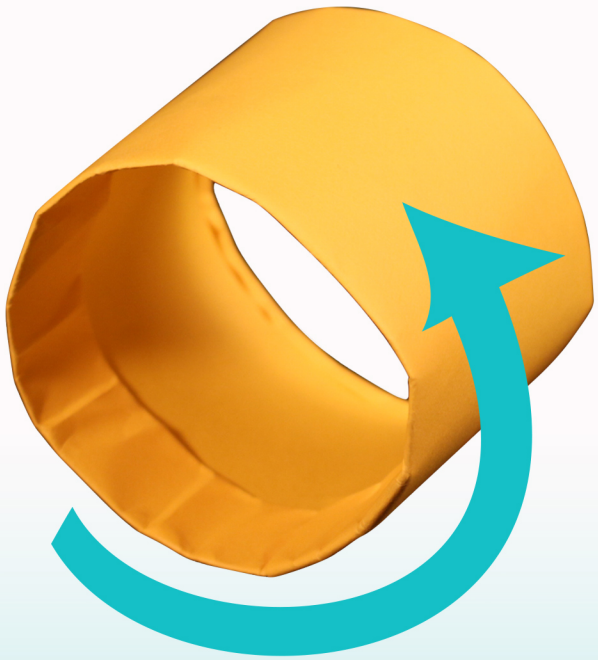
Fold about .25 inch (.5 cm) of the rear to the inside to lock it together.



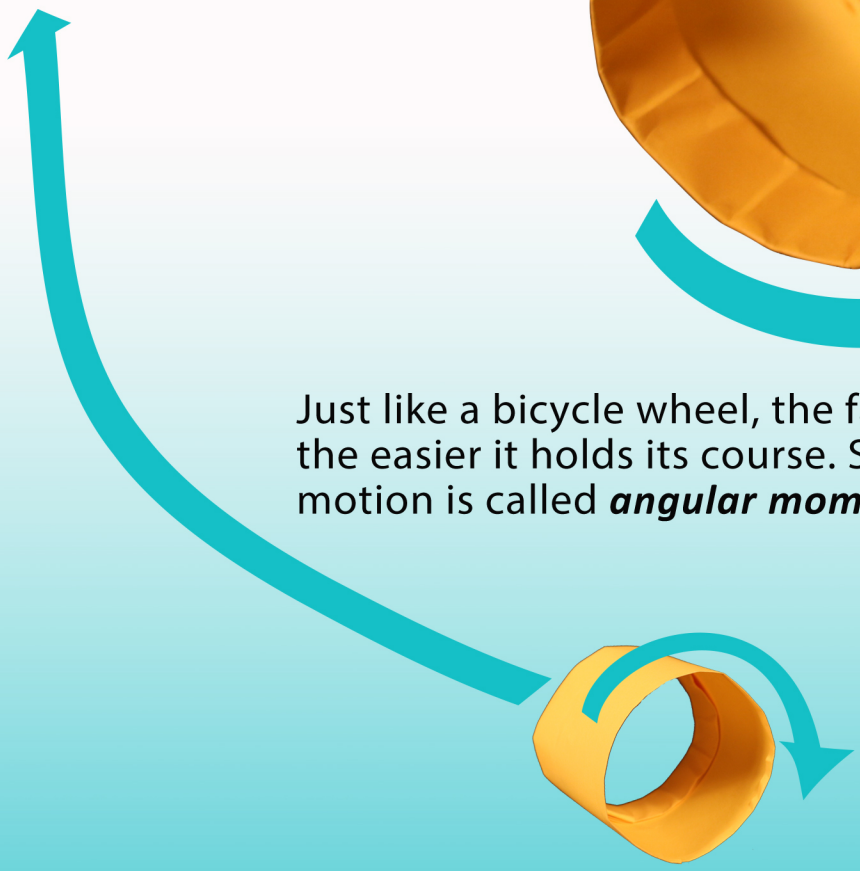
Totally Tubular

Throw it like a football. Wrap your fingers around it, and make it spin as you launch it forward.

The Tube is that rare paper airplane that uses rapid rolling to create lift. It's also interesting to note that the ***Center of Gravity*** is not on the plane. The center of rotation is the center of gravity, which in this case, is in thin air!



Just like a bicycle wheel, the faster The Tube spins, the easier it holds its course. Stability from spinning motion is called ***angular momentum***.



If you're throwing The Tube with enough spin, and hard enough, you'll notice (if you're right-handed) The Tube will curve gently to the right. In fact, a fun thing to practice is throwing slightly down and to the left of your target, and getting The Tube to curve up and right for a direct hit. For lefties, aim down and to the right. The Tube works the same way as a curveball in baseball, or a hook or slice in golf. It's a ***boundary layer*** effect called: ***Kutta-Joukowski Lift*** (specific to spinning cylinders, otherwise ***magnus effect***).