



# How To Make A Kite For Free

(or darn close to it)

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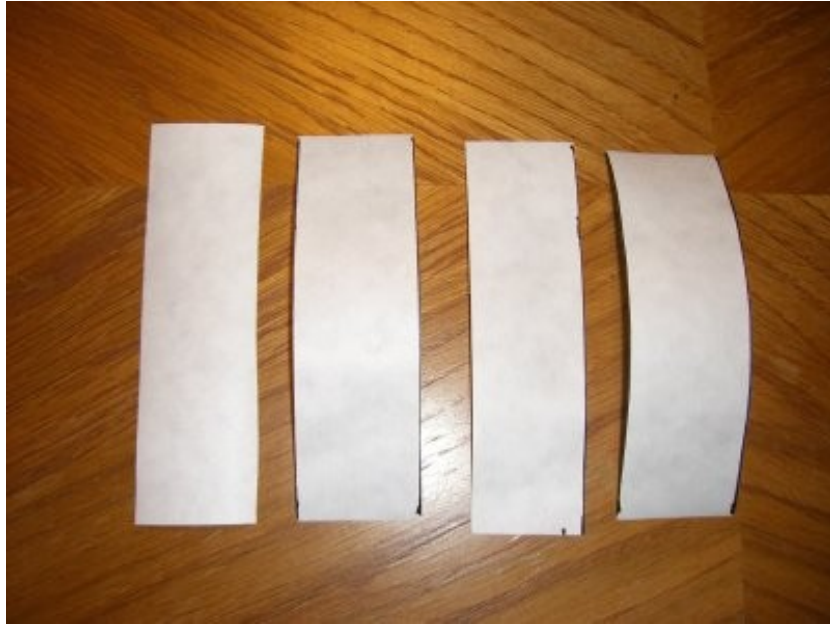
# What You'll Need

1. A ruler or tape measure.
2. Clear tape.
3. White glue (I prefer Tacky Glue for many projects).
4. A pair of scissors, optionally a craft knife or scalpel.
5. A fine-tip marker.
6. Lightweight sail material, such as tissue paper, plastic gift wrap, or a cut open trash bag.
7. Heavy weight wrapping paper (kraft paper works well), any color.
7. Four large plastic drinking straws (Dunkin Donuts straws are used in this project).



## First Step - Joint Construction

1. Cut the kraft paper into four strips, each 5 inches by 1.5 inches as shown below.



2. One at a time, tightly roll each strip around one of the drinking straws and fasten with glue to create four small paper tubes as shown below.



3. To form the spine of the kite, insert two drinking straws into one of the paper tubes and fasten together with clear tape, as shown below.



4. Cut another piece of kraft paper into a strip measuring 2 inches by 1.5 inches and tightly roll it into a small cylinder two inches in length. It should resemble the thin cylinder shown in the photo below. This piece will serve as the horizontal joint support.

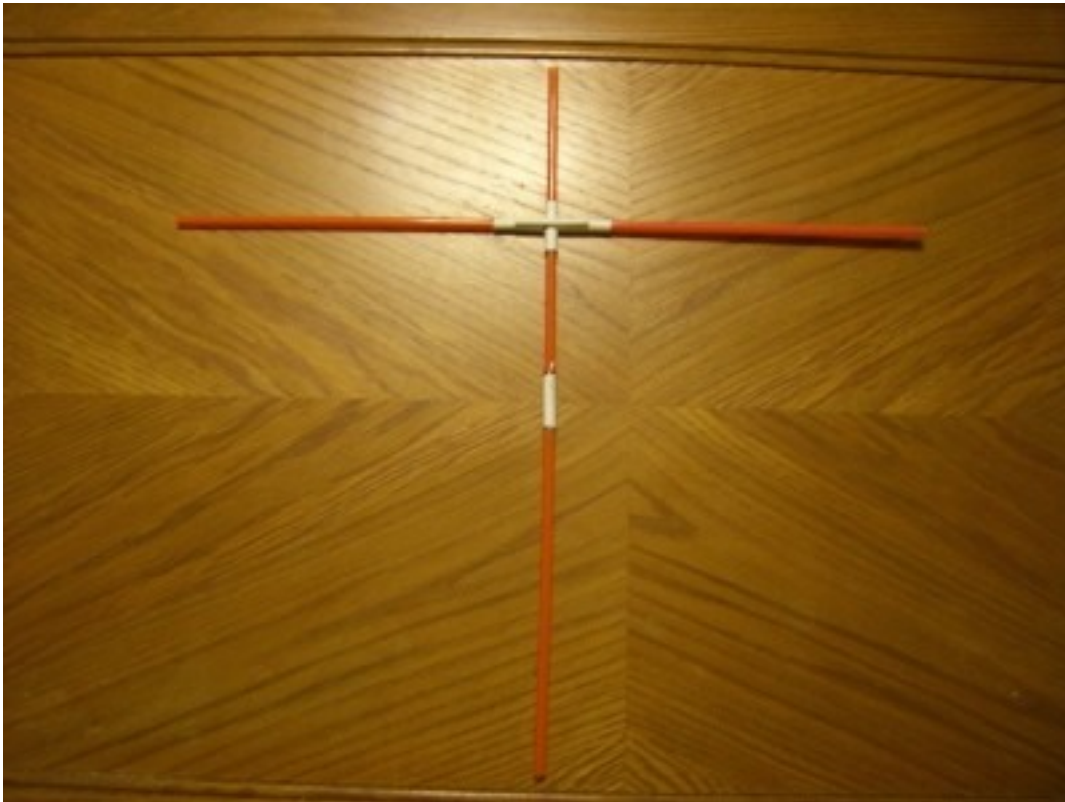


5. Apply glue to one end each of two paper cylinders. and fasten them to the remaining cylinder as shown below. Apply glue to the thinner joint support cylinder and place it across the joint as shown below. *Allow the joint to dry thoroughly before proceeding.*



## Second Step - Frame Construction

1. Insert the spine of the kite into the joint. If you're using Dunkin Donuts straws, the center of the joint should be five inches from the top of the spine. Fasten the joint in place with clear tape.
2. Insert a straw into each remaining cylinder and fasten in place with clear tape to complete the frame. It should look like the photo below.



## Third Step - Attaching the Sail

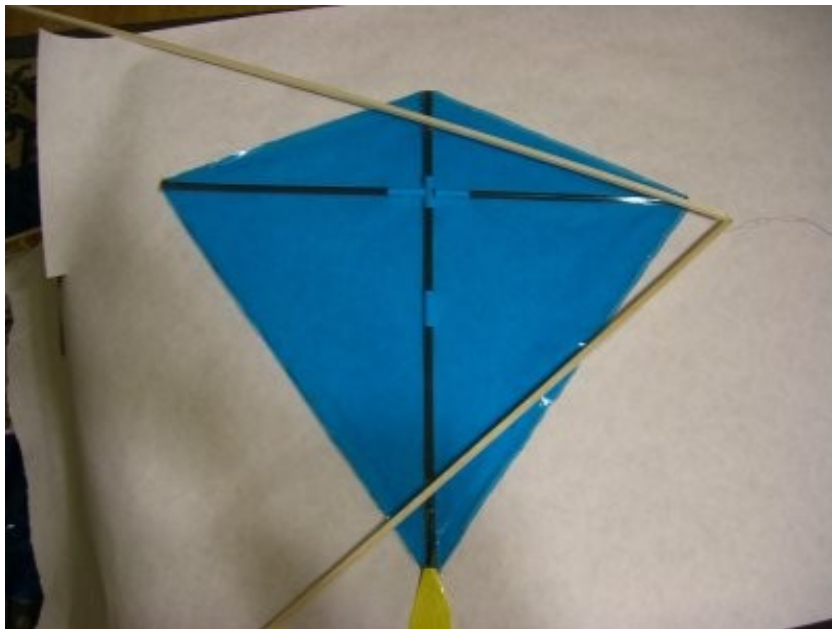
1. On a flat surface, spread out your sail material (tissue paper, gift wrap, etc). Place the kite frame on the material and fasten it with clear tape. Each end of the frame should be taped to the sail, with an extra piece of tape applied between the end of each straw and the center joint.
2. Using a ruler or other straight edge, draw lines connected each end point in the frame as shown below.



3. Using scissors or a craft knife, carefully cut along the lines to separate your sail from the excess material. If you used cellophane gift wrap or mylar for your sail, you will need to reinforce the edges with clear tape to prevent tears.

## Last Step - The Bridle and Tail

1. Place clear tape reinforcement on the front of the sail at two points, approximately two inches from the top and bottom of the spine. Carefully punch two small holes in each reinforced point, to allow a piece of string to be tied around the spine through the sail. Tie a piece of line to the spine in this fashion, forming a small loop in the line to allow the flying line to be attached. Use the photo below for reference; the tied loop should be approximately where the two sticks intersect.



You may have to experiment to determine the best place to form the loop to attach your flying line. For stiffer breezes, move the tether point up toward the top of the kite. For light breezes, move it down a bit toward the base of the kite.

2. Attach a tail made from any material you like. Strips of plastic bags or party streamers work quite well. Streamers provide additional drag and balancing weight to help stabilize the kite in flight. You may need to experiment to determine the best length for your kite's tail.

## Additional Tips

*Wind:* This kite flies well in light, steady breezes. Be careful not to fly it on a day that's too windy; the frame won't be able to handle strong gusts.

*Balance:* The better balanced the kite is, the better it will fly. Be careful not to pucker the sail material when attaching it to the frame, as this will cause uneven regions to form in the sail.

*Flying Line:* You can fly the kite on any lightweight line. 10-15 lb. braided flying line from a kite shop works best, but feel free to experiment. Light cotton string or heavy sewing thread will work well in a pinch.

*Modifications:* If you'd like to adapt the kite to handle heavier breezes, try using inexpensive wooden dowels or balsa strips from your local hardware or craft store instead of drinking straws. You will need to use a stronger joint reinforcement piece as well; a short length of dowel or balsa strip will serve to replace the thin paper reinforcing tube in the joint.

*Stability:* For added lateral stability in flight, you can try attaching a piece of string between the horizontal spars (the wings of the kite) to gently bow the frame. This creates a dihedral effect which can greatly improve the kite's flying performance. For stiffer breezes, increase the depth of the bow.

*Construction Tips:* If you're using a craft knife, be sure to reserve a blade for cutting materials such as plastic film or thin tissue paper. Dull blades will snag in the material and produce tears. When gluing two pieces together, the best approach is to apply a thin layer of glue to both pieces, wait a minute for the glue to get tacky, and press the pieces together for a few seconds. Allow plenty of drying time before using glued parts.

If you have any questions or suggestions for improvement, please feel free to email me at: [philip.paradis@classhelper.org](mailto:philip.paradis@classhelper.org). Enjoy your kite!