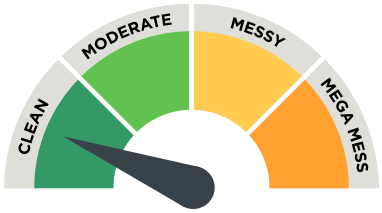
4-H STEM LAB



The Messy Meter

Crazy Kites

In this exciting activity, kids will get to use their engineering design skills to make and build a kite of their own. While testing out the kite designs kids will learn about how lift and air pressure work together to make things fly!

Kites have been constructed and flown for thousands of years. They have been used for fun, for military exercises, and for scientific purposes. You may know that Benjamin Franklin used a kite to show that lightning is electricity. There is also historical evidence that in China kites were used more than 2200 years ago.

Recommended Grades:
Grades 3-5, 6-8

Estimated Time:
30 minutes

Subject:
Aeronautics

WHAT YOU'LL NEED

PANTRY STAPLES:

- 8.5" X 11" sheet of paper (1 sheet per child)
- Tape
- Scissors
- Plastic straws
- Sewing thread or string

SPECIALTY SUPPLIES:

- Breezy day or a fan

STEPS

1. Fold the corner (A) to the opposite side (B) of a sheet of standard 8.5" X 11" paper as shown. Note: There will be a 2 1/2" border remaining on bottom (C).
2. Cut off bottom (C). Note: Save the bottom to make the tail in Step 4.
3. Fold corner (D) to left side (E). Crease. Turn over and repeat on other side.
4. Cut bottom piece (C) lengthwise into four equal strips. Tape together to form kite tail.
5. Fold piece (F) down over longer triangle (D). Turn over and repeat on other side.
6. Make a hole and attach the tail at the end of the kite (at the red circle). Use sewing thread to make a bridle and attach the rest of the spool to the bridle. This will complete the kite bridle.
7. Mark a spot about a third of the way down the spine and about half an inch from the edge. Put tape over this mark to reinforce it on both sides. Use your hole punch or scissors to make a hole in this spot. Attach your kite string through this hole.
8. Fly your kite!
9. Try making some improvements to your kite to help it fly better. What happens if you adjust the length of the tail or the length of the bridle? What happens if you make the kite larger?

Bonus Fun:
Design, build, and fly a kite of your own. Use what you've learned about various kite designs and from flying this small kite.

- Investigate other small paper kites like sled kites or delta kites.
- Add struts using straws or other material
- Consider various points for attaching the bridle.

Questions to Engage Youth:

- What happens when you pull in or let out the kite line?
- If you attach a string to a balloon. What happens to the balloon in the wind? Does it fly?
- How is a balloon different from a kite?
- How is a paper airplane different from a kite?

Explanation:

Lift caused by changes in air pressure overcomes gravity and the line keeps the kite from moving away, so it moves up.

Kites come in many shapes and the lines are attached in a variety of positions. The earliest kites were flat kites that fly at a low angle. In the late 1800's the box kite design appeared, followed by tetrahedral box kites and delta kites.

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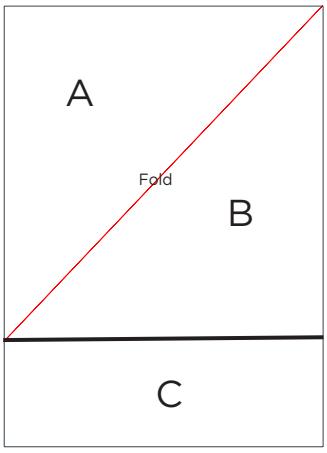
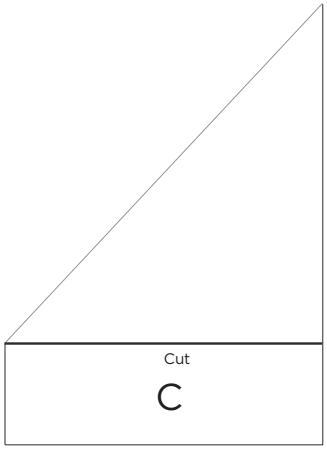
Instructions for making a kite are listed on page 1; visual steps are listed below.

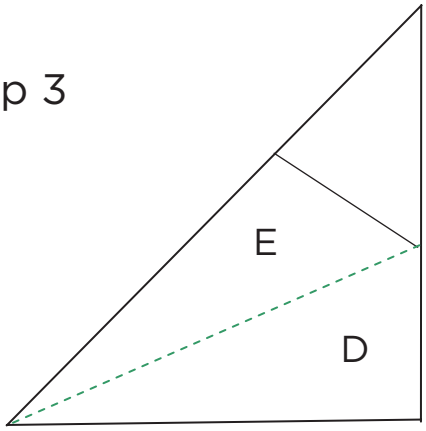
Step 1



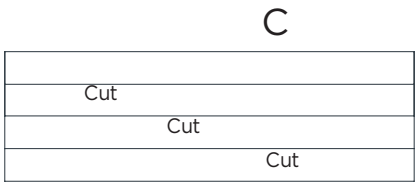
Step 2



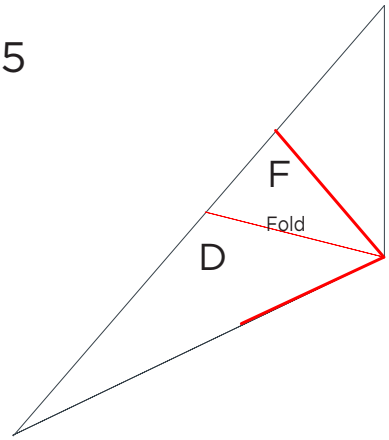
Step 3



Step 4



Step 5



Step 6