deSTEMber
SCIENCE ★ TECHNOLOGY ★ ENGINEERING ★ MATH
PRESENTED BY: girlstart

Kinetic Sculpture

Did you know a pinwheel spinning in the wind is a type of kinetic sculpture? What other things can you think of that move with the wind? Use your creativity to design your own kinetic sculpture to twirl in the breeze.

TEKS:

SCI 2.6C: The student is expected to trace and compare patterns of movement of objects such as sliding, rolling, and spinning over time.
SCI 3.6B: The student is expected to demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.
SCI 6.8A: The student is expected to compare and contrast potential and kinetic energy.
SCI 6.8B: The student is expected to identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces.

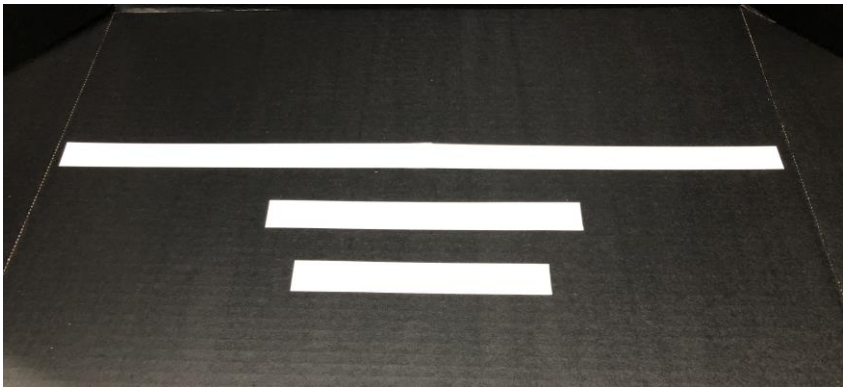
Materials:

- Cardstock
- Paper cup
- Pencil/pen
- 1 6 x 6-inch piece of cardboard
- Ruler
- Scissors
- Tape
- Wooden dowel

How To:

Create the moving part of your kinetic sculpture

1. Cut the cardstock into about 1 inch strips lengthwise (each should be 1 x 11 inches). You will need four strips in total.
2. Cut one of the strips to be about 7 inches long and cut another strip to be about 9 inches long.
3. Take the remaining two strips and tape them end to end. This strip should be about 20 inches long.



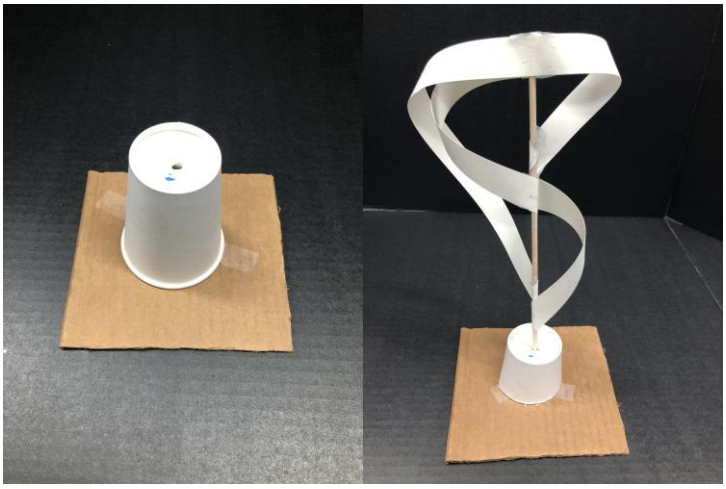
4. On each strip, mark one side A and the other side B.
5. Measure 7 inches from one end of side A on the 20-inch strip and place a mark with your pencil/pen. You will use this mark later.
6. Next, measure approximately 3 inches from one end of the wooden dowel and mark this spot with a pencil/pen. This is where you will attach the first strip later.
7. Measure approximately 5 inches farther down the dowel from the mark in step 6 and mark this spot with a pencil/pen that will be used later. This will be the 8-inch mark on the dowel.
8. Decorate your strips, wooden dowel, cup and cardboard piece however you want, but be sure that you can still see the marks you made on them!
9. Now, take the 20-inch strip and tape one end of side A to the wooden dowel at the 3-inch mark.
10. Wrap the strip upward in a spiraling shape, leaving space between the strip and the dowel. At the 7-inch mark of the strip on side A, tape the strip to the top of the wooden dowel.
11. Wrap the remaining part of the strip downward so that it looks like its spiraling and then tape the end of the strip on side A to the 8-inch mark on the dowel. All of side B of this strip should be facing outward (away from the dowel).

12. Now take the 9-inch strip and tape one of the ends on side A to the top of the dowel, where the 20-inch long strip is attached.
13. Wrap the remaining part of the strip downward so that it looks like its spiraling and tape the opposite end on side A directly below the 3-inch mark on the wooden dowel. All of side B of this strip should be facing outward (away from the dowel).

14. Now take the 7-inch strip and tape one end on side A to the opposite side of where the end of the 9-inch strip is located directly below the 3-inch mark on the dowel.
15. Wrap the remaining part of the strip downward so that it looks like its spiraling and tape the end on side A somewhere below where the 20-inch strip is located (below the 8-inch mark on the wooden dowel). All of side B of this strip should be facing outward (away from the dowel)
16. The main part of your kinetic sculpture is now complete!

Create the base of your kinetic sculpture

1. Poke a hole in the bottom of a paper cup with your wooden dowel. The size of the hole should be about the same size of the wooden dowel's diameter.
2. Take your piece of cardboard and make a small indention in the center with the end of the wooden dowel.
3. Finally, put your completed kinetic sculpture through the hole in the bottom of the cup and place the cup upside down onto the cardboard piece.
4. Line up the cardboard and the cup so that the wooden dowel can go through the hole in the cup and is lined up with the indention in the cardboard piece.
5. Tape the upside-down cup to the cardboard.
6. Your kinetic sculpture is complete, it should stand on its own and the center should spin in the wind.



STEM Explanation:

Kinetic energy is the energy of motion. Therefore, kinetic sculptures are structures that contain parts that can move or are in motion. Your kinetic sculpture is like a pinwheel because it uses wind to make it move. As the wind blows, the curves of your kinetic sculpture catch the wind, which makes it spin and twirl. The cup and cardboard piece serve as the base of your structure, to keep your moving parts stable and upright in the wind. Other kinetic sculptures include objects like pinwheels, whirlygigs, and spinners.

Career Connection:

Structural engineers are concerned with the design and construction of all types of structures such as bridges, buildings, dams, tunnels, power plants, offshore drilling platforms, and space satellites. Structural engineers research the forces that will affect the structure, and then develop a design that allows it to withstand these forces.

Resource:

http://pbskids.org/designsquad/build/kinetic-sculpture/

