

Last Tower Standing

Can you build the next Leaning Tower of Pisa or Eiffel Tower? Construct a tower that can hold weight and withstand winds using only paper and tape. Discover which shapes and structures are the strongest and see if you can make the last tower standing!

TEKS:

6.8B Identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces.

How To

Materials:

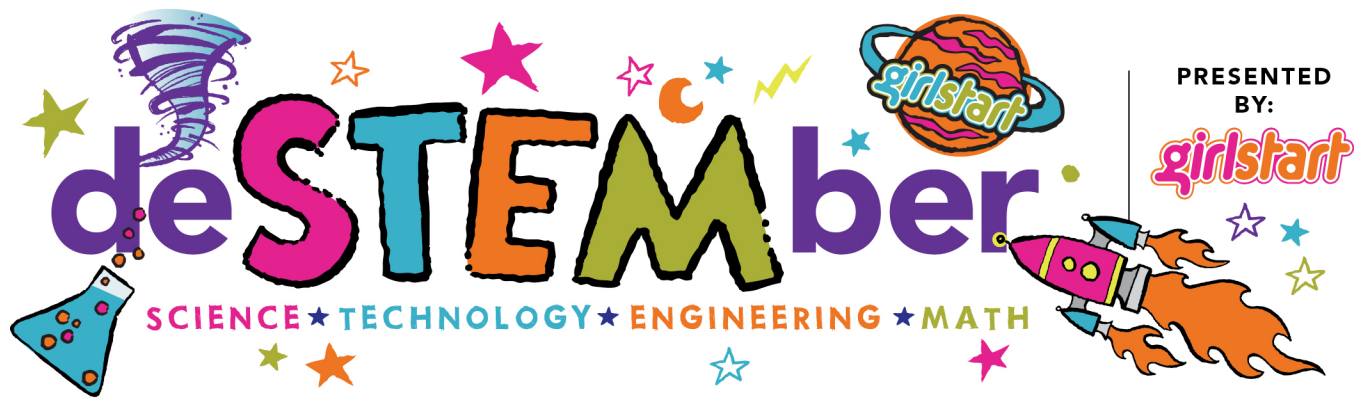
- 4" x 6" index card
- Blow dryer
- Copy paper
- Scissors
- Scotch tape
- Straws
- Weights for testing – (work out weights, fishing weights, books, etc.)

1. Place a piece of paper on a flat surface. Place a straw in the corner of your paper and use it to roll your paper into a thin tube.
2. Tape your tube so that it doesn't come unraveled. Notice that your tube is strongest in the middle where there are more layers of paper.
3. Trim the ends of your tube so that it is 8 inches long.
4. Continue these steps to make 4 more tubes.
5. Tape four of these tubes together at their ends to make a square. Observe that this square on its own wouldn't carry very much weight.
6. Visit <http://www.pbs.org/wgbh/buildingbig/lab/shapes.html> to test out the strengths of different shapes when building structures.
7. We now know that structures are stronger when they are made of triangles. Tape one more tube diagonally in your square, making it into two triangles.
8. Repeat steps 1-7 to make 6 squares, then tape them together to make one cube.
9. Using your knowledge of structures, continue to build onto your tower to make it as strong as it can be.

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Why Does it Work?

Towers use different forces to remain standing. Triangles are the most rigid shape because they only experience one force at a time on each side. Your tower is able to hold the most weight when you use triangles in its structure.

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.

Resources: <http://www.pbs.org/wgbh/buildingbig/index.html>

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