



Curiosity Guide #606

Springs

Accompanies Curious Crew, Season 6, Episode 6 (#606)

Paper Springs

Investigation #4

Description

Use the power of a spring with paper to create something fun for a celebration or a surprise!

Materials

- Paper cutter or scissors
- 8 $\frac{1}{2}$ by 11-inch paper in assorted colors
- Glue stick
- Ruler

Procedure

- 1) Select two sheets of paper of different colors.
- 2) Cut a one-inch strip from the long edge of each paper.
- 3) Overlap the two strips on the short end so that the two strips form a 90-degree angle.
- 4) Place a dab of glue between the two strips where they overlap.
Press the strips together at the overlap.
- 5) Fold the loose end of the bottom strip across the top of the section that was glued. Be careful not to sharply crease the edge.
- 6) Continue to alternate and loosely fold the strips across each other, making a "stack" on the base, until the last of each strip has been folded.
- 7) Carefully pull the paper spring so that the spring is uncompressed.
- 8) Glue a little picture on the top of the paper spring.

- 9) Insert the pop-out spring into a birthday card or even into a little paper box.
- 10) How else might you use this paper spring?

My Results

Explanation

Paper springs work in a similar fashion to compression springs, but they are much more fragile. As long as the paper bands are not damaged during the creasing process, the bands will revert to their original shape. Compressing the paper stores elastic potential energy that converts to kinetic energy when the holding force is removed. The holding force could come from a closed birthday card, the lid of a paper box, or even your hand pressing the spring down.

Investigate further. This activity was about making springs out of paper. However, springs are usually made from coiled steel and come in many shapes. Cylinder and cone-shaped springs are very common, and even though these springs look different, they work in a similar way.

When springs are squeezed, or compressed, the coils are forced closer together. The coils of each spring hold potential energy until the force is removed and the coils can spring back to their original shape.

We saw the compression spring in the pogo stick. You can also find compression springs in mattresses, the kitchen faucet, watches, and even your retractable ball point pen!

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