

Which bridge design is the strongest?

Materials:

Drinking straws
Cardboard tubes (from toilet paper or paper towel rolls)
Paper
Masking tape
Scissors
100 pennies
Small cup
Hole punch (optional)
Notebook and pencil

Instructions:

Your mission is to build a bridge that will hold the weight of 100 pennies in a cup. Try to do so by using as few materials as you can.

Place two objects of equal height (books, etc.) about 20 inches from each other. You need your bridge to connect the two sides, without intermediary supports, and hold the weight of the pennies.

First, use the straws and masking tape to build a bridge. In your notebook, keep track of the amount of materials that you use. Place the cup with the pennies on top and count to 30.

Next, build a bridge using only the cardboard tubes, paper, and tape. In your notebook, keep track of the amount of materials that you use. Place the cup with the pennies on top and count to 30.

Next, build a bridge using all of the materials (straws, tubes, paper, tape, hole punch). In your notebook, keep track of the amount of materials that you use. Place the cup with the pennies on top and count to 30.

Questions:

What design held the pennies the best?

Which design used the most materials? Which used the least? Was there a difference in the strength?

Can your bridge also withstand weather? As a variation, try using a blow dryer to simulate wind. Shake the table to emulate an earthquake. Do any of the bridges still hold the pennies in adverse weather conditions?

Are there pieces of the structures that aren't needed? Use scissors to carefully cut pieces away from the



bridge.