

# Testing Paper Chains

A lot of people enjoy making paper chains to decorate their Christmas tree, but they're fun to make for all kinds of holidays and festivals. With this experiment, learners will discover which kind of paper is the strongest, while focusing on variables and collecting data.



**Recommended Age:** 5+ years old

**Time needed:** 20+ minutes

**Link to the Video:**

[https://youtu.be/mtl\\_FyCuD4g](https://youtu.be/mtl_FyCuD4g)

## What You Need

- Several kinds of paper for making chains (such as copy paper, newspaper, wrapping paper, cardstock, construction paper, etc.)
- Scissors
- Pencil
- Ruler
- String
- Tape
- Plastic or paper cup
- Something to use as weights (pennies, washers, rocks)--they should all be the same size

## What You Do

- Cut your paper into strips that are all the same length and width.
- Figure out how much you want your strips to overlap when making a link. Measure that distance from each end of every strip, and mark with a pencil.
- Rip off pieces of tape that are all the same length.
- Make your chains with at least 3 links. They should all be exactly the same, except for the type of paper.
- Make a chart with paper types across the top, and one row for each test. **See the sample on the next page.**
- Punch holes on opposite sides of your cup, and run a piece of string through the holes.
- Hang one paper chain so that it swings freely. You can hang it from a hook or hanger, get a friend to help, or whatever you can figure out!



- Tie the cup to the bottom link of the chain.
- Add your weights, one at a time. Make sure to count them!
- When the chain breaks, write the number of weights on your chart.
- Repeat for your other chains. Ideally, you should test each paper at least 3 times.
- After your final test, figure out the strongest paper by figuring out the average count for each type of paper.
  - To find an average, add up the numbers for each test for one type of paper. Then divide by the number of tests.

	Paper type 1	Paper type 2	Paper type 3	Paper type 4
Test 1				
Test 2				
Test 3				
Average				

### Tips for Adults

- This experiment is really focusing on variables. It is important when doing an experiment that everything is exactly the same for each test, except for the thing you are testing. In this case, we are testing for the type of paper. So everything else (size of paper, size of pieces of tape, number of links, etc) needs to be the same.
- Your child may need help figuring out the average for their tests.



### Learning and Skills Connection

- **Analytical reasoning:** applying logic, breaking problems into parts, comparing, categorizing, counting, measuring, estimating
- **Being open to possibilities:** Expressing interest, wanting to explore, taking things apart, trying things out, asking questions
- **Critical thinking:** Employing objectivity, looking for and applying evidence

### Doing STEAM with Kids

STEAM stands for Science, Technology, Engineering, Art, and Math. There are lots of ways you can explore these letters, apart or together. Ask your child to make predictions, describe what they see, and to imagine possibilities and solutions. Don't worry so much about the "right" answer. Developing curiosity, and problem-solving skills are important first steps to doing STEAM!

