

# Stretching to Make a Point

Let's say that you worked in a rubber band factory. You are trying to figure out some of the characteristics of the rubber band used in the rubber bands. The question is: How much does a length of rubber band stretch as more weight is added to it?

## Materials:

- Rubber band
- Small paper cup
- Tape
- String
- Metric ruler
- Pennies (50)

## Procedures:

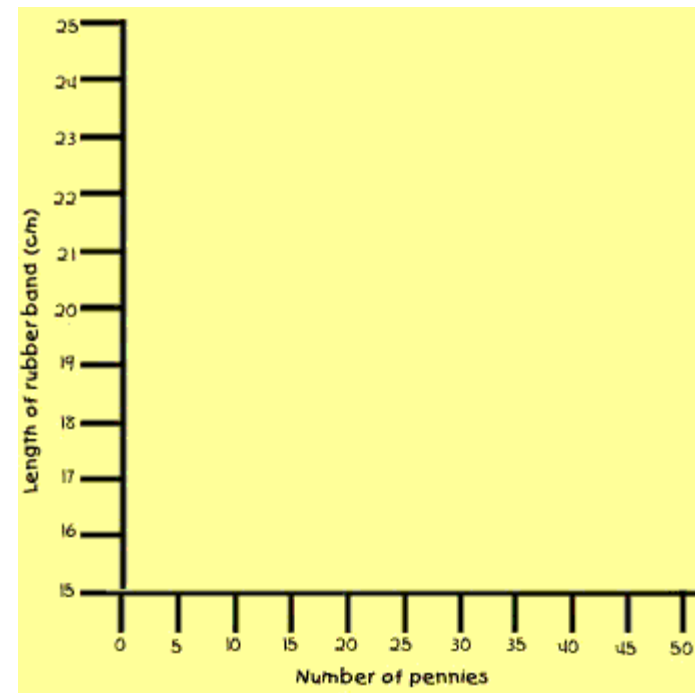
1. Make a chart like the one shown. Cut a piece of string about 30 centimeters long. Lay the string over the cup and tape the string to the sides of the cup as shown. Bring the ends of the string up and tie a knot so that the string is tied securely around each piece of tape.

Number of pennies	0	5	10	15	20	25	30	35	40	45	50
Length (cm)											

2. Carefully use your scissors to cut a rubber band. Tie one end of the rubber band around the string. Place the other end of the rubber band over the ruler. Try to have the rim of the cup even with the 15 cm mark on the ruler.



3. Wrap a piece of tape around the rubber band and ruler to hold the rubber band securely in place. Record the number where the cup rim is under "0" for number of pennies.
4. Place 5 pennies in the cup. Check to see where the rim of the cup is on the ruler. Record that length under "5" for number of pennies.
5. Continue adding 5 pennies each time and recording the length from the ruler. Do this until you have used all 50 pennies.
6. Let's graph it! Make a graph like the one shown. Use the information in the chart to graph the results of your experiment. What does your graph tell you about how much a rubber band stretches when weight is added to it?



## Think about this ...

Although you never added exactly 27 pennies, can you use the graph to predict where the rim of the cup would be if you placed 27 pennies in the cup? Try using the graph to make a prediction and then try it to see how close you were!

## Where's the Chemistry?

To predict how much the rubber band would stretch with 27 pennies, just go to where 27 would be on the bottom line ("x" axis) of the graph. Then go straight up until you hit the graph line. Now, look directly to the left at the vertical line ("y" axis) of the graph and see what the length would be.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at [www.acs.org/kids](http://www.acs.org/kids).

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## Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

### Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

**Never** eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

**Never** experiment on your own!

**For more detailed information on safety go to [www.acs.org/education](http://www.acs.org/education) and click on "Safety Guidelines".**

