

# Tack toss. (Probability)

## Objective

To determine the chance of a thumb tack landing point down.

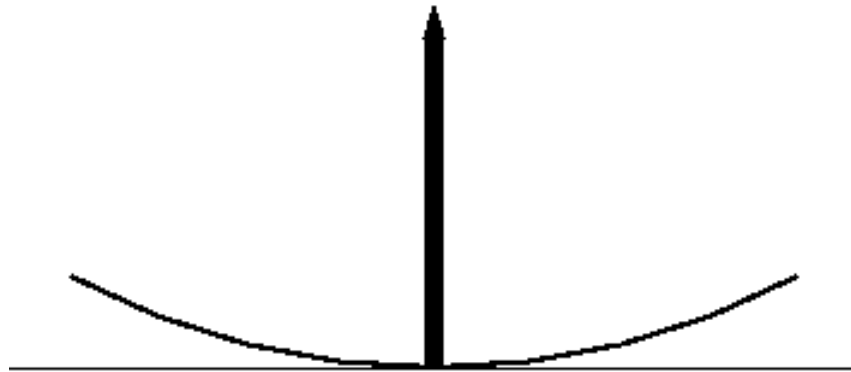
## Materials

- A few different types of thumb-tacks (at least three if possible)
- Pencil and paper for recording results

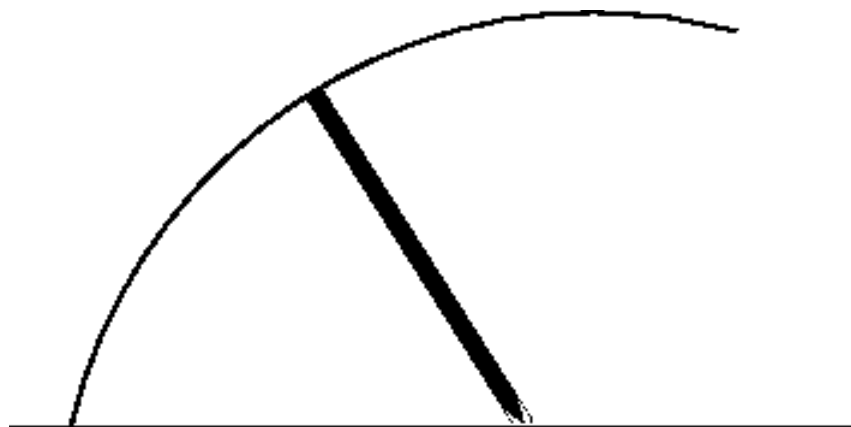
## Methods

- Determine a method and place for tossing the thumb-tacks that is safe and allows the tack to land on a flat surface. You may decide to have many people tossing thumb-tacks; in this case, make sure each person has a similar place and tosses the tacks as closely as possible to a pre-defined method.
- Toss the thumb-tacks a lot of times! (Since this is simple to do, you can do this, say, 50 times pretty quickly and easily.) Record how often each type of thumb-tack lands with the point down, and how often with the point up; see the pictures below.

The tack may land point-up, like this:



Or it could land point-down, like this:



- For each type of thumb-tack, keep a record of the number of tosses made, and how many times the tack lands each way.

## Analysis

- For each type of tack, calculate the percentage of times the thumb-tack lands point-up.
- Construct a table or a bar-chart showing the percentage of times the thumb-tacks land point-up for the different types of tacks.

## Discussion

- Is there any measurement bias in your study? (Did you follow identical methods for each toss? Was the tossing consistent?)
- Does there appear to be any difference between the types of thumb-tacks with regard to the percentage of tacks landing point-up? If so, can you describe this difference simply?
- What would you do to improve the study the next time you ran it?