

Probability: The Study of Randomness

Project 7 FAIR COIN

Let's flip a coin and record the outcome. As a group, discuss the following items before you begin the experiment:

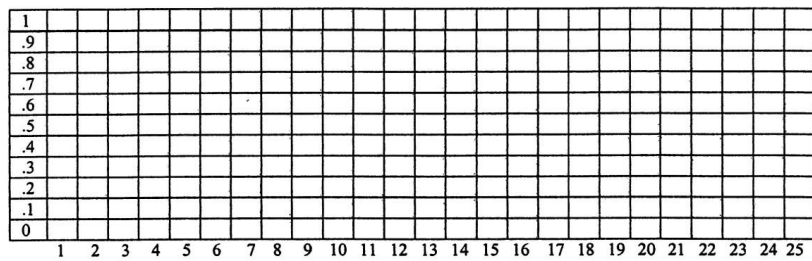
- How to flip the coin so it is done in the same manner each time.
 - Whether or not to turn the coin when you catch it.
 - Which side of the coin should start facing up? Alternate heads or tails up, or always the same?
 - What do you do if you drop the coin . . . will you count the toss or re-flip?
1. You are to flip your chosen coin according to the agreed upon guidelines above. After each flip you are to record the results as an H (head) or T (tail). Keep track of the total number of heads after each flip and find the percentage of heads after each flip.

Record the results on the grid that follows:

Trial number	Start up H or T	Outcome H or T	Total number heads	% heads
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

2. The above data gives you a numerical representation of the behavior of your coin. Make an observation about the percent heads column.

3. Let X represent the trial number and Y the percent of heads after X trials. Plot the set of (X, Y) on the grid below.



4. Make a line plot of the above points on the grid by connecting the points as you move from left to right on the grid.

5. The graphical display of the data on the grid gives you a picture of the behavior of your coin over time. What does your graph indicate to you about your coin?

6. By using both the numeric display and the graph, make a conjecture about your coin.

7. If the other members of the group used different coins, compare the graphs of the various coins. State your observations here.

Penny

Nickel

Dime

Quarter

8. Using what you have learned, consider the following. To start a volleyball match, the official begins with a coin flip. Do you think that you can call it correctly more than 50% of the time if you see the top side of the coin and know that she will not turn it over? Review your results of the coin flip column 2 and column 3. State what you observe.

9. Is this a fair method of starting the match?