

Random Variables and Coin Tossing

November 23, 2009

Suppose you toss a coin four times. For each toss, write T for the outcome of “tails” and H for the outcome of “heads.” For the four tosses, string the H ’s and T ’s together. For example, if the first toss results in a head and the remaining three tosses result in tails, write $HTTT$.

Let X be a variable whose value is the total number of heads in the given toss. For example, for the outcome $HTTT$, $X = 1$. For each value of X , list all the corresponding possible outcomes of the four coin tosses:

1. $X = 0$:
2. $X = 1$:
3. $X = 2$:
4. $X = 3$:
5. $X = 4$:

Now fill in the following table:

Value of X (number of heads)	0	1	2	3	4
Probability					

What do the probabilities add to?

Finally, make a histogram for this table. What does the histogram look like?