	A	B	C	D	E
1	Marco F. Duarte	Aidan Chin			
2	10.11.2023	10/20/2023			
3	ECE 202 Lecture 16	ECE 202 E3	this excel doc calculates the probability of getting a certain number of heads at 50% heads and 55% heads		
4	Adapting N = 4 coins to N <= 20	Adapting for N = 10 and P = .55			
5					
6	number of coins (N <= 20)	10			
7	predict total # of microstates (n)	1024			
8	predict total # of macrostates	11	q (probability of inverse result)	Most Likely Number of heads FAIR	Most Likely Number of heads WEIGHTED
9	Weighted Probability (P)	55.00%	45.00%	5	6
10	Fair Probability(P)	50.00%	50.00%		
11					
12		count microstates	Check NEW vs. OLD --->	0.00%	
13		1024		(should be 0%)	
14			OLD, FAIR	NEW, FAIR	NEW, WEIGHTED
15	check total # of macrostates	check total # of microstates	check total probability	check total probability	check total probability
16	0	0	100.00%	100.00%	100.00%
17	(should be zero)	(should be zero)	(should be 100%)	(should be 100%)	(should be 100%)
18			heads 50% of the time	heads 50% of the time	heads 55% of the time
19	Macrostate n (# of heads showing)	# of microstates	Fair Probability P(n) OLD	Fair Probability P(n) NEW	Weighted Probability P(n) NEW
20	0	1	0.10%	0.10%	0.03%
21	1	10	0.98%	0.98%	0.42%
22	2	45	4.39%	4.39%	2.29%
23	3	120	11.72%	11.72%	7.46%
24	4	210	20.51%	20.51%	15.96%
25	5	252	24.61%	24.61%	23.40%
26	6	210	20.51%	20.51%	23.84%
27	7	120	11.72%	11.72%	16.65%
28	8	45	4.39%	4.39%	7.63%
29	9	10	0.98%	0.98%	2.07%
30	10	1	0.10%	0.10%	0.25%