Enrichment Problems for Part 2

(due November XX) Math 125KovitzFall 2020

1. A fair coin is tossed 10 times. Find the exact chance that it results in 5 or more heads.

(Hint for shortcut. First find the chance of exactly 5 heads. Then think about the three cases: less than 5, exactly 5, and more than 5 heads.)

- John tosses 6 fair coins and records the number of heads. Mary does the same.
 Find the exact probability that the number of heads for John and the number of heads for Mary add to 6.
- 3. (a) A fair coin is tossed 176 times. Find the exact probability that the total number of heads is odd.

Prove that your answer is correct. You may do this by a simple logical argument, or by using some probability formulas.

- (b) A fair coin is tossed 16 times. Prove that the chances of getting 9, 11, 13, and 15 heads all add up to exactly 25%.
- 4. True or false, and explain:

If something has probability 1,000%, it is sure to happen.