

## Probability 2. Other Homework problems

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The average person is mean.

Finish the problems from the class handout.

### Competition practice

**Exercise 1. AMC.** Keiko tosses one penny and Ephraim tosses two pennies. What is the probability that Ephraim gets the same number of heads that Keiko gets?

**Exercise 2. 2002 AMC 10B Problem 9.** Using the letters A, M, O, S, and U, we can form 120 five-letter “words”. If these “words” are arranged in alphabetical order, then what position does the “word” USAMO occupy?

**Exercise 3. 2002 AMC 10B Problem 25.** When 15 is appended to a list of integers, the mean is increased by 2. When 1 is appended to the enlarged list, the mean of the enlarged list is decreased by 1. How many integers were in the original list?

**Exercise 4. 2003 AMC 10A Problem 15.** What is the probability that a randomly picked integer in the set  $\{1, 2, 3, \dots, 100\}$  is divisible by 2 and not divisible by 3?

### Challenge Problems

**Exercise 5.** A group of five friends decide to exchange gifts as secret Santas. Each person writes their name on a piece of paper and puts it in a hat and

then each person randomly draws a name from the hat to determine who has them as their secret Santa.

What is the probability that at least one person draws their own name?

**Exercise 6.** Tanya flips a coin 10 times and gets 10 tails in a row. What is the probability that the next flip is a tail?