

Probability 2

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The qualifying quiz for USA/Canada mathcamp is available at the camp's website: <http://www.mathcamp.org/>.

Class Discussion

Conditional probability. Statistics.

Warm Up

Exercise 1. Tanya has 4 sesame and 3 garlic bagels at home. While packing for her hiking trip she randomly picks 3 bagels. What is the probability that she picked 2 sesame and 1 garlic bagel?

Exercise 2. What is the most probable number of heads when you flip 6 coins?

Problem Set

Exercise 3. AMC. In how many ways can you add a fifth number to the set of numbers $\{3, 6, 9, 10\}$ to make the mean of the set of five numbers equal to its median.

Exercise 4. AMC. Five test scores have a mean of 90, a median of 91 and a mode of 94. What is the sum of the lowest two scores?

Exercise 5. AMC. Which of the ten digits is the last to appear in the units position of a number in the Fibonacci sequence?

Exercise 6. You have 100 white balls and 100 black balls. You need to put all of them in two bags. Your worst enemy will pick a bag at random and then will pick a random ball out of the bag. You want him to pick a white ball. How can you put the balls into the bags to maximize your chances of success?

Exercise 7. For each positive integer n the mean of the first n terms of a sequence is $n + 1$. What is 2009th term of the sequence?

Exercise 8. Three fair coins are tossed at once. For each head that results, one fair die is rolled. What is the probability that the sum of the die rolls is 4?

Exercise 9. What is the last digit of 7^{2009} ?

Exercise 10. For drafting purposes the government made a list of all boys from families with two children where at least one of the children is a boy. A boy from this list is picked at random. What is the probability that his family has two boys?