Math 21 - 01
Homework #5
10/11/2019

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1 Look at the magic square below.

(a) If you choose a random number from the first row and I choose a random number from the second row, who is more likely to have the higher number?

(b) Find a non-transitive situation from the rows of the magic square. (A similar situation arises with the columns too!)

4	9	2
3	5	7
8	1	6

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2 You have 3 six-sided dice (A, B, C) with the following numbers. $A = (6, 3, 3, 3, 3, 3)$, $B = (5, 5, 5, 2, 2, 2)$, and $C = (4, 4, 4, 4, 4, 1)$.

(a) Find $P(A > B)$

(b) Find $P(B > C)$

(c) Find $P(C > A)$

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3 Consider the game of Penney Ante with sequences based on just two coin flips instead of 3. If the first player chooses HH, what should the second player choose to maximize his chance of winning, and determine that probability. What if the first player chooses HT instead? Is this version of Penney Ante fair?

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4 Choose your favorite baseball team, and Ill choose mine. Each team will play about 160 games in the season. My score at the end of the season is the sum of my scores after each game. (So if in the first 5 games, my team scores 1, 1, 2, 3, and 5 runs, then my total will be 12 at that point.) You get the product of the scores (so if your teams scored 1, 1, 2, 3, 5 then your product would be 30 at that point). Who's favored to win this bet?

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