

# ECE 341 - Homework #1

Tree Diagrams and Enumeration. Summer 2023

1) Two teams, A and B, are playing a best of 5 game series.

- The series is over once one team wins 3 games.
- A starts with +2 points (odds)

Draw the tree diagram for all possible outcomes of the series.

2) List all possible combinations of rolling two 5-sided dice (d5) (enumeration).

Also determine the probability  $X \{1..5\}$  where  $X$  is the largest of the two numbers.

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Two players, A and B, are playing a game of dice.

- Player A rolls two 5-sided dice (2d5) the largest of the two numbers (i.e. problem #2)
- Player B rolls an 8-sided die (d8).

Player A wins on ties.

3) What is the conditional probability

- Player A wins given B's score is 3 (B rolled a 3)

4) What is the probability that player A will win any given game?

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## Enumeration & Farkle

Write a Matlab program to go through every combination of 6d6 and determine...

5) The odds of rolling 4-of-a-kind

dice = xxxx a b      a, b, x different values

6) The odds of rolling three doubles

dice = xx yy zz      x, y, z different

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## Enumeration in 6-card Poker

*warning: Enumeration took 31 minutes to run on my computer...*

7) In 6-card poker, you're dealt 6 cards and keep the best 5. Determine using enumeration the odds of being dealt 2-pair

hand = xx yy ab      a and b different than x and y (could be the same though)

8) Determine using enumeration the odds of being dealt one-pair

hand = xx a b c d      a, b, c, d x all different