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8. Complete the following assignment prior to Meeting #14:

A. Study our notes from Meeting #13.

B. Comprehend Jim's sample response to Quiz 13.

C*. Solve Lanfen's problem and display your computation (As usual upload the resulting pdf document on the appropriate *Canvas* Assignment link):

> In a lottery, players pick six different numbers from { 1, 2, 3, ..., 49 }; the order in which a player picks them is irrelevant. The lottery manager randomly selects (without replacement) six of the numbers from { 1, 2, 3, ..., 49 }; the six selected numbers are referred to as "winning numbers." A player wins the grand prize if they/he/she picked all of the winning numbers. A player wins the second prize exactly if five of her/his/their picks match five of the winning numbers. A player wins the third prize if exactly four of his/their/her picks match four of the winning numbers. Lanfen wants to know the probability the pick of a player wins the first prize, the probability that it wins the second prize, and that the probability that it wins the third prize.

D. From the Video Page of *Canvas*, view with comprehension "combinations" and then do the same for "probability using combinations."

E. Comprehend Jim's sample responses to the homework prompts that are posted on *Canvas*.

$\binom{49}{6} = 13983816$ = total number of possible winning sets of 6 numbers.

$$P(\text{first prize}) = \frac{1}{13983816}$$

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$$P(\text{2nd prize}) = \frac{\binom{6}{5}\binom{49-6}{1}}{13983816} = \frac{258}{13983816}$$

$$P(\text{3rd prize}) = \frac{\binom{6}{4}\binom{43}{2}}{13983816} = \frac{13545}{13983816}$$