9. Complete the following homework assignment prior to Meeting #9:

A. Study our notes from Meeting #8 ; comprehend Jim's sample responses to the Quiz #9 prompts that are posted on *Canvas*.

B*. Staggerlee wants to conduct a coin-flipping experiment for the purpose of determining the probabilities of randomly obtaining various events when a fair coin is flipped exactly three times in succession. He plans to use the resulting probability distributions to hedge his bets in a variety of games of chance. Please design the experiment for him so that it yields probability values for the each of the following events: X_j is the event in which exactly j tails turn up for $j \in \{ 0, 1, 2, 3 \}$. Describe the experiment – identifying the sample space and discrete probability distribution.

Sample description:

Let $\Omega = \{ TTT, TTH, THT, HTT, HHH, HHT, HTH, THH \}$

Let X_j = the event that there exactly j tails. Thus,

$| X_0 | = | \{ HHH \} | = 1$
$| X_1 | = | \{ HHT, HTH, THH \} | = 3$
$| X_2 | = | \{ TTH, THT, HTT \} | = 3$
$| X_3 | = | \{ TTT \} | = 1$

Let p be our random probability function. Since $|\Omega| = 8$, we have the following probability values:

$$p(X_0) = \frac{1}{8} \wedge p(X_1) = \frac{3}{8} \wedge p(X_2) = \frac{3}{8} \wedge p(X_3) = \frac{1}{8}$$

C. Compare your responses to the homework prompts to those Jim posted in *Canvas* on the usual page.