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

A. Study our notes from Meeting #7 ; comprehend Jim's sample responses to the Quiz #7 prompts that are posted on *Canvas*.

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B. Comprehend the entry from Line #030 from our *Glossary* document.

C*. Examine each of the following propositions to determine whether or not it is true; indicate your determination in the usual way and then prove that the determination is correct (Please post the resulting PDF using the appropriate Canvas Assignment link):

i. $p(A^c) = 1 - p(A)$

T F

The probability of all the events is 1, and since A is an event with probabitit x, The probability of A not occuring is

$$1 - p(x) = p(x^c)$$

ii. $p(\emptyset) = 0$

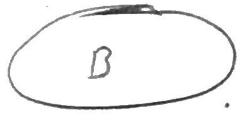
T F

The empty set is an event, and the cardinality of $\emptyset = 0$

therefore $p(\emptyset) = \frac{0}{\text{any number}} = 0.$

iii. $A \subseteq B \rightarrow p(A) \leq p(B)$

T F

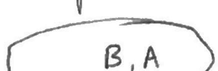
Take some set B to be all points in 

. Say $P(B) = 1$.

A could be the empty set which $p(\emptyset) = 0$ which is less than B.

A could be some smaller portion of B for example: 

Therefore, $P(A) < P(B)$

A could be similar to B, 

Therefore $P(A) = P(B)$.

iv. $p(A \cup B) = p(A) + p(B) - p(A \cap B)$

T F

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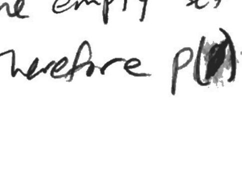

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From these 2 pictures, we can clearly see that this proposition is true. Picture 1 shows that if A and B are mutually exclusive, $P(A \cap B) = 0, \therefore P(A \cup B) = P(A) + p(B)$. Figure 2 shows that if A and B are not mutually exclusive, $P(A) + P(B)$ will count $P(A \cap B)$ twice. Therefore we must subtract 1 $P(A \cap B)$.

D. Comprehend Jim's sample responses to Prompt 8-C's that are posted on *Canvas*.