Math 5710 Thursday, 7/09/20 Quiz 13

1. What is your name?

2. Following is our definition of a *combination* of a finite set:

34-E. Definition of a *combination* of a finite set:

Given $A \in$ { finite sets } $\wedge\ n, r \in \omega\ \wedge r \leq n \wedge |A| = n$,
((A combination of r on A) $= B \Leftrightarrow B \subseteq A \ni |B| = r$)

A Is this definition compatible with your concept of a combination? Indicate your response by circling one of the following words:

"Yes" "No"

B. Write a paragraph that explains why you circled "Yes" or why you circled "No."

Sample paragraph:

I didn't struggled to formulate a definition of *combination* as I had formulating a definition for a permutation. I think that was because could just use the concept of subset without concern for how the elements appear to be ordered in an expression of the set. Here is why I think the definition is compatible with my notion of a combination of r on A:

(A combination of r on A) $= B \Leftrightarrow B \subseteq A \ni |B| = r$) jives with my conception of a combination because I think of a of combination of any subset of A that has exactly r elements. I think I'm just going in circles here so let's look at a specific example:

Suppose $B = \{ 1, 2, 3 \}$, then all of the subsets of B are as follows:

$\varnothing$, { 1 }, { 2 }, { 3 }, { 1, 2 }, { 1, 3 }, { 2, 3 }, and B. Suppose $r = 2$. Then a combination of 2 on B is any one of the 8 subsets that have cardinality 2. So all the combinations of 2 on B are { 1, 2 }, { 1, 3 }, and { 2, 3 }

Notice that ${}_3C_2 =$ 3 because we have 3 subsets listed above. As an aside, that number of combinations jives with Theorem 7, doesn't it?

3. Smile.