CSC 2259 Session 1 Worksheet 01/26/2020	John Brasher SI Sessions: Sundays & Mondays @ 6:30 – 8:00 PM [PFT 1212] Office Hours: Mondays & Fridays 12:30 – 2:30 PM

1) Create 7 rows of Pascal's Triangle.

2) How is Pascal's Triangle related to Binomial Theorem? Use #1 to show direct examples of this relationship.

3) What does C(n,m) mean? How can we calculate it (in more than 1 way)?

4) Derive the general formula for finding the sum of the numbers of in row n of Pascal's Triangle.

5) Use the Pascal's Triangle from #1 to find C(5,2) and C(6,4).

6) Calculate C(15,3) and C(15,12). Do you notice anything about the results?

7) What is the Symmetric Property of Combinations? When can we use this?

8) [a] Create an efficiency table for the following code.

```
int[] longestArray = nums1;

if (nums2.length > longestArray.length)
    longestArray = nums2;
```

[b] Can we improve the code? If we can, how?

9) Give a syntax-tree for the equation a + 5b - 3

10) Give a syntax-tree for myList[2*i] = i + 1

11) Write all ways of choosing 4 things out of {a, b, c, d, e} and all ways of choosing 3 things out of {a, b, c, d, e}. Then, show the connections between these sets.

12) Using what we have from #11, find the equation connecting C(5,3) and C(5,4).