HW9 #11

\[ S = 9(\ldots, 6) \]

\[ 31, 2, 3, 4, 3 \sim 31, 2, 3, 5, 3 \]

\[ 31, 2, 4, 5, 3 \]

\[ 33, 4, 5, 6, 2 \]

HW8 #13

2) \[ \binom{2n}{2} \]

\[ \binom{n}{2} + \binom{n}{2} \]

\[ \binom{2}{2} \] \text{ ways to pick 2 black socks.}

\[ \binom{2}{2} \] \text{ ways to pick 2 white socks.}

\[ 2 \cdot \frac{n \cdot (n-1)}{2^2} = \frac{(n-1)}{2n-1} \]

\[ \binom{n}{2} = \frac{n!}{2! (n-2)!} = \frac{n(n-1)}{2} \]

HW8 #3

m variables

\[ \binom{n}{m-1} \]

\[ \binom{12 + 75 - 1}{75 - 1} > \binom{84}{74} \]

n = 12, m = 75
Define \( y = 35 - x_1 - x_2 - x_3 - x_4 \)

Thus \( 35 \geq x_1 + x_2 + x_3 + x_4 \) if \( y \geq 0 \).

\( x_1 + x_2 + x_3 + x_4 + y = 35 \)

\[
\frac{n = 35}{u = 5} \left( \frac{35 + 5 - 1}{5 - 1} \right).
\]

\( \frac{\#W8}{\#IS} \quad \# digits = 10 \)

\( \# low = 26 \quad \# upper = 26. \)

\[
(62)^{10} - \left[ \frac{\# missing D \ or \ missing L \ or \ missing U}{26} \right]
\]

\[
\frac{\# missing D + \# missing L + \# missing U}{26} - \frac{\# (missing D and L)}{26} - \frac{\# (missing D and U)}{26} - \frac{\# (missing L and U)}{10^{10}}
\]

\( (62)^{10} - \left( \frac{52}{26} + \frac{36}{26} + \frac{36}{26} - 26 - 26 - 10^{10} \right) \)

\[
|A \cup B \cup C| = |A| + |B| + |C| - |A \cap B| - |B \cap C| - |A \cap C| + |A \cap B \cap C|
\]