$$\begin{pmatrix} m+n \\ m \end{pmatrix} = \frac{(m+n)!}{m!n!} = \underbrace{\frac{(m+n)(m+n-1)\cdots(n+1)}{m(m-1)\cdots1}}_{m(m-1)\cdots1}$$

$$\overline{x + \overline{y}} = \overline{x} + y$$