

Pascal triangle

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For $n=5$

$$\begin{array}{l}
 i=0 \quad 1^0C_0 \\
 i=1 \quad 1^1C_0 \quad 1^1C_1 \\
 i=2 \quad 1^2C_0 \quad 2^2C_1 \quad 1^2C_2 \\
 i=3 \quad 1^3C_0 \quad 3^3C_1 \quad 3^3C_2 \quad 1^3C_3 \\
 i=4 \quad 1^4C_0 \quad 4^4C_1 \quad 6^4C_2 \quad 4^4C_3 \quad 1^4C_4
 \end{array}$$

Deconstruction in parts

$$\begin{array}{c}
 \textcircled{1} \quad \star \\
 \star \quad \star \\
 \star \quad \star \quad \star \\
 \star \quad \star \quad \star \quad \star \\
 \star \quad \star \quad \star \quad \star \quad \star
 \end{array}$$

$\textcircled{2}$ For each row \Rightarrow Print Binomials of this row

Using formula

$$nC_{r+1} = \frac{n!}{(r+1)!(n-r-1)!} = \frac{n!}{r!(n-r)!} \cdot \frac{(n-r)}{(r+1)} = nC_r \cdot \frac{(n-r)}{(r+1)}$$

For a row $\Rightarrow i$ $n \Rightarrow i$
 $r \Rightarrow j$