Paskal üçgeni ve ispat:

$\binom{0}{0} = 1$ $(a+b)^0$

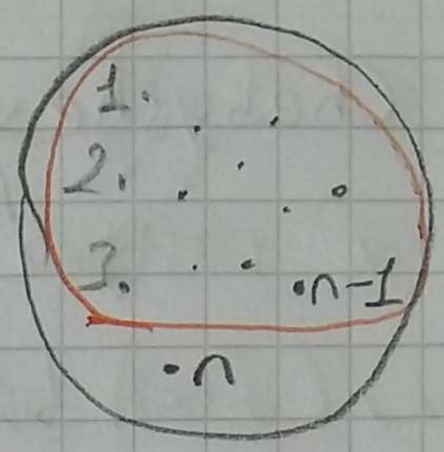
$\binom{1}{0} = 1$ $\binom{1}{1} = 1$ $(a+b)^1$

$\binom{2}{0} = 1$ $\binom{2}{1} = 2$ $\binom{2}{2} = 1$ $(a+b)^2$

$\binom{3}{0} = 1$ $\binom{3}{1} = 3$ $\binom{3}{3} = 1$

$\binom{n-1}{k-1}$ $\binom{n-1}{k}$

$\binom{n}{k}$



$\binom{n}{k} = \binom{n-1}{k} + \binom{n-1}{k-1}$

Hatırlatma!

$\binom{n}{k} = \frac{n!}{(n-k)!\,k!}$

iddia: $\binom{n}{k} = \binom{n-1}{k-1} + \binom{n-1}{k}$

ispat:

$$= \frac{(n-1)!}{k!(n-1-k)!} + \frac{(n-1)!}{(k-1)!(n-1-k+1)!}$$

$(n-k)$ ile çarp

(k) ile çarp $(n-k)!$

$$= \frac{(n-k)\cdot(n-1)! + k\cdot(n-1)!}{k!\,(n-k)!}$$

$$= \frac{n(n-1)!}{k!\,(n-k)!} = \frac{n!}{k!(n-k)!} = \binom{n}{k}$$