Definition

Let A be a set of size n, and let "n choose k" be the number of subsets of A of size k.

One way to "construct" this:

- Take n items;
- Choose an ordering for them;
- Take the first k, throw out the last $n - k$;

So we should have something like

$$\binom{n}{k} = \frac{\text{number of ways to arrange } n \text{ items}}{(\text{number of ways to arrange } k \text{ items})(\text{number of ways to arrange } n-k \text{ items})}$$