The Binomial Theorem expresses the $n$th power of the sum, $A+B$, as the sum over all binary sequences of $A$s and $B$s.

The power of the sum is the hyper-volume of the hypercube whose edge length is $A+B$. The binary sequence summands are each the hyper-volume of a hypercube whose edge lengths are some choice of $A$s and $B$s.

Pascal's Triangle tells us how many terms of each type.