Claim 1. *The number of subsets of a set with n elements is 2^n.*

Proof. Let a set S be defined as $S = \{a_1, a_2, a_3, a_4, \ldots, a_n\}$.

The number of subsets of S will be formed by making a choice of whether to include the elements (a_1, a_2, etc.). Therefore, the number of choices per element of S are:

a_1	a_2	a_3	$\ldots$	a_n
2	2	2	$\ldots$	2

$= 2^n$ total choices. □