

Week 2 Discrete

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Spring 2024

Combinations of Sets

Let S be a set of n elements, A *combination* of set S is an unordered selection of r elements in S . The result is a subset, A , of S . An r -subset or r -combination of S is denoted by $\binom{n}{r}$.

For example, if $S = \{a, b, c, d\}$, the four 3-subsets of S are:

$$\{a, b, c\}, \{a, b, d\}, \{a, c, d\}, \{b, c, d\}$$

Obvious rules for combinations:

$$\binom{n}{r} = 0 \text{ if } r > n,$$

$$\binom{0}{r} = 0 \text{ if } r > 0$$

And,

$$\binom{n}{0} = 1, \binom{n}{1} = n, \binom{n}{n} = 1$$