AICC

Tuples

n-tuples are ordered sequences of n elements.

2-tuples are called ordered pairs.

Sets

Power set
The set of all subsets.

Let $A = \{a, b\}$ then

$$P(A) = \{\emptyset, \{a\}, \{b\}, \{a, b\}\}$$

Cartesian product

$$A_1 \times A_2 \times \dots = \{(a_1, a_2, \dots) \mid a_1 \in A_1, a_2 \in A_2, \dots\}$$

Truth set
Set with the elements from a domain D for which a given predicate $P(x)$ is true.

$$\{a \in D \mid P(a)\}$$

Cardinality

Number of elements in a set

Notation: $|A|$

- Power set: $P(A) = 2^{|A|}$
- $|A \times B| = |A| \cdot |B|$
- $|A \cup B| = |A| + |B| - |A \cap B|$