Set Theory Symbols

List of set symbols of set theory and probability.

Table of set theory symbols

Symbol	Symbol Name	Meaning / definition	Example
$\{\ \}$	set	a collection of elements	$A = \{3,7,9,14\}$, $B = \{9,14,28\}$
$\vert$	such that	so that	$A = \{x \mid x\in\mathbb{R}, x<0\}$
$A \cap B$	intersection	objects that belong to set A and set B	$A \cap B = \{9,14\}$
$A \cup B$	union	objects that belong to set A or set B	$A \cup B = \{3,7,9,14,28\}$
$A \subseteq B$	subset	subset has fewer elements or equal to the set	$\{9,14,28\} \subseteq \{9,14,28\}$
$A \subset B$	proper subset / strict subset	subset has fewer elements than the set	$\{9,14\} \subset \{9,14,28\}$
$A \not\subset B$	not subset	left set not a subset of right set	$\{9,66\} \not\subset \{9,14,28\}$
$A \supseteq B$	superset	set A has more elements or equal to the set B	$\{9,14,28\} \supseteq \{9,14,28\}$
$A \supset B$	proper superset / strict superset	set A has more elements than set B	$\{9,14,28\} \supset \{9,14\}$
$A \not\supset B$	not superset	set A is not a superset of set B	$\{9,14,28\} \not\supset \{9,66\}$
2^A	power set	all subsets of A	
$\mathcal{P}(A)$	power set	all subsets of A	
$A = B$	equality	both sets have the same members	$A=\{3,9,14\}$, $B=\{3,9,14\}$, $A=B$
A^c	complement	all the objects that do not belong to set A	

$A \setminus B$	relative complement	objects that belong to A and not to B	$A = \{3,9,14\}$, $B = \{1,2,3\}$, $A \setminus B = \{9,14\}$
$A - B$	relative complement	objects that belong to A and not to B	$A = \{3,9,14\}$, $B = \{1,2,3\}$, $A - B = \{9,14\}$
$A \Delta B$	symmetric difference	objects that belong to A or B but not to their intersection	$A = \{3,9,14\}$, $B = \{1,2,3\}$, $A \Delta B = \{1,2,9,14\}$
$A \ominus B$	symmetric difference	objects that belong to A or B but not to their intersection	$A = \{3,9,14\}$, $B = \{1,2,3\}$, $A \ominus B = \{1,2,9,14\}$
$a \in A$	element of	set membership	$A=\{3,9,14\}$, $3 \in A$
$x \notin A$	not element of	no set membership	$A=\{3,9,14\}$, $1 \notin A$
(a,b)	ordered pair	collection of 2 elements	
$A \times B$	cartesian product	set of all ordered pairs from A and B	
$\|A\|$	cardinality	the number of elements of set A	$A=\{3,9,14\}$, $\|A\|=3$
$\#A$	cardinality	the number of elements of set A	$A=\{3,9,14\}$, $\#A=3$
$\aleph_0$	aleph-null	infinite cardinality of natural numbers set	
$\aleph_1$	aleph-one	cardinality of countable ordinal numbers set	
$\varnothing$	empty set	$\varnothing = \{ \}$	$C = \{\varnothing\}$
$\mathbb{U}$	universal set	set of all possible values	
$\mathbb{N}_0$	natural numbers / whole numbers set	$\mathbb{N}_0 = \{0,1,2,3,4,...\}$	$0 \in \mathbb{N}_0$

	(with zero)		
$\mathbb{N}_1$	natural numbers / whole numbers set (without zero)	$\mathbb{N}_1 = \{1,2,3,4,5,...\}$	$6 \in \mathbb{N}_1$
$\mathbb{Z}$	integer numbers set	$\mathbb{Z} = \{...-3,-2,-1,0,1,2,3,...\}$	$-6 \in \mathbb{Z}$
$\mathbb{Q}$	rational numbers set	$\mathbb{Q} = \{x \mid x=a/b,\ a,b\in\mathbb{Z}\}$	$2/6 \in \mathbb{Q}$
$\mathbb{R}$	real numbers set	$\mathbb{R} = \{x \mid -\infty < x < \infty\}$	$6.343434 \in \mathbb{R}$
$\mathbb{C}$	complex numbers set	$\mathbb{C} = \{z \mid z=a+bi,\ -\infty<a<\infty,\quad -\infty<b<\infty\}$	$6+2i \in \mathbb{C}$

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