

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	$A = \{3,7,9,14\}$, $B = \{9,14,28\}$
$ $	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	A is a subset of B. set A is included in set B.	$\{9,14,28\} \subseteq \{9,14,28\}$
$A \subset B$	proper subset / strict subset	A is a subset of B, but A is not equal to B.	$\{9,14\} \subset \{9,14,28\}$
$A \not\subseteq B$	not subset	set A is not a subset of set B	$\{9,66\} \not\subseteq \{9,14,28\}$
$A \supseteq B$	superset	A is a superset of B. set A includes set B	$\{9,14,28\} \supseteq \{9,14,28\}$
$A \supset B$	proper superset / strict superset	A is a superset of B, but B is not equal to A.	$\{9,14,28\} \supset \{9,14\}$
$A \not\supseteq B$	not superset	set A is not a superset of set B	$\{9,14,28\} \not\supseteq \{9,66\}$
2^A	power set	all subsets of A	
$\mathcal{P}(A)$	power set	all subsets of A	

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$P(A)$	power set	all subsets of A	
$\mathbb{P}(A)$	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'	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, belongs to	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	$A \times B = \{(a,b) a \in A, b \in B\}$
$ A $	cardinality	the number of elements of set A	$A=\{3,9,14\}$, $ A =3$
$\#A$	cardinality	the number of elements of set A	$A=\{3,9,14\}$, $\#A=3$
$ $	vertical bar	such that	$A=\{x 3 < x < 14\}$
\aleph_0	aleph-null	infinite cardinality of natural numbers set	

Symbol	Symbol Name	Meaning / definition	Example
\aleph_1	aleph-one	cardinality of countable ordinal numbers set	
\emptyset	empty set	$\emptyset = \{\}$	$A = \emptyset$
\mathbb{U}	universal set	set of all possible values	
\mathbb{N}_0	natural numbers / whole numbers set (with zero)	$\mathbb{N}_0 = \{0,1,2,3,4,\dots\}$	$0 \in \mathbb{N}_0$
\mathbb{N}_1	natural numbers / whole numbers set (without zero)	$\mathbb{N}_1 = \{1,2,3,4,5,\dots\}$	$6 \in \mathbb{N}_1$
\mathbb{Z}	integer numbers set	$\mathbb{Z} = \{\dots-3,-2,-1,0,1,2,3,\dots\}$	$-6 \in \mathbb{Z}$
\mathbb{Q}	rational numbers set	$\mathbb{Q} = \{x \mid x=a/b, a,b \in \mathbb{Z} \text{ and } b \neq 0\}$	$2/6 \in \mathbb{Q}$
\mathbb{R}	real numbers set	$\mathbb{R} = \{x \mid -\infty < x < \infty\}$	$6.343434 \in \mathbb{R}$
\mathbb{C}	complex numbers set	$\mathbb{C} = \{z \mid z=a+bi, -\infty < a < \infty, -\infty < b < \infty\}$	$6+2i \in \mathbb{C}$