Mathematical Symbol Table

Greek Name	small	Capital	Hebrew Name	
Alpha	α	A	Aleph	$\aleph$
Beta	β	B	Beth	$\beth$
Gamma	γ	Γ	Gimmel	$\gimel$
Delta	δ	Δ	Daleth	$\daleth$
Epsilon	ϵ or ε	E		
Zeta	ζ	Z		
Eta	η	H		
Theta	θ or ϑ	Θ		
Iota	ι	I		
Kappa	κ	K		
Lambda	λ	Λ		
Mu	μ	M		
Nu	ν	N	Nabla	∇
Xi	ξ	Ξ		
Omicron	o	O		
Pi	π or ϖ	Π		
Rho	ρ or ϱ	P		
Sigma	σ or ς	Σ		
Tau	τ	T		
Upsilon	υ	Υ		
Phi	ϕ or φ	Φ		
Chi	χ	X		
Psi	ψ	Ψ		
Omega	ω	Ω		

Boldface		Sans Serif		'Blackboard'	Script	Gothic	
$\mathbf{a}$	$\mathbf{A}$	a	A	$\mathbb{A}$	$\mathcal{A}$	$\mathfrak{a}$	$\mathfrak{A}$
$\mathbf{b}$	$\mathbf{B}$	b	B	$\mathbb{B}$	$\mathcal{B}$	$\mathfrak{b}$	$\mathfrak{B}$
$\mathbf{c}$	$\mathbf{C}$	c	C	$\mathbb{C}$	$\mathcal{C}$	$\mathfrak{c}$	$\mathfrak{C}$
$\mathbf{d}$	$\mathbf{D}$	d	D	$\mathbb{D}$	$\mathcal{D}$	$\mathfrak{d}$	$\mathfrak{D}$
$\mathbf{e}$	$\mathbf{E}$	e	E	$\mathbb{E}$	$\mathcal{E}$	$\mathfrak{e}$	$\mathfrak{E}$
$\mathbf{f}$	$\mathbf{F}$	f	F	$\mathbb{F}$	$\mathcal{F}$	$\mathfrak{f}$	$\mathfrak{F}$
$\mathbf{g}$	$\mathbf{G}$	g	G	$\mathbb{G}$	$\mathcal{G}$	$\mathfrak{g}$	$\mathfrak{G}$
$\mathbf{h}$	$\mathbf{H}$	h	H	$\mathbb{H}$	$\mathcal{H}$	$\mathfrak{h}$	$\mathfrak{H}$
$\mathbf{i}$	$\mathbf{I}$	i	I	$\mathbb{I}$	$\mathcal{I}$	$\mathfrak{i}$	$\mathfrak{I}$
$\mathbf{j}$	$\mathbf{J}$	j	J	$\mathbb{J}$	$\mathcal{J}$	$\mathfrak{j}$	$\mathfrak{J}$
$\mathbf{k}$	$\mathbf{K}$	k	K	$\mathbb{K}$	$\mathcal{K}$	$\mathfrak{k}$	$\mathfrak{K}$
$\mathbf{l}$	$\mathbf{L}$	l	L	$\mathbb{L}$	$\mathcal{L}$	$\mathfrak{l}$	$\mathfrak{L}$
$\mathbf{m}$	$\mathbf{M}$	m	M	$\mathbb{M}$	$\mathcal{M}$	$\mathfrak{m}$	$\mathfrak{M}$
$\mathbf{n}$	$\mathbf{N}$	n	N	$\mathbb{N}$	$\mathcal{N}$	$\mathfrak{n}$	$\mathfrak{N}$
$\mathbf{p}$	$\mathbf{P}$	p	P	$\mathbb{P}$	$\mathcal{P}$	$\mathfrak{p}$	$\mathfrak{P}$
$\mathbf{q}$	$\mathbf{Q}$	q	Q	$\mathbb{Q}$	$\mathcal{Q}$	$\mathfrak{q}$	$\mathfrak{Q}$
$\mathbf{r}$	$\mathbf{R}$	r	R	$\mathbb{R}$	$\mathcal{R}$	$\mathfrak{r}$	$\mathfrak{R}$
$\mathbf{s}$	$\mathbf{S}$	s	S	$\mathbb{S}$	$\mathcal{S}$	$\mathfrak{s}$	$\mathfrak{S}$
$\mathbf{t}$	$\mathbf{T}$	t	T	$\mathbb{T}$	$\mathcal{T}$	$\mathfrak{t}$	$\mathfrak{T}$
$\mathbf{u}$	$\mathbf{U}$	u	U	$\mathbb{U}$	$\mathcal{U}$	$\mathfrak{u}$	$\mathfrak{U}$
$\mathbf{v}$	$\mathbf{V}$	v	V	$\mathbb{V}$	$\mathcal{V}$	$\mathfrak{v}$	$\mathfrak{V}$
$\mathbf{w}$	$\mathbf{W}$	w	W	$\mathbb{W}$	$\mathcal{W}$	$\mathfrak{w}$	$\mathfrak{W}$
$\mathbf{x}$	$\mathbf{X}$	x	X	$\mathbb{X}$	$\mathcal{X}$	$\mathfrak{x}$	$\mathfrak{X}$
$\mathbf{y}$	$\mathbf{Y}$	y	Y	$\mathbb{Y}$	$\mathcal{Y}$	$\mathfrak{y}$	$\mathfrak{Y}$
$\mathbf{z}$	$\mathbf{Z}$	z	Z	$\mathbb{Z}$	$\mathcal{Z}$	$\mathfrak{z}$	$\mathfrak{Z}$

Logic

$\forall x$	'for all x...'
$\exists x$	'there exists an x such that...'
$\exists! x$	'there exists a unique x such that...'
$\nexists x$	'there does not exist any x...'
$A \Longrightarrow B$	'if A, then B', or, 'A implies B'
$A \Longleftarrow B$	'if B, then A', or, 'B implies A'
$A \Longleftrightarrow B$	'A if and only if B', or, 'A is equivalent to B'
`TFAE`	'The Following Are Equivalent...'
$\Box$	Q.E.D. —End of Proof.
$\lightning$ or ⨳	Contradiction.

Functions

$f : \mathbf{X} \longrightarrow \mathbf{Y}$	'f is a function from $\mathbf{X}$ to $\mathbf{Y}$'
$f : \mathbf{X} \ni x \mapsto y \in \mathbf{Y}$	'f is a function from $\mathbf{X}$ to $\mathbf{Y}$ mapping element x to element y'
$f : \mathbf{X} \hookrightarrow \mathbf{Y}$	$\mathbf{X} \subset \mathbf{Y}$, and f is the identity map, taking $x \in \mathbf{X}$ to $x \in \mathbf{Y}$
$f : \mathbf{X} \rightarrowtail \mathbf{Y}$	f is an injective function from $\mathbf{X}$ to $\mathbf{Y}$
$f : \mathbf{X} \twoheadrightarrow \mathbf{Y}$	f is a surjective function from $\mathbf{X}$ to $\mathbf{Y}$
$\mathbf{Id}$	The identity map: $\mathbf{Id}(x) = x$ for all x.
$\mathbb{1}$	The constant unity: $\mathbb{1}(x) = 1$ for all x.
$f^{-1}\{y\}$	$\{x \in \mathbf{X}\ ;\ f(x) = y\}$; the **fibre over** y or **preimage of** y (where $f : \mathbf{X} \longrightarrow \mathbf{Y}$)

Set Theory

$\mathcal{A} \subset \mathcal{B}$	$\mathcal{A}$ is a subset of $\mathcal{B}$ ie. if $a \in \mathcal{A}$, then $a \in \mathcal{B}$ also.	$\mathcal{A} \subseteq \mathcal{B}$	$\mathcal{A}$ is a subset of $\mathcal{B}$, and possibly $\mathcal{A} = \mathcal{B}$.
$\mathcal{A} \sqcup \mathcal{B}$	The **disjoint union:** $\mathcal{A} \sqcup \mathcal{B} = \mathcal{A} \cup \mathcal{B}$, with the assertion that $\mathcal{A} \cap \mathcal{B} = \emptyset$.	$\mathcal{A} \times \mathcal{B}$	The **Cartesian product** of $\mathcal{A}$ and $\mathcal{B}$: $\mathcal{A} \times \mathcal{B} = \{(a, b)\ ;\ a \in \mathcal{A}\ \&\ b \in \mathcal{B}\}$
$\bigcup_{n=1}^{\infty} \mathcal{A}_n$	$\mathcal{A}_1 \cup \mathcal{A}_2 \cup \mathcal{A}_3 \cup \ldots$	$\bigcap_{n=1}^{\infty} \mathcal{A}_n$	$\mathcal{A}_1 \cap \mathcal{A}_2 \cap \mathcal{A}_3 \cap \ldots$
$\bigsqcup_{n=1}^{\infty} \mathcal{A}_n$	$\mathcal{A}_1 \sqcup \mathcal{A}_2 \sqcup \mathcal{A}_3 \sqcup \ldots$	$\prod_{n=1}^{\infty} \mathcal{A}_n$	$\mathcal{A}_1 \times \mathcal{A}_2 \times \mathcal{A}_3 \times \ldots$
$\mathcal{A} \setminus \mathcal{B}$	The **difference** of $\mathcal{A}$ from $\mathcal{B}$: $\mathcal{A} \setminus \mathcal{B} = \{a \in \mathcal{A}\ ;\ a \notin \mathcal{B}\}$	$\mathcal{A} \triangle \mathcal{B}$	The **symmetric difference**: $\mathcal{A} \triangle \mathcal{B} = (\mathcal{A} \setminus \mathcal{B}) \sqcup (\mathcal{B} \setminus \mathcal{A})$

Source: http://xaravve.trentu.ca/mascot/handbook/SEC_symbols.pdf