Numbers:

$\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$	positive integers, integers, rational, real and complex numbers
$+, -, \cdot, :$	arithmetic operations: addition, subtraction, multiplication, division
	multiplication symbols are often omitted, i.e. $a \cdot b = ab$
	division uses also fractions or (multiplicative) inverses, i.e. $a : b = \frac{a}{b} = ab^{-1}$
$\sum, \prod$	repeated addition (sum) or multiplication (product) of a collection of numbers
$\mid$	divisor relation on integers
$\equiv$	congruence on integers, i.e. $a \equiv b \pmod p$ means that p divides $a - b$

Logic:

$\neg, \wedge, \vee, \Rightarrow, \Leftrightarrow$	logical connectives: negation, conjunction, disjunction, implication, equivalence
$\forall, \exists$	quantifiers "for all" and "exists"

Sets:

$A, B, \dots, Z$	sets (uppercase Latin letters)
$a, b, \dots, z, \alpha, \dots, \omega$	elements of sets (lowercase Latin and Greek letters)
$\mathcal{A}, \dots, \mathcal{Z}$	set systems, i.e. sets whose elements are sets, e.g. $\{\{1,2\},\{1,3\}\}$
$\in, \ni$	membership to a set, e.g. $x \in X$ and $X \ni x$ both mean that x belongs to a set X
$\{a, b, \dots, e\}$	a set given by the list of its elements
$\{x : C(x)\}$	a set given by a condition C, e.g. even numbers are $\{x \in \mathbb{Z} : 2 \mid x\}$
$\cap, \cup, \setminus$	intersection, union and difference (of two sets)
$\bigcap, \bigcup$	repeated intersection and union (of a set system)
$\times$	the Cartesian product of two sets
m, n, o, d	are often used for the sizes or dimensions
i, j, k, l	are often used for indices
$a_1, \dots, a_n$	a sequence of n elements, its i-th term is a_i
	sometimes also upper indices may be used, see below

Mappings:

f, g, h	are often used for mappings
$\to$	indicates the domain and the range of a mapping
	e.g. $f : A \to B$ means that f is a mapping from a set A to a set B
$f(x)$	the image of an element x via a mapping f
id	the identity mapping defined by $id(x) = x$
$\circ$	the composition of two mappings defined by $(g \circ f)(x) = g(f(x))$
p, q, π	are often used for permutations

Vectors and matrices:

$\mathbf{A}, \dots, \mathbf{Z}$	are often used for matrices
$\mathbf{u}, \dots, \mathbf{z}$	are often used for vectors
$\mathbf{x}, \mathbf{y}$	are often used for vectors of unknowns
$\mathbb{K}^{m \times n}$	the set of matrices with m rows and n columns over a field $\mathbb{K}$
$a_{i,j}$ or $(\mathbf{A})_{i,j}$	the entry of $\mathbf{A}$ in its i-th row and j-th column
$\mathbf{u}_i$	the i-th entry of a vector $\mathbf{u}$
$\mathbf{u}^i$	the i-th vector in the sequence $\mathbf{u}^1, \mathbf{u}^2, \dots$
$\mathbf{I}_n, \mathbf{0}$	the identity matrix of order n, the zero matrix
$\mathbf{A}^T, \mathbf{A}^{-1}$	the transpose matrix of $\mathbf{A}$, the inverse matrix of a regular $\mathbf{A}$

Vector spaces:

$\mathbb{K}$	a field
$a, b, c, t, \alpha, \beta$	are often used for field elements — scalars
U, V, W	are often used for vector spaces
$\mathbb{K}^n$	the arithmetic vector space of dimension n over a field $\mathbb{K}$
X, Y, Z, K	are often used for bases
$\mathbf{e}^1, \dots, \mathbf{e}^n$	the vectors of the standard basis K of $\mathbb{K}^n$
$[\mathbf{u}]_X$	the vector of coordinates of a vector $\mathbf{u}$ with respect to a basis X
$[f]_{X,Y}$	the matrix of a linear map f with respect to bases X and Y