



# Definitions

Term	Notation Example(s)	We say in English
$n$ -tuple	$(x_1, x_2, x_3)$ $(3, 4)$	The 3-tuple of $x_1$ , $x_2$ , and $x_3$ The 2-tuple or <b>ordered pair</b> of 3 and 4
sequence	$x_1, \dots, x_n$ $x_1, \dots, x_n$ where $n = 0$ $x_1, \dots, x_n$ where $n = 1$ $x_1, \dots, x_n$ where $n = 2$ $x_1, x_2$	A sequence $x_1$ to $x_n$ An empty sequence A sequence containing just $x_1$ A sequence containing just $x_1$ and $x_2$ in order A sequence containing just $x_1$ and $x_2$ in order
set		Unordered collection of objects. The set of ...
all integers	$\mathbb{Z}$	The (set of all) integers (whole numbers including negatives, zero, and positives)
all positive integers	$\mathbb{Z}^+$	The (set of all) strictly positive integers
all natural numbers	$\mathbb{N}$	The (set of all) natural numbers. <b>Note:</b> we use the convention that 0 is a natural number.
roster method	$\{43, 7, 9\}$ $\{9, \mathbb{N}\}$	The set whose elements are 43, 7, and 9 The set whose elements are 9 and $\mathbb{N}$
set builder notation	$\{x \in \mathbb{Z} \mid x > 0\}$ $\{3x \mid x \in \mathbb{Z}\}$	The set of all $x$ from the integers such that $x$ is greater than 0 The set of all integer multiples of 3. <b>Note:</b> we use the convention that writing two numbers next to each other means multiplication.
function definition	$f(x) = x + 4$	Define $f$ of $x$ to be $x + 4$
function application	$f(7)$ $f(z)$ $f(g(z))$	$f$ of 7 <b>or</b> $f$ applied to 7 <b>or</b> the image of 7 under $f$ $f$ of $z$ <b>or</b> $f$ applied to $z$ <b>or</b> the image of $z$ under $f$ $f$ of $g$ of $z$ <b>or</b> $f$ applied to the result of $g$ applied to $z$
absolute value	$ -3 $	The absolute value of $-3$
square root	$\sqrt{9}$	The non-negative square root of 9
summation notation	$\sum_{i=1}^n i$ $\sum_{i=1}^n i^2 - 1$	The sum of the integers from 1 to $n$ , inclusive The sum of $i^2 - 1$ ( $i$ squared minus 1) for each $i$ from 1 to $n$ , inclusive
quotient, integer division	$n \text{ div } m$	The (integer) quotient upon dividing $n$ by $m$ ; informally: divide and then drop the fractional part
modulo, remainder	$n \text{ mod } m$	The remainder upon dividing $n$ by $m$