



JavaScript Operator Precedence

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Operator precedence describes the order in which operations are performed in an arithmetic expression.

Multiplication (`*`) and division (`/`) have higher **precedence** than addition (`+`) and subtraction (`-`).

Examples

As in traditional mathematics, multiplication is done first:

```
let x = 100 + 50 * 3;
```

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As in traditional mathematics, the precedence can be changed by parentheses.

When using parentheses, operations inside the parentheses are computed first:

```
let x = (100 + 50) * 3;
```

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Operations with the same precedence (like `*` and `/`) are computed from left to right:



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Operator Precedence Values

Expressions in parentheses are computed **before** the rest of the expression
Function are executed **before** the result is used in the rest of the expression

Val	Operator	Description	Example
18	()	<u>Expression Grouping</u>	(100 + 50) * 3
17	.	<u>Member Of</u>	person.name
17	[]	<u>Member Of</u>	person["name"]
17	?.	<u>Optional Chaining ES2020</u>	x ?. y
17	()	<u>Function Call</u>	myFunction()
17	new	<u>New with Arguments</u>	new Date("June 5,2022")
16	new	<u>New without Arguments</u>	new Date()
<h3>Increment Operators</h3> <p>Posfix increments are executed before prefix increments</p>			
15	++	<u>Postfix Increment</u>	i++
15	--	<u>Postfix Decrement</u>	i--
14	++	<u>Prefix Increment</u>	++i
14	--	<u>Prefix Decrement</u>	--i
<h3>NOT Operators</h3>			
14	!	<u>Logical NOT</u>	!(x==y)
14	~	<u>Bitwise NOT</u>	~x
<h3>Unary Operators</h3>			
14	+	<u>Unary Plus</u>	+x
14	-	<u>Unary Minus</u>	-x
14	typeof	<u>Data Type</u>	typeof x
14	void	<u>Evaluate Void</u>	void(0)



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Arithmetic Operators

Exponentiations are executed **before** multiplications

Multiplications and divisions are executed **before** additions and subtractions

13	**	<u>Exponentiation ES2016</u>	10 ** 2
12	*	<u>Multiplication</u>	10 * 5
12	/	<u>Division</u>	10 / 5
12	%	<u>Division Remainder</u>	10 % 5
11	+	<u>Addition</u>	10 + 5
11	-	<u>Subtraction</u>	10 - 5
11	+	<u>Concatenation</u>	"John" + "Doe"

Shift Operators

10	<<	<u>Shift Left</u>	x << 2
10	>>	<u>Shift Right (signed)</u>	x >> 2
10	>>>	<u>Shift Right (unsigned)</u>	x >>> 2

Relational Operators

9	in	<u>Property in Object</u>	"PI" in Math
9	instanceof	<u>Instance of Object</u>	x instanceof Array

Comparison Operators

9	<	<u>Less than</u>	x < y
9	<=	<u>Less than or equal</u>	x <= y
9	>	<u>Greater than</u>	x > y
9	>=	<u>Greater than or equal</u>	x >= Array
8	==	<u>Equal</u>	x == y
8	===	<u>Strict equal</u>	x === y
8	!=	<u>Unequal</u>	x != y
8	!==	<u>Strict unequal</u>	x !== y

Bitwise Operators



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6	^	<u>Bitwise XOR</u>	$x \wedge y$
---	---	--------------------	--------------

5		<u>Bitwise OR</u>	$x y$
---	--	-------------------	---------

Logical Operators

4	&&	<u>Logical AND</u>	$x \&\& y$
---	----	--------------------	------------

3		<u>Logical OR</u>	$x y$
---	--	-------------------	----------

3	??	<u>Nullish Coalescing ES2020</u>	$x ?? y$
---	----	----------------------------------	----------

Conditional (ternary) Operator

2	? :	<u>Condition</u>	$? \text{"yes"} : \text{"no"}$
---	-----	------------------	--------------------------------

Assignment Operators

Assignments are executed **after** other operations

2	=	<u>Simple Assignment</u>	$x + y$
---	---	--------------------------	---------

2	:	<u>Colon Assignment</u>	$x : 5$
---	---	-------------------------	---------

2	+=	<u>Addition Assignment</u>	$x += y$
---	----	----------------------------	----------

2	-=	<u>Subtraction Assignment</u>	$x -= y$
---	----	-------------------------------	----------

2	*=	<u>Multiplication Assignment</u>	$x *= y$
---	----	----------------------------------	----------

2	**=	<u>Exponentiation Assignment</u>	$x **= y$
---	-----	----------------------------------	-----------

2	/=	<u>Division Assignment</u>	$x /= y$
---	----	----------------------------	----------

2	%=	<u>Remainder Assignment</u>	$x \% = y$
---	----	-----------------------------	------------

2	<<=	<u>Left Shift Assignment</u>	$x << = y$
---	-----	------------------------------	------------

2	>>=	<u>Right Shift Assignment</u>	$x >> = y$
---	-----	-------------------------------	------------

2	>>>=	<u>Unsigned Right Shift</u>	$x >>> = y$
---	------	-----------------------------	-------------

2	&=	<u>Bitwise AND Assignment</u>	$x \& = y$
---	----	-------------------------------	------------

2	=	<u>Bitwise OR Assignment</u>	$x = y$
---	---	------------------------------	-----------

2	^=	<u>Bitwise XOR Assignment</u>	$x \wedge = y$
---	----	-------------------------------	----------------

2	&&=	<u>Logical AND Assignment</u>	$x \&\& = y$
---	-----	-------------------------------	--------------

2	=	<u>Logical OR Assignment</u>	$x = y$
---	---	------------------------------	------------

2	=>	<u>Arrow</u>	$x => y$
---	----	--------------	----------

2	yield	<u>Pause / Resume</u>	$\text{yield } x$
---	-------	-----------------------	-------------------



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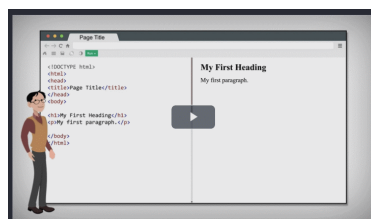
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