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# JavaScript Comparison and Logical Operators

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Comparison and Logical operators are used to test for *true* or *false*.

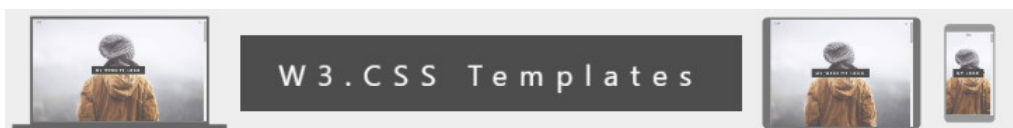
## Comparison Operators

Comparison operators are used in logical statements to determine equality or difference between variables or values.

Given that **x = 5**, the table below explains the comparison operators:

Operator	Description	Comparing	Returns	Try it
==	equal to	x == 8	false	<a href="#">Try it &gt;</a>
		x == 5	true	<a href="#">Try it &gt;</a>
		x == "5"	true	<a href="#">Try it &gt;</a>
===	equal value and equal type	x === 5	true	<a href="#">Try it &gt;</a>
		x === "5"	false	<a href="#">Try it &gt;</a>
!=	not equal	x != 8	true	<a href="#">Try it &gt;</a>
!==	not equal value or not equal type	x !== 5	false	<a href="#">Try it &gt;</a>
		x !== "5"	true	<a href="#">Try it &gt;</a>
		x !== 8	true	<a href="#">Try it &gt;</a>
>	greater than	x > 8	false	<a href="#">Try it &gt;</a>

<	less than	$x < 8$	true	<a href="#">Try it »</a>
>=	greater than or equal to	$x \geq 8$	false	<a href="#">Try it »</a>
<=	less than or equal to	$x \leq 8$	true	<a href="#">Try it »</a>



## How Can it be Used

Comparison operators can be used in conditional statements to compare values and take action depending on the result:

```
if (age < 18) text = "Too young";
```

You will learn more about the use of conditional statements in the next chapter of this tutorial.

## Logical Operators

Logical operators are used to determine the logic between variables or values.

Given that **x = 6** and **y = 3**, the table below explains the logical operators:

Operator	Description	Example	Try it
&&	and	$(x < 10 \ \&\& \ y > 1)$ is true	<a href="#">Try it »</a>
	or	$(x == 5 \    \ y == 5)$ is false	<a href="#">Try it »</a>
!	not	$!(x == y)$ is true	<a href="#">Try it »</a>

## Conditional (Ternary) Operator

JavaScript also contains a conditional operator that assigns a value to a variable based on some condition.

### Syntax

```
variablename = (condition) ? value1:value2
```

## Example

```
var voteable = (age < 18) ? "Too young":"Old enough";
```

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If the variable age is a value below 18, the value of the variable voteable will be "Too young", otherwise the value of voteable will be "Old enough".

## Comparing Different Types

Comparing data of different types may give unexpected results.

When comparing a string with a number, JavaScript will convert the string to a number when doing the comparison. An empty string converts to 0. A non-numeric string converts to NaN which is always false.

Case	Value	Try
2 < 12	true	<a href="#">Try it »</a>
2 < "12"	true	<a href="#">Try it »</a>
2 < "John"	false	<a href="#">Try it »</a>
2 > "John"	false	<a href="#">Try it »</a>
2 == "John"	false	<a href="#">Try it »</a>
"2" < "12"	false	<a href="#">Try it »</a>
"2" > "12"	true	<a href="#">Try it »</a>
"2" == "12"	false	<a href="#">Try it »</a>

When comparing two strings, "2" will be greater than "12", because (alphabetically) 1 is less than 2.

To secure a proper result, variables should be converted to the proper type before comparison:

```
age = Number(age);
if (isNaN(age)) {
    voteable = "Input is not a number";
} else {
    voteable = (age < 18) ? "Too young" : "Old enough";
}
```

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## Test Yourself with Exercises!

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