JavaScript Essentials

Numbers and Operators

Table of Contents

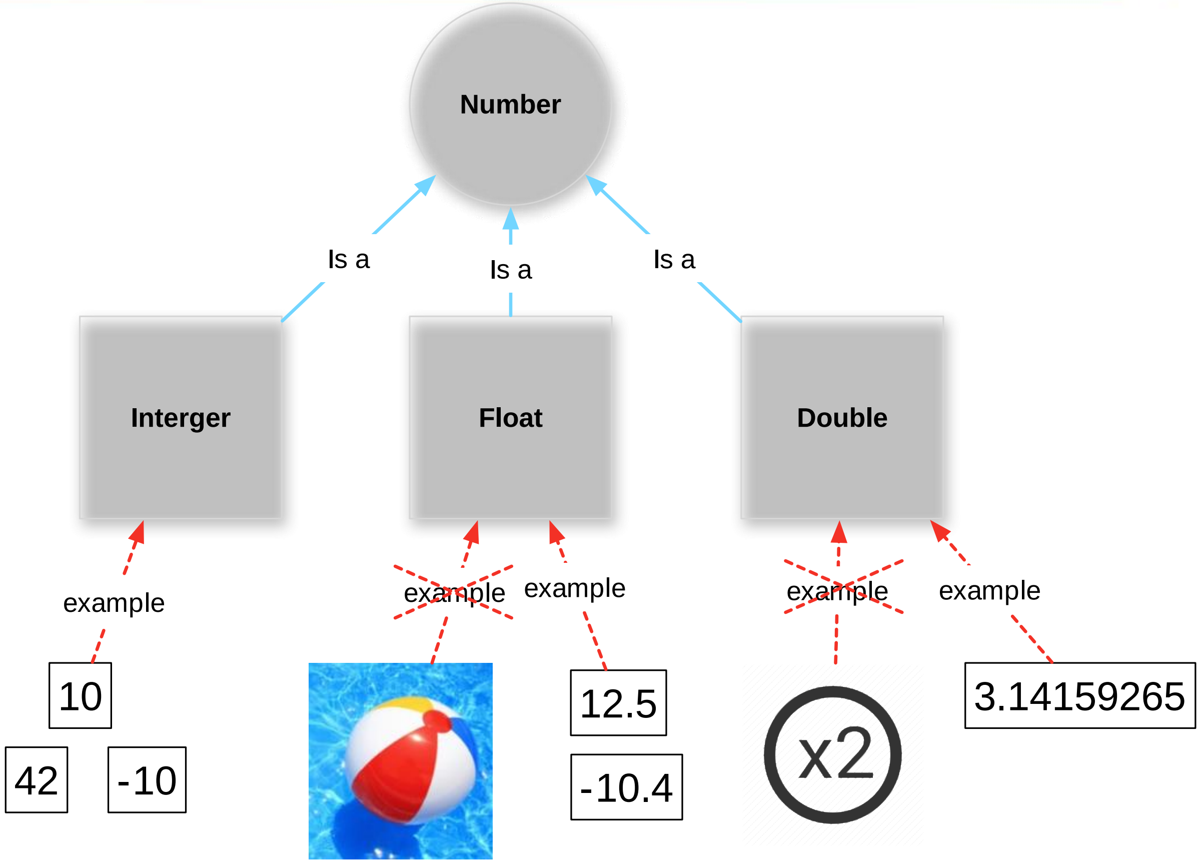
Lesson Objectives

- Understand Numbers in JavaScript
- Able to compute numbers using Arithmetic operators
- Able to use assignment operators for cleaner code
- Able to compare numbers with comparison operators

Section 1

Overview

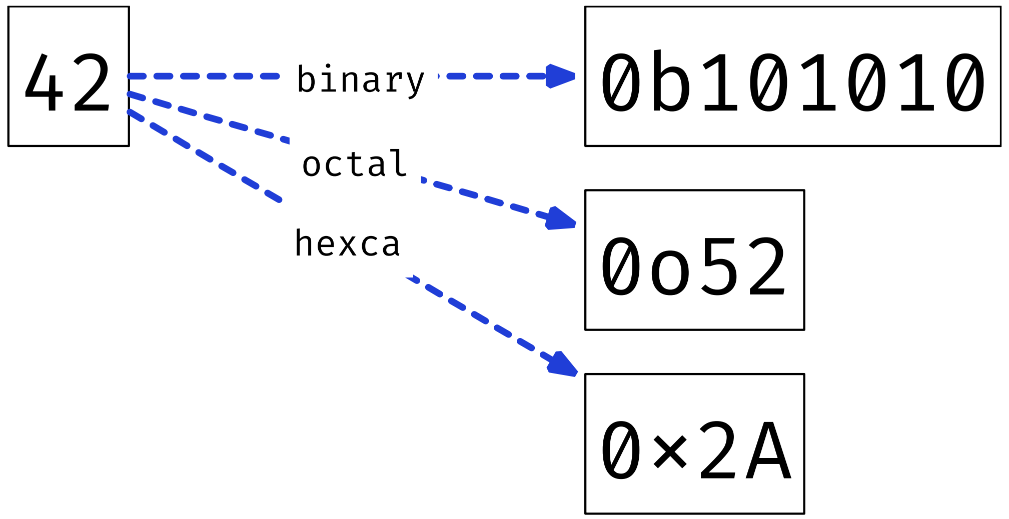
Overview – Types of numbers



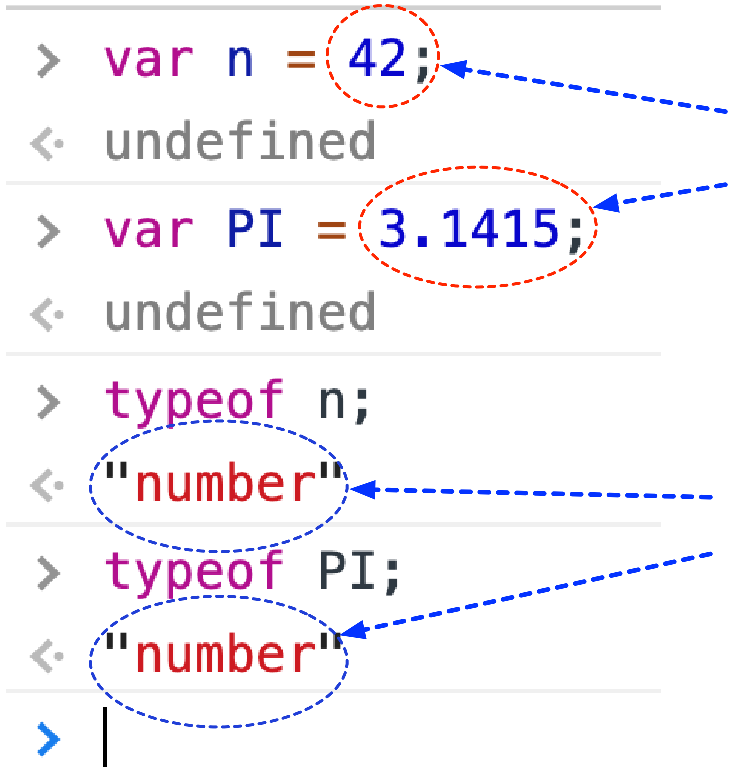
Overview – Number systems

We even have different types of number systems:

- **Binary** (lowest level)
- **Octal** (base 8)
- **Decimal** (base 10)
- **Hexadecimal** (base 16)

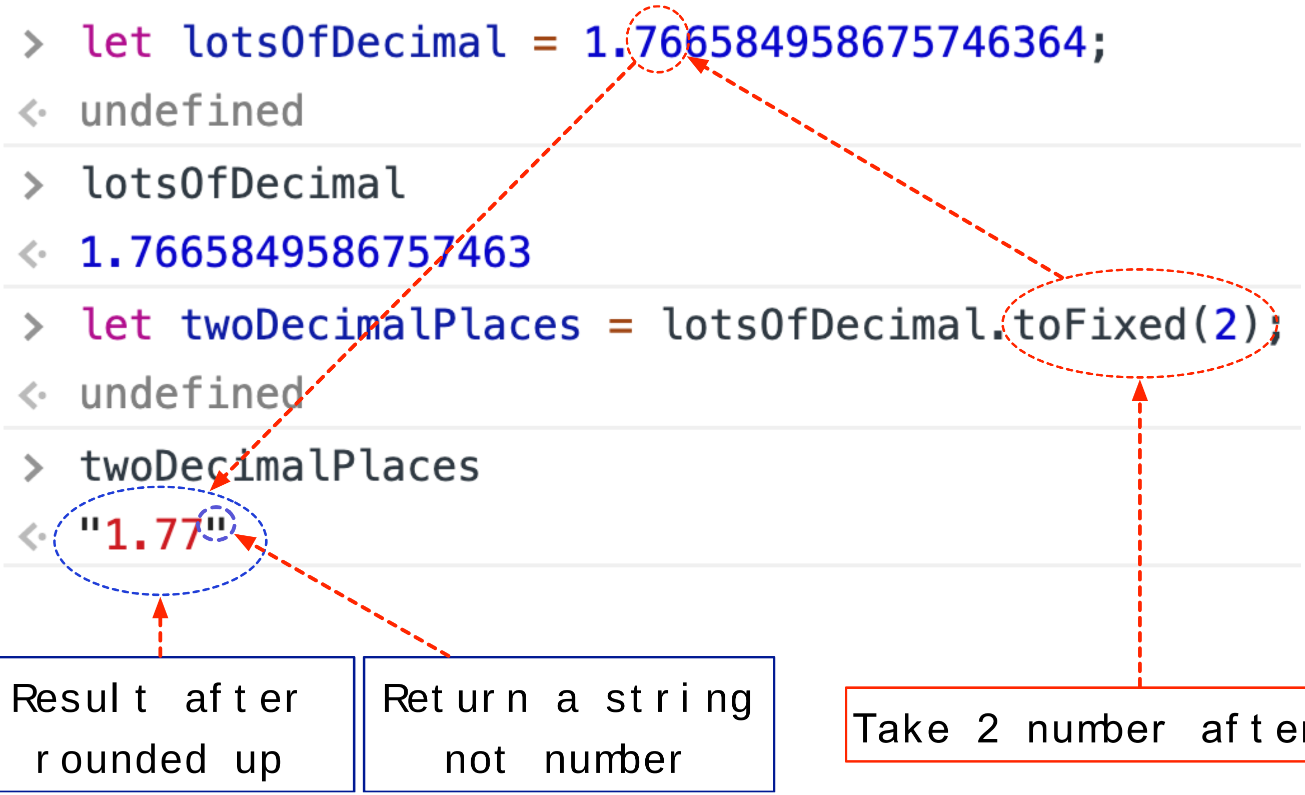


Overview – It’s all numbers



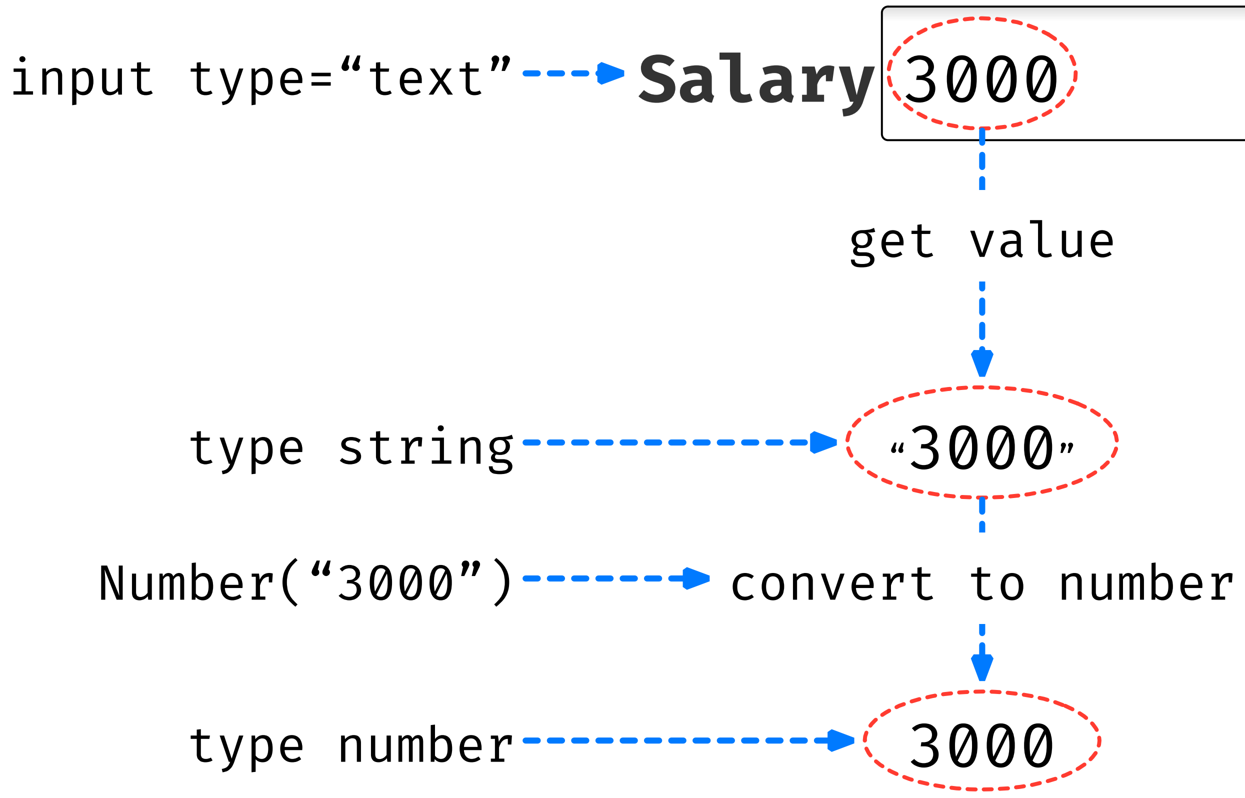
```
> var n = 42;
<· undefined
> var PI = 3.1415;
<· undefined
> typeof n;
<· "number"
> typeof PI;
<· "number"
>
```

Overview – Useful Number methods



```
> let lotsOfDecimal = 1.766584958675746364;
<· undefined
> lotsOfDecimal
<· 1.7665849586757463
> let twoDecimalPlaces = lotsOfDecimal.toFixed(2);
<· undefined
> twoDecimalPlaces
<· "1.77"
```

Overview – Converting to number data types



Overview – Summary

- Different types of number such as **Integers**, **Float**, **Doubles**
- Different systems to represent number: **Binary**, Octal, **Decimal**, Hexadecimal
- In JavaScript, it’s all numbers
- Use .toFixed() to round your number to a fixed number of decimal places
- Use Number() to convert text to number

Section 2

Arithmetic operators

Arithmetic operators

Operator	Name	Purpose	Example
+	Addition	Adds two numbers together	12 + 30
-	Subtraction	Subtracts the right number from the left	20 - 15
*	Multiplication	Multiplies two numbers together.	3 * 7
%	Remainder (modulo)	Returns the remainder left over after you've divided the left number by the right number.	8 % 3 = 2
**	Exponent	Raises a base number to the exponent power	5 ** 2 = 25

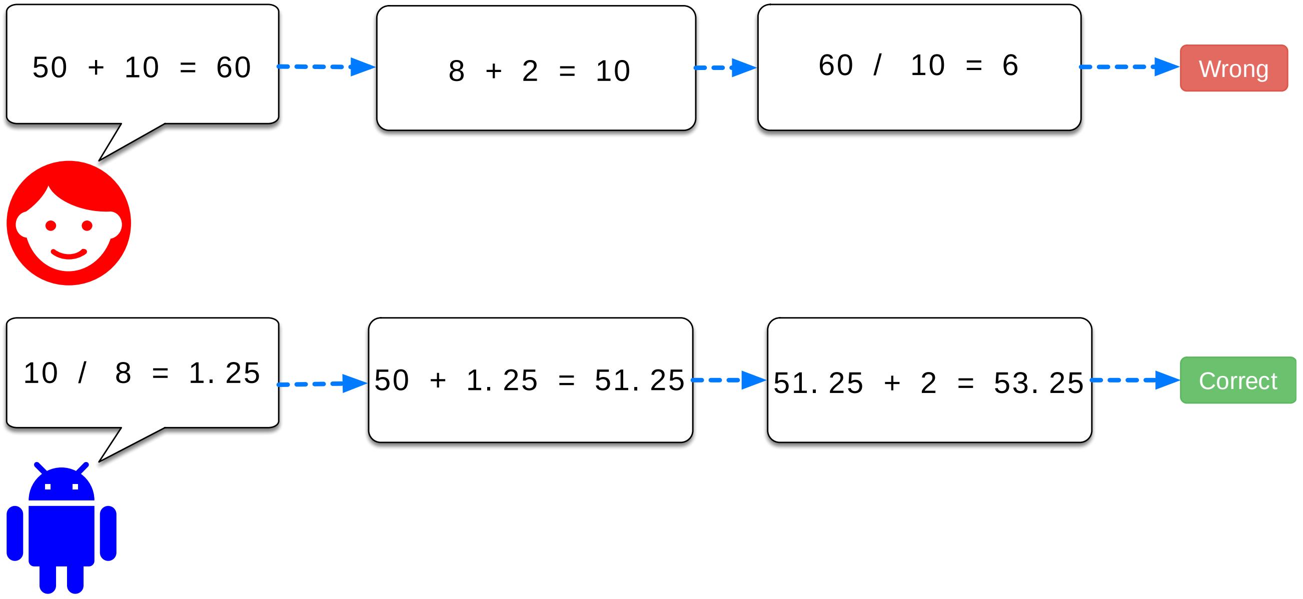
Arithmetic operators – Practice Time

Practice Arithmetic operators

Arithmetic operators – Operator precedence

What is the result ?

```
> 50 + 10 / 8 + 2;
```



Arithmetic operators - Summary

- 6 arithmetic operators: +, -, *, /, %, **
- % has many commonly use cases. Make sure you understand it
- Take note of operator precedence else you won't get the correct result

Section 3

Assignment operators

Assignment operators

Operator	Name	Purpose	Example	Shortcut for

+=	Addition assignment	Adds the value on the right to the variable value on the left, then returns the new variable value	x = 3;
			x += 4;
				x = 3;
				x = x + 4;

-=	Subtraction assignment	Subtracts the value on the right from the variable value on the left, and returns the new variable value	x = 6;
			x -= 3;
				x = 6;
				x = x - 3;

*=	Multiplicatio n assignment	Multiplies the variable value on the left by the value on the right, and returns the new variable value	x = 2;
			x *= 3;
				x = 2;
				x = x * 3;

/=	Division assignment	Divides the variable value on the left by the value on the right, and returns the new variable value	x = 10;
			x /= 5;
				x = 10;
				x = x / 5;

Assignment operators - Summary

- Assignment operators provide useful shortcuts to keep our code cleaner and more efficient
- Can use other variables on the right hand side of each expression as well

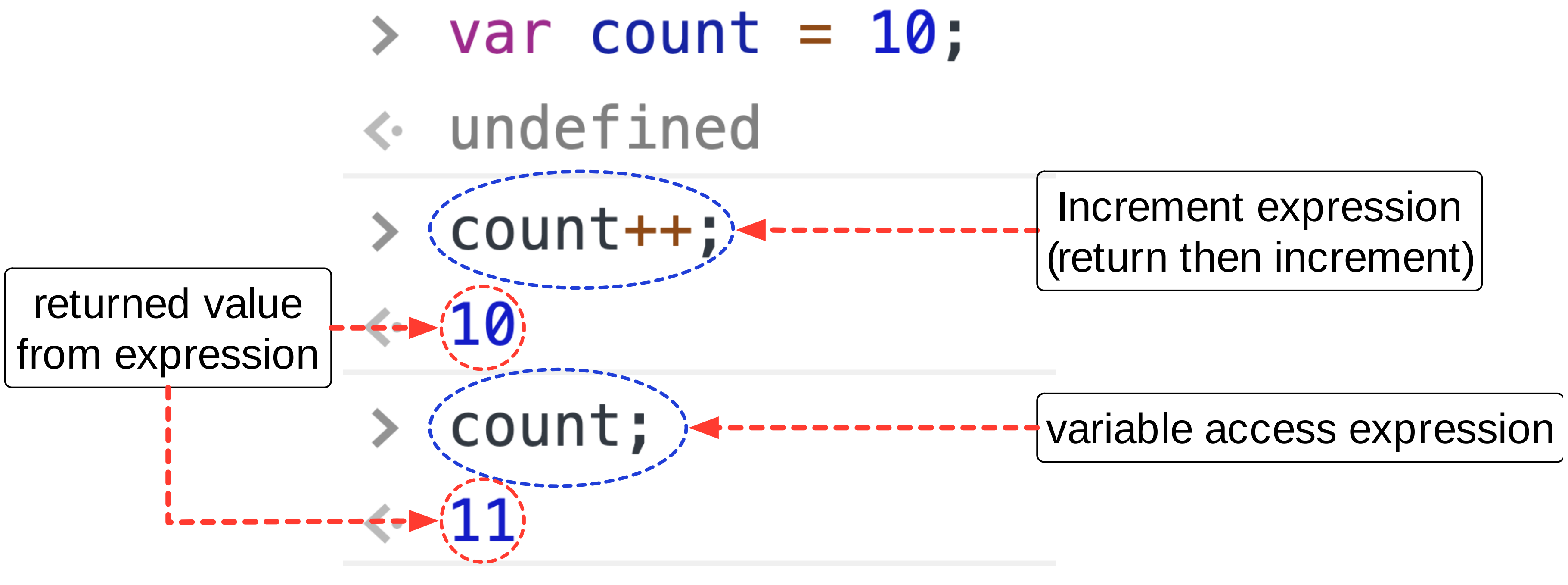
Section 4

Increment/Decrement operators

Increment/Decrement operators

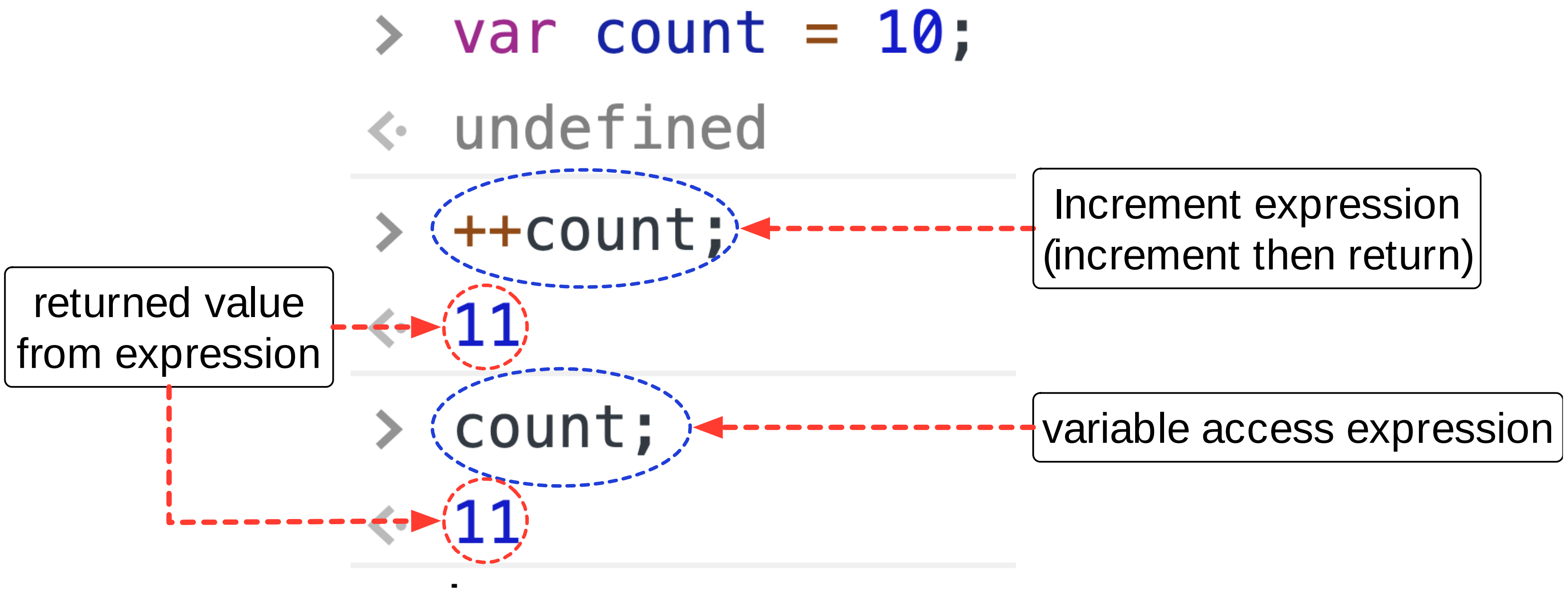
- Sometimes you'll want to repeatedly add or subtract one to or from a numeric variable value.
- This can be conveniently done using the increment (++) and decrement(--) operators.

Increment/Decrement operators



```
> var count = 10;
<· undefined
> count++;
<· 10
> count;
<· 11
```

Increment/Decrement operators



```
> var count = 10;
< undefined
> ++count;
< 11
> count;
< 11
```

Increment expression (increment then return)
returned value from expression
variable access expression

Increment/Decrement operators - Summary

- Provide a convenient mechanism to repeatedly add or subtract one to or from a numeric value
- **Syntax**: variable++, ++variable
- variable++ is same as variable += 1 then return the value **before** increment its value
- ++variable is same as variable += 1 then return the value **after** increment its value

Section 5

Comparison operators

Comparison operators

Operator	Name	Purpose	Example
===	Strict equality	Tests whether the left and right are identical	5 === 2 + 4
!==	Strict-non-equality	Tests whether the left and right are **not** identical	5 !== 2 + 3
<	Less than	Tests whether the left value is smaller than the right one.	10 < 6
>	Greater than	Tests whether the left value is greater than the right one.	10 > 20
<=	Less than or equal to	Tests whether the left value is smaller than or **equal** to the right one.	3 <= 2
>=	Greater than or equal to	Tests whether the left value is greater than or **equal** to the right one.	5 >= 4

Comparison operators - Summary

- If you want to compare numeric number use Comparison operators
- The result of a comparison is always a **Boolean**
- Always use strict comparison operator as it test the equality of both the values and their datatypes

Thank you

Q&A