Expressions and Operators

- **Arithmetic Operators**

1. addition (+)
2. subtraction (-)
3. multiplication (*)
4. division (/)
5. remainder (%)
6. exponentiation (**) to square root use " ** 1/2 "
7. increment (++)
8. decrement (--)

- **Assignment (Atribuição)**

1. num1 = num1 + 2
2. num1 += 2
3. num1 -= 2
4. num1 *= 2
5. num1 /= 2
6. num1 &= 2
7. num1 **= 2

```
let num1 = 3
let num2 = 2

console.log(num1 + num2)
console.log(num1 - num2)
console.log(num1 * num2)
console.log(num1 / num2)
console.log(num1 % num2)
console.log(num1 ** num2)

console.log(--num1)
console.log(++num1 + num2)
```

- **Comparison Operators (Boolean)**

1. > >=
2. < <=
3. == !=
4. === !==

Ex:

```
console.log(num1 > num2)
console.log(num1 <= num2)
console.log(num1 == num2)
console.log(num1 != num2)
```

- **Logical Operators (Boolean)**

1. and (&&)
2. or (||)
3. not (!)

Ex: Ir para a Walt Disney?

```
let economizarDinheiro = true
let juntarDinheiro = true

console.log(economizarDinheiro && juntarDinheiro)

let guardarPoupanca = false
let pegarEmprestimo = true

console.log(guardarPoupanca || pegarEmprestimo)

console.log(!guardarPoupanca)
```

TRUTH TABLE

Conjunction, Disjunction

P	Q	P ^ Q	P v Q
V	V		
V	F		
F	V		
F	F		

Negation

P	Q	~P	~Q
V	V		
V	F		
F	V		
F	F		

Exercise

P	Q	~P ^ Q	P ^ ~Q
V	V		
V	F		
F	V		
F	F		

P	Q	~P v Q	~(P v ~Q)
V	V		
V	F		
F	V		
F	F		

P	Q	P ^ (Q ^ P)	(P ^ Q) v ~Q
V	V		
V	F		
F	V		
F	F		

- **Operators**

1. Binary

```
let n1 = 8
let n2 = 7

console.log(n1 + n2)
console.log("Test " + n2)
```

2. Unary

```
console.log(n1++)
console.log(n1)
console.log(++n1)
console.log(typeof n2)

const fruits = ['banana', 'maçã', "Uva"]
delete fruits[1]
console.log(fruits)
```

3. Ternary

test ? true : false

```
let avarege = 7
console.log(avarege >= 7 ? 'Aprovado': 'Reprovado')
```

- **Truthy e False**

* Cuidado com valores onde o booleano é considerado obrigatório (condicionais e loops)

Truthy	False
1, 1.5, -1	0
" ", "0", "false"	“”
{ }	null
[ ]	undefined
Infinity, -Infinity	NaN

```
console.log( 1 ? 'yes' : 'no')
console.log( "" ? 'yes' : 'no')
console.log( "0"? 'yes' : 'no')
console.log( {} ? 'yes' : 'no')
console.log( null ? 'yes' : 'no')
console.log( Infinity ? 'yes' : 'no')
```

- **Expressions Grouping Operator**

```
let total = (2 + 3) * 3
console.log(total)
```

- **Operator Precedence**

Grouping	( )
Negation, Increment and Decrement	! ++ --
Multiplication and Division	* /
Addition and Subtraction	+ -
Comparison	< <= > >=
Equality	== != === !==
And	&&
Or	||
Conditional	? :
Assignment	= += -= *= %=

```
console.log(7 + 8 / 2)
console.log((7 + 8) / 2)
console.log(3 > 2 && 4 < 10)
console.log(3 < 2 || 4 < 10)
console.log(6 < 2 || 4 > 10)
console.log(3 > 2 > 1) // true == 1 false == 0
console.log(3 > 2 && 2 > 1)
console.log(true == 1)
console.log(true === 1)
```

Referência: https://developer.mozilla.org/pt-BR/docs/Web/JavaScri