1. Arithmetic Operators

Used for mathematical operations.

Operator	Description	Example
+	Addition	3 + 2 → 5
-	Subtraction	5 - 3 → 2
*	Multiplication	2 * 3 → 6
/	Division	10 / 2 → 5.0
%	Modulus (remainder)	10 % 3 → 1
**	Exponentiation	2 ** 3 → 8
//	Floor Division	10 // 3 → 3

2. Comparison Operators

Used to compare two values.

Operator	Description	Example
==	Equal to	3 == 3 → True
!=	Not equal to	3 != 2 → True
>	Greater than	5 > 3 → True
<	Less than	5 < 3 → False
>=	Greater than or equal to	5 >= 5 → True
<=	Less than or equal to	5 <= 3 → False

3. Logical Operators

Used to combine conditional statements.

Operator	Description	Example
and	True if both are true	(5 > 3) and (2 < 4) → True
or	True if at least one is true	(5 > 3) or (2 > 4) → True
not	Inverts the result	not (5 > 3) → False

4. Assignment Operators

Used to assign values to variables.

Operator	Description	Example
=	Assign	x = 5

Operator	Description	Example
+=	Add and assign	x += 3 → x = x + 3
-=	Subtract and assign	x -= 2 → x = x - 2
*=	Multiply and assign	x *= 2 → x = x * 2
/=	Divide and assign	x /= 2 → x = x / 2
%=	Modulus and assign	x %= 2 → x = x % 2
**=	Exponent and assign	x **= 2 → x = x ** 2
//=	Floor divide and assign	x //= 2 → x = x // 2

5. Bitwise Operators

Used to perform operations on binary numbers.

Operator	Description	Example
&	AND	5 & 3 → 1
`	`	OR `5 3→7`
^	XOR	5 ^ 3 → 6
~	NOT (inverts bits)	~5 → -6
<<	Left shift	5 << 1 → 10
>>	Right shift	5 >> 1 → 2

6. Membership Operators

Used to test if a value is present in a sequence (e.g., list, string).

Operator	Description	Example
in	True if value is present	'a' in 'apple' → True
not in	True if value is not present	'b' not in 'apple' → True

7. Identity Operators

Used to compare the memory locations of two objects.

Operator	Description	Example
is	True if both are the same object	x is y → True if x and y point to the same object
is not	True if both are not the same object	x is not y → True if x and y are different objects