2.3 Operators

Operators are special symbols or keywords that perform an operation on one or more values (operands).

Arithmetic Operators

Perform mathematical operations.

Operator	Description	Example	Result
+	Addition	$5 + 2$	7
-	Subtraction	$5 - 2$	3
*	Multiplication	$5 * 2$	10
/	Division (always returns a float)	$5 / 2$	2.5
//	Floor Division (discards fractional part)	$5 // 2$	2
%	Modulus (remainder of the division)	$5 \% 2$	1
**	Exponentiation	$5 ** 2$	25

Example Program:

Python

```
a = 10
b = 3

print(f"Addition (a + b): {a + b}")        # 13
print(f"True Division (a / b): {a / b}")    # 3.333... (float)
print(f"Floor Division (a // b): {a // b}") # 3 (int)
print(f"Modulus (a % b): {a % b}")         # 1 (Remainder)
print(f"Exponent (a ** b): {a ** b}")      # 1000 (10*10*10)
```

Comparison Operators

Compare two values and return a **Boolean** (True or False).

Operator	Description
==	Equal to
!=	Not equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to

Example Program:

Python

```
x = 10
y = 12
print(f"x == y: {x == y}")   # False
print(f"x != y: {x != y}")   # True
print(f"x <= 10: {x <= 10}") # True
```

Assignment Operators

Combine an arithmetic operator with the assignment operator (=) for a shorthand notation.

Operator	Equivalent to
+=	x = x + y
-=	x = x - y
*=	x = x * y
/=	x = x / y