# Basic Documentation: Variables and Arithmetic Operators in Python

## 1. Variables in Python

A variable is a container used to store data values.

### Variable Declaration

- No need to declare type explicitly.  
- Variable name should be meaningful.  
- Syntax:  
```python  
variable\_name = value  
```

### Examples:

```python  
# Integer  
x = 10  
# Float  
pi = 3.14  
# String  
name = "Riyaz"  
# Boolean  
is\_valid = True  
```

### Variable Naming Rules

- Must start with a letter or underscore (`\_`).  
- Cannot start with a number.  
- Only letters, numbers, and underscores are allowed.  
- Case-sensitive (`name` and `Name` are different).

## 2. Arithmetic Operators in Python

Arithmetic operators perform basic mathematical operations.

### List of Arithmetic Operators

|  |  |  |  |
| --- | --- | --- | --- |
| Operator | Symbol | Description | Example |
| Addition | + | Adds two numbers | x + y |
| Subtraction | - | Subtracts two numbers | x - y |
| Multiplication | \* | Multiplies two numbers | x \* y |
| Division | / | Divides and returns float | x / y |
| Floor Division | // | Returns integer quotient | x // y |
| Modulus | % | Returns remainder | x % y |
| Exponentiation | \*\* | Raises to power | x \*\* y |

### Examples:

```python  
# Declare variables  
a = 15  
b = 4  
# Arithmetic operations  
print(a + b) # Addition: 19  
print(a - b) # Subtraction: 11  
print(a \* b) # Multiplication: 60  
print(a / b) # Division: 3.75  
print(a // b) # Floor Division: 3  
print(a % b) # Modulus: 3  
print(a \*\* b) # Exponentiation: 15^4 = 50625  
```

## Summary

- Variables store data in memory.  
- Arithmetic operators perform calculations between variables or values.