Python Basics Notes

1. What is Python?

Python is a high-level, interpreted programming language known for its simplicity and readability. It supports multiple programming paradigms including procedural, object-oriented, and functional programming.

2. Variables

Variables are used to store data in Python. You don’t need to declare the type explicitly; Python infers it automatically.
Example:

```
x = 10

name = "Shamitha"
```

3. Data Types

Python has several built-in data types:

- Numbers: int, float, complex
- Sequence: list, tuple, range
- Text: str
- Set: set, frozenset
- Mapping: dict
- Boolean: bool

4. Operators

- Arithmetic: +, -, *, /, //, %, **
- Comparison: ==, !=, >, <, >=, <=
- Logical: and, or, not
- Assignment: =, +=, -=, *=, /=

5. Conditional Statements

Python uses if, elif, and else to perform conditional logic:

```
age = 18

if age >= 18:

    print("Adult")

else:

    print("Minor")
```

6. Loops

Loops are used to repeat tasks:

- for loop iterates over sequences:

```
for i in range(5):
    print(i)
```

- while loop runs until a condition is false:

```
count = 0

while count < 5:

    print(count)

    count += 1
```

7. Functions
Functions are reusable blocks of code:

```
def greet(name):

    return f"Hello, {name}"
```

8. Lists
Lists store multiple items in an ordered way:

```
fruits = ["apple", "banana", "cherry"]

print(fruits[0])  # apple
```

9. Dictionaries
Dictionaries store key-value pairs:

```
student = {"name": "Shamitha", "age": 21}

print(student["name"])
```

10. Classes & Objects
Python supports object-oriented programming:

```
class Person:

    def __init__(self, name):

        self.name = name


p = Person("Shamitha")

print(p.name)
```

11. Modules
Modules are Python files containing functions and variables. Use import to access them:

```
import math

print(math.sqrt(16))
```