Python Basics Cheat Sheet

1. Input & Output

- Output: print() sends data to screen
Example:
print("Hello, world!")
print(5 + 3)

- Input: input() takes data from user as string
Example:
name = input("Enter your name: ")
print("Hello,", name)

age = int(input("Enter your age: "))
print("Next year you will be", age + 1)

2. Data Types

int: 5, -2 (whole numbers)
float: 3.14, -0.5 (decimals)
str: "Python", 'Hi' (text)
bool: True, False (logic values)
list: [1, 2, 3] (ordered, changeable)
tuple: (1, 2, 3) (ordered, unchangeable)
dict: {"name": "Ali", "age": 22} (key-value pairs)
set: {1, 2, 3} (unordered, unique values)

Example:
x = 5
y = 3.5
name = "Raees"
is_student = True
numbers = [1, 2, 3]
person = {"name": "Raees", "age": 22}

3. Conditionals

if condition: runs if True
elif condition: runs if above False but this True
else: runs if all above False

Example:
marks = 75
if marks >= 80:
    print("A Grade")
elif marks >= 60:
    print("B Grade")

```
else:
    print("Fail")
```

Operators:
== equal, != not equal, <, >, <=, >=, and, or, not

4. Loops

For loop: repeat a set number of times
Example:

```
for i in range(5):  # 0 to 4
    print(i)
```

While loop: repeat while condition True
Example:

```
count = 0
while count < 3:
    print("Count is", count)
    count += 1
```

Loop with list:

```
for fruit in ["apple", "banana", "cherry"]:
    print(fruit)
```

5. Functions

Functions group reusable code.

Example:

```
def greet(name):
    print("Hello", name)

greet("Raees")
```

Returning values:

```
def add(a, b):
    return a + b

result = add(5, 3)
print(result)
```

6. Objects (OOP Basics)

Class: blueprint for objects
Object: instance of a class

Example:

```
class Car:
    def __init__(self, brand, year):
```

```
        self.brand = brand
        self.year = year

    def display(self):
        print(f"{self.brand} - {self.year}")

my_car = Car("Toyota", 2020)
my_car.display()
```