

**Course  
&  
Test Series**

 **CBSE**

 **ICSE**

 **NTSE**

 **Banking &  
Insurance**

 **Central Govt.  
Service**

 **State Govt.  
Services**

 **LAW  
Entrance**

 **MBA  
Entrance**

 **Railways & Metro  
Services**

...many more

**abhyasonline.in**

**Functions in Python**



Functions in Python

A function is a named block of code that performs a specific task. You can "call" (or run) the function whenever you need it, instead of writing the same code again and again.

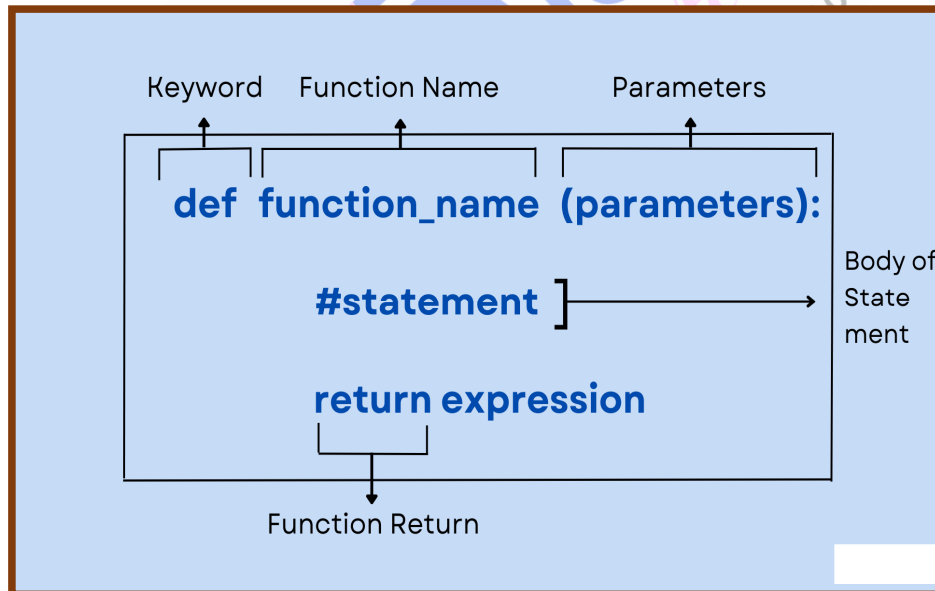
**NOTE:** You write a function **once** and use it **many times**.

**Why we use Function in Python?**

- Avoid repetition - Write code once and reuse it anywhere.
- Improve readability - Makes code easier to understand by breaking it into logical parts.
- Make code modular - Easier to manage and organize large programs.
- Enable reusability - You can call the same function multiple times with different inputs.
- Simplify debugging - Easier to test and fix smaller code blocks.
- Support collaboration - Different people can work on different functions in a big project.
- Allow abstraction - Hide complex logic behind simple function names.

**Creating a Function**

In Python, a function is defined using the "def" keyword, followed by a function name and parentheses:



**Course  
&  
Test Series**

 **CBSE**

 **ICSE**

 **NTSE**

 **Banking &  
Insurance**

 **Central Govt.  
Service**

 **State Govt.  
Services**

 **LAW  
Entrance**

 **MBA  
Entrance**

 **Railways & Metro  
Services**

...many more

**abhyasonline.in**

**Functions in Python**

- keyword (**def**): Used to define a new function in Python.
- **Function Name**: The name you give to your function so you can call it later.
- **Parameters**: Variables listed inside parentheses that accept input values when the function is called.
- **Body of Statement**: The indented block where the function's tasks are written.
- **Return Expression**: Sends a value back to the caller using the return keyword.
- **Function Return**: The final output/result that the function provides after execution.

**Example of defining a Function:**

```
def greet():
    print("Hello! Welcome to Python.")

greet()
```

**Output:**

Hello! Welcome to Python.

**Explanation:**

- def → keyword used to define a function.
- greet → name of the function.
- () → parentheses – used to pass data (parameters).
- The function prints a message when called using greet().

**Function Names**

Function names follow the same rules as variable names in Python:

- A function name must start with a letter or underscore
- A function name can only contain letters, numbers, and underscores
- Function names are case-sensitive (myFunction and myfunction are different)

**Calling a Function in Python**

- A function is a block of code that performs a specific task.
- To call a function means to run or execute that block of code.
- You call a function by writing its name followed by parentheses: `function_name()`.
- If the function takes arguments, you pass them inside the parentheses: `function_name(arg1, arg2)`.

Course  
&  
Test Series

 CBSE

 ICSE

 NTSE

 Banking & Insurance

 Central Govt. Service

 State Govt. Services

 LAW Entrance

 MBA Entrance

 Railways & Metro Services

...many more

abhyasonline.in

Functions in Python

```
1 - def shake():  
2     ...print('bugaloo')  
3     ...  
4 shake() Function call  
5
```

Debug I/O Exceptions Python Shell Messages OS Commands

Debug I/O (stdin, stdout, stderr) appears below

```
bugaloo Function output
```

Why Use Functions?

Imagine you need to convert temperatures from Fahrenheit to Celsius several times in your program. Without functions, you would have to write the same calculation code repeatedly:

Example - Without functions - repetitive code:

```
temp1 = 77  
celsius1 = (temp1 - 32) * 5 / 9  
print(celsius1)
```

```
temp2 = 95  
celsius2 = (temp2 - 32) * 5 / 9  
print(celsius2)
```

```
temp3 = 50  
celsius3 = (temp3 - 32) * 5 / 9  
print(celsius3)
```

With functions, you write the code once and reuse it:

Example - With functions - reusable code:

```
def fahrenheit_to_celsius(fahrenheit):  
    return (fahrenheit - 32) * 5 / 9
```

```
print(fahrenheit_to_celsius(77))  
print(fahrenheit_to_celsius(95))  
print(fahrenheit_to_celsius(50))
```

Course  
&  
Test Series

Functions in Python

Types of Functions in Python

Python functions are mainly divided into two types:

1. Built-in Functions

These are already provided by Python.

Examples:

```
print("Hello") # prints text
len("Python") # returns length of string
max(5, 8, 2) # returns the largest number
sum([1, 2, 3]) # adds all numbers in a list
```

Output:

```
Hello
6
8
6
```

NOTE: These are ready to use – you don't need to define them.

2. User-Defined Functions

These are created by the programmer using the def keyword.

Syntax:

```
def function_name(parameters):
    # function body
    return value
```

Example:

```
def add_numbers(a, b):
    result = a + b
    return result
```

```
# Calling the function
sum_result = add_numbers(5, 10)
print("Sum is:", sum_result)
```

Output:

```
Sum is: 15
```

Explanation:

- The function add\_numbers takes two inputs (a, b).
- It adds them and returns the result.
- We call it using add\_numbers(5, 10).

 CBSE

 ICSE

 NTSE

 Banking & Insurance

 Central Govt. Service

 State Govt. Services

 LAW Entrance

 MBA Entrance

 Railways & Metro Services

...many more

abhyasonline.in

**Course  
&  
Test Series**

**Functions in Python**

 **CBSE**

 **ICSE**

 **NTSE**

 **Banking &  
Insurance**

 **Central Govt.  
Service**

 **State Govt.  
Services**

 **LAW  
Entrance**

 **MBA  
Entrance**

 **Railways & Metro  
Services**

**...many more**  
**abhyasonline.in**

**Parameter vs Argument in Python**

Term	What it is	Where it appears
Parameter	A variable in the function definition	When defining the function
Argument	The actual value you pass to the function	When calling the function

```

                Parameters
                ┌───┬───┐
def foobar(x, y) :
    return x+y

foobar(3, 5)
                └───┬───┘
                Arguments
    
```

**Solved Example 1:**

Ques: Write a Python program to define a function greet() that displays a welcome message to students of *Abhyas Academy*. Call the function once to show the message.

**Program:**

```

def greet():
    print("Hello Students! Welcome to Abhyas Academy - Learn Python with Confidence!")

# Calling the function
greet()
    
```

**Output:**

Hello Students! Welcome to Hartron Skill Centre - Learn Python with Confidence!

**Explanation:**

- The keyword def is used to define the function named greet().
- The statement inside the function prints a message when the function is called.
- The function is executed only when greet() is written at the end of the program.

Course  
&  
Test Series

Functions in Python

**Solved Example 2: Function with one argument**

Ques: Create a function named welcome(name) that takes one argument (name of a person) and prints  
Hello, <name> Welcome to Abhyas Academy. Have a great day!  
Call this function at least two times with different names.

**Program**

```
def welcome(name):  
    print("Hello,", name, " Welcome to Abhyas Academy. Have a great day!")  
  
welcome("Ravi")  
welcome("Sita")
```

**Output:**

Hello, Ravi Welcome to Abhyas Academy. Have a great day!  
Hello, Sita Welcome to Abhyas Academy. Have a great day!

**Explanation:**

The function welcome(name) takes one argument (name) and prints it with a greeting.

**Solved Example 3: Function with two arguments**

Ques: Write a function add\_numbers(a, b) that takes two numbers as input and prints their sum.  
Call the function with different pairs of numbers like (5, 3) and (10, 20).

**Program**

```
def add_numbers(a, b):  
    print("The sum is:", a + b)  
  
add_numbers(5, 3)  
add_numbers(10, 20)
```

**Output:**

The sum is: 8  
The sum is: 30

**Explanation:**

Here, a and b are inputs.  
The function adds them and prints the result.



CBSE



ICSE



NTSE



Banking &  
Insurance



Central Govt.  
Service



State Govt.  
Services



LAW  
Entrance



MBA  
Entrance



Railways & Metro  
Services



...many more

abhyasonline.in



Course  
&  
Test Series

Functions in Python

**Solved Example 4: Function with return value**

Ques: Write a function named square(num) that takes a number as input, finds its square, and returns the result.  
Print the returned value outside the function.

**Program**

```
def square(num):  
    return num * num  
  
result = square(6)  
print("The square is:", result)
```

**Output:**

The square is: 36

**Explanation:**

The return statement sends the result back to where the function was called. The value is stored in the variable result.

**Solved Example 5: Function with no input but returning output**

Ques: Write a Python function called get\_institute() that does not take any arguments but returns the string "Hartron Skill Centre, Ambala Cantt".  
Print the value returned by the function.  
def get\_institute():  
 return "Hartron Skill Centre, Ambala Cantt"

**Program**

```
print(get_institute())
```

**Output:**

Hartron Skill Centre, Ambala Cantt

**Explanation:**

This function has no parameters, but it returns a value (string).

**Solved Example 6: Function performing a small calculation**

Ques: Write a function named calculate\_area(length, width) that takes the length and width of a rectangle and returns its area.  
Print the result in a meaningful way.  
def calculate\_area(length, width):

**Program**

```
area = length * width  
return area
```

 CBSE

 ICSE

 NTSE

 Banking & Insurance

 Central Govt. Service

 State Govt. Services

 LAW Entrance

 MBA Entrance

 Railways & Metro Services

...many more

abhyasonline.in

Course  
&  
Test Series

Functions in Python

```
result = calculate_area(5, 3)  
print("Area of rectangle:", result)
```

 CBSE

**Output:**  
Area of rectangle: 15

 ICSE

**Explanation:**

The function takes two inputs – length and width – multiplies them and returns the area.

 NTSE

**Assignment**

1. Write a function that takes a number and returns its cube.
2. Create a function that takes a student's name and marks, and prints "<Name> has scored <Marks> marks."
3. Write a function that accepts two numbers and returns both their sum and difference.
4. Define a function that prints a motivational quote without taking any input.
5. Write a function that calculates and returns the average of three numbers.

 Banking & Insurance

 Central Govt. Service

 State Govt. Services

 LAW Entrance

 MBA Entrance

 Railways & Metro Services

...many more

abhyasonline.in