

```
In [1]: print(3 + 2)    # addition(+)
        print(3 - 2)    # subtraction(-)
        print(3 * 2)    # multiplication(*)
        print(3 / 2)    # division(/)
        print(3 ** 2)   # exponential(**)
        print(3 % 2)    # modulus(%)
        print(3 // 2)   # Floor division operator(//)
```

```
5
1
6
1.5
9
1
1
```

## Checking data types

```
In [4]: print(type(10))           # Int
        print(type(3.14))         # Float
        print(type(1 + 3j))        # Complex
        print(type('Sania'))      # String
        print(type([1, 2, 3]))     # List
        print(type({'name': 'Tabassum'})) # Dictionary
        print(type({9.8, 3.14, 2.7})) # Set
        print(type((9.8, 3.14, 2.7))) # Tuple
        print(type(3 == 3))        # Bool
        print(type(3 >= 3))        # Bool
```

```
<class 'int'>
<class 'float'>
<class 'complex'>
<class 'str'>
<class 'list'>
<class 'dict'>
<class 'set'>
<class 'tuple'>
<class 'bool'>
<class 'bool'>
```

## Arithmetic Operations in Python

### Integers

```
In [5]: print('Addition: ', 1 + 2)
        print('Subtraction: ', 2 - 1)
        print('Multiplication: ', 2 * 3)
        print('Division: ', 4 / 2)           # Division in python gives float
        print('Division: ', 6 / 2)
        print('Division: ', 7 / 2)
        print('Division without the remainder: ', 7 // 2)   # gives without the floating point part, only gives int
        print('Modulus: ', 3 % 2)           # Gives the remainder
```

```
print ('Division without the remainder: ', 7 // 3)
print('Exponential: ', 3 ** 2)                # it means 3 * 3
```

```
Addition: 3
Subtraction: 1
Multiplication: 6
Division: 2.0
Division: 3.0
Division: 3.5
Division without the remainder: 3
Modulus: 1
Division without the remainder: 2
Exponential: 9
```

```
In [6]: # Floating numbers
print('Floating Number,PI', 3.14)
print('Floating Number, gravity', 9.81)
```

```
Floating Number,PI 3.14
Floating Number, gravity 9.81
```

```
In [ ]: # Complex numbers
print('Complex number: ', 1 + 1j)
print('Multiplying complex number: ',(1 + 1j) * (1-1j))
```

```
In [8]: # Declaring the variable at the top first

a = 3 # a is a variable name and 3 is an integer data type
b = 2 # b is a variable name and 3 is an integer data type
```

```
In [12]: # Arithmetic operations and assigning the result to a variable
total = a + b
diff = a - b
product = a * b
division = a / b
remainder = a % b
floor_division = a // b
exponential = a ** b
print(a + b)
print(a - b)
print(a * b)
print(a / b)
print(a % b)
print(a // b)
print(a ** b)
```

```
5
1
6
1.5
1
1
9
```

```
In [13]: # I should have used sum instead of total but sum is a built-in function try to
print(total) # if you don't label your print with some string, you never know fr
print('a + b = ', total)
print('a - b = ', diff)
print('a * b = ', product)
print('a / b = ', division)
print('a % b = ', remainder)
```

```
print('a // b = ', floor_division)
print('a ** b = ', exponential)
```

```
5
a + b = 5
a - b = 1
a * b = 6
a / b = 1.5
a % b = 1
a // b = 1
a ** b = 9
```

```
In [14]: # Declaring values and organizing them together
num_one = 3
num_two = 4
```

```
In [15]: # Arithmetic operations
total = num_one + num_two
diff = num_two - num_one
product = num_one * num_two
div = num_two / num_two
remainder = num_two % num_one

# Printing values with label
print('total: ', total)
print('difference: ', diff)
print('product: ', product)
print('division: ', div)
print('remainder: ', remainder)
```

```
total: 7
difference: 1
product: 12
division: 1.0
remainder: 1
```

```
In [16]: # Calculating area of a circle
radius = 10                                     # radius of a circle
area_of_circle = 3.14 * radius ** 2           # two * sign means exponent or power
print('Area of a circle:', area_of_circle)
```

Area of a circle: 314.0

```
In [17]: # Calculating area of a rectangle
length = 10
width = 20
area_of_rectangle = length * width
print('Area of rectangle:', area_of_rectangle)
```

Area of rectangle: 200

```
In [18]: # Calculating a weight of an object
mass = 75
gravity = 9.81
weight = mass * gravity
print(weight, 'N')
```

735.75 N

```
In [19]: print(3 > 2)      # True, because 3 is greater than 2
print(3 >= 2)     # True, because 3 is greater than 2
print(3 < 2)      # False, because 3 is greater than 2
```

```
print(2 < 3)      # True, because 2 is less than 3
print(2 <= 3)     # True, because 2 is less than 3
print(3 == 2)     # False, because 3 is not equal to 2
print(3 != 2)     # True, because 3 is not equal to 2
print(len('mango') == len('avocado')) # False
print(len('mango') != len('avocado')) # True
print(len('mango') < len('avocado'))  # True
print(len('milk') != len('meat'))      # False
print(len('milk') == len('meat'))      # True
print(len('tomato') == len('potato'))  # True
print(len('python') > len('dragon'))   # False
```

True  
True  
False  
True  
True  
False  
True  
False  
True  
True  
False  
True  
True  
False

## Variables in Python

```
In [22]: first_name = 'Sania'
last_name = 'Tabassum'
country = 'India'
city = 'HYD'
age = 21
skills = ['HTML', 'CSS', 'JS', 'React', 'Python']
person_info = {
    'firstname': 'Sania',
    'lastname': 'Tabassum',
    'country': 'India',
    'city': 'Hyd'
}
```

```
In [24]: # Printing the values stored in the variables

print('First name:', first_name)
print('First name length:', len(first_name))
print('Last name: ', last_name)
print('Last name length: ', len(last_name))
print('Country: ', country)
print('City: ', city)
print('Age: ', age)
print('Skills: ', skills)
print('Person information: ', person_info)
```

```

First name: Sania
First name length: 5
Last name: Tabassum
Last name length: 8
Country: India
City: HYD
Age: 21
Skills: ['HTML', 'CSS', 'JS', 'React', 'Python']
Person information: {'firstname': 'Sania', 'lastname': 'Tabassum', 'country': 'India', 'city': 'Hyd'}

```

## Declaring multiple variables in one line

```

In [28]: first_name, last_name, country, age, is_married = 'Conrad', 'Fisher', 'British',

print(first_name, last_name, country, age, is_married)
print('\nFirst name:', first_name)
print('Last name: ', last_name)
print('Country: ', country)
print('Age: ', age)
print('Married: ', is_married)

```

Conrad Fisher British 25 True

```

First name: Conrad
Last name: Fisher
Country: British
Age: 25
Married: True

```

```

In [30]: print(True*2) # 1*2=2

```

2

```

In [32]: poll_data=7
poll_data

```

Out[32]: 7

```

In [33]: type(poll_data)

```

Out[33]: int

```

In [34]: print(type("hello")) # <class 'str'>
print(type(42)) # <class 'int'>

```

```

<class 'str'>
<class 'int'>

```

In [ ]: