

## 1. To determine the product and average of any two given numbers.

### Source code:-

```
a, b = eval(input("Enter two numbers separated by a comma: "))  
product = a * b  
average = (a + b) / 2  
print("Product:", product)  
print("Average:", average)
```

### Output:-

```
Microsoft Windows [Version 10.0.19045.5073]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Micros  
oft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/1.py  
  
Enter two numbers separated by a comma: 1,7  
Product: 7  
Average: 4.0
```

**2. To determine the simple interest on a given amount of money at a given rate of interest for a given period of time.**

**Source code:-**

```
principal, rate, time = eval(input("Enter principal, rate, and time separated by commas: "))  
simple_interest = (principal * rate * time) / 100  
print("Simple Interest:", simple_interest)
```

**Output:-**

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/2.py  
  
Enter principal, rate, and time separated by commas: 7000,3,7  
Simple Interest: 1470.0  
  
C:\Users\khamr\Desktop\Python\Theory>
```

### 3. To determine wage of workers for certain hours of work at a given hourly rate.

#### Source code:-

```
hourly_rate, hours_worked = eval(input("Enter hourly rate and hours worked separated by a comma: "))  
  
wage = hourly_rate * hours_worked  
  
print("Wage:", wage)
```

#### Output:-

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/3.py  
  
Enter hourly rate and hours worked separated by a comma: 35,15  
Wage: 525  
  
C:\Users\khamr\Desktop\Python\Theory>
```

**4. To determine the stock value of a store of certain item on the basis of its unit cost and quantities held in the stock.**

**Source code:-**

```
unit_cost, quantity = eval(input("Enter unit cost of item and quantity in stock separated by a comma: "))
```

```
stock_value = unit_cost * quantity
```

```
print("Stock Value:", stock_value)
```

**Output:-**

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/4.py
```

```
Enter unit cost of item and quantity in stock separated by a comma: 78,12
Stock Value: 936
```

```
C:\Users\khamr\Desktop\Python\Theory>
```

## 5. To determine the remainder when one number is divided by another number.

### Source code:-

```
num1, num2 = eval(input("Enter dividend and divisor separated by a comma: "))  
remainder = num1 % num2  
print("Remainder:", remainder)
```

### Output:-

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/5.py  
  
Enter dividend and divisor separated by a comma: 78,3  
Remainder: 0  
  
C:\Users\khamr\Desktop\Python\Theory>
```

**6. To determine the value of an exponential expression of the form  $a^b$  on the basis of a given base and the power to be raised.**

**Source code:-**

```
base, exponent = eval(input("Enter base and exponent separated by a comma: "))  
result = base ** exponent  
print("Result of a^b:", result)
```

**Output:-**

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/6.py
```

```
Enter base and exponent separated by a comma: 4,5  
Result of a^b: 1024
```

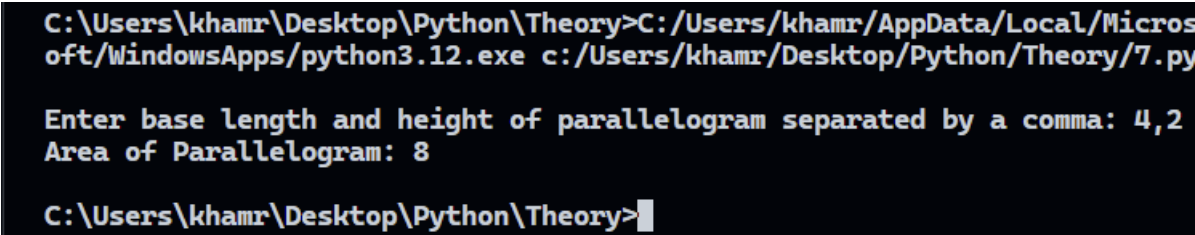
```
C:\Users\khamr\Desktop\Python\Theory>
```

## 7. To determine the area of a parallelogram.

### Source code:-

```
base_length, height = eval(input("Enter base length and height of parallelogram separated by a comma: "))  
  
area_parallelogram = base_length * height  
  
print("Area of Parallelogram:", area_parallelogram)
```

### Output:-



```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/7.py  
  
Enter base length and height of parallelogram separated by a comma: 4,2  
Area of Parallelogram: 8  
  
C:\Users\khamr\Desktop\Python\Theory>
```

**8. To determine the area of the walls of a rectangular room and hence the cost of its painting on the basis of charge per square unit.**

**Source code:-**

```
length, width, height, cost_per_unit_area = eval(input("Enter length, width, height of room, and cost per square unit separated by commas: "))
```

```
wall_area = 2 * height * (length + width)
```

```
painting_cost = wall_area * cost_per_unit_area
```

```
print("Area of Walls:", wall_area)
```

```
print("Cost of Painting:", painting_cost)
```

**Ouput:-**

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/8.py
```

```
Enter length, width, height of room, and cost per square unit separated by commas: 18,10,8,20
```

```
Area of Walls: 448
```

```
Cost of Painting: 8960
```

```
C:\Users\khamr\Desktop\Python\Theory>
```



## 9. To determine the area of a cone.

### Source code:-

```
radius, slant_height = eval(input("Enter radius and slant height of cone separated by a comma: "))

import math

area_cone = math.pi * radius * slant_height

print("Area of Cone:", area_cone)
```

### Output:-

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/9.py

Enter radius and slant height of cone separated by a comma: 5,8
Area of Cone: 125.66370614359172

C:\Users\khamr\Desktop\Python\Theory>
```

## 10. To determine the perimeter of a triangular plot.

### Source code:-

```
side1, side2, side3 = eval(input("Enter the lengths of the three sides of the triangle separated by commas: "))
```

```
perimeter_triangle = side1 + side2 + side3
```

```
print("Perimeter of Triangle:", perimeter_triangle)
```

### Output:-

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/10.py
Enter the lengths of the three sides of the triangle separated by commas
: 4,7,3
Perimeter of Triangle: 14

C:\Users\khamr\Desktop\Python\Theory>
```

## 11. To determine the area and perimeter of a square.

### Source code:-

```
side = eval(input("Enter the side length of the square: "))  
area_square = side * side  
perimeter_square = 4 * side  
print("Area of Square:", area_square)  
print("Perimeter of Square:", perimeter_square)
```

### Output:-

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/11.py  
Enter the side length of the square: 4  
Area of Square: 16  
Perimeter of Square: 16  
  
C:\Users\khamr\Desktop\Python\Theory>
```

## 12. To determine the miles on the basis of given kilometers.

### Source code:-

```
kilometers = eval(input("Enter distance in kilometers: "))  
  
miles = kilometers * 0.621371  
  
print("Distance in Miles:", miles)
```

### Output:-

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/12.py  
Enter distance in kilometers: 78  
Distance in Miles: 48.466938  
  
C:\Users\khamr\Desktop\Python\Theory>
```

**13. To determine the acceleration due to gravity on the basis of the effective length of a simple pendulum.**

**Source code:-**

```
length = eval(input("Enter the effective length of the pendulum in meters: "))  
import math  
gravity = (4 * math.pi ** 2 * length) / (1 ** 2) # assuming time period of 1 second for simplicity  
print("Acceleration due to Gravity:", gravity)
```

**Output:-**

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/13.py  
Enter the effective length of the pendulum in meters: 1.5  
Acceleration due to Gravity: 59.21762640653615  
C:\Users\khamr\Desktop\Python\Theory>
```

**14. To determine the volume a certain mass of gas at a given temperature and pressure when the volume is known at the normal pressure and at the absolute temperature.**

**Source code:-**

```
V1, T1, T2 = eval(input("Enter initial volume, initial temperature, and final temperature separated by commas: "))
```

```
V2 = V1 * (T2 / T1)
```

```
print("Final Volume (V2):", V2)
```

**Output:-**

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/14.py
Enter initial volume, initial temperature, and final temperature separated by commas: 45,25,30
Final Volume (V2): 54.0

C:\Users\khamr\Desktop\Python\Theory>
```

**15. To determine the net salary of an employee when it is known that the employee is eligible to dearness allowance (DA) of 97% of the basic pay, House Rent Allowance (HRA) of 57% of the basic pay and medical allowance of Rs.150. It is further known that 12% of the basic pay is deducted from the gross salary for the Employees' Provident fund (EPF) and Rs. 200 is deducted from the gross pay as the professional tax.**

**Source code:-**

```
basic_pay = eval(input("Enter basic pay: "))
DA = 0.97 * basic_pay # Dearness Allowance
HRA = 0.57 * basic_pay # House Rent Allowance
medical_allowance = 150 # Fixed medical allowance
gross_salary = basic_pay + DA + HRA + medical_allowance
EPF_deduction = 0.12 * basic_pay # Employees' Provident Fund deduction
professional_tax = 200 # Fixed professional tax
net_salary = gross_salary - (EPF_deduction + professional_tax)
print("Net Salary:", net_salary)
```

**Output:-**

```
C:\Users\khamr\Desktop\Python\Theory>C:/Users/khamr/AppData/Local/Microsoft/WindowsApps/python3.12.exe c:/Users/khamr/Desktop/Python/Theory/15.py
Enter basic pay: 20000
Net Salary: 48350.0

C:\Users\khamr\Desktop\Python\Theory>
```

