

Q1) Write a program to calculate $f(x) = \sin(x)$ where x is in degree.

```
import math
def f(x):
    x=n*(math.pi/180)
    return x
n=int(input("Enter a number "))
print (f(n))
```

```
Enter a number 0
0.0
```

Q2) Create a function that accepts a list of numbers and returns the sum of elements on the list.

```
def f(x):
    add=0
    for values in x:
        add= add+values
    return add
```

```
q=[1,3,6,8,12]
print (f(q))
```

```
30
```

Q3) Write a program to calculate the sum of digit of a number using fuction.

```
def sumofdigit(a):
    total= 0
    while a>0:
        num= a%10
        a = int(a/10)
        total+=num
    return total
a = int(input("Enter the number: "))
print(sumofdigit(a))
```

```
Enter the number: 23
5
```

Q4) Write a program to calculate the smallest divisor of a number using function.

```
def smallest(n):
    if n<2:
        return None
    for i in range(2, n+1):
        if n%i == 0:
            return i
```

```

num = int(input("Enter the number: "))
smallest_number= smallest(num)
result = smallest(num)
if result == None:
    print("The input is invalid.")
else:
    print("The smallest divisor of" ,num, "is" ,result)

```

```

Enter the number: 33
The smallest divisor of 33 is 3

```

5) Write a program to check a given number is perfect number or not using function.

```

def perfectnum(x):
    total = 0
    for i in range(1, a):
        if a%i==0:
            total += i
    if total == a:
        print(a,"is a perfect number.")
    else:
        print(a, "is not perfect number.")
a = int(input("Enter the number: "))
output = perfectnum(a)
print(output)

```

```

Enter the number: 56
56 is not perfect number.
None

```

6. Write a function that takes two integers m and n as arguments and prints out an m×n box consisting of asterisks.

```

def shape(j,i):
    for j in range(1, j+1):
        for i in range(1, i+1):
            print("*" , end=" ")
        print()
shape(6,4)

```

```

* * * *
* * * *
* * * *
* * * *
* * * *
* * * *

```

7) Write a python program to create a matrix of dimensions m x n without using any additional libraries and display the values.

```
def create_matrix(c, d):
    matrix = []
    for i in range(c):
        row = []
        for j in range(d):
            row.append(0)
        matrix.append(row)
    return matrix
def display_matrix(matrix):
    for row in matrix:
        print(row)

c = int(input("Enter the number of rows: "))
d = int(input("Enter the number of columns: "))

matrix = create_matrix(c, d)
display_matrix(matrix)
```

```
Enter the number of rows: 5
Enter the number of columns: 1
[0]
[0]
[0]
[0]
[0]
```

8) Write a program for addition of two matrices.

```
import numpy as np
matrixa = np.array([[2,6,3],[1,4,3],[1,8,2]])
matrixb = np.array([[4,4,1],[7,1,3],[3,6,5]])
result = matrixa + matrixb
print(result)

[[ 6 10  4]
 [ 8  5  6]
 [ 4 14  7]]
```

9) Write a program to identify the given matrix is diagonal matrix or not

```
matrix = [[3, 0, 0],
          [0, 9, 0],
          [0, 0, 27]]
is_diagonal = True
for i in range(len(matrix)):
    for j in range(len(matrix[0])):
        if i != j and matrix[i][j] != 0:
            is_diagonal = False
            break
if is_diagonal:
    print("The matrix is diagonal")
else:
    print("The matrix is not diagonal")
```

☞ The matrix is diagonal

✓ 0s completed at 8:40 PM

