1. **Write a program to calculate area of rectangle.**

```
def calculate_area (length, width):
    return (length * width)

length = float (input ("Enter the length of the rectangle:"))
width = float (input ("Enter the width of the rectangle:"))

area = calculate_area (length, width)
print(f"{area}")
```

2. **Write a program to calculate area of circle.**

```
import math
def calculate_area(radius):
    return (math.pi * radius ** 2)

radius = float (input ("Enter the radius of the circle:"))
area = calculate_area(radius)
print(f"{area}")
```

3. **Write a program to find sum of following series using functions.**

```
import math
#a.
def sum_n(n):
    return sum (range (1, n + 1))

#b.
def sum_factorial(n):
    total = 0
    for i in range (1, n + 1):
        total += math.factorial(i)
    return total

#c.
def sum_power(n):
    total = 0
    for i in range (1, n + 1):
        total += i ** i
    return total
```

```
n = int (input ("Enter the value of n:"))
print(f"{sum_n(n)}")
print(f"{sum_factorial(n)}")
print(f"{sum_power(n)}")
```

4. Sum of all odd numbers between 1 to n.

```
def sum_of_odds(n):
    total = 0
    for i in range (1, n + 1, 2):
        total += i
    return total

n = int (input ("Enter the value of n: "))
print(f"{sum_of_odds(n)}")
```

5. Sum of all prime numbers between 1 to n.

```
def is_prime(num):
    if num < 2:
        return False
    for i in range(2, num):
        if num % i == 0:
            return False
    return True

def sum_of_primes(n):
    total = 0
    for i in range(2, n + 1):
        if is_prime(i):
            total += i
    return total

n = int(input("Enter the value of n: "))
print(f"{sum_of_primes(n)}")
```

6. **Write a program to find print the following Fibonacci series using functions.**

```
def Fibonacci (n):
    a, b = 1, 1
    for i in range(n):
        print(a, end=" ")
        a, b = b, a + b

n = int(input("Enter number of terms:"))
fibonacci(n)
```

7. **Write a program to find sum of digits of a number.**

```
def sum_of_digits(n):
    total = 0
    for digit in str(n):
        total += int(digit)
    return total

num = int(input("Enter a number: "))
print(f"{sum_of_digits(num)}")
```

8. **Write a program find reverse of a number.**

```
def reverse_number(n):
    return int(str(n)[::-1])

num = int(input("Enter a number: "))
print(f"{reverse_number(num)}")
```

9. Write a program to check if entered number is a palindrome or not.

```
def is_palindrome(n):
    return str(n) == str(n)[::-1]

num = int (input ("Enter a number:"))
if is_palindrome(num):
    print ("The number is a palindrome.")
else:
    print ("The number is not a palindrome.")
```

10. Write a program to check if entered year is a leap year or not.

```
def is_leap(year):
    return (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0)

year = int (input ("Enter a year: "))

if is_leap(year):
    print ("Leap year")
else:
    print ("Not a leap year")
```

11. WAP to check if a given number is Armstrong number or not. For each task create separate functions.

```
def is_armstrong(n):
    total = 0
    digits = str(n)
    power = len(digits)
    for digit in digits:
        total += int(digit) ** power
    return total == n

num = int (input ("Enter a number:"))

if is_armstrong(num):
    print ("Armstrong number")
else:
    print ("Not an Armstrong number")
```