TUTE 04

1. Write and run a program that tests the summation formula

$$\sum_{i=1}^{n} i \quad = \frac{\mathrm{n}(\mathrm{n}+1)}{2}$$

Generate a random integer n in the range of 0 to 99 , sum the integers from 1 to n, compute the value of the expression on the right , and then print both values to see that they agree,
Your output should look like this:

n = 14
Sum = 105
n*(n+1)/2 = 105

2. Write and run a program that testes the summation formula

$$\sum_{i=1}^{n} i^2 \quad = \frac{\mathrm{n}(\mathrm{n}+1)(2n+1)}{6}$$

Generate a random integer n in the range of 0 to 99, sum the integers from 1 to n, compute the value of the expression on the right, and then print both values to see that they agree.

3. Write and run a program that testes the summation formula

$$\sum_{i=1}^{n} i^3 \quad = \frac{n^2(n+1)^2}{4}$$

Generate a random integer n in the range of 0 to 99, sum the integers from 1 to n, compute the value of the expression on the right, and then print both values to see that they agree.

4. Write and run a program that testes the summation formula

$$\sum_{i=1}^{\infty} \frac{1}{i^2} = \frac{\pi^2}{6}$$

Generate a random integer n in the range of 0 to 9999, sum the numbers $1/i^2$ from 1 to n, compute value of the expression on the right, and then print both values and their difference to see how closely they agree.