

PRUEBA DE ESCRITORIO

$$f(n, r) = \binom{n}{r} = \frac{n!}{r!(n-r)!}$$

$$n = 9$$

$$r = 4$$

Factorial N	N_i
1	1
2	2
6	3
24	4
120	5
720	6
5040	7
40320	8
362880	9

Factorial R	R_i
1	1
2	2
6	3
24	4

$$n! = 362,880$$

$$r! = 24$$

$$(n-r) = 5$$

$$(n-r)! = 120$$

$$(n-r)! \cdot r! = 120 \cdot 24$$

$$= 2,880$$

$$n! / r!(n-r)! = 362,880 / 2,880$$

$$= 126$$

Pantalla
 Ingrese N
 9
 Ingrese R
 4
 El resultado final es: 126

CODIGO EN C++, EN CODE::BLOCKS

The image shows two screenshots of the Code::Blocks IDE. The top screenshot displays the first part of the C++ code in `main.cpp`, which includes headers, namespace declarations, and the start of the `main` function. It initializes variables for `numN`, `factorialN`, `restaNum`, `restaFactorialNum`, `multiplicacion`, and `division`. It prompts the user to enter `N` and `R`. The bottom screenshot shows the continuation of the code, which includes a loop to calculate the factorial of `N`, a loop to calculate the factorial of `R`, and logic to calculate the division of the two factorials. The output window on the right shows the program's execution with the input values 9 and 4, resulting in a final value of 126. The execution time is 3.348 seconds.

```
1 #include <iostream>
2
3 using namespace std;
4
5 int main()
6 {
7     int numN = 0, numR = 0;
8     int factorialN = 1, factorialR = 1;
9     double restaNum = 0, restaFactorialNum = 1;
10    double multiplicacion = 0, division = 0;
11    cout << "Ingrese N" << endl;
12    cin >> numN;
13
14    if (numN < 0)
15        factorialN = 0;
16    else if (numN == 0)
17        factorialN = 1;
18    else
19    {
20        for (int i = 1; i <= numN; i++)
21        {
22            factorialN = factorialN * i;
23        }
24    }
25
26    do
27    {
28        do
29        {
30            cout << "Ingrese R" << endl;
31            cin >> numR;
32        } while (numR > numN);
33    } while (numR < 0);
34
35    while (numR > numN)
36    {
37        while (numR < 0);
38
39        if (numR == 0)
40            factorialR = 1;
41        else
42        {
43            for (int i = 1; i <= numR; i++)
44            {
45                factorialR = factorialR * i;
46            }
47        }
48
49        restaNum = numN - numR;
50
51        if (restaNum < 0)
52            restaFactorialNum = 0;
53        else if (restaNum == 0)
54            restaFactorialNum = 1;
55        else
56        {
57            for (int i = 1; i <= restaNum; i++)
58            {
59                restaFactorialNum = restaFactorialNum * i;
60            }
61        }
62
63        multiplicacion = factorialR * restaFactorialNum;
64
65        division = factorialN / multiplicacion;
66        cout << "El resultado final es: " << division << endl;
67        return 0;
68    }
69 }
```

Output window: "D:\Documentos\LebenBits\Proyecto de Clientes\Eri...
Ingrese N
9
Ingrese R
4
El resultado final es: 126
Process returned 0 (0x0) execution time : 3.348 s
Press any key to continue.

CODIGO HECHO EN PSEINT

```
1  Algoritmo determinarResultado
2  //
3  Escribir "Ingrese el valor de N";
4  acumN←1;
5  Leer numN;
6
7  Para i←1 Hasta numN Con Paso 1 Hacer
8  .....
9      acumN←acumN*i;
10 .....
11 FinPara
12 //
13 acumR←1;
14 Repetir
15     Repetir
16         Escribir "Ingrese el valor de R // 0 <= R <= N";
17     Leer numR;
18     Hasta Que numR ≤ numN;
19 Hasta Que 0 ≤ numR
21
22
23 Para i←1 Hasta numR Con Paso 1 Hacer
24 .....
25     acumR←acumR*i;
26 .....
27 FinPara
28 //
29 factorialResta←1;
30 resta←(numN - numR);
31 Para i←1 Hasta resta Con Paso 1 Hacer
32 .....
33     factorialResta←factorialResta*i;
34 .....
35 FinPara
```

