Activity 5:

Code 1:

int sum = 0;  
        for (int n = N; n > 0; n /= 2)  
            for (int i = 0; i < n; i++)  
                sum++;

Time Complexity: 2N

Because inner loop runs N/2 + N/4 + N/8 + ………. Till N times.

Code 2:

int sum = 0;  
        for (int i = 1 i < N; i \*= 2)  
             for (int j = 0; j < i; j++)  
                sum++;

Time Complexity: N

Because inner loop runs 1+2+4+8+……….

Code 3:

int sum = 0;  
        for (int i = 1 i < N; i \*= 2)  
            for (int j = 0; j < N; j++)  
                sum++;

Time Complexity: N log (N)

Order of Growth:

Code 3, Code 2, Code 1