Time Complexity Analysis Questions .

Que1. What is the time complexity of following code:

```
int a = 0;
for (i = 0; i < N; i++) {
    for (j = N; j > i; j--) {
        a = a + i + j;
    }
}
```

Options:

1. O(N)
2. O(N*log(N))
3. O(N * Sqrt(N))
4. O(N*N)

Answer=> O(N*N)

Que 2. What is the time complexity of following code:

```
int i, j, k = 0;
for (i = n / 2; i <= n; i++) {
    for (j = 2; j <= n; j = j * 2) {
        k = k + n / 2;
    }
}
```

Options:

1. O(n)
2. O(nLogn)
3. O(n^2)
4. O(n^2Logn)

Answer=> O(nLogn)

Que 3. What does it mean when we say that an algorithm X is asymptotically more efficient than Y?

Options:

1. X will always be a better choice for small inputs
2. X will always be a better choice for large inputs
3. Y will always be a better choice for small inputs
4. X will always be a better choice for all inputs

Answer=> X will always be a better choice for large inputs

Que 4. What is the time complexity of following code:

```
int a = 0, i = N;
while (i > 0) {
    a += i; -- 128,64, 32, 16, 8,4 2, 1 = logN+1
    i /= 2;
}
```

Options:

1. O(N)
2. O(Sqrt(N))
3. O(N / 2)
4. O(log N)

Answer => O(log N)