

```

public class binary search tree {

    public static void main(String[] args) {

        int nums[] = { -31 , -27 , -9 , 14 , 17 , 18 , 29 , 30 , 48 };

        for ( int i = 0 ; i < nums.length ; i++ ) {

            int currentNumber = nums[i];

            int comparisonsNumber = 0;

            for ( int j = 0 ; j < nums.length ; j++ )

            {

                comparisonsNumber++;

                if ( nums[j]==currentNumber ) { // The comparing

                    System.out.println("To find "+currentNumber+" we need

                    "+comparisonsNumber+" comparisons");

                    break;

                }

            }

        }

    }

}

```

Describe the differences between the linear search and the binary search algorithms

Linear search is a search that finds an element in the list by searching the element sequentially until the element is found in the list. On the other hand, a binary search is a search that finds the middle element in the list recursively until the middle element is matched with a searched element.

BASIS FOR COMPARISON	LINEAR SEARCH	BINARY SEARCH
Time Complexity	$O(N)$	$O(\log_2 N)$
Worst case for N number of elements	N comparisons are required	Can conclude after only $\log_2 N$ comparisons
Best case time	First Element $O(1)$	Center Element $O(1)$