TQ1:

1. It is a recursive algorithm, in this algorithm we are searching for a number (s) so that when we split the A into L and R the length of the L be equal to K.
2. The time complexity of the algorithm is O(log n).
3. The best-case time complexity would be O(1) when the K would directly match the desired value.

TQ3:

1. Suppose the knapsack has a capacity 8. And suppose there are three items:

* Item A with weight 1 and value 2
* Item B with weight 3 and value 3
* Item C with weight 5 and value 4

The optimal solution contains items: B and C, in the knapsack with a total value = 7. However, if we Order them in decreasing order of weights (1, 3, and 5) adding them to the solution by choosing the lighter items. We will reach the value of 5.

2. Suppose the knapsack has a capacity 4. And suppose there are three items:

* Item A with weight 3 and value 5
* Item B with weight 2 and value 3
* Item C with weight 2 and value 3

The optimal solution contains items: B and C, in the knapsack with a total value = 6. However, if we Order them in decreasing order of values (3, 3, and 5) adding them to the solution we will reach the value of 5.

3. Suppose the knapsack has a capacity 16. And suppose there are three items:

* Item A with weight 12 and value 24
* Item B with weight 4 and value 15
* Item C with weight 5 and value 30

The optimal solution contains items: A and B, in the knapsack with a total value = 39. However, if we Order them in decreasing order of Vi/Wi (2, 3.75, and 6) adding them to the solution we will reach the value of 30.