Sorting – Study Questions

- Trace the **insertion sort algorithm** as it sorts the following sequence into <u>ascending order</u>. Show all steps and clearly indicate the sorted and unsorted portions of the sequence

    20 80 40 25 60 40

- Trace the **selection sort algorithm** as it sorts the following sequence into <u>ascending order</u>. Show all steps and clearly indicate the sorted and unsorted portions of the sequence

    7 12 24 4 19 32

- Trace the **bubble sort algorithm** as it sorts the following sequence into <u>descending order</u>. Show all steps and clearly indicate the sorted and unsorted portions of the sequence

    12 23 5 10 34

- How many comparisons would be needed to sort an array containing 25 entries using the bubble sort algorithm in
    - The worst case?
    - The best case?

- Write both an iterative and recursive version of the insertion sort algorithm.
- Trace the **merge sort algorithm** as it sorts the following sequence into <u>ascending order</u>. List all calls to mergeSort and merge in the order in which they occur.

    20 80 40 25 60 30