5) (10 pts) ALG (Sorting)

a) (3 pts) The following diagram shows an initial array, followed by what the array looks like after a single pass of some sorting algorithm. Indicate what sorting algorithm is being applied, and give that algorithm's worst-case runtime using big-oh notation, for an array of size n.

22	49	36	22	17	18	4

4	49	36	22	17	18	22

Sorting algorithm being applied: _____

Worst-case runtime for algorithm: _____

b) (3 pts) For the following array, follow the same instructions from part (a):

84	19	23	66	91	44	42

19	23	66	84	44	42	91

Sorting algorithm being applied: _____

Worst-case runtime for algorithm: _____

c) (4 pts) Give a recurrence relation that represents the runtime for a Merge Sort of n items. Let T(n) represent the runtime of Merge Sort of n items in setting up your recurrence relation.