3.1

Total Memory	Number of Runs	Processing Time	Total Memory Used
180MB	4	2.18s	334528KB
150MB	5	2.08s	267988KB
120MB	6	2.06s	223552KB
100MB	7	2.04s	191760KB

3.2

Running Time	Number of Runs
2.16s	2
2.08s	4
2.25s	16
2.02s	32

Throughout the experiment it becomes apparent that the difference in running time isn't significant as the number of runs changes. Although it would be expected that as the buffers decrease in size allowing for quicker and more frequent sorting of less data, the overhead increases, causing more IO calls, as well as keeping track of more variables on the stack.