5. From the chart shell sort is the fastest

6.Bubble sort from the chart is O(n^2) as it tends to climb exponentially in run time as Array size increases. This matches with the function's complexity for average cases.

Insertion sort from the chart linearly increases therefore it is O(n log n) which is not expected as the average case for insertion sort leans towards O(n^2). A possible explanation for this is that Insertion sort becomes significantly more efficient the more sorted the input array is which provided an entirely random input could have many of the variables inside be already sorted.

Shell sort is an improved version of insertion sort. From the chart it is O(n log n) and as expected slightly faster than insertion sort. O(n log n) is expected for a good implementation of shellsort, but the implementation we used is not optimal and much like insertion sort was expected to hit O(n^2). Though for the same reason given for insertion sort, it did not give the expected result.