Ans: From the resultant table, we can clearly make out the co-relation of each algorithm to the size.

Below is the table:

Size Algo1 Algo2 Algo3

5 35 15 5

10 220 55 10

15 680 120 15

20 1540 210 20

25 2925 325 25

30 4960 465 30

35 7770 630 35

40 11480 820 40

45 16215 1035 45

50 22100 1275 50

Here, we can see that Algo3 has a linear co-relation to size. Hence, we can say that time complexity for it is O(n). The same can be confirmed from the graph below:

Now, coming to algo2, the total assignments there are certainly greater than the size of it and also lesser than the square of size.

Basically O(n)<T<O(n2). In the worst case, this will be equaling to quadratic time complexity and hence we can say that the time complexity of algo2 is O(n2). This can be confirmed from below graph as well which is identical to a quadratic graph:

Now, coming to algo1, we can certainly say from data points that number of assignments are definitely greater than the square of size for each value of size. For example, for size = 5, we have num = 35 which is greater than the square of 5 (25). However, for each data point we can also see that it is less than the cube of size.

O(n2)<T<O(n3) – This relation is followed for each size. Hence we can say that the time complexity of algo1 is O(n3) as can also be observed from below graph which is cubic in nature: