

## 2. Insertion Sort

3, 5, 78, 89, 456, 123, 23, 9, 7, 200, 308, 196, 345, 6

Step 1: Select element 5 and compare with 3, no swap

3, 5, 78, 89, 456, 123, 23, 9, 7, 200, 308, 196, 345, 6

Step 2: Select 78 and compare with 5. No Swap

3, 5, 78, 89, 456, 123, 23, 9, 7, 200, 308, 196, 345, 6

Step 3: Select 89 and compare with 78; No Swap.

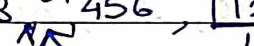
3, 5, 78, 89, 456, 123, 23, 9, 7, 200, 308, 196, 345, 6

Step 4: Select 456 and compare with 89. No Swap.

3, 5, 78, 89, 456, 123, 23, 9, 7, 200, 308, 196, 345, 6

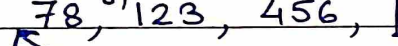
Step 5: Select 123 and compare with 456. Since  $123 < 456$ , insert in front of 456.

3, 5, 78, <sup>89</sup>456, 123, 23, 9, 7, 200, 308, 196, 345, 6



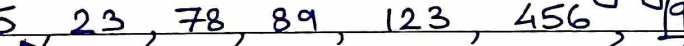
Step 6: Select 23 and compare with elements on the left-side and place / insert it accordingly.

3, 5, 78, <sup>89</sup>123, 456, 23, 9, 7, 200, 308, 196, 345, 6




Step 7: Select 9 and compare with left hand side elements and insert accordingly.

3, 5, 23, 78, 89, 123, 456, 9, 7, 200, 308, 196, 345, 6



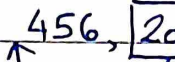
Step 8: Select element 7 and compare with left-hand side elements and insert accordingly.

3, 5, 9, 23, 78, 89, 123, 456, 7, 200, 308, 196, 345, 6



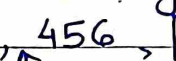
Step 9: select 200 and compare it with elements on the left side and insert accordingly.

3, 5, 7, 9, 23, 78, 89, 123, 456, 200, 308, 196, 345, 6



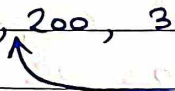
Step 10: select 308 and compare it with elements on the left side and insert accordingly.

3, 5, 7, 9, 23, 78, 89, 123, 200, 456, 308, 196, 345, 6



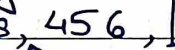
Step 11: select 196 and compare it with elements on the left side and insert accordingly.

3, 5, 7, 9, 23, 78, 89, 123, 200, 308, 456, 196, 345, 6




Step 12: select 345 and compare it with elements on the left side and insert accordingly.

3, 5, 7, 9, 23, 78, 89, 123, 196, 200, 308, 456, 345, 6



Step 13: select 6 and compare it with elements on the left and insert accordingly.

3, 5, 6, 7, 9, 23, 78, 89, 123, 196, 200, 308, 345, 456



Therefore, the sorted array is as follows:

3, 5, 6, 7, 9, 23, 78, 89, 123, 196, 200, 308, 345, 456