**Non-recursive Merge and MergeSort - Answers**

1. **int** mid = (first + last) / 2;

This line initializes the variable mid that is then assigned the value 6: (0 + 12)/2

selectionSort (numbers, first, mid);

This line calls the selectionSort method (discussed in Lesson A17) to sort the *numbers* ArrayList from index 0 to index 6. Now *numbers* looks as follows - the sorted portion of array is highlighted in yellow:

**13 24 29 32 56 74 84** 65 70 52 16 44 37

selectionSort (numbers, mid+1, last);

This line calls the selectionSort method to sort the *numbers* ArrayList from index 7 to index 12. *N*ow *numbers* looks as follows - the sorted portion (from this new line of code) is highlighted in yellow:

13 24 29 32 56 74 84 **16 37 44 52 65 70**

merge (mumbers, first, mid, last);

This line calls a merge method that effectively combines the two sorted halves of the *numbers* ArrayList into one sorted ArrayList. This process is explained in section A in the Student Lesson. Now *numbers* looks as follows:

13 16 24 29 32 37 44 52 56 65 74 70 84

2. 12 23 28 31 47 65 3 15 18 35 44 59

3 12 15 18 23 28 31 35 44 47 59 65