AP Computer Science Name _____
Binary Search Lab

Goal: Write a program that performs a binary search on a sorted array using the **Arrays** class.

1. Your program should set the size of the array to a random number between 20 and 50 and then fill the array with random integers between 0 and 99 inclusive. Print the elements, going across the screen, 10 numbers to a line. Sort them in ascending order using the **Arrays** sort method, and print the sorted array. Be sure to label your output.

Sample output

```
Original array of 25 elements:
10  3 23 18 92 11  6 99 20 42
42 13 48 84 33 86 15 11 88 40
 2  7 64 41 77

Sorted array of 25 elements:
 2  3  6  7 10 11 12 13 15 18
20 23 33 40 41 42 42 48 64 77
84 86 88 92 99
```

2. Perform a binary search using the built-in binary search method in the Arrays class to see if the item exists in the list, if so output the index.

3. Then write your own binary search method on the sorted array, count the number of probes made, and output that. A probe is counted as a comparison between the element sought and an element in the array.

Sample output

```
Part 2:
      What entry? 12
            status: found at index 6.
      What entry? 170
            status: not found.
Part 3:
      What entry? 12
            status: found at index 6 after 4 probes.
      What entry? 170
            status: not found after 5 probes.
```