Exercise 4: Binary Search

Last name _____

First Name _____

Refer to the array below to answer each question.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
13	15	18	29	32	36	41	49	53	57	59	60	61	63	68	70	71	73	75	80	83	84	86	89	94

Question 1. How many comparisons will be performed by an iterative binary search algorithm (as seen on the slides) if searching for 89? (Show your work.)

0 + 24 = 24 / 2 = 12 [12] = 61 < 89

13 + 24 = 37 / 2 = 18 [18] = 75 < 89

19 + 24 = 43 / 2 = 21 [21] = 84 < 89

22 + 24 = 46 / 23 = 89 [4] = 32 < 89 ➔ found

Number of comparisons: 4

Question 2. How many comparisons will be performed by an iterative binary search algorithm (as seen on the slides) if searching for 33? (Show your work.)

0 + 24 = 24 / 2 = 12 [12] = 61 > 33

0 + 11 = 11 / 2 = 5 [5] = 36 > 33

0 + 4 = 4 / 2 = 2 [2] = 18 < 33

3 + 4 = 7 / 2 = 3 [2] = 29 < 33

4 + 4 = 8 / 2 = 4 [4] = 32 < 33

5 + 4 ➔ Start is greater than end; function will stop.

Number of comparisons: 5