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 49? (Show your work.)

0 + 24 = 24 / 2 = 12 **[12] = 61 > 49**

0 + 11 = 11 / 2 = 5 **[5] = 36 < 49**

6 + 11 = 17 / 2 = 8 **[8] = 53 > 49**

6 + 7 = 13 / 2 = 6 **[6] = 41 < 49**

7 + 7 = 14 / 2 = 7 **[7] = 49 ← found**

Number of comparisons: 5

Question 2. How many comparisons will be performed by an iterative binary search algorithm (as seen on the slides) if searching for 64? (Show your work.)

0 + 24 = 24 / 2 = 12 **[12] = 61 < 64**

13 + 24 = 37 / 2 = 18 **[18] = 75 > 64**

13 + 17 = 30 / 2 = 15 **[15] = 70 > 64**

13 + 14 = 27 / 2 = 13 **[13] = 63 < 64**

14 + 14 = 28 / 2 = 14 **[14] = 68 > 64**

14 + 13 ← Start is greater than end; function will stop.

Number of comparisons: 5