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	25	26
12	15	18	29	32	35	41	49	56	57	59	60	61	63	67	70	71	72	75	77	83	84	88	89	94	97	99

Question 1. How many comparisons will be performed by an iterative binary search algorithm (as seen on the slides) if searching for 35? (Show your work.)

0 + 26 = 26 / 2 = 13 **[13] = 63 > 35**

0 + 12 = 12 / 2 = 6 **[6] = 41 > 35**

0 + 5 = 5 / 2 = 2 **[2] = 18 < 35**

3 + 5 = 8 / 2 = 4 **[4] = 32 < 35**

5 + 5 = 10 / 2 = 5 **[5] = 35 ➔ 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 87? (Show your work.)

0 + 26 = 26 / 2 = 13 **[13] = 63 < 87**

14 + 26 = 40 / 2 = 20 **[20] = 83 < 87**

21 + 26 = 47 / 2 = 23 **[23] = 89 > 87**

21 + 22 = 43 / 2 = 21 **[21] = 84 < 87**

22 + 22 = 44 / 2 = 22 **[22] = 88 > 87**

22 + 21 ← Start is greater than end; function will stop.

Number of comparisons: 5