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	16	18	21	22	25	31	39	46	47	49	50	51	53	57	60	61	62	73	78	83	84	85	90	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 97? (Show your work.)

0 + 26 = 26 / 2 = 13 [13] = 53 < 97

14 + 26 = 40 / 2 = 20 [20] = 83 < 97

21 + 26 = 47 / 2 = 23 [23] = 90 < 97

24 + 26 = 50 / 2 = 25 [25] = 97 < 97 ➔ 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 40? (Show your work.)

0 + 26 = 26 / 2 = 13 [13] = 53 > 40

0 + 12 = 12 / 2 = 6 [6] = 31 < 40

7 + 12 = 19 / 2 = 9 [9] = 47 > 40

7 + 8 = 13 / 2 = 6 [6] = 31 < 40

7 + 7 = 14 / 2 = 7 [7] = 39 < 40

8 + 7 ➔ Start is greater than end; function will stop.

Number of comparisons: 5