Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is:

86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

Starting from the current head position, what is the total distance (in cylinders) and order that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?

I. FCFS
II. SSTF
III. SCAN
IV. C-SCAN
V. C-LOOK

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(a) Suppose that the two last read disk blocks were 125 and 143, and that the blocks that are waiting to be read are:

86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

Determine the order that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?

I. FCFS
II. SSTF
III. SCAN
IV. C-SCAN
V. C-LOOK

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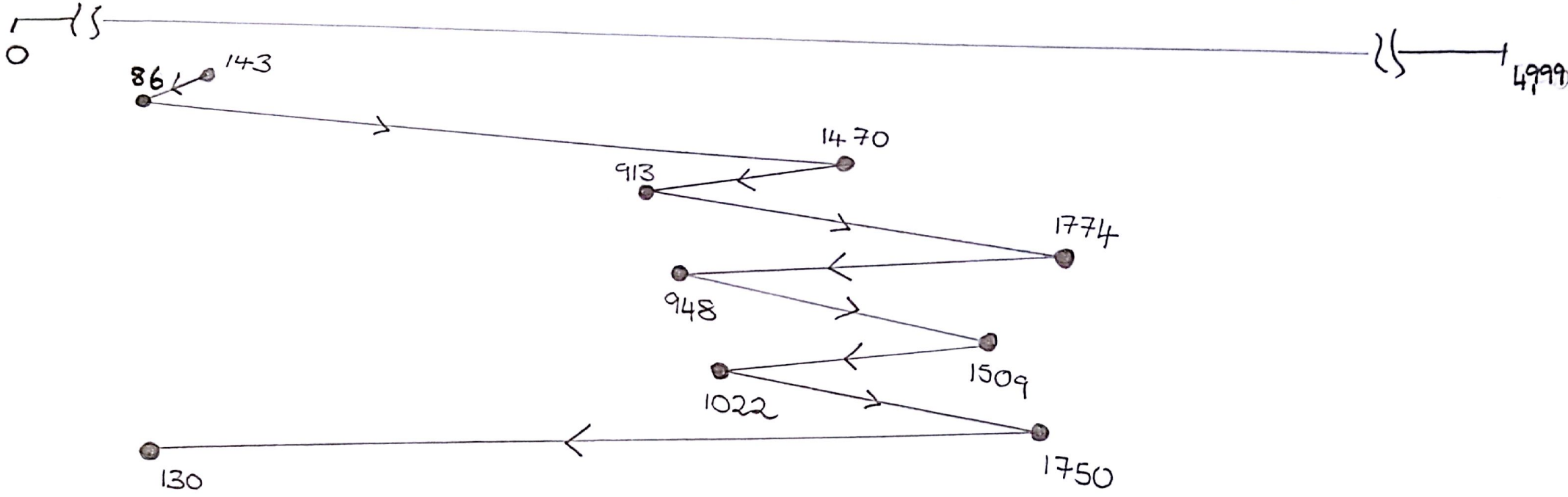
FCFS



Order : 143, 83, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

Displacement : $(143-86)+(1470-86)+(1470-913)+(1774-913)+(1774-948)$
$+(1509-948)+(1509-1022)+(1750-1022)+(1750-130)$

$= 57+1384+557+861+826+561+487+728+1620$
$= 7,081$

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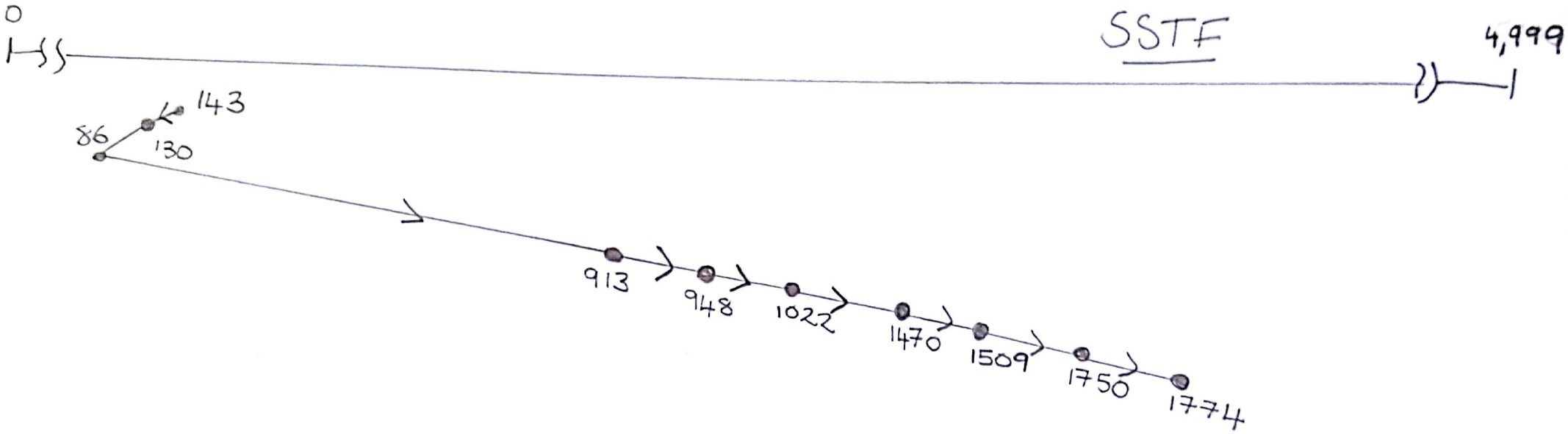

Order : 143, 130, 86, 913, 948, 1022, 1470, 1509, 1750, 1774

(1) Displacement : $(143-130)+(130-86)+(913-86)+(948-913)+(1022-948)$
$+(1470-1022)+(1509-1470)+(1750-1509)+(1774-1750)$

$= 13 + 44 + 827 + 35 + 74 + 448 + 39 + 241 + 24$

$= 1745$

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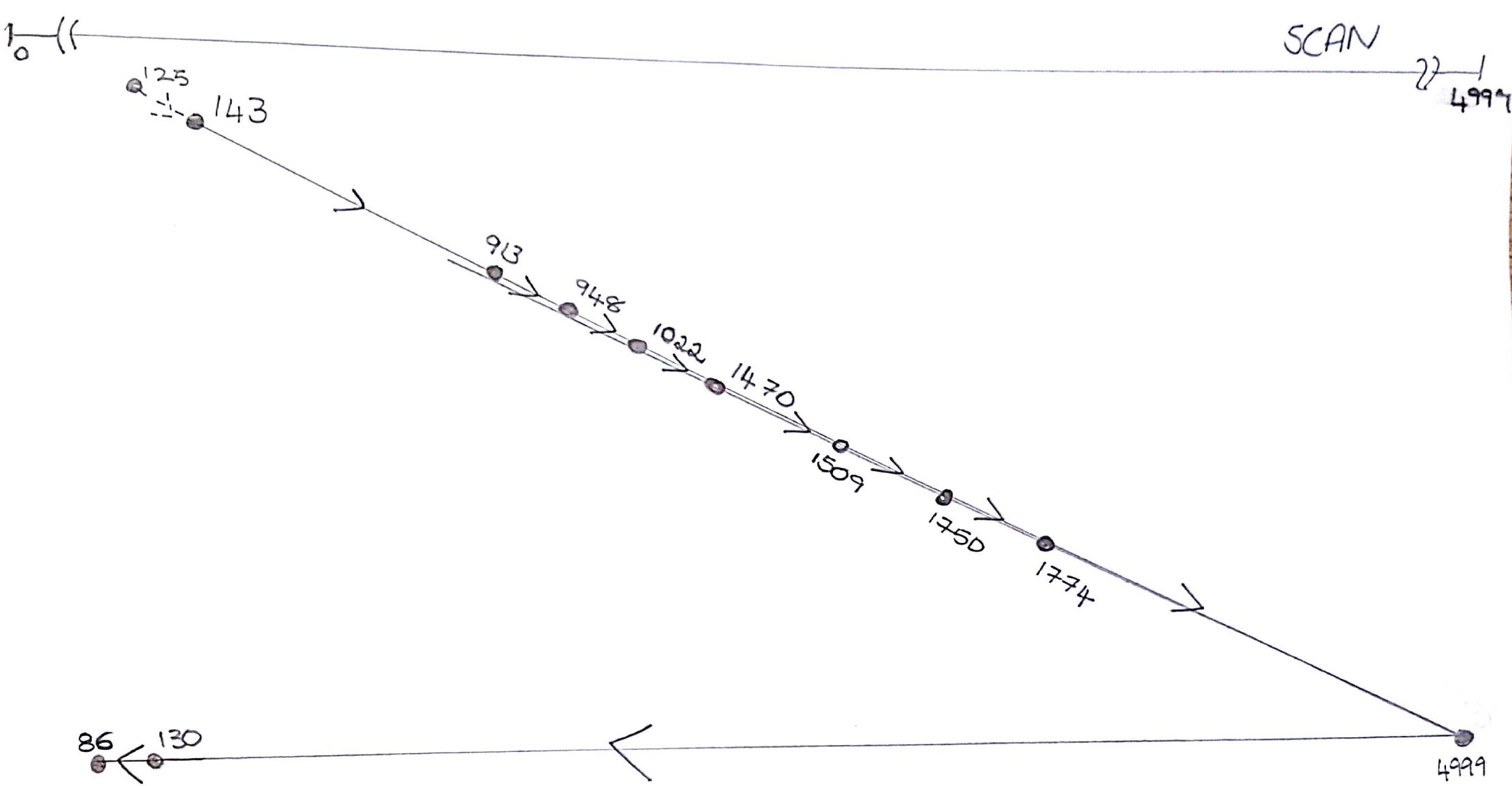

Order : 143, 913, 948, 1022, 1470, 1509, 1750, 1774, 4999, 130, 86

Displacement : $(913-143)+(948-913)+(1022-948)+(1470-1022)+(1509-1470)$
$+(1750-1509)+(1774-1750)+(4999-1774)+(4999-130)+(130-86)$

$= 770+35+74+448+39+241+24+3225+4869+44 = 9769$

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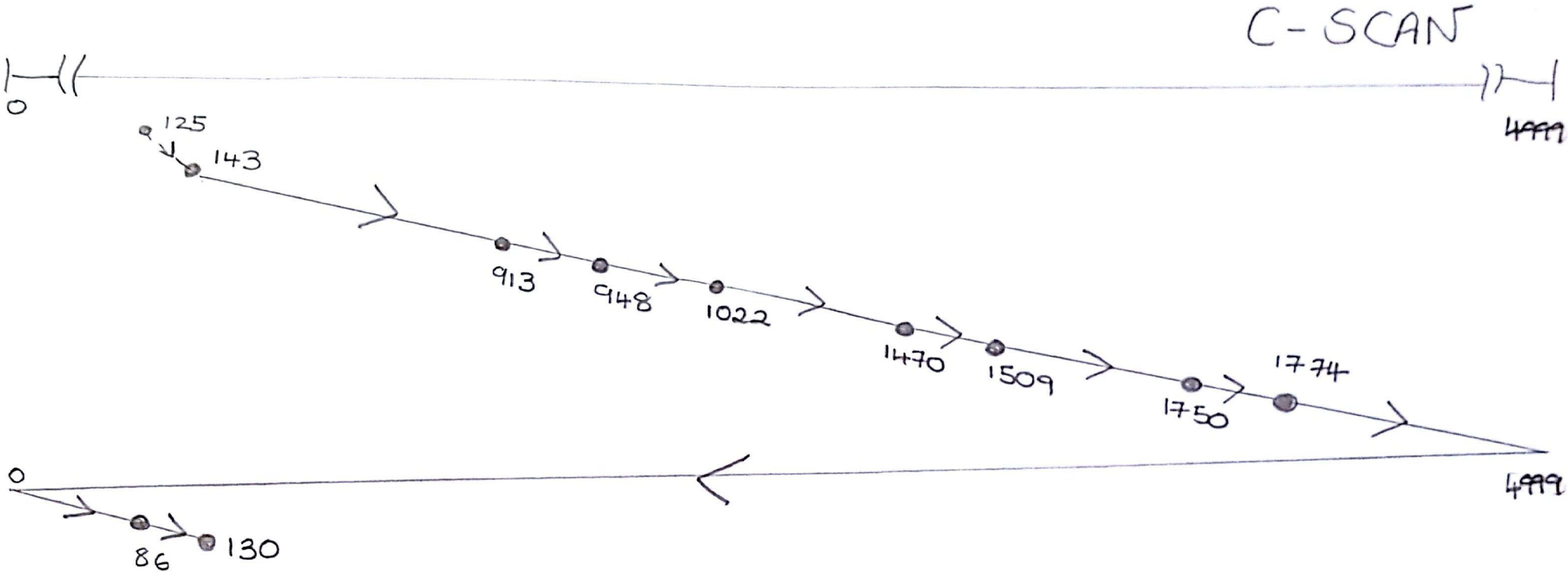

Order : 143, 913, 948, 1022, 1470, 1509, 1750, 1774, 4999, 0, 86, 130

Displacement : $(913-143)+(948-913)+(1022-948)+(1470-1022)+(1509-1470)$
$+(1750-1509)+(1774-1750)+(4999-1774)+(4999-0)$
$+(86-0)+(130-86)$

$= 770+35+74+448+39+241+24+3225+4999+86+44$
$= 9,985$

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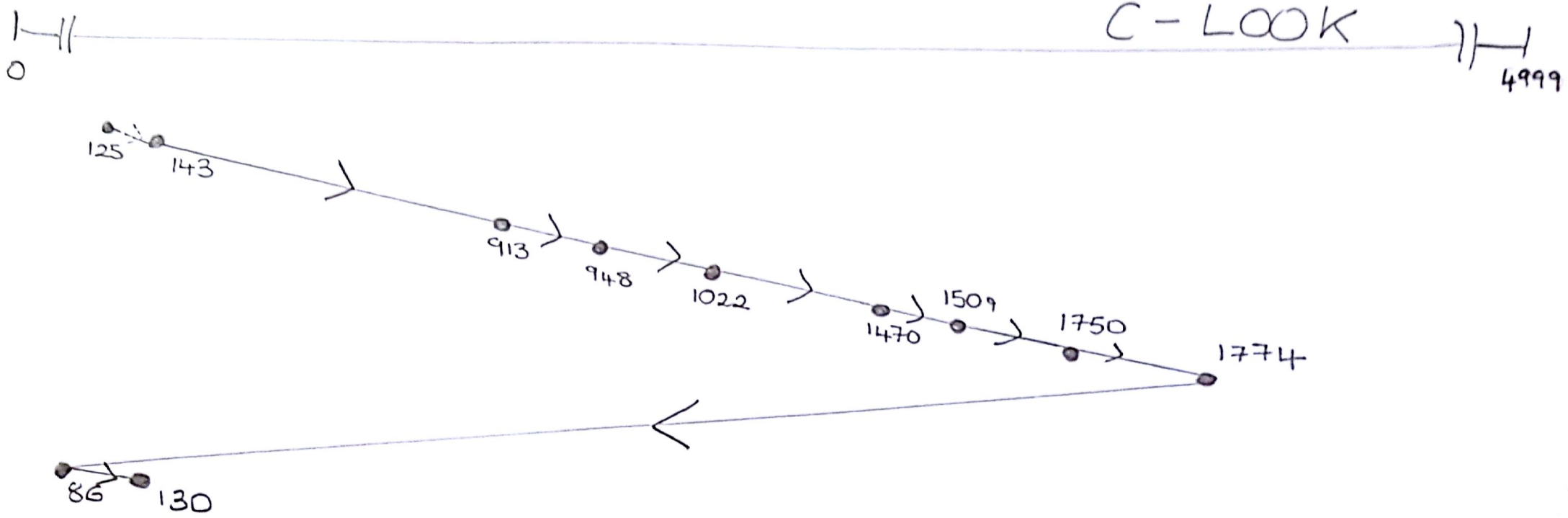

Order 143, 913, 948, 1022, 1470, 1509, 1750, 1774, 86, 130

Displacements : $(913-143)+(948-913)+(1022-948)+(1470-1022)+(1509-1470)$
$+(1750-1509)+(1774-1750)+(1774-86)+(130-86)$

$= 770 + 35 + 74 + 448 + 39 + 241 + 24 + 1688 + 44$

$= 3363$