

Given 11 blanks initially on which to perform a straight insertion sort,  
the maximum number of moves for each i-th item follows:

i-Item Maximum number of moves to sort in physical order

1	0	= 0	or 1 + -1
2	0 + 1	= 1	or 2 + -1
3	0 + 1 + 2	= 3	or 3 + 0
4	0 + 1 + 2 + 3	= 6	or 4 + 2
5	0 + 1 + 2 + 3 + 4	= 10	or 5 + 5
6	0 + 1 + 2 + 3 + 4 + 5	= 15	or 6 + 9
7	0 + 1 + 2 + 3 + 4 + 5 + 6	= 21	or 7 + 14
8	0 + 1 + 2 + 3 + 4 + 5 + 6 + 7	= 28	or 8 + 20
9	0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8	= 36	or 9 + 27
10	0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9	= 45	or 10 + 35
11	0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10	= 55	or 11 + 44

[list is rewritten by inserting 11-blanks between each of the above i-items,  
hence there are i or 11 more moves]

12	55 + 11 + 0	= 66	or 12 + 54
13	55 + 11 + 0 + 1	= 67	or 13 + 54
14	55 + 11 + 0 + 1 + 2	= 69	or 14 + 55
15	55 + 11 + 0 + 1 + 2 + 3	= 72	or 15 + 57
16	55 + 11 + 0 + 1 + 2 + 3 + 4	= 76	or 16 + 60
17	55 + 11 + 0 + 1 + 2 + 3 + 4 + 5	= 81	or 17 + 64
18	55 + 11 + 0 + 1 + 2 + 3 + 4 + 5 + 6	= 87	or 18 + 69
19	55 + 11 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7	= 94	or 19 + 75
20	55 + 11 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8	= 102	or 20 + 82
21	55 + 11 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9	= 111	or 21 + 90
22	55 + 11 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10	= 121	or 22 + 99

[list is rewritten by inserting 11-blanks between each of the above i-items,  
hence there are i or 22 more moves]

23	121 + 22 + 0	= 143	or 23 + 120
24	121 + 22 + 0 + 1	= 144	or 24 + 120
25	121 + 22 + 0 + 1 + 2	= 146	or 25 + 121
26	121 + 22 + 0 + 1 + 2 + 3	= 149	or 26 + 123
27	121 + 22 + 0 + 1 + 2 + 3 + 4	= 153	or 27 + 126
28	121 + 22 + 0 + 1 + 2 + 3 + 4 + 5	= 158	or 28 + 130
29	121 + 22 + 0 + 1 + 2 + 3 + 4 + 5 + 6	= 164	or 29 + 135
30	121 + 22 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7	= 171	or 30 + 141
31	121 + 22 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8	= 179	or 31 + 148
32	121 + 22 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9	= 188	or 32 + 156
33	121 + 22 + 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10	= 198	or 33 + 165

[list is rewritten by inserting 11-blanks between each of the above i-items,  
hence there are i or 33 more moves]

34	198 + 33 + 0	= 231	or 34 + 197
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#### Analysis

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Maximum number of moves is  $N * (b/2)$ .

Maximum number of moves with rewrite of new list is  $N * (b/2) + (INT(N/b) * b)$ , where  
b is the number of blanks inserted.