This is originally Christian's solution.

Assume we have a hash table with 9 entries, and the hash function is x mod 9.

a) Show the entries in the hash table after 1, 4, 8, 14, 22, 9 are inserted. Assume **separate chaining** is used.

1 % 9 = 1 22 % 9 = 4
4 % 9 = 4 9 % 9 = 0
8 % 9 = 8
14 % 9 = 5

Index: 0 1 2 3 4 5 6 7 8

9	1			4	14			8

↓

22

b) Show the entries in the hash table after 1, 8, 14, 22, 9 are inserted. Assume **linear probing** is used.

same

i = 1, 8, 5, 0, 4, 4

Index: 0 1 2 3 4 5 6 7 8

9	1			4	14	22		8

c) Assume **linear probing** is used.
Suppose now 10 is inserted. Now for the following searches, show the result of the search and how many entries need to be examined before the search return the result?

i) Search 5
ii) Search 15
iii) Search 19

10 % 9 = 1

9	1	10		4	14	22		8

Search 5:

9	1	10		4	14	22		8

5 % 9 = 5

3 entries were examined before null was found.

Search 15:

9	1	10		4	14	22		8

15 % 9 = 6

2 entries were examined before null was found.

Search 19:

9	1	10		4	14	22		8

19 % 9 = 1

3 entries were examined before null was found.