2. 19.

Keys : 12, 44, 13, 88, 23, 94, 11, 39, 20, 16, 5

- (2(i) + 5) Mod 11

Key	12	44	13	88	23	94	11	39	20	16	5
hash	7	5	9	5	7	6	5	6	1	4	4

Chaining

Index	0	1	2	3	4	5	6	7	8	9	10	size 11
		20			16	44	94	12		13		
					5	88	39	23				
						11						
Average :		1			3	6	3	3		1		=

Average : 17/11 = 1.55

Linear Probing

Index	0	1	2	3	4	5	6	7	8	9	10
	11	39	20	5	16	44	88	12	23	13	94
Average	7	7	2	11	1	1	2	1	2	1	5

40/11 = 3.6

Quadratic

index	0	1	2	3	4	5	6	7	8	9	10
	20	16		39	44	88	12	23	13	94	

$(4+5^2)\%\ 11$ → No found key 5

R. 2.22.

key	12	44	13	88	23	94	11	39	20	16	5
hash	7	5	9	5	7	6	5	6	1	4	4

Seondary hash $(7 - k \bmod 7)$

Index	0	1	2	3	4	5	6	7	8	9	10
	[illegible]	39	[illegible]	[illegible]	16	44	[illegible]	12	88	13	23
	11	1	20	5		94		1			

Index	0	1	2	3	4	5	6	7	8	9	10
	11	39	20	5	16	44	94	12	88	13	23

=/

Algorithm removeItem(k)

```
i ← h(k)
p ← 0
while p < N do
    x ← (i + p) mod N
    item ← A[x]
    if item = [illegible] then
        return NO-SUCH-KEY
    else if item.key() == k then
        A[x] ← AVAILABLE
        return item.value()
    else p ← p + 1
return NO_SUCH_KEY
```

```
Algorithm removeItem(k)
    item := findItem(k)
    if item != NO_SUCH_KEY
        old := item.getValue()
        item.setValue(AVAILABLE)
        return old
    return NO_SUCH_ITEM
```