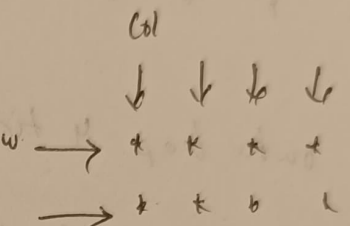
L3- Solve any Pattern Question — Nested loops

① * *

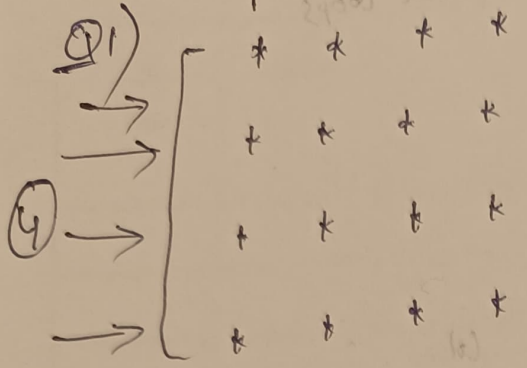
To solve any pattern -



1) Outer loops is for the lines
2) Inner loop is for the columns (focus on the columns)
3) for the outer loops, count the no of lines
4) for the inner loops, focus on the col. and connect them somehow to the rows
5) Print them inside the inner for loop
6) Observe symmetry (Optional)

→ at every lines we are printing 4 *

Q1)



4

```
* * * *
* * * *
* * * *
* * * *
```

row

0 → 4

1 → 4

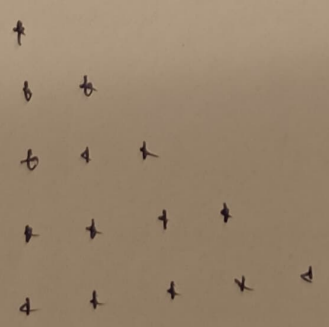
2 → 4

3 → 4

for the outer loop 4 times

```
for (int i = 0; i < 4; i++)
{
    for (int j = 0; j < 4; j++)
    {
        cout << "*" << endl;
    }
    cout << endl;
}
```

Q2)



→ 5 — rows (outer loop)

rows

0 → 1

1 → 2

2 → 3

3 → 4

```
for(int i=0; i<n; i++)
{ for(int j=0; j<=i; j++)
  { cout<<"*";
  }
  cout<<endl;
}
```

Q3

① 1

② 1 2

③ 1 2 3

① → 3 3 Lines

② →

```
for(int i=1; i<=n; i++)
  for(int j=1; j<=i; j++)
    cout<<j<<" ";
  cout<<endl;
```

row	col
①	1
②	1 — 2
③	1 — 3

Q4

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

for every row we are printing = row nos.

```
for(int i=0; i<=n; i++)
    for(int j=0; j<=i; j++)
        cout << i //row number
```

Q5

```
* * * *
* * * *
* * *
* *
*
```

① → no of lines ⇒ 45 (n)

② → Total rows − row nos + 1

⇒ n − row + 1

e.g. n=5 row=1

5 − 1 + 1 = 5 | row=1, col=5

1 → 5

2 → 4

3 → 3

4 → 2

5 → 1