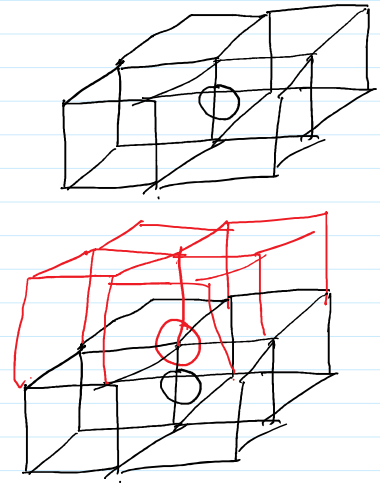
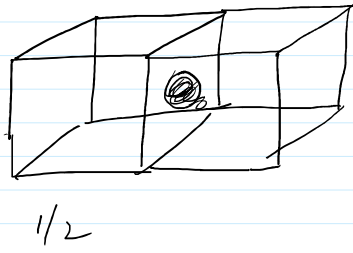
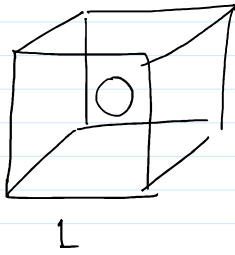
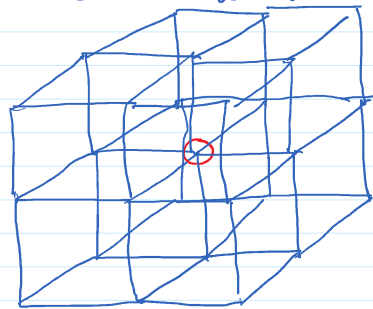
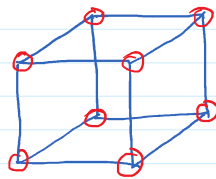


## Number of Atoms in a unit cell



## Primitive cubic unit cell

1. Primitive cubic unit cell has atoms only at its corner. Each atom at a corner is shared between eight adjacent unit cells.

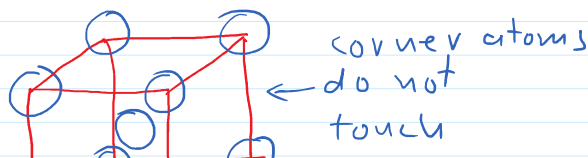


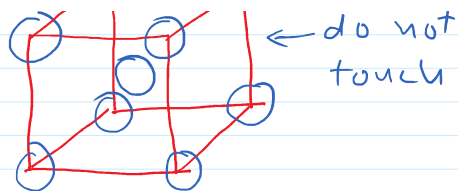
2.  $\frac{1}{8}$  of each atom is contributed towards a unit cell.
3. Each cubic unit cell has 8 atoms on its corners, the total number of atoms in one unit cell =  $8 \times \frac{1}{8} = 1$ .



## Body centered Cubic unit cell

1. A body-centred cubic (bcc) unit cell has an atom at each of its corners and also one atom at its body centre.



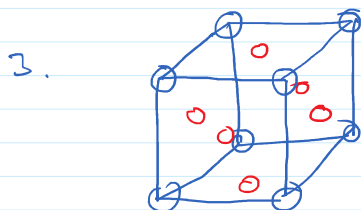
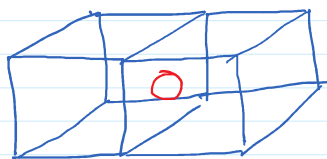


Body centre atoms touch with corner atoms.

2. One eighth of each atom present at corner is contributed towards a unit cell. Atom present at body centre is completely present inside the unit cell, thus its contribution towards unit cell is 1.
3. Each cubic unit cell has 8 atoms on its corners and one atom at body centre, the total number of atoms in one unit cell is :  $8 \times \frac{1}{8} + 1 \times 1 = 2$

Face centered unit cell

1. A face-centred (fcc) unit cell has an atom at each of its corners and also one atom at each of its face centre.
2. One eighth of each atom present at corner is contributed towards a unit cell. Half of each atom present at face centre is contributed towards a unit cell.



Each cubic unit cell has 8 atoms on its corners and six atoms at face centre, the total number of atoms in one unit cell is :  $8 \times \frac{1}{8} + 6 \times \frac{1}{2} = 4$ .