Particles are spread apart

Particles move slowly through a container
Solid

- Particles are tightly packed and close together
- Particles do move but not very much
- Definite shape and definite volume (because particles are packed closely and do not move)
- Most solids are crystals
- Crystals are made of unit cells (repeating patterns)
  - The shape of a crystal reflects the arrangement of the particles within the solid
Types of Solids

- Crystalline material
- Single Crystal
- Polycrystalline
- Amorphous
Polycrystalline material

- These ordered regions, or single crystal regions, vary in size & orientation with respect to one another.
- These regions are called grains (or domains) & are separated from one another by grain boundaries.
Examples of amorphous material include amorphous silicon, plastics, & glasses.
What about translation?

- Translations are restricted to only certain values to get symmetry (periodicity)
Each block is represented by a point
LATTICE

infinite, perfectly periodic array of points in a space
An ideal crystal is constructed by the infinite repetition of identical groups of atoms.