(a) **SINGLE PHASE : -** When matter exists in only one of these forms and the substance is said to be "homogenous"

(b) **TWO - PHASE MIXTURE:** - When two phases exist together (substance is "Heterogeneous")

e.g. When solid is being melted into liquid, or when liquid is being transformed into vapour

A substance can also exist as a mixture of ***three*** phases.

(Discussed when dealing with TRIPPLE POINT"- the point at which water exists in all three forms – solid, liquid and vapour at the same time.)

8. **TWO PROPERTY RULE**
Have discussed concept of properties, state and phase.

When two independent properties of a substance are defined, then all other properties (or the state) are defined. If the state of the substance is known, then the phase or the mixture of phases of the substance are also known, e.g. water between its freezing and boiling points is defined by its temperature and pressure only.

9. **PROCESS**
This is an "operation", or "operations" that are carried out on a substance, causing a change of state

OR

When the state changes from one equilibrium state to another.

Example: Expansion, compression, conversion of water into steam.

10. **CYCLE**
This is when processes are carried out on a substance such that at the end, the substance is returned to its original state.

11 **THE CONSTANT TEMPERATURE PROCESS (ISOTHERMAL PROCESS)**
In this type of process, the temperature remains constant throughout the process.

12. **CONSTANT PRESSURE PROCESS (ISOPIESTIC PROCESS)**
This is when the pressure remains CONSTANT throughout the process.

13. **CONSTANT VOLUME PROCESS (ISOCHORIC PROCESS)**
This is when the volume remains constant throughout the process.

14. **ENERGY**
This is the capacity that a body possesses which enables it to do work

15. **WORK**
If a force acting on a boundary of a specified system is moved through a distance, then work is said to be done "on" or "By" the system.

*WORK = FORCE * DISTANCE*

16. **WORK and the PRESSURE – VOLUME DIAGRAM**
NOTE:
The PV diagram for compression has the same shape but proceeds in the OPPOSITE DIRECTION.

If a series of readings is taken for an expansion or compression process and plotted on a graph, the curve shown in Figure 1 will be obtained