

Engineering Drawing MEng 2062

Chapter Five

Auxiliary Views

Introduction

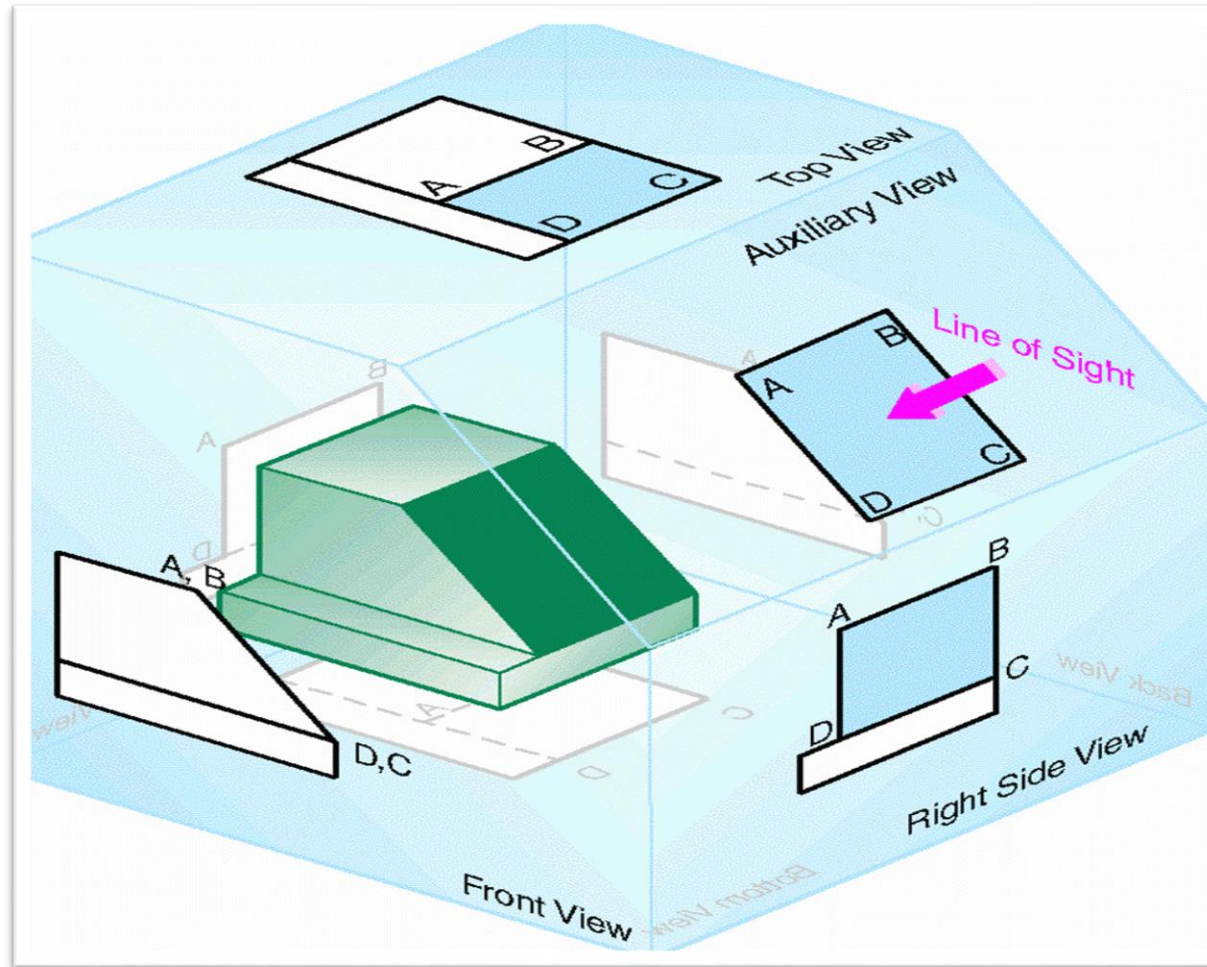
- It is already seen how the **principal view** of an object can be represented using the glass box approach to surface identification. However, when an object has a surface that is **not parallel (slanted)** to any side of the glass box additional view is required for the sake of **true shape** and **size** called **auxiliary view**. The plane used to represent the auxiliary view is **auxiliary plane**.

Introduction

- Slanted surfaces that need auxiliary plane are **Inclined** and **Oblique** surfaces.
- Inclined surfaces need **single** auxiliary plane to represent their **true shape** and **size**; whereas
- oblique surfaces need **two** auxiliary plane to represent their **true shape** and **size**.

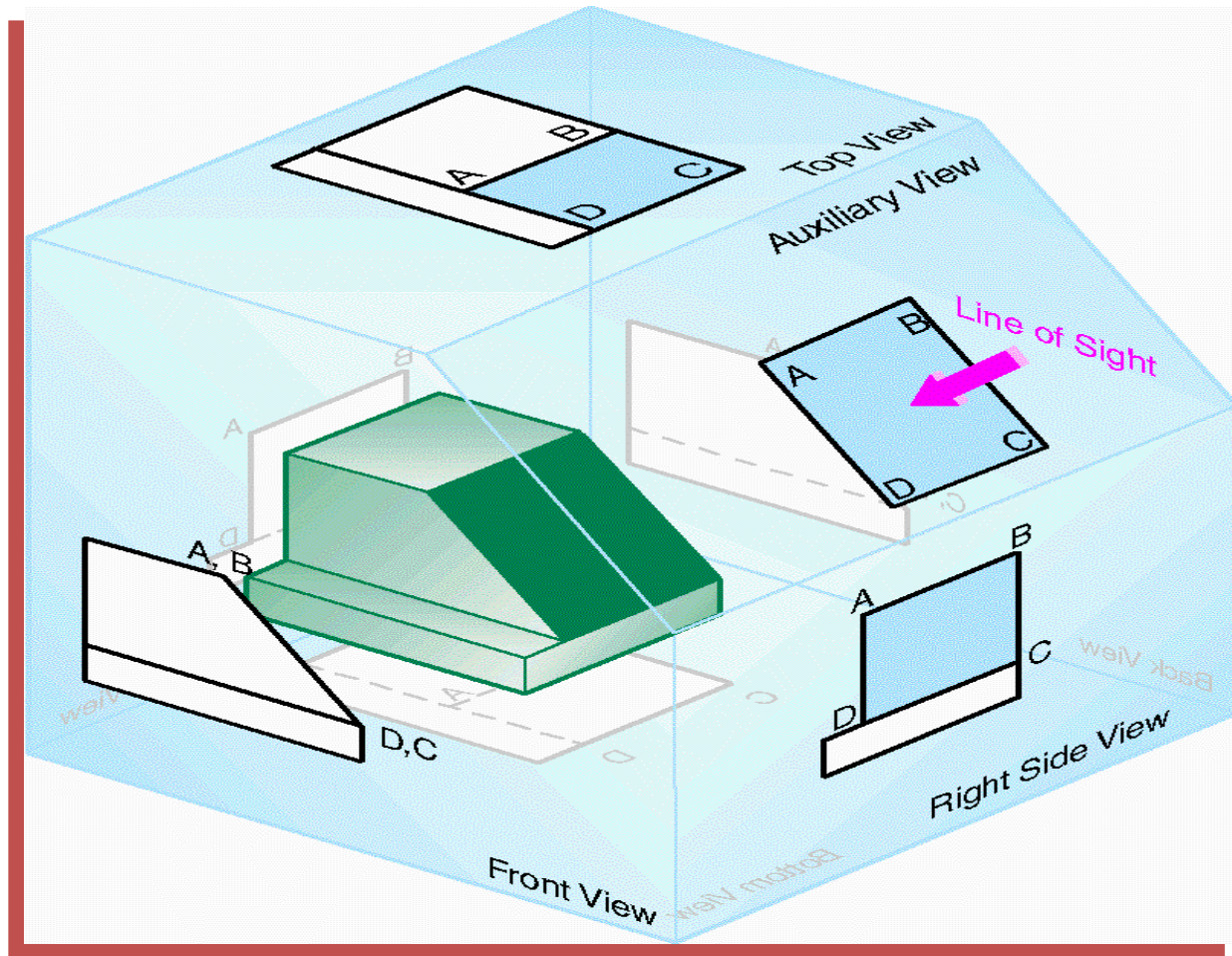
Introduction

- By adding another plane (auxiliary plane) parallel to slanted surface, the glass box method can be used.

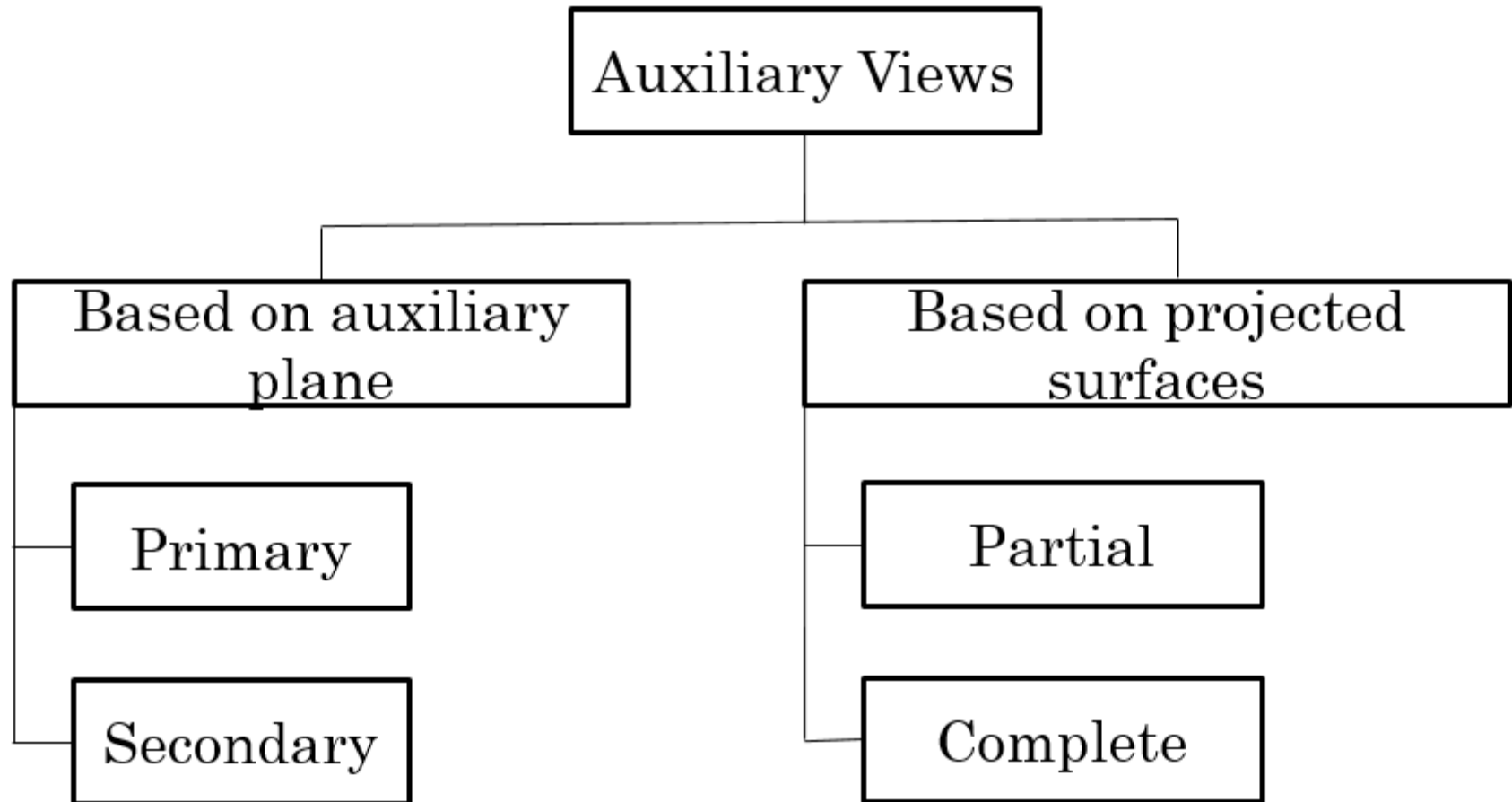


Introduction

- The plane (auxiliary plane) that is parallel to the **slanted** surface is unfolded to show as **true shape and size**.



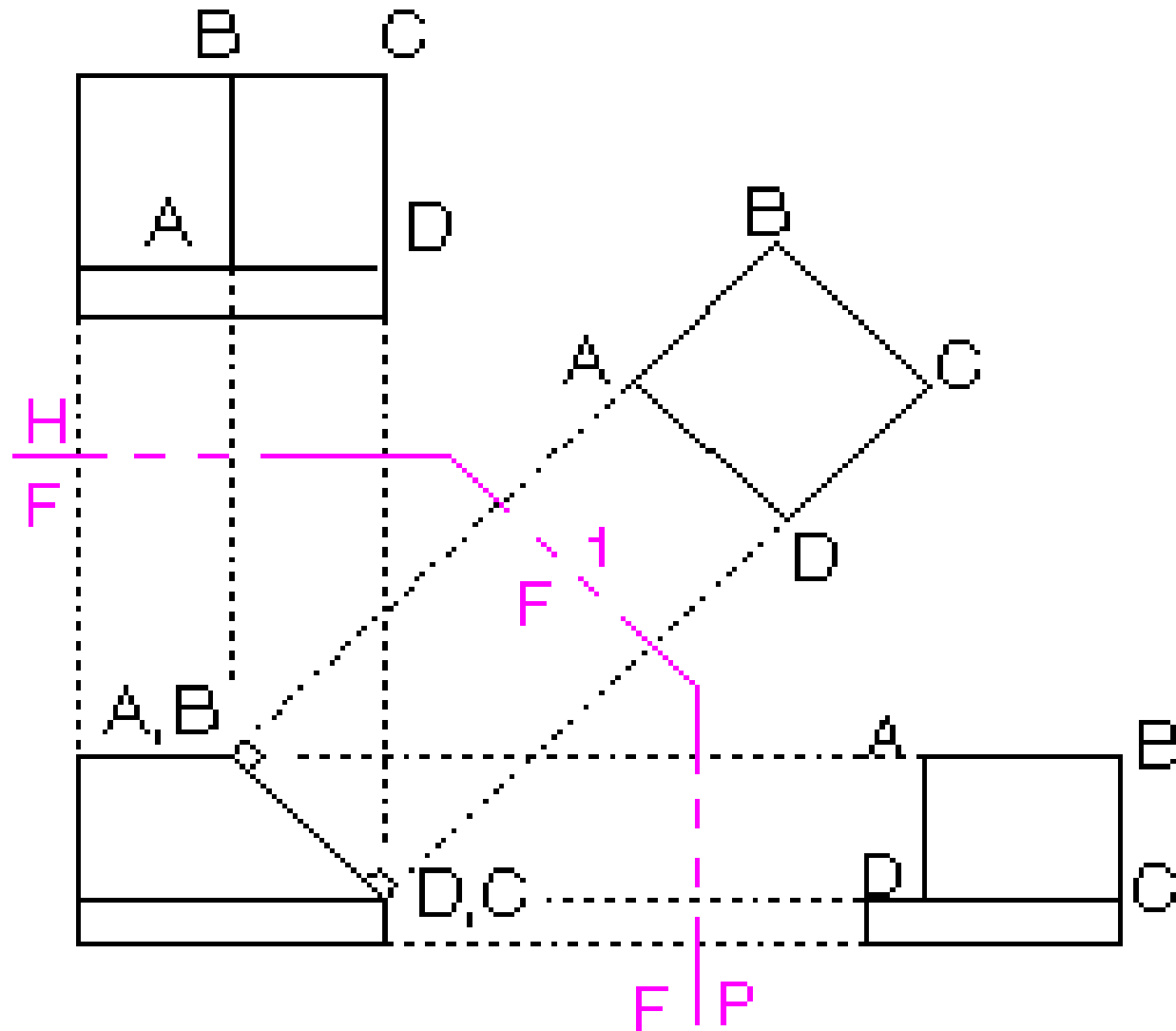
Types of Auxiliary Views



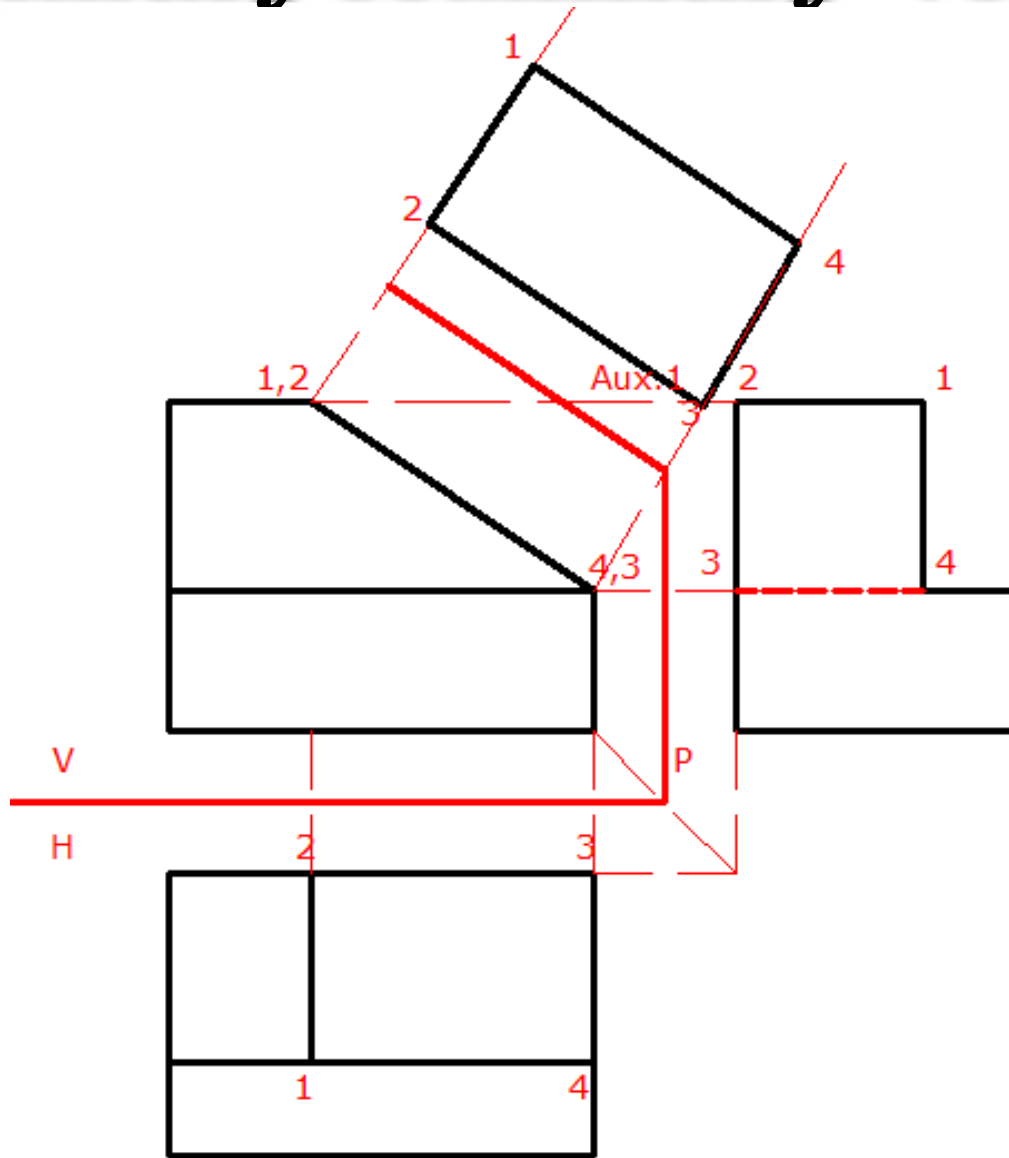
Primary Auxiliary Views

- **Primary auxiliary views** are views that can be represented with their **true shape** and **size** using **single auxiliary plane** which is drawn parallel to slanted surface of an object.
- **Primary auxiliary views** are applicable for **inclined surface** of an object.

Primary Auxiliary Views



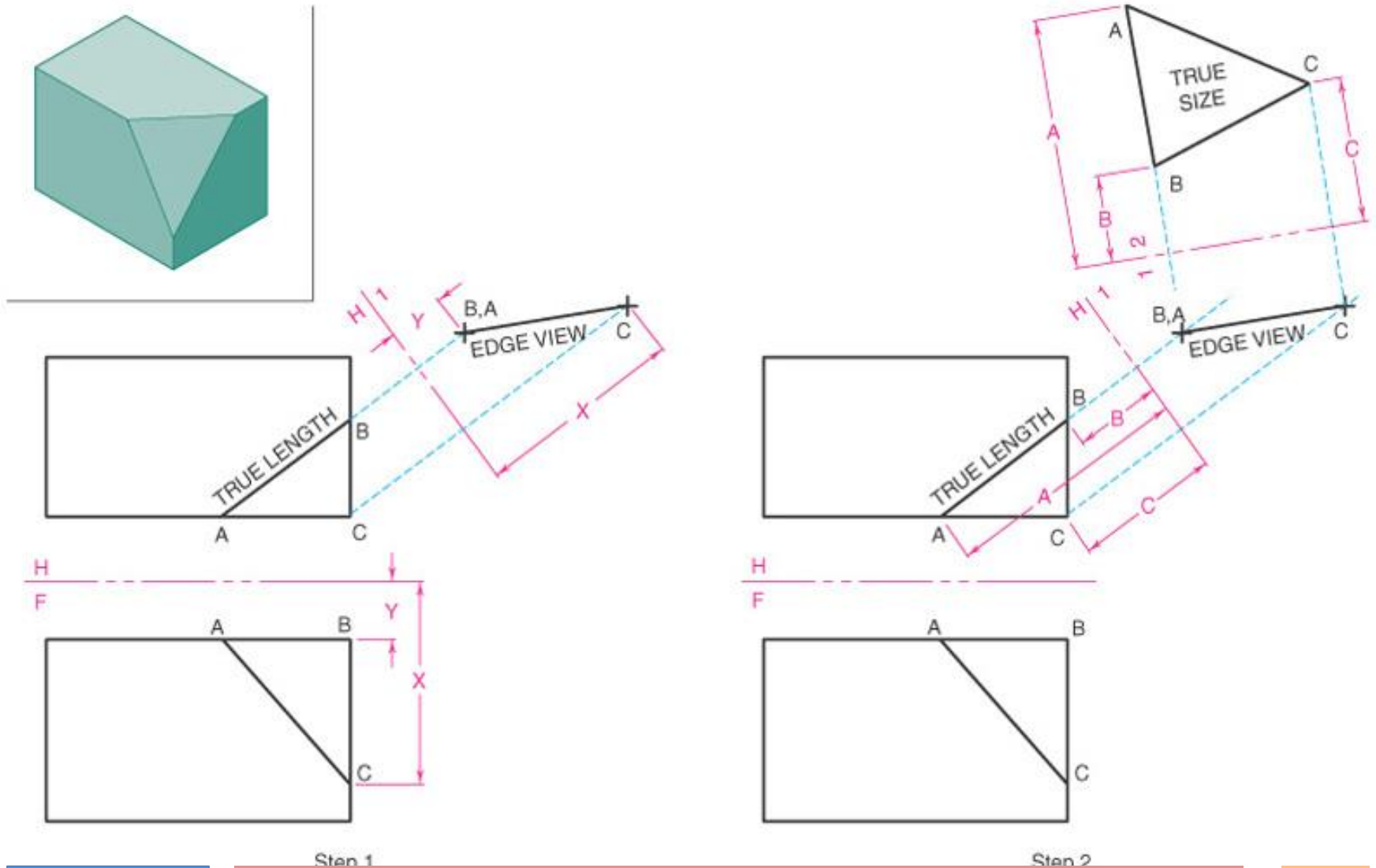
Primary Auxiliary Views



Secondary Auxiliary Views

- Secondary auxiliary views are views that can be represented using **two auxiliary plane**. The first auxiliary plane is drawn perpendicular to one of the **true length** of slanted surface to get **edge view**; and then the second auxiliary plane is drawn parallel to the edge view to represent the auxiliary view with its **true shape** and **size**.
- Secondary auxiliary views are applicable for **oblique surface** of an object.

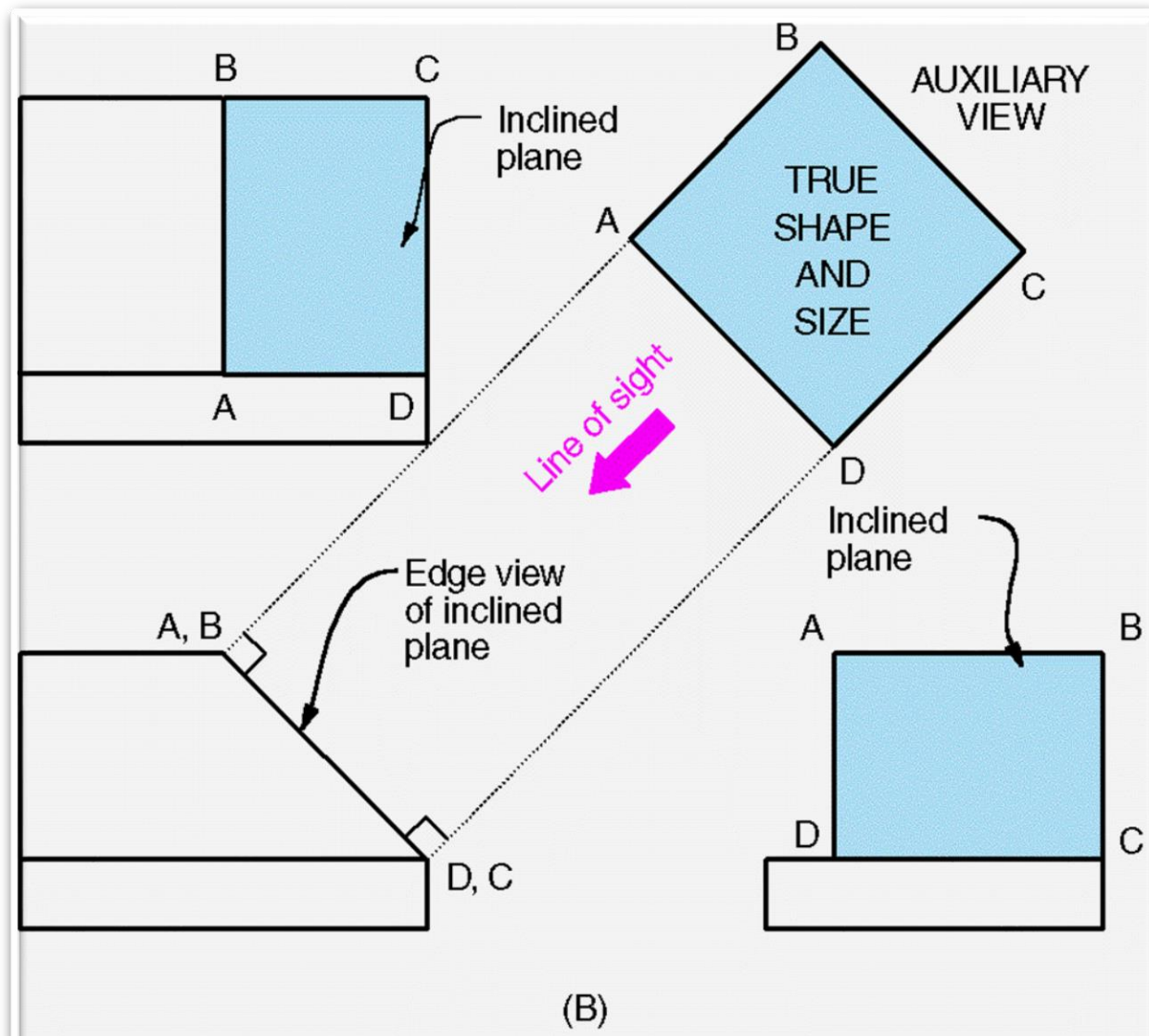
Secondary Auxiliary Views



Partial Auxiliary Views

- When **only the slanted surface** of an object is projected and represented on auxiliary plane, the view obtained is called **partial auxiliary view**.
- It is **more economical** to draw partial auxiliary views than complete auxiliary views.

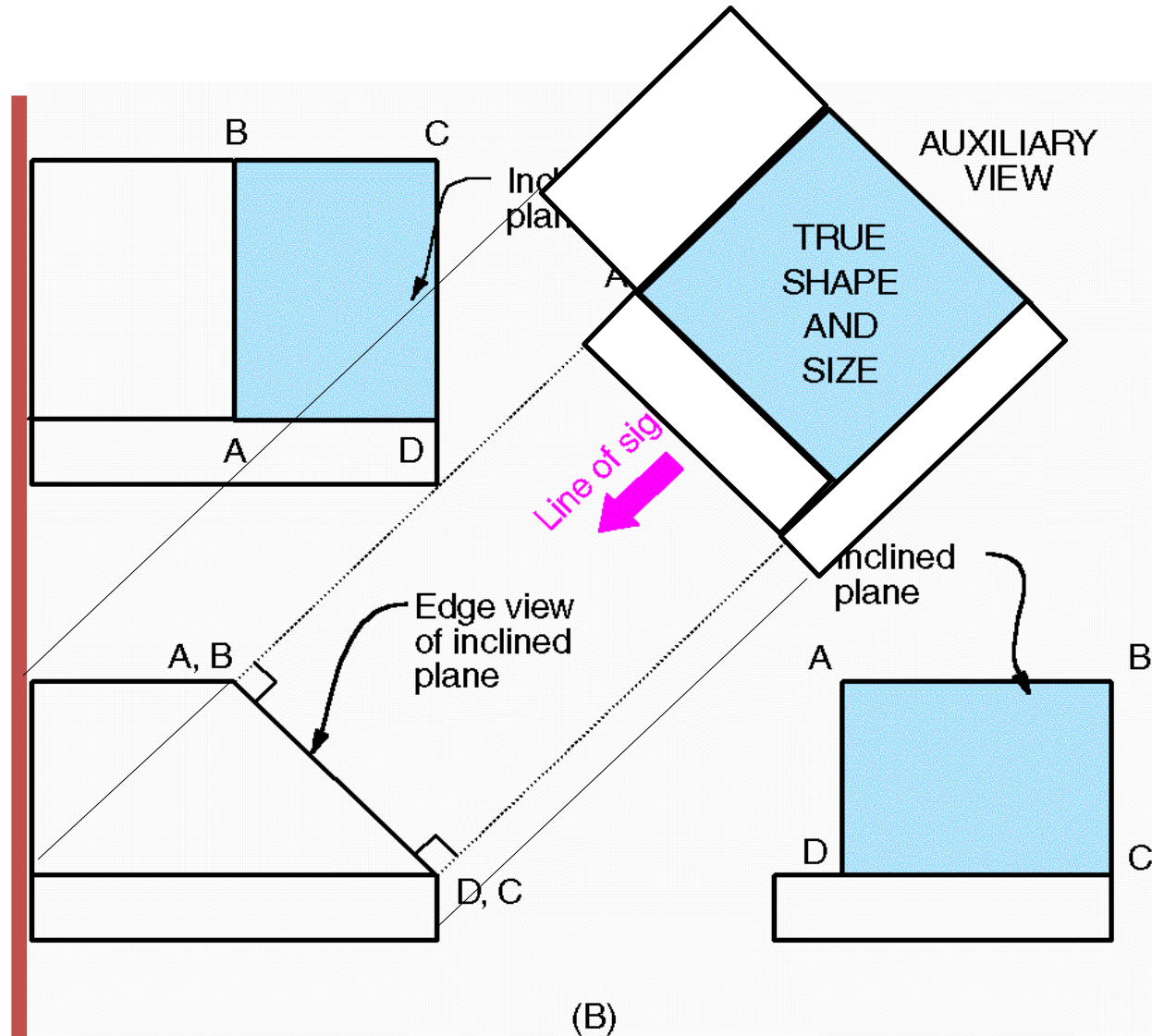
Partial Auxiliary Views



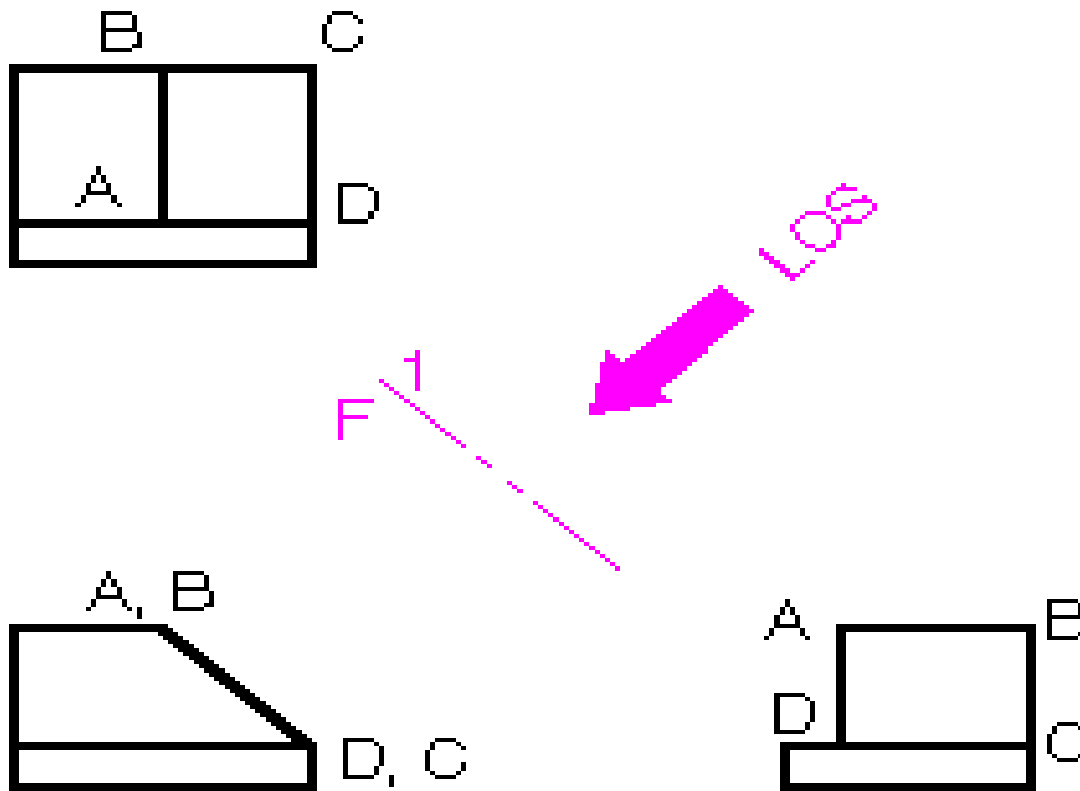
Complete Auxiliary Views

- When **all the surfaces** of an object are projected and represented on auxiliary plane, the view obtained is called **complete auxiliary view**.
- **Complete auxiliary views** are drawn when necessary.

Complete Auxiliary Views



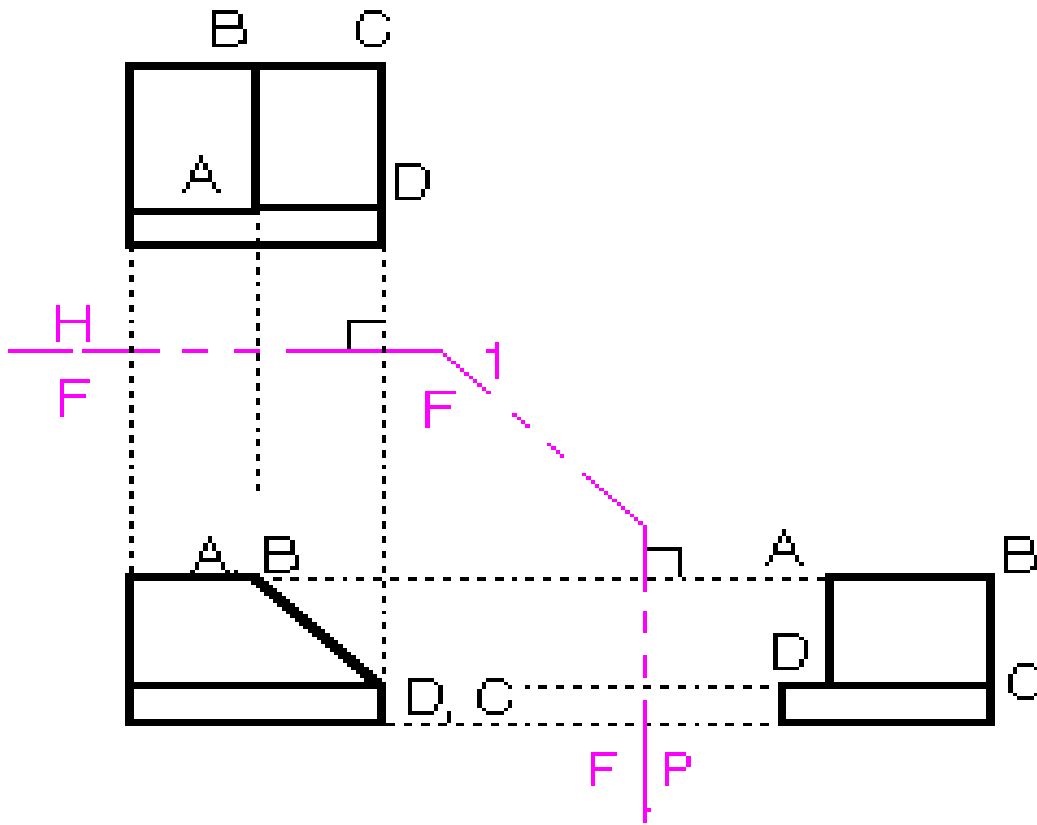
Steps to Draw Auxiliary Views, (primary A.V.)



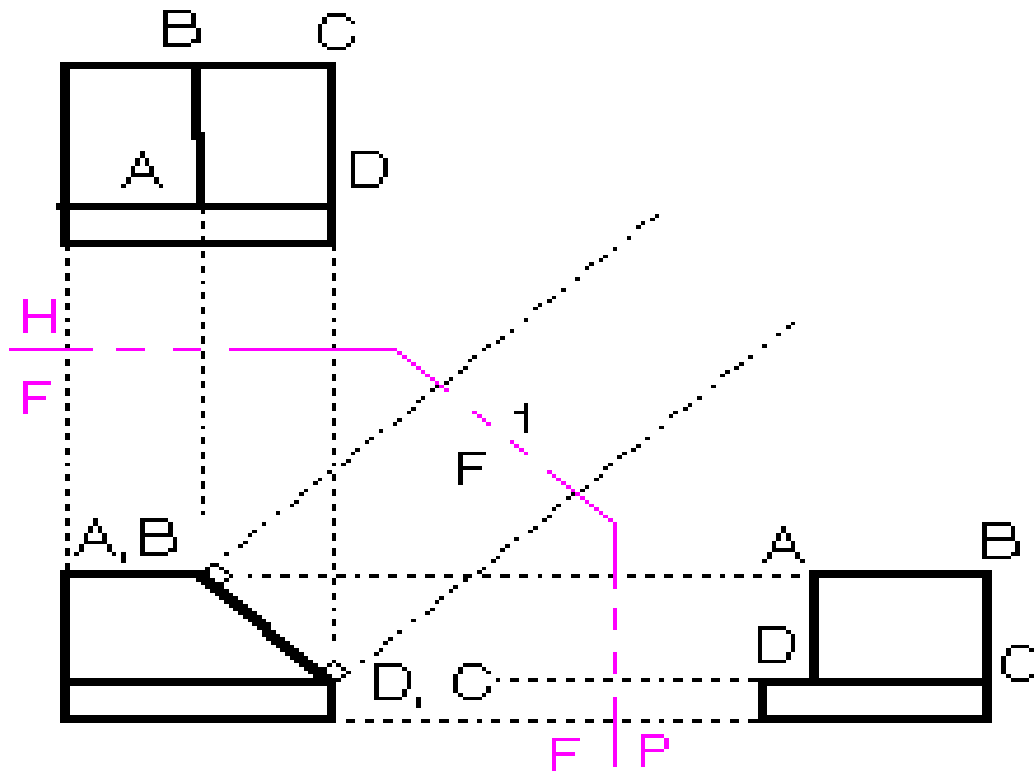
- Step 1: Draw **auxiliary plane line** at any distance and parallel to slanted surface (edge view).

Steps to Draw Auxiliary Views, (primary A.V.)

- Step 2: Add **principal plane lines** as shown so they will auxiliary plane line.



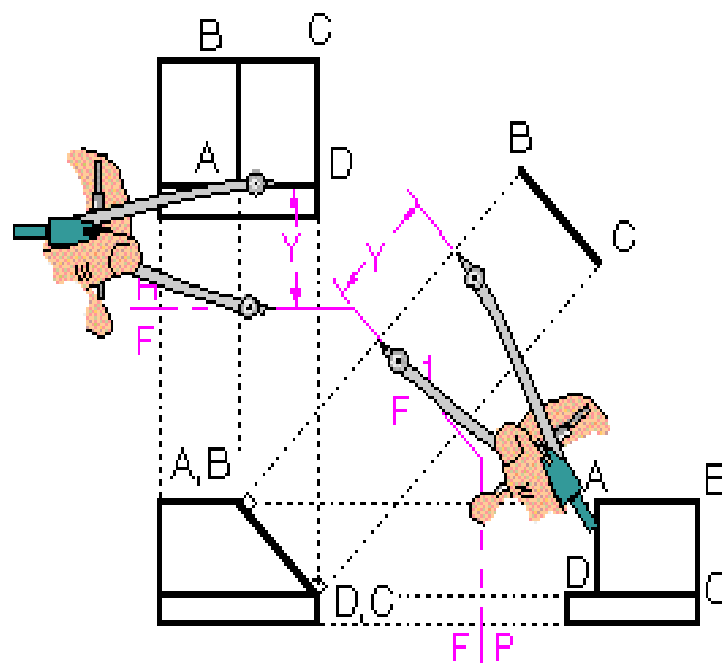
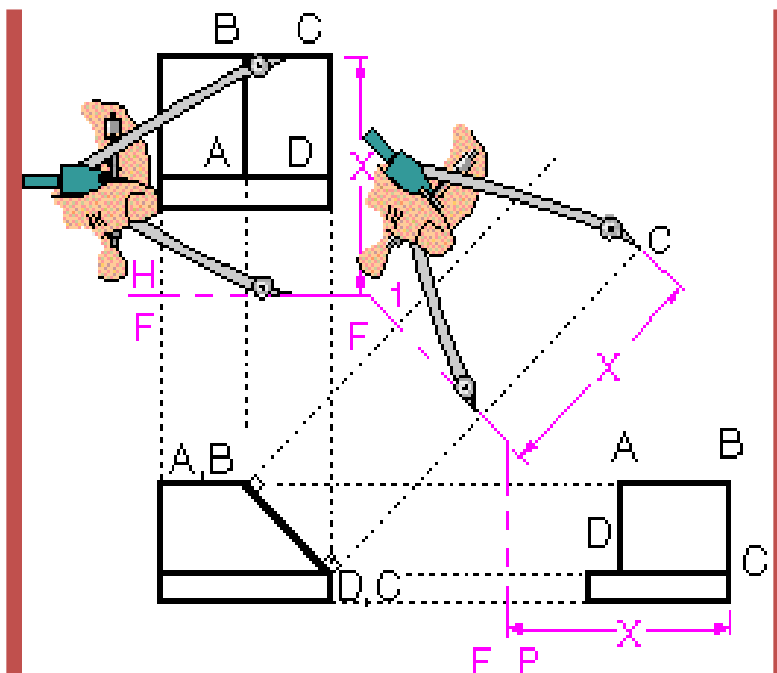
Steps to Draw Auxiliary Views, (primary A.V.)



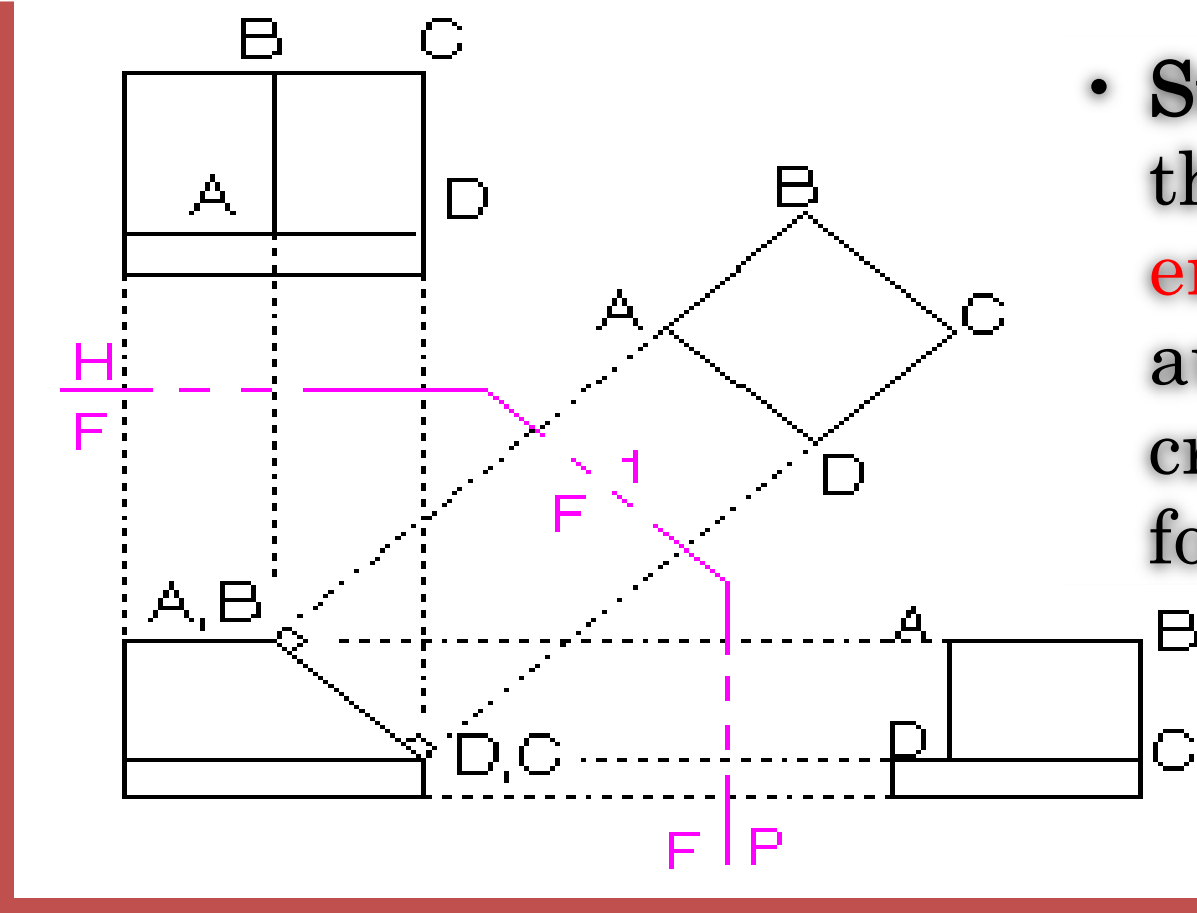
- **Step 3:** Project **required lines of projection** from slanted surface to perpendicular to auxiliary plane line.

Steps to Draw Auxiliary Views, (primary A.V.)

- **Step 4:** Transfer the distance between either of **principal plane to endpoints** of slanted surface to its new position from **auxiliary plane line** in the auxiliary view.

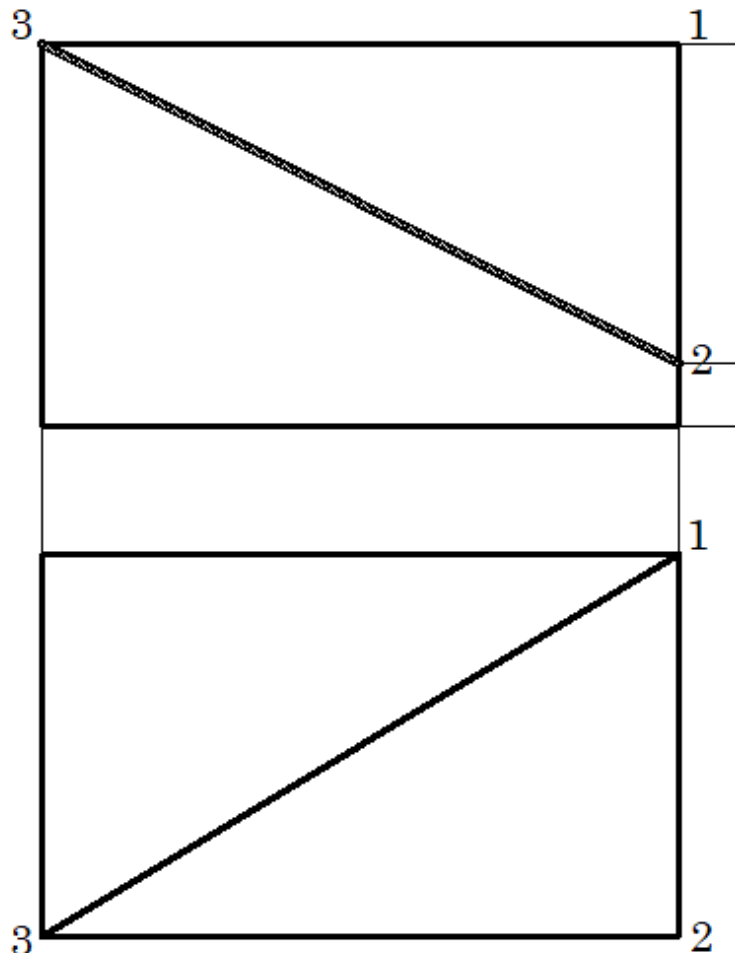


Steps to Draw Auxiliary Views, (primary A.V.)

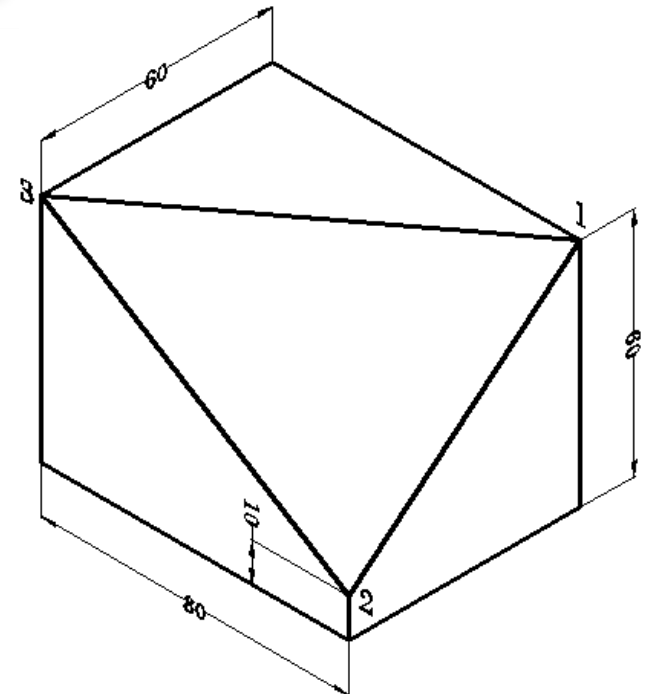


- **Step 5:** Connect the **transferred endpoints** in the auxiliary view to create its final form.

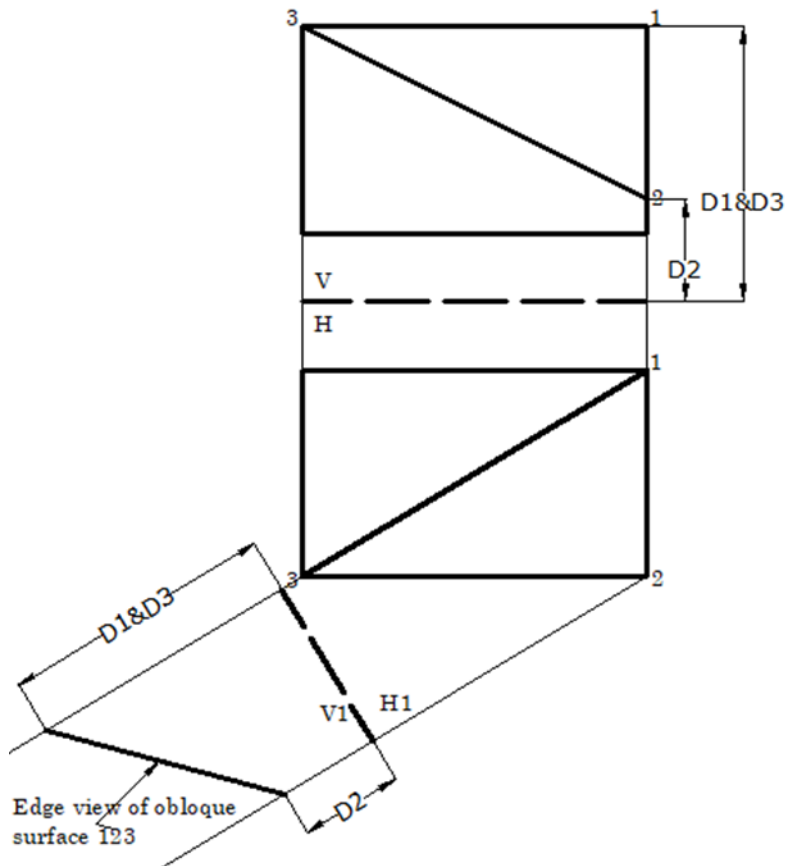
Steps to Draw Auxiliary Views, (Secondary A.V.)



Step 1: Draw the top and front view of the object;

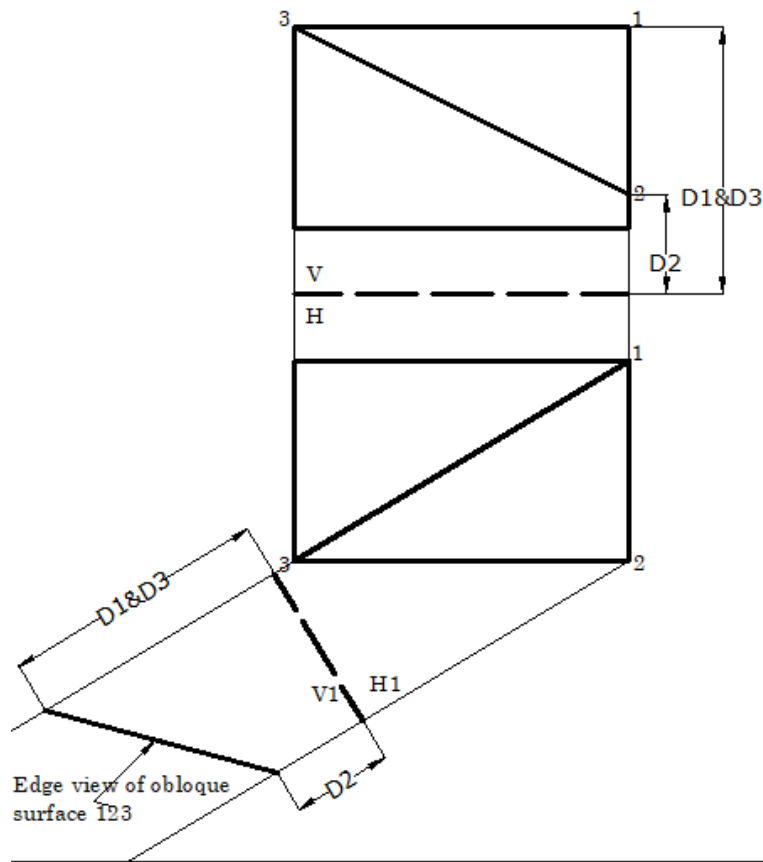


Steps to Draw Auxiliary Views, (Secondary A.V.)



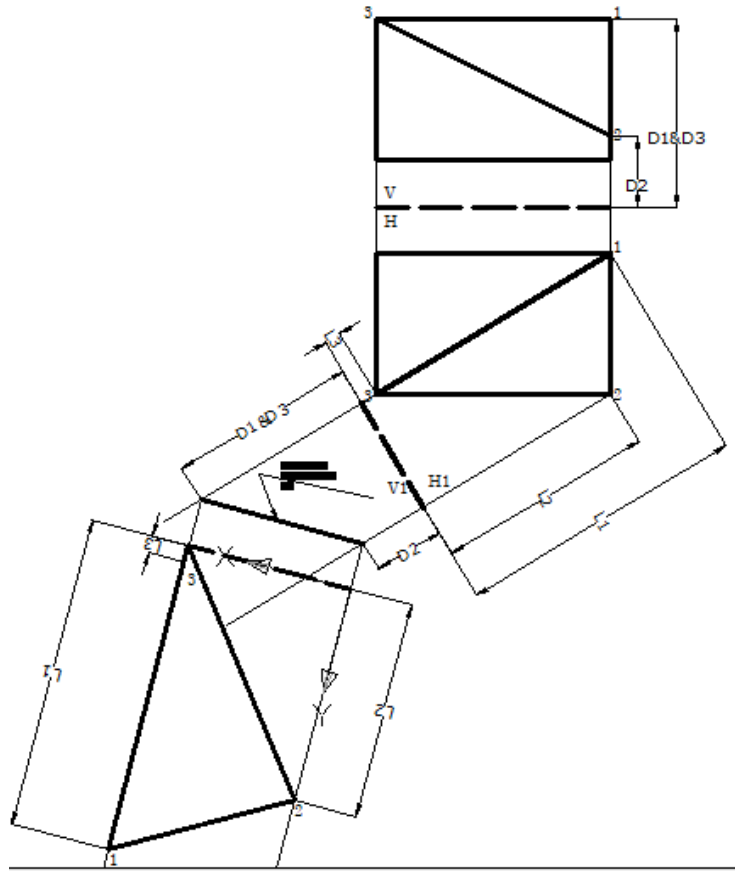
Step 2: Draw the edge view of the oblique surface by drawing the construction lines from the top view and draw V1/H1 reference lines

Steps to Draw Auxiliary Views, (Secondary A.V.)



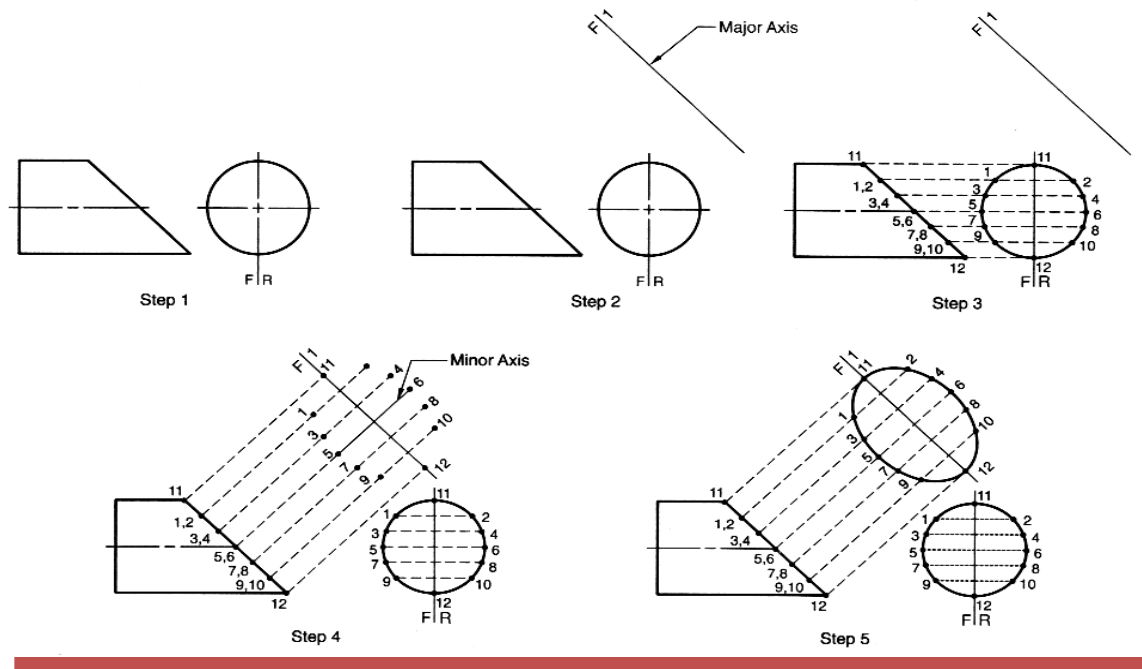
Step 3: Complete the edge view: with a compass by transferring point 1, 2, and 3 from the top view to the auxiliary view. The straight line obtained from the projection is an edge view of the surface 123.

Steps to Draw Auxiliary Views, (Secondary A.V.)



Step 4: 4. Draw the secondary auxiliary view: project perpendicular construction lines from the edge view and draw reference line V2/H2 line. The new plan is a partial secondary auxiliary view that shows the true shape of surface 123.

Curves in Auxiliary Views

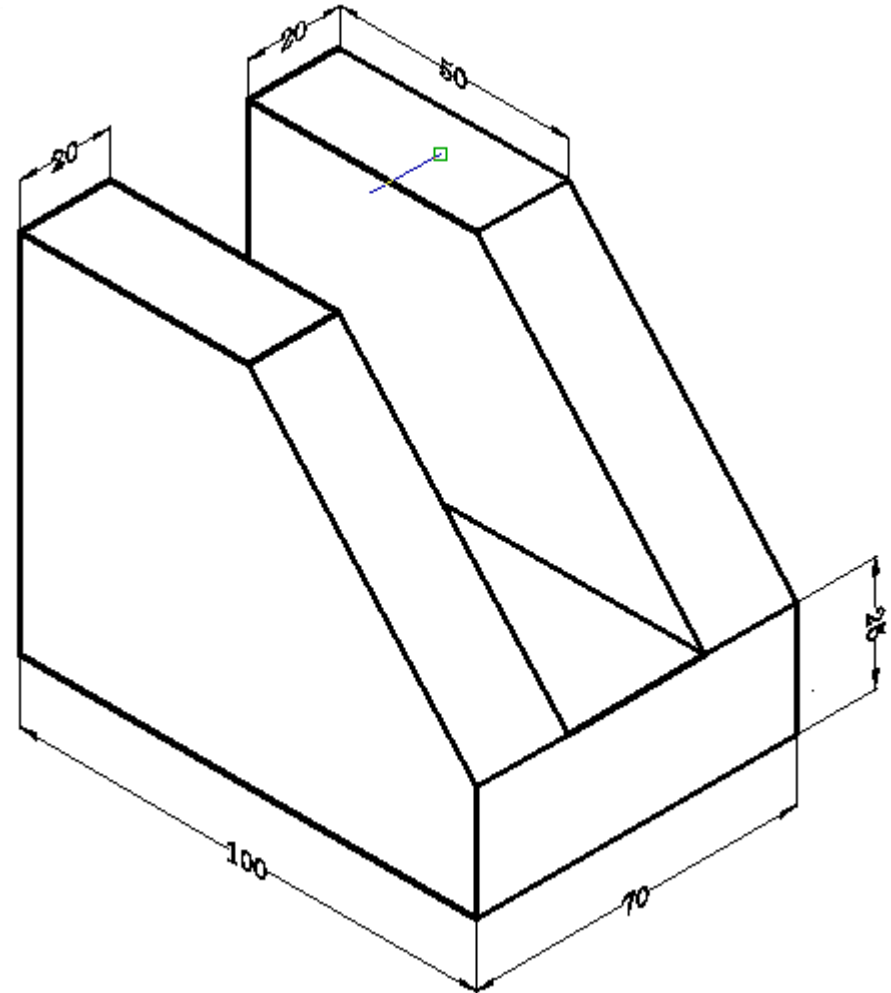
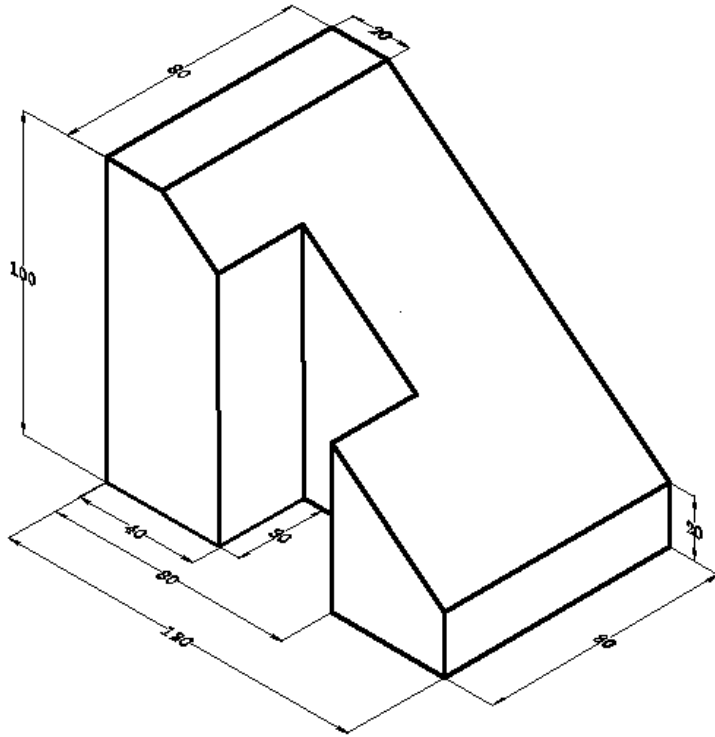


- Curves in auxiliary views are handled similar to **offset method (division approach)** used in pictorial drawing.

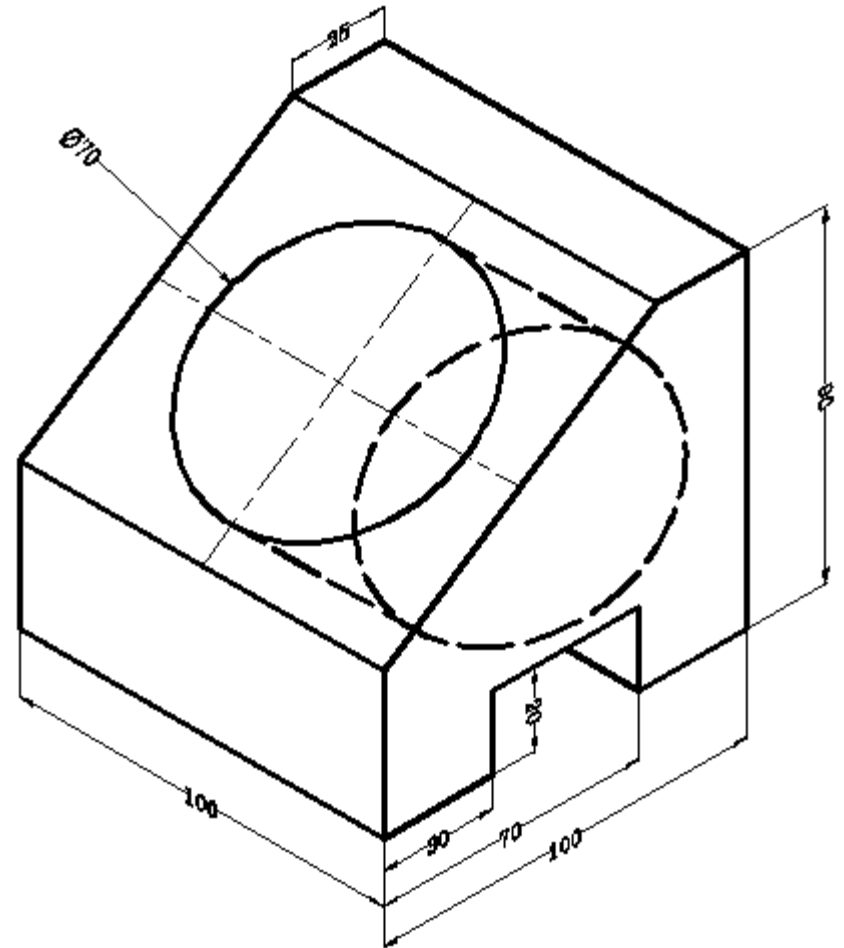
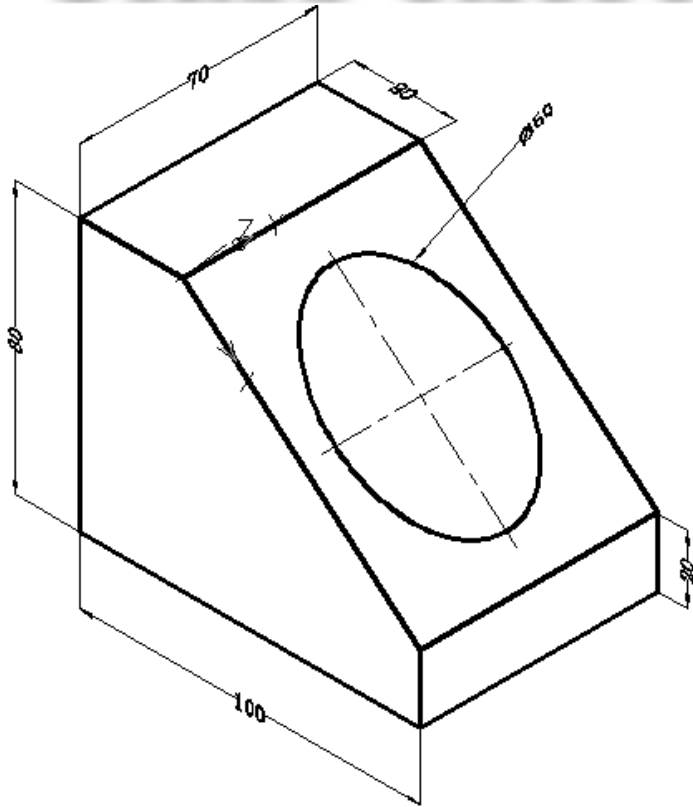
Class exercises primary A.V.

Draw partial and complete auxiliary view using the drawing available in the next two slides, slide no. 23&24.

Class exercises primary A.V.



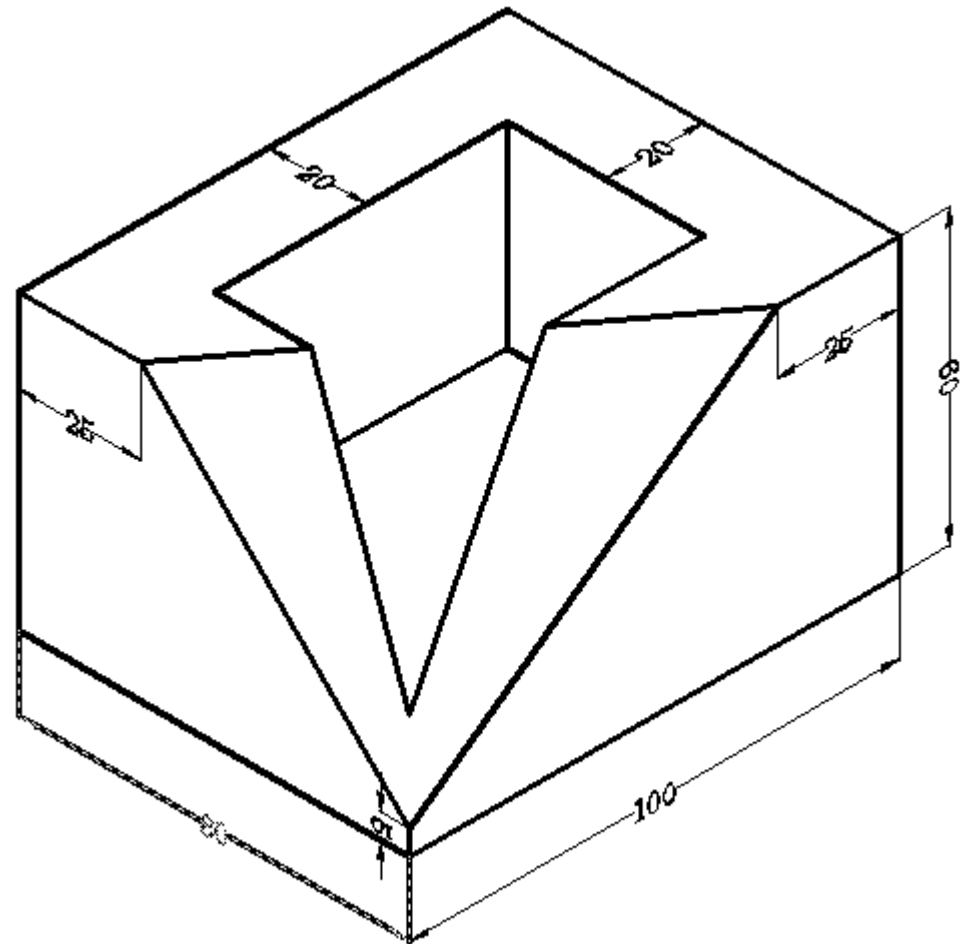
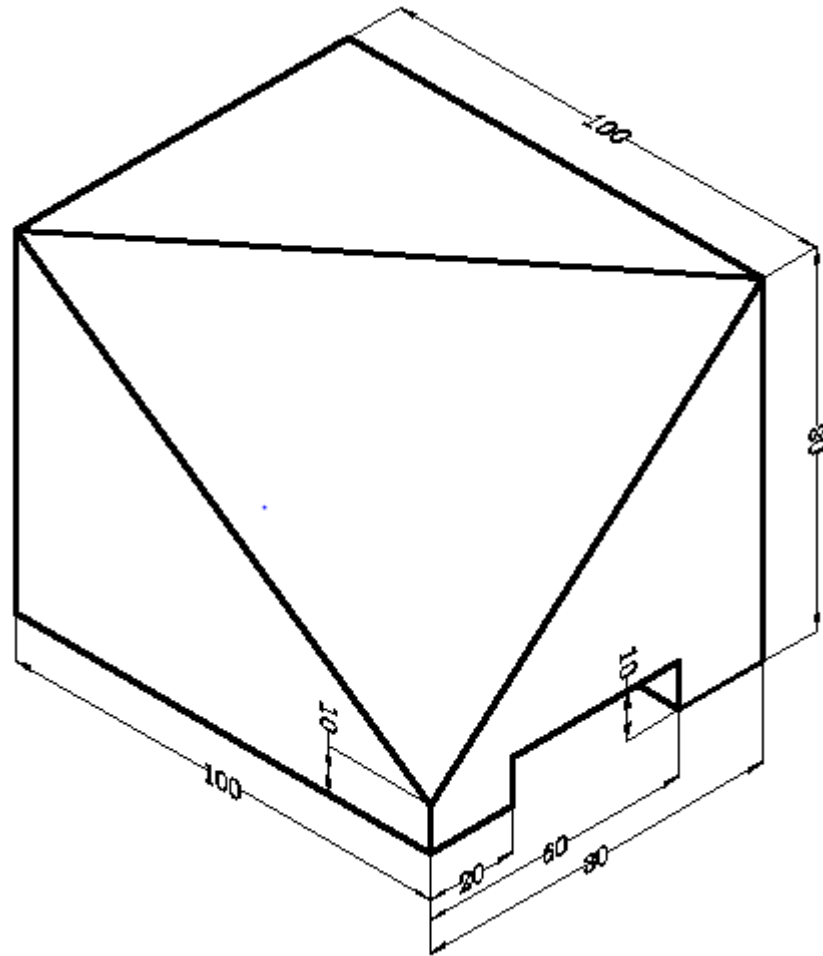
Class exercises primary A.V.



Class exercises Secondary A.V.

Draw partial and complete auxiliary view using the drawing available in the next two slides, slide no. 23&24.

Class exercises Secondary A.V.



The End!