

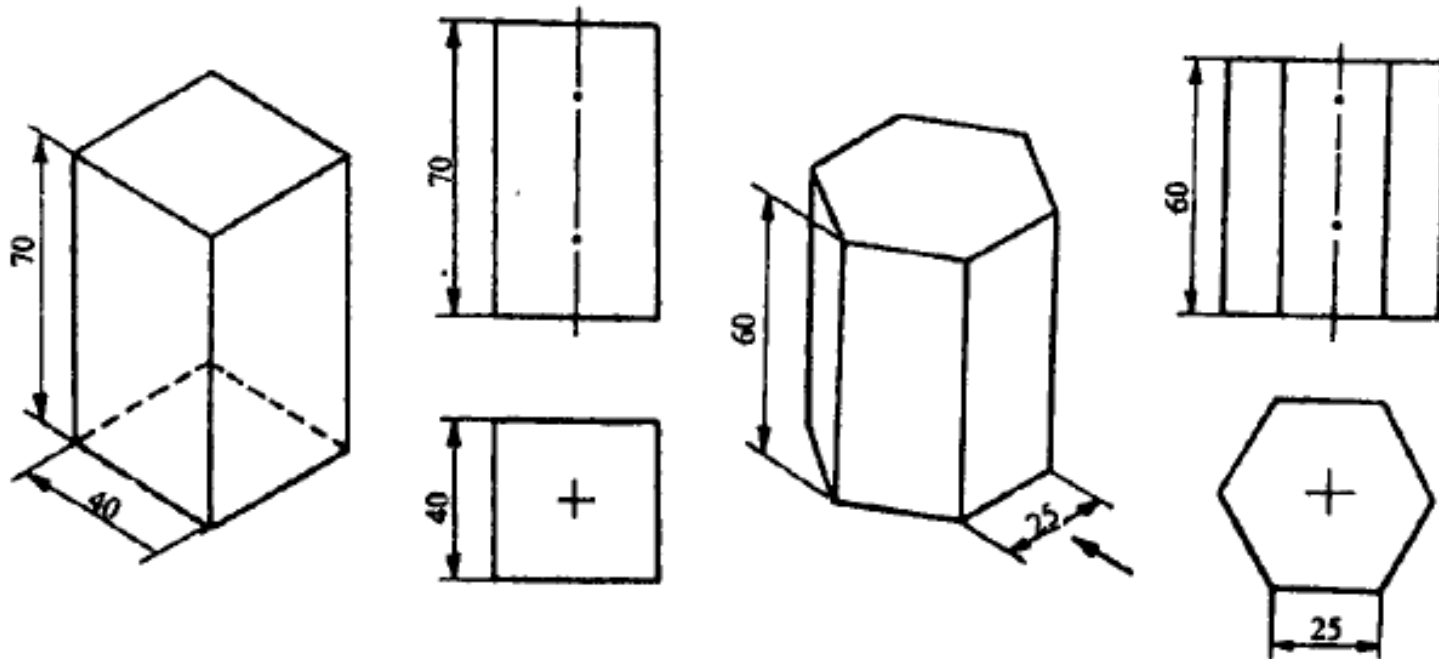
Isometric to Orthographic Projection

Selection of views

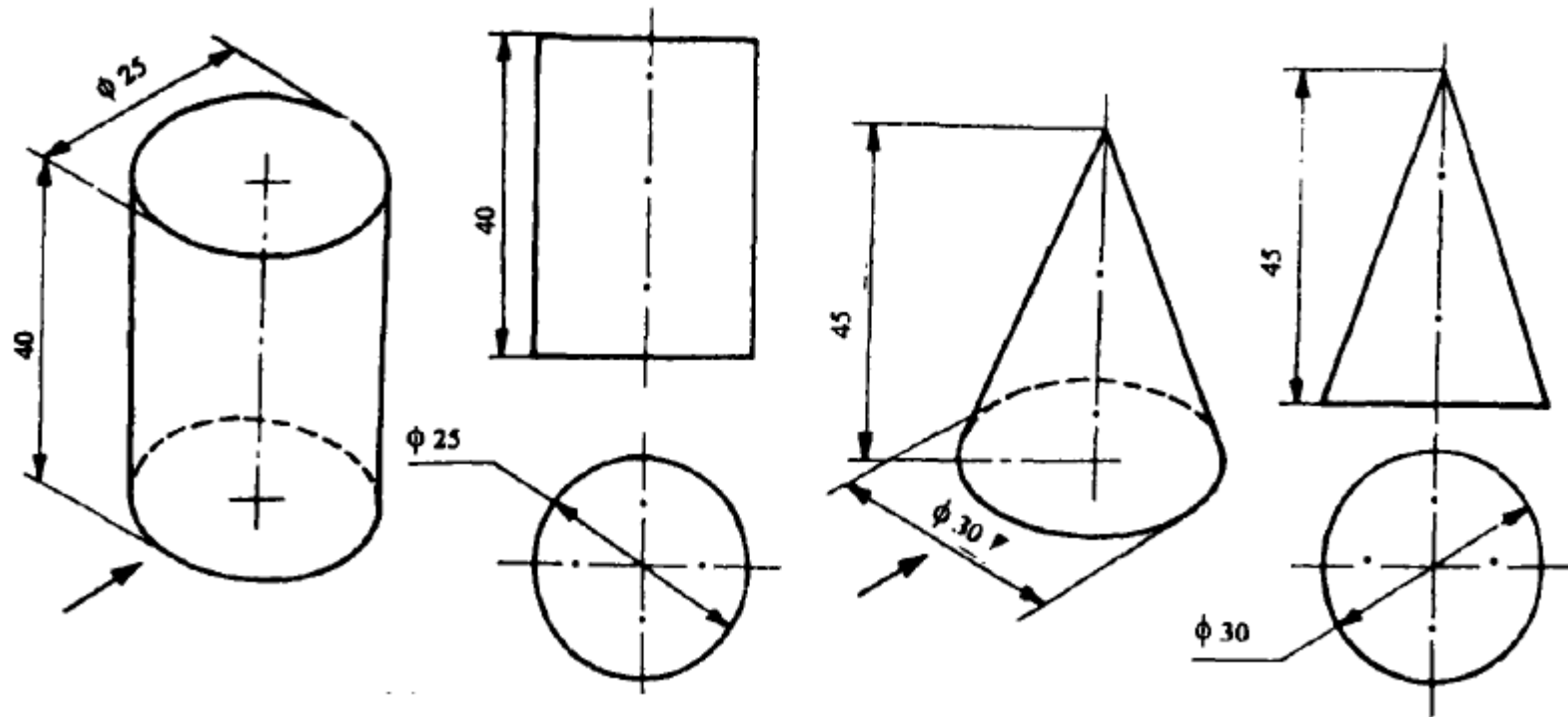
- The number of views required to describe an object depends upon the extent of complexity involved in it.
- The higher the symmetry the lesser the number of views required to be drawn

Selection of views (Contd...)

- In cases of simple solids, solid can be fully described by two views



Selection of Views (Contd...)



Development of Orthographic Views

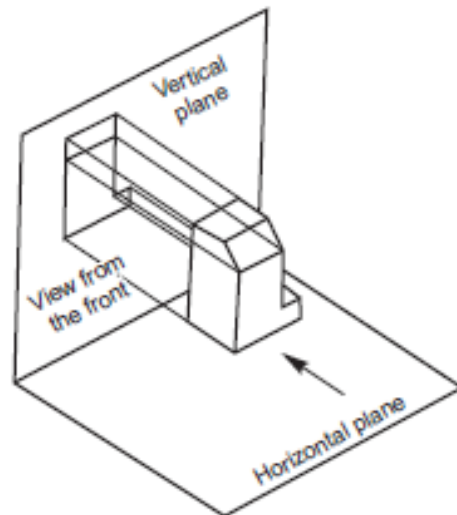
Three View Drawings

- In general, three views are required to describe most of the objects.
- In such cases the views normally selected are: the front view, top view and left or right side view.

Methods of Obtaining Orthographic Views

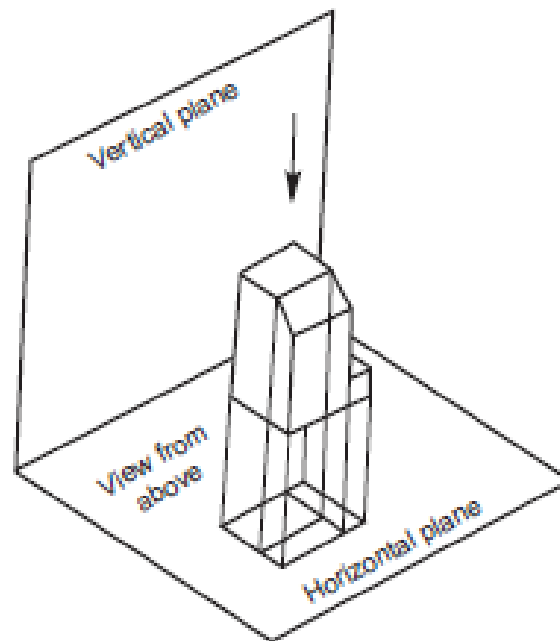
View from the front

- The view from the front of an object is defined as the view that is obtained as projection on the vertical plane by looking at the object normal to its front surface.
- It is the usual practice to position the object such that its view from the front reveals most of the important features.



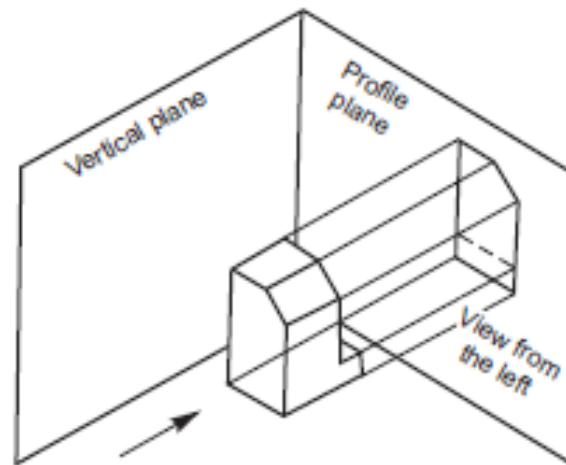
View from above

The view from above of an object is defined as the view that is obtained as projection on the horizontal plane, by looking the object normal to its top surface



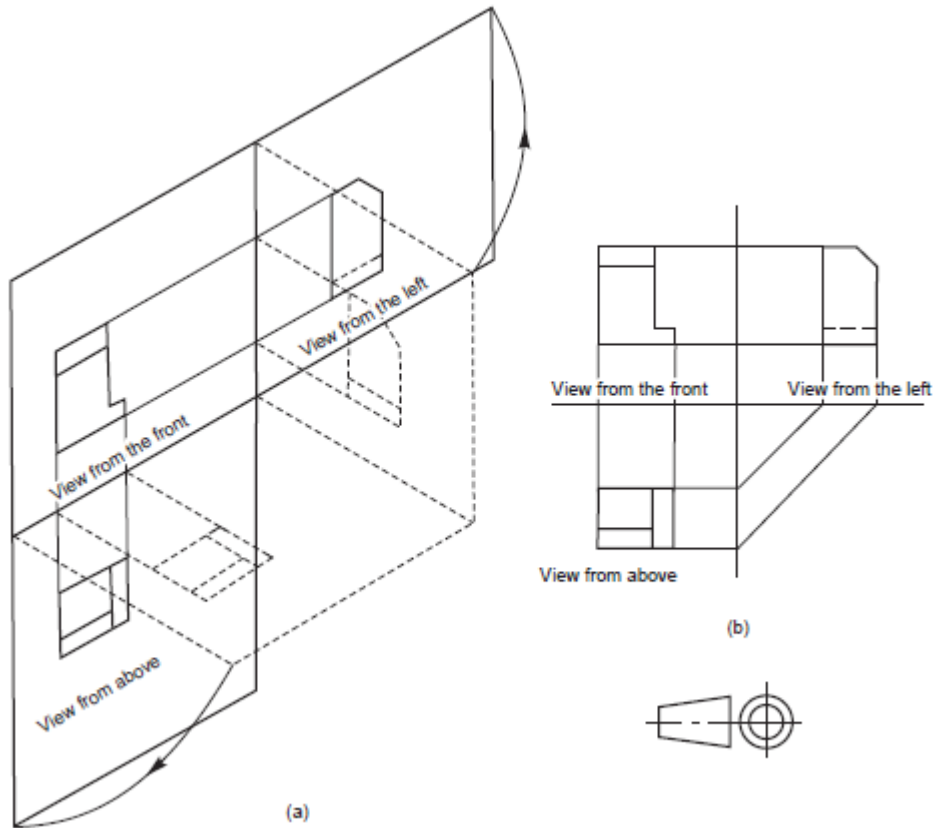
View from side

- The view from the side of an object is defined as the view that is obtained as projection on the profile plane by looking the object, normal to its side surface.
- As there are two sides for an object, viz., left side and right side, two possible views from the side, viz., view from the left and view from the right may be obtained for any object.



Presentation of Views

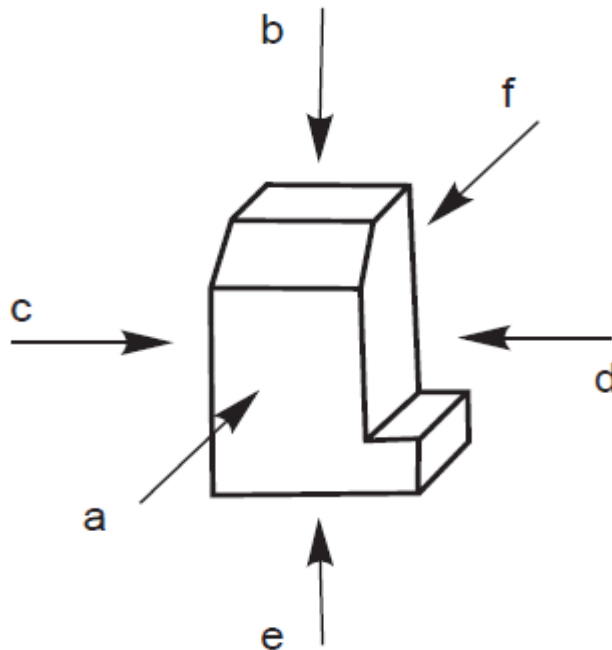
The different views of an object are placed on a drawing sheet which is a two dimensional one, to reveal all the three dimensions of the object

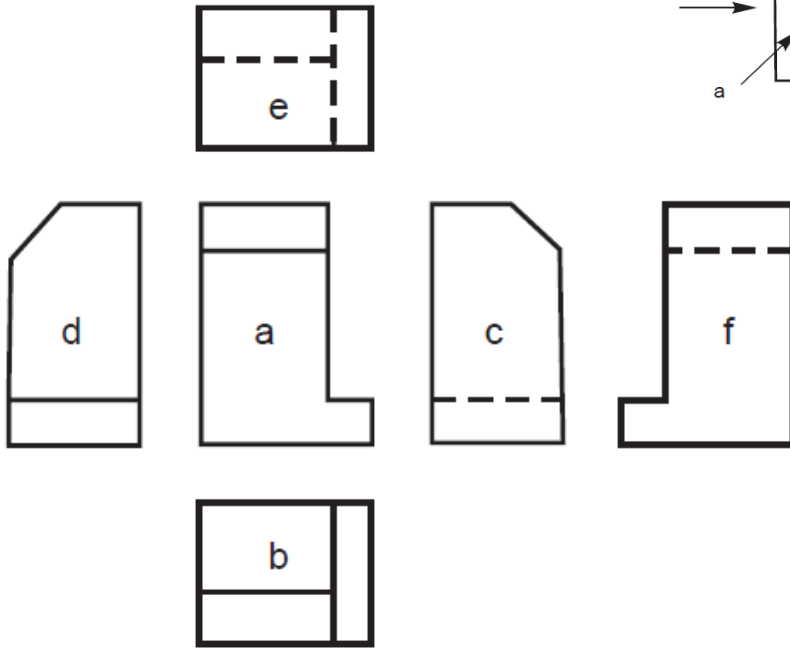
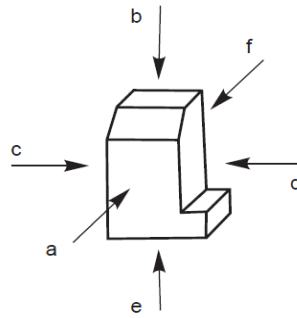


Designation and Relative Positions of Views

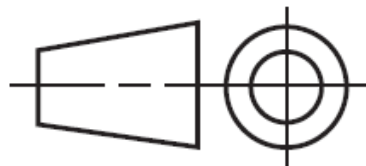
An object positioned in space may be imagined as surrounded by six mutually perpendicular planes. So, for any object, six different views may be obtained by viewing at it along the six directions, normal to these planes

1. View in the direction **a** = view from the front
2. View in the direction **b** = view from above
3. View in the direction **c** = view from the left
4. View in the direction **d** = view from the right
5. View in the direction **e** = view from below
6. View in the direction **f** = view from the rear

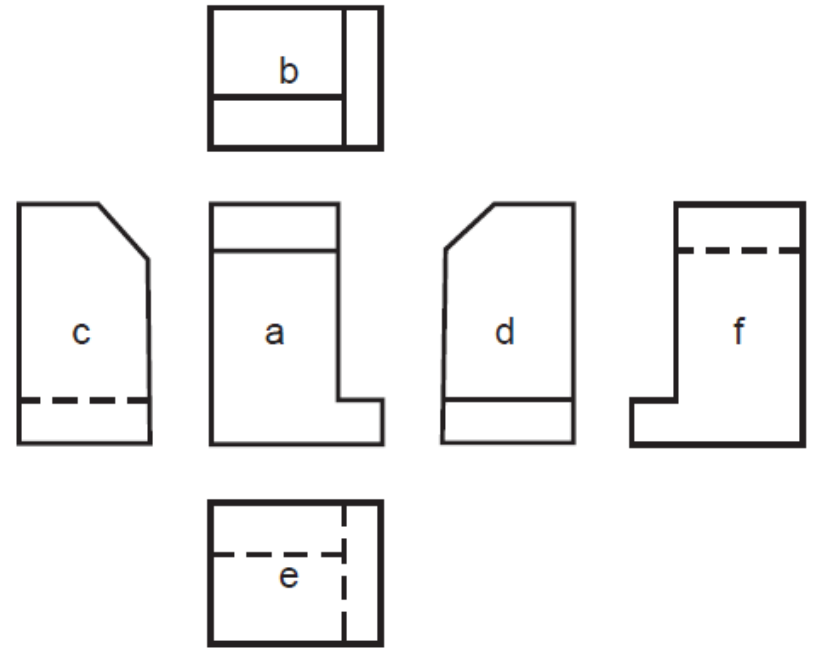




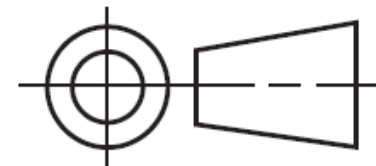
(a)



First angle projection



(a)



Third angle projection

Positions of the Object

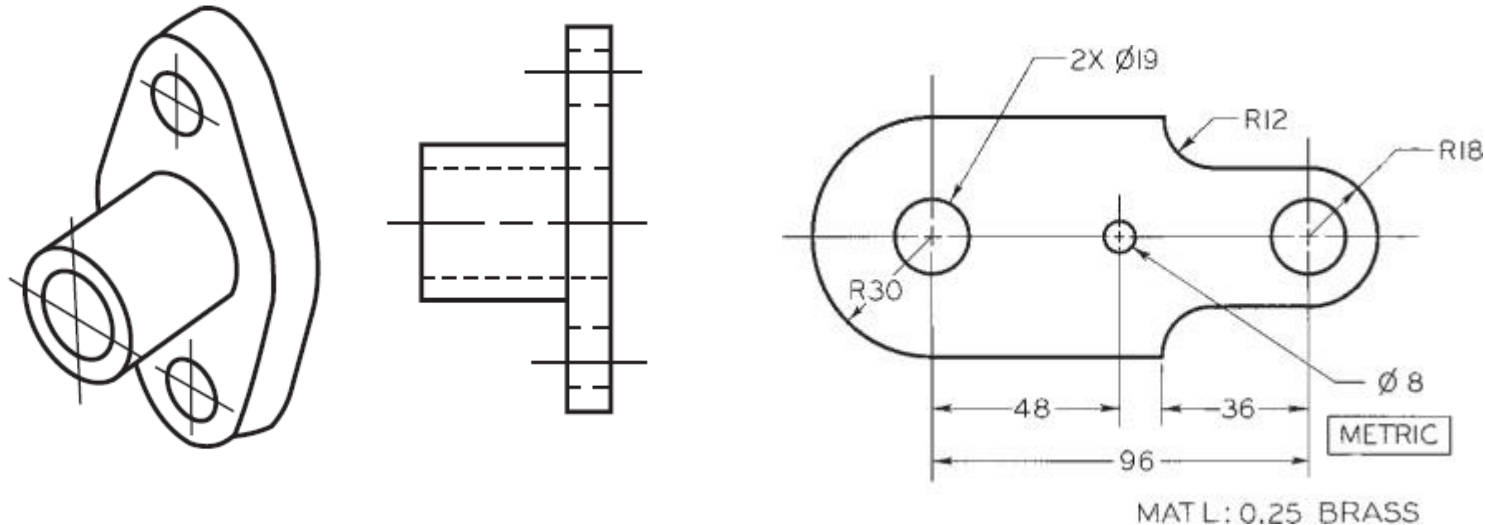
It is important to understand the significance of the position of the object relative to the planes of projection.

To get useful information about the object in the orthographic projections, the object may be imagined to be positioned properly because of the following facts :

1. Any line on an object will show its true length, only when it is parallel to the plane of projection.
2. Any surface of an object will appear in its true shape, only when it is parallel to the plane of projection.

Hidden Lines

- While obtaining the projection of an object on to any principal plane of projection, certain features of the object may not be visible.
- The invisible or hidden features are represented by short dashes of medium thickness.

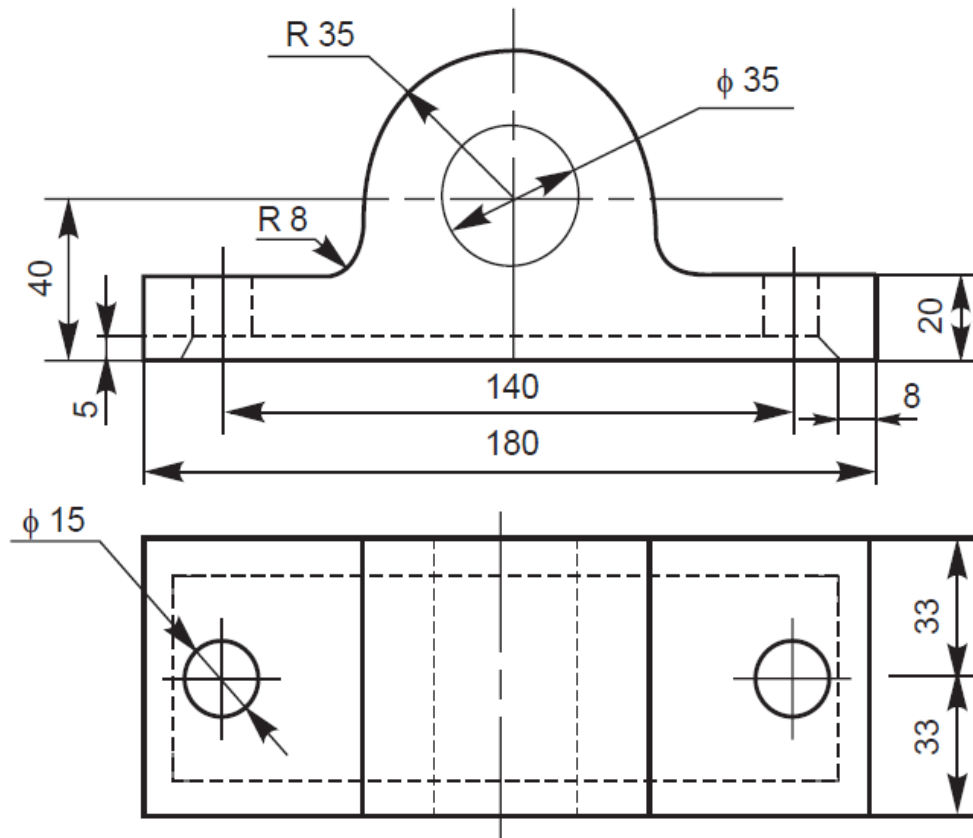


One view Drawing

Some objects with cylindrical, square or hexagonal features or, plates of any size with any number of features in it may be represented by a single view. In such cases, the diameter of the cylinder, the side of the square, the side of the hexagon or the thickness of the plate may be expressed by a note or abbreviation.

Two view Drawings

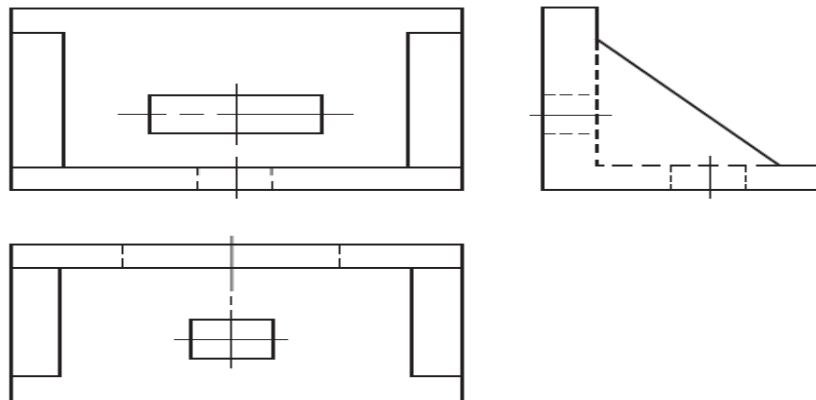
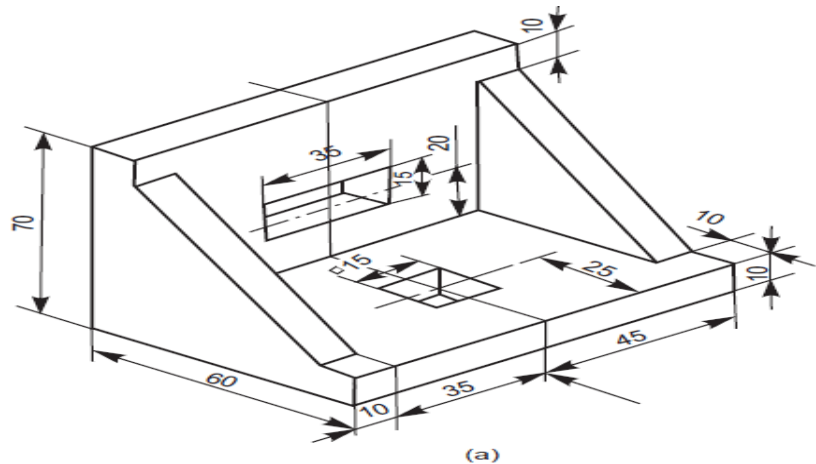
Some objects which are symmetrical about two axes may be represented completely by two views. Normally, the largest face showing most of the details of the object is selected for drawing the view from the front. The shape of the object then determines whether the second view can be a view from above or a side view.



Three view drawings

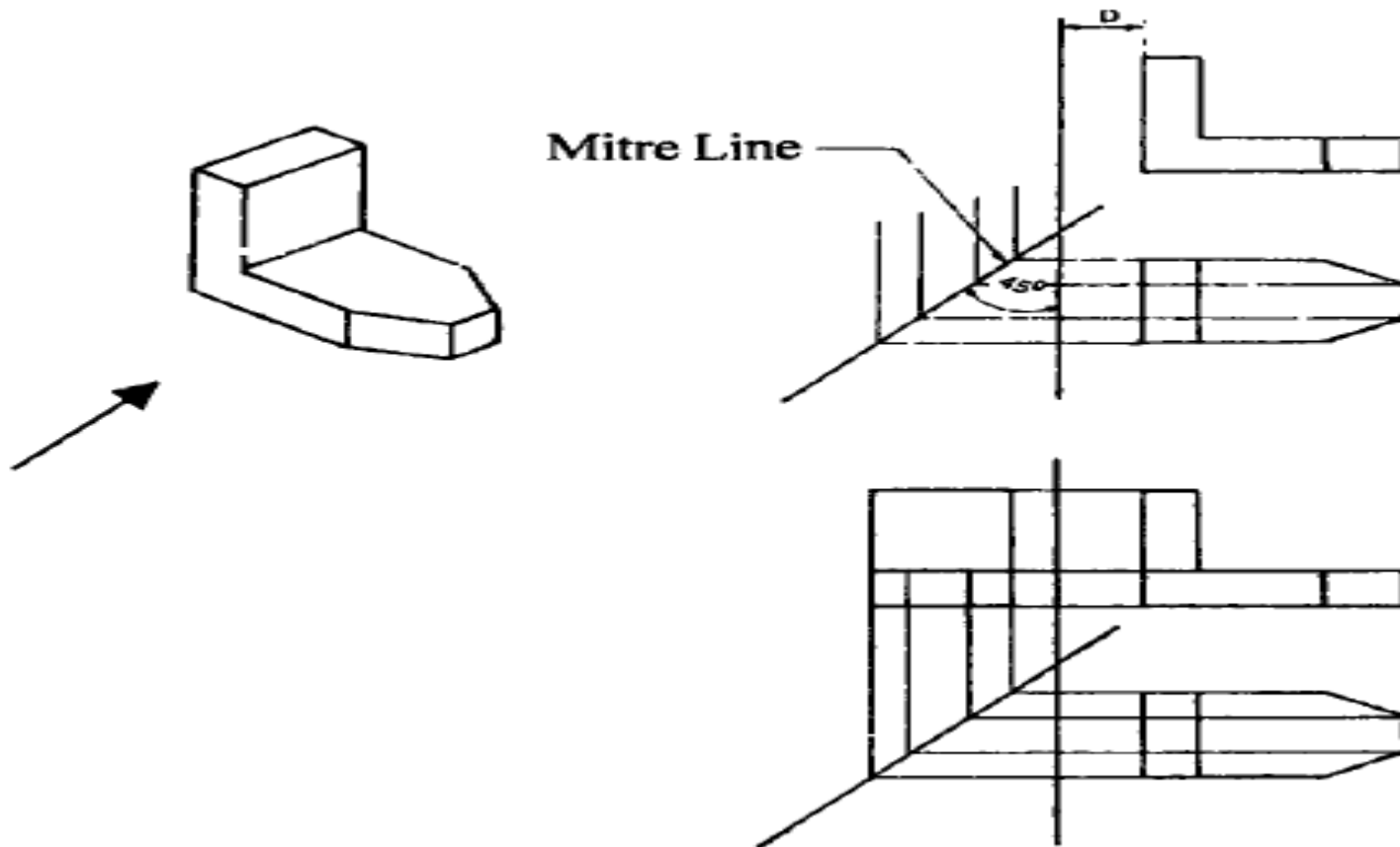
In general, most of the objects consisting of either a single component or an assembly of a number of components, are described with the help of three views.

In such cases, the views normally selected are the views from the front, above and left or right side.



Development of Missing Views

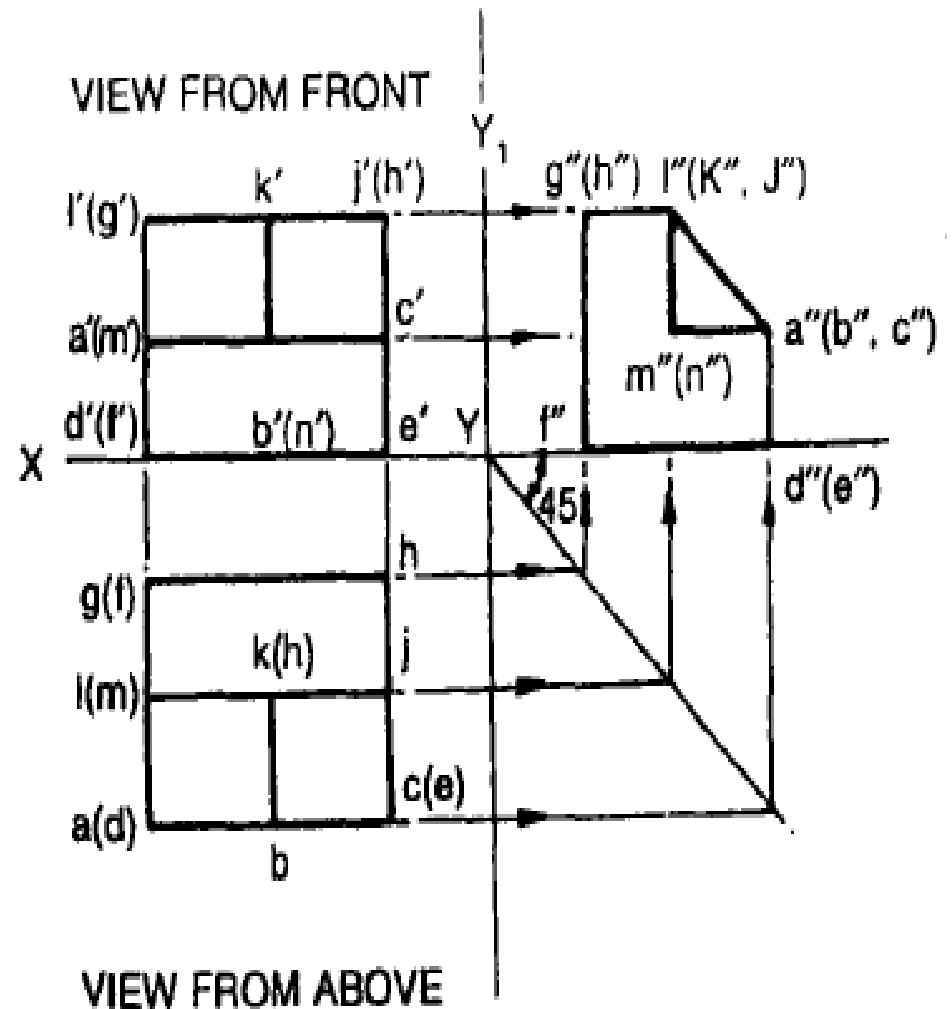
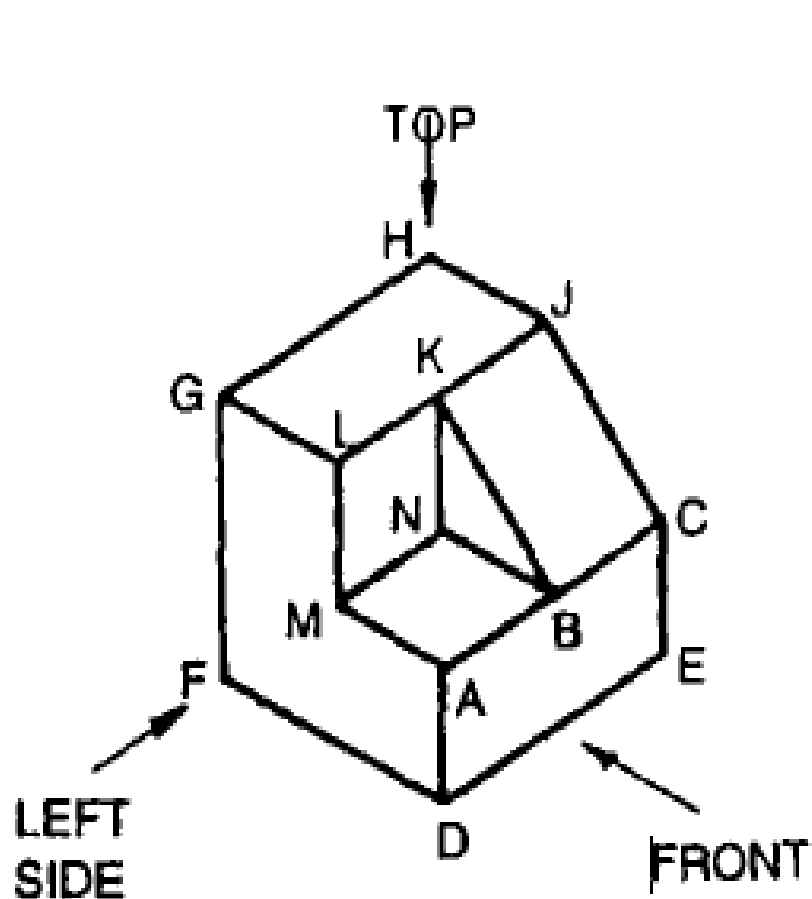
- When two views of an object are given the third view may be developed by the use of mitre line as described in the following example.



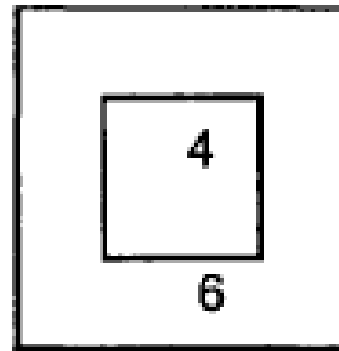
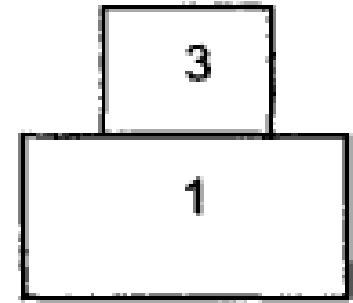
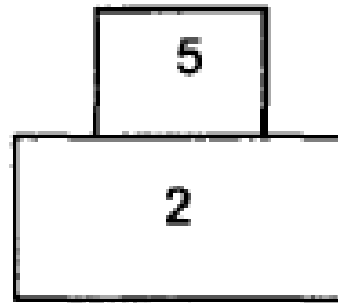
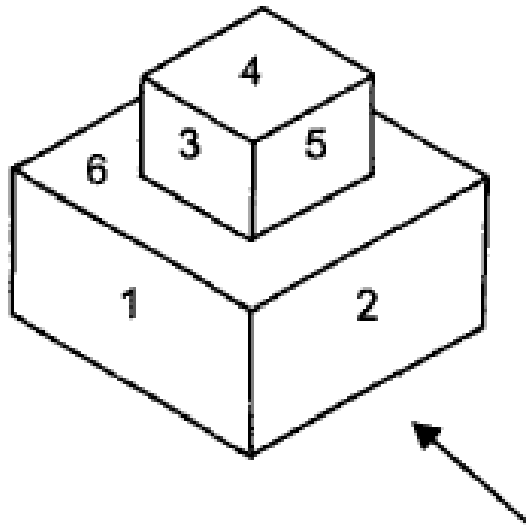
Isometric to Orthographic

- Draw the given front and top views.
- Draw projection lines to the left of the top view.
- Draw a vertical reference line at any convenient distance D from the front view.
- Draw a mitre line at 45° to the vertical
- Through the points of intersection between the mitre line and the above projection lines draw vertical projection lines.
- Join the points of intersection in the order and obtain the required view.

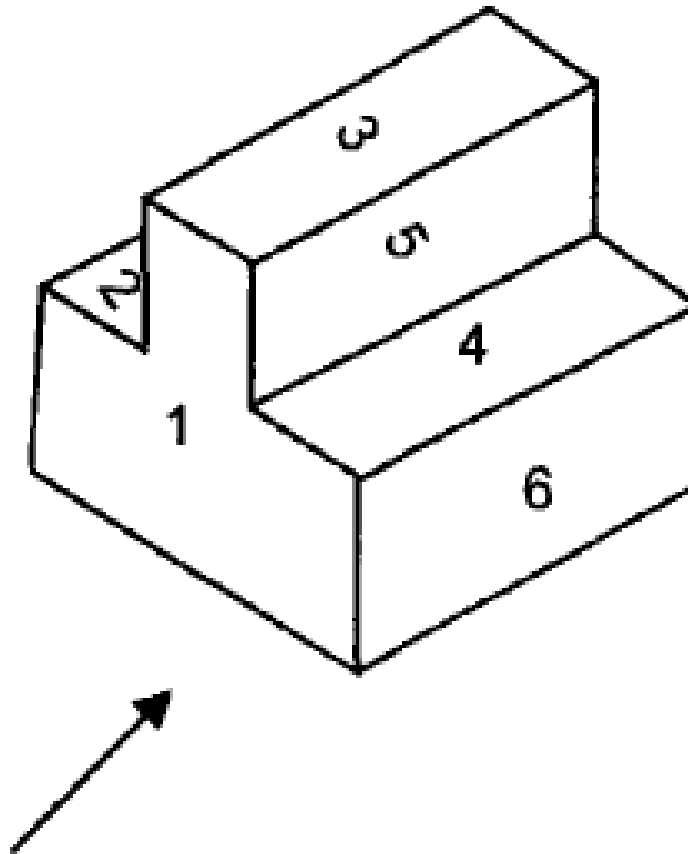
Isometric to Orthographic



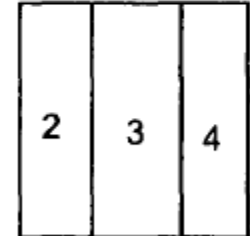
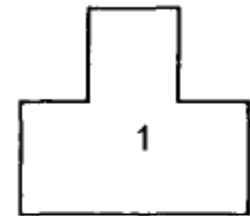
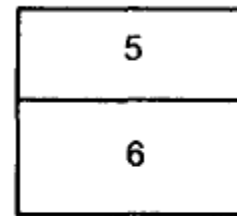
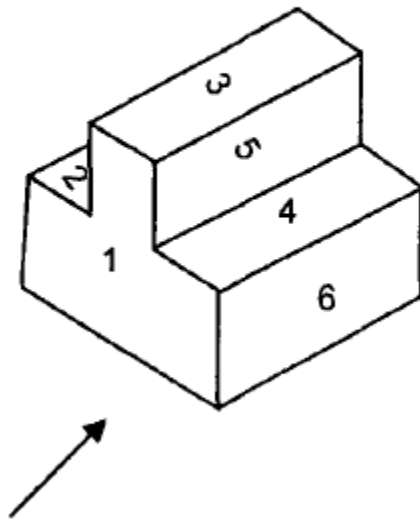
Isometric to Orthographic



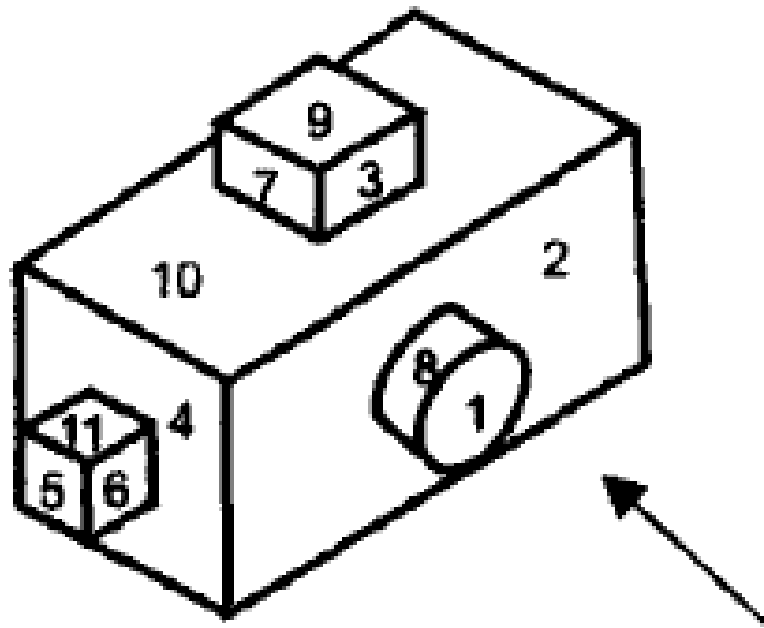
Isometric to Orthographic



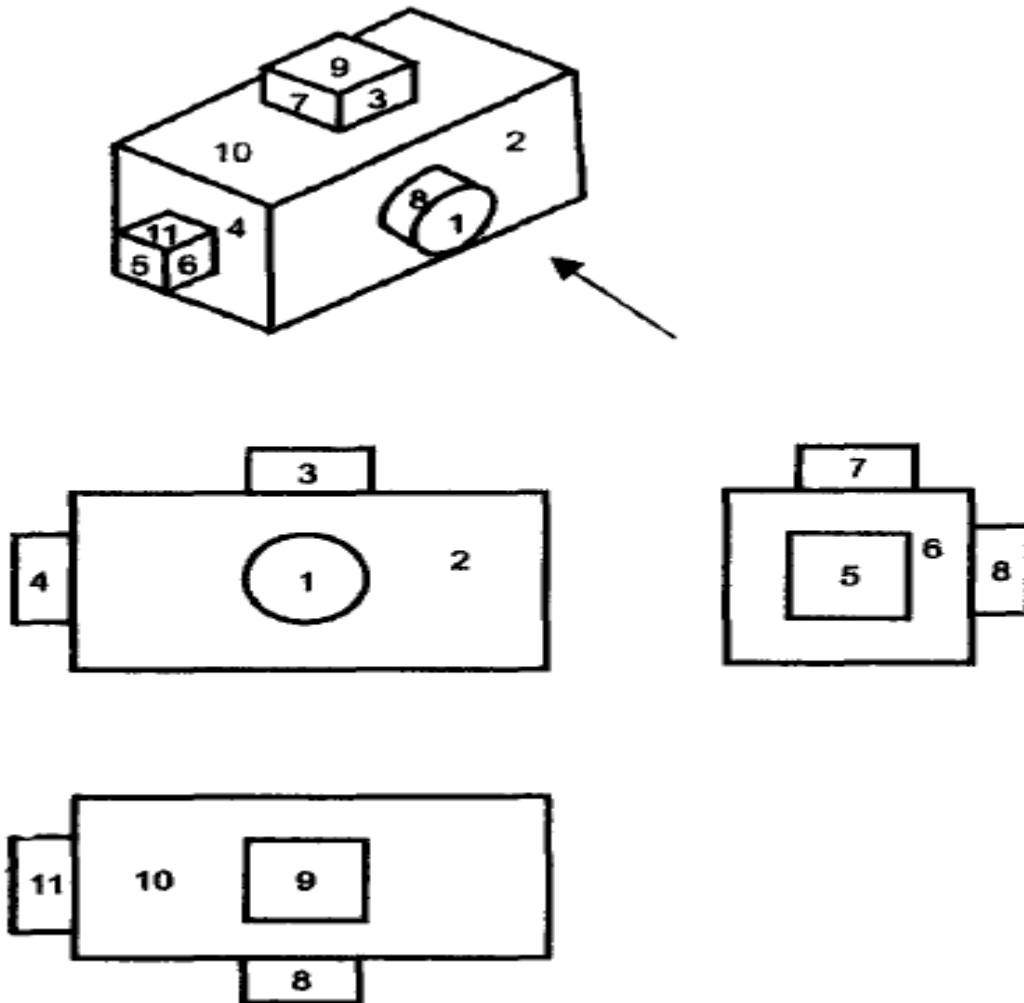
Isometric to Orthographic



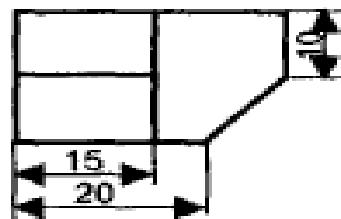
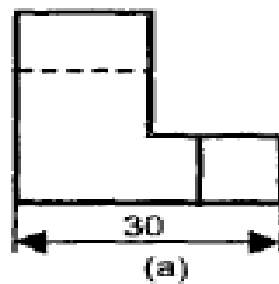
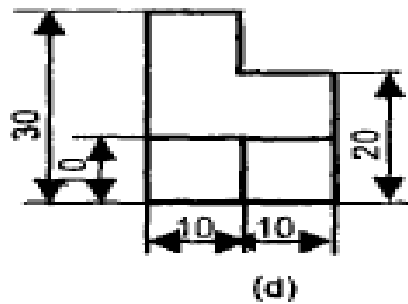
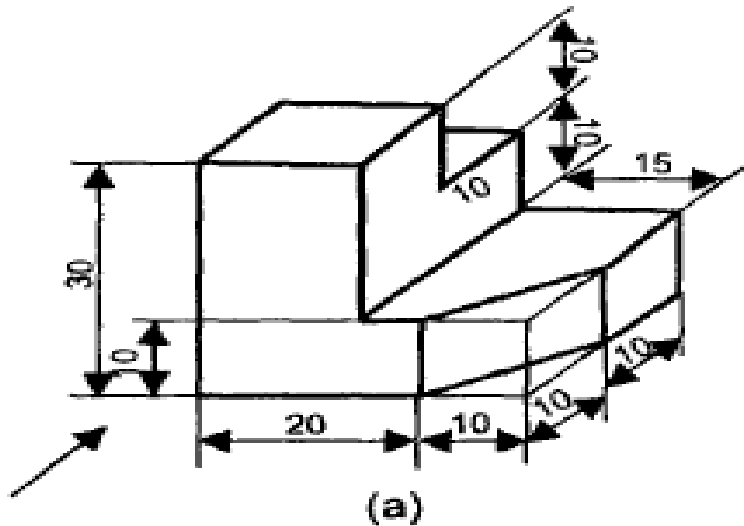
Isometric to Orthographic

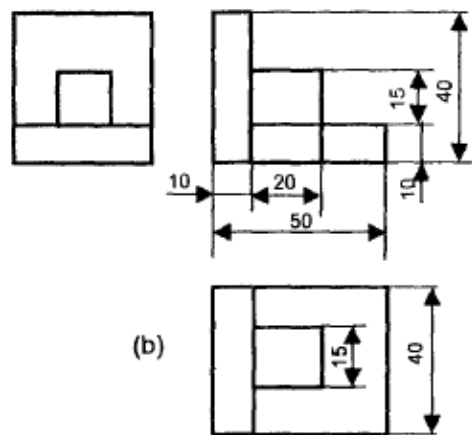
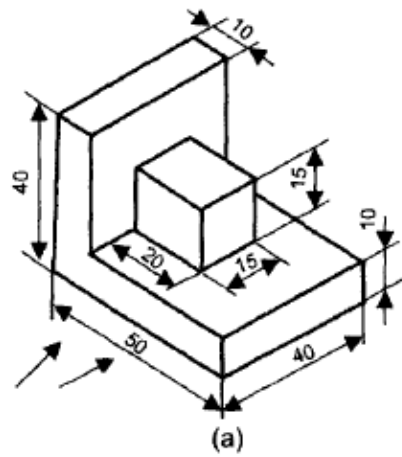


Isometric to Orthographic

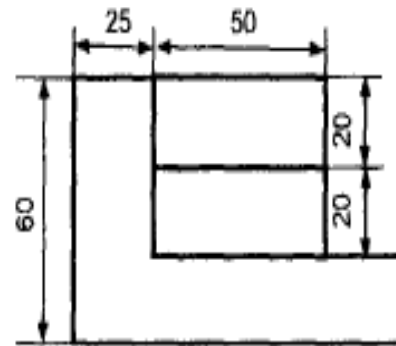
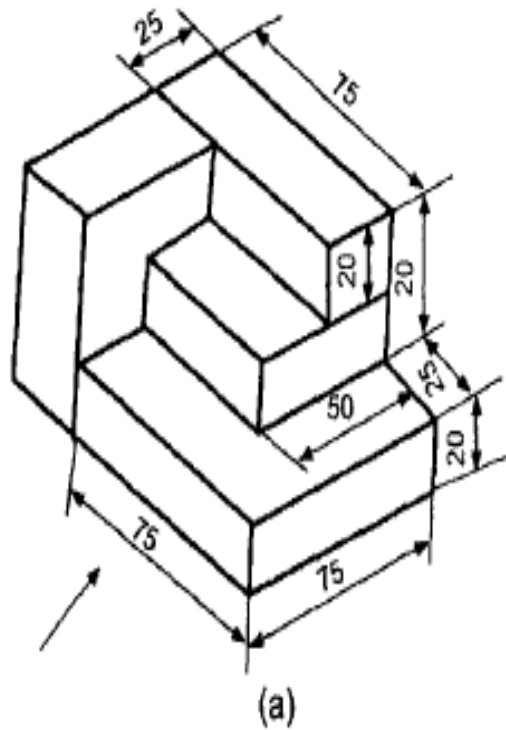


Isometric to Orthographic

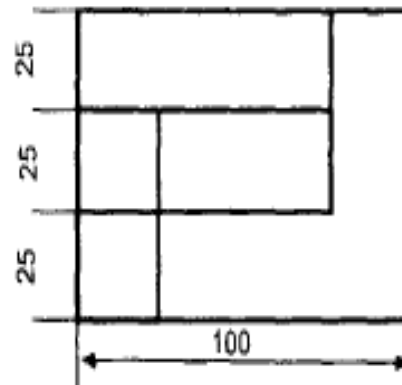




Isometric to Orthographic

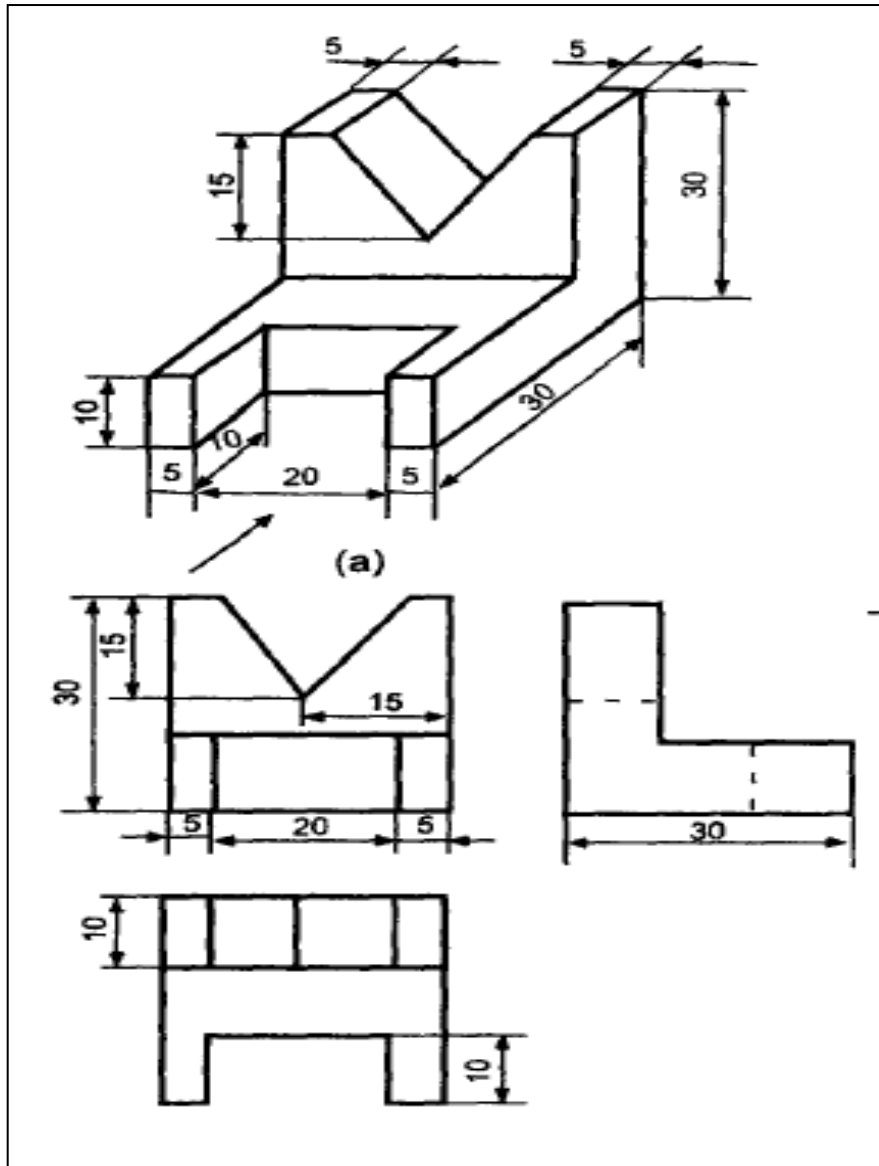


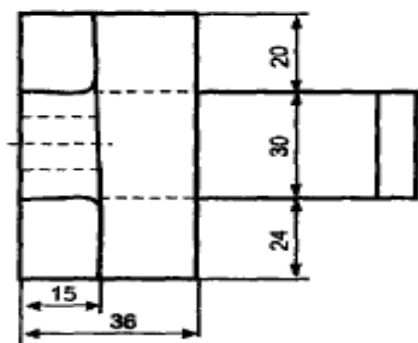
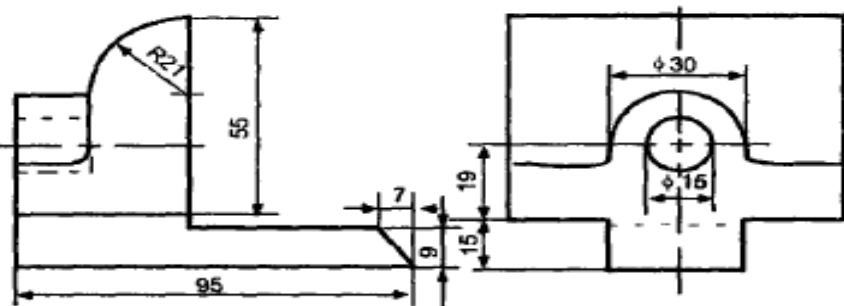
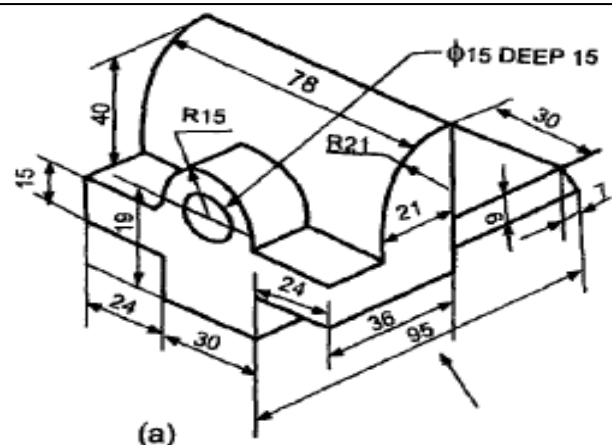
FRONT VIEW



(b)

Isometric to Orthographic





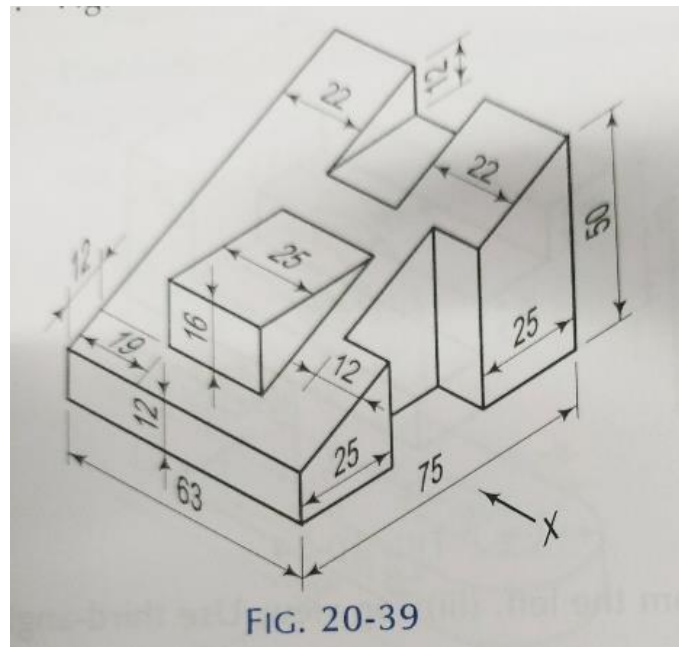
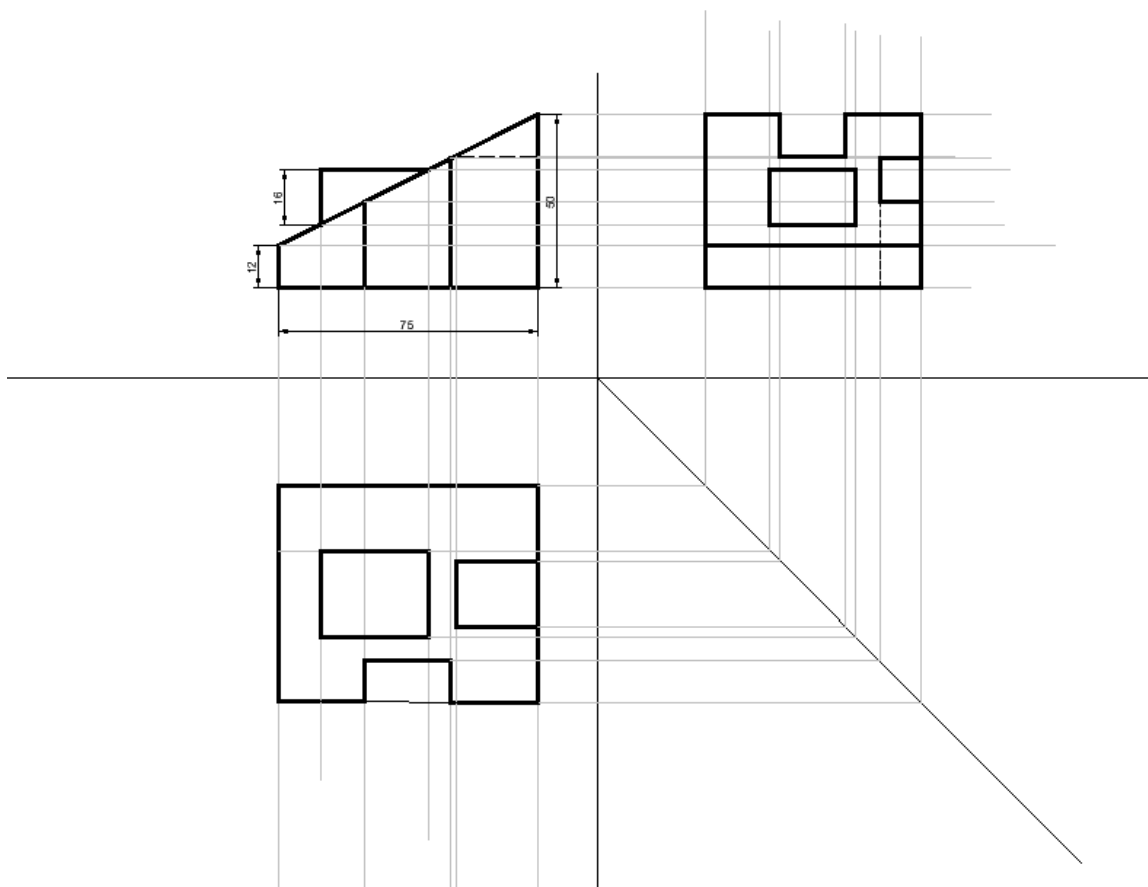
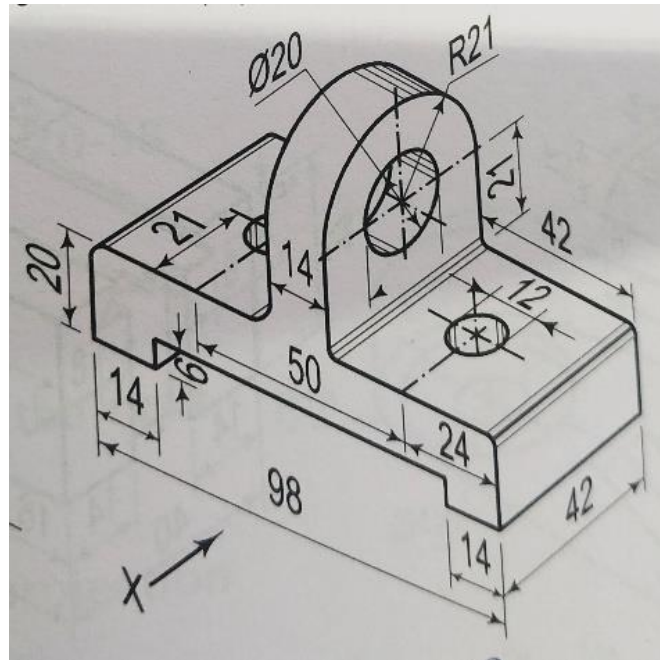
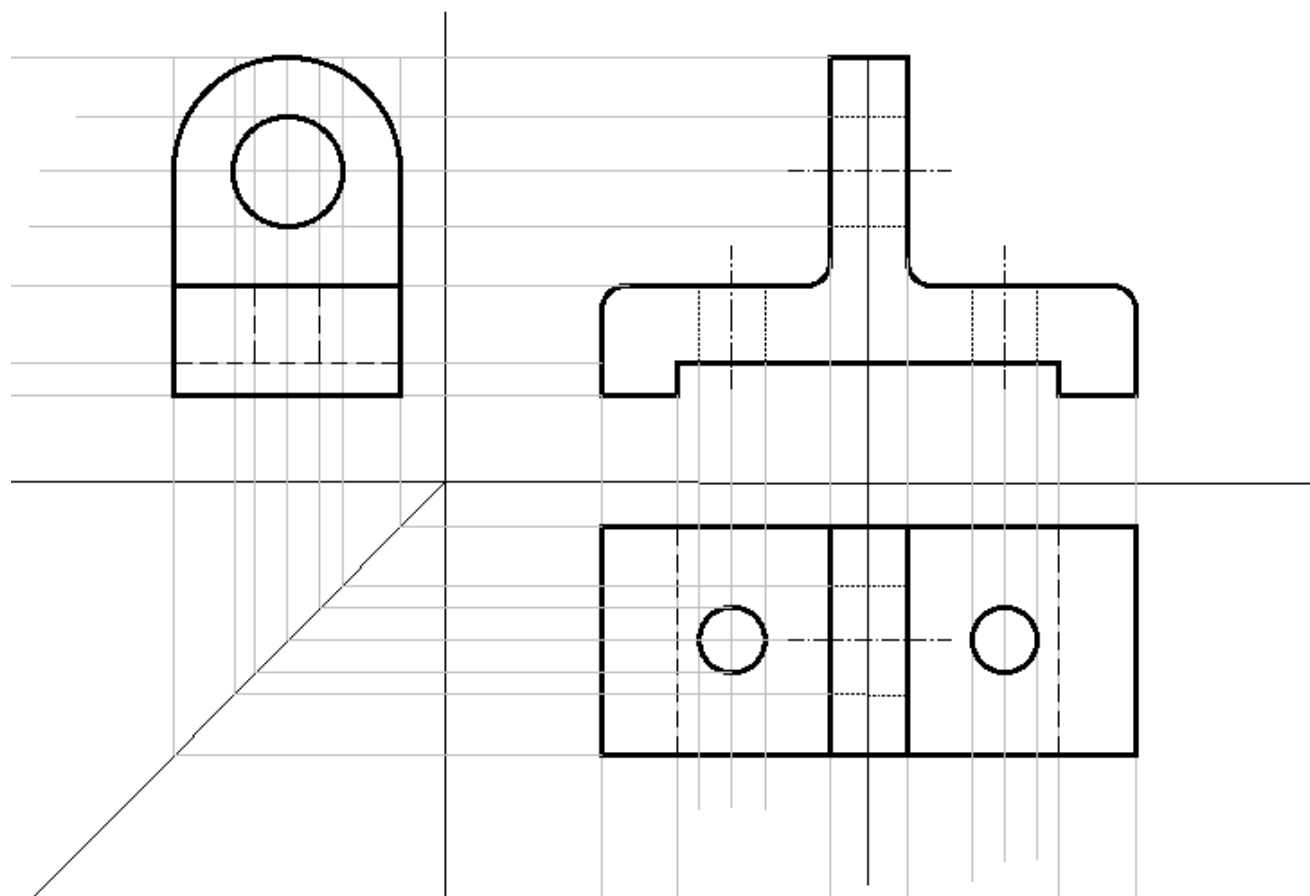


FIG. 20-39







Reference videos

- https://www.youtube.com/watch?v=f1Hdtf_iAWk
- <https://www.youtube.com/watch?v=3fvTKGIEGM8>
- https://www.youtube.com/watch?v=DB3_OMJG2kc&t=41s
- <https://www.youtube.com/watch?v=YvvZ65OBwLU&t=575s>