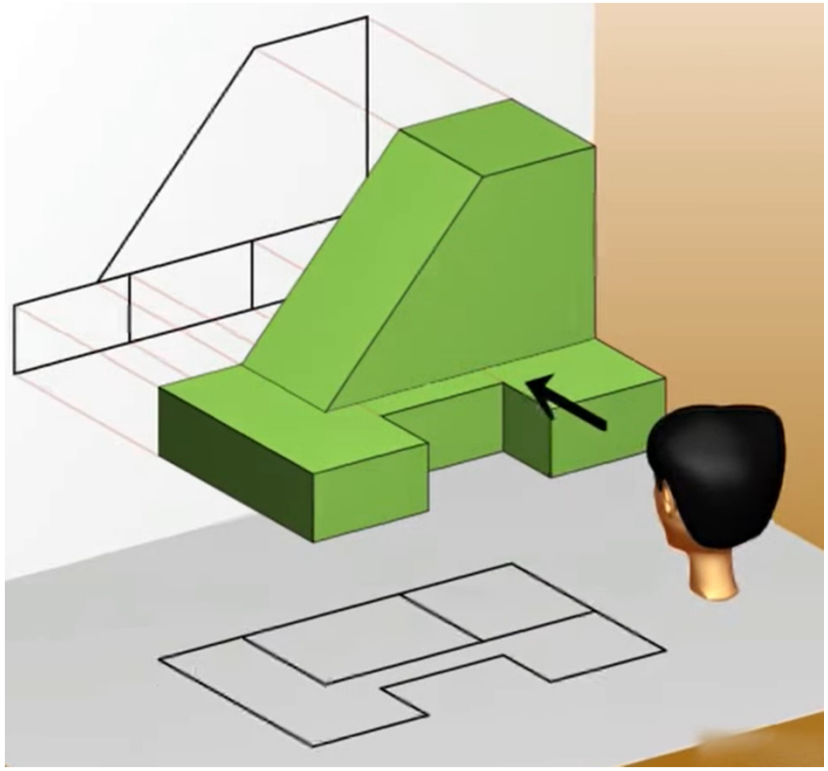
Unit-2

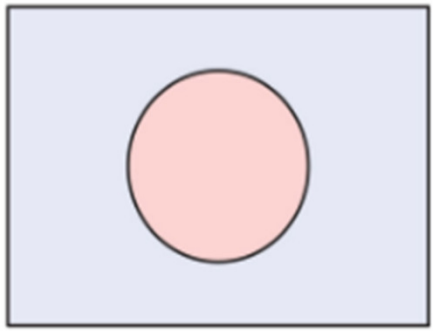
ORTHOGRAPHIC PROJECTION

"When the projectors are parallel to each other and also perpendicular to the plane, the projection is called orthographic projection"

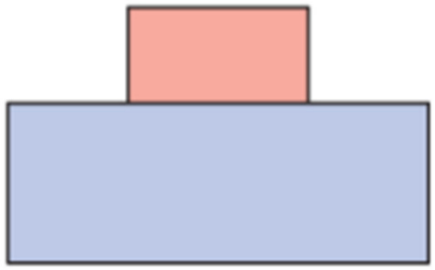


Objective

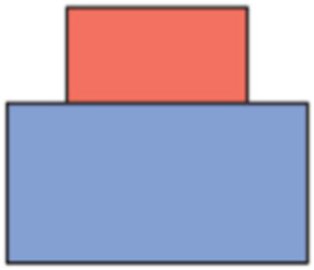
An orthographic drawing represents a three-dimensional object using several two-dimensional views of the object. Three-dimensional drawings can be used to show the overall concept and design, but they are often not able to explain actual shape, size and other details of object which are required for the purpose of manufacturing . Orthographic drawings can help to overcome those challenges.



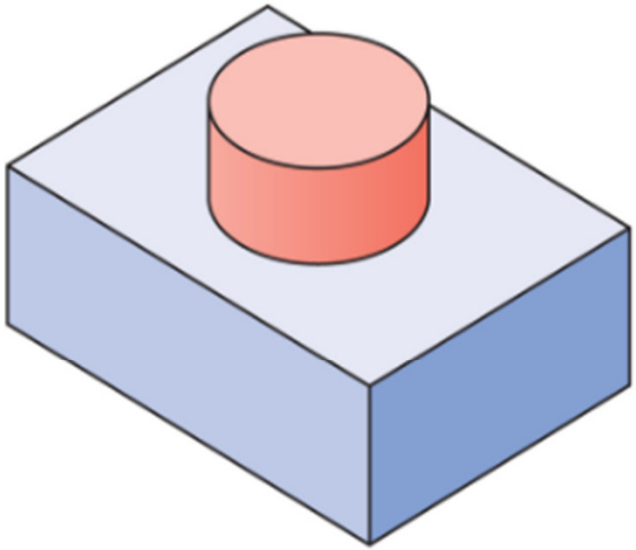
top view



front view



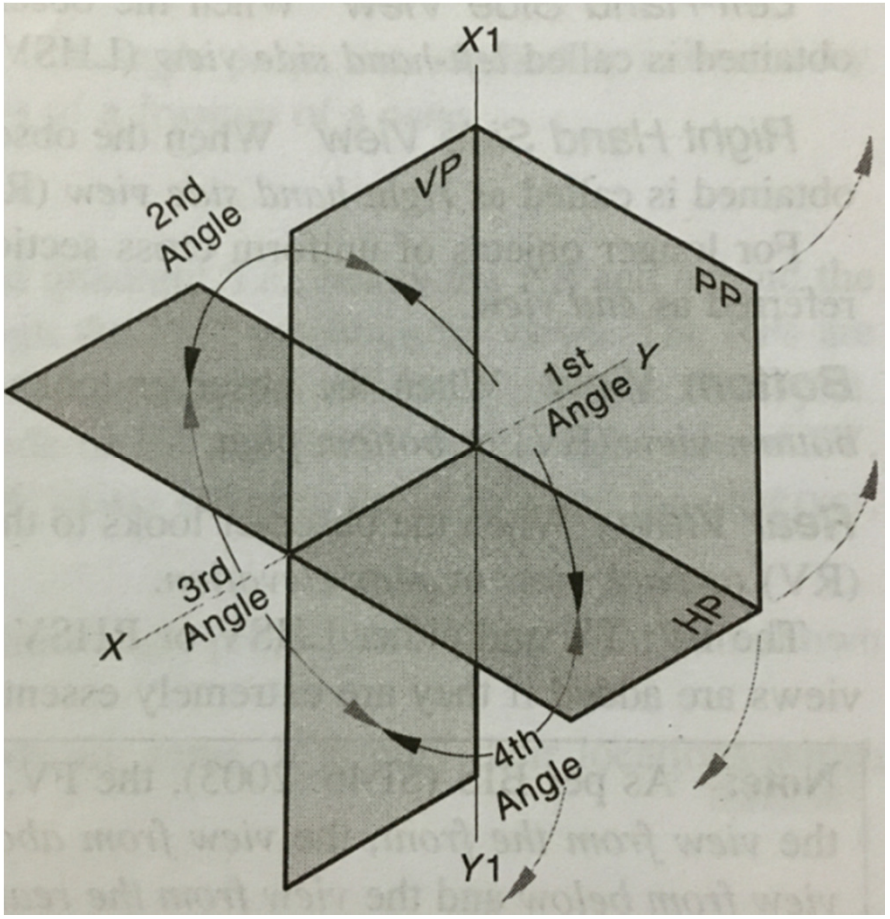
side view



3-dimensional isometric projection

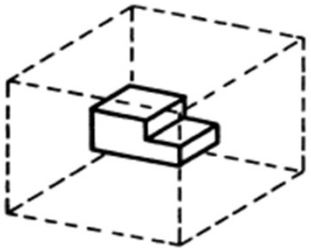
Three Reference Planes:-

VP- Vertical Plane
HP- Horizontal Plane
PP- Profile Plane

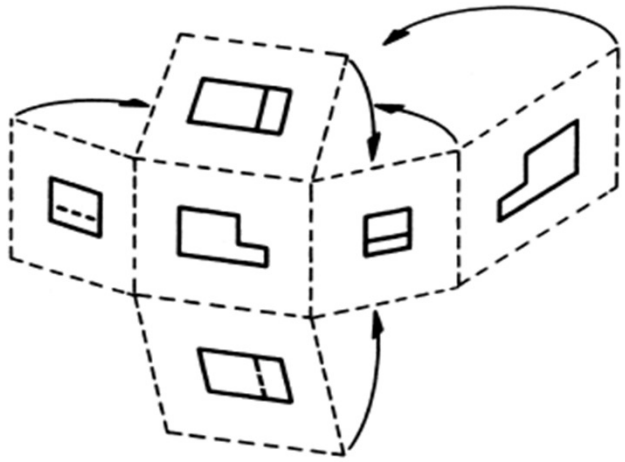


Orthographic Views

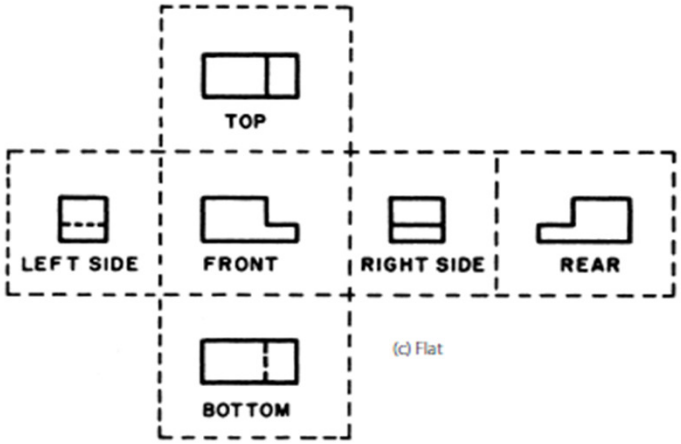
Front View- FV
Top View- TV
Left Hand Side View-LHSV
Right Hand Side View- RHSV
Bottom View- BV
Rear View- RV



(a) Object



(b) Rotated

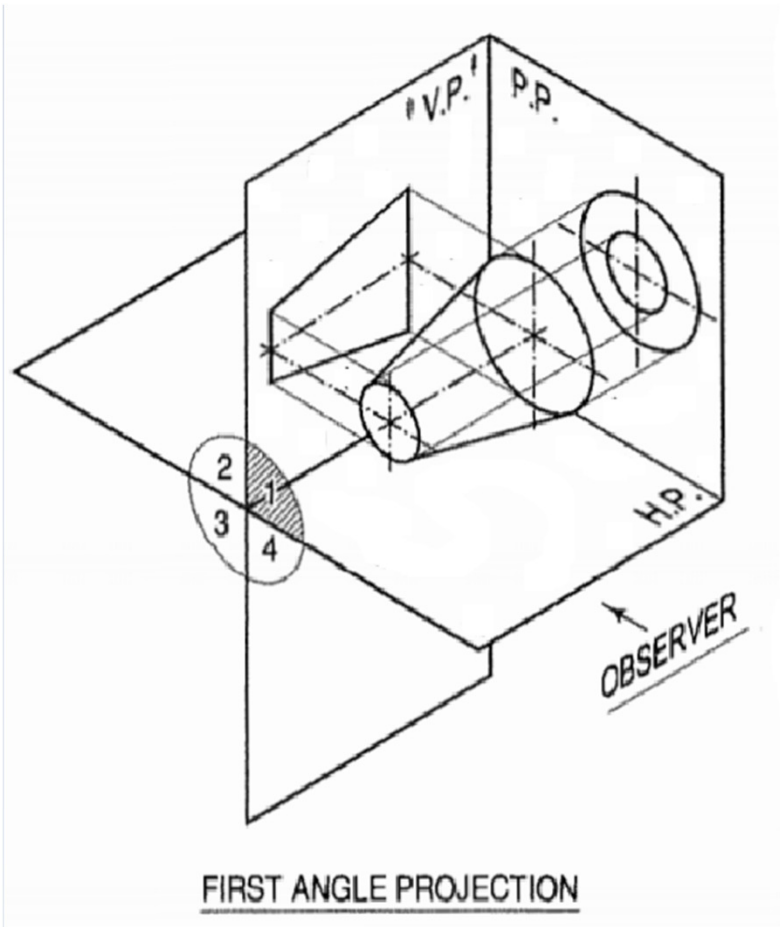


(c) Flat

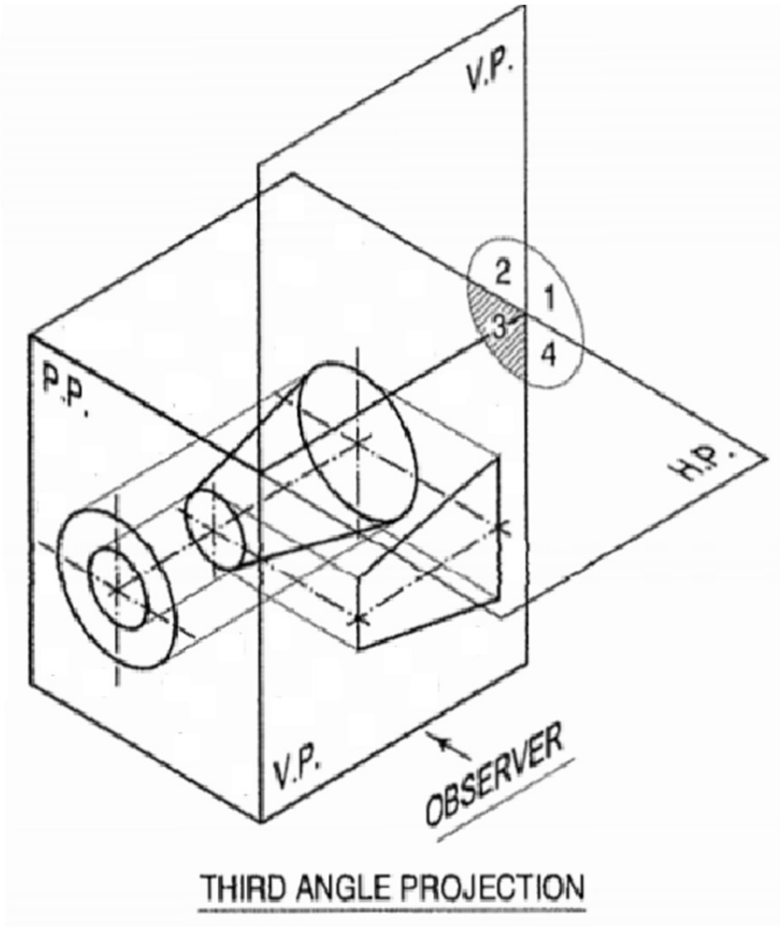
Note:- *As per BIS (SP: 2003), the FV, TV, LHSV, RSHV, BV and RV should be referred as the view from the front, the view from above, the view from left, the view from right, the view from below and the view from rear respectively.*

Methods of Multiview Projection

First Angle of Projection
Third Angle of Projection

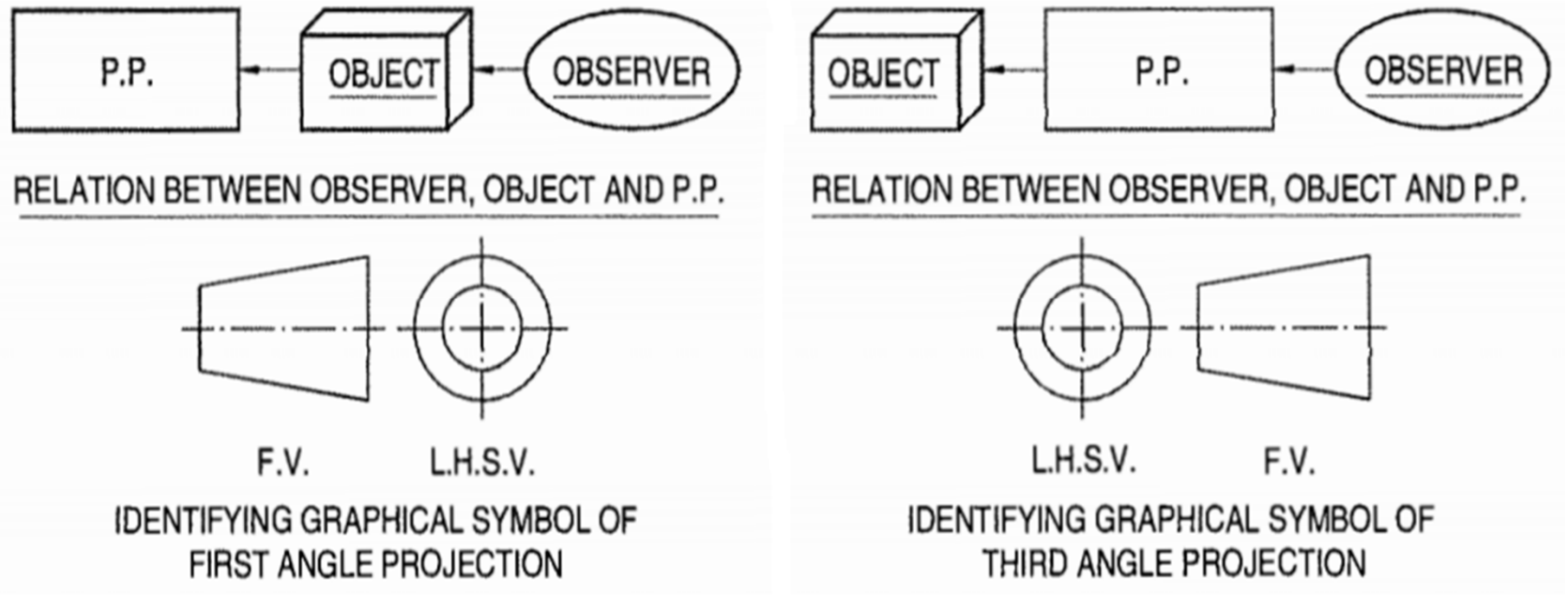


FIRST ANGLE PROJECTION



THIRD ANGLE PROJECTION

Methods of Multiview Projection



*The method of **first-angle projection** is the **British standard practice**. The **third-angle projection** is the standard practice followed in **America and in the continent of Europe**.*

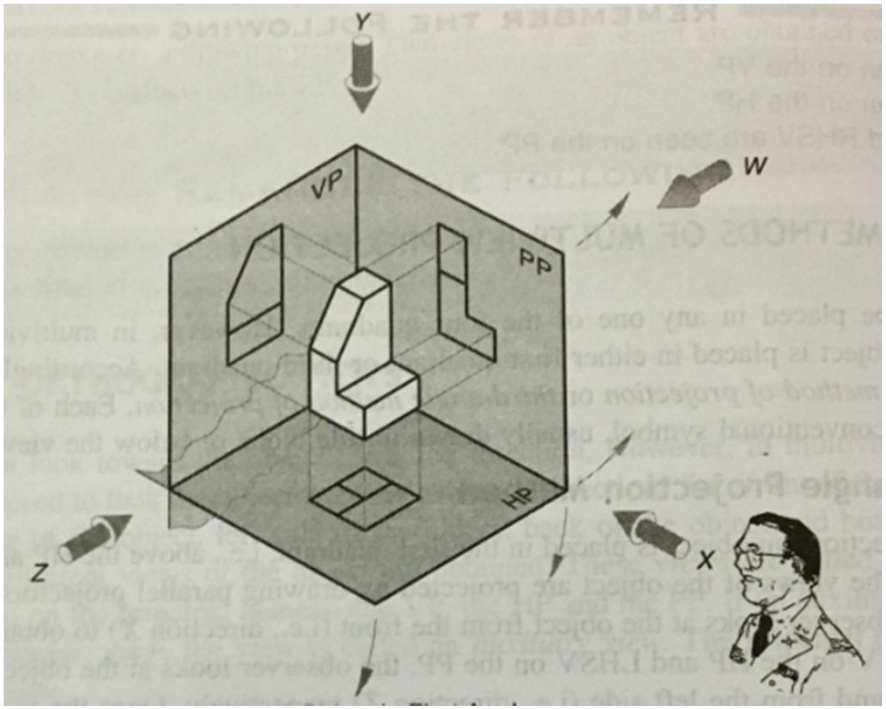
*In our country, the **first-angle projection** method is used as per revised SP:46-1988 and SP:46-2003 which is recommended by Bureau of Indian Standards (B.I.S.)*

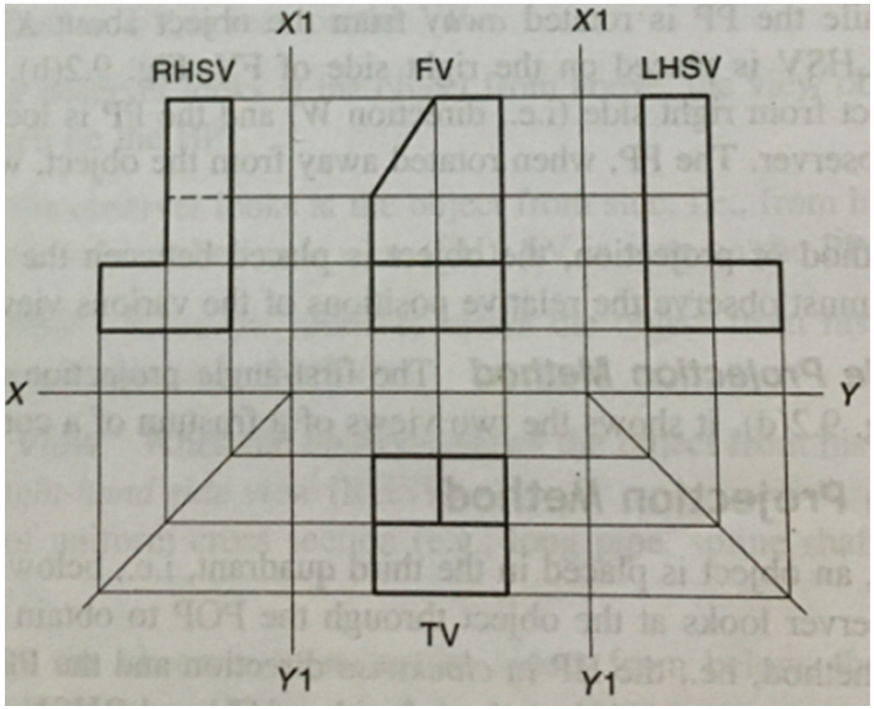
Difference Between First Angle & Third Angle

First-Angle Projection	Third-Angle Projection
The object is kept in the first quadrant.	The object is assumed to be kept in the third quadrant.
The object lies between the observer and the plane or projection.	The plane of projection lies between the observer and the object.
The plane of projection is assumed to be non-transparent.	The plane of projection is assumed to be transparent.
In this method, when the views are drawn in their relative positions, the plan comes below the elevation, the view of the object as observed from the left-side is drawn to the right of elevation.	In this method, when the views are drawn in their relative positions, the plan, comes above the elevation, left hand side view is drawn to the left hand side of the elevation.
This method of projection is now recommended by the "Bureau of Indian Standards'' from 1991.	This method of projection is used in U.S.A. and also in other countries.

Sequence of Views

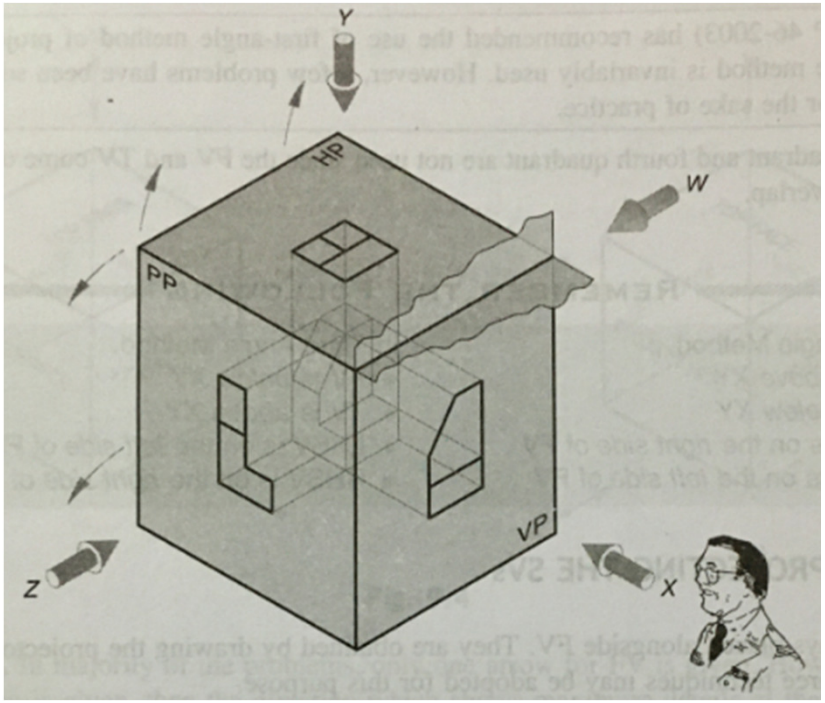
First-Angle Projection

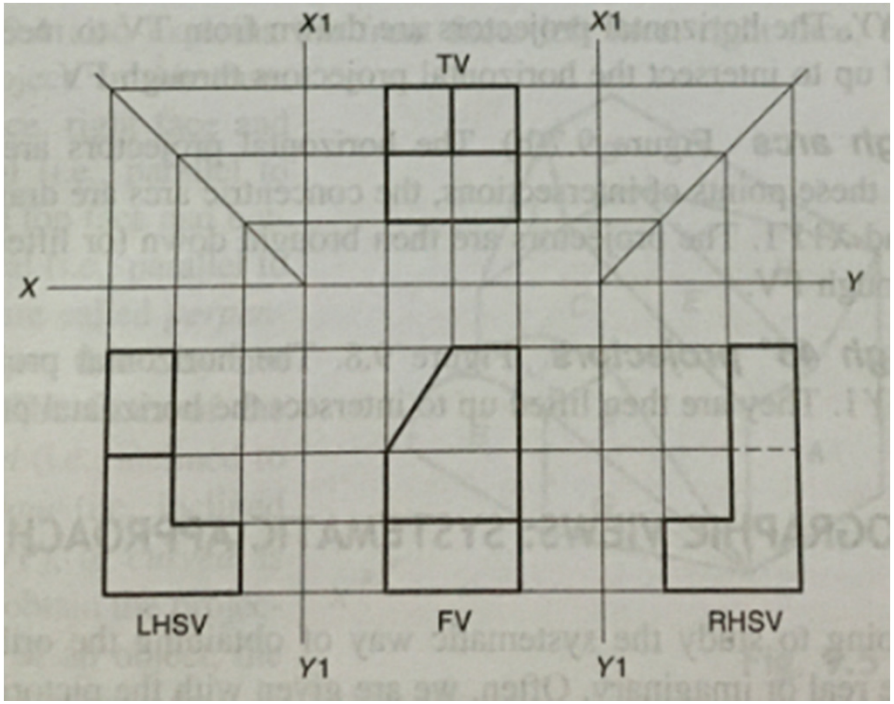




Sequence of Views

Third-Angle Projection





Few Points To Remember

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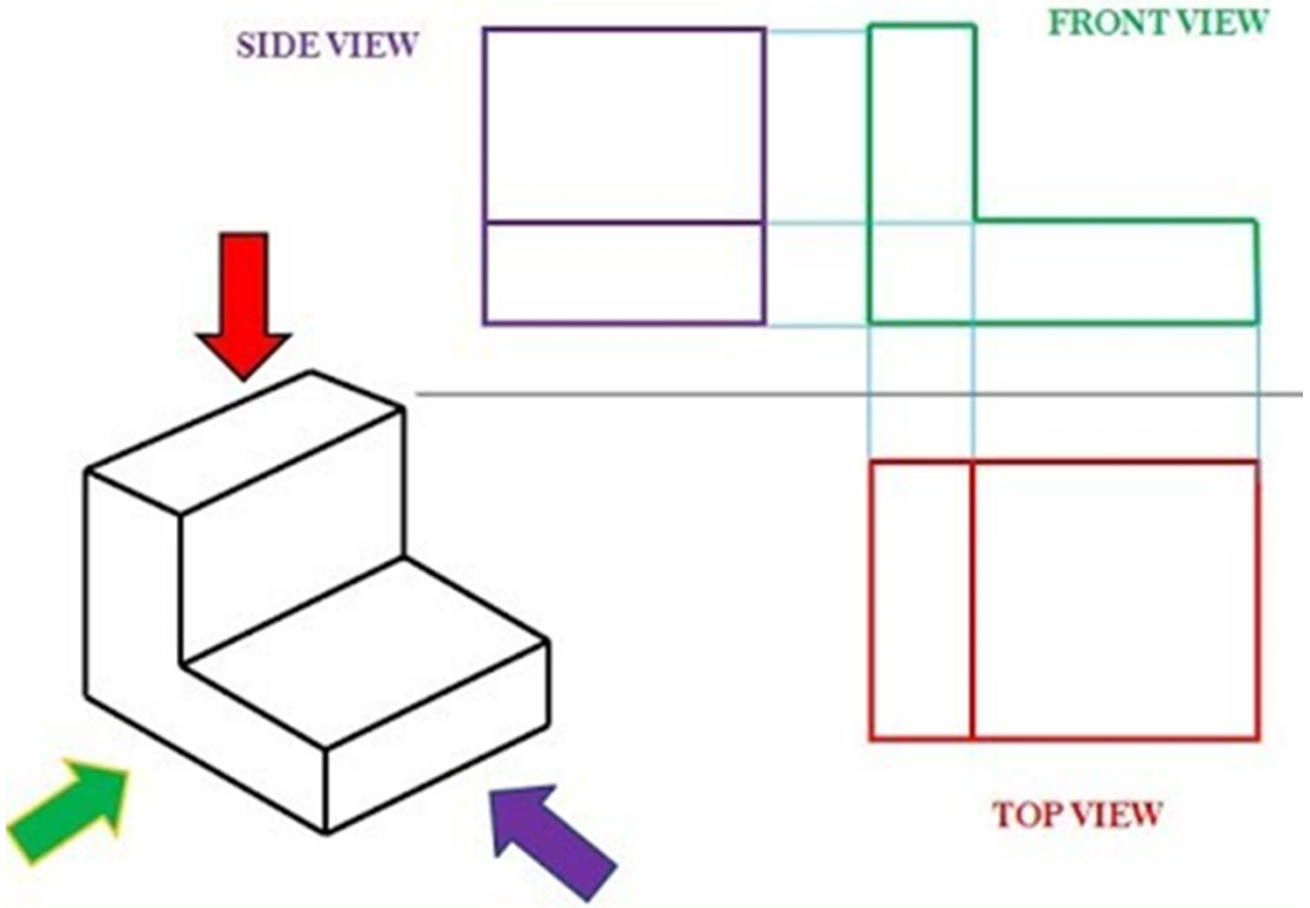
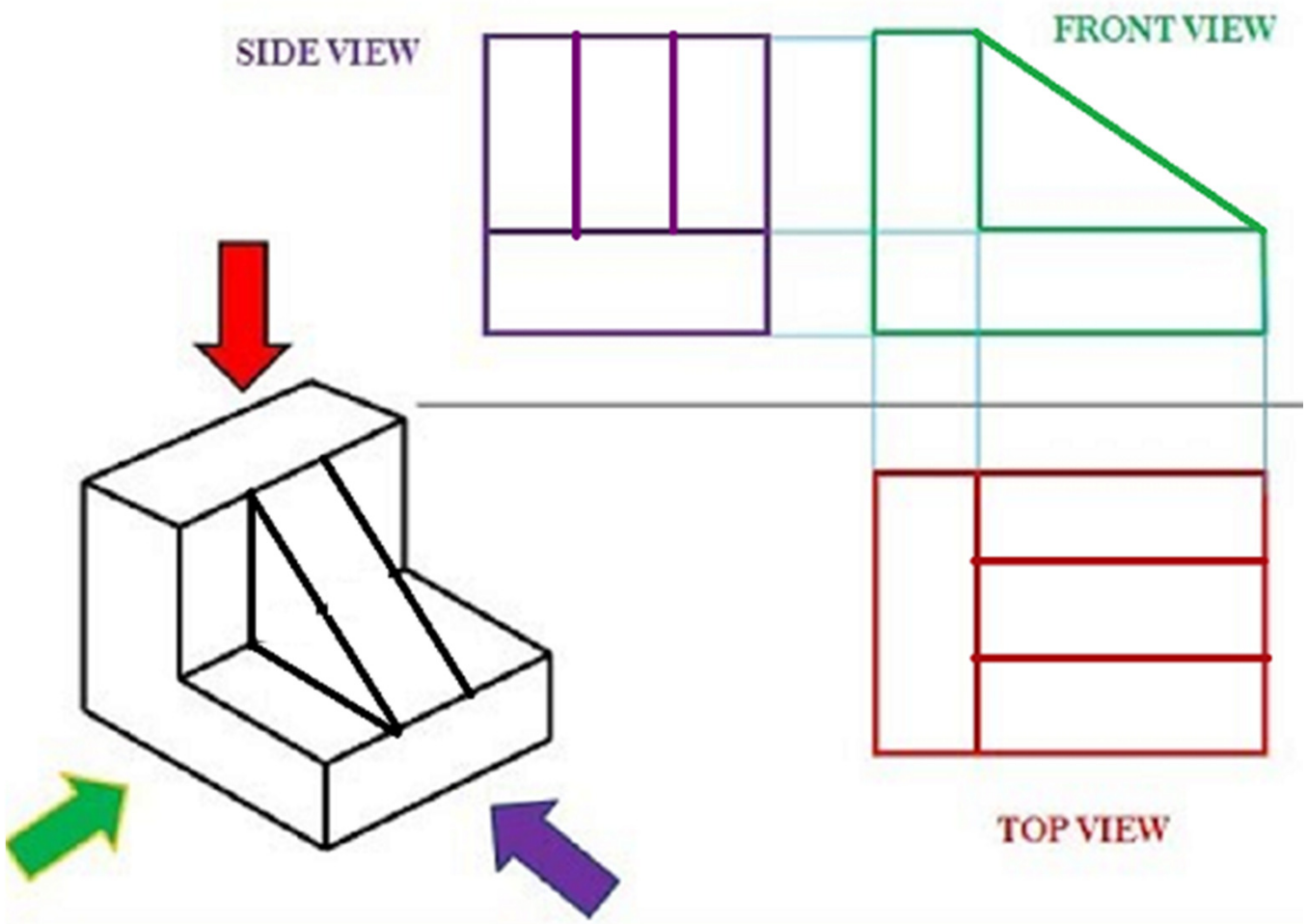
- ✓ If the angle of projection is not given then follow first angle of projection.
- ✓ If the drawing is prepared by using a scale i.e. reducing or enlarging then mention the scale value.
- ✓ If any dimension is missing then assume the missing dimension in proportion to other available dimensions.
- ✓ Missing depth of hole can be assumed as through hole.
- ✓ If direction of view for front view is not available then the view of maximum length should be assumed as front.
- ✓ Over dimensioning should be avoided.

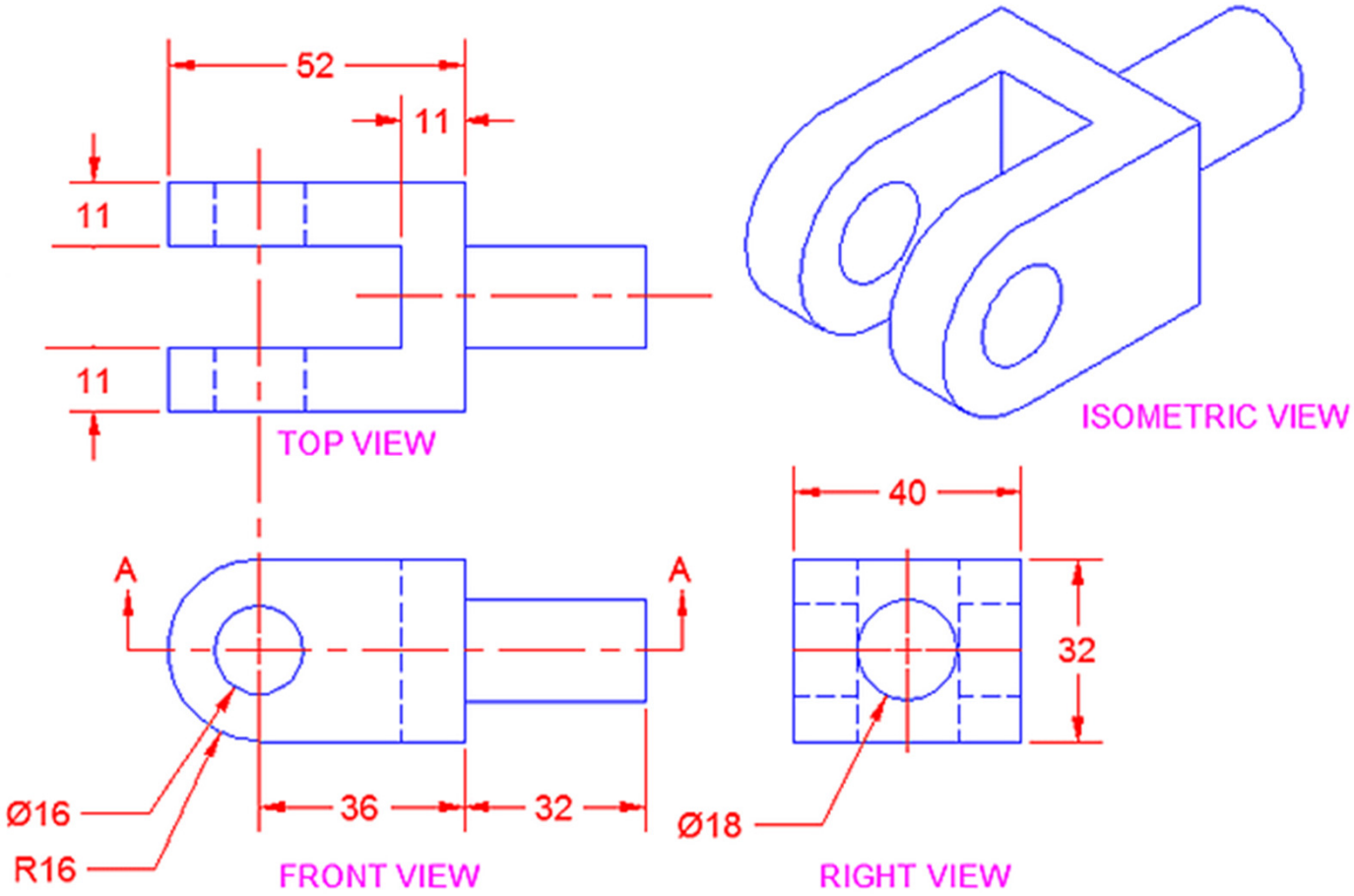
Few Examples



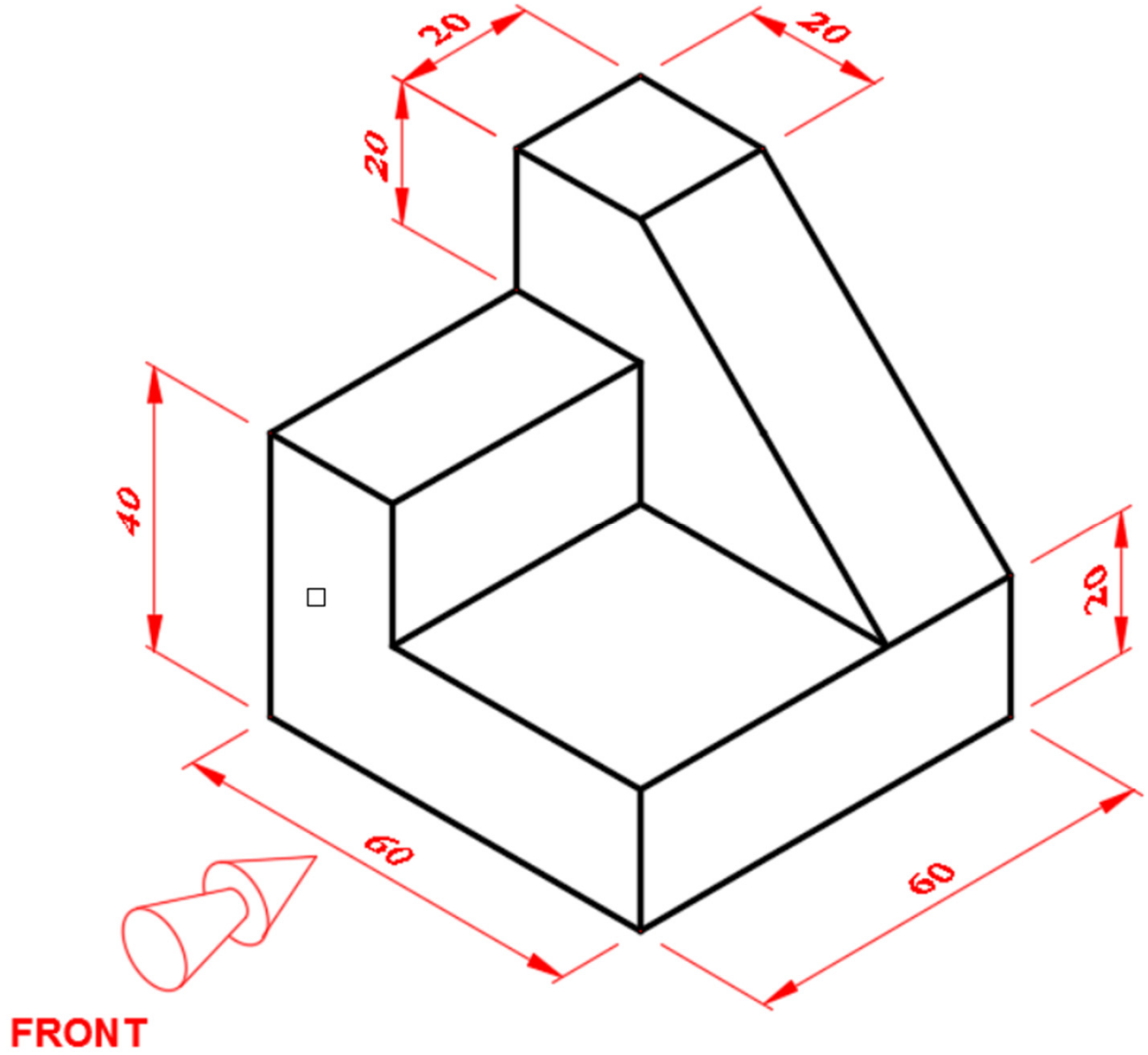
Few Examples



Few Examples



For Practice

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