SESSION 7

PERSPECTIVE PROJECTION

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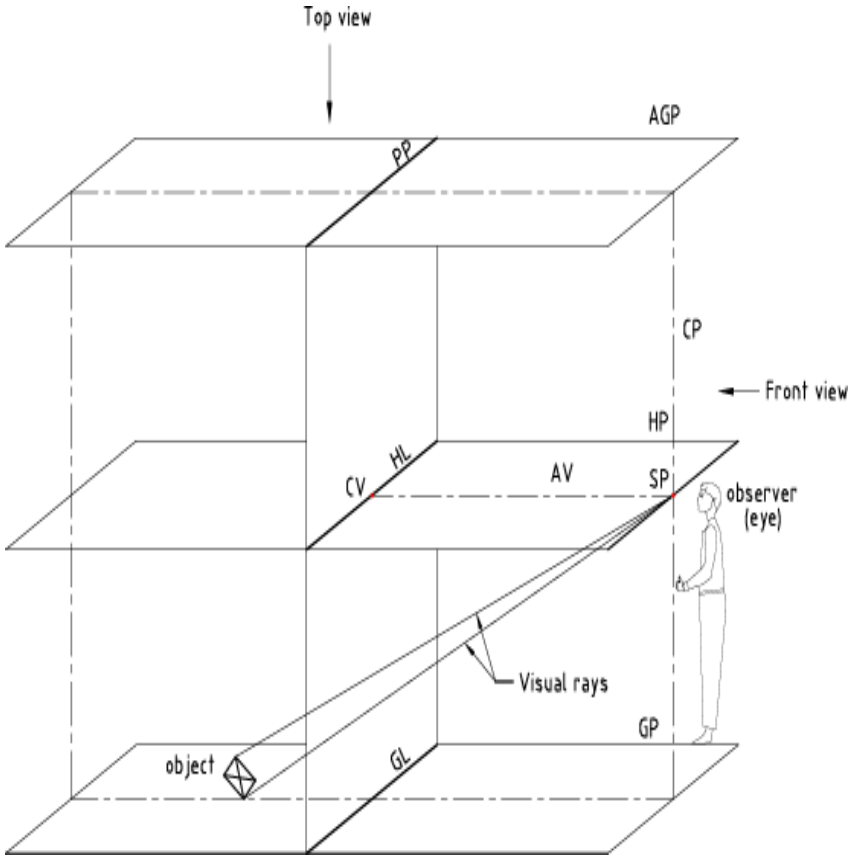
Perspective Projection

- Perspective projection is used to draw the three dimensional picture of an object as it appears to the human eye.
- Perspective drawings are usually drawn for large objects such as buildings.
- In perspective projection, the picture of the object is obtained in a plane known as the *picture plane* by assuming that the view is taken from a specific point known as the station point.



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Perspective Nomenclature

- ***Ground plane (GP)*** is a horizontal reference plane on which the object will be resting or placed.
- ***Station point (SP)*** is the observer's eye.
- ***Picture plane (PP)*** is a vertical reference plane on which perspective view of the object is obtained when the object is viewed from the station point.
- ***Ground line (GL)*** is the intersection line of PP and GP.
- ***Horizon plane (HP)*** is also a horizontal reference plane which is parallel to GP and passing through the station point.
- ***Horizon line (HL)*** is the intersection line of PP and HP.
- ***Visual rays*** are imaginary lines drawn to join various corners of the object to the station point (*SP*) which pierce the picture plane. These piercing points are marked in top view and are projected to front view to get the perspective projection of an object.

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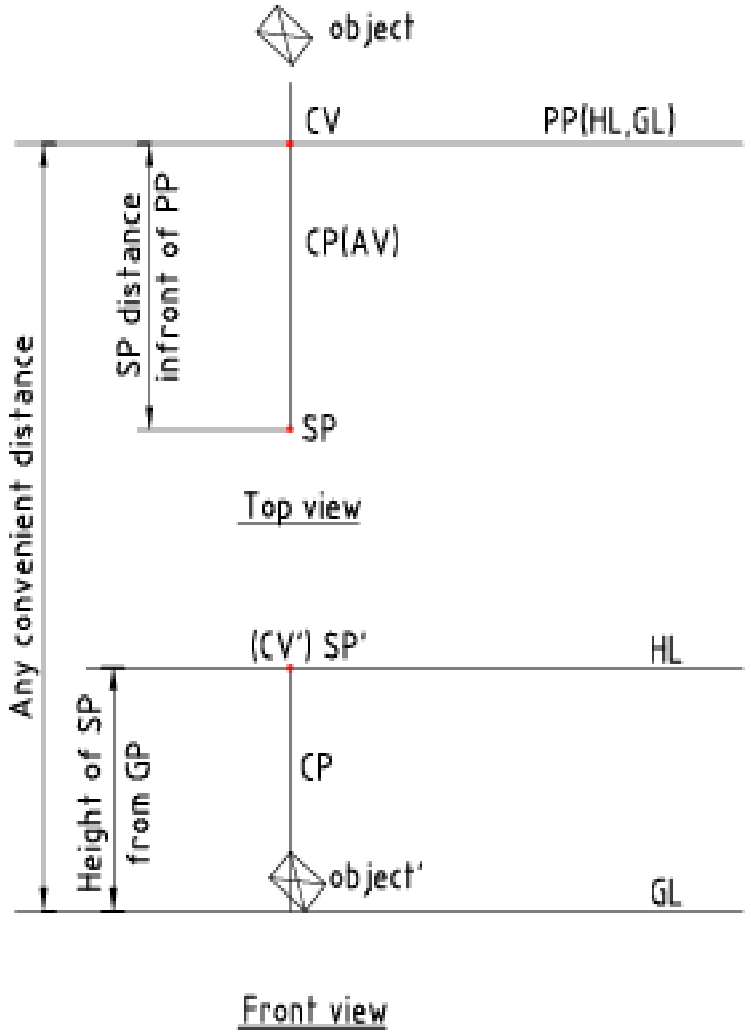
Perspective Projection

- Consider the arrangement of the reference planes, position of the object and observer shown earlier.
- When viewed from the top, the line of intersection of the planes alone can be seen in top view.
- In this case, the object is placed behind *PP* and the observer (station point) stands in front of *PP* as shown in Fig.
- Also, consider the front view of the arrangement of the reference planes, object, observer and other elements seen as shown in Fig.



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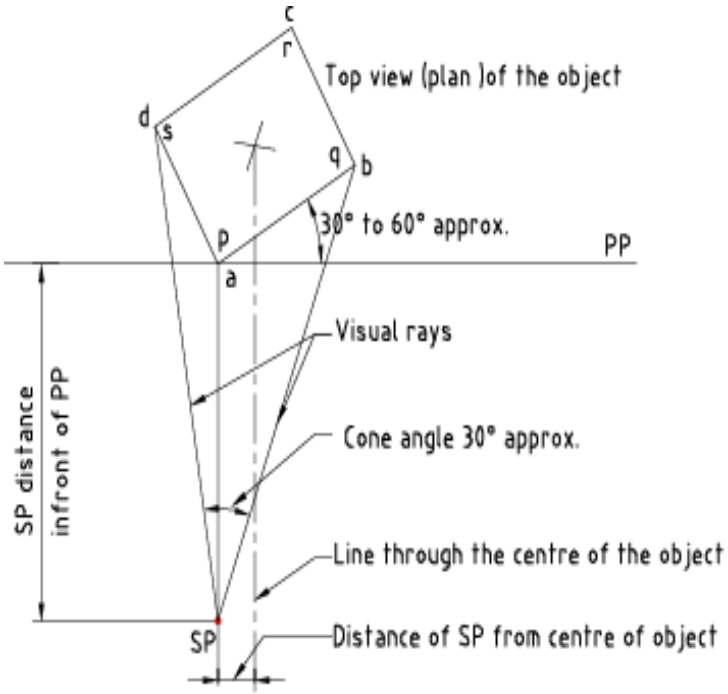
Visual ray method

- In visual ray method, the TV and FV of the object and station point (*sp*) in both the views are located.
- Then visual rays from *sp* connecting various corners of the object in TV and FV are drawn.
- The piercing points of these rays with picture plane are marked in TV and projected to FV to get perspective projection of the object.



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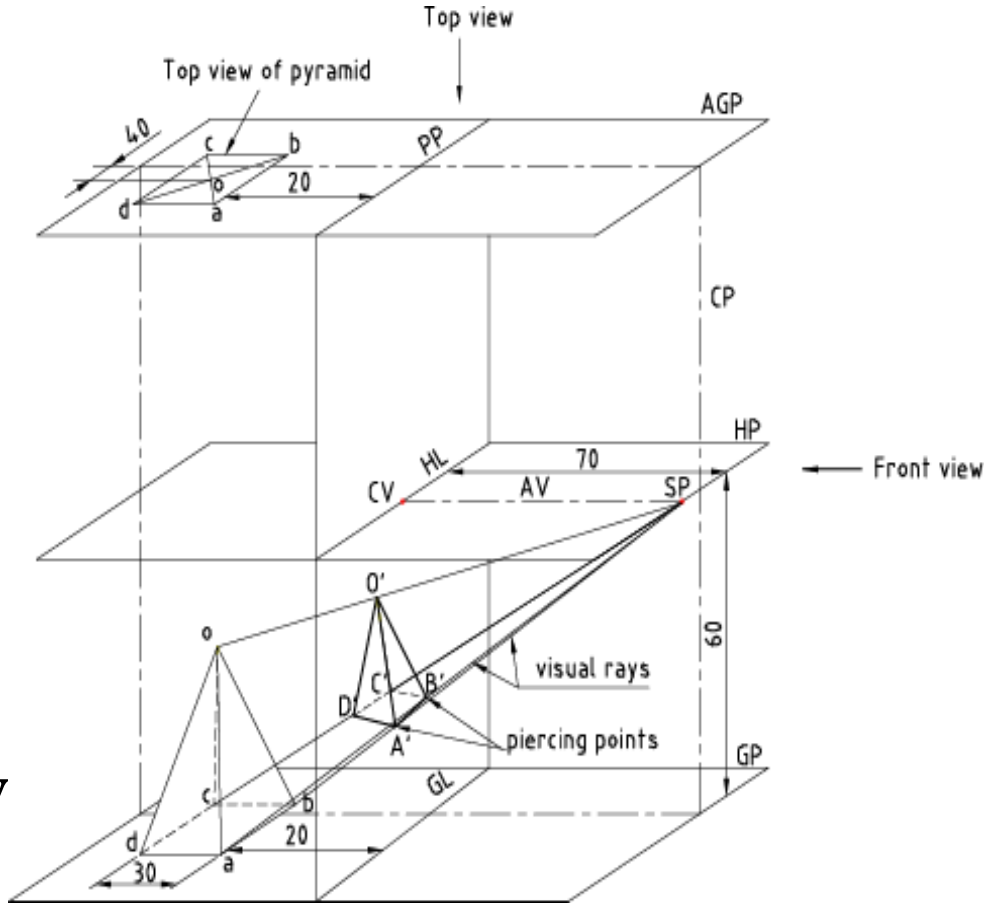
Example 1: Draw the perspective view of a square pyramid of base 30 mm, side and height of apex 45 mm rests on *GP*. The nearest edge of the base is parallel to and 20 mm behind the picture plane. The station point is situated at a distance of 70 mm in front of the *PP* and 40 mm to the right of the axis of the pyramid and 60 mm above the ground.

- Understand and visualize the reference planes and object placed on GP.
- Understand and draw the line of intersection of the planes, object and observer in TV and FV.
- Draw the rays connecting object corners and SP in TV and FV.



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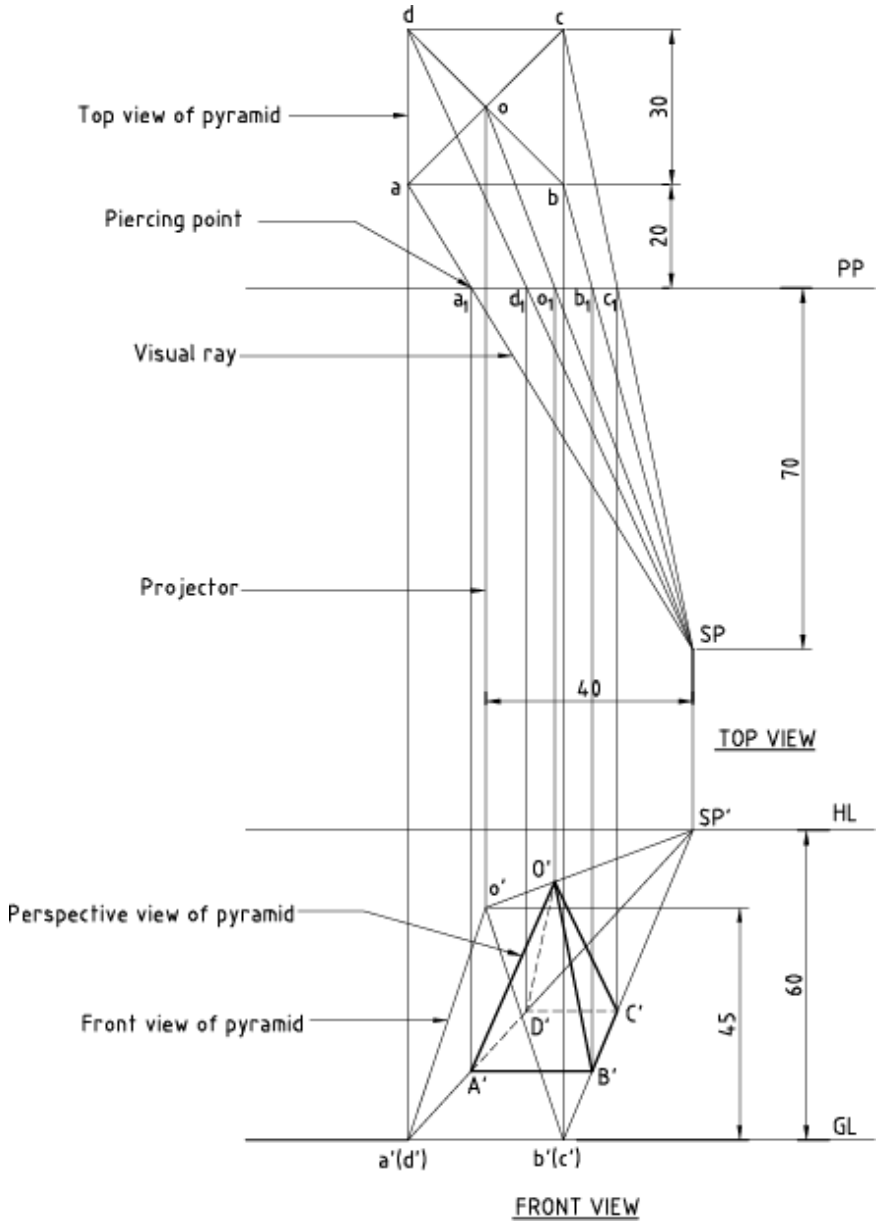
- Draw the visual rays connecting object corners and SP in TV and FV.
- Mark piercing points of the visual rays in top view and project and mark them to the corresponding rays in front view.
- Join the points, draw the visible and hidden edges to complete the perspective projection of the pyramid.



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END OF SESSION 7

SESSION 8
INTERSECTION OF SOLIDS

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