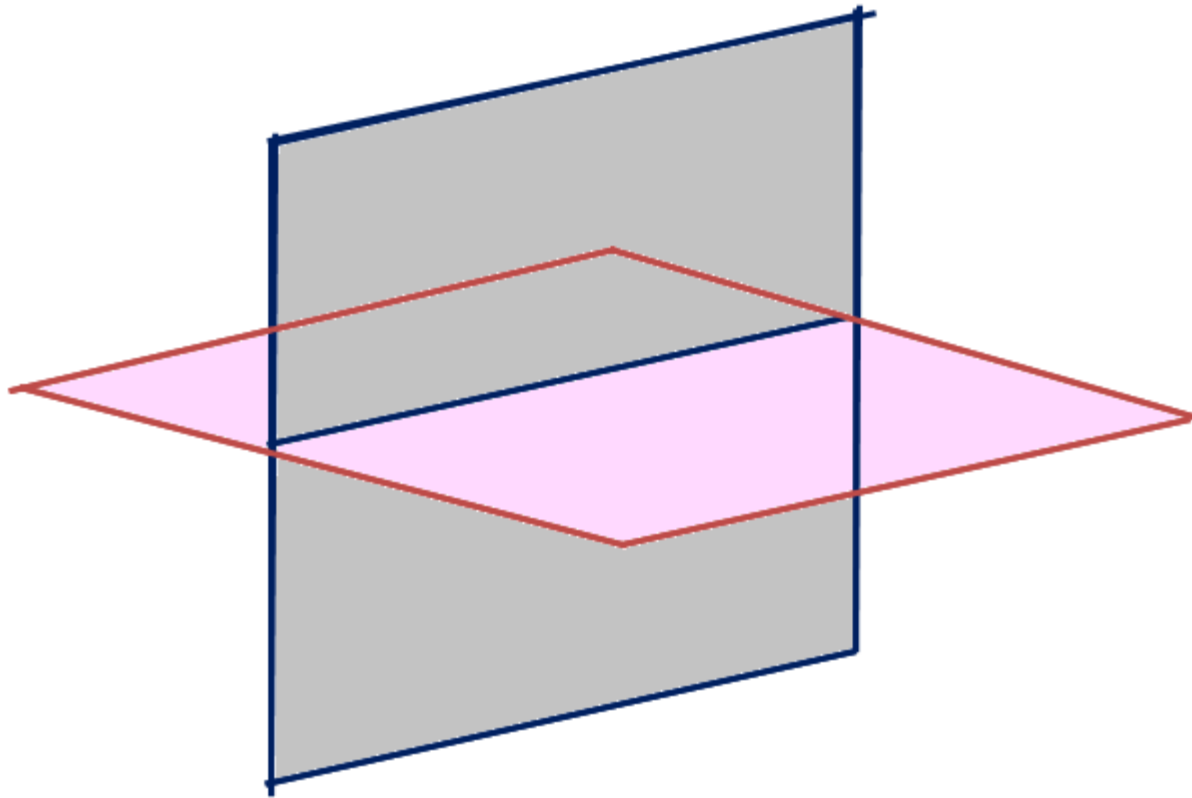


## ***Orthographic Projection:***

***Observer at infinite distance from the object.***

***Parallel Line of Sight, Perpendicular to the plane.***

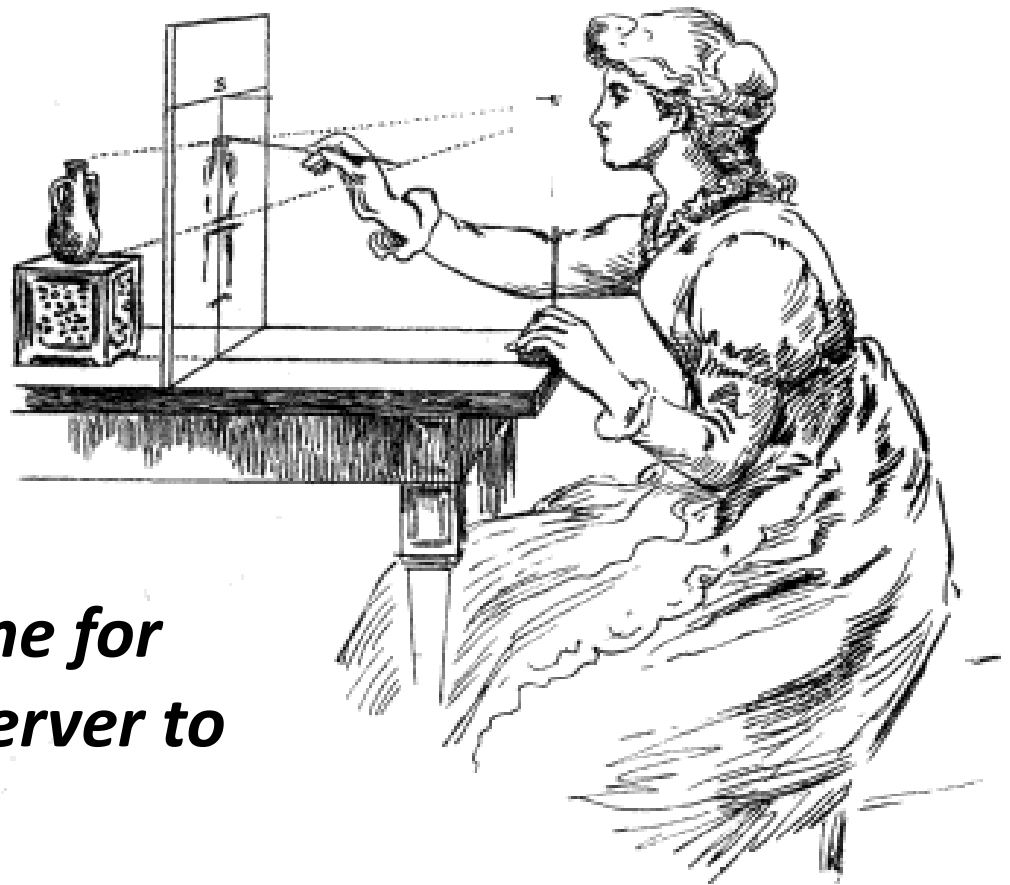
***Object & the Observer are resting on imaginary planes.***



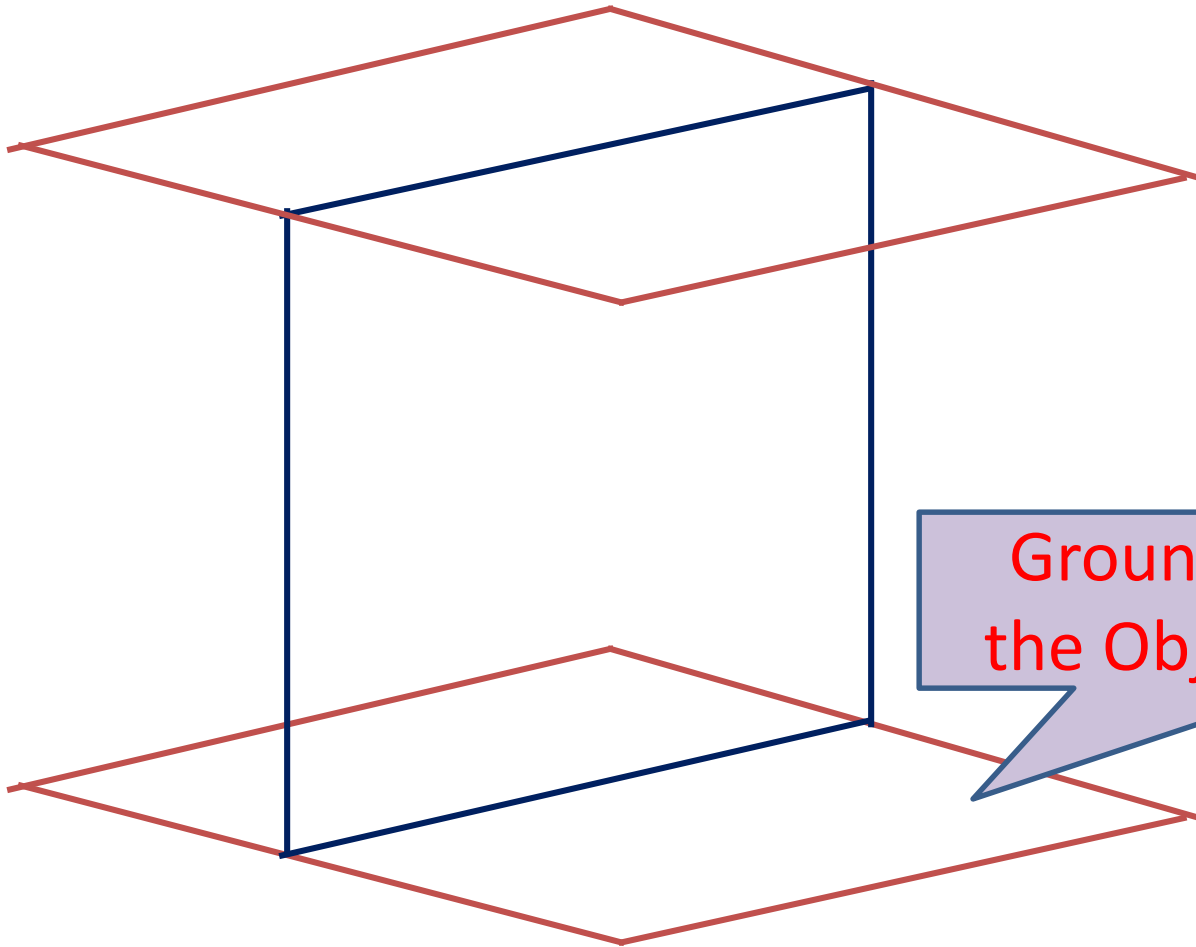
***Perspective Projection:***

***Observer at finite distance from the object.***

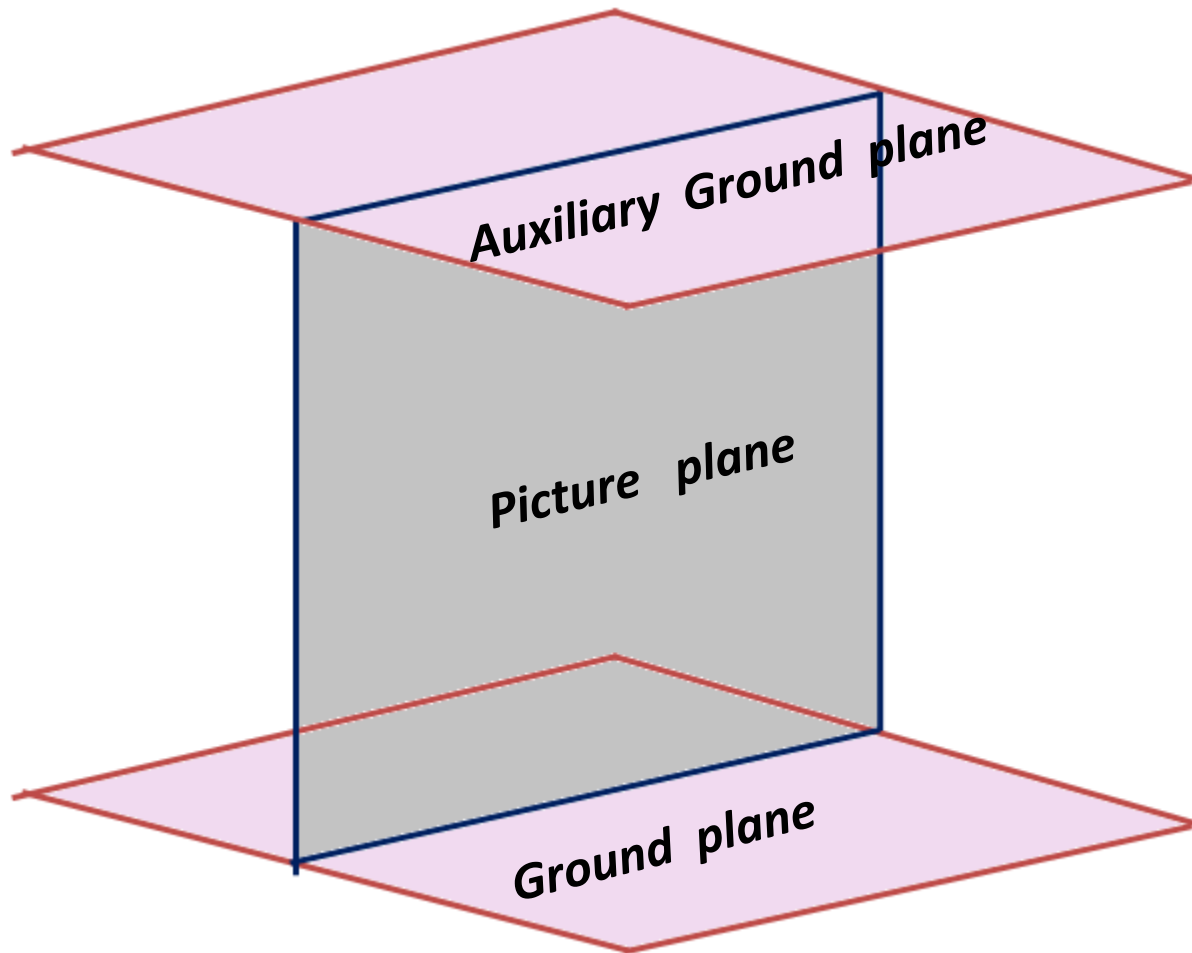
***Lines of Sight converge at the observer's eye.***



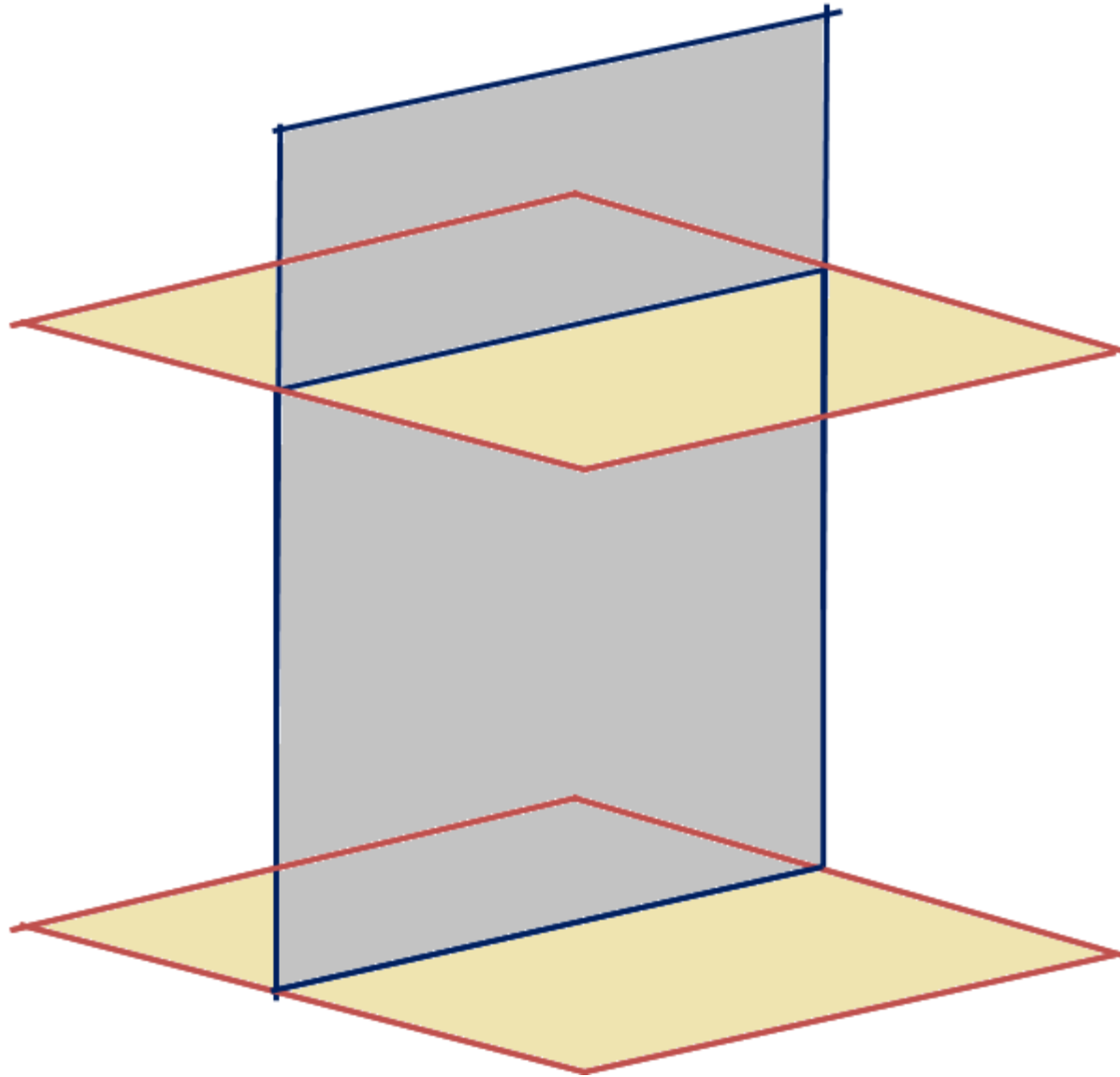
***Requires a Ground plane for  
the object and the observer to  
rest.***



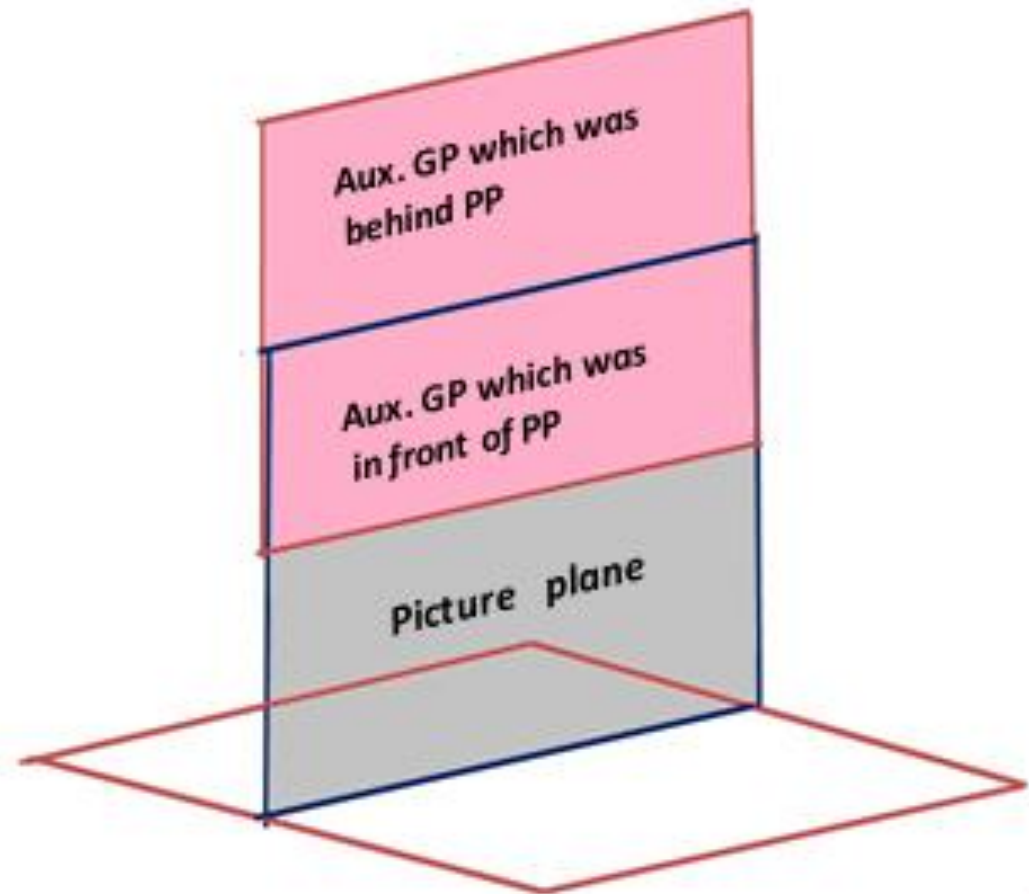
Ground plane to support  
the Object & the Observer



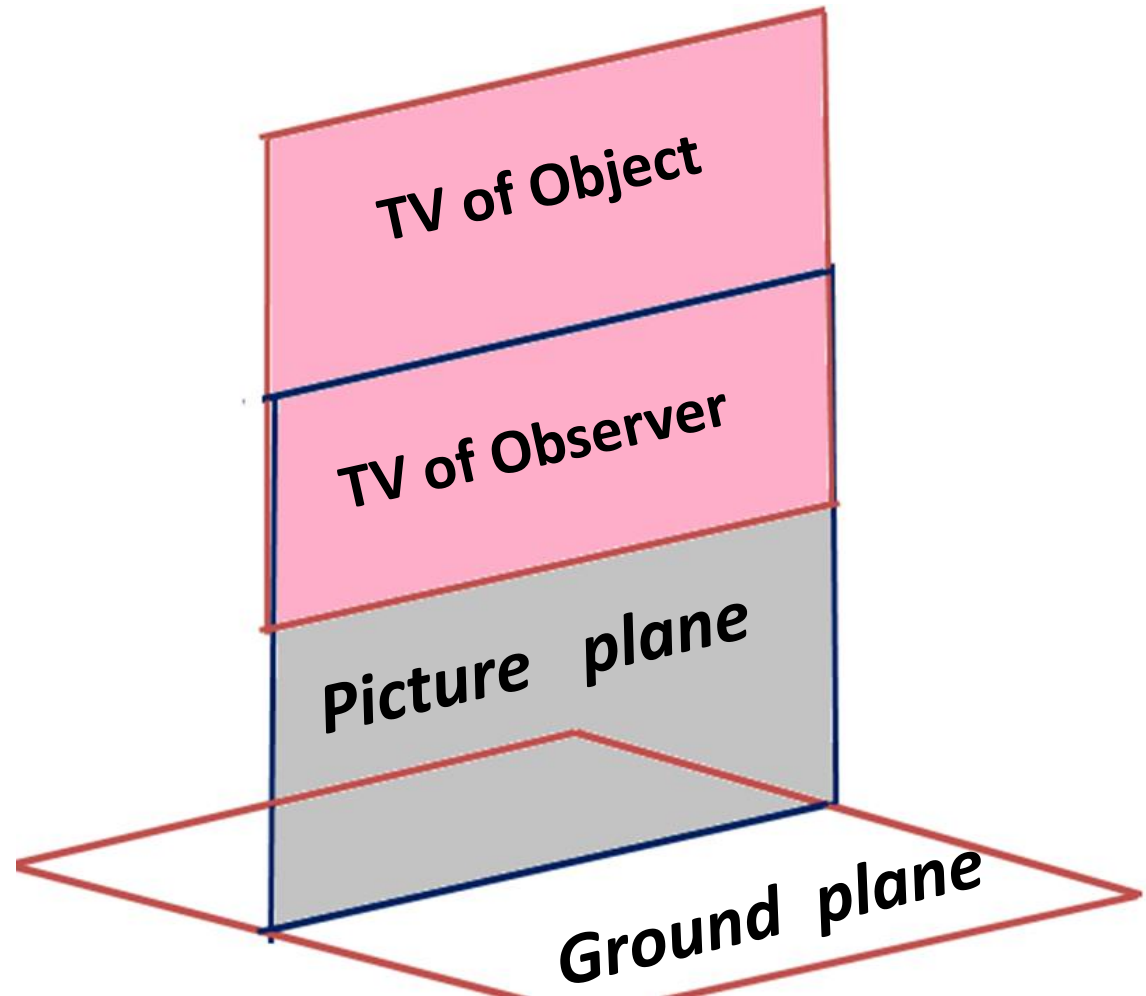
***Turn the Auxiliary Ground plane by 90° clockwise.***



***Auxiliary Ground plane  
turned by 90° clockwise.***



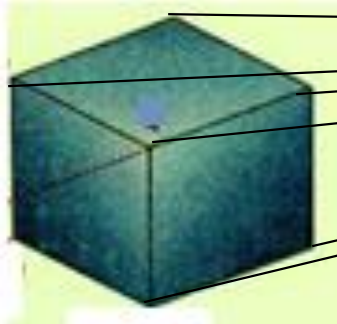
***Auxiliary Ground plane  
turned by 90° clockwise.***



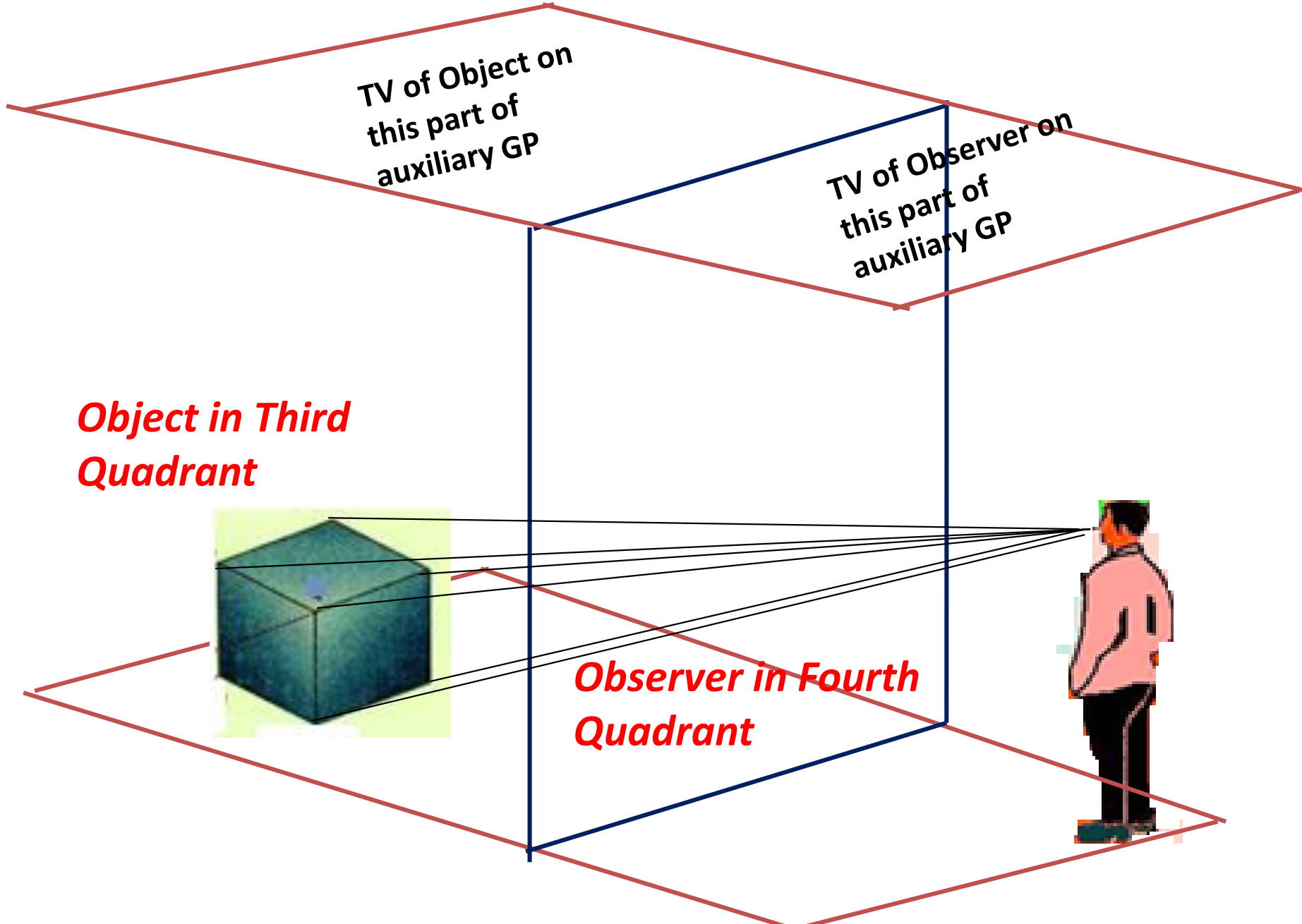
**TV of Object on  
this part of  
auxiliary GP**

**TV of Observer on  
this part of  
auxiliary GP**

**Object in Third  
Quadrant**

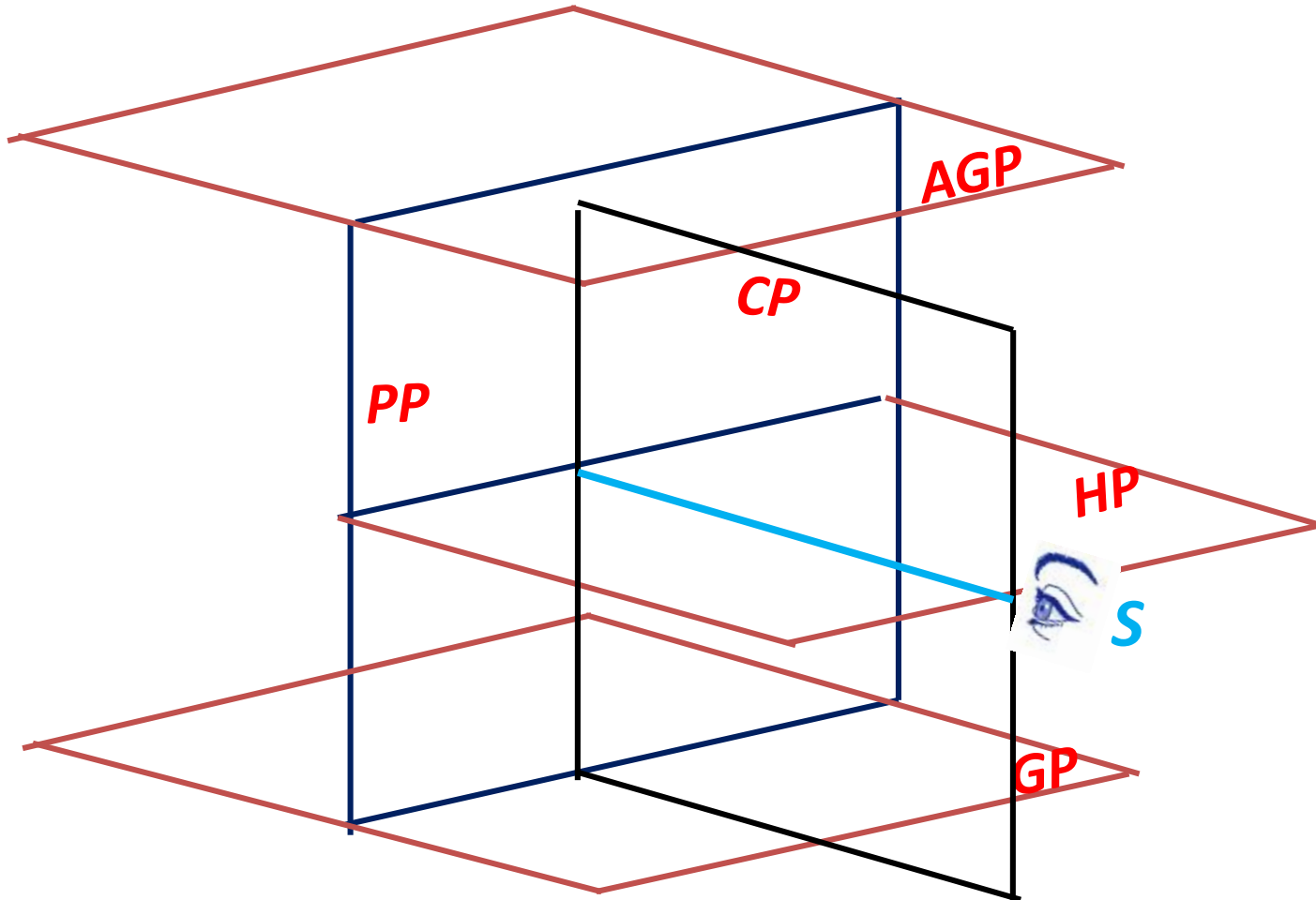


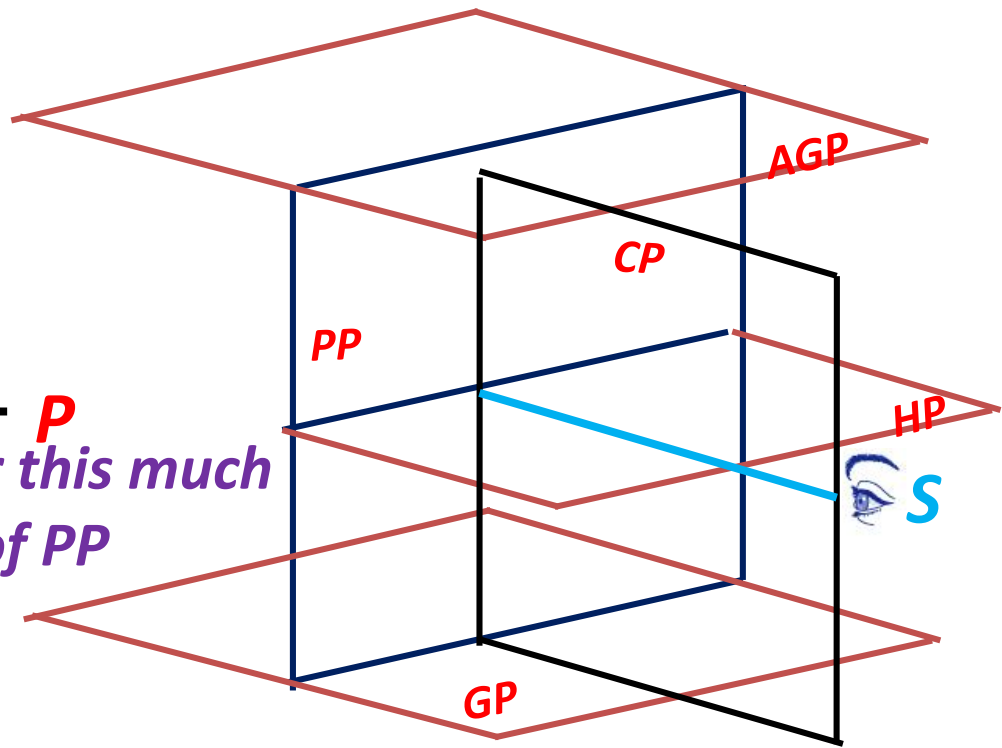
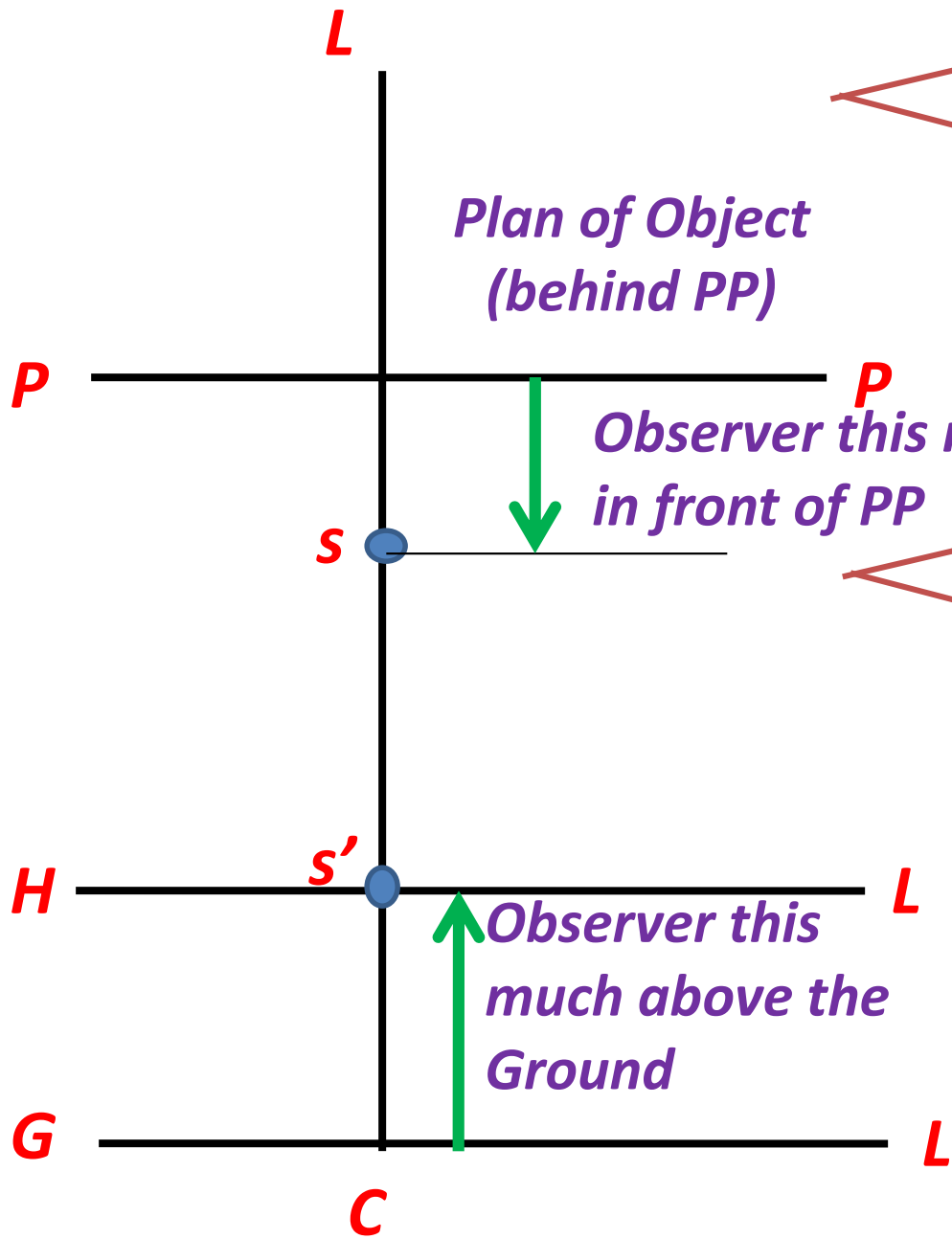
**Observer in Fourth  
Quadrant**





# HORIZON PLANE & CENTRAL PLANE





## **NOTE:**

- (1). Horizon Plane referred with the ground.***
- (2). Height of the Observer equals height of the Horizon Plane .***
- (3). Distance of the Observer referred with the Picture Plane.***
- (4). Central plane referred with respect to some point on the Object.***
- (5). Front & Top views of the Station point lie on the Central Line.***

# ***IMPORTAT POINTS IN VISUAL RAY METHOD***

***1. The Ground line (GL).***

***2. The Horizon Line (HL).***

***It is above GL by the height of the Observer.***

***3. The TV of the Picture Plane (pp line). Height of the pp line above the HL should be more than the distance of the observer from Picture plane.***

***4. Front & Top views of the object in simple position.***

- 5. Based on the position of object with respect to PP, reposition the simple plan. This is called the diagram.***
- 6. Locate the position of the central plane (CL) with respect to the object (diagram) and represent it as a line in both the views.***

***On the (CL) mark the top view (s) and front view (s') of the station point based on its position with respect to PP and GP.***

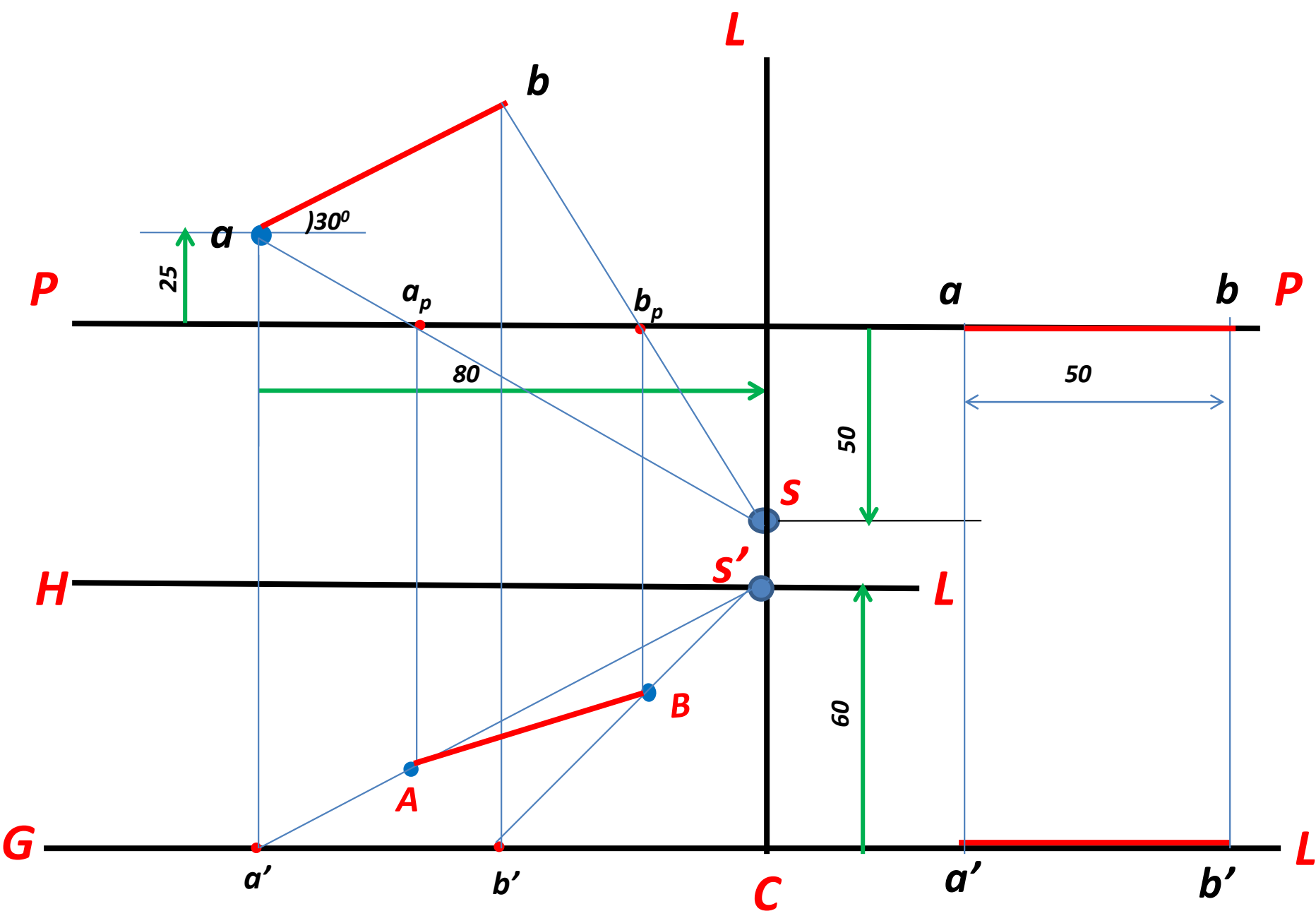
***Distance of s' measured from GL upward.***

***Distance of s measured from pp line downward.***

- 7. Obtain the Elevation points  $a'_p, b'_p, c'_p, d'_p$  etc. corresponding to the Plan points in the diagram.**
- 8. Join ( $s'$ ) to the Elevation points  $a'_p, b'_p, c'_p, d'_p$  etc. These are the Front views of the Visual rays.**
- 9. Join all plan points with ( $s$ ) and note the intercepts of each line with PP line. They are  $a_p, b_p, c_p, d_p$  etc.**
- 10. From each intercept, with PP, draw projector vertically to meet the respective Front view of the Visual ray. They are A, B, C, D etc. Joint A-B-C-D-E etc. to obtain the perspective.**

## **PP (1)**

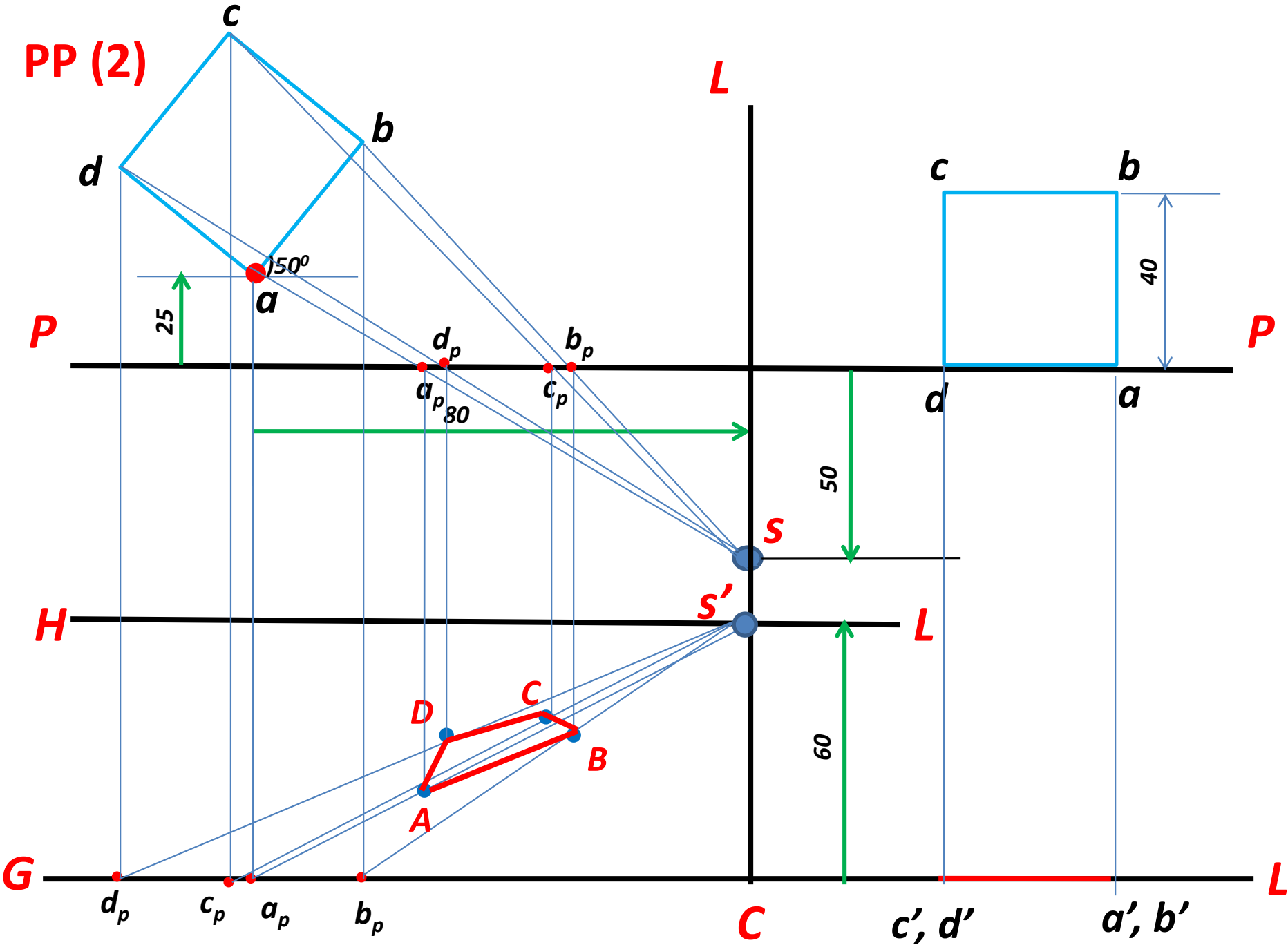
***A straight line AB 50 mm long lies on the ground. The end A is 30 mm behind PP. A B is inclined 30° to PP. The station point is 50 mm in front of PP, 60 mm above the ground plane and lies in a central plane which is 80 mm to the right of A. Draw the perspective view of the line A B by visual ray method.***





## **PP (2)**

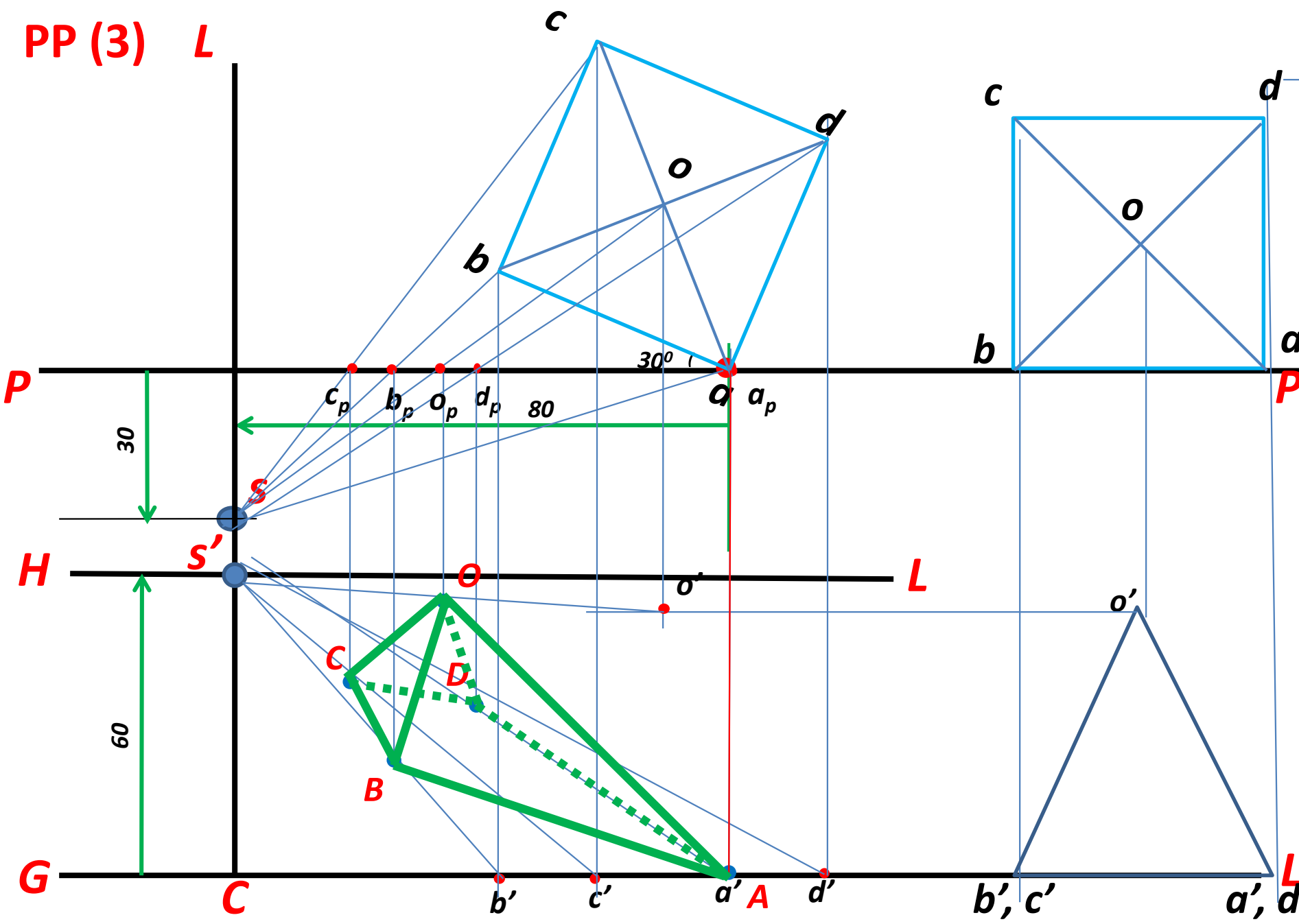
*A square lamina of 40 mm edge lies on the ground. The corner which is nearest to PP is 25 mm behind it and an edge containing that corner is making  $50^\circ$  to PP. The station point is 50 mm in front of PP, 60 mm above the ground plane and lies in a central plane which is 80 mm to the right of the corner nearest to PP. Draw the perspective view of the lamina by visual ray method.*



## **PP (3)**

*A square pyramid 40 mm edge of base and axis 50mm long is resting on the ground. A corner of the pyramid is on PP and an edge containing that corner is making  $30^\circ$  to PP. The station point is 30 mm in front of PP, 60 mm above the ground plane and lies in a central plane which is 80 mm to the left of the corner on PP. Draw the perspective view of the pyramid by visual ray method.*

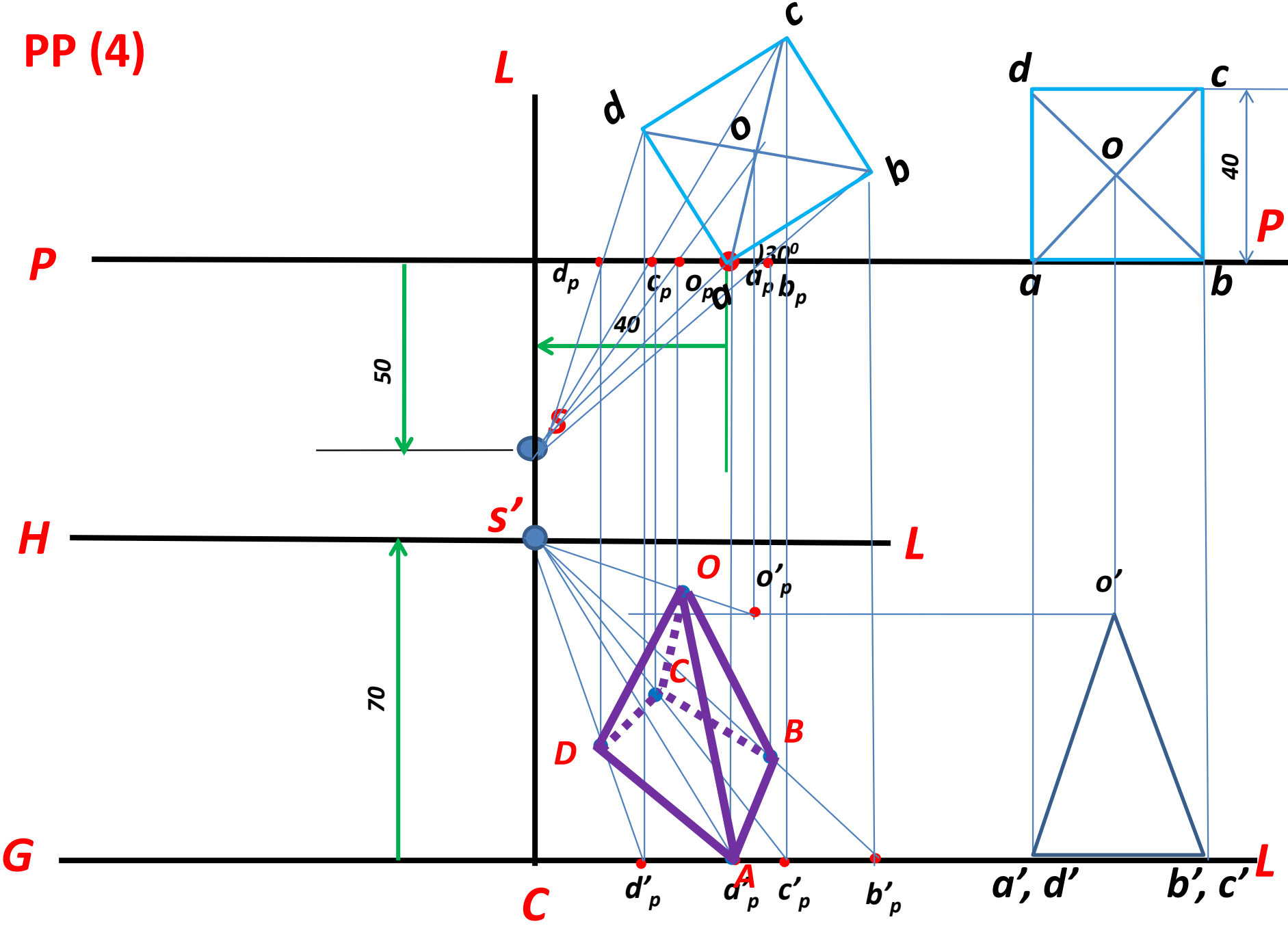
PP (3) L



## **PP (4)**

*A square pyramid 40 mm edge of base and axis 60mm long is resting on the ground. A corner of the pyramid is on PP and an edge containing that corner is making  $30^\circ$  to PP. The station point is 50 mm in front of PP, 70 mm above the ground plane and lies in a central plane which is 40 mm to the left of the corner on PP. Draw the perspective view of the pyramid by visual ray method.*

PP (4)



## **PP (5)**

*A hexagonal lamina of 45 mm edge lies on the ground. The corner which is nearest to PP is 25 mm behind it and an edge containing that corner is making  $50^\circ$  to PP. The station point is 50 mm in front of PP, 60 mm above Ground plane and lies in a central plane which is 80 mm to the left of the corner nearest to PP. Draw the perspective view of the lamina by visual ray method.*

PP (5)

L

P

H

G

S

S'

C

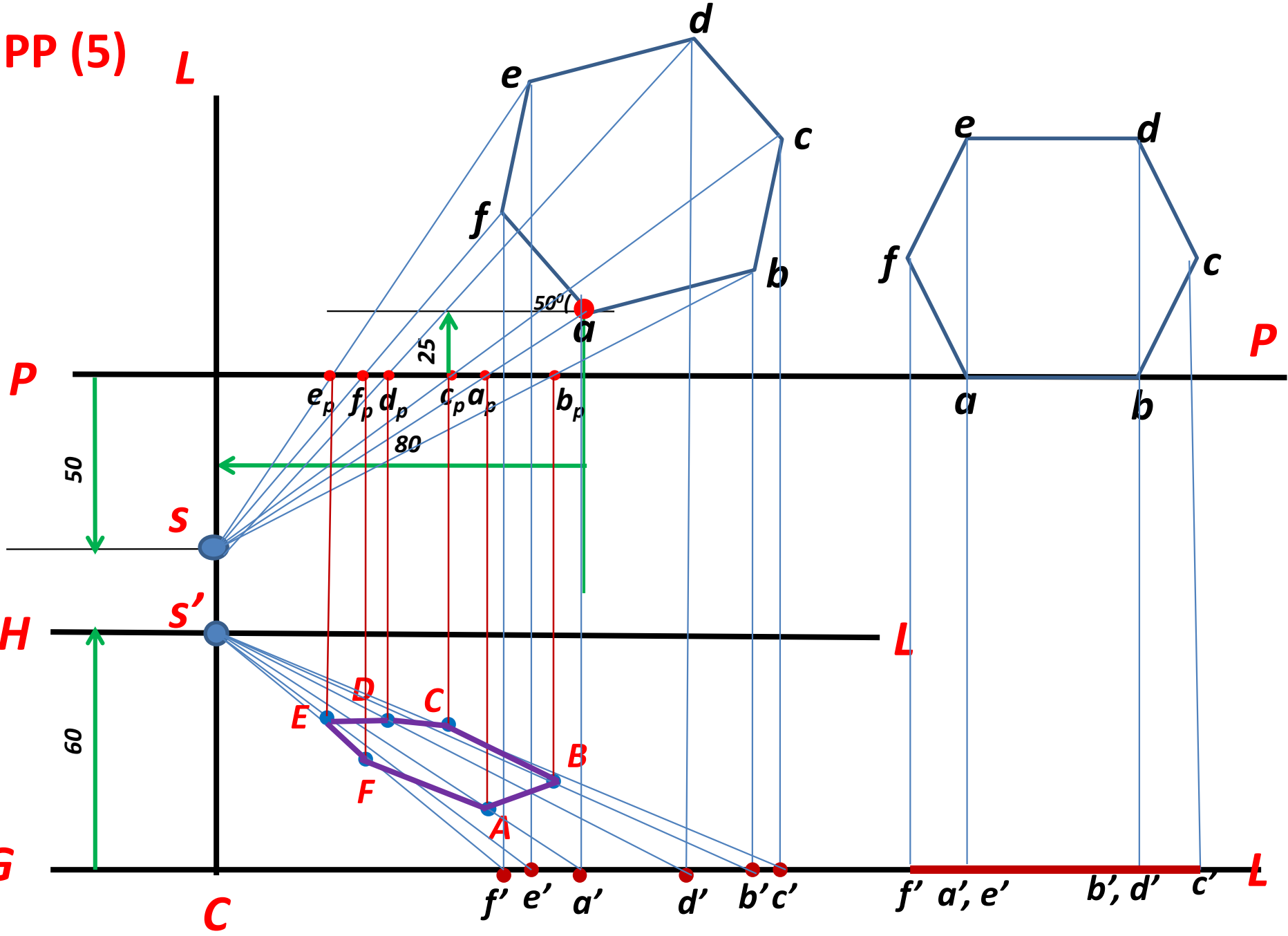
P

f'

a', e'

b', d'

c' L

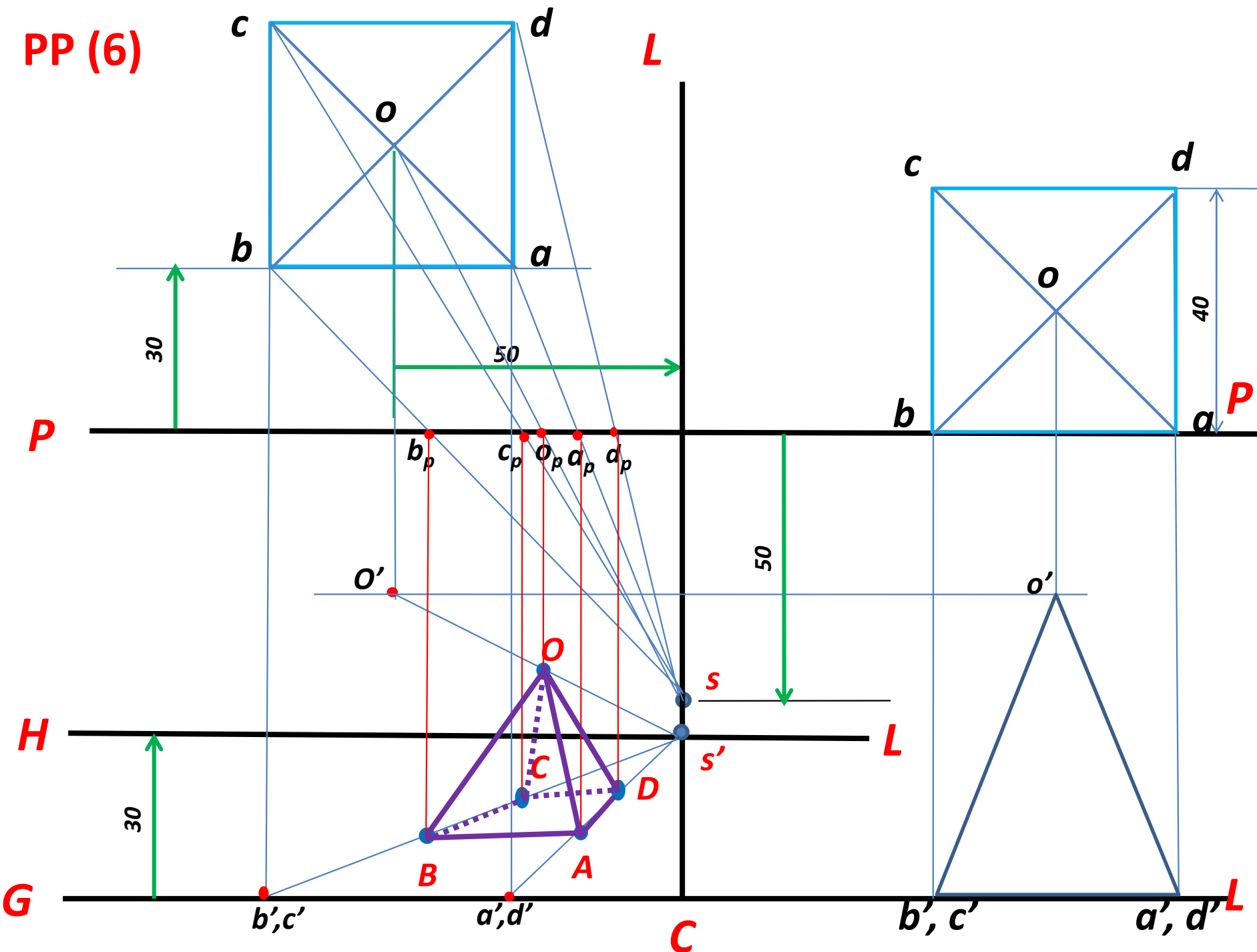




## **PP (6)**

*A square pyramid 50 mm base edge and axis 60 mm high, rest on the base with one edge of the base parallel to and 30 mm behind the picture plane. The central plane is 50 mm to the right of the apex. The station point is 50 mm in front of the picture plane and 30 mm above the ground plane. Draw the perspective of the pyramid.*

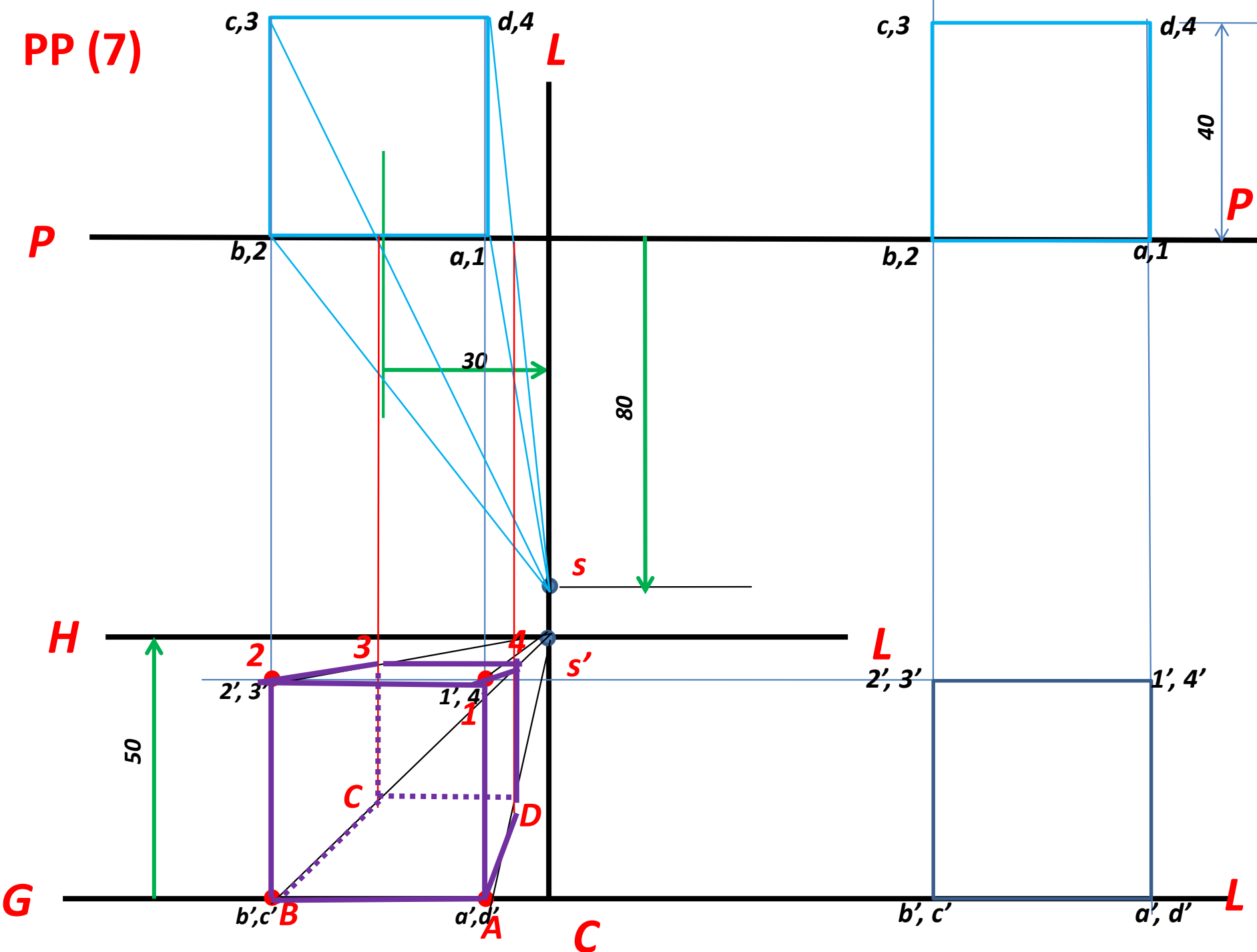
PP (6)



## **PP (7)**

***Draw the perspective view of a cube, edge 40 mm.  
standing on the HP with one base edge on the PP.  
The station point is 50 mm. above the HP, 30 mm.  
to the right of the axis and 80 mm. from PP***

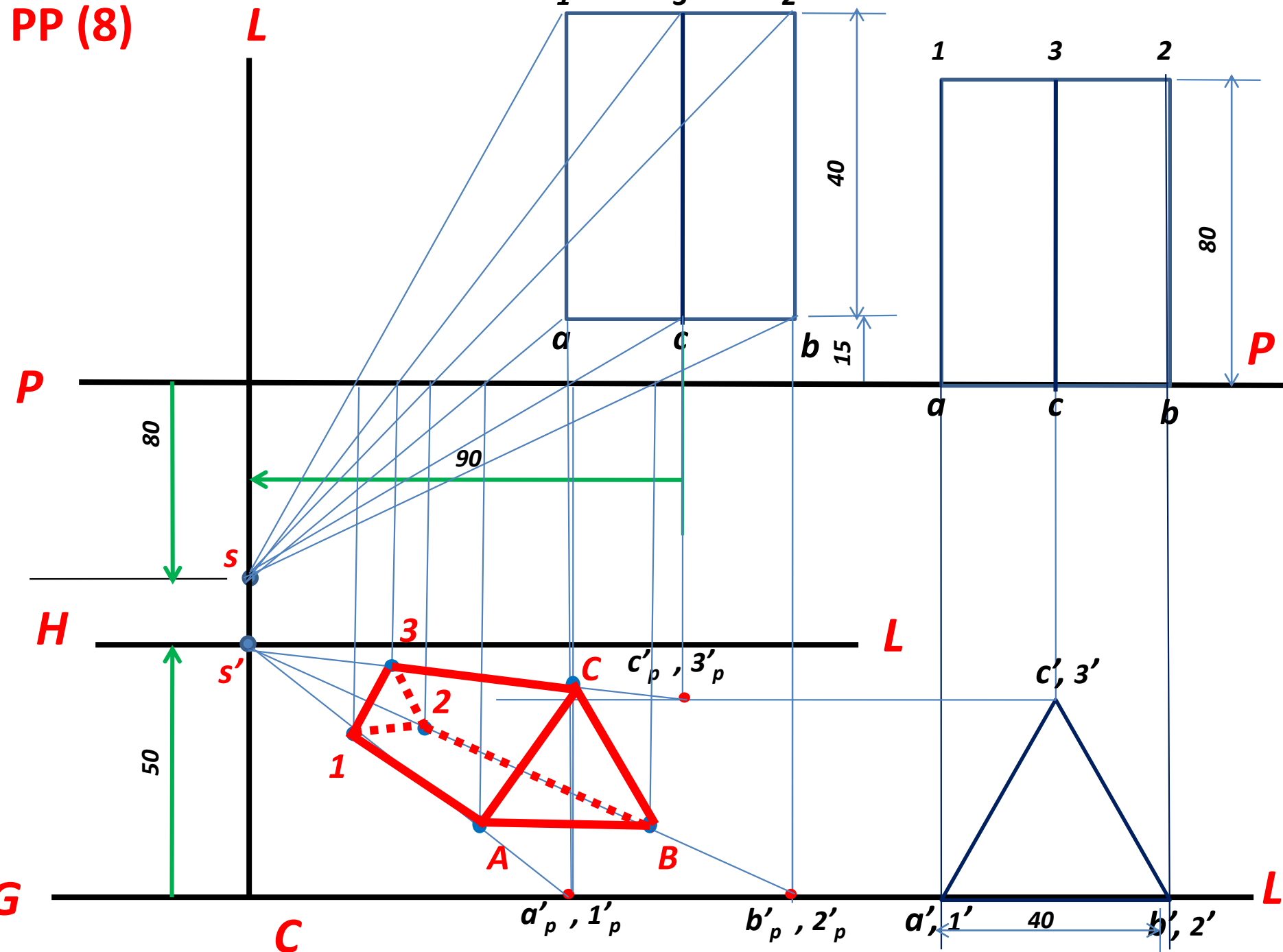
PP (7)



## **PP (8)**

*An equilateral triangular prism of 40 mm side of base and axis 80 mm long lies on its rectangular face on the ground. A triangular face is parallel to and 15 mm behind PP. The observer is viewing the object from a point 50 mm above the ground and 30 mm in front of the PP. The central plane is 90 mm towards the left of the axis of the prism. Draw the perspective view of the prism.*

PP (8)



## **PP (9)**

*A hexagonal prism 25 mm. side and 50 mm. long, is lying on one of its rectangular faces on the ground plane. The station point is 80 mm. in front of the picture plane, 65 mm. above the ground plane and lies in a central plane, which is 70 mm. to the right of the axis of the prism. Draw the perspective view of the prism if one of the hexagonal faces of the prism is on the picture plane.*

## **PP (10)**

***Draw the perspective view of a pentagonal prism 20 mm side and 35 mm long lying on one of the rectangular faces on the ground plane. One of its pentagonal faces touches the picture plane and the station point is 52 mm. in front of the picture plane, 25 mm. above the ground plane and lies in a central plane, which is 70 mm. to the left of the centre of the prism.***



## **PP (11)**

***A circular lamina 60 mm. in diameter is resting on the ground vertically with the plane of the lamina inclined at  $40^\circ$  to the PP. The end nearest to the PP is 20 mm. behind it. The station point is 35 mm. to the left of the nearest point of the circular lamina, 60 mm. in front of the PP and 90 mm. above the ground. Draw the perspective view of the circular lamina.***

## **PP (12)**

*A cylinder of base diameter 60 mm. and height 80 mm is resting on one of the generators on the ground with the base completely touching the PP. The SP is 60 mm. to the right of the centre of the base, 100 mm from the PP and 100 mm. above the ground. Draw the perspective projection of the object.*

## **PP (13)**

*A cylinder of base diameter 40 mm. and height 60 mm is lying on one of the generators on the ground with the base inclined at 40° to the PP. One of the points on the circumference of the base of the circle is touching the PP. The SP is opposite to this point, 80 mm. from the PP and 70 mm. above the ground. Draw the perspective view of the object.*

## **PP (14)**

*Draw the perspective view of a hexagonal prism, side of base 30 mm. and axis 60 mm long, lying on the ground on one of its rectangular faces, axis being inclined at  $30^{\circ}$  to the PP and a corner of the rectangular face which is on the ground touching the PP. The SP lies in a central plane which bisects the axis at a distance of 70 mm. from the PP The horizon is at the level of the top rectangular face of the prism.*

## **PP (15)**

***A pentagonal lamina, edge 30 mm. is resting on its edge with the plane of the lamina vertical. The SP is 40 mm. in front of PP, 60 mm. to the right of the center of the lamina and 90 mm. above the ground. Draw the perspective view.***

***Case (1). The plane of the lamina is 25 mm. behind the PP. Case (2). ). The plane of the lamina makes  $30^\circ$  to the PP, center of the lamina being 25 mm. behind the PP.***

## **PP (16)**

***A cone of base diameter 60 mm. and axis 90 mm. long is resting on its base on ground with the axis 50 mm. behind the PP. The eye is 40 mm. in front of PP, the central plane is 35 mm. to the left of the axis and the horizon is 60 mm. above the GL. Draw the perspective view.***

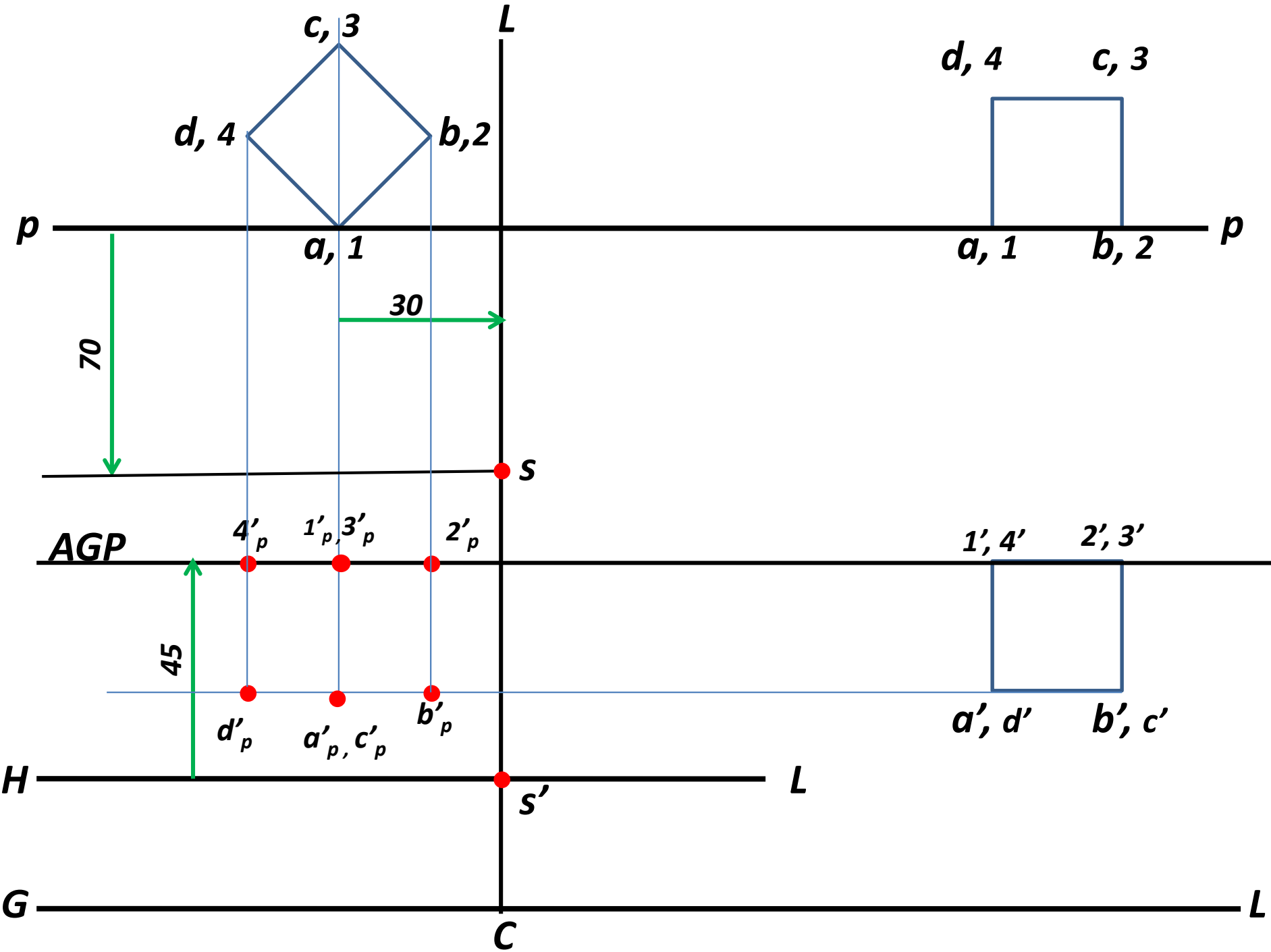
## **PP (17)**

***The frustum of a triangular pyramid, bottom edge 40 mm, top edge 20 mm. and height 50 mm. has its base 20 mm. above the ground. An edge at top is in the PP. The view point is 90 mm. above the ground, 60 mm. to the right of the axis and 30 mm. in front of PP. Draw the perspective view.***

## **PP (18)**

*A cube of side 25 mm. is placed vertically with one of its edges on the PP and top square end face touching an auxiliary ground plane at a height of 45 mm. above the horizon plane. The vertical edge, formed by the two adjacent square faces which are inclined at  $45^{\circ}$  to the PP, touches the PP. Draw the perspective view of the cube if the SP is 70 mm. in front of the PP and lies in a central plane which is 30 mm. to the right side of the centre of the cube.*

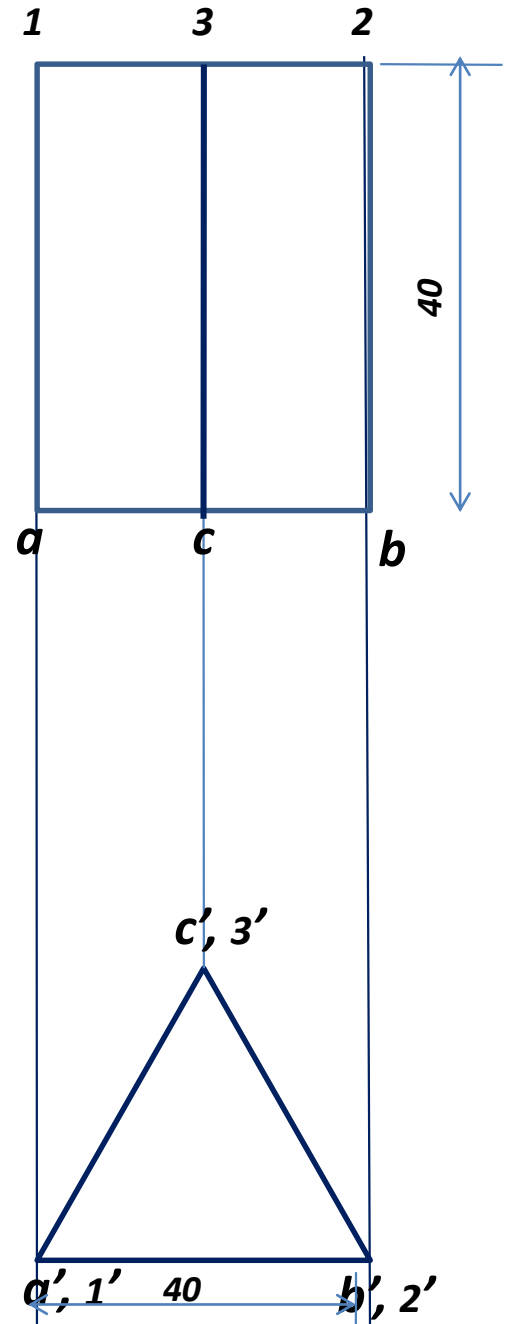
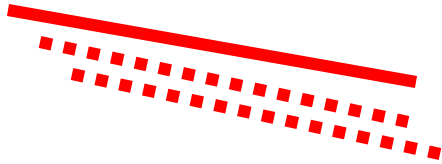






## **PP (19)**

***A rectangular pyramid base 35 mm x 45 mm and axis 50 mm. is resting on its base on the ground plane such that one of its longer edges of the base is touching on the picture plane. Draw the perspective view of the pyramid following the visual ray method if the station point is 60 mm. in front of the picture plane, 35 mm. above the ground plane and in the central plane, which passes through the axis of the pyramid.***



***c,3***

***d,4***

***b,2***

***a,1***

***2***

***3***

***4***

***1***

***2', 3'***

***1', 4'***

***C***

***B***

***A***

***b', c'***

***a', d'***

PP (8)

*L*

*P*

*H*

*G*

*s*

*s'*

*L*

*C*

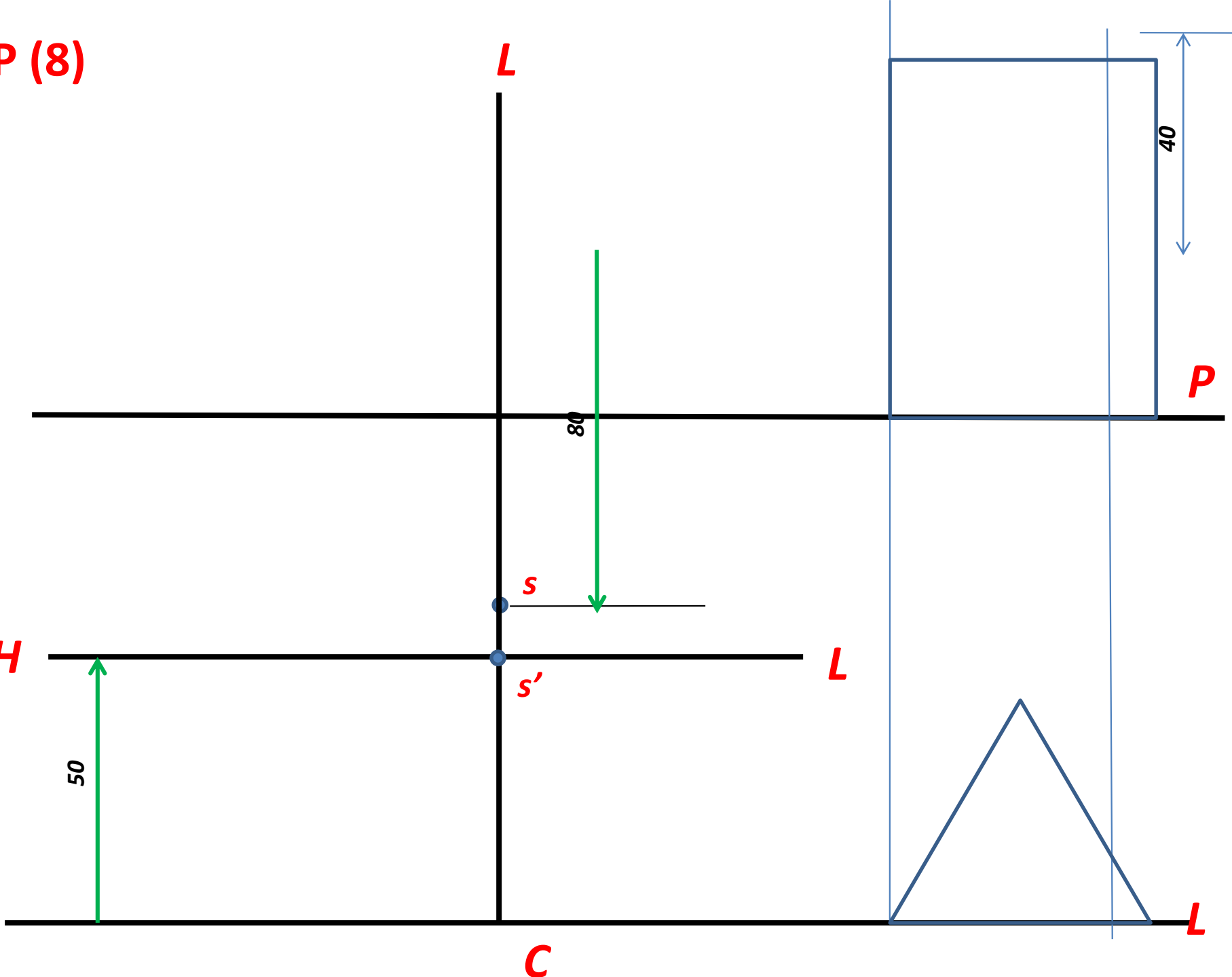
*P*

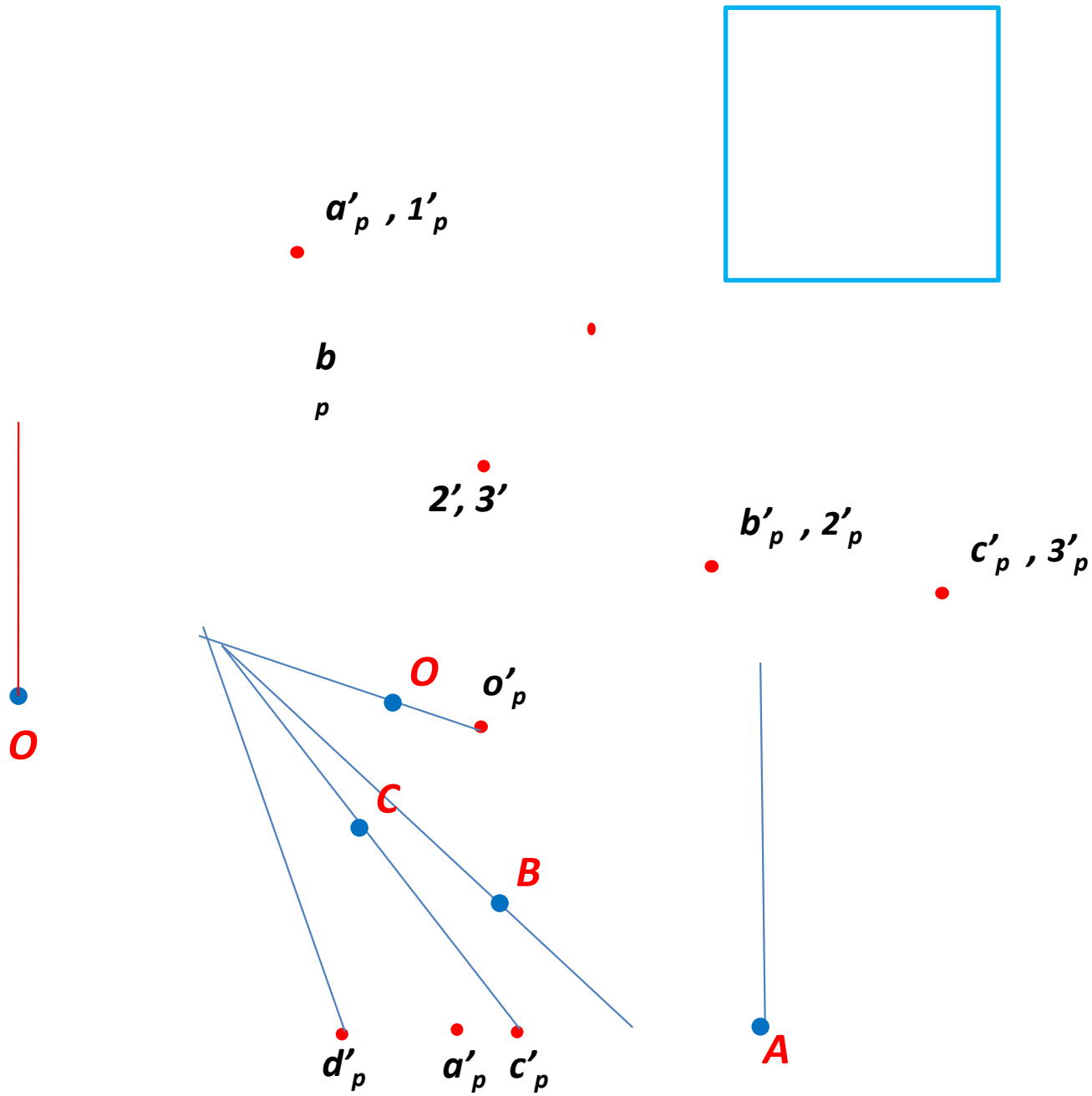
*L*

50

80

40





*d*

*c*

*a*

*b*

*e*

*f*

*d<sub>p</sub>*

*c<sub>p</sub>*

*o<sub>p</sub>*

*b<sub>p</sub>*

*30°*

*d*

*c*

*a*

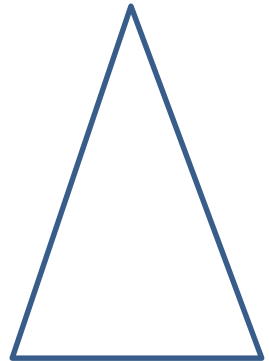
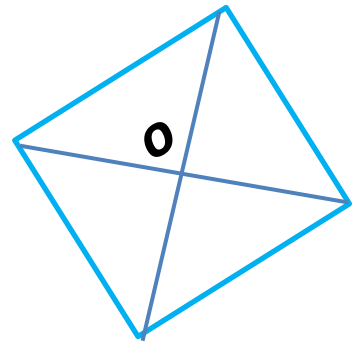
*b*

*o*

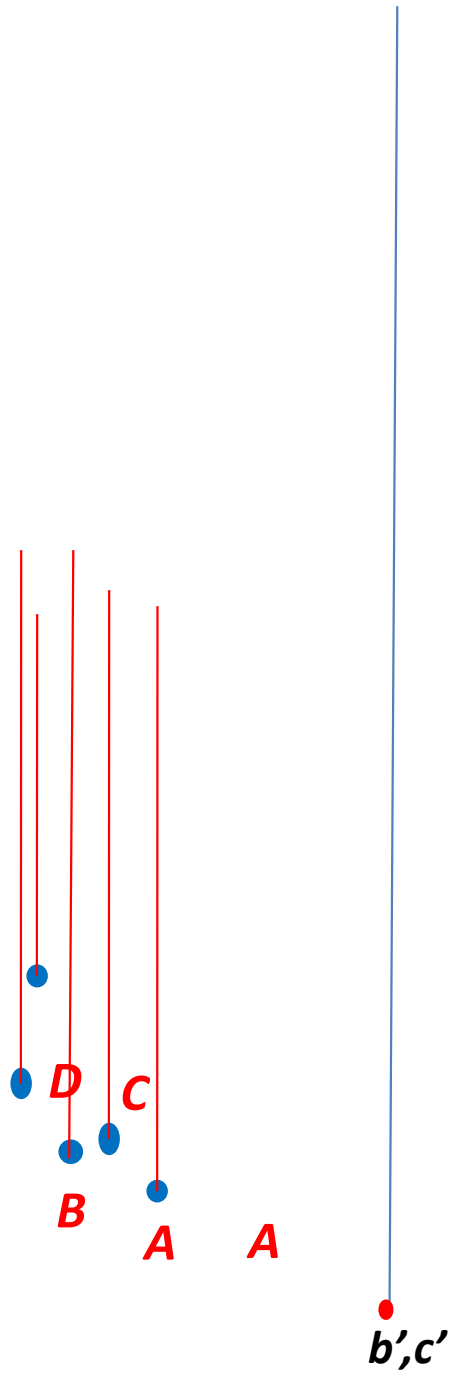
*o'*

*a', d'*

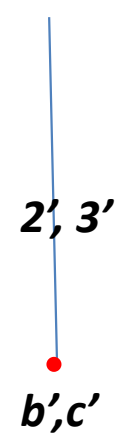
*b', c'*







$b_p$   $c_p$   $o_p$   $a_p$   $d_p$



$1', 4'$

$1', 4'$