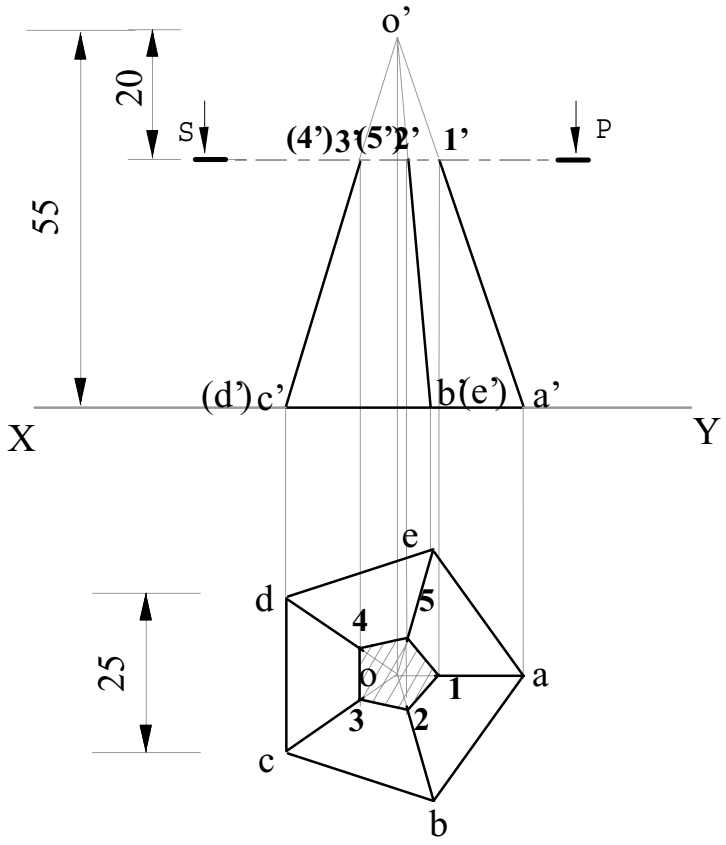
Sections of Solids

Perpendicular to the VP and Parallel to the HP:

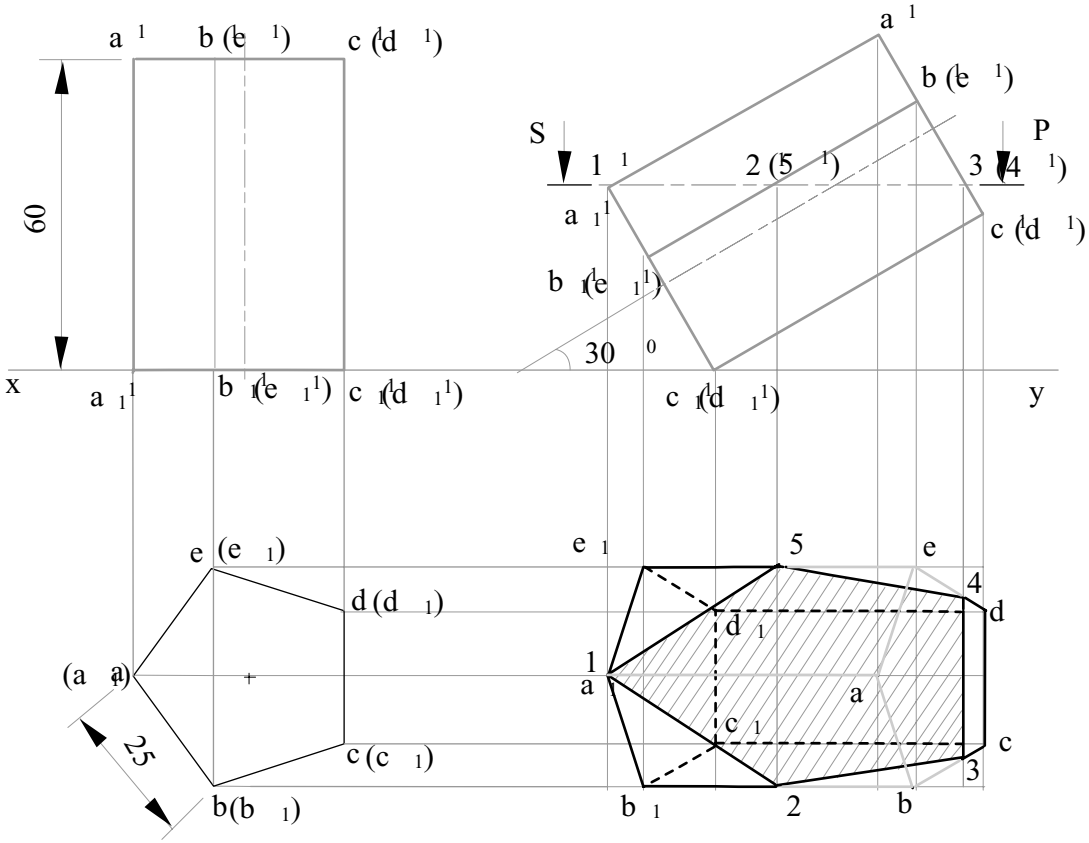
1. Ok..! Let us imagine that a pentagonal pyramid of base 25mm and height 55mm rests with its base on the HP such that one of its edges is perpendicular to the VP. A section plane parallel to the HP and perpendicular to the VP cuts the pyramid at 20mm from the apex.

1. Draw the line XY.
2. Draw the top view as a pentagon and name its corners.
3. Draw projectors from each corner of the top view through XY.
4. Draw the front view as shown in the figure and name its corners.
5. Draw the section plane in the front view at 20mm from the apex and name the sectional points.
6. Draw projectors from each sectional point in front view so that they cut the corresponding edges in the top view.
7. Name these points and join them.
8. Draw the hatching lines to get the sectional top view.



2. Ok ..! Let us imagine that a regular pentagonal prism of base edge 25mm and height 60mm rests on the HP on one of the edges of its base and with its axis inclined at 30° to the HP. A section plane parallel to the HP and perpendicular to the VP cuts the prism at the highest corner of the prism's base.

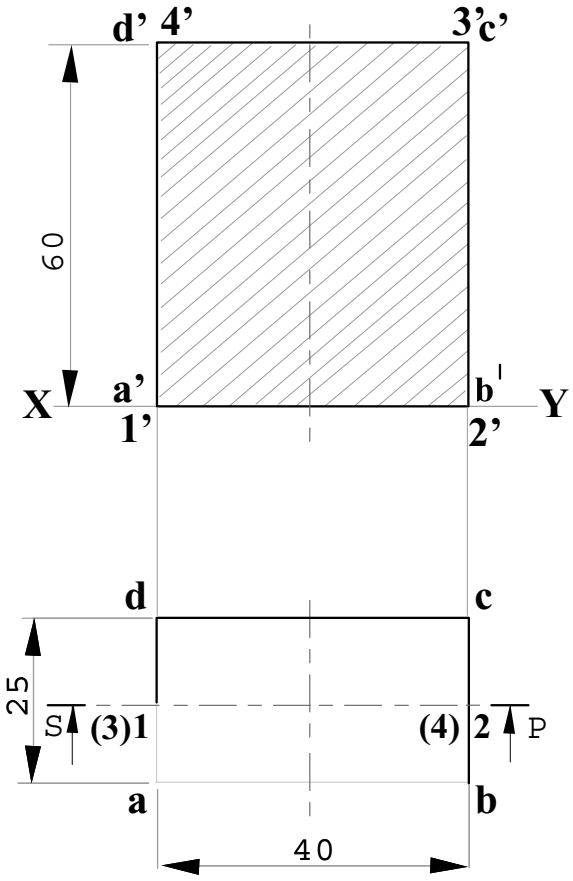
1. Draw the line XY.
2. Draw the projections of the prism placed in the simple position (the axis is perpendicular to the HP and parallel to the VP).
3. Rotate the front view so that the axis is inclined at 30° to XY.
4. Draw projectors from the front view through XY and from the initial top view.
5. Draw the rotated top view as shown in the figure and name its corners.
6. Draw the section plane in the rotated front view through the top corner of the base and name the sectional points.
7. Draw projectors from each sectional point of the front view through XY to cut the corresponding edges of the top view.
8. Name the points and join them, as shown.
9. Draw the hatching lines to get the sectional top view.



Perpendicular to the HP and Parallel to the VP:

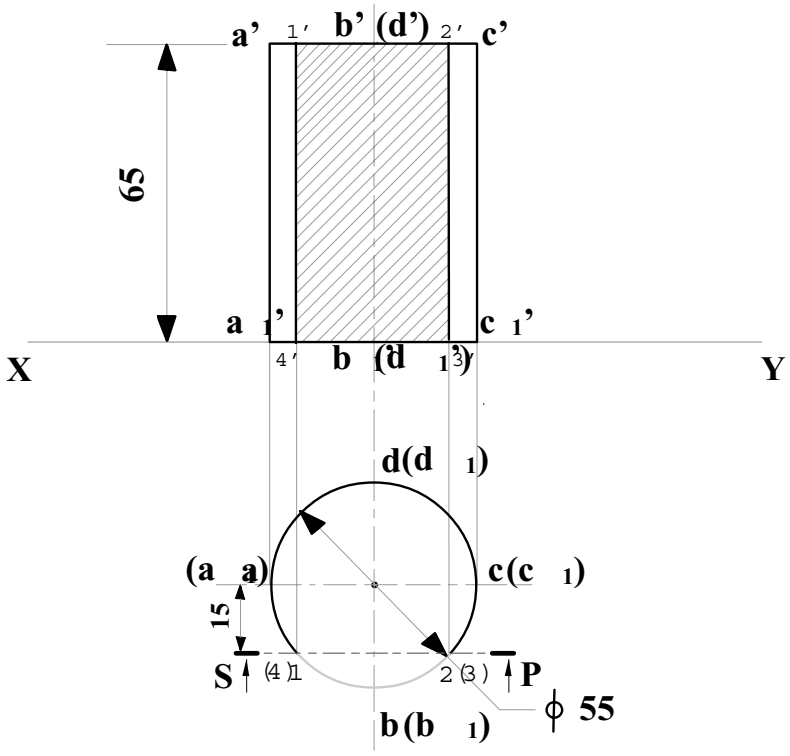
1. **Ok ..!** Let us imagine that a rectangular prism 40 x 25mm and height 60mm rests with its base on the HP such that one of its rectangular faces is parallel to the VP. A section plane parallel to the VP and perpendicular to the HP bisects the prism.

1. Draw the line XY.
2. Draw the top view as a rectangle (40x25) and name its corners.
3. Draw projectors from each corner of top view up to line XY.
4. Draw the front view as a rectangle (40x60) and name its corners.
5. Draw the section plane in the top view at the center and name the sectional points.
6. Draw projectors from each sectional point in the top view so that they cut the corresponding edges of the front view.
7. Name the points and Join them.
8. Draw the hatching lines (inclined at 45°) to get the sectional front view.



2. **Ok ..!** Let us imagine that a cylinder of diameter 55mm and axis 65mm long, rests with its base on the HP such that its axis is parallel to the VP. A section plane parallel to the VP and perpendicular to the HP cuts the cylinder 15mm in front of the axis.

1. Draw the line XY.
2. Draw the top view as a circle and name it as shown.
3. Draw projectors from the top view through XY.
4. Draw the front view as a rectangle and name its corners.
5. Draw the section plane in the top view at 15mm in front of the axis and name the sectional points.
6. Draw projectors from each sectional point in the top view so that they cut the corresponding edges of the front view.
7. Name these points and join them.
8. Draw the hatching lines to get the sectional front view.



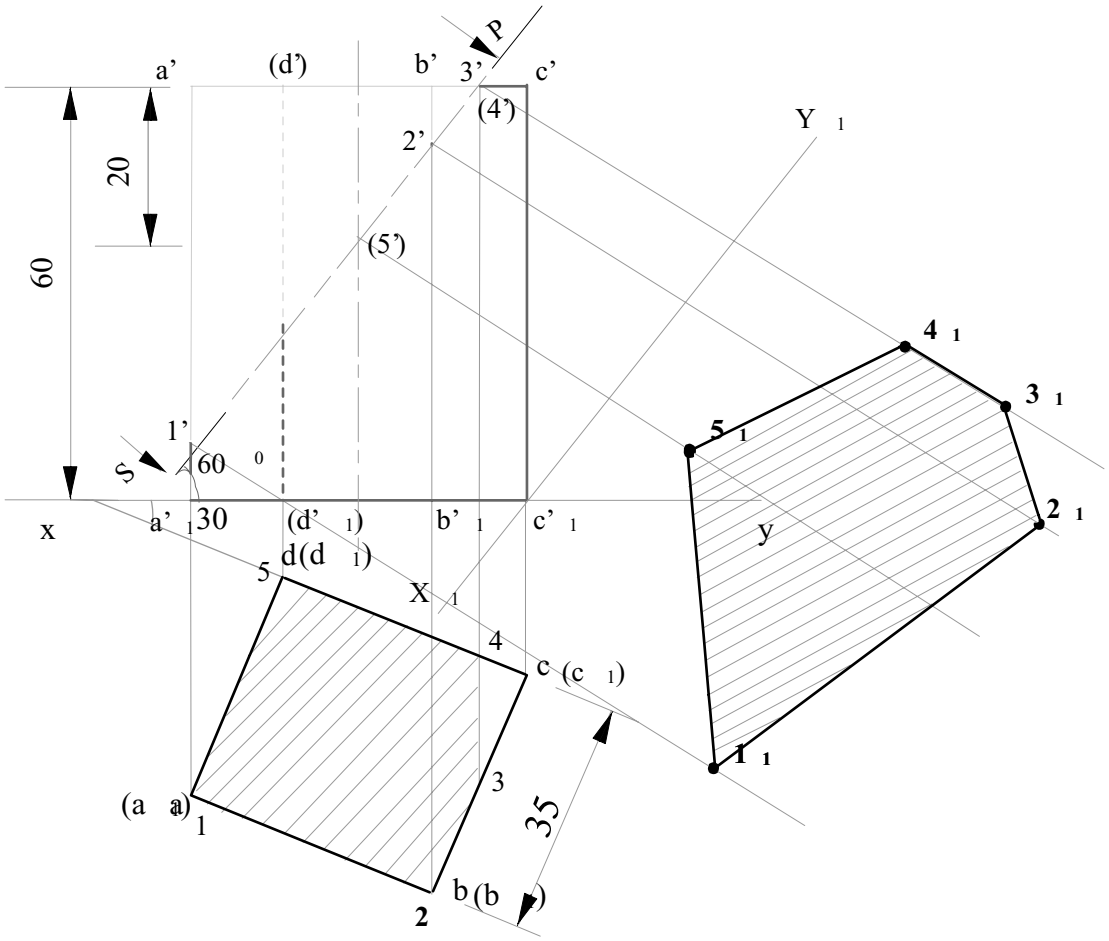
Perpendicular to the VP and Inclined to the HP:

Ok ..! Let us imagine that a square prism of base 35mm and height 60mm rests with its base on the HP such that one of its edges is inclined at 30° to the VP. A section plane inclined at 60° to the HP and perpendicular to the VP cuts the prism through a point on the axis 20mm from the top of the prism.

1. Draw the line XY.
2. Draw the top view as a square such that it is inclined at 30° to XY and name its corners.
3. Draw projectors from each corner of the top view to XY.
4. Draw the front view as shown in the figure and name its corners.
5. Draw the section plane in the front view through a point on the axis 20mm from the top of the prism such that it is inclined at 60° to XY, and name the sectional points.
6. Draw projectors from each sectional point through XY.
7. The projectors cut the corresponding edges of the top view. Name the points and join them.
8. Draw the hatching lines to get the sectional top view

To get the True Shape of the section:

9. Draw a line X1Y1 parallel to SP, as shown.
10. Draw projectors from each sectional point in the front view through X1Y1.
11. Transfer the distances, from XY, of the sectional points in the top view to the corresponding projectors through X1Y1, measuring from X1Y1 in each case.
12. Join these points as shown and draw the hatching lines to get the true shape of the section.

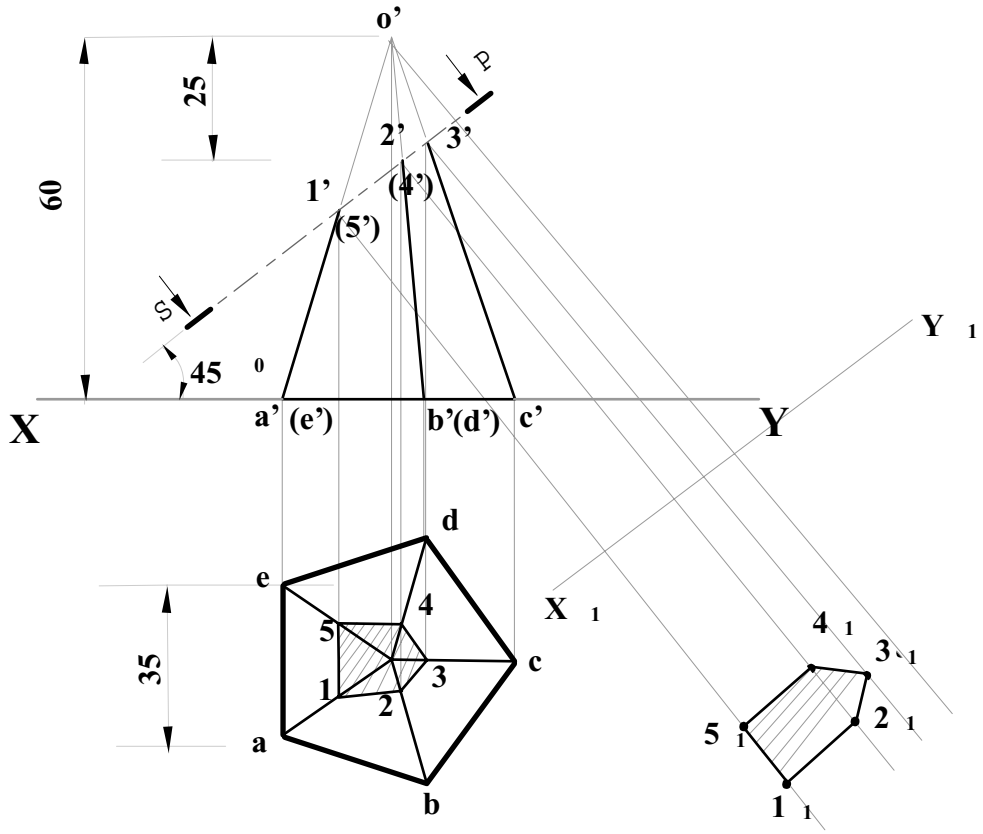

P
a'
(d')
b'
3'
c'
(4')
2'
(5')
20
60
1'
S
60
0
x
a'
1
30
(d'
1)
b'
1
c'
1
d(d
1)
X
1
Y
1
y
4
1
3
1
5
1
2
1
1
1
5
4
c
(c
1)
3
(a
a)
1
2
b
(b
)
35

2. Ok ..! Let us imagine that a pentagonal pyramid of base 35mm and height 60mm, rests with its base on the HP such that one of its edges is perpendicular to the VP. A section plane inclined at 45° to the HP and perpendicular to the VP cuts the pyramid through its axis at 25mm from the apex.

1. Draw the line XY.
2. Draw the top view as a pentagon such that one of its edges is perpendicular to XY. Name the corners of the pentagon.
3. Draw projectors from the top view to XY.
4. Draw the front view as shown in the figure and name its corners.
5. Draw the section plane in the front view through a point on the axis 25mm below the apex and inclined at 45° to XY and name the sectional points.
6. Draw projectors from the sectional points through XY.
7. The projectors cut the corresponding edges of the top view. Name the points of intersection and join them.
8. Draw the hatching lines to get the sectional top view

To get the True Shape of the section:

9. Draw a line X_1Y_1 parallel to SP, as shown.
10. Draw projectors from each sectional point in the front view through X_1Y_1.
11. Transfer the distances, from XY, of the sectional points in the top view to the corresponding projectors through X_1Y_1, measuring from X1Y1 in each case.
12. Join these points as shown and draw the hatching lines to get the true shape of the section.


o'
25
60
P
2'
3'
1'
(4')
(5')
S
45
0
X
a' (e')
b'(d')
c'
Y
Y 1
d
e
4
5
X 1
4 1
3 1
35
1
3
c
2
2 1
5 1
a
b
1 1

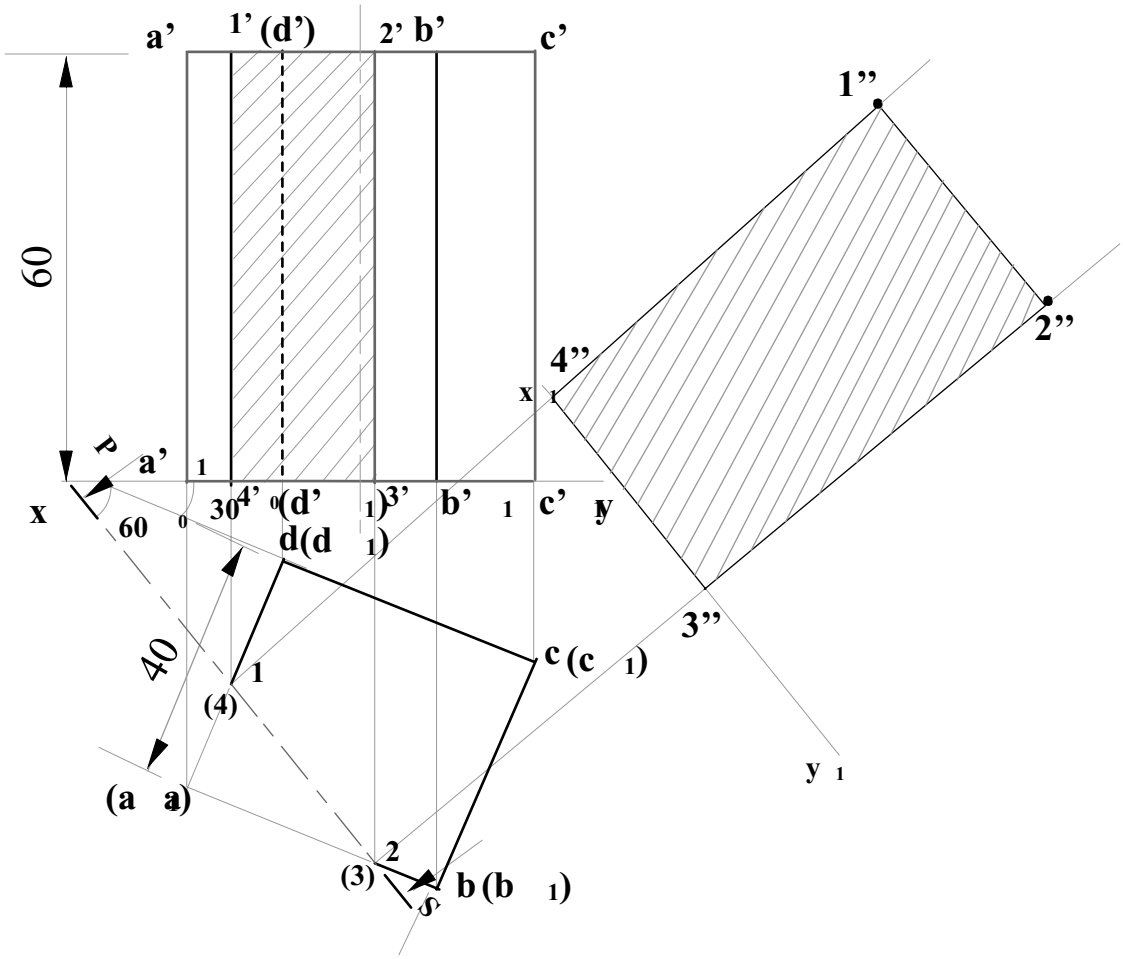
Perpendicular to the HP and Inclined to the VP

1.Ok ..! Let us imagine that a square prism of base 40mm and height 60mm rests with its base on the HP such that one of its edges is inclined at 30° to the VP. A section plane inclined at 60° the VP and perpendicular to the HP bisects one of the rectangular faces is nearer to the VP.

1. Draw the line XY.
2. Draw the top view as a square such that an edge of its base edge is inclined at 30(to XY and name its corners.
3. Draw projectors from each corner of the top view to XY.
4. Draw the front view as shown in the figure and name its corners.
5. Draw the section plane in the top view such that it is at 60(to XY and bisects an edge of the prism as shown in the figure. Name the sectional points.
6. Draw projectors from each sectional point in the topview through XY to meet the corresponding edges of the front view. Name the points of intersection.
7. Join the sectional points in the front view and draw the hatching lines to get the sectional front view.

To get the True Shape of the section:

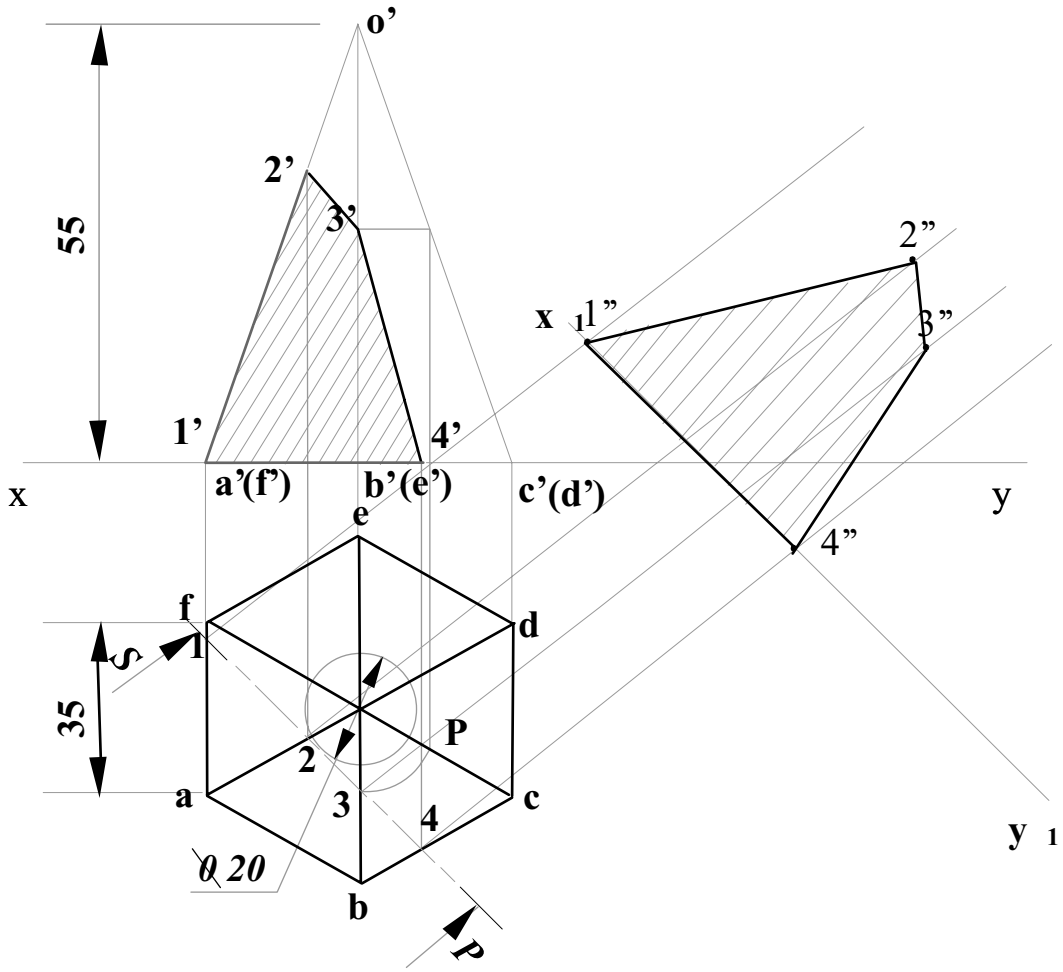
8. Draw a line X1Y1 Parallel to SP as shown
9. Draw projectors from each sectional point in the top view through X1Y1.
10. Transfer the distances, from XY, of the sectional points in the front view to the corresponding projectors through X1Y1, measuring from X1Y1 in the case. Name these points.
11. Join these points and draw the hatching lines to get the true shape of the section.


a'
1' (d')
2' b'
c'
60
1"
2"
4"
x 1
a'
1
x
30
4'
0
(d'
1)
3'
b'
1
c'
y
60
0
d(d 1)
40
1
(4)
c (c 1)
3"
y 1
(a a)
2
(3)
b (b 1)

2. **Ok ..!**Let us imagine that a hexagonal pyramid of base 35mm and height 55mm, rests with its base on the HP such that one of its edges is perpendicular to the VP. A section plane inclined at 60° to the VP and perpendicular to the HP cuts the pyramid at 10mm from the axis.

1. Draw the line XY.
2. Draw the top view as a hexagon such that an edge is perpendicular to the VP and name its corners.
3. Draw projectors from the top view through XY.
4. Draw the front view as shown in the figure and name its corners.
5. Draw a circle of radius 10mm at the center of the top view. Draw the section plane in the top view tangential to this circle and inclined at 60° to XY and in front of the axis. Name the sectional points.
6. Draw projectors from each sectional point in the top view so that they cut the corresponding edges of the front view. Name the sectional points in the front view.
7. Join the sectional points and draw the hatching lines to get the sectional front view.

   To get the True Shape of the section:
8. Draw a line X_1Y_1 parallel to SP as shown.
9. Draw projectors from each sectional point in the top view through X_1Y_1.
10. Transfer the distances, from XY, of the sectional points in the front view to the corresponding projectors through X_1Y_1, measuring from X1Y1 in each case. Name these points.
11. Join these points and draw the hatching lines to get the true shape of the section.


o'
55
2'
3'
1'
4'
x
a'(f')
b'(e')
c'(d')
y
2"
x 1
1"
3"
4"
e
f
d
1
S
35
P
2
a
3
4
c
0 20
b
P
y 1