

# Section of Solids

	<b>Cutting Plane Line</b>
Horizontal sectional plane (HSP) - Parallel to H.P. & Perpendicular to V.P.	Front View
Vertical sectional plane (VSP) - Parallel to V.P. & Perpendicular to H.P.	Top View
Auxiliary inclined plane (AIP)- Perpendicular to V.P. & inclined to H.P.	Front View
Auxiliary vertical plane (AVP) - Perpendicular to H.P. & inclined to V.P.	Top View

1. A square prism side of base 40mm and height 50mm is resting on H.P. on its base with all vertical face equally inclined to V.P. it is cut by a vertical sectional plane parallel & away from V.P. and remaining 9mm away from axis of prism. Draw plan and sectional elevation.
2. A hexagonal prism is resting on HP on its base with two edges of base parallel to V.P. It is cut by AIP perpendicular to V.P. and inclined to H.P. by  $45^\circ$  passing through a point

of axis 40 mm above the base. Draw three principal projection and find true shape of section, side of base 25mm & height 50mm.

3. A pentagonal prism is resting on H.P. one of its rectangular faces with axis of the prism parallel to H.P. and inclined to V.P. by  $30^\circ$ . It is cut by horizontal sectional plane 40mm above the HP. Draw the elevation and sectional plan of the prism. Take side of base 40mm and height 93mm also draw true shape of section.
4. A cylinder diameter of 43mm and height 58mm is resting on H.P. on its base, it is cut by AIP inclined at  $45^\circ$  to H.P. bisecting the axis. Draw three projections with section and find true shape of the section.
5. A pentagonal prism is resting on H.P. on one of its rectangular faces with axis of the prism parallel to H.P. and V.P. both. It is cut by AVP perpendicular to H.P. and inclined to V.P. by  $45^\circ$  passing through the point on the axis 15mm from one end. Draw three projections with sections and draw the true shape of section. Take side of base 45mm and height 80mm.

6. A hexagonal pyramid of base 30mm and height 60mm is resting on H.P. on its base with two edges of the base parallel to V.P. it is cut by HSP passing through point on axis 27mm from the apex. Draw the projection and draw the true shape of the section.
  
7. A pentagonal pyramid side of base 40mm and height 80mm is resting on H.P. on its base with one of edge of base away from V.P. & parallel to V.P. it is cut by an AIP bisecting the axis, the distance of the sectional plane from apex is 20mm. Draw the elevation and sectional plan and true shape. Find the inclination of the sectional plane with HP.
  
8. A pentagonal pyramid side of base 40mm and height 80mm is resting on H.P. on its base with one of edges of base, nearer to V.P. & parallel to VP. It is cut by AVP inclined to V.P. by  $45^\circ$ , cutting plane remains 12mm away from the axis. Draw the sectional elevation, plan and true shape of the section.
  
9. A cone diameter of base 50mm and height 80mm is resting on H.P. on its base with one of edges of base, nearer to V.P., is parallel to V.P. It is cut by AVP inclined to V.P. by  $45^\circ$ , cutting plane remains 12mm away from the axis. Draw the sectional elevation, plan & true shape of the section.

10. A cone diameter of base 10mm & height 80mm is resting on H.P. on its base. It is cut by AVP to H.P. by  $45^\circ$  passing through a point on axis 35mm below the apex. Draw the elevation, sectional plan & true shape of the section.
11. A cone diameter of base 70mm & height 80mm is resting on H.P. on its base. It is cut by cutting plane perpendicular to V.P. & H.P., cutting plane remain 15mm away from the axis. Draw plan, elevation, & sectional side view. State the nature of the section.
12. A hexagonal Pyramid is resting on H.P. on one of its triangular face with axis remaining parallel to V.P., it is cut by AVP making  $30^\circ$  to V.P. passing through a point on axis 33mm from apex. Draw plan, section elevation & True shape section side of base 30mm & height 70mm.
13. A cone diameter of base 60mm & height 75mm is resting on H.P. on its generator with axis parallel to V.P. it is cut by HSP passing through a point on the axis 50mm from apex. Draw elevation, sectional plan and true shape of the section.
14. A hexagonal pyramid side of base 30mm & height 55mm long has triangular face on H.P. and axis parallel to V.P. it is cut by HSP, which bisects the axis. Draw sectional top view and true shape of section.

15. A cone diameter of base 80mm & Height 80mm is resting on H.P. on its base. It is cut by an AIP passing through the midpoint of axis. Draw sectional top view, front view and true shape of the section. Cutting plane is parallel to one of its generator.
16. A solid made of half cone diameter of base 60mm and half hexagonal pyramid side of base 30mm & height 60mm. It is resting on H.P. on its base with middle edge of base perpendicular to V.P. It is cut by AIP inclined to  $30^\circ$  to H.P. passing through a point on axis 12mm above the base. Draw the elevation, sectional plan & true shape of section.
17. A cube side 50mm is resting on H.P. on its base with all the vertical faces equally inclined to V.P. It is cut by AIP in a such way that the true shape of the section is a regular hexagon. Find inclination of cutting plane with H.P. Draw projections and true shape of the section.
18. A cone diameter of base 60mm & axis length 60mm is resting on H.P. on its base. It is cut by an AIP in a such way that the true shape of the section is an isosceles triangle of base 40mm. Draw front view, sectional top view & true shape of section.

19. A tetrahedron of 70mm side is resting on H.P on one of its triangular faces with an edge of the triangular face perpendicular to V.P. It is cut by an AIP such a way that the true shape of the section is a square of 35mm side. Draw front view, sectional top view & true shape of section.
20. A cylinder glass jar, diameter of 60mm & height 75mm, is filled with water. It is then tilted on the rim of its base in a such a way that half of its water is drained out. Draw the projection of cylinder jar showing remaining water in it.
21. A cylinder base diameter 60mm & axis 80mm is kept on H.P. on its base. It is cut by an AIP in such a way that true shape of section is the largest possible ellipse.
22. A square pyramid of base 40mm & axis 65mm has its base on H.P. & all the edges of base equally inclined to V.P. It is cut by a sectional plan perpendicular to V.P. & inclined at  $45^\circ$  to H.P & bisecting the axis. Draw all three projections with section & true shape of section.