



Descriptive Geometry 1
Year 2017-2018
1st (fall) semester

1^s DRAWING

Tint-drawing, size A2 (594x420 mm)

Deadline for delivery: Oct. 7

(Titles in capital letters)

1) AUXILIARY PROJECTION FOR SPECIAL PURPOSE

Let the segment MO be given by the 1st and 2nd images. Construct

- a) regular pyramid with pentagon base
- b) regular prism with hexagon base

by means of auxiliary projections such that the segment MO is the height of the polyhedron and the length of the edge of the base is the half of the height. The point O is the centre of the base. Show the visibility of the lateral surface of the polyhedron.

2) INTERSECTION OF A PAIR OF PLANE SHEETS

Represent a triangle PQR in a slanting plane. The smaller triangle XYZ is inside of the triangle PQR and consider it as a hole in the sheet PQR . Let a rectangle $ABCD$ in a spanned plane be defined such that the sides are

- a) first gradient and first principal lines
- b) second gradient and second principal lines.

Construct the line of intersection of $[PQR]$ and $[ABCD]$ and show the visibility of the two plane sheets.

3) SHADOW CONSTRUCTIONS

Construct all shadows and shades of the schematic building in the figure.

4) INTERSECTION OF POLYHEDRONS

Construct the intersection of a horizontal prism with square base and a polyhedron, standing on the first picture plane. Let the second polyhedron be

- a) a regular pyramid with pentagon base
- b) oblique prism with regular pentagon base.

Let the intersection be a

- a) complete interpenetration
- b) partial intersection,

Show the visibility of the second polyhedron surface minus the horizontal prism.

5) METRICAL CONSTRUCTIONS

Let a non-incident pair of line e , and point O be given. Construct the regular hexagon in the plane $[e, O]$ with the centre O and one of the edges on e . The height of a right prism is the double of the side of the hexagon. Remove three faces of the surface; the top and two lateral faces further to the second image plane. Show the visibility, construct the self-shadow and the projected shadow at parallel lighting of 45° .

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