Sections of Solids
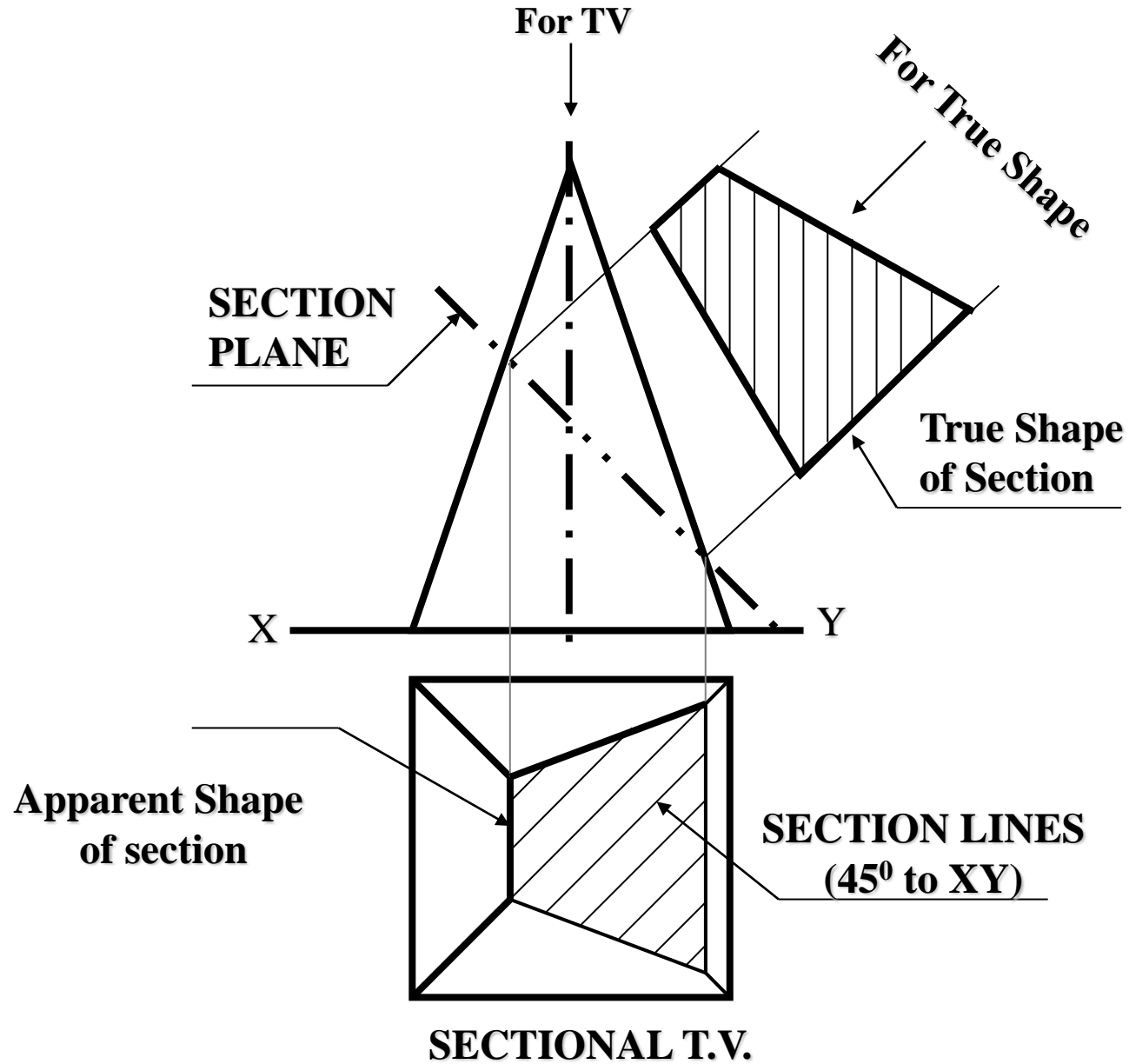

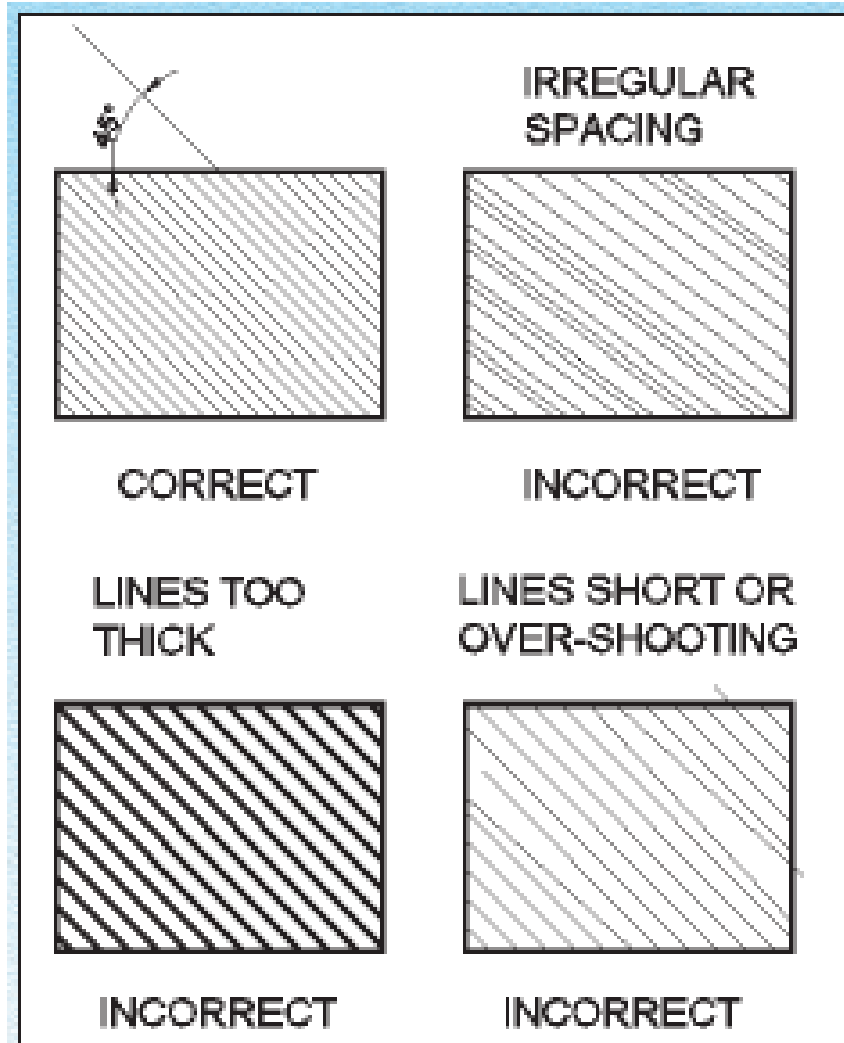**Department of Mechanical Engineering**
Indian Institute of Technology Madras, Chennai
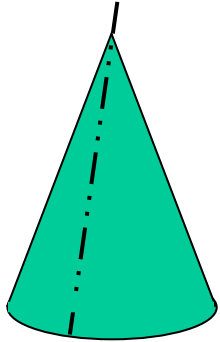
Introduction

SECTIONAL T.V.

For TV

For True Shape

SECTION PLANE

True Shape of Section

X — Y

Apparent Shape of section
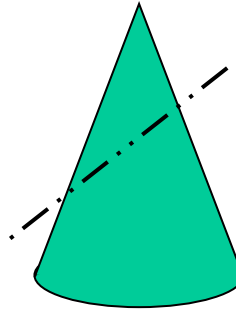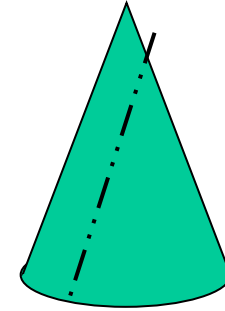
SECTION LINES (45⁰ to XY)

Method of Hatching

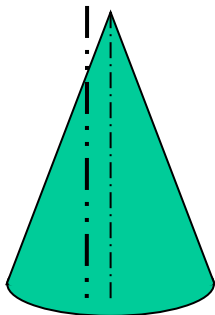# Typical Section Planes and Shape of Sections
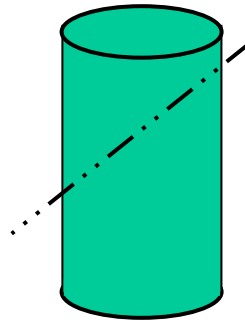
Section plane
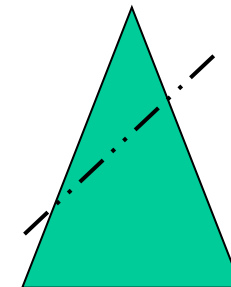through apex

Section plane
through generators

Section plane parallel
to end generator

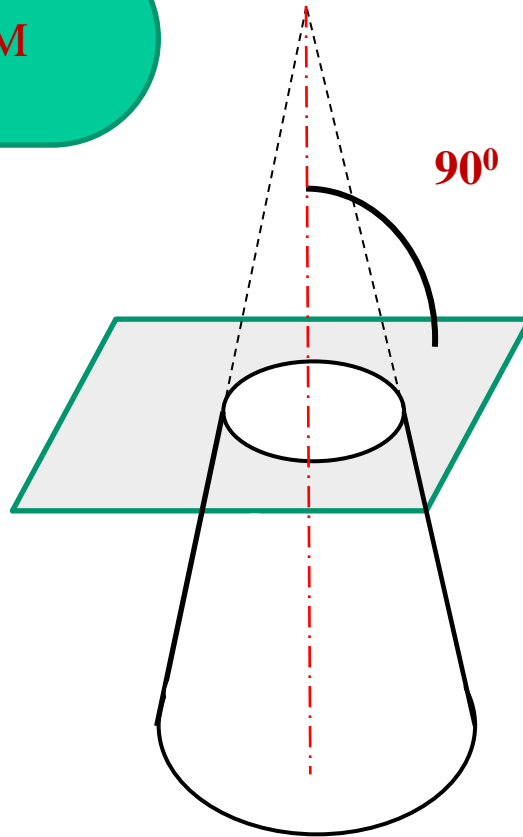Section plane
parallel to axis.
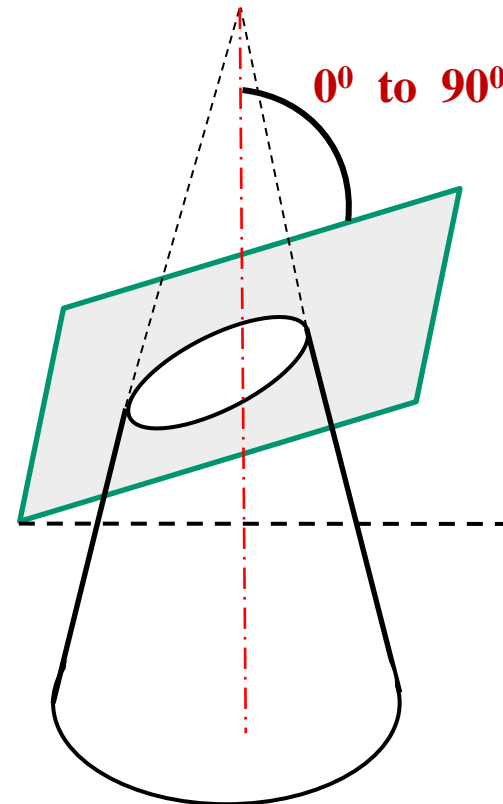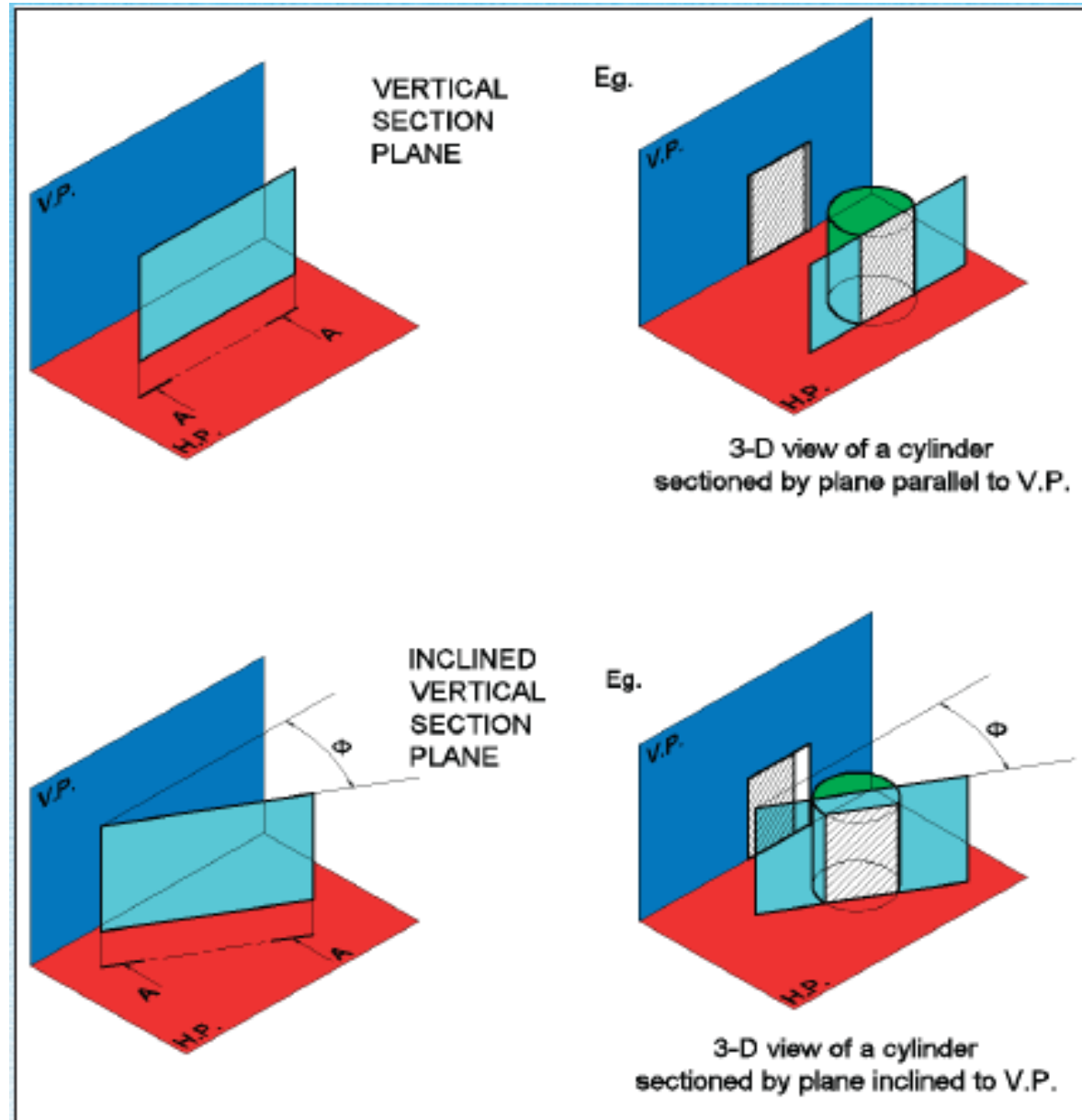
Cylinder through
generators

Square pyramid through
all slant edges

Frustum vs. Truncated Sections

FRUSTUM

TRUNCATED SECTION

90^0

0^0 to 90^0

VERTICAL SECTION PLANE
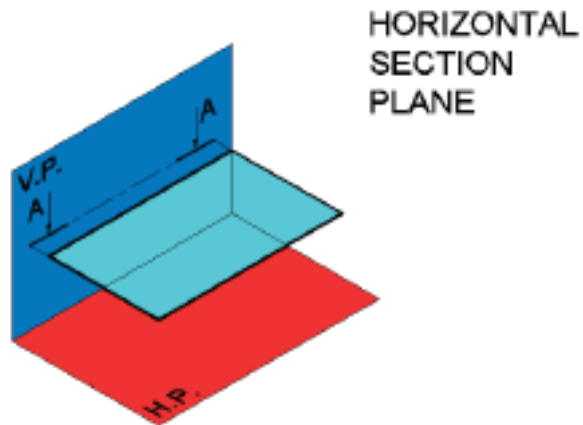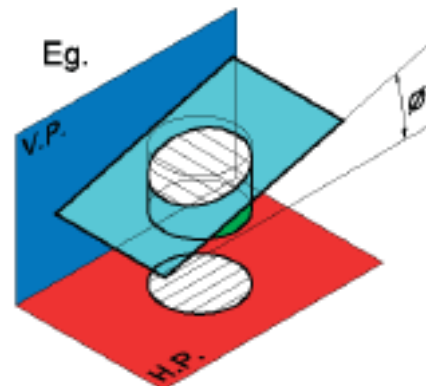
V.P.

A

A

H.P.

Eg.

V.P.

H.P.

3-D view of a cylinder sectioned by plane parallel to V.P.

INCLINED VERTICAL SECTION PLANE

Φ

V.P.

A

A

H.P.

Eg.

Φ

V.P.

H.P.

3-D view of a cylinder sectioned by plane inclined to V.P.

6

3-Apr-24

HORIZONTAL
SECTION
PLANE

Eg.
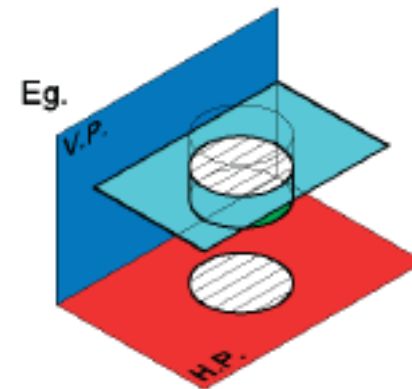
3-D view of a cylinder
sectioned by a plane parallel to H.P.

INCLINED
HORIZONTAL
SECTION
PLANE

Eg.
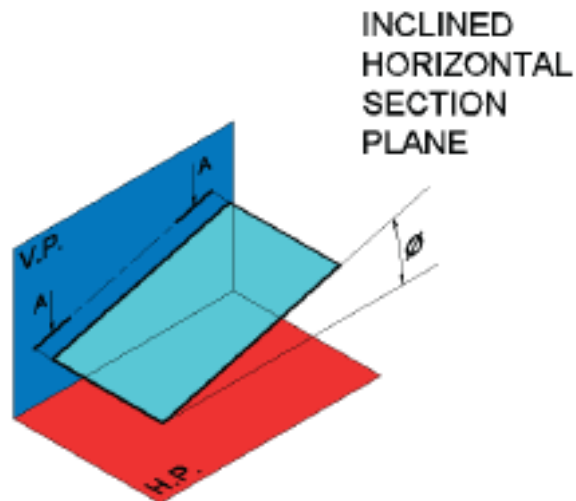
3-D view of a cylinder
sectioned by a plane inclined to H.P.

Example 1
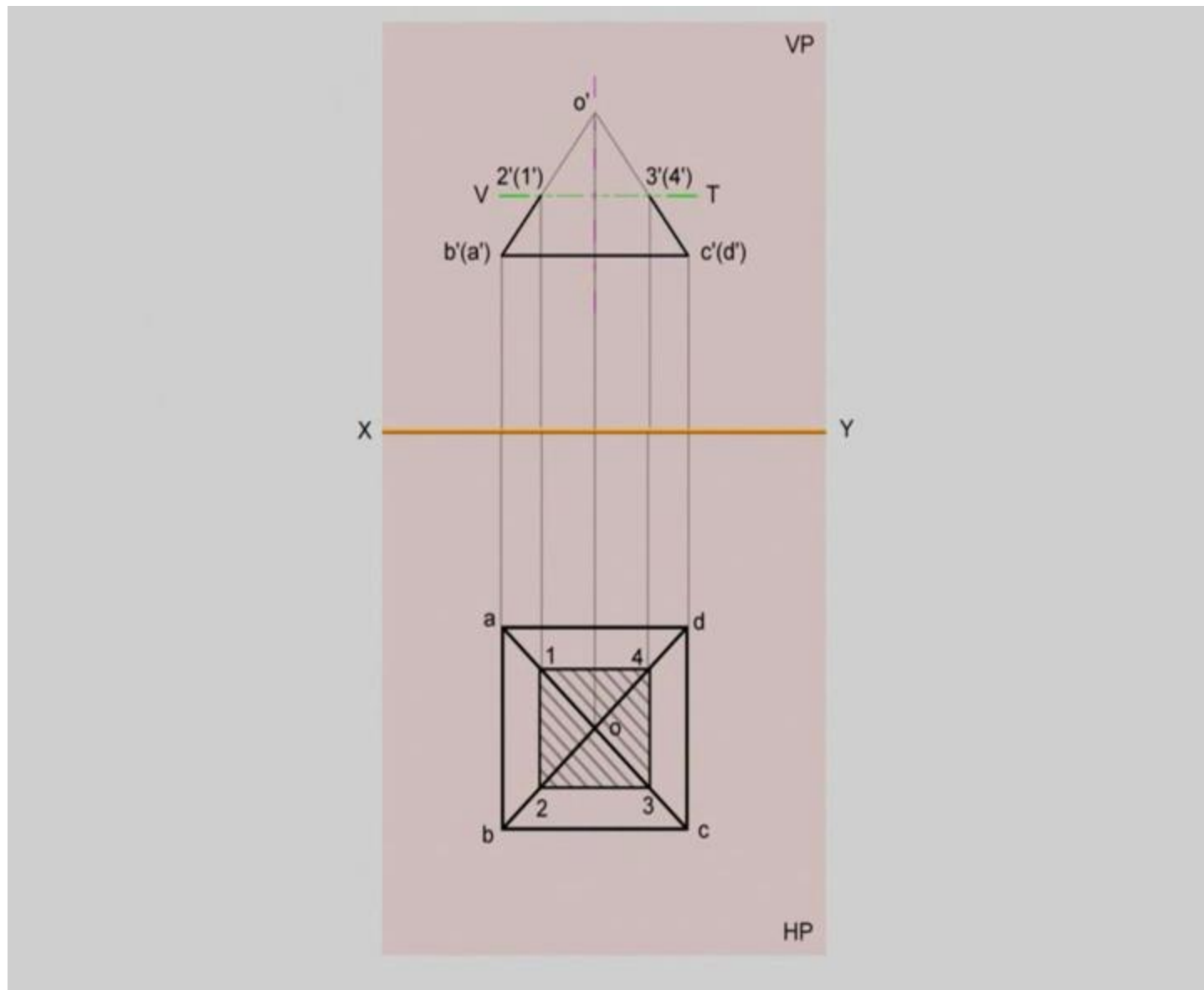
Example 2

Example 3

Example 4
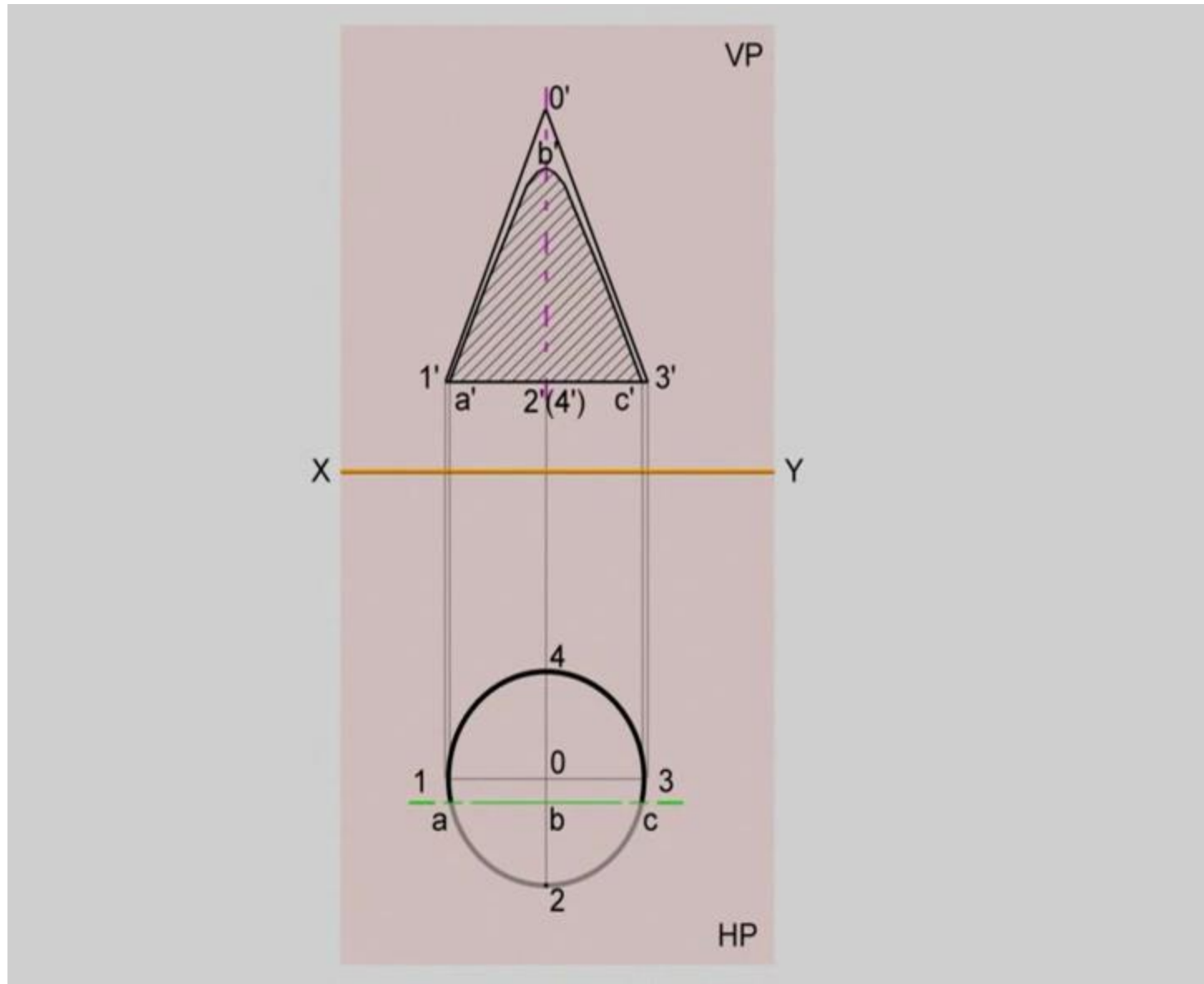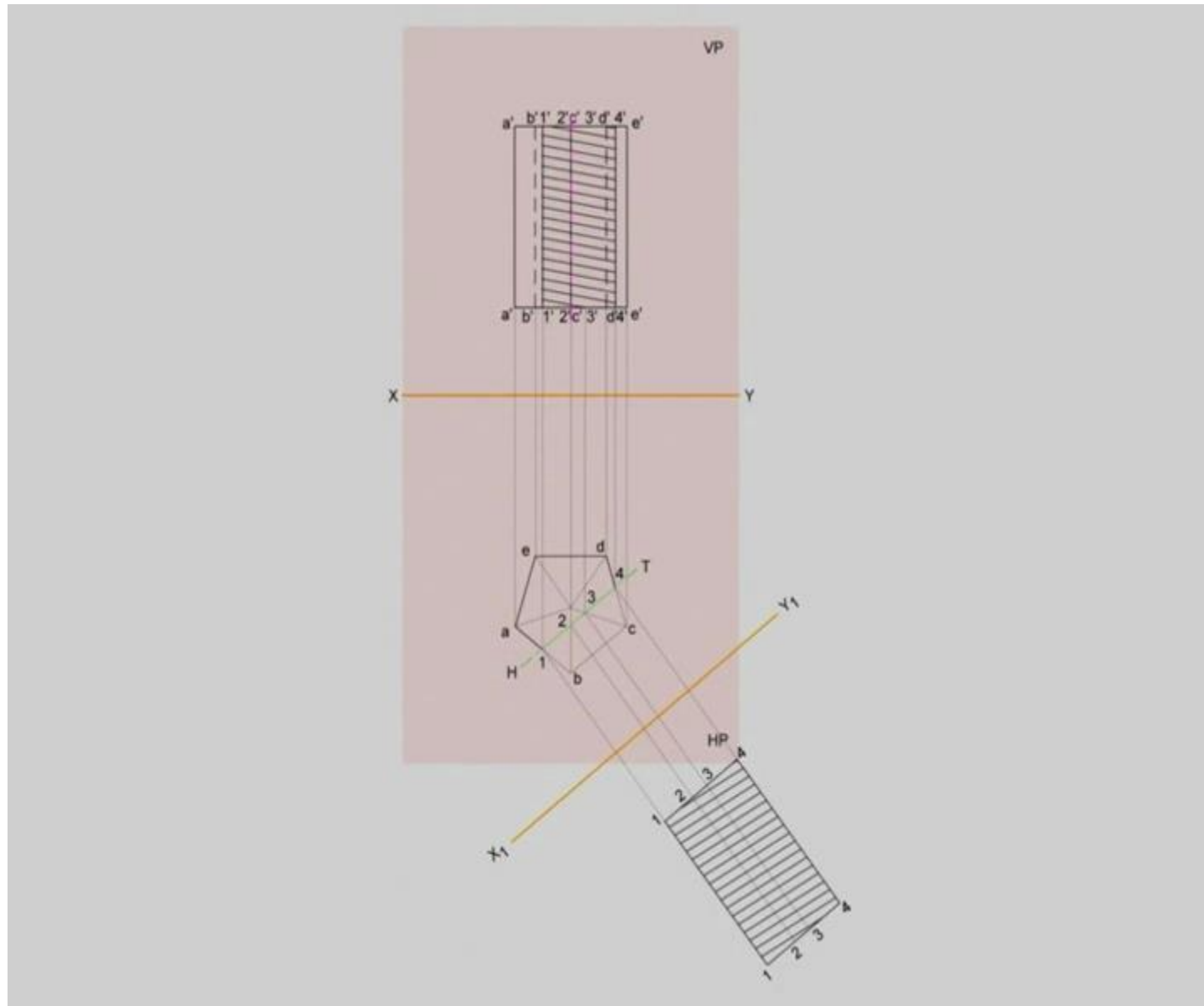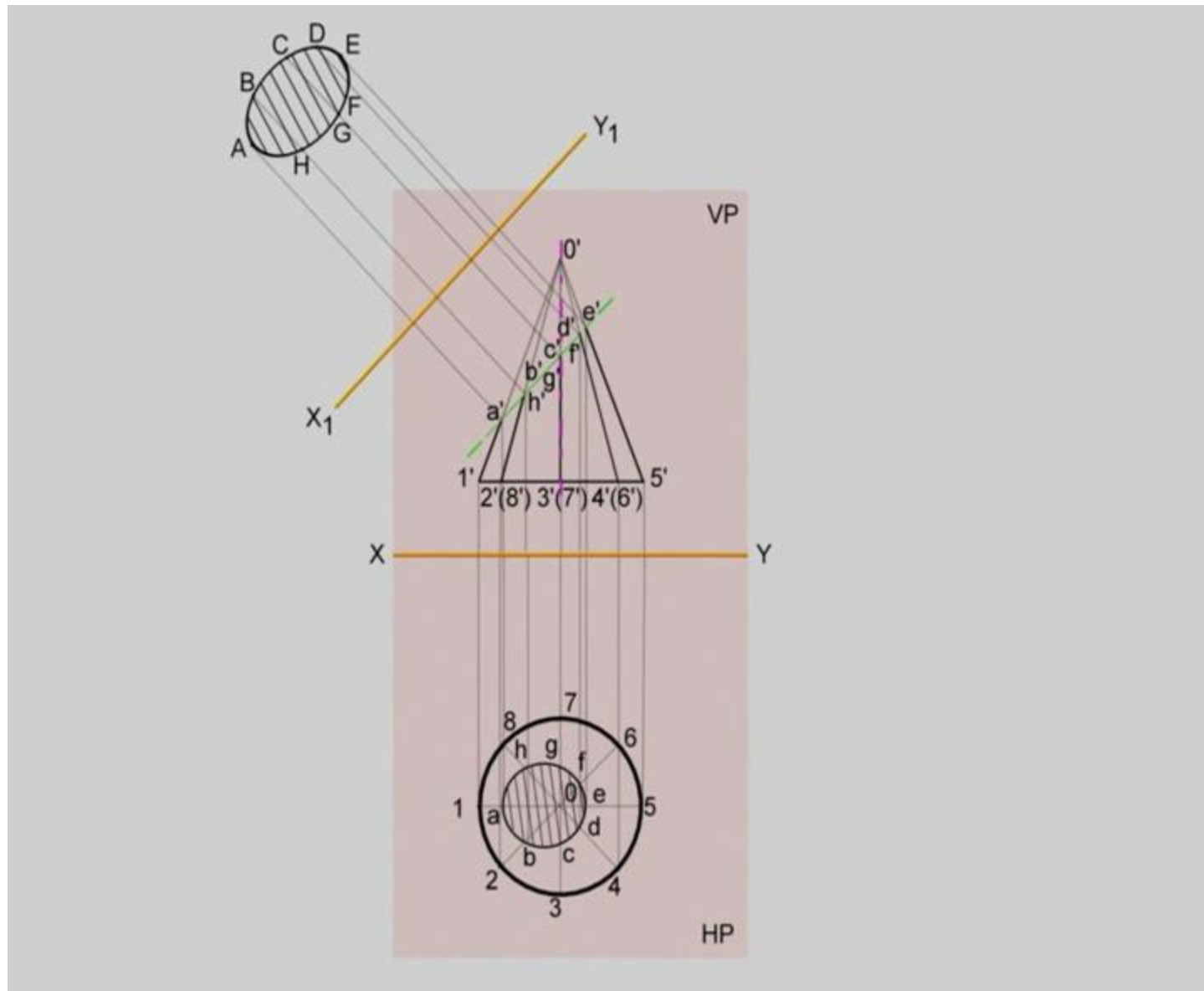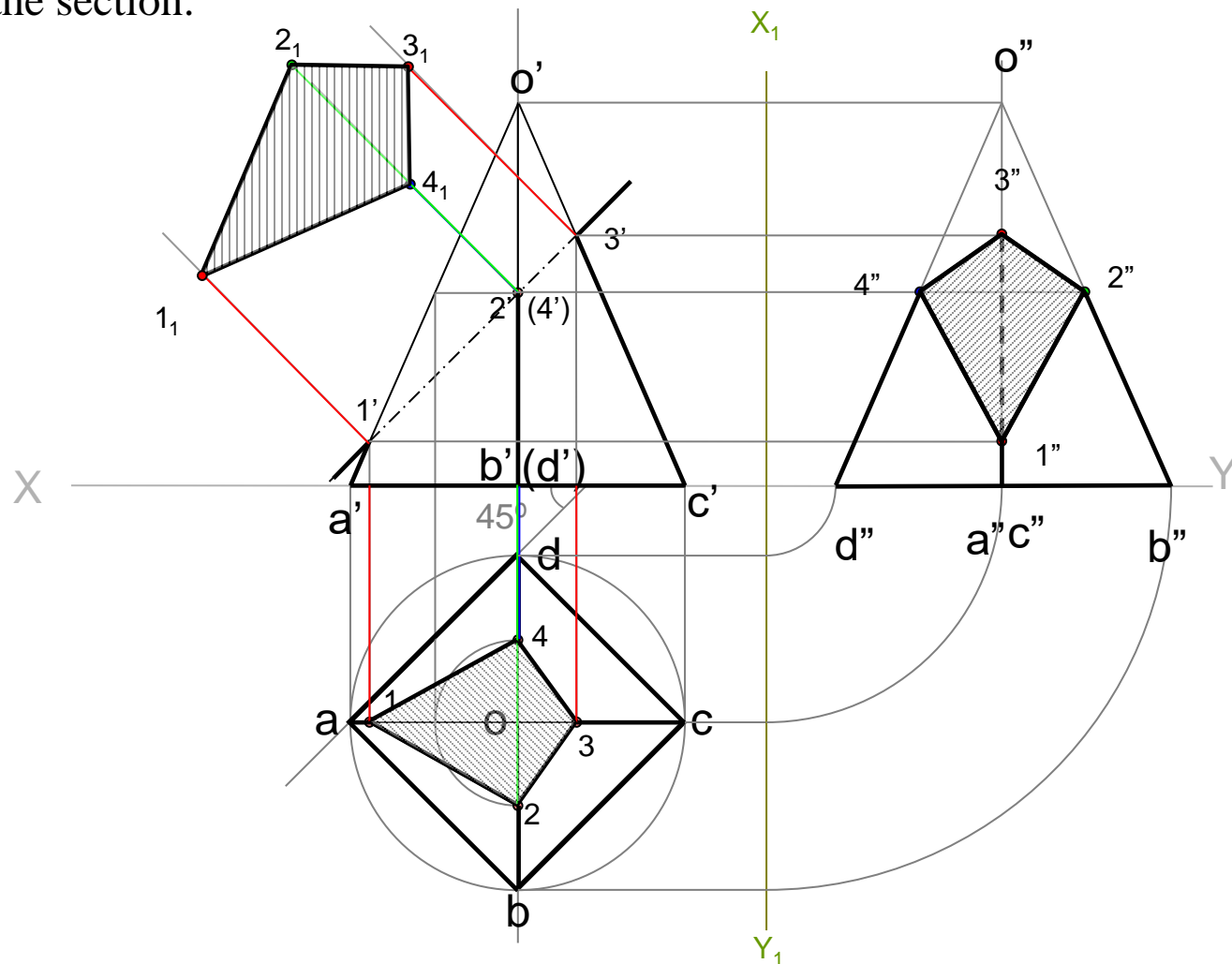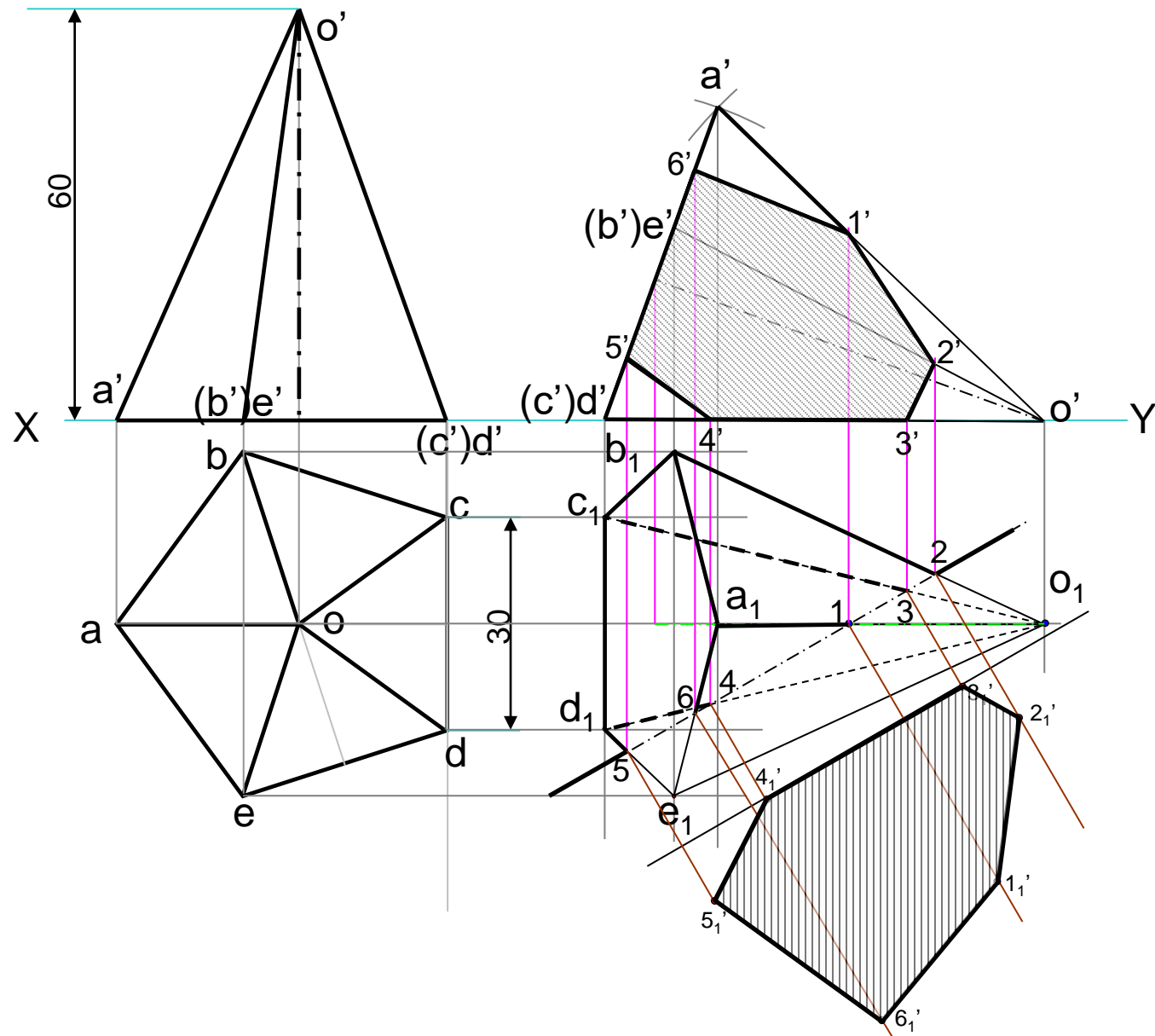
Example 5

A square pyramid, of base 40 mm side and axis 65 mm long, has its base on the HP and all the edges of the base equally inclined to the VP. It is cut by a section plane, perpendicular to the VP, inclined at 45º to the HP and bisecting the axis. Draw its sectional top view, sectional side view and true shape of the section.
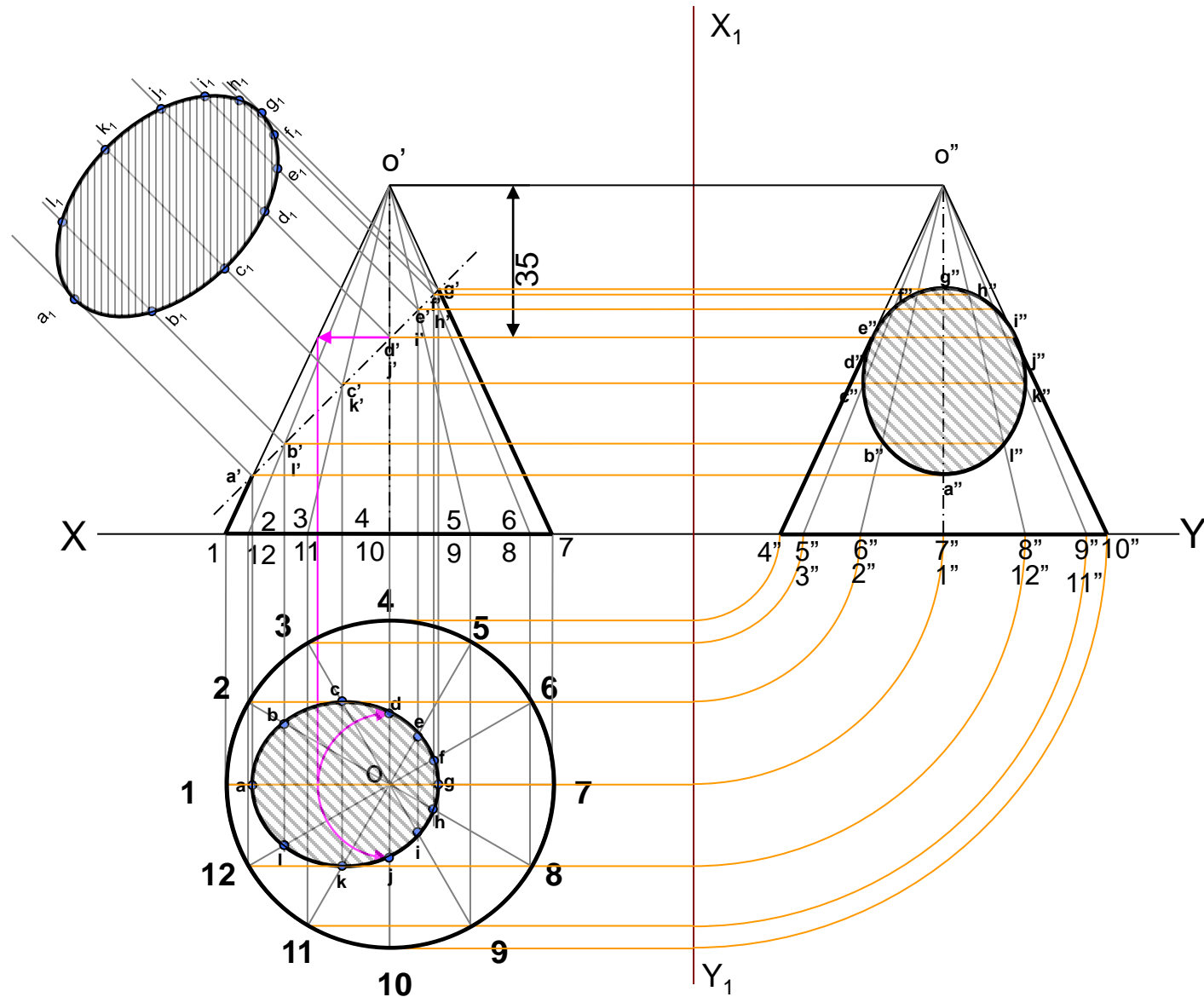
Example 6

A pentagonal pyramid, of base 30 mm side and axis 60 mm long is lying on one of its triangular faces on the HP with the axis parallel to the VP. A vertical section plane, whose HT bisects the top view of the axis and makes an angle of 30º with the reference line, cuts the pyramid removing its top part. Draw the top view, sectional front view and true shape of the section.

Example 7

A cone of base 75 mm diameter and axis 80 mm long is resting on its base on H.P. It is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P. and cutting the axis at a point 35 mm from the apex. Draw the front view, sectional top view, sectional side view and true shape of the section.

Thank you

3-Apr-24