10

30

10

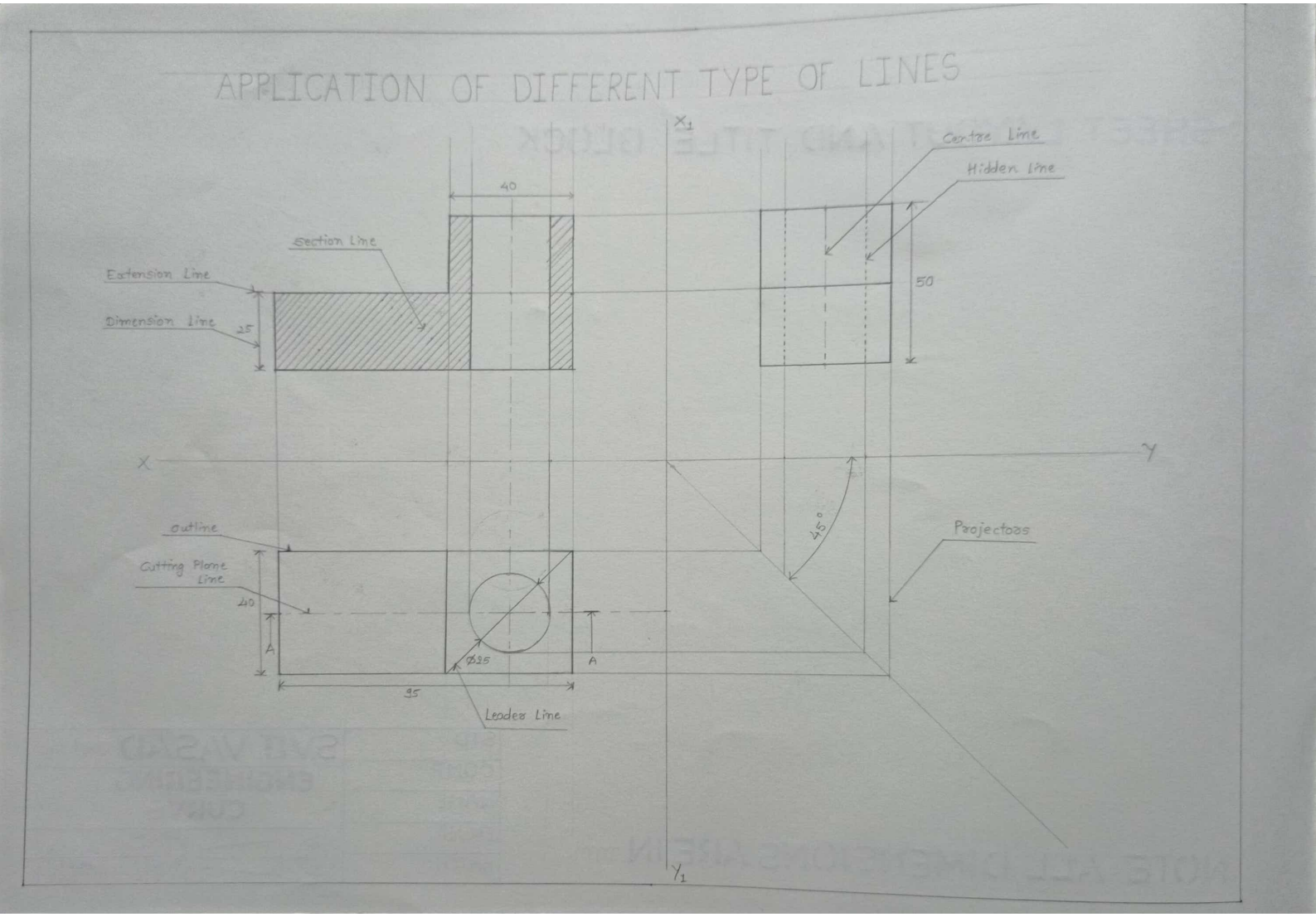
SHEET LAYOUT AND TITLE BLOCK

NOTE : ALL DIMENSIONS ARE IN mm

STD	S.V.I.T. VASAD 388 306
COMP	ENGINEERING CURVS
NAME	
EN. NO.	DRG. NO SVIT/CE/18/028
BATCH	SCALE 1:1 / SHEET 1 OF 1

10

APPLICATION OF DIFFERENT TYPE OF LINES

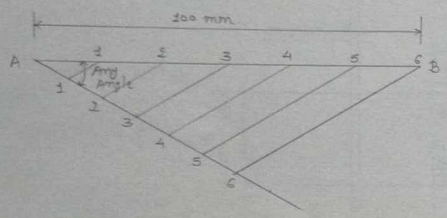


TYPES OF LINES

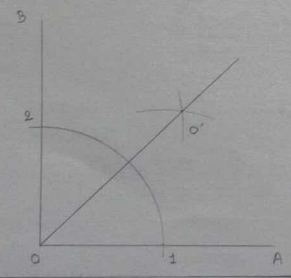
SR NO.	LINE TYPES	ILLUSTRATION	APPLICATION
1	CONTINUOUS THICK (0.5 mm)		VISIBLE OUTLINES
2	CONTINUOUS THIN (0.2 mm)		DIMENSION, LEADER, EXTENSION, CONSTRUCTION LINES, OUTLINES OF ADJACENT PARTS, HATCHING, REVOLVED SECTIONS
3	DASHED LINES		HIDDEN LINES
4	CHAIN THIN		CENTRE LINES, LINES SYMMETRY, LOCUS LINES, PITCH CIRCLES
5	CHAIN THIN WITH THICK ENDS		CUTTING PLANES
6	CHAIN THICK		INDICATION OF SURFACE TO WHICH A SPECIAL REQUIREMENT APPLIES
7	CONTINUOUS THIN FREE HAND		IRREGULAR BOUNDARY LINES, SHORT BREAK LINES
8	CONTINUOUS THIN WITH ZIGZAGS		LONG BREAK LINES

GEOMETRICAL CONSTRUCTION

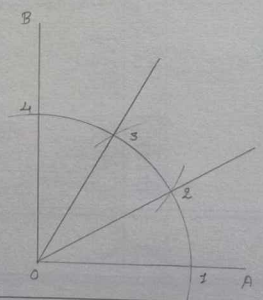
A. DIVIDE A 100mm LINE INTO 6 EQUAL PARTS



B. BISECT RIGHT ANGLE



TRISECT RIGHT ANGLE



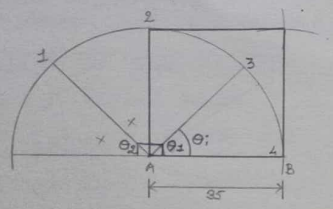
C.

SQUARE

$\theta_i = \frac{180^\circ}{4} = 46^\circ$

$\theta_1 = 90^\circ$

$\theta_2 = 90^\circ$

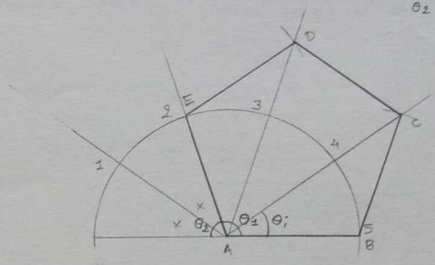


PENTAGON

$\theta_i = \frac{180^\circ}{5} = 36^\circ$

$\theta_1 = 108^\circ$

$\theta_2 = 72^\circ$

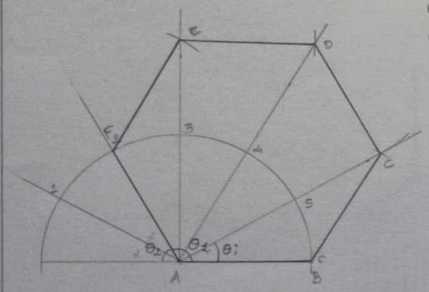


HEXAGON

$\theta_i = \frac{180^\circ}{6} = 30^\circ$

$\theta_1 = 120^\circ$

$\theta_2 = 60^\circ$

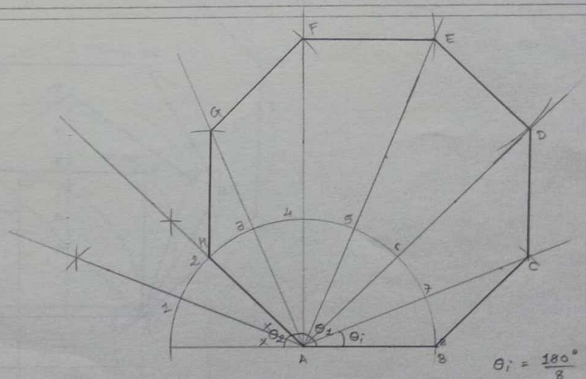


OCTAGON

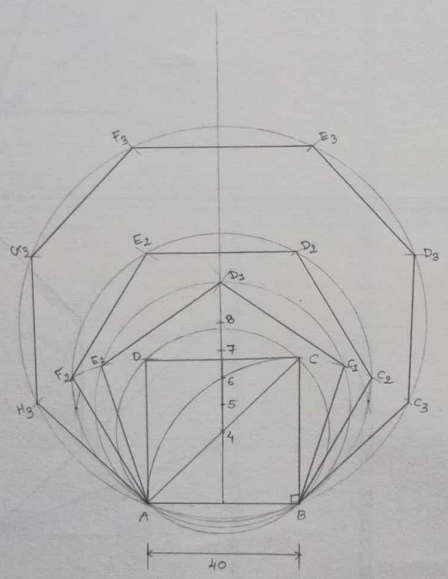
$\theta_i = \frac{180^\circ}{8} = 22.5^\circ$

$\theta_1 = 135^\circ$

$\theta_2 = 45^\circ$



D. SQUARE, PENTAGON, HEXAGON, OCTAGON IN SAME FIGURE.



PLAIN SCALE AND DIAGONAL SCALE

1.

GIVEN DATA :

1 km = 10 hm

25 mm = 1 km

max. length = 6 km

measured length = 3 km and 4 hm

Length Of Scale (L.O.S.)

= R.F. × max. length

$= \frac{1}{40,000} \times 6000000$ mm

= 150 mm

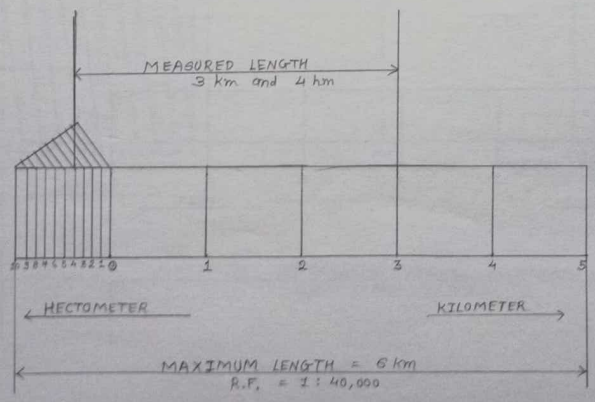
= 15 cm

Representative Fraction (R.F.) = $\frac{\text{drawing length of an object}}{\text{actual length of some object}}$

$= \frac{25 \text{ mm}}{1 \text{ km}}$

$= \frac{25 \text{ mm}}{1000000 \text{ mm}}$

R.F. = $\frac{1}{40,000}$



2

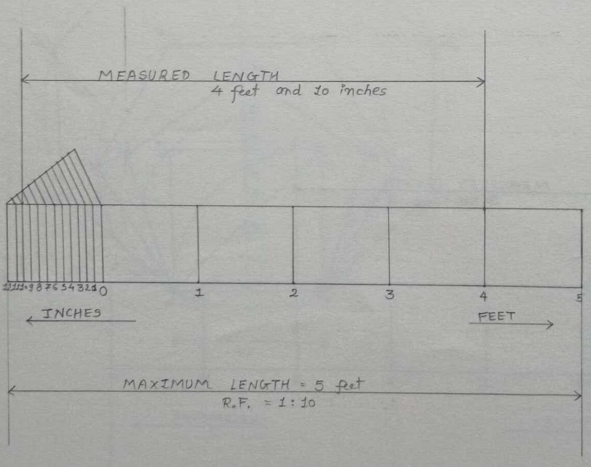
GIVEN DATA :

Representative Fraction (R.F.) = 1 : 10
1 feet = 12 inches
max length = 5 feet
measured length = 4 feet and 10 inches

length of scale (L.O.S.) = R.F. × max. length

$= \frac{1}{10} \times 5 \times 12$ inches

L.O.S. = 6 inches

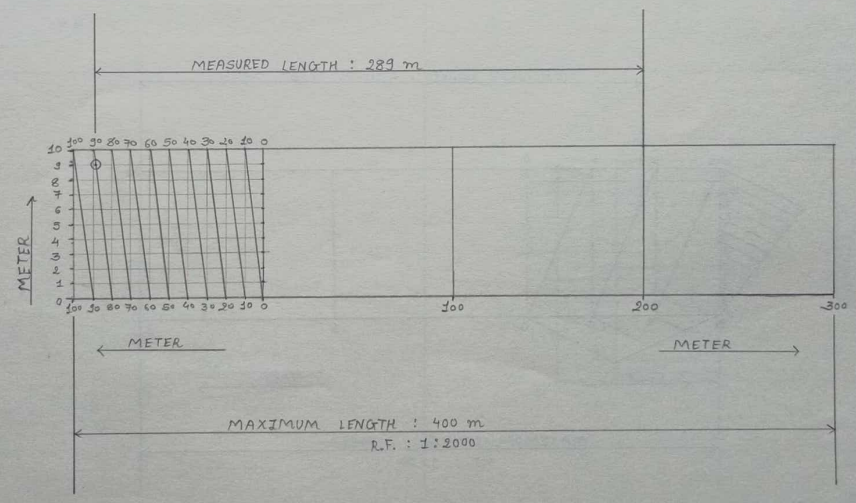


3

GIVEN DATA :

actual length of object = 330 m
drawing length of object = 16.5 cm
max. length = 400 m
measured length = 289 m
Length of Scale (L.O.S.) = R.F. x max length
$= \frac{1}{2000} \times 40000$ cm
L.O.S. = 20 cm

Representative Fraction (R.F.) = $\frac{\text{drawing length}}{\text{actual length}}$
$= \frac{16.5 \text{ cm}}{330 \times 100 \text{ cm}}$
R.F. = $\frac{1}{2000}$



4

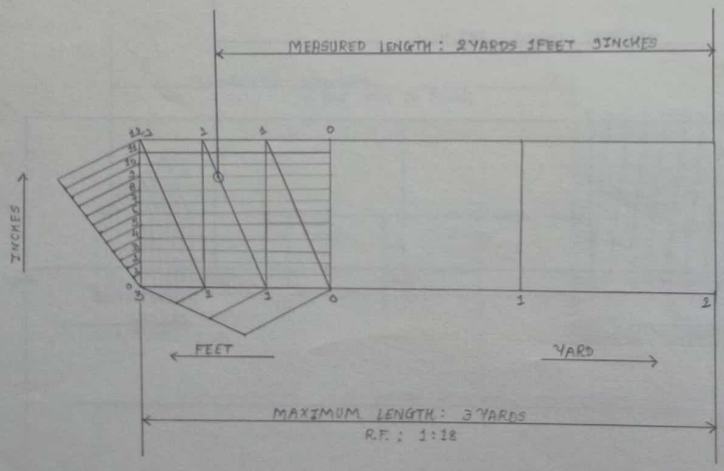
GIVEN DATA :

Representative Fraction (R.F.) = 1:18
1 yard = 3 feet
1 feet = 12 inches
max. length = 3 yards
measured length = 2 yards 1 feet 9 inches

Length Of Scale (L.O.S.) = R.F. x max. length

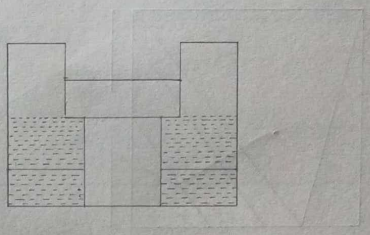
$$= \frac{1}{18} \times 3 \times 3 \times 12^{2}$$

L.O.S. = 6 inches

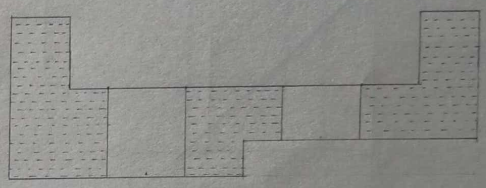


ORTHOGRAPHIC PROJECTION

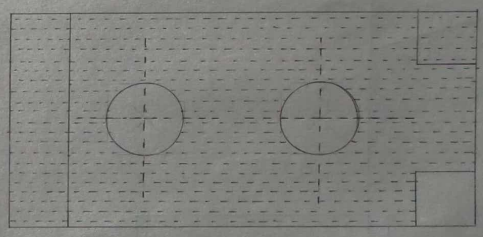
131.



R.H.S.V

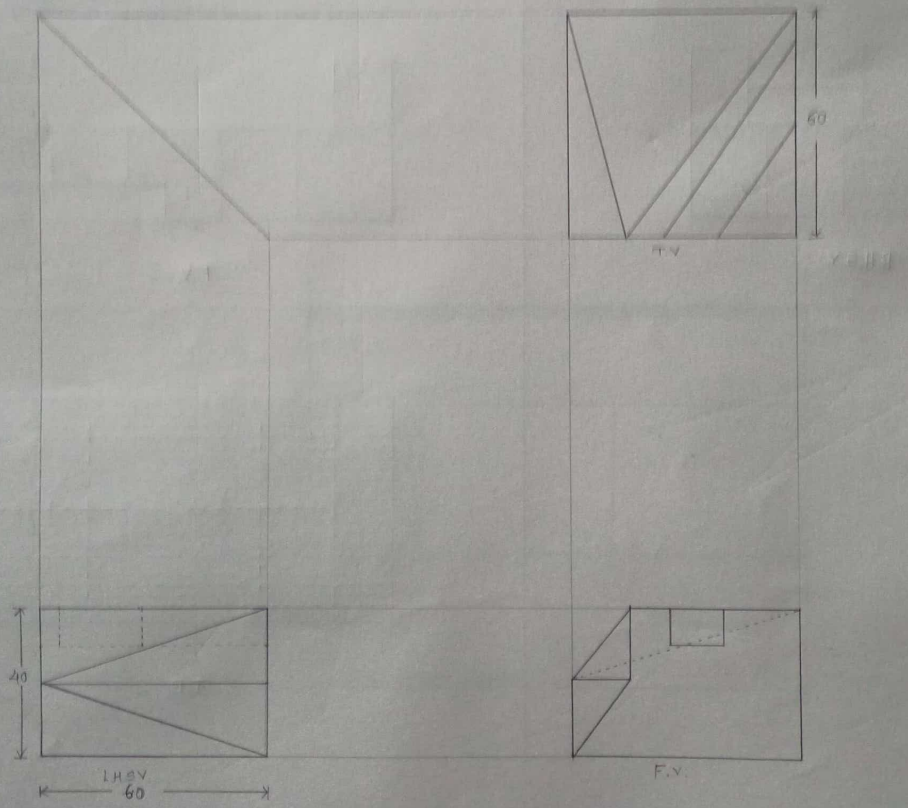


F.V

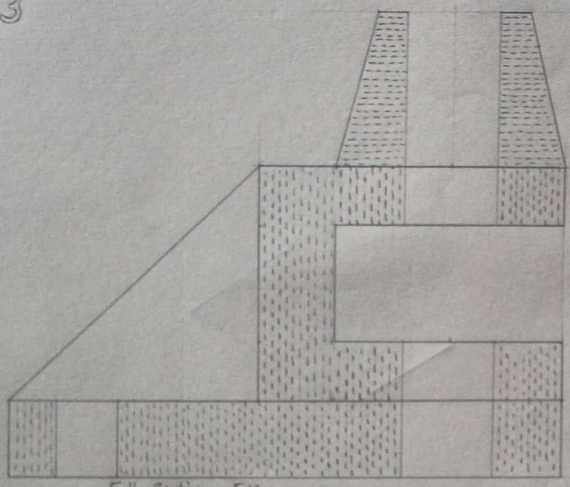


T.P

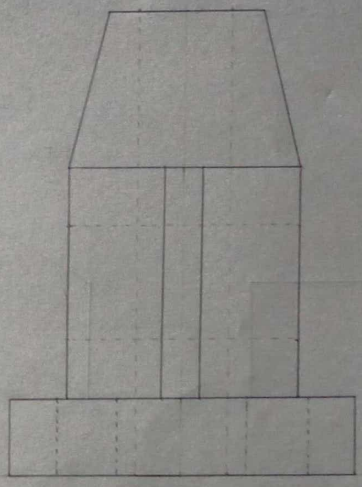
132



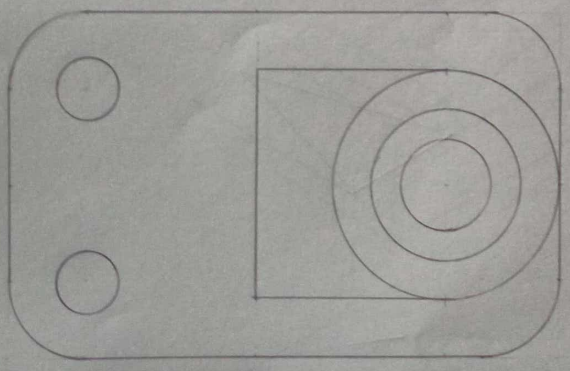
133



Full Section F.V.



L.H.S.V.

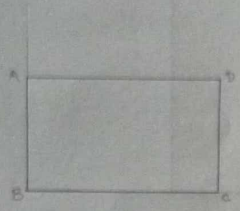


T.V.

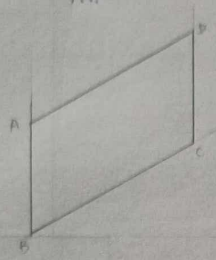
ISOMETRIC OF PLANE FIGURES

[Isometric Views if Shape is]

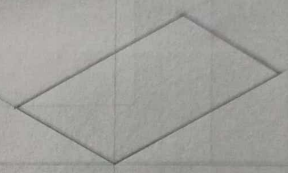
Shape

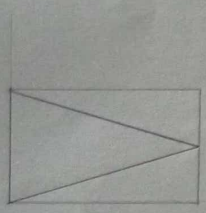


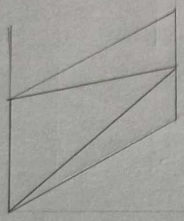
F.V.

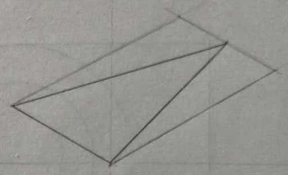


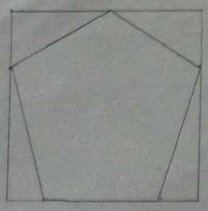
T.V.

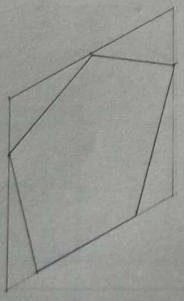


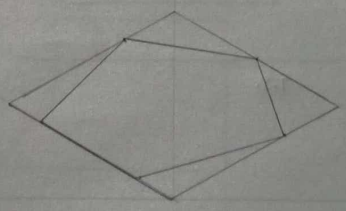




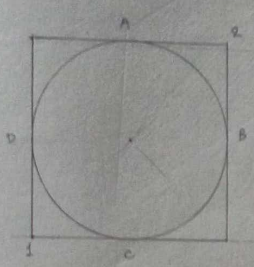


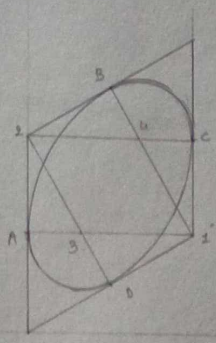




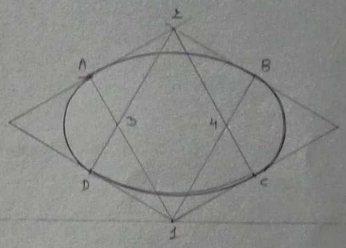


CIRCLE



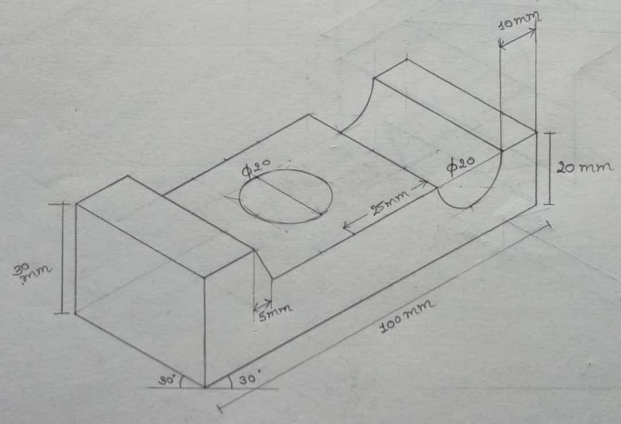


FV

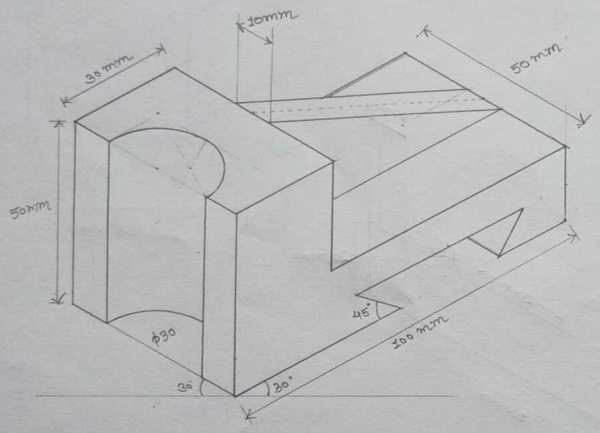


TV

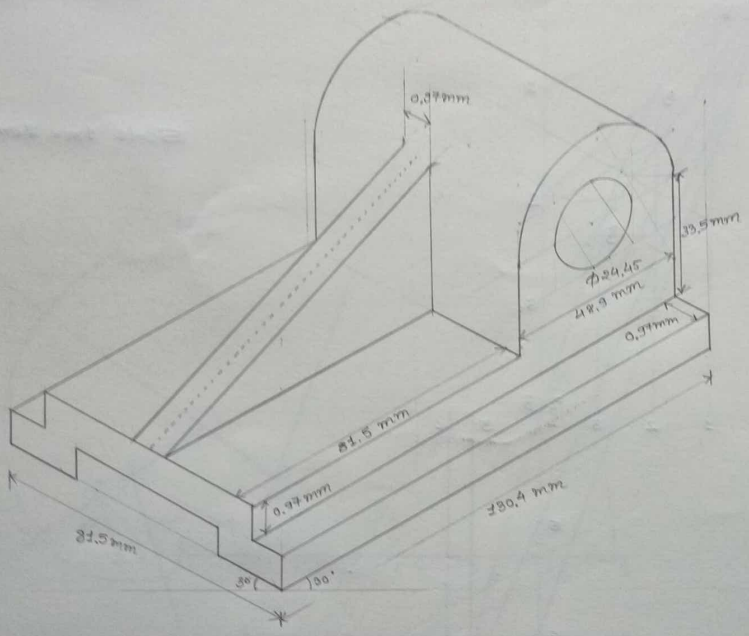
131



132



13 3



Isometric projection

= normal line x 0.815

= 160 mm x 0.815

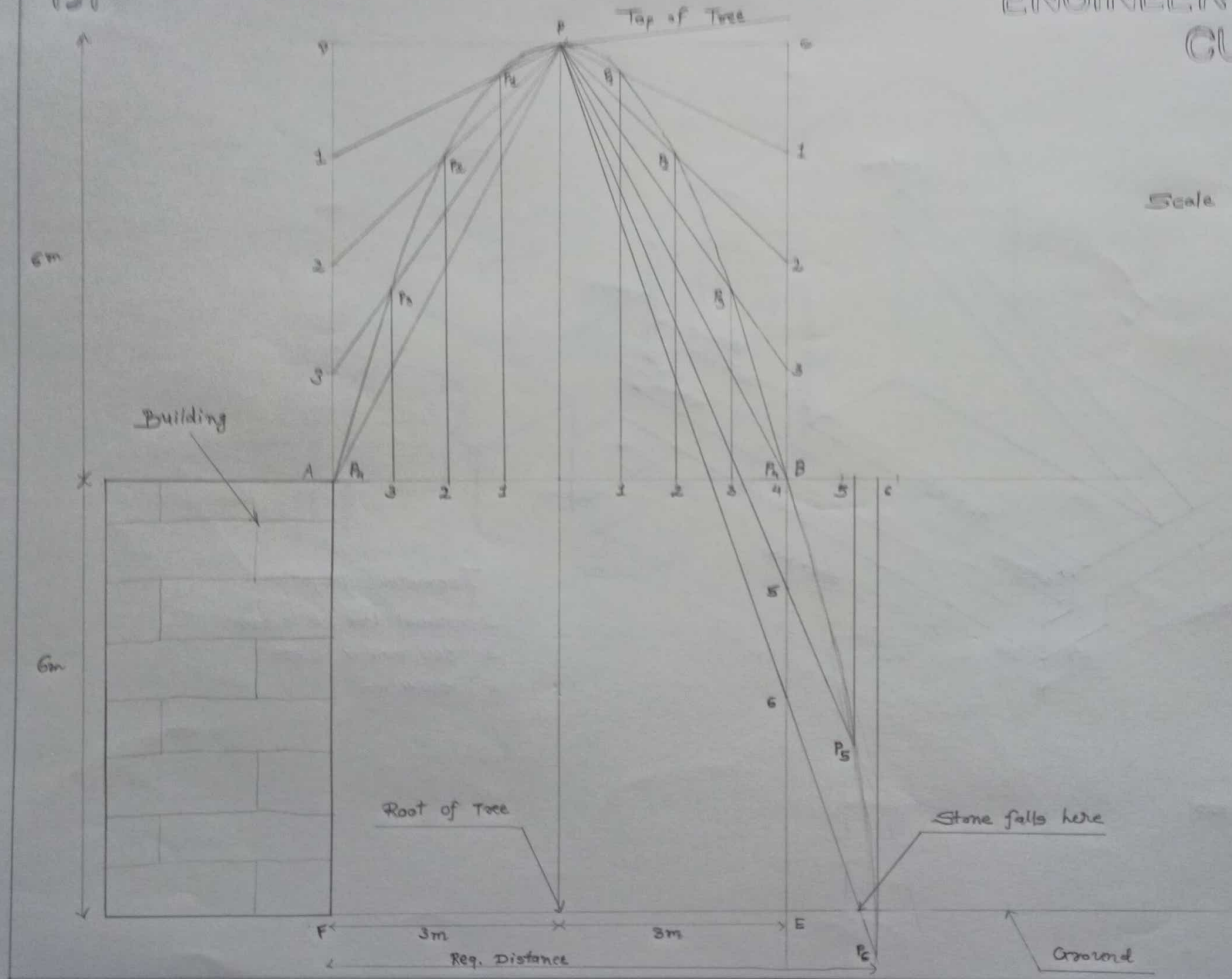
= 130.4 mm

= 100mm x 0.815

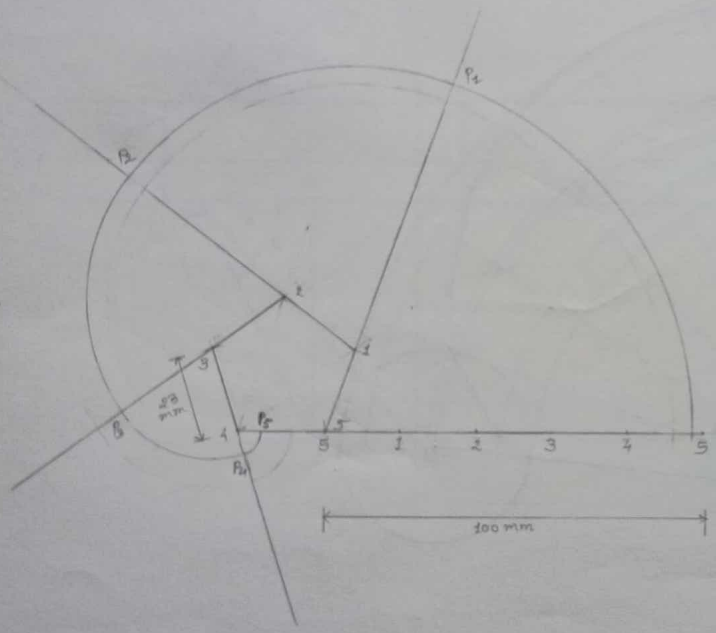
= 81.5 mm

131

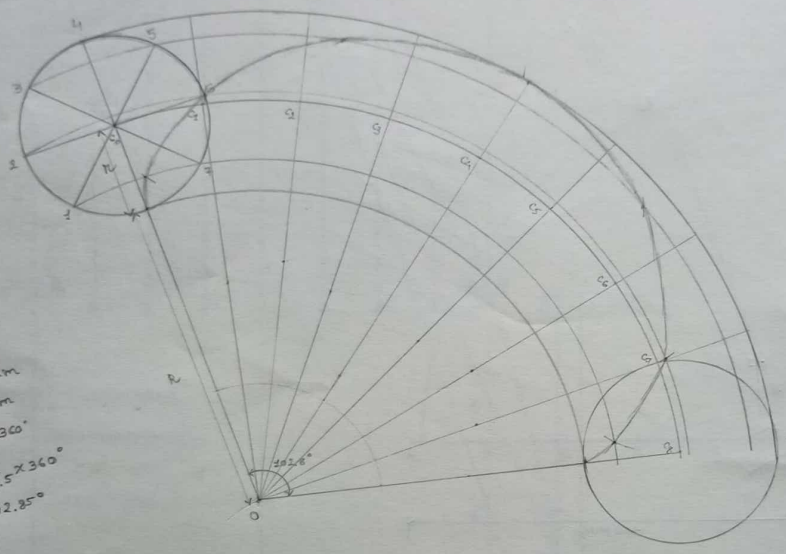
ENGINEERING CURVS



132



133



$R = 87.5\ mm$

$r = 25\ mm$

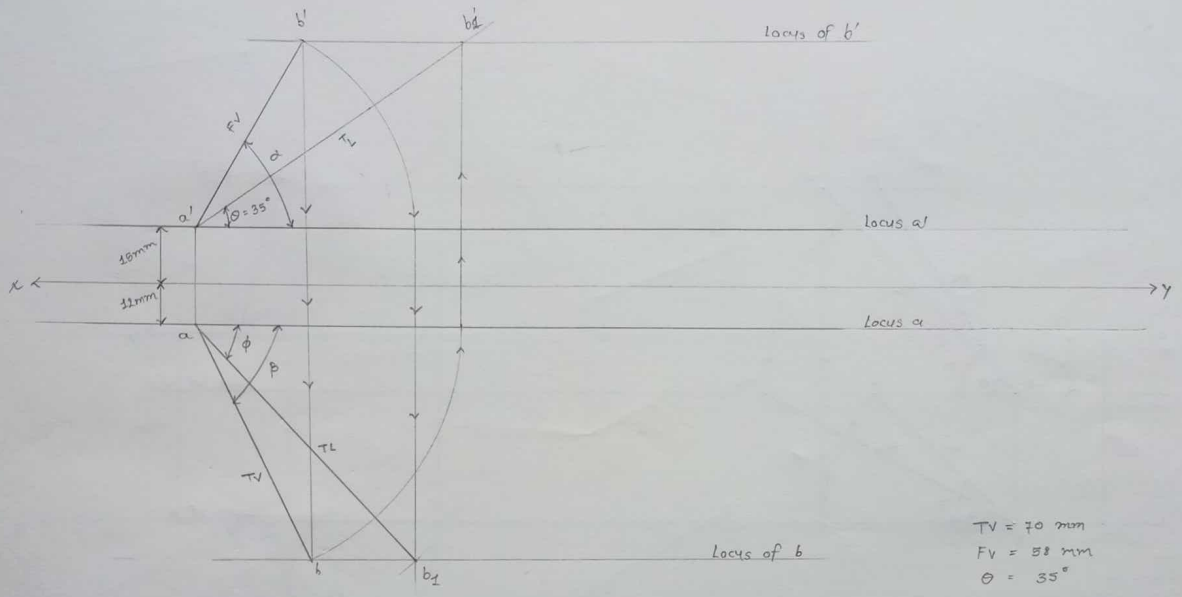
$\theta = \frac{r}{R} \times 360°$

$= \frac{25}{87.5} \times 360°$

$\theta = 102.85°$

PROJECTION OF STRAIGHT LINES

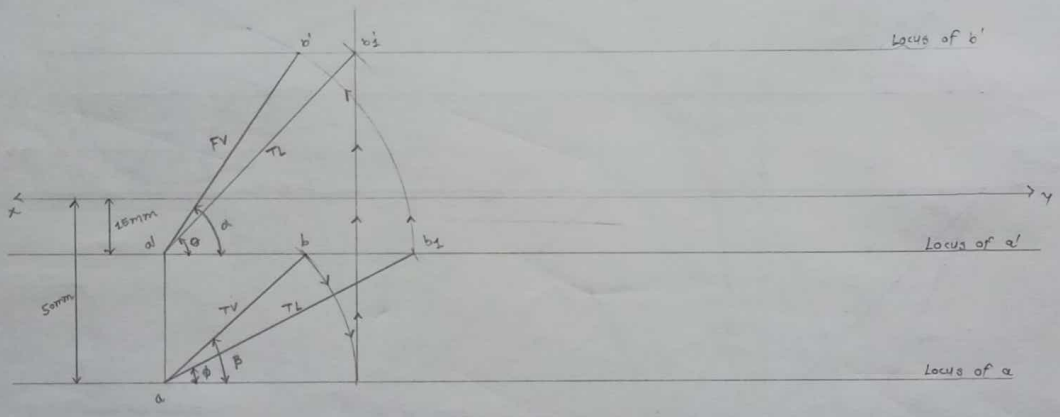
131



TV = 70 mm
FV = 58 mm
θ = 35°

TL = 80 mm
α = 60°
β = 64°
ϕ = 48°

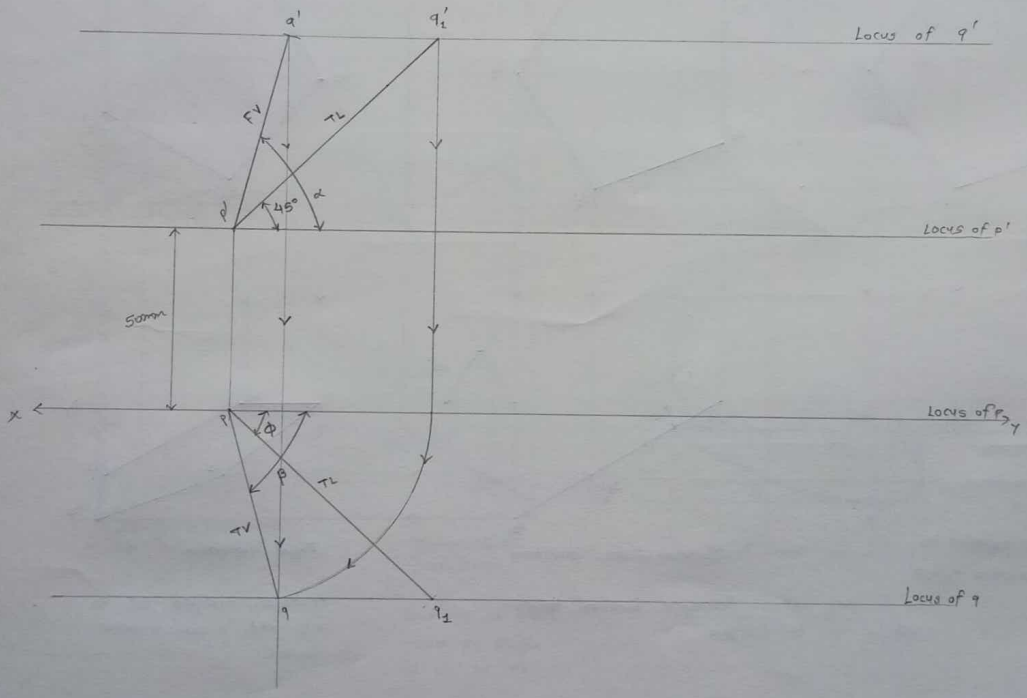
132



TL = 75 mm
Tv = 50 mm

Fv = 66 mm
θ = 57°
φ = 28°
α = 69°
β = 48°

133

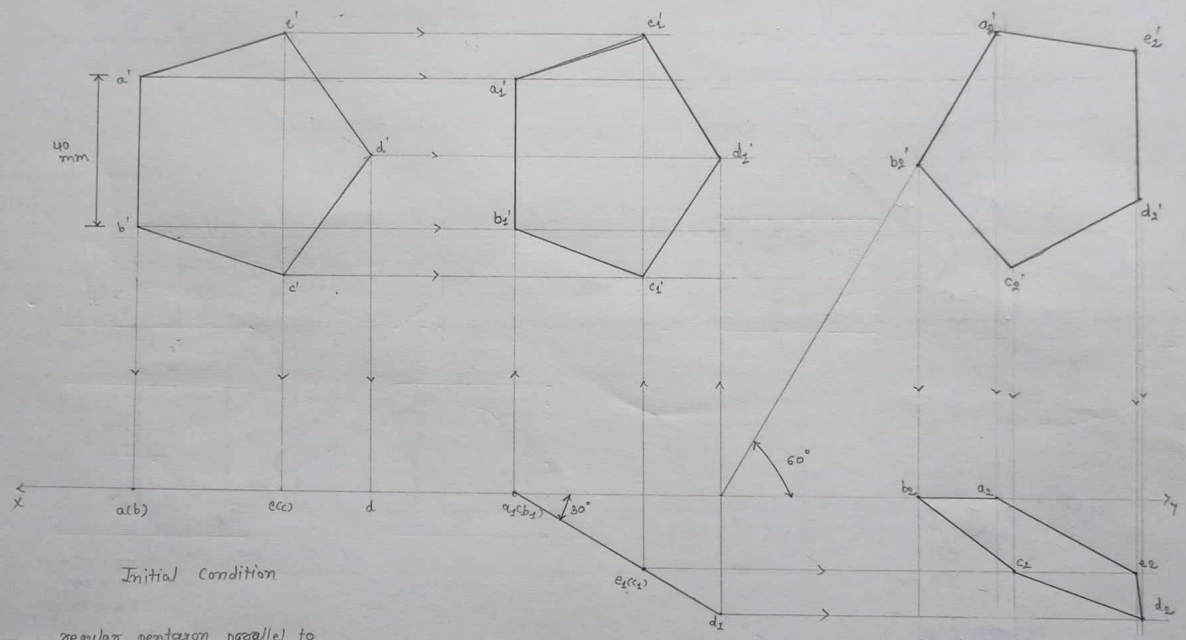


TL = 75 mm
θ = 45°
FV = 55 mm

TV = 53 mm
ϕ = 48°
α = 75°
β = 75°

PROJECTION OF PLANES

1.



Initial Condition

regular pentagon parallel to V.P. and perpendicular to H.P.

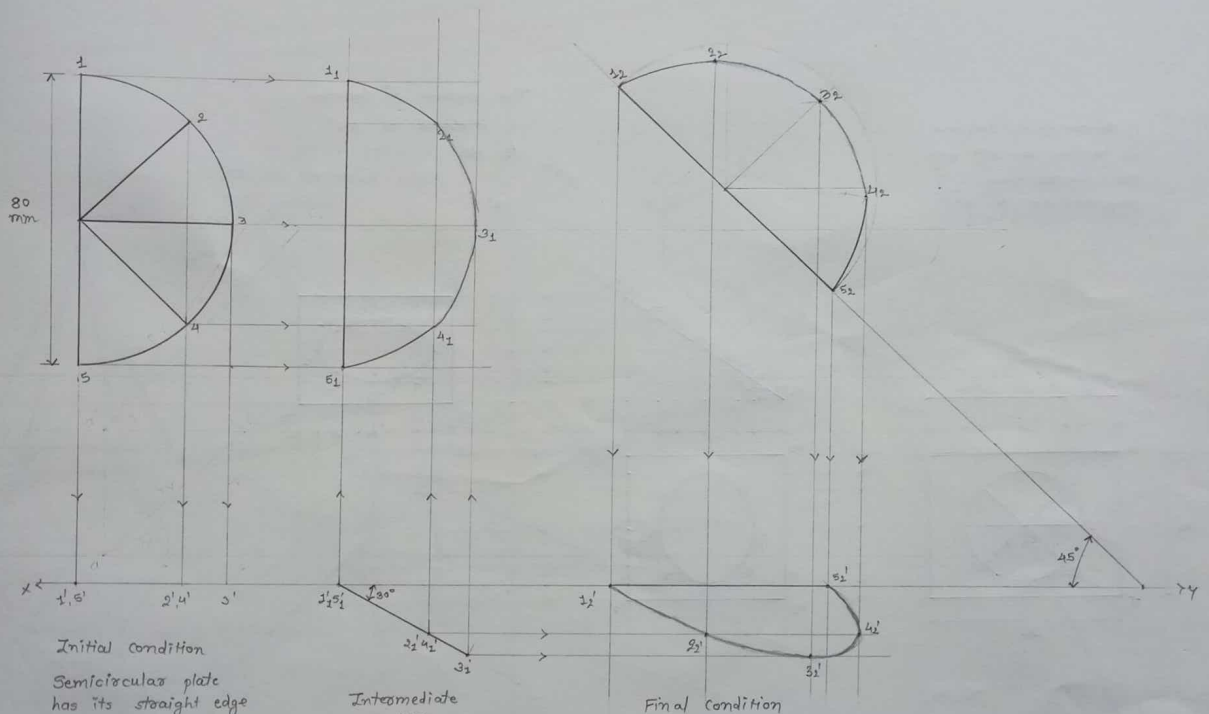
Intermediate Condition

Pentagon inclined 30° to H.P.

Final Condition

Pentagon inclined 60° to V.P. and a side parallel to H.P.

2.



Initial condition

Semicircular plate has its straight edge in V.P

Intermediate condition

Surface of plate makes an angle of 30° to V.P.

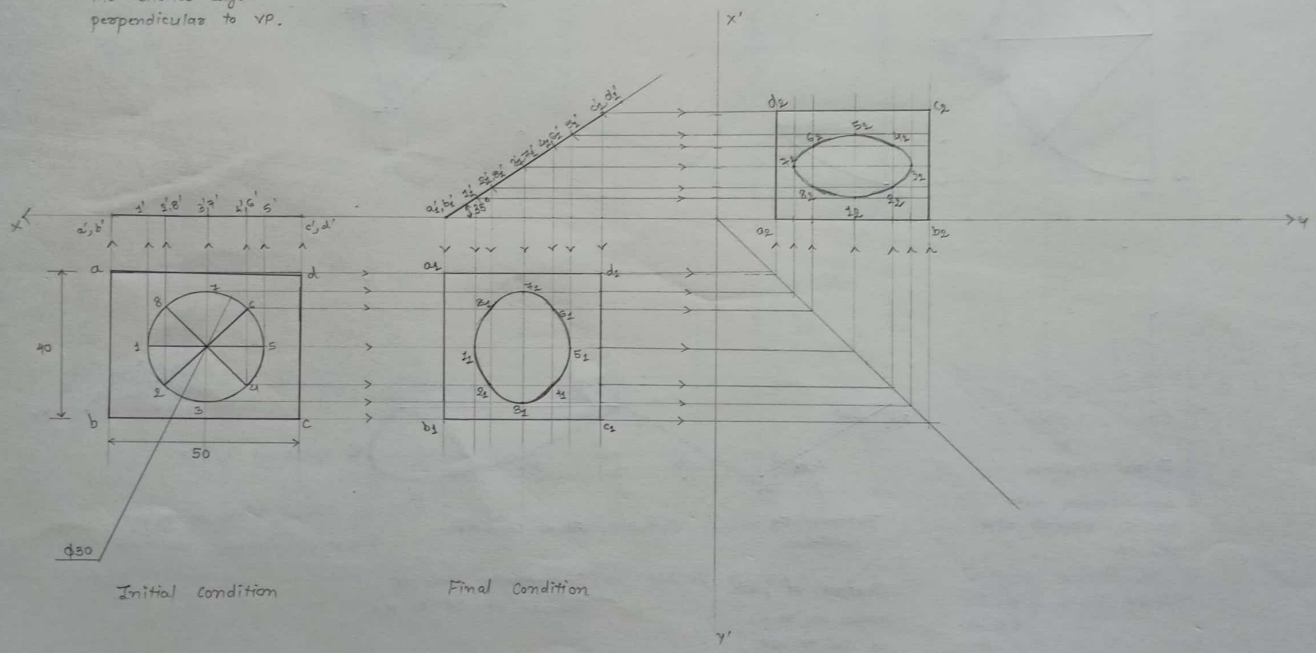
Final condition

Semicircular plate is inclined at 45° to H.P.

3.

A rectangular lamina is resting on HP with the shorter edge perpendicular to VP.

The surface of lamina is inclined at 35° to HP



Initial condition

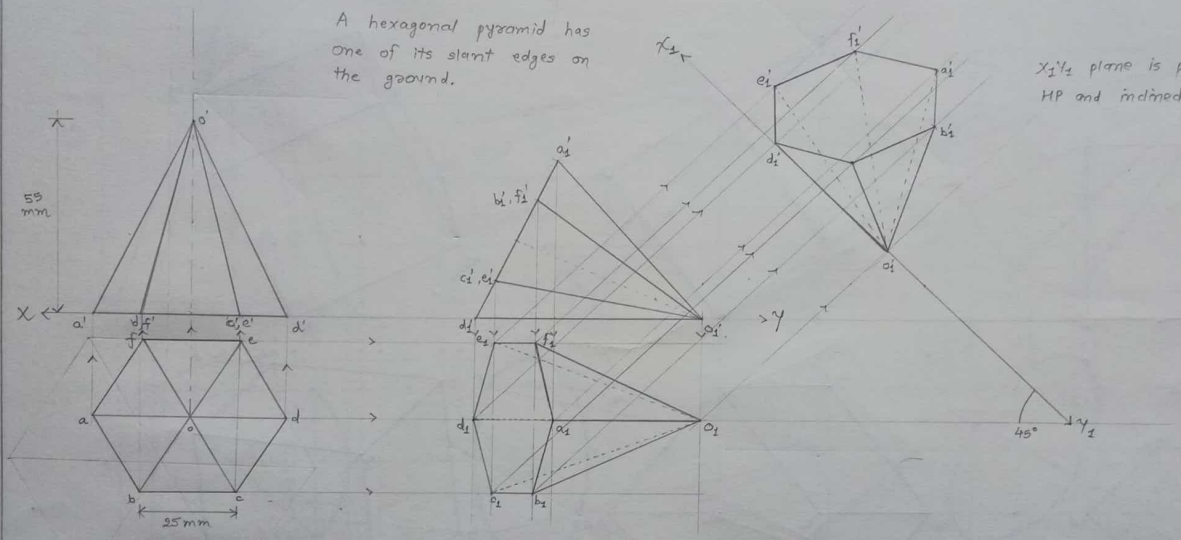
Final condition

PROJECTION OF SOLIDS

2.

A hexagonal pyramid has one of its slant edges on the ground.

X_1Y_1 plane is perpendicular to HP and inclined 45° to VP.

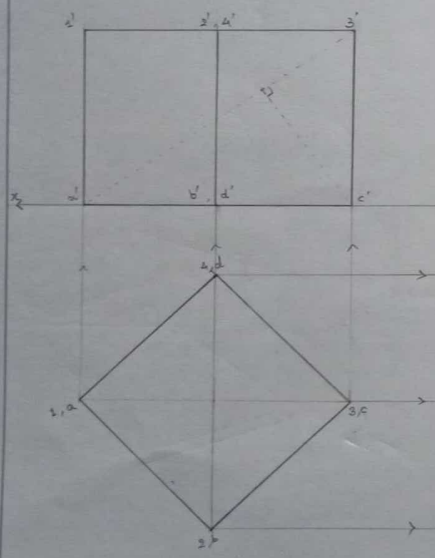


Initial condition

Final condition

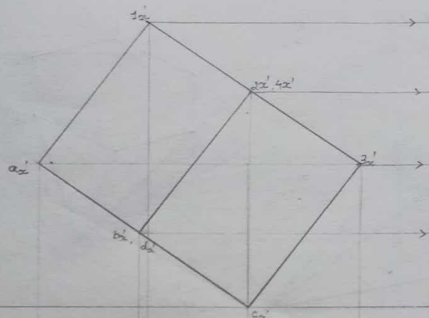
Q.

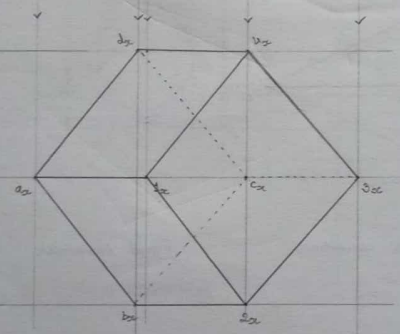
cube is resting on one of its corners



Initial Condition

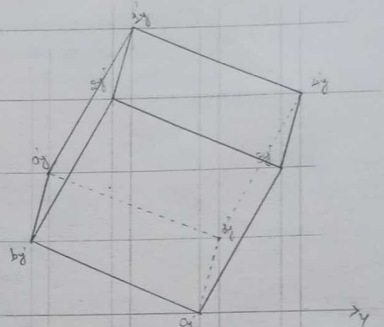
one of its body diagonals parallel to HP

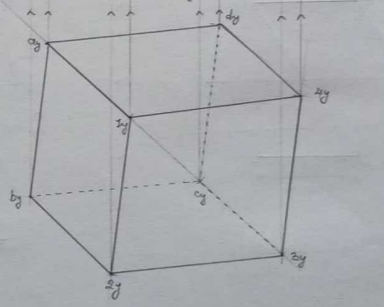




Intermediate condition

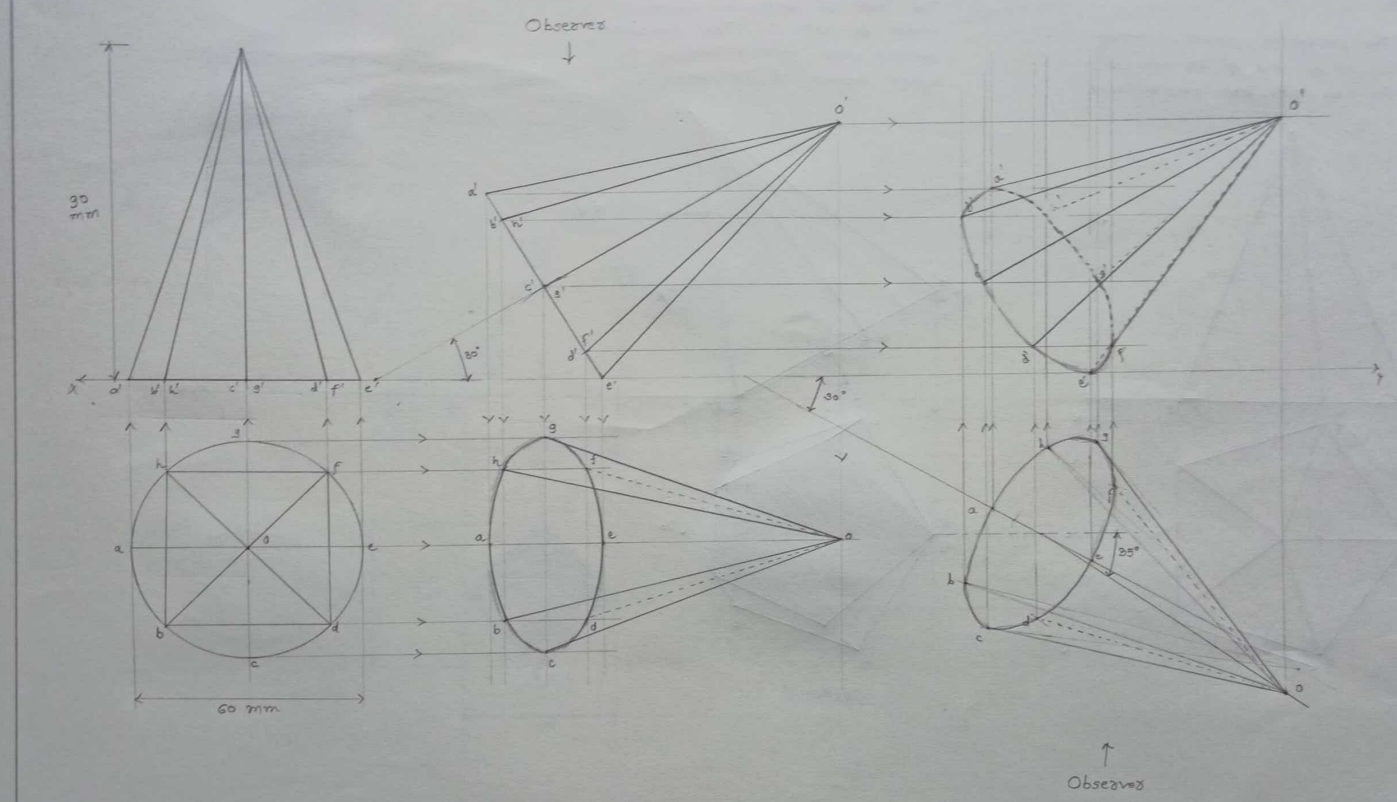
One of its body diagonals parallel to HP and inclined at 45° to VP.





Final Condition

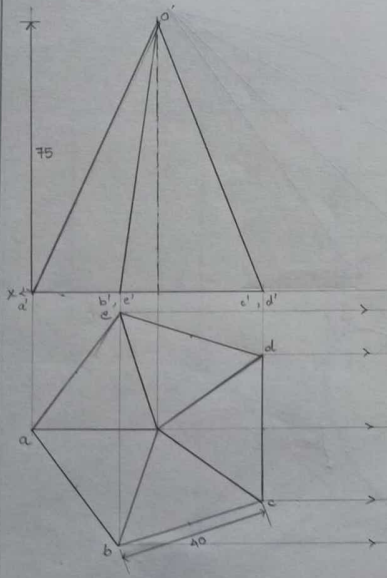
3.



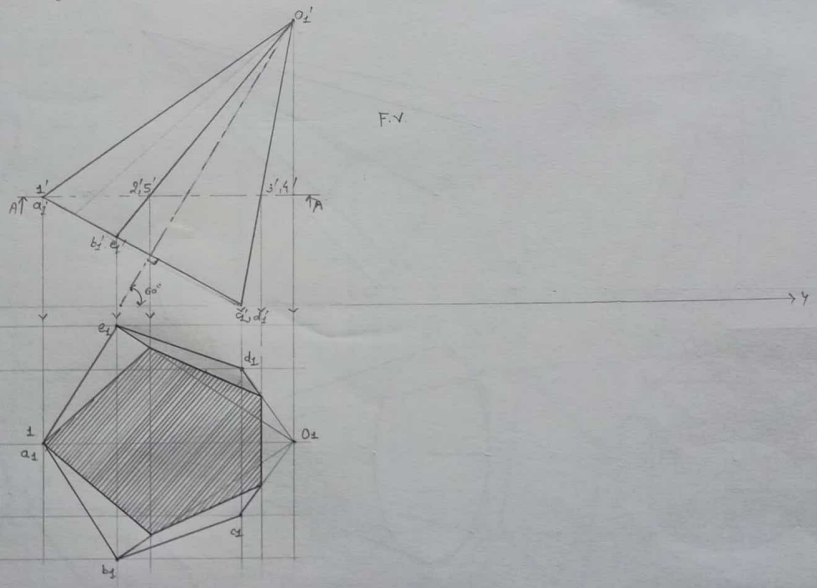
SECTION OF SOLIDS

1.

The pentagonal pyramid is resting on HP on one of its edge of the base with axes parallel to VP.

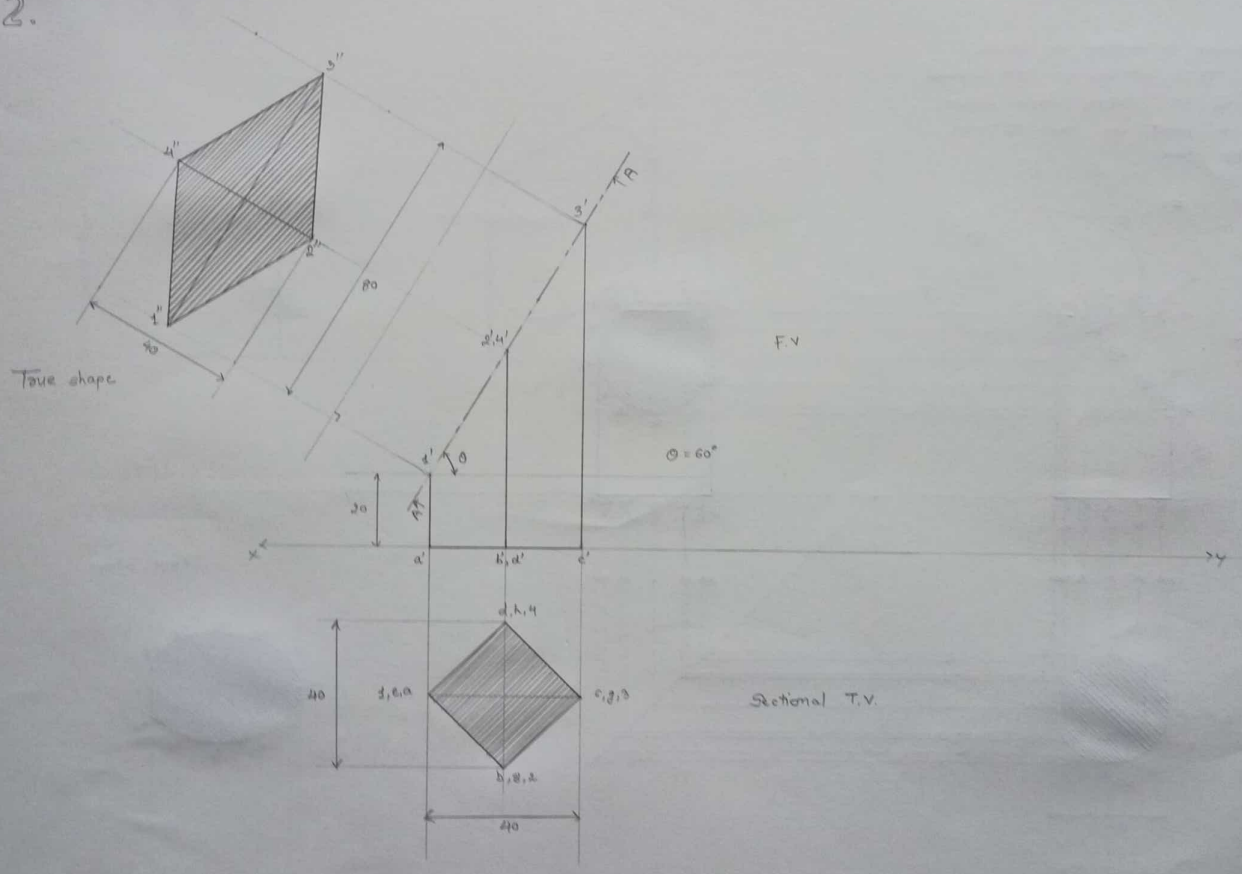


The axis of pentagonal pyramid makes 60° with HP. The horizontal cutting plane passing through the highest corners of the base.



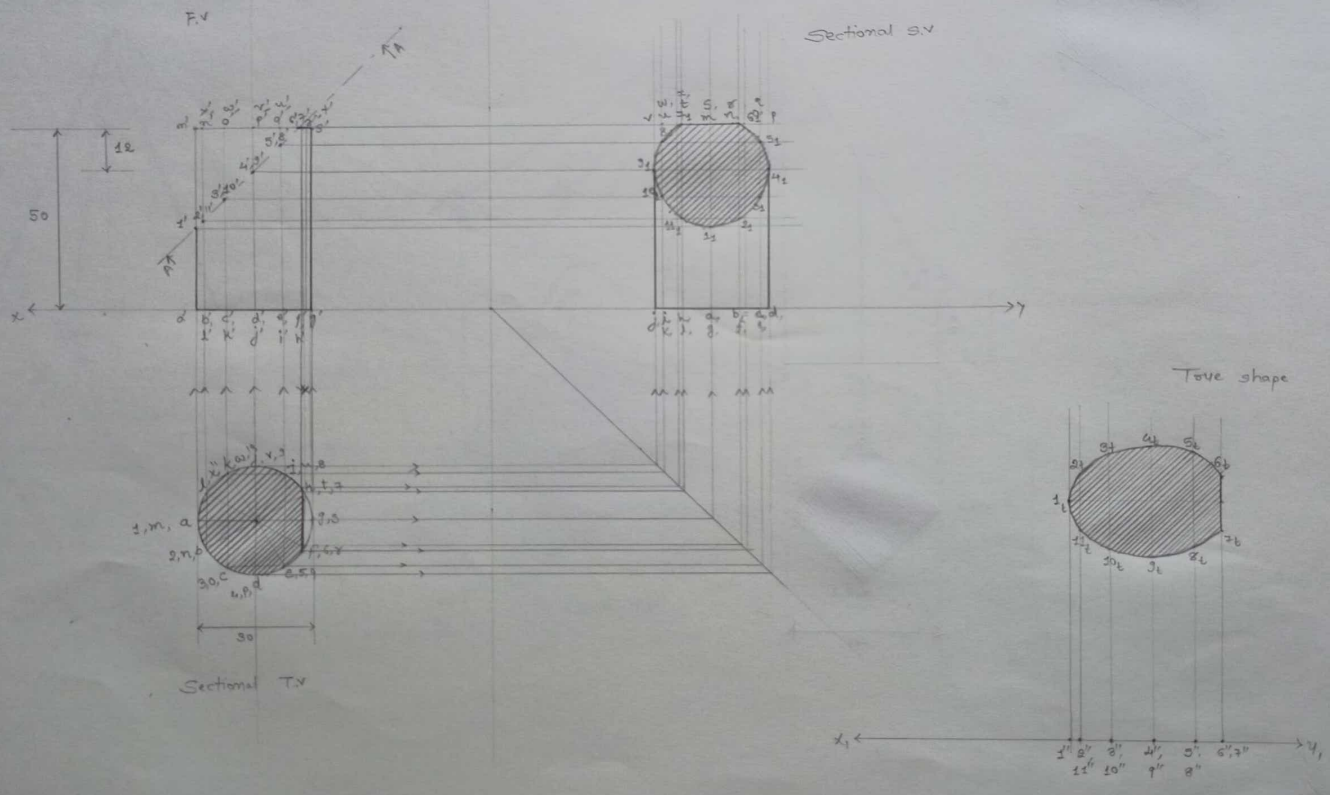
Sectional T.V.

2.


3''
4''
2''
1''
80
40
True shape
3'
A
2',4'
F.V
θ = 60°
θ
30
a'
b',d'
c'
X
Y
d,h,4
40
f,e,a
c,g,3
b,g,2
40
Sectional T.V.

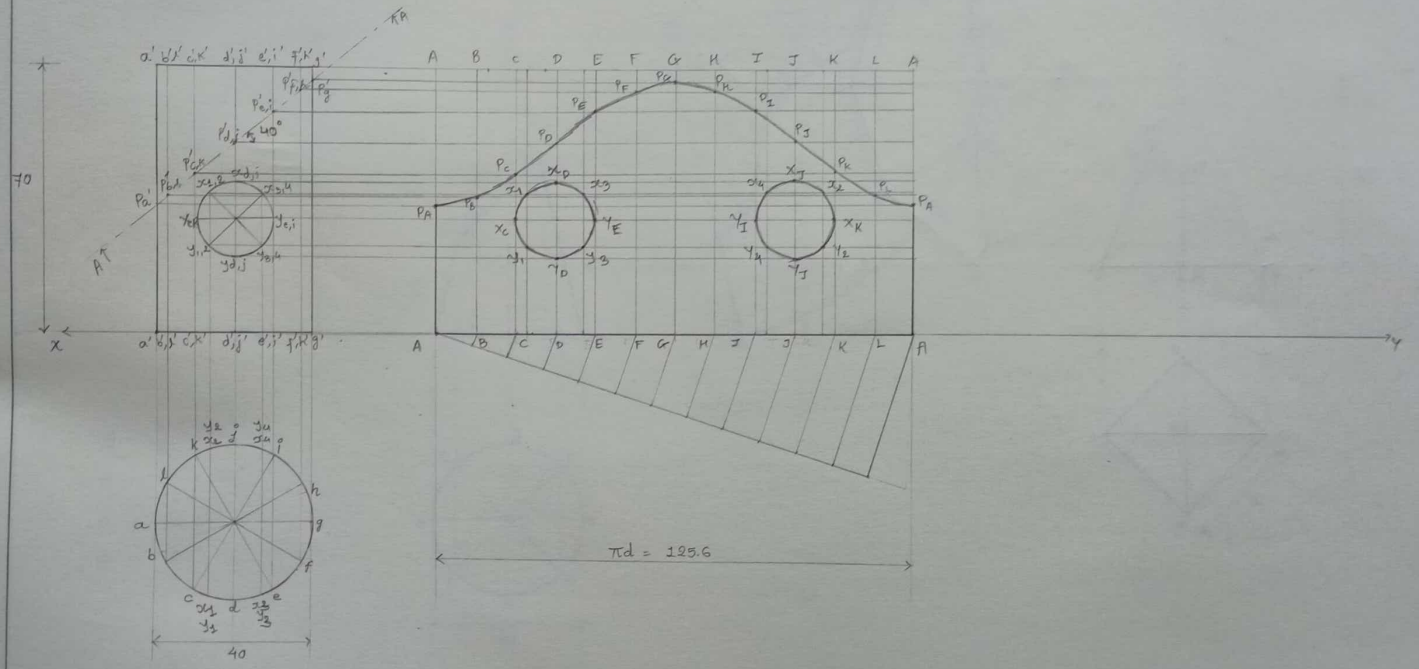
3.

The cylinder is resting on HP on its base. It is cut by an AIP inclined at 45° to HP. Cutting plane passes through a point on axis 22 mm below top face.

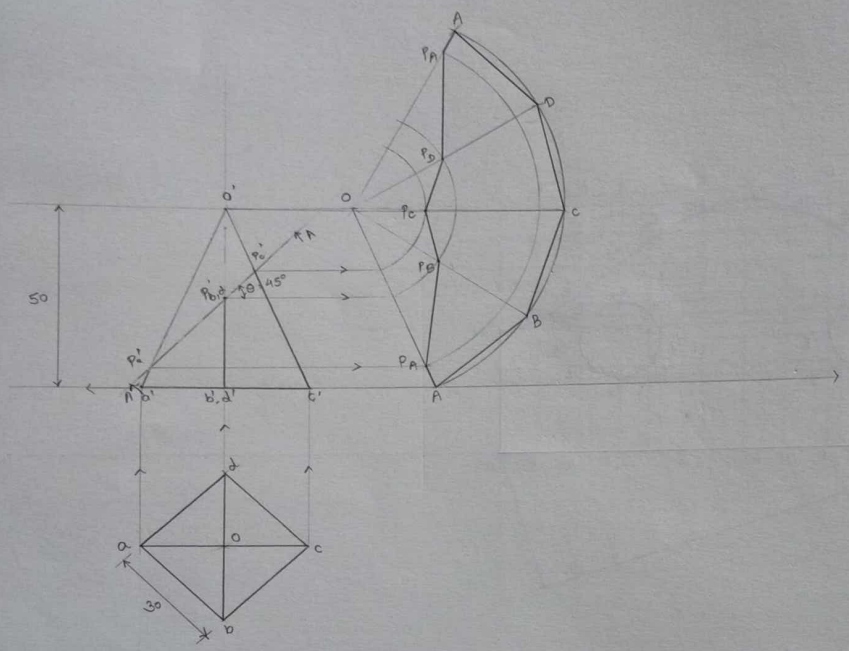


DEVELOPMENT OF SURFACES

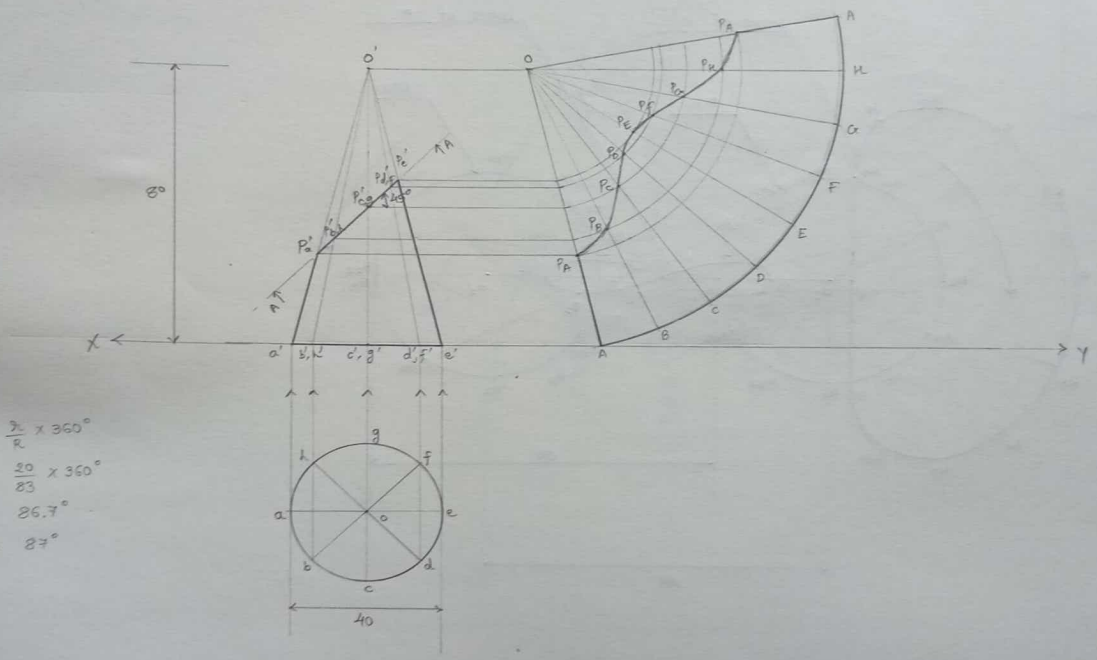
1.



2.



3.



$\theta = \frac{2\pi}{R} \times 360°$

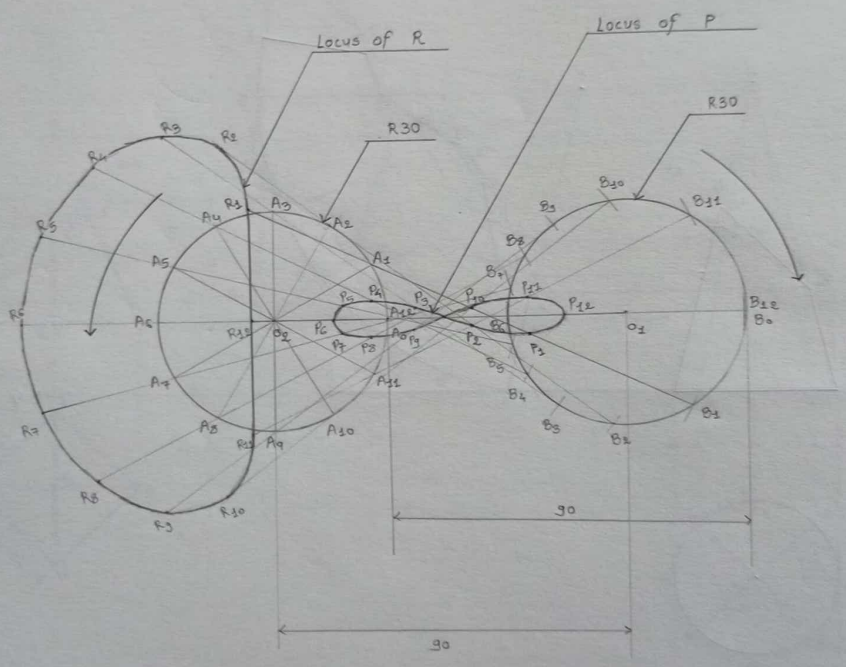
$\theta = \frac{80}{83} \times 360°$

$\theta = 86.7°$

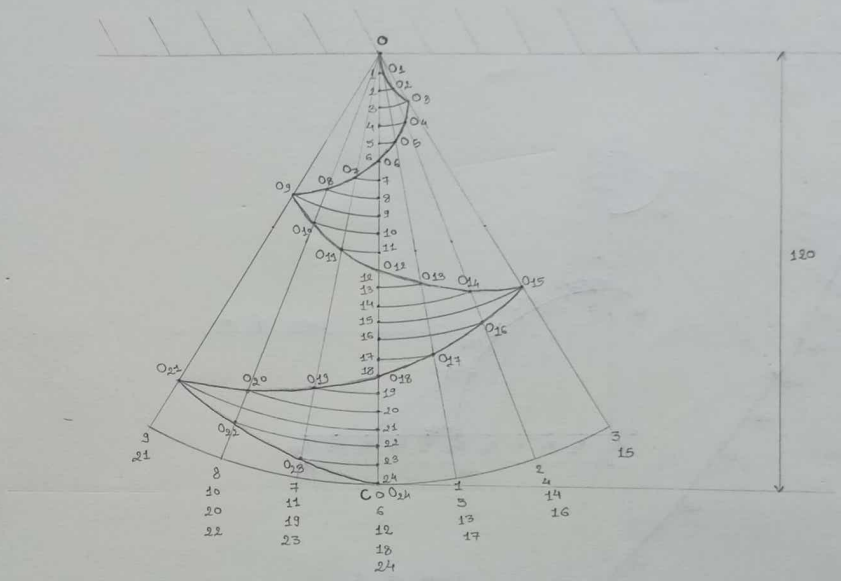
$\theta \approx 87°$

LOCI OF POINTS

1.



2.


O
O1
O2
O3
O4
O5
O6
O7
O8
O9
O10
O11
O12
O13
O14
O15
O16
O17
O18
O19
O20
O21
O22
O23
O24
C
120
9
21
8
10
20
22
7
11
19
23
6
12
18
24
1
5
13
17
2
4
14
16
3
15

3.