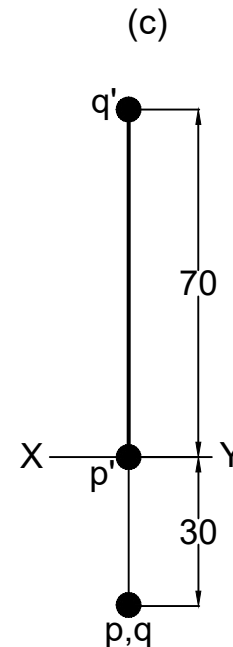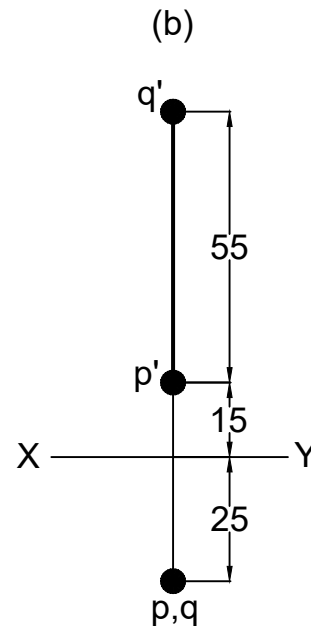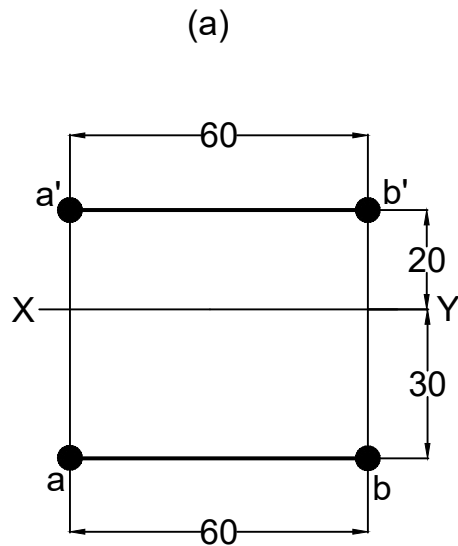1. (a) A 60 mm long line AB is parallel to both the H.P. and the V.P. It is 20 mm above the H.P. and 30 mm in front of the V.P. Draw its projections.

(b) A 55 mm long line PQ is perpendicular to the H.P. and 25 mm in front of the V.P. Draw its projections when one end of the line is 15 mm above the H.P.

(c) A 70 mm long line PQ is perpendicular to the H.P. and 30 mm in front of the V.P. End P of the line is on the H.P. Draw its projections.
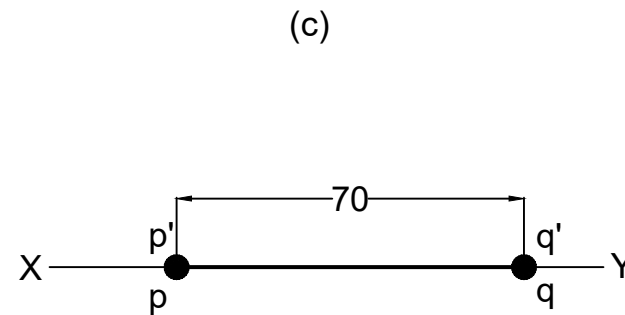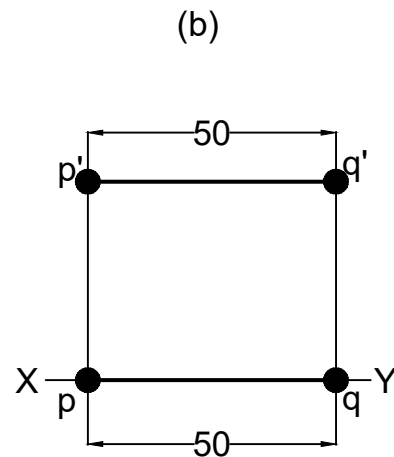
(a)

(b)

(c)

Note: All dimensions are in mm

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2. (a) A 50 mm long line AB is perpendicular to the V.P. and 40 mm above the H.P. One end of the line is 10 mm in front of the V.P. Draw its projections.

(b) A 50 mm long line situated in the V.P. is parallel to the H.P. The line is at a distance of 40 mm from the H.P. Draw its projections.

(c) A 70 mm long line lies both on the H.P. and the V.P. Draw its projections.

(a)

(b)

(c)

Note: All dimensions are in mm

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3. (a) A 70 mm long line MN is inclined at 45° to the H.P. and parallel to the V.P. The end M is 15 mm above the H.P. and 25 mm in front of the V.P. Draw its projections.

   (b) An 80 mm long line is inclined at 60° to the V.P. and parallel to the H.P. One end of the line is 30 mm above the H.P. and 10 mm in front of the V.P. Draw its projections.
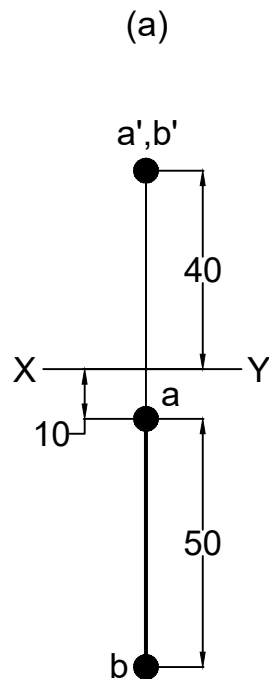

(a)

(b)

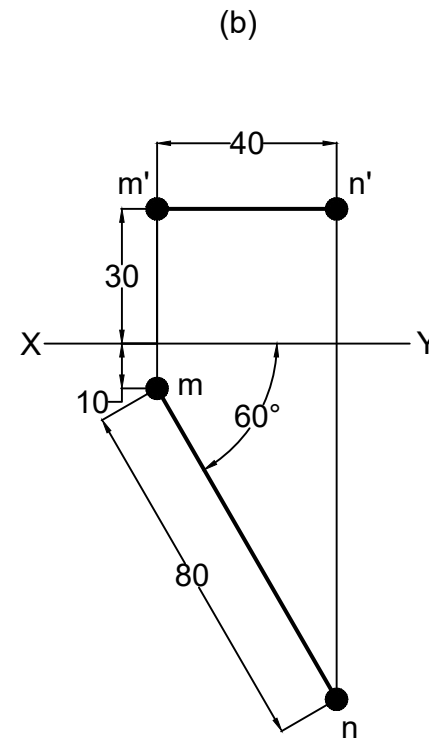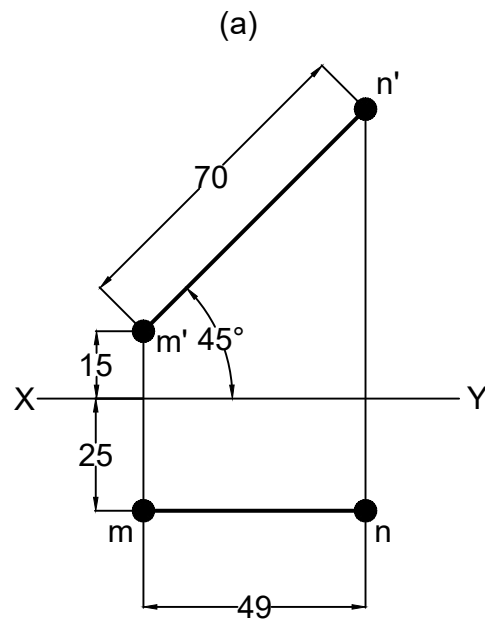**Note: All dimensions are in mm**

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4. (a) A 70 mm long line CD lying in the V.P. is inclined at 60° to the H.P. One end of the line 15 mm above the H.P. Draw its projections.

(b) A 70 mm long line PQ lying in the H.P. is inclined at 45° to the V.P. End P of the line is in the V.P. Draw its projections.
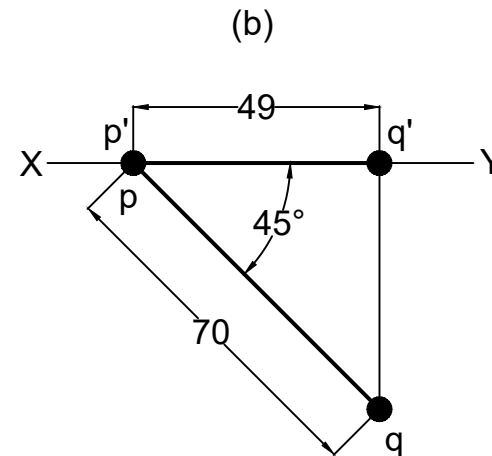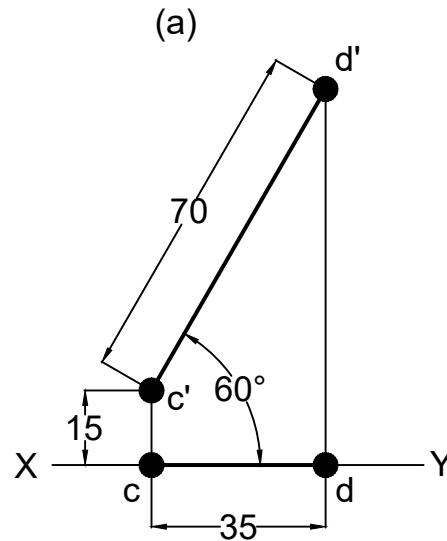
(a)

d'

70

15

c' 60°

X — c — d — Y

35

(b)

49

p' q'

p

45°

70

q

X — Y

Note: All dimensions are in mm

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5. (a) A 70 mm long line has an end 40 mm above the H.P. and 20 mm in front of the V.P. The front view of the line is a point. Draw its projections and determine true inclination with the reference planes.

(b) A 70 mm long line AB is parallel to the V.P. and inclined to the H.P. The end A is 20 mm above the H.P. and 30 mm in front of the V.P. The top view of the line measures 45 mm. Draw its projections.

(c) The front view of an 80 mm long line PQ measures 50 mm. The line lies in the H.P. such that one end is 30 mm in front of the V.P. Draw the projections of the line and find its inclination with the V.P.
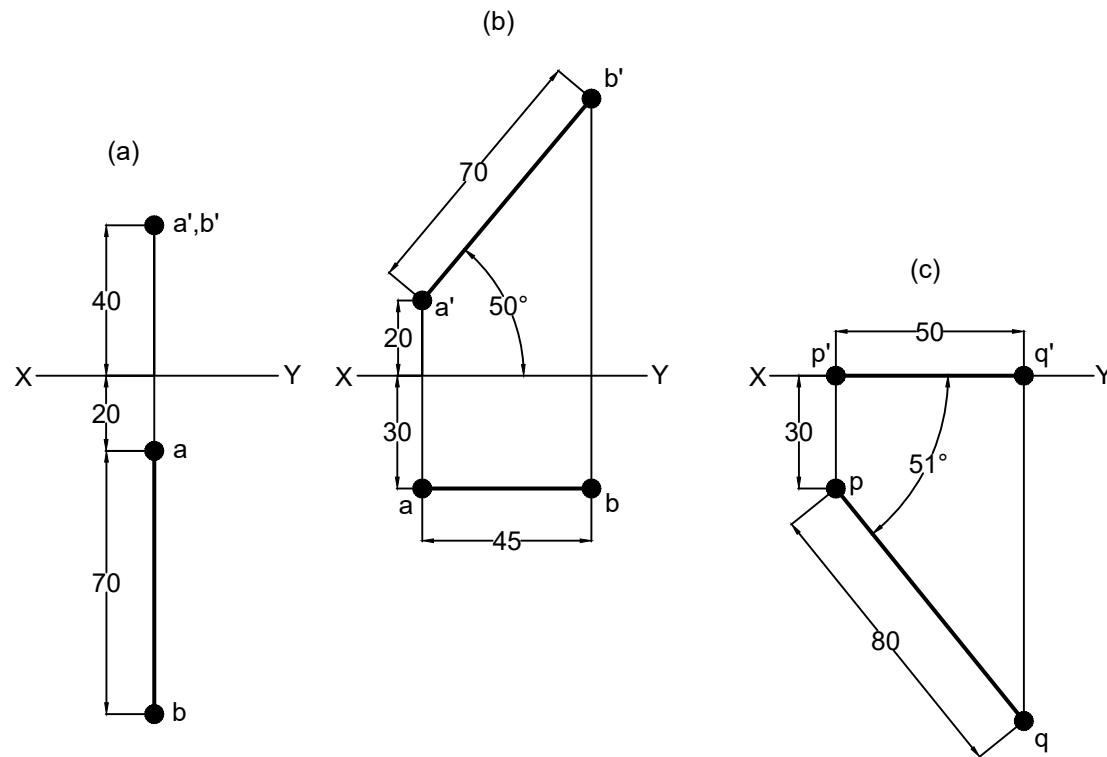
(b)

(a)

b'

70

a',b'

40

a' 50°

20

(c)

X —————— Y   X —————— Y   X —————— Y

20

30

50

p'   q'

30

51°

70

a

p

a   b

45

80

b

q

Note: All dimensions are in mm

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6. An 80 mm long line PQ is inclined at 45° to the H.P. and 30° to the V.P. The end P is in the H.P. and 40 mm in front of the V.P. Draw its projections.
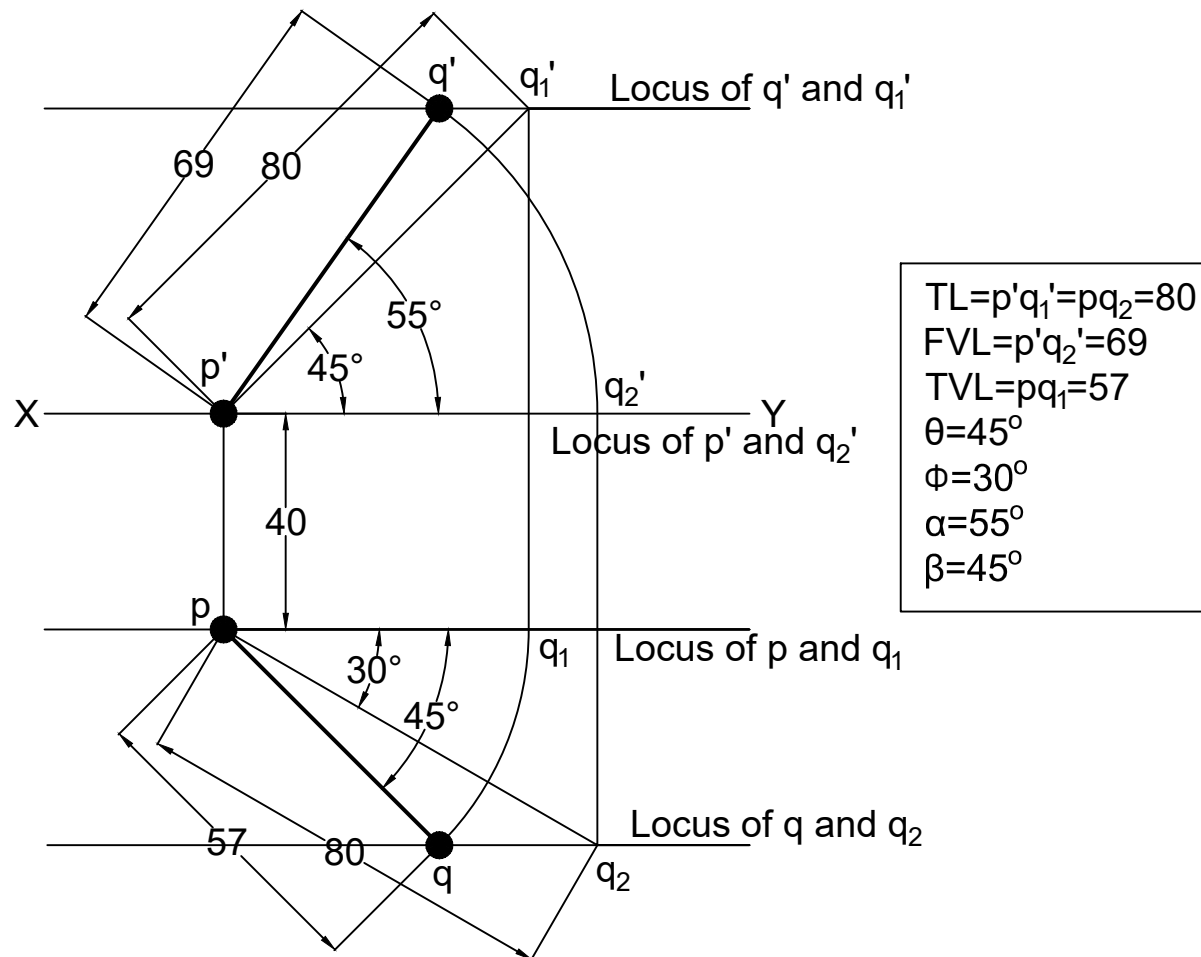
Locus of q' and q_1'

69   80

55°

p'

45°

X ——————————————————— Y

q_2'

Locus of p' and q_2'

40

p

Locus of p and q_1

q_1

30°

45°

Locus of q and q_2

57   80

q

q_2

TL=p'q_1'=pq_2=80
FVL=p'q_2'=69
TVL=pq_1=57
θ=45°
Φ=30°
α=55°
β=45°

Note: All dimensions are in mm

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7. A straight line PQ has its end P 15 mm above the H.P. and 60 mm in front of the V.P.
The end Q is 45 mm above the H.P. and 10 mm in front of the V.P. If the end projectors of the
line are 60 mm apart, draw its projections. Determine the true length and true inclinations of the
line with the principal planes.
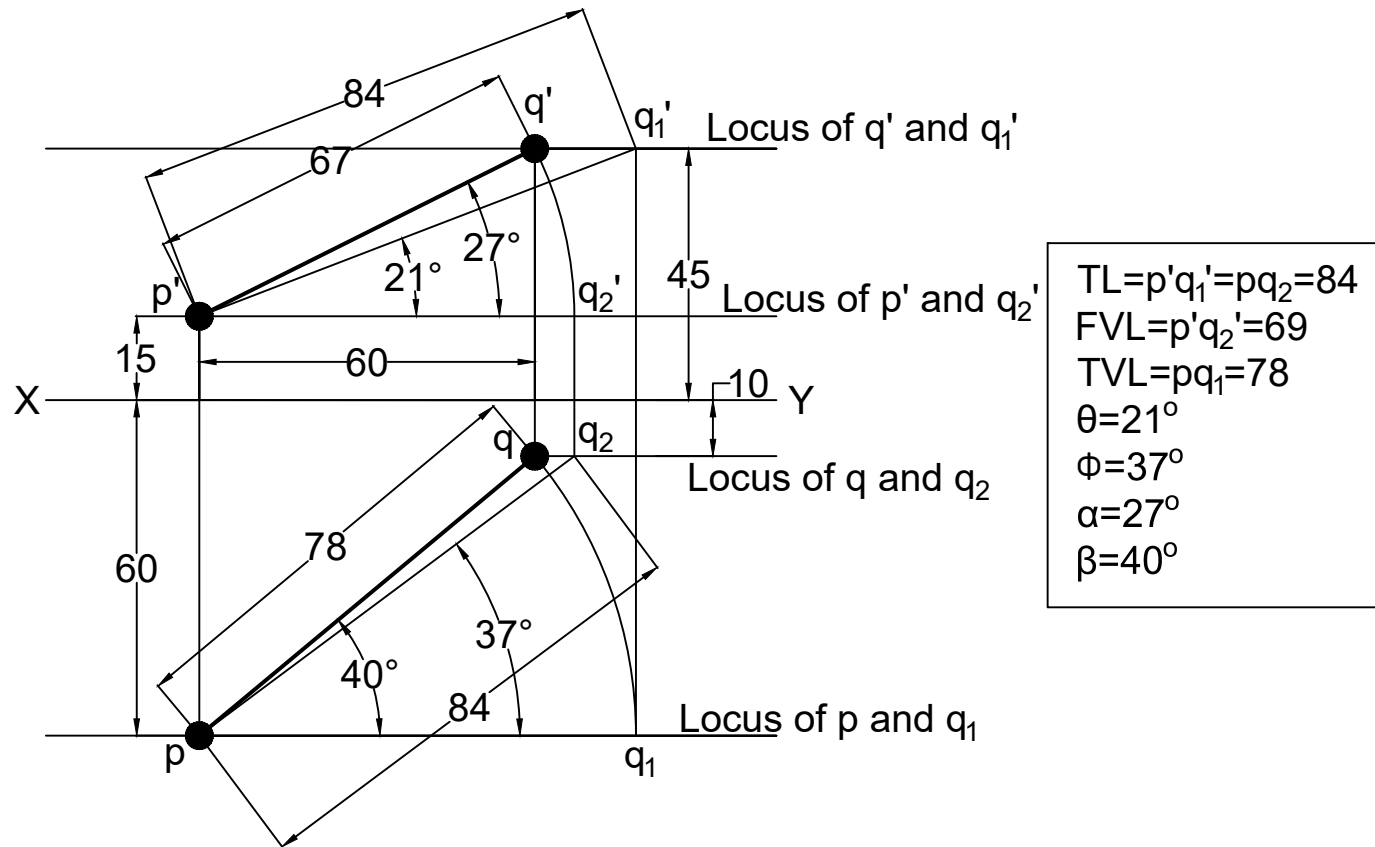
84

q'

q₁' Locus of q' and q₁'

67

27°

21°

q₂'   45 Locus of p' and q₂'

p'

15   60

X ————————————————————— -10 Y

60

q q₂

Locus of q and q₂

78

37°

40°

84

Locus of p and q₁

p

q₁

TL=p'q₁'=pq₂=84
FVL=p'q₂'=69
TVL=pq₁=78
θ=21°
Φ=37°
α=27°
β=40°

Note: All dimensions are in mm

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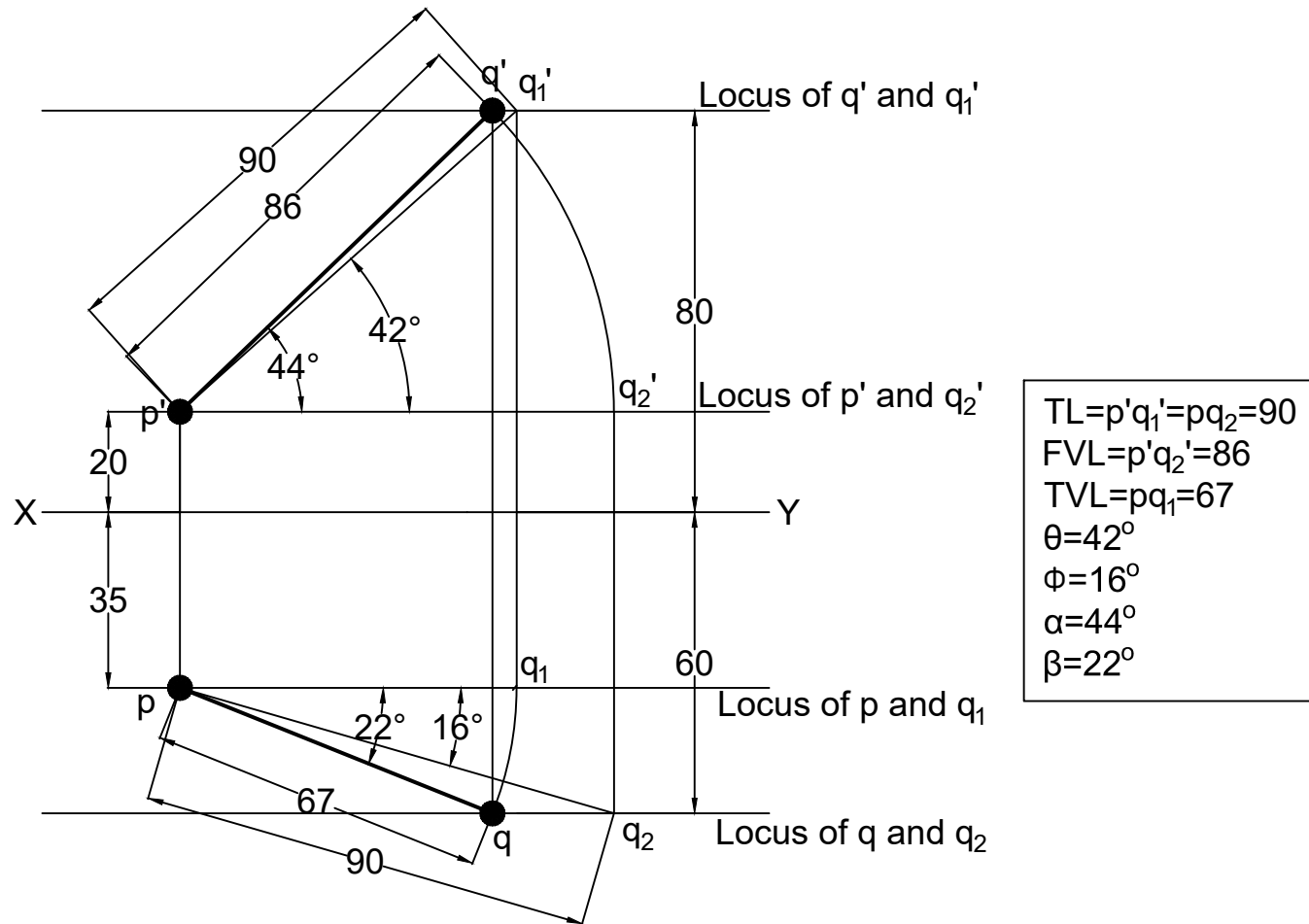C:\Engineering First Year\Semester-2\Computer Aided Engineering Graphics\Autocad F

8. A 90 mm long line PQ has the end P 20 mm above the H.P. and 35 mm in front of the V.P. The end Q is 80 mm above the H.P. and 60 mm in front of the V.P. Draw the projections of PQ and determine its true inclinations with the principal planes.

90
86
42°
44°
q' q$_1$'   Locus of q' and q$_1$'
80
q$_2$'   Locus of p' and q$_2$'
p'
20
X ——————————————— Y
35
q$_1$ 60
p   Locus of p and q$_1$
22°   16°
67
90
q   q$_2$ Locus of q and q$_2$

TL=p'q$_1$'=pq$_2$=90
FVL=p'q$_2$'=86
TVL=pq$_1$=67
θ=42°
Φ=16°
α=44°
β=22°

Note: All dimensions are in mm

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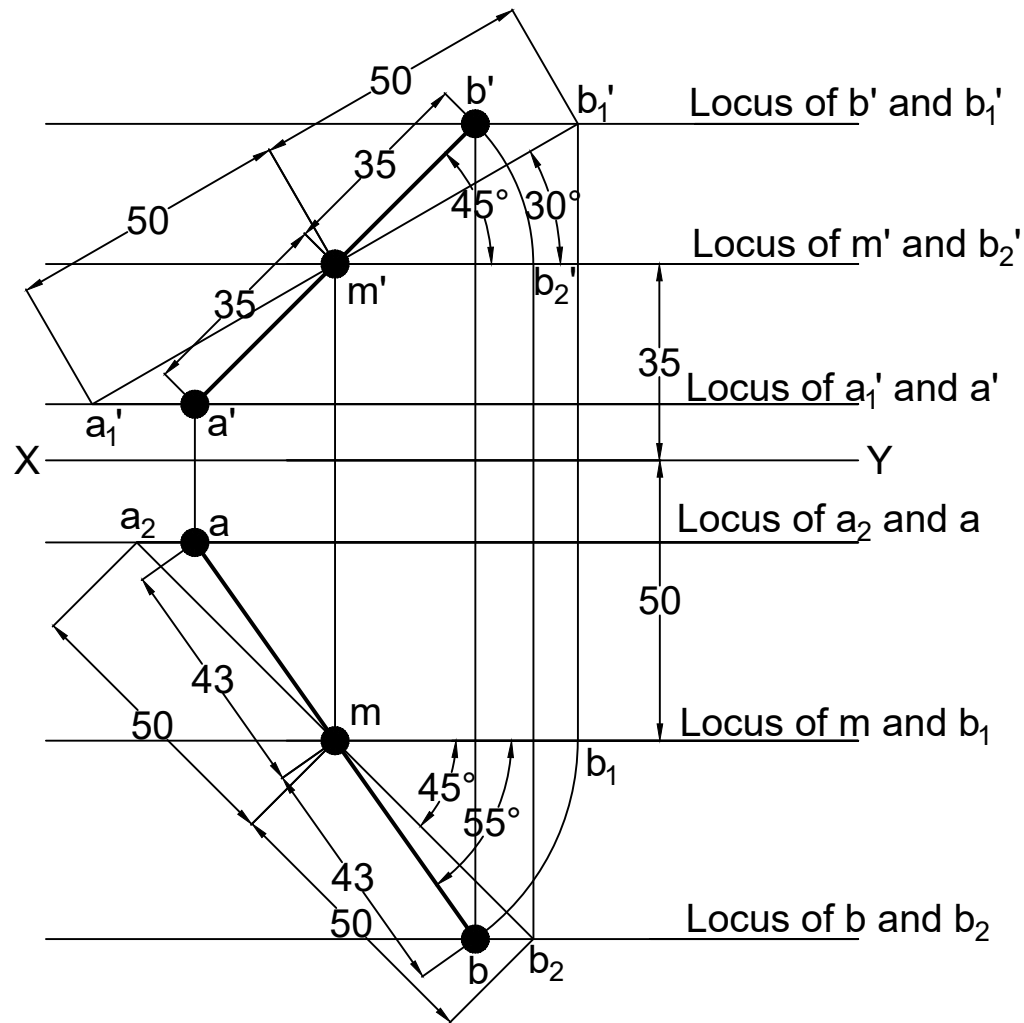
9. The front and top views of a straight line PQ measures 50 mm and 65 mm, respectively. The point P is on the H.P. and 20 mm in front of the V.P. The front view of the line is inclined at 45° to the reference line. Determine the true length of PQ and its true inclinations with the reference planes.
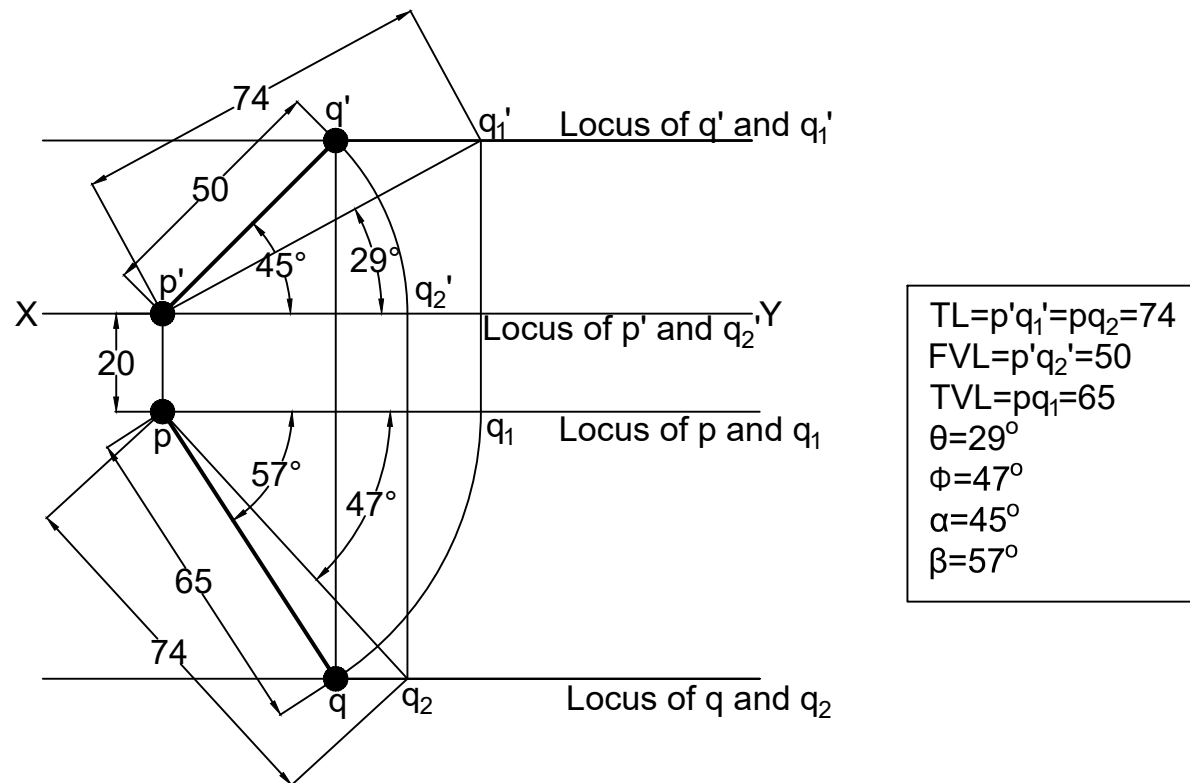
74

50

q'

q_1' Locus of q' and q_1'

45° 29°

p'

q_2'

X ─── Locus of p' and q_2' ───Y

20

p

q_1 Locus of p and q_1

57°

47°

65

74

q q_2 Locus of q and q_2

TL=p'q_1'=pq_2=74
FVL=p'q_2'=50
TVL=pq_1=65
θ=29º
Φ=47º
α=45º
β=57º

Note: All dimensions are in mm

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10. A 100 mm long line AB is inclined at 30° to the H.P. and 45° to the V.P. Its mid-point is 35 above the H.P. and 50 mm in front of the V.P. Draw its projections.
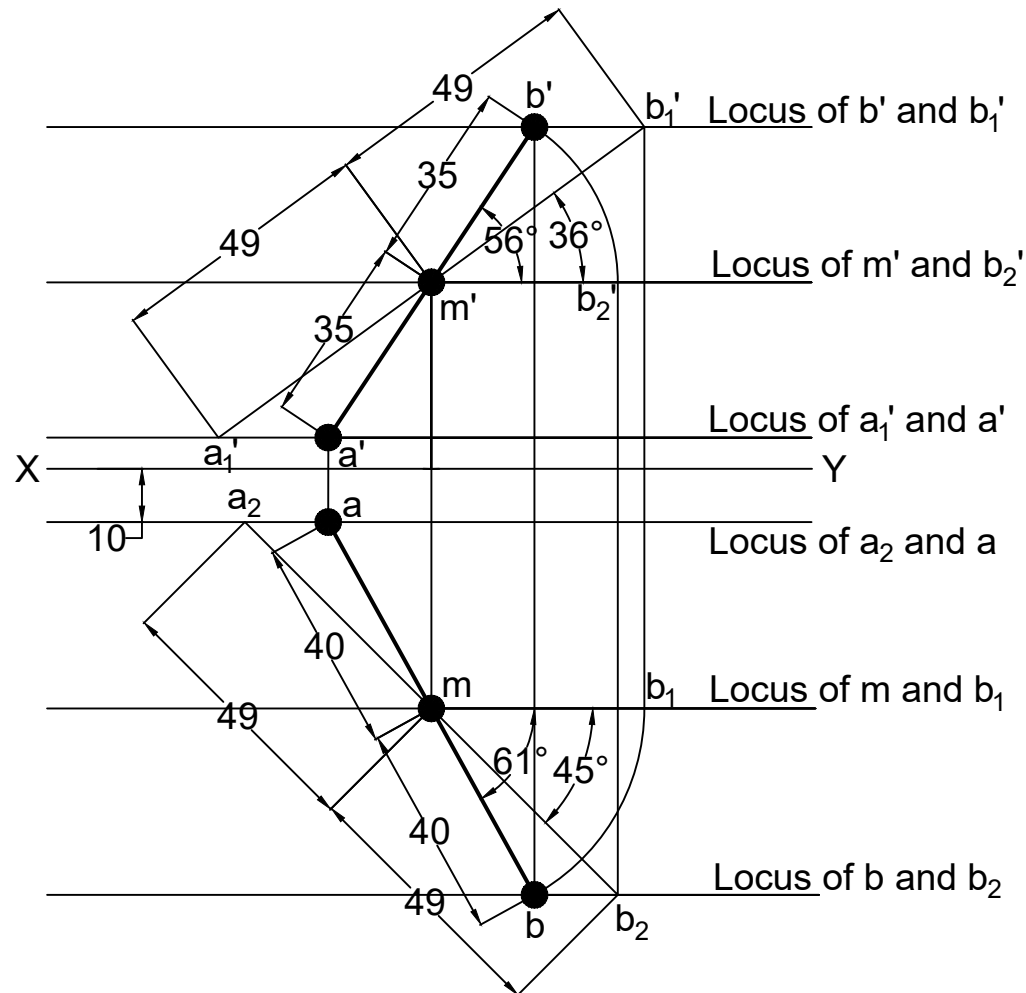
50

b'   b₁'   Locus of b' and b₁'

35

45° 30°

50

35   m'   b₂'   Locus of m' and b₂'

35

35   Locus of a₁' and a'

a₁' a'

X ——————————————————— Y

a₂ a   Locus of a₂ and a

50

43

50   m   Locus of m and b₁

45°   b₁

55°

43

50   Locus of b and b₂

b b₂

TL=a₁'m'b₁'=a₂mb₂=100
FVL=a'b'=70
TVL=ab=86
θ=30°
Φ=45°
α=45°
β=55°

Note: All dimensions are in mm

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11. The projections of line measure 80 mm in the top view and 70 mm in the front view. The midpoint of a line is 45 mm in front of V. P. and 35 mm above H. P. One end is 10 mm in front of V. P. and nearer to it. Draw the projections. Find true length and true inclinations with reference planes.

Locus of b' and b_1'

Locus of m' and b_2'

Locus of a_1' and a'

Locus of a_2 and a

Locus of m and b_1

Locus of b and b_2

49
35
49
35
56° 36°
10
40
49
61° 45°
40
49

X — Y

a$_1$' a'
a$_2$ a
m'
b'
b_1'
b_2'
m
b
b_1
b_2

TL=a_1'm'b_1'=a_2mb_2=98
FVL=a'b'=70
TVL=ab=80
θ=36°
Φ=45°
α=56°
β=61°

Note: All dimensions are in mm

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