بسم الله الرحمن الرحيم
PROJECTION CLASSIFICATION

Projections

Parallel

Orthogonal

Multiview

Axonometric

Oblique

Convergent

Multiview drawing

Pictorial drawing

Perspective Drawing
Axonometric Drawing

Definition

It is show the three principal dimensions of an object in one view.
Axonometric Projection

Rotate about vertical axis

Tilt forward

All edges *foreshorten*
About (---) time.
Axonometric Projection

Type of axonometric drawing

1. Isometric
   All angles are equal.

2. Dimetric
   Two angles are equal.

3. Trimetric
   None of angles are equal.

Axonometric axis
Isometric Projection

Rotate 45° about vertical axis

Tilt forward (35°16′)

All edges *foreshorten* about 0.8 time.
Isometric drawing is a drawing drawn on an isometric axes using **full scale**.

- **Isometric projection** (True projection)
- **Isometric drawing** (Full scale)

Forshorten  
Full scale
Isometric Drawing

Front

Right

35° 16′
**Distance in Isometric Drawing**

- **True-length distances** are shown along isometric lines.
- *Isometric line* is the line that run *parallel* to any of the isometric axes.
Example 1: Object has only normal surfaces
Example 2: Object has inclined surfaces

Nonisometric line

Front View
Example 3: Object has inclined surfaces
Irregular Curve in Isometric

Steps

1. Construct points along the curve in multiview drawing.

2. Locate these points in the isometric view.

3. Sketch the connecting lines.
Circle & Arc in Isometric

In isometric drawing, a circle appears as an ellipse.

Sketching Steps

1. Locate the center of an ellipse.
2. Construct an isometric square.
3. Sketch arcs that connect the tangent points.
Circle & Arc in Isometric

- **Four-center** method is usually used when drawn an isometric ellipse with drawing instrument.

**Sketching Steps**

1. Locate the center of an ellipse.
2. Construct an isometric square.
3. Construct a perpendicular bisector from each tangent point.
4. Locate the **four** centers.
5. Draw the arcs with these centers and tangent to isometric square.
Example 5
ISOMETRIC VIEW OF PENTAGONAL PYRAMID STANDING ON H.P.
(Height is added from center of pentagon)

ISOMETRIC VIEW OF BASE OF PENTAGONAL PYRAMID STANDING ON H.P.
ISOMETRIC VIEW OF HEXAGONAL PRISM STANDING ON H.P.

ISOMETRIC VIEW OF PENTAGONAL PRISM LYING ON H.P.
CYLINDER STANDING ON H.P.

CYLINDER LYING ON H.P.
HALF CYLINDER
LYING ON H.P.
( with flat face // to H.P.)

HALF CYLINDER
STANDING ON H.P.
( ON IT’S SEMICIRCULAR BASE)
STUDY ILLUSTRATIONS

ISOMETRIC VIEW OF
A FRUSTUM OF SQUARE PYRAMID
STANDING ON H.P. ON IT’S LARGER BASE.

X

Y

60

FV

40

20

TV
PROJECTIONS OF FRUSTOM OF PENTAGONAL PYRAMID ARE GIVEN. DRAW IT’S ISOMETRIC VIEW.
ISOMETRIC VIEW OF
A FRUSTOM OF CONE STANDING ON H.P. ON IT’S LARGER BASE.
PROBLEM:
A SQUARE PLATE IS PIERCED THROUGH CENTRALLY
BY A CYLINDER WHICH COMES OUT EQUALLY FROM BOTH FACES
OF PLATE. IT’S FV & TV ARE SHOWN. DRAW ISOMETRIC VIEW.
PROBLEM:
A CIRCULAR PLATE IS PIERCED THROUGH CENTRALLY
BY A SQUARE PYRAMID WHICH COMES OUT EQUALLY FROM BOTH FACES
OF PLATE. IT’S FV & TV ARE SHOWN. DRAW ISOMETRIC VIEW.
F.V. & T.V. of an object are given. Draw its isometric view.
F.V. & T.V. of an object are given. Draw its isometric view.
F.V. & T.V. of an object are given. Draw its isometric view.
F.V. & T.V. and S.V. of an object are given. Draw its isometric view.

**FV**

| 30 | 0 | 30 |

| 30 |

| 10 |

| 30 |

**SV**

**TV**

ALL VIEWS IDENTICAL
F.V. & T.V. and S.V. of an object are given. Draw its isometric view.

ALL VIEWS IDENTICAL

FV

SV

TV

x

y

10

40

60

40

60
F.V. & T.V. and S.V. of an object are given. Draw its isometric view.

ALL VIEWS IDENTICAL
F.V. & T.V. and S.V. of an object are given. Draw it’s isometric view.
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F.V.

LSV

NOTE THE SMALL CHANGE IN 2ND FV & SV. DRAW ISOMETRIC ACCORDINGLY.
F.V. and S.V. of an object are given. Draw its isometric view.
F.V. and S.V. of an object are given. Draw its isometric view.