ENGINEERING DRAWING
SKKK 1021

ISOMETRIC DRAWING

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LEARNING OUTCOMES

ISOMETRIC DRAWING

It is expected that students will be able to:

- Understand the significance of isometric drawing
- Apply the basics method of isometri drawing

ISOMETRIC DRAWING

- INTRODUCTION
- SIGNIFICANCE
- TRUE LENGTH
- BASIC METHOD

INTRODUCTION

- Isometric drawing method shows the drawing in 3-D
- The real shape of an object can be easily interpreted by using isometric drawing
- The construction of an isometric drawing can be made by viewing the object from certain angle and directions.

SIGNIFICANCE

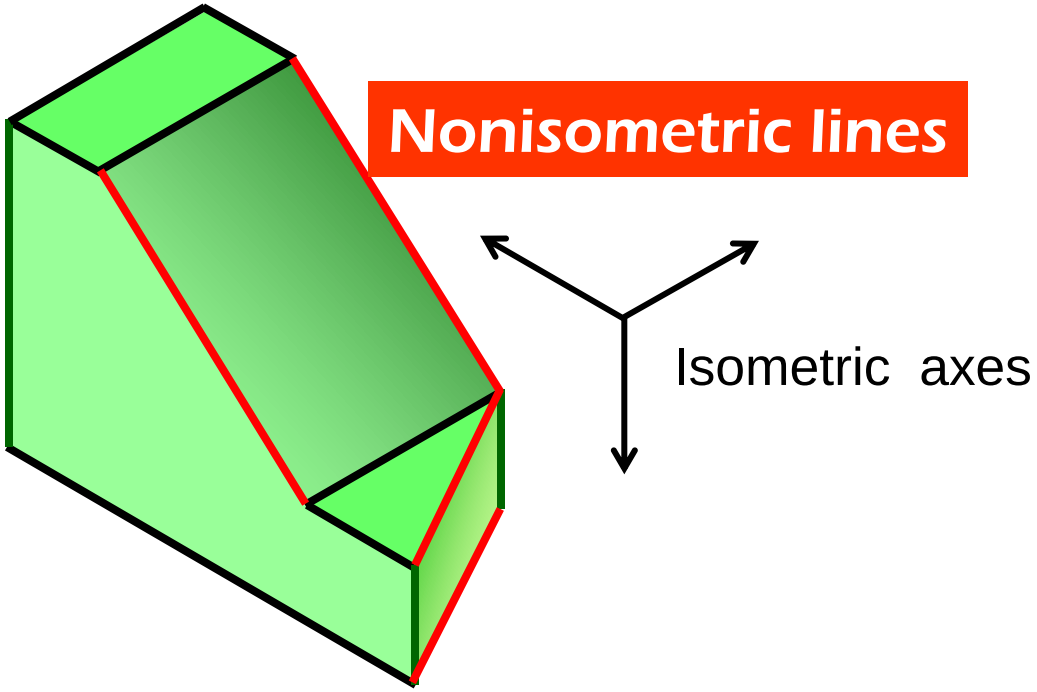
- In this Chapter, you will be constructing isometric drawings from given orthographic projections of an object.
- Isometric drawing is important to engineering designers as the drawing shows clearly what that has been designed
- It is also useful for equipment designers as they can easily interpret the method of construction of an object or equipment.
- This type of drawing also can cope with beginners of someone who has no basics in engineering drawing unlike orthographic drawing.

TRUE LENGTH

- Every measurements that are transferred to the isometric drawing is in its true length of the object
- However, only vertical & horizontal lines in orthographic drawing can be transferred directly to isometric drawing.
- Inclined, oblique lines, circles and others however cannot be transferred directly and must be drawn using certain techniques

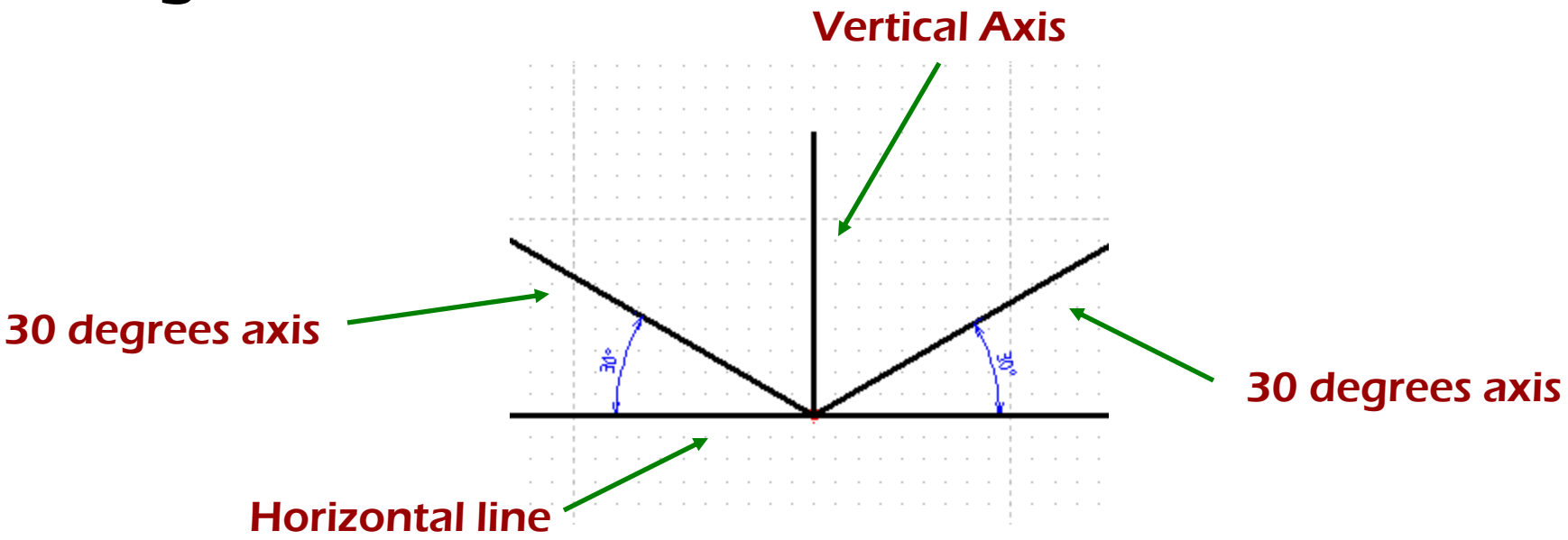
Distance in Isometric Drawing

- **True-length distances** are shown along isometric lines.
- *Isometric line* is the line that run *parallel* to any of the isometric axes.



BASIC METHODS

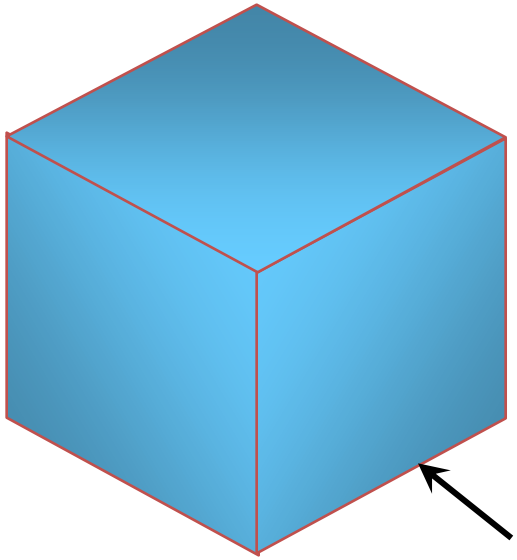
- Isometric drawing is built on 3 main axis namely the vertical axis and two 30 degrees axis from a horizontal line to the left and right of the vertical axis



Isometric Drawing and Scale

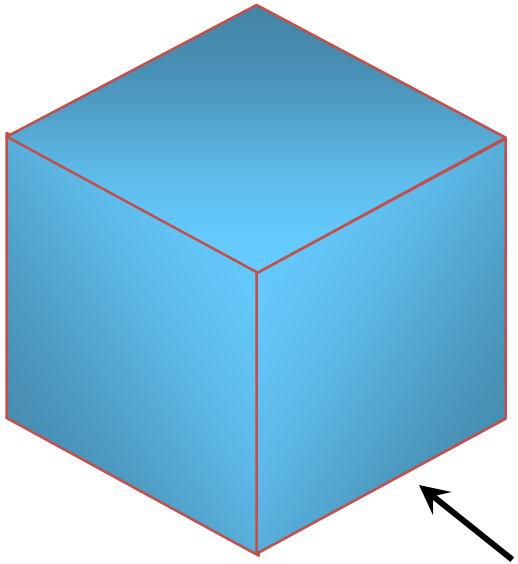
Isometric drawing is a drawing drawn on an isometric axes using *full scale*.

Isometric projection
(True projection)



Foreshorten

Isometric drawing
(Full scale)



Full scale

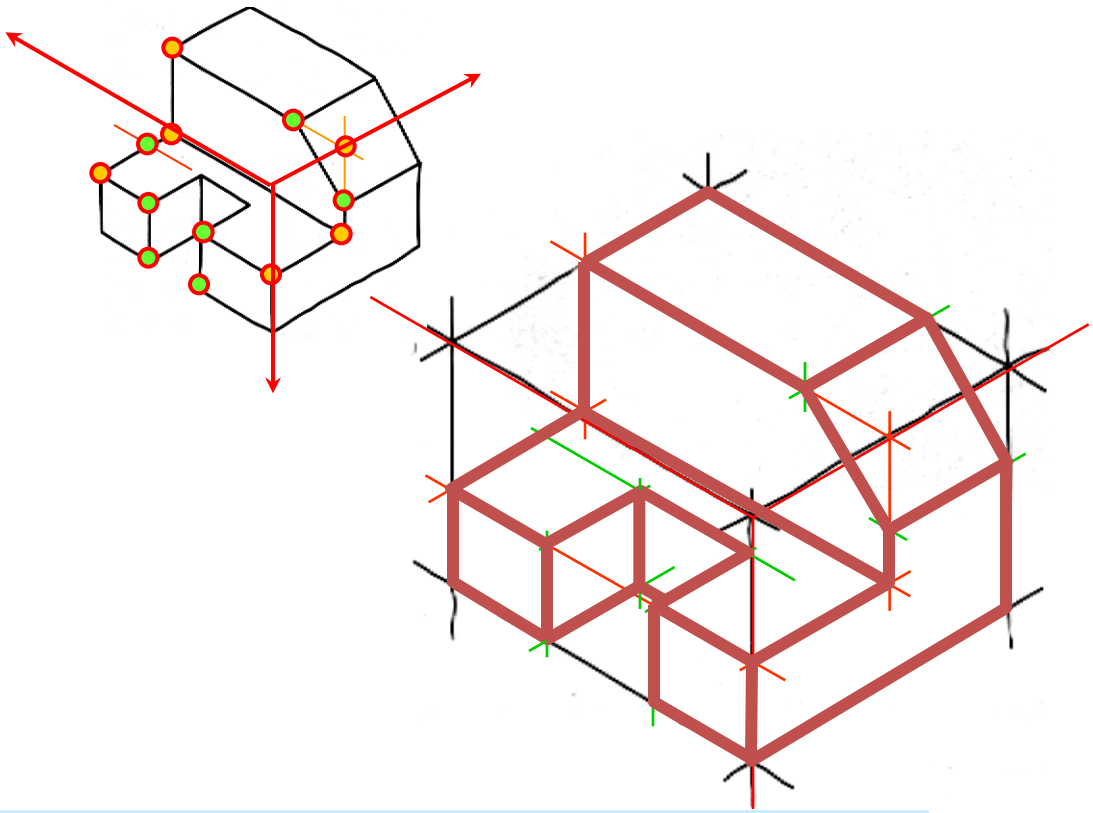
Sketch from an actual object

1. Place the object in the position which its shape and features are clearly seen.
2. Define an isometric axis.
3. Sketching the enclosing box.
4. Estimate the size an and relationship of each details.
5. Darken all visible lines.

Sketch from an actual object

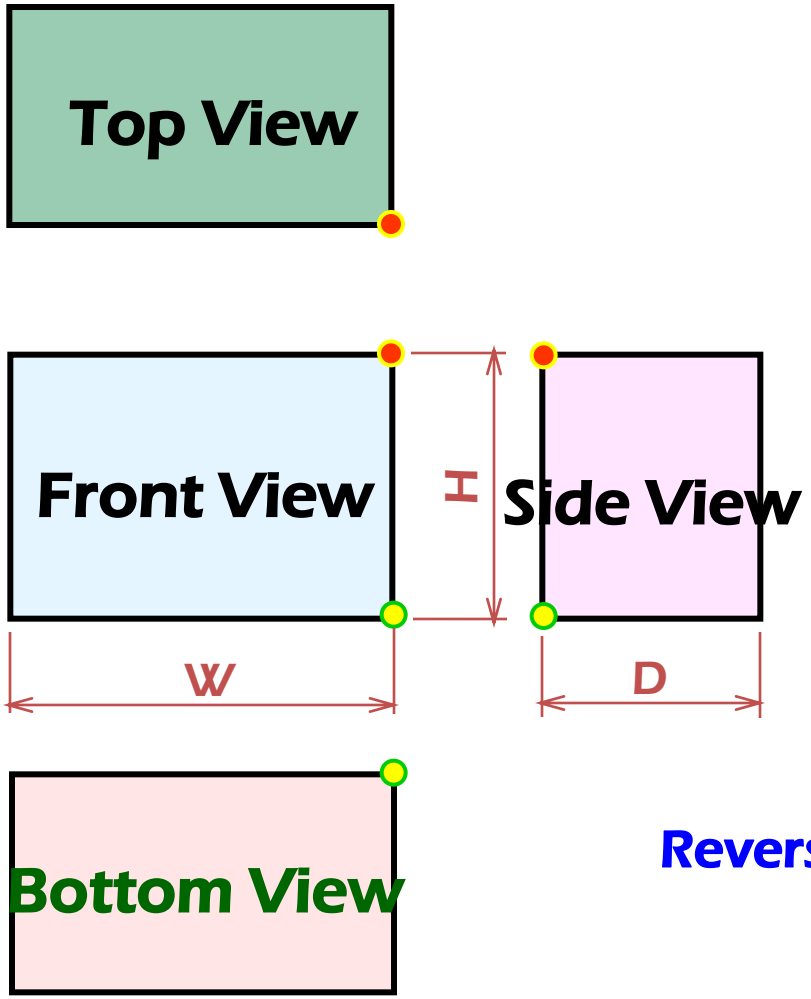
STEPS

1. Positioning object.
2. Select isometric axis.
3. Sketch enclosing box.
4. Add details.
5. Darken visible lines.



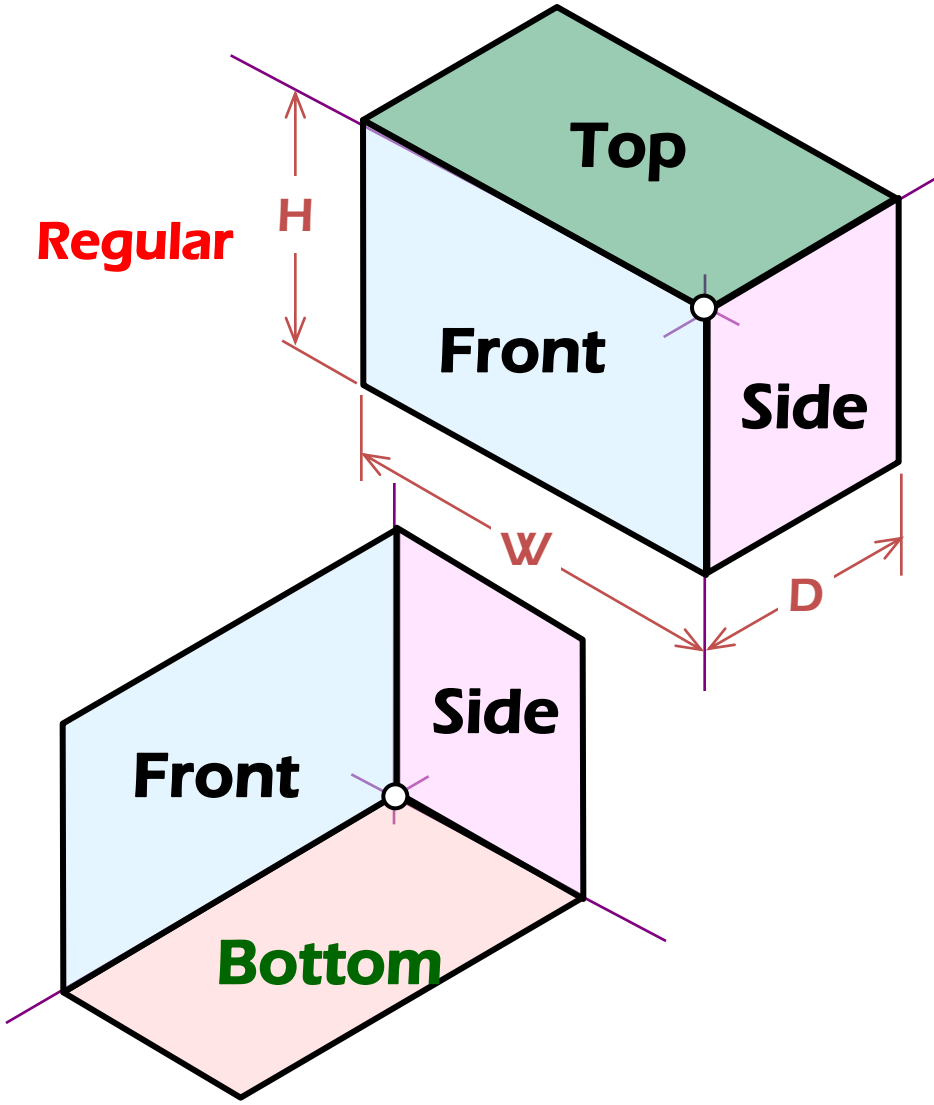
Note In isometric sketch/drawing), hidden lines are ***omitted*** unless they are absolutely necessary to completely describe the object.

Example 1 : Object has only normal surfaces

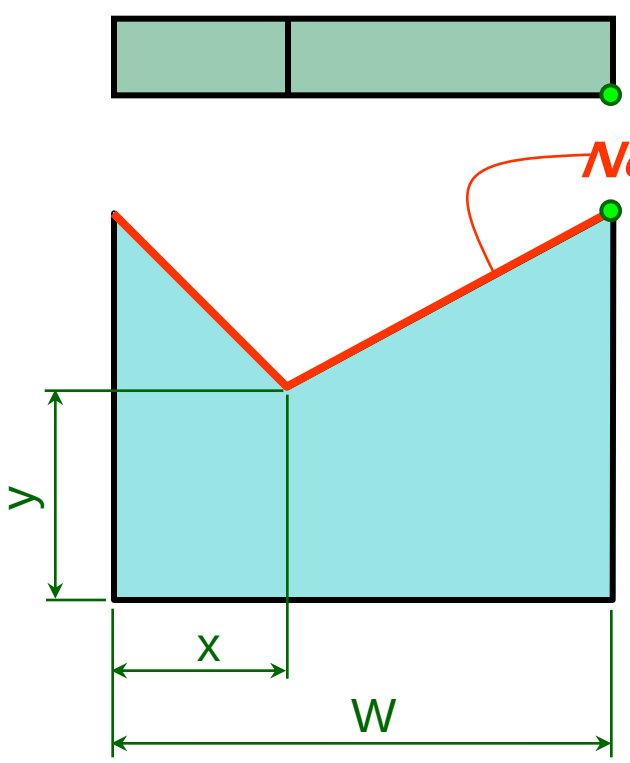


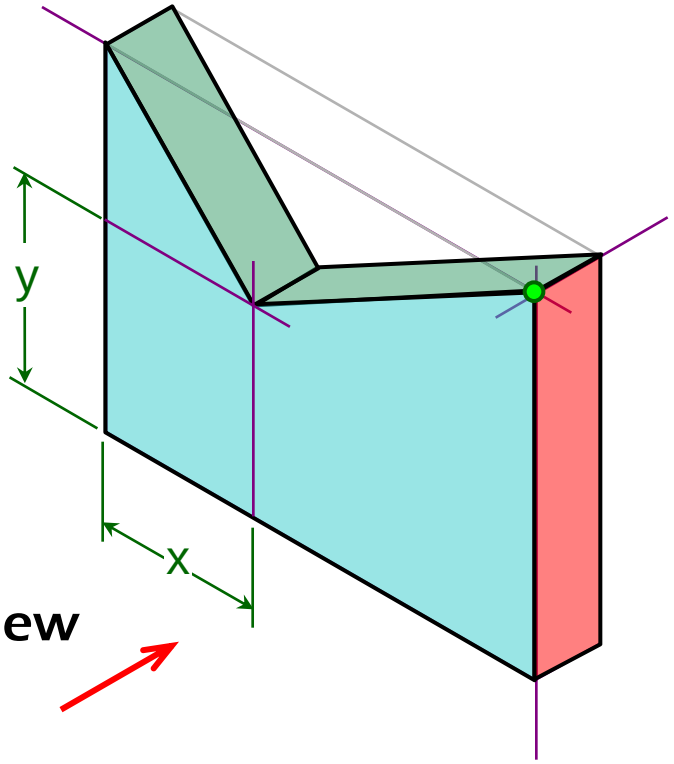
Regular

Reverse

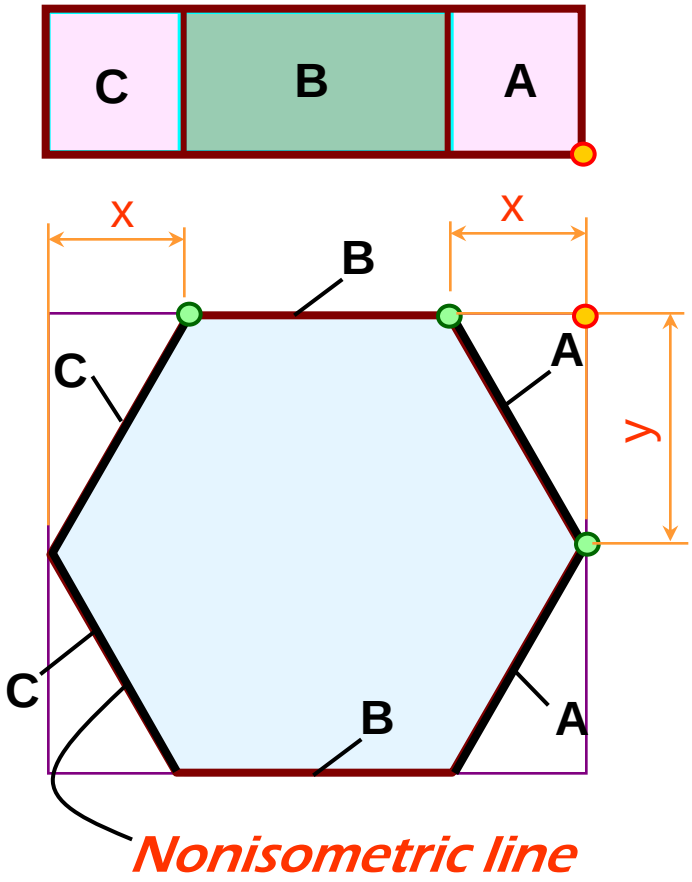


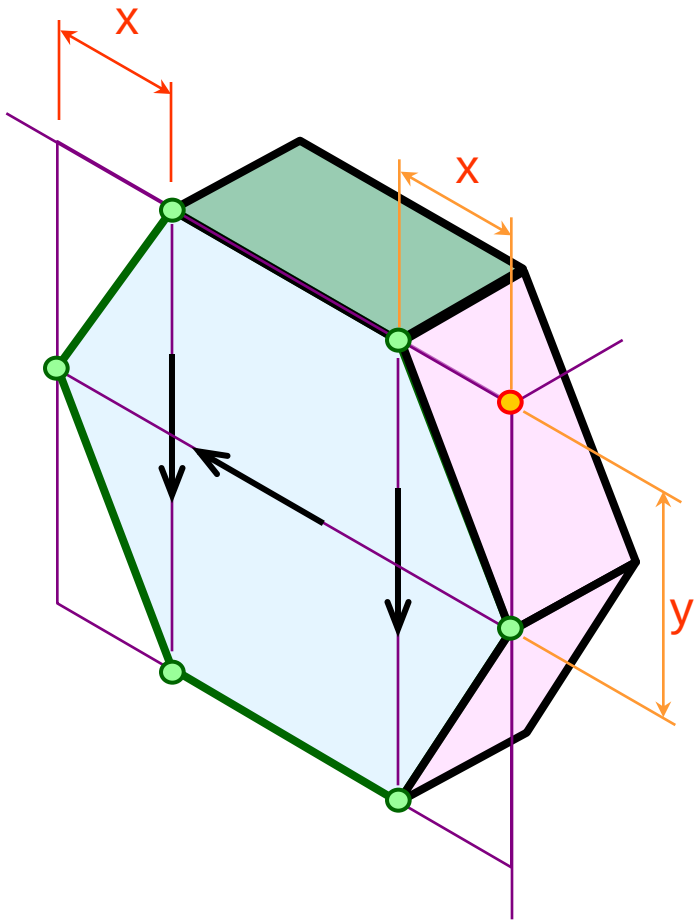
Example 2 : Object has inclined surfaces



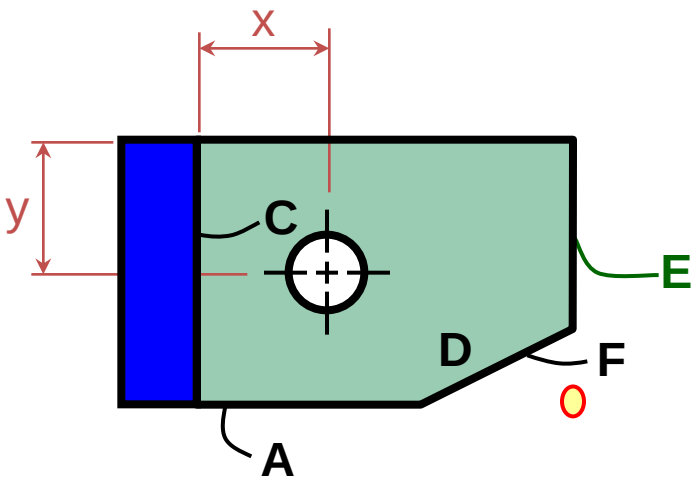


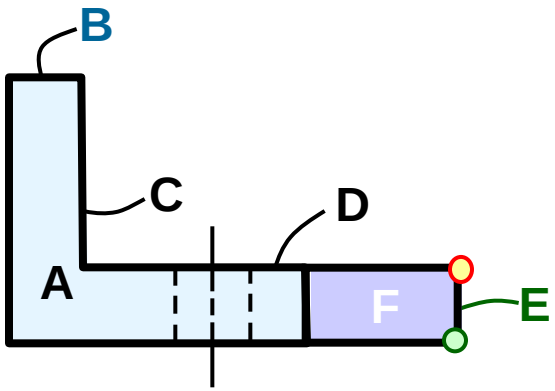
Example 3 : Object has inclined surfaces



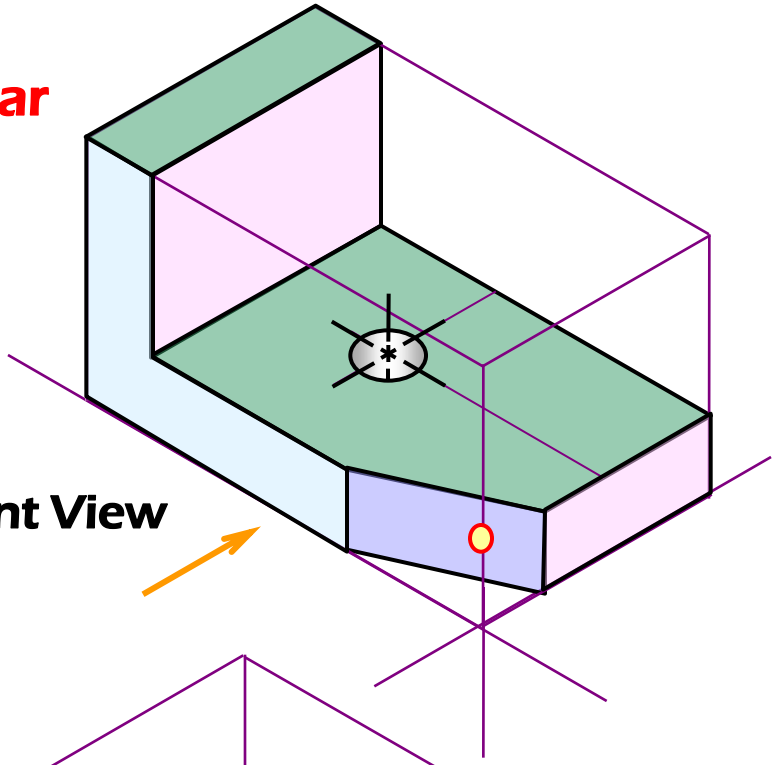


Example 4

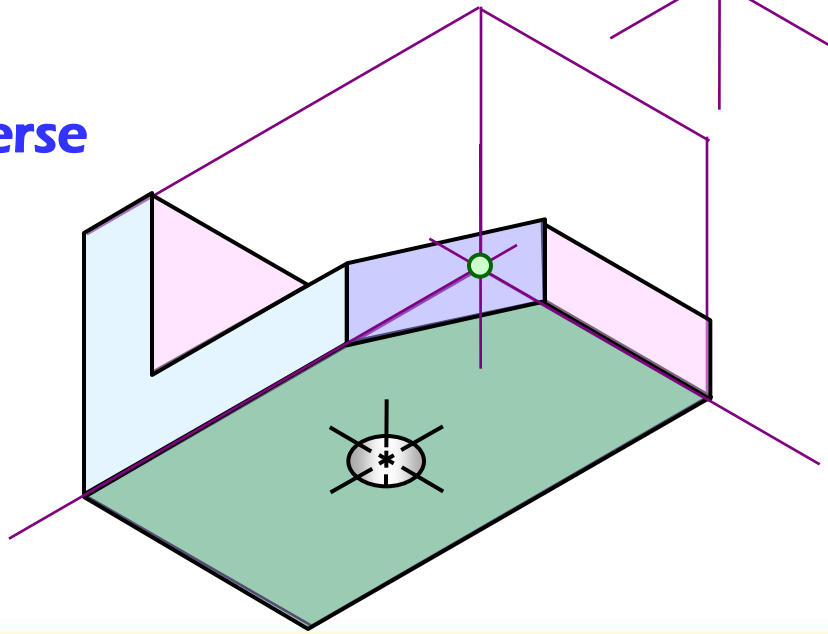




Regular



Reverse

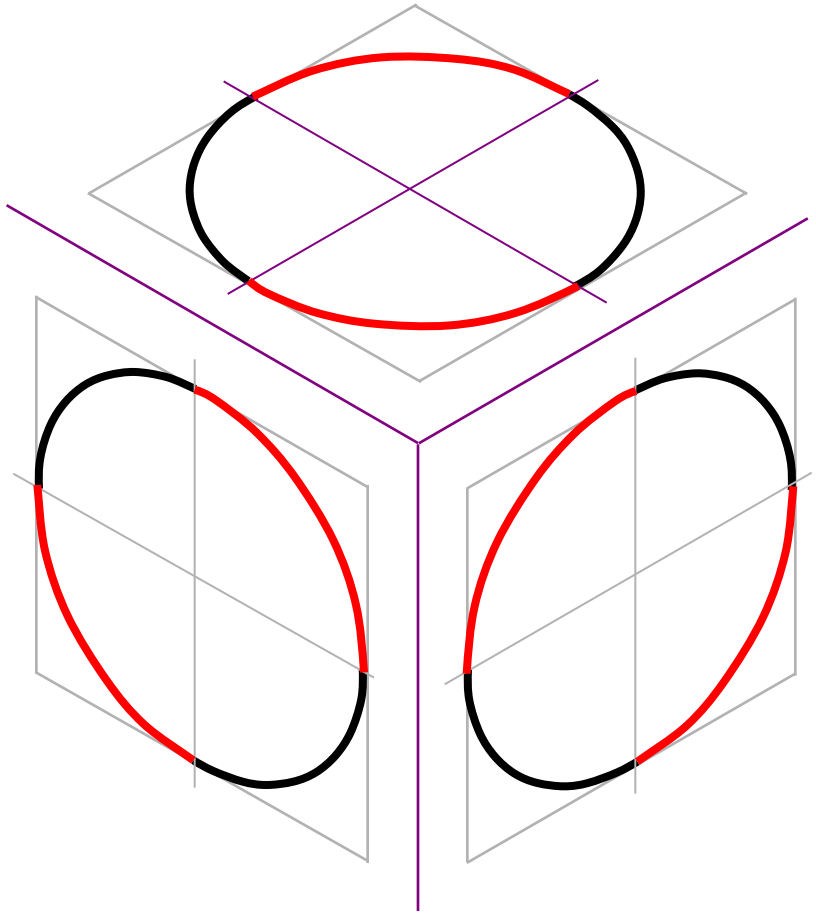


Circle & Arc in Isometric

- 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.

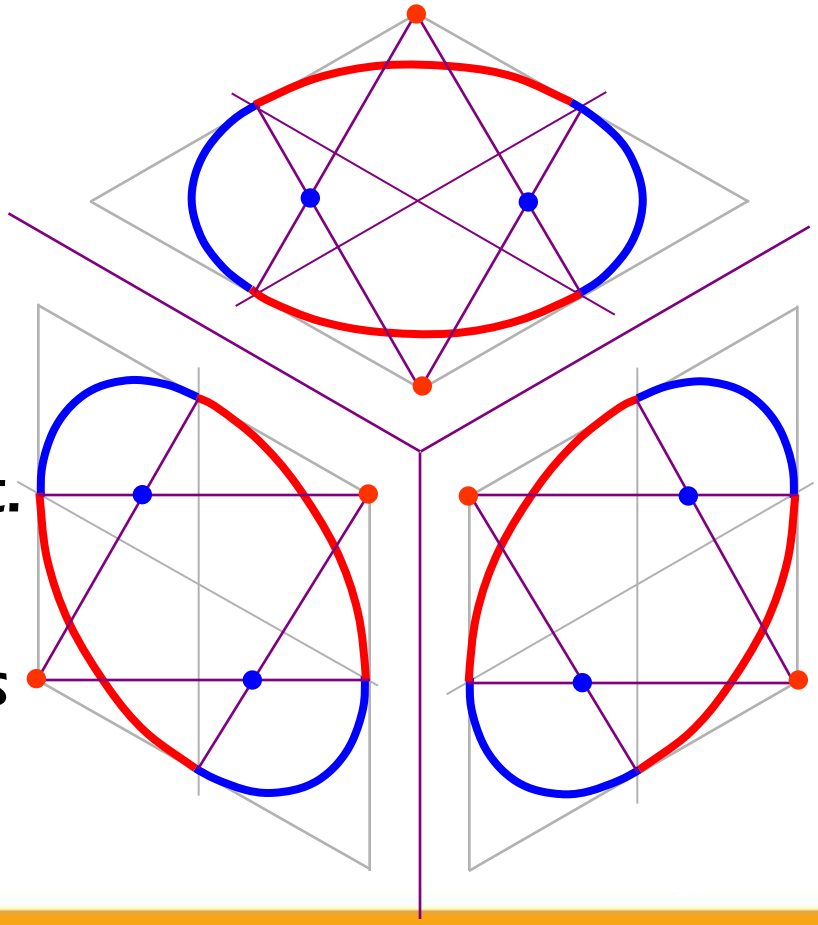


Circle & Arc in Isometric

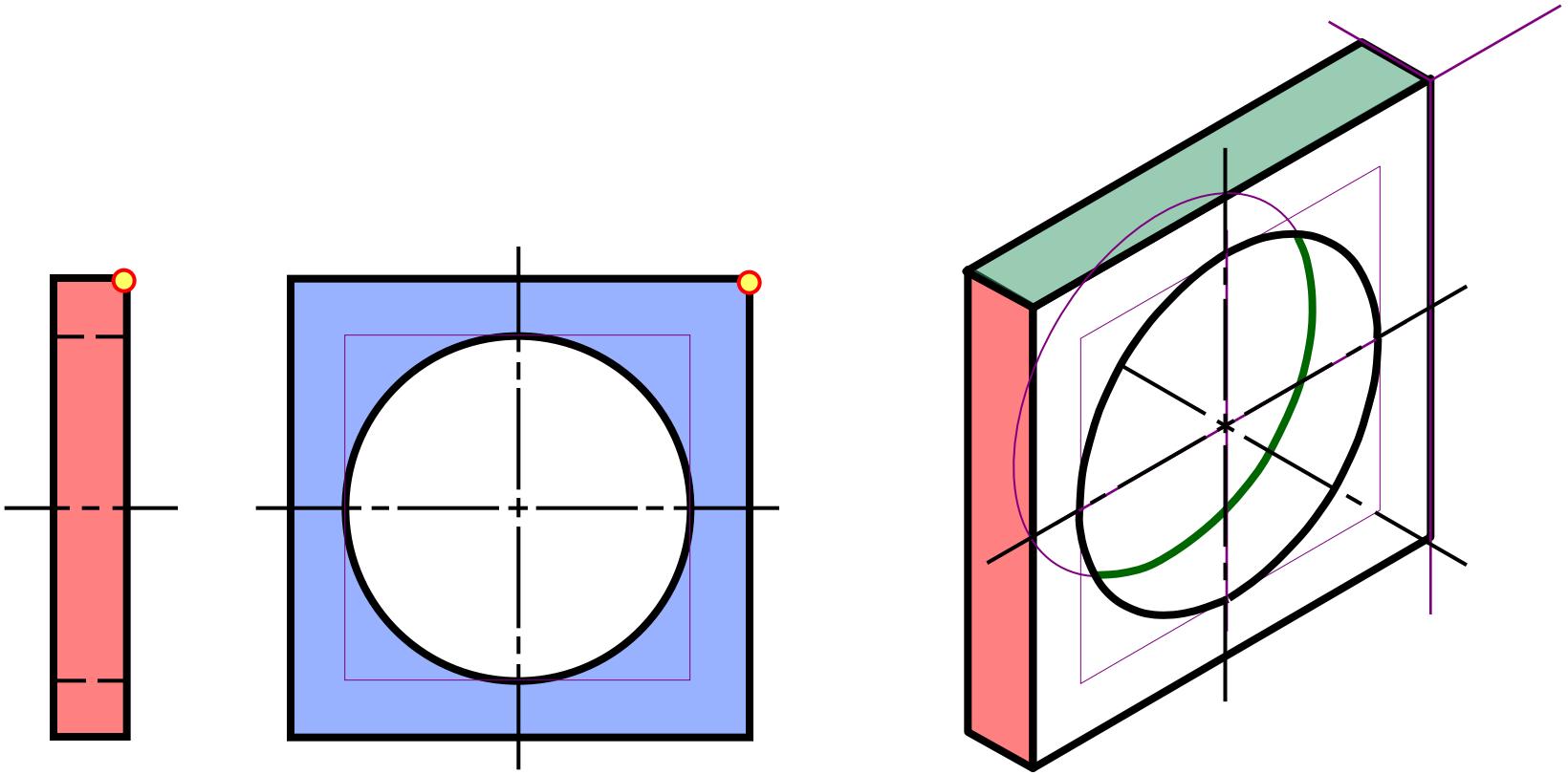
- *Four-center* method is usually used when drawn an isometric ellipse with drawing instrument.

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.



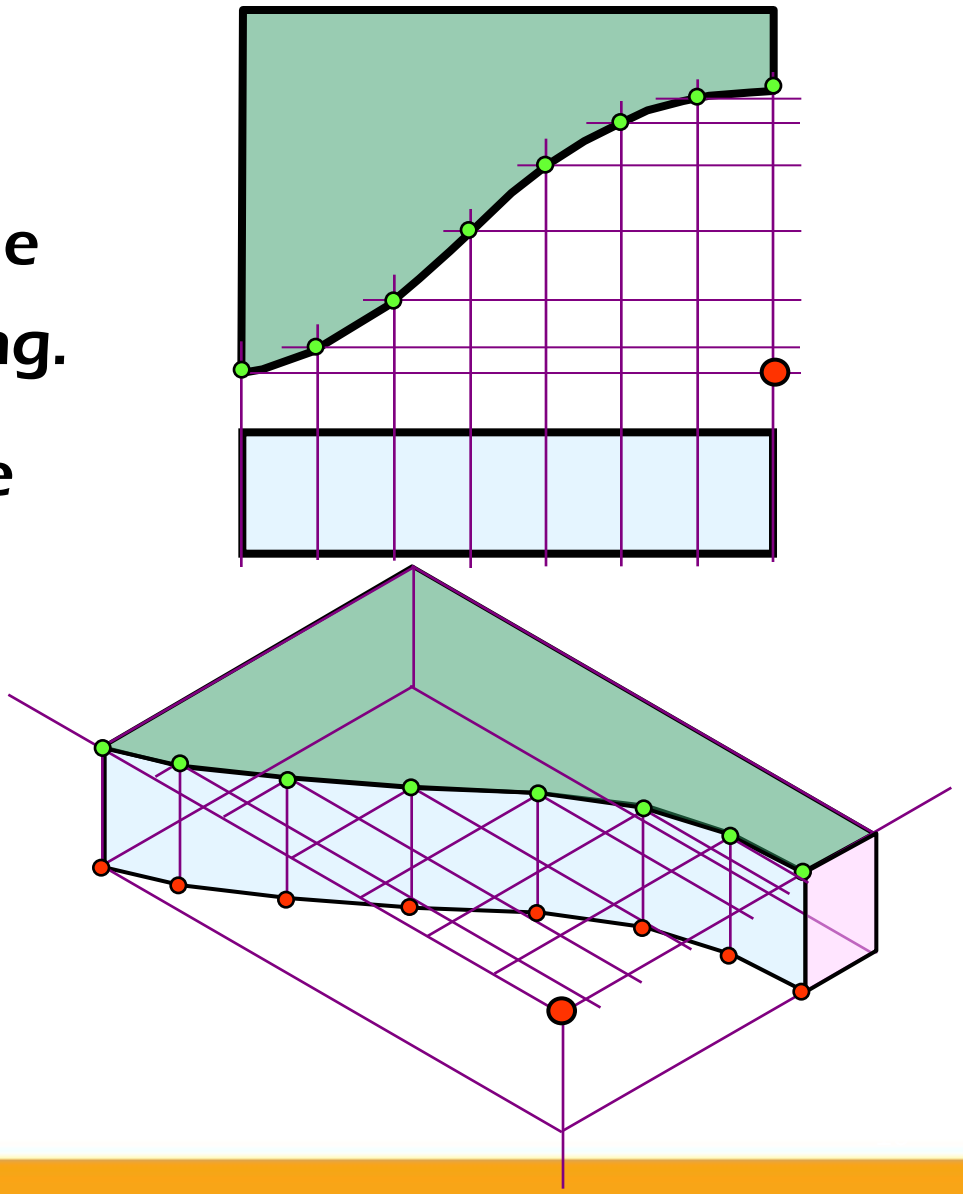
Example 5



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.



END OF CHAPTER 5