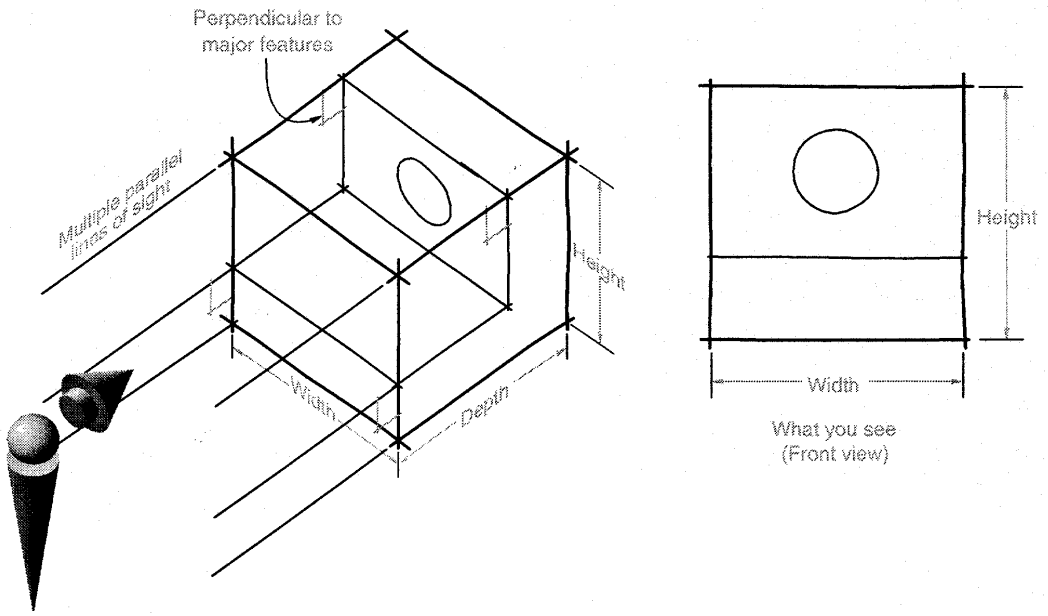
ORTHOGRAPHIC PROJECTION

AN

INTRODUCTION

Orthographic Projections



- Orthographic Projections are a collection of 2-D drawings that work together to give an accurate overall representation of an object.

Which Views to Present?

General Guidelines

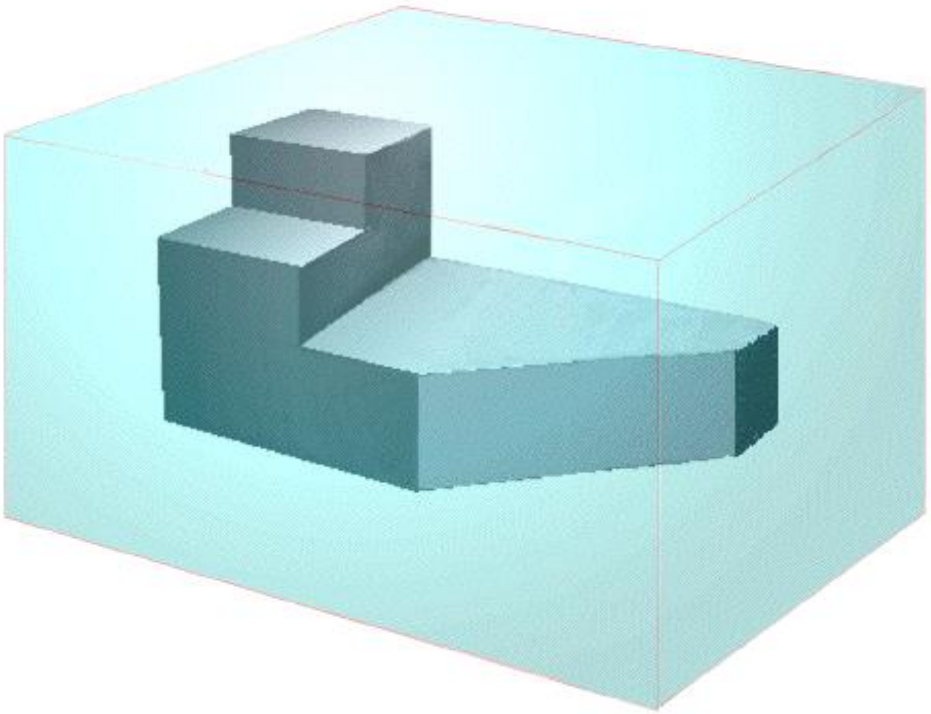
- Pick a Front View that is most descriptive of object
- Normally the longest dimension is chosen as the width (or depth)
- Most common combination of views is to use:
  - Front, Top, and Side View

Glass Box Approach

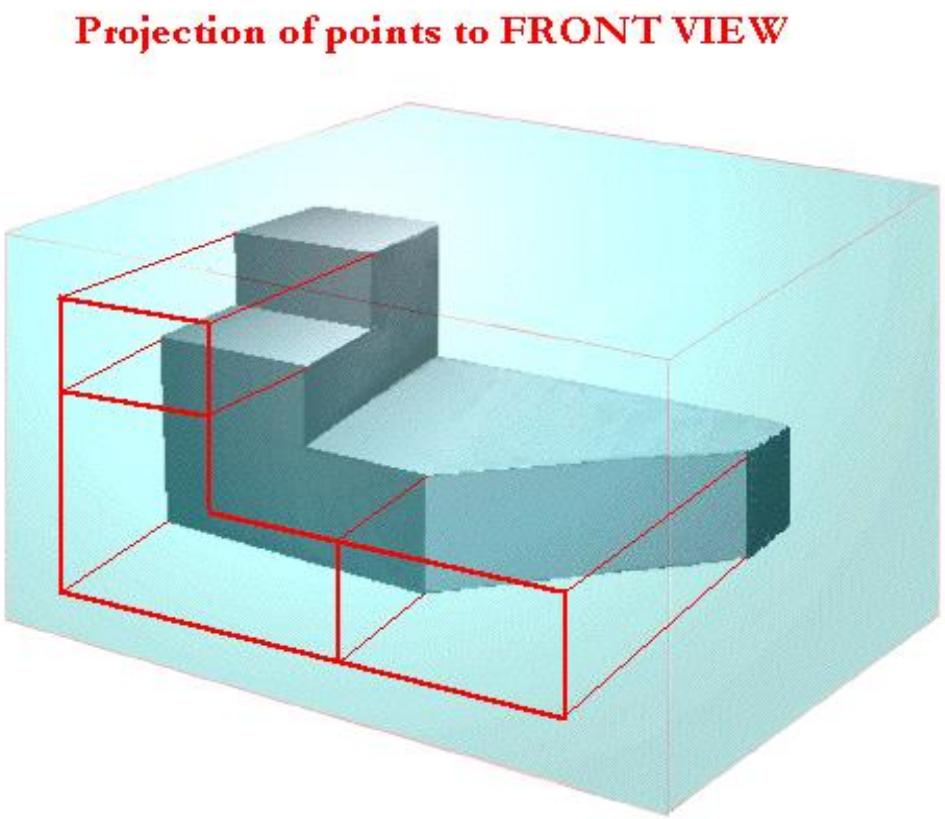
- Place the object in a glass box
- Freeze the view from each direction (each of the six sides of the box) and unfold the box

Glass Box Approach

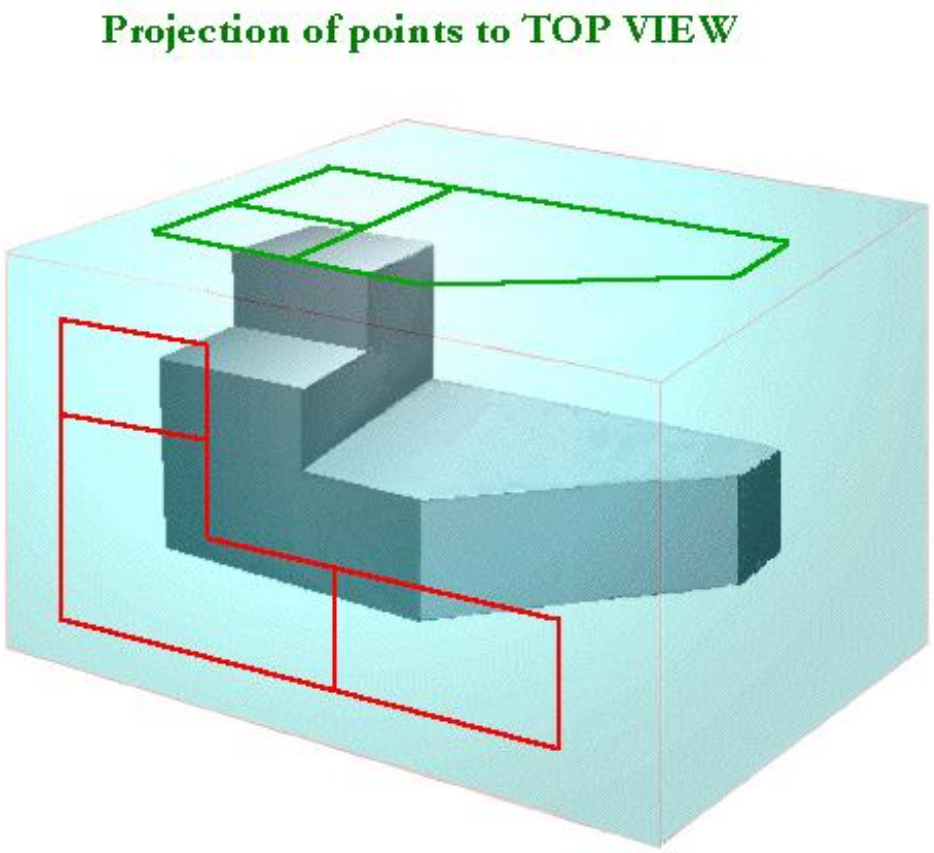
Projection of points to the three views



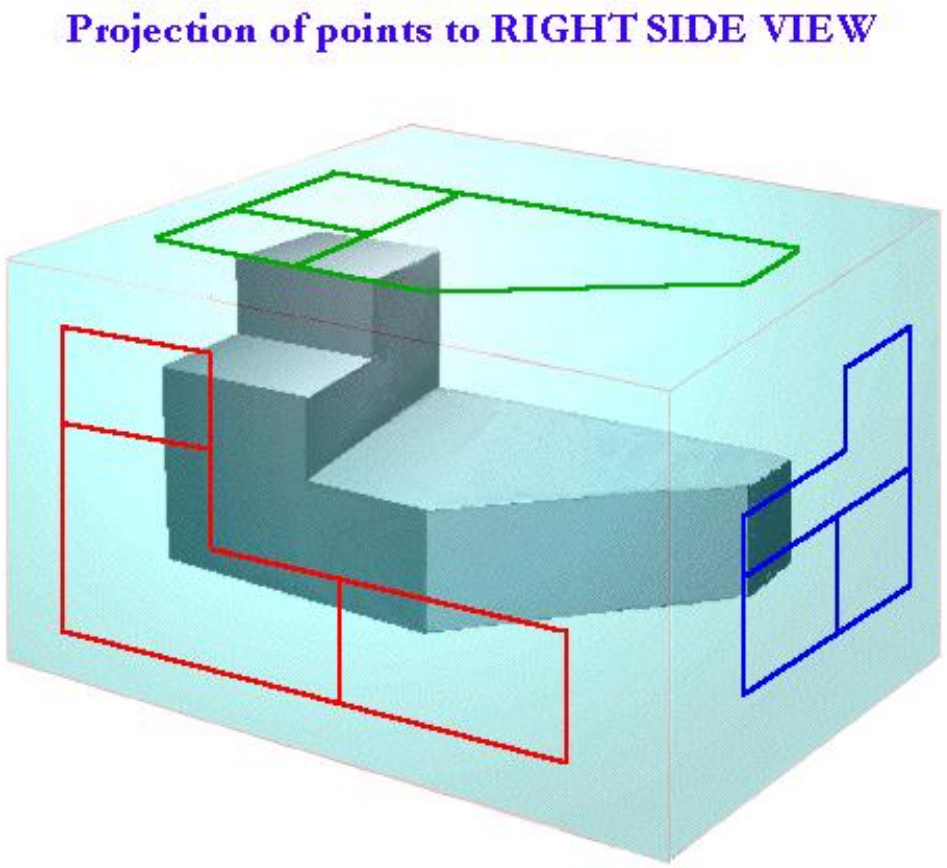
Glass Box Approach



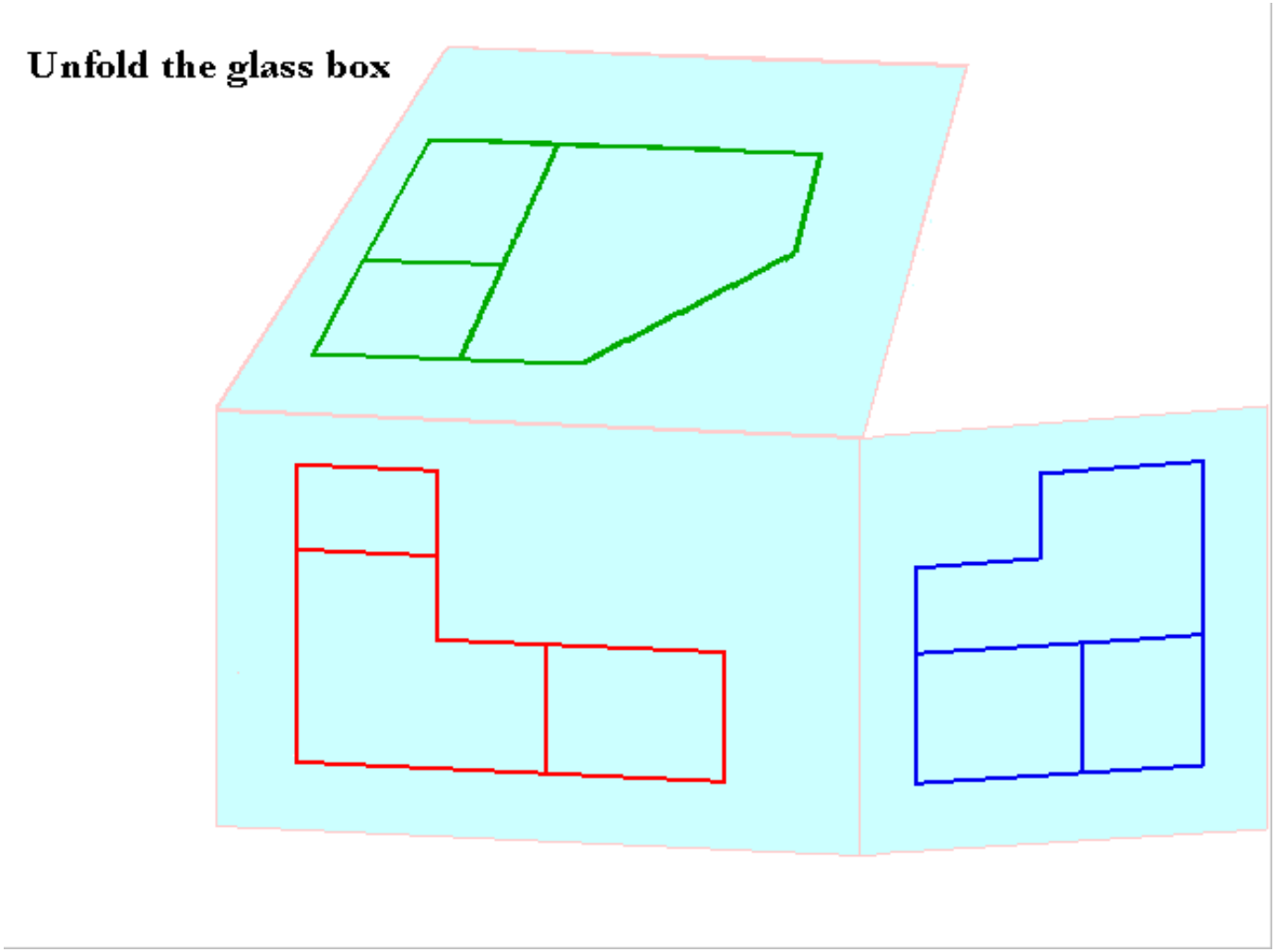
Glass Box Approach



Glass Box Approach

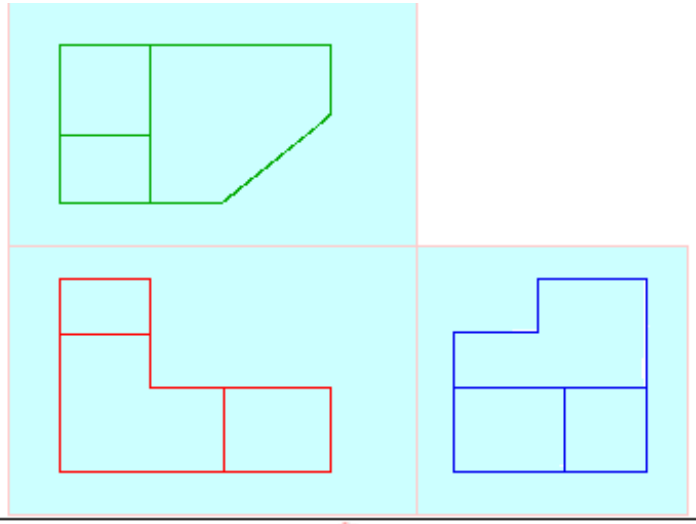


Glass Box Approach

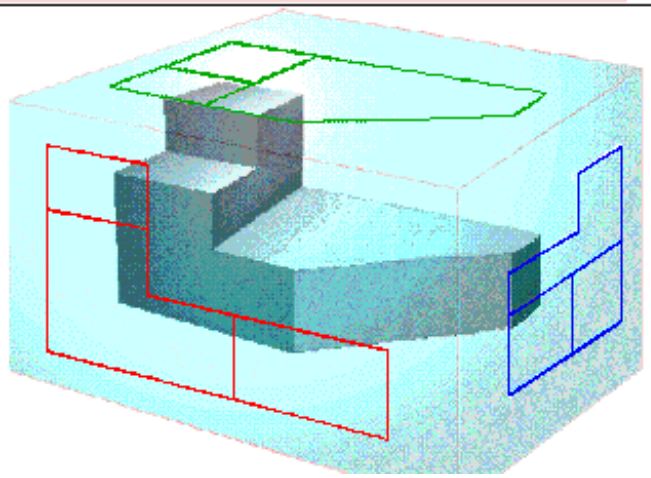


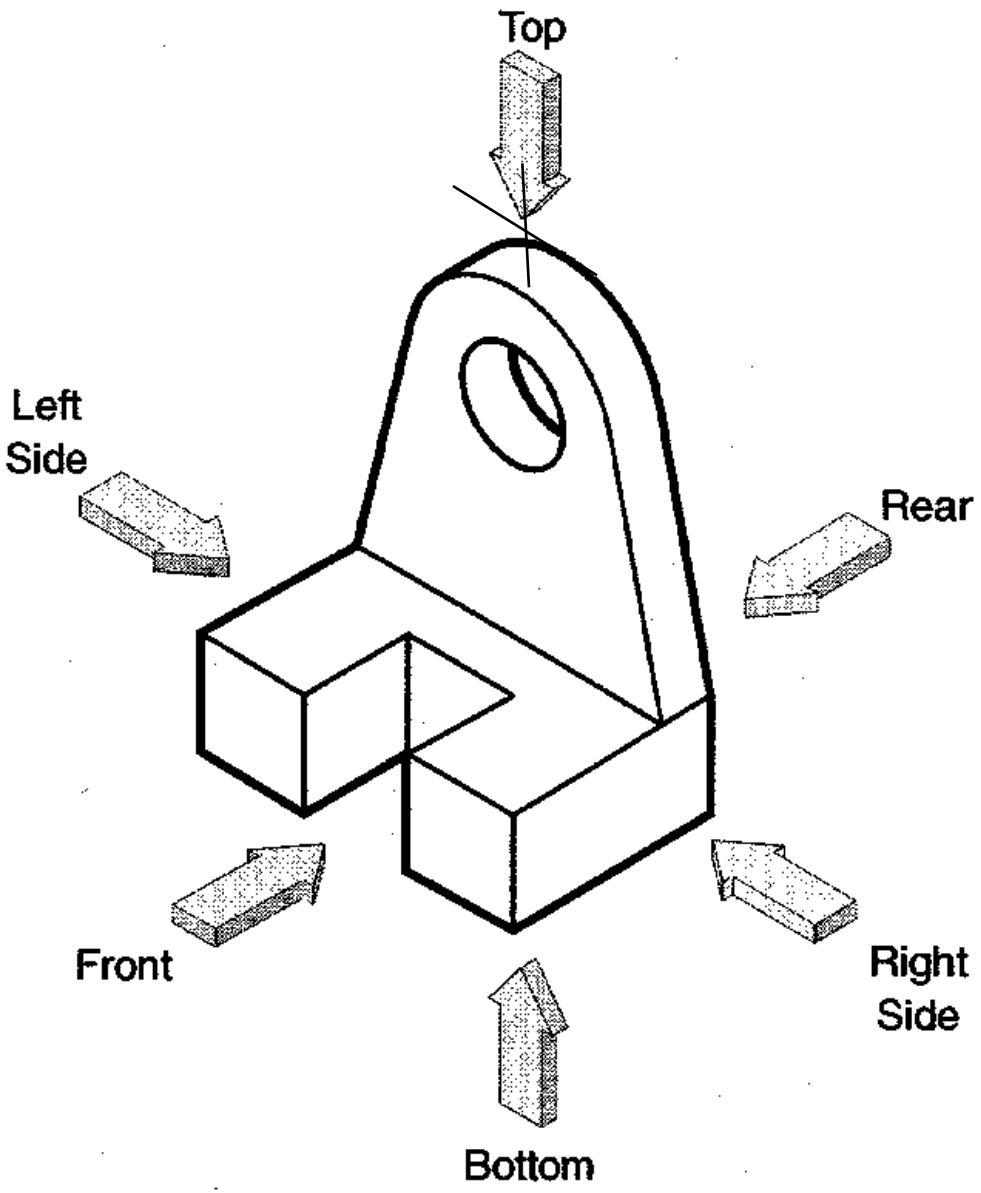
Glass Box Approach

Unfolded glass-box

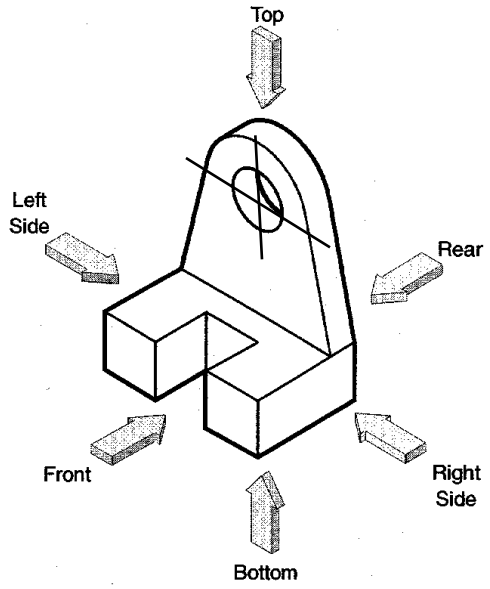


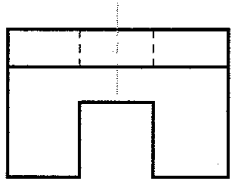
Object in the glass-box

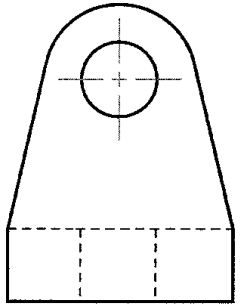


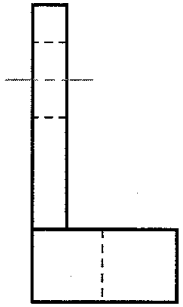

Top
Left
Side
Rear
Front
Right
Side
Bottom

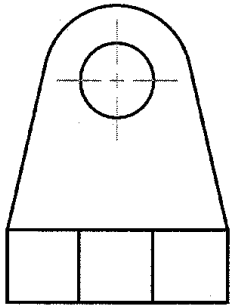
Defining the Six Principal Views or Orthographic Views

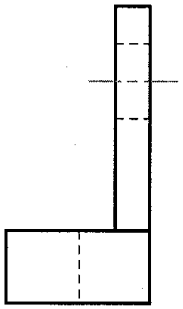


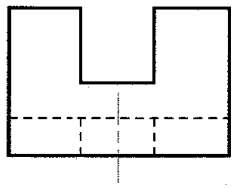

Top

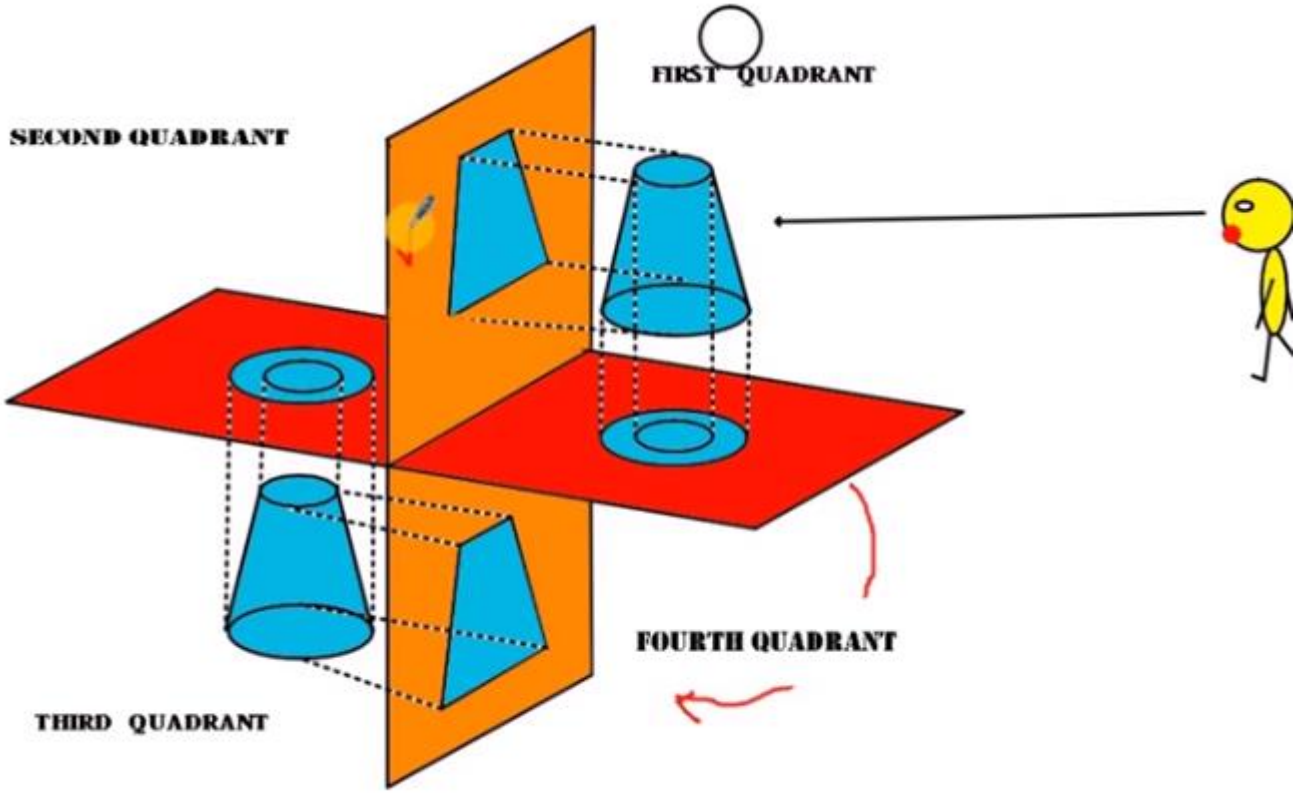

Rear


Left Side


Front


Right Side


Bottom


FIRST QUADRANT
SECOND QUADRANT
FOURTH QUADRANT
THIRD QUADRANT

VIKASH AC

LEARN AND GROW

FIRST ANGLE VS THIRD ANGLE

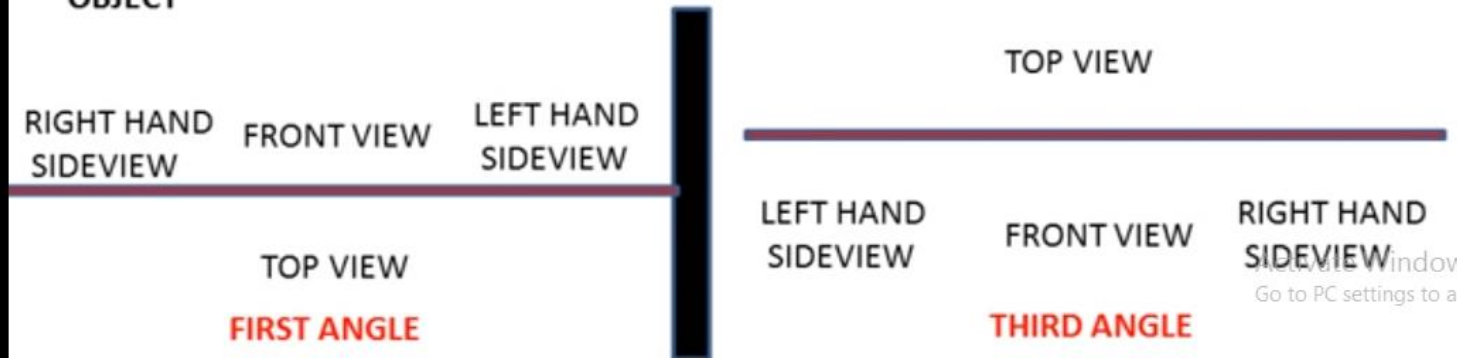
LEARN AND GROW

FIRST ANGLE PROJECTION,WILL BE IN 1ST QUARDANT

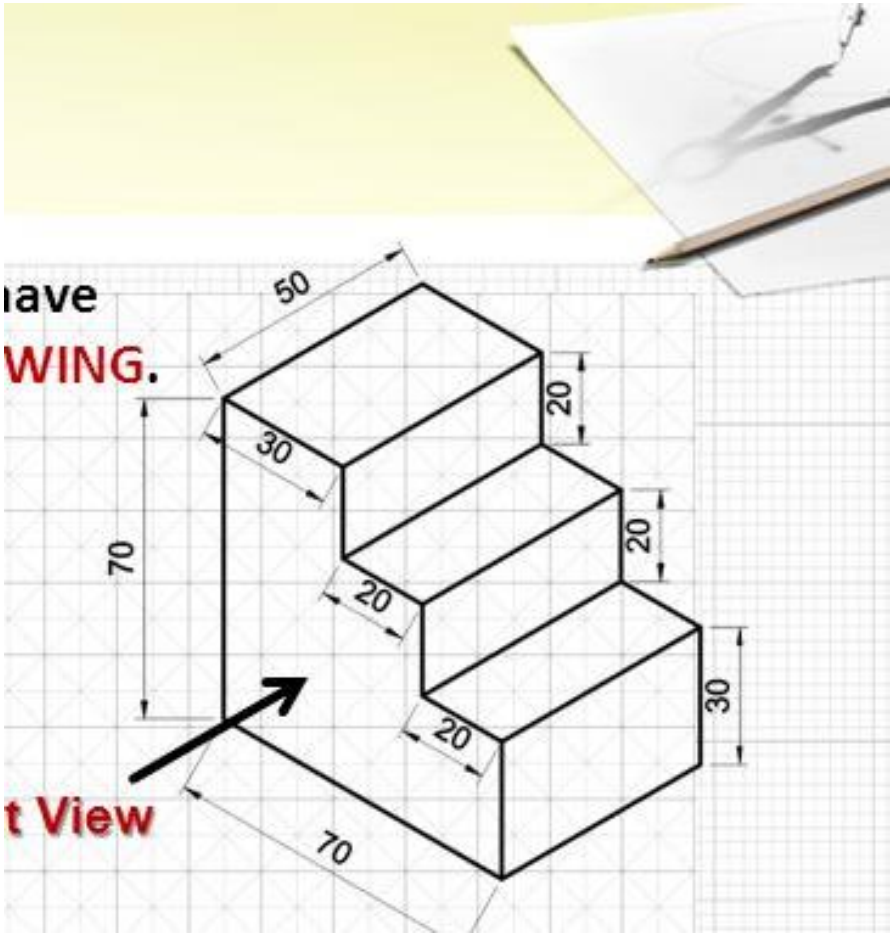
THIRD ANGLE PROJECTION,WILL BE IN 3RD QUARDANT

IN FIRST ANGLE PROJECTION,OBJECT WILL BE IN BETEWEEN OBSERVER AND PROJECTION PLANE

IN THIRD ANGLE PROJECTION, PROJECTION PLANE WILL BE IN BETWEEN OBSERVER AND OBJECT

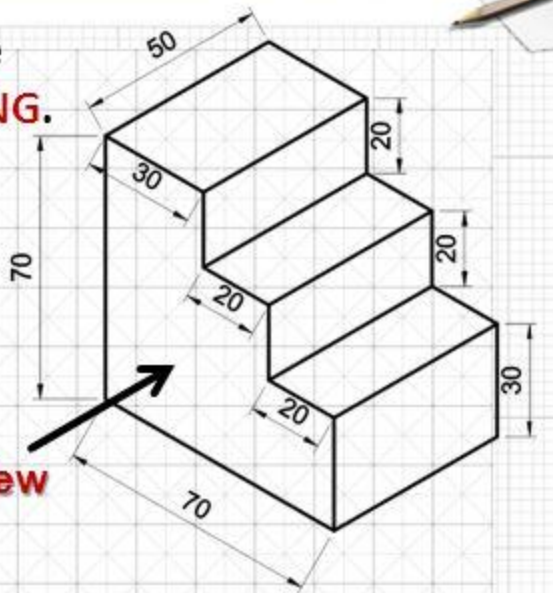


Draw orthographic view

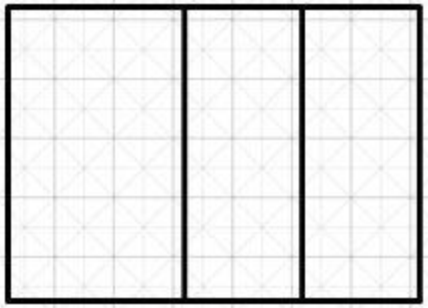


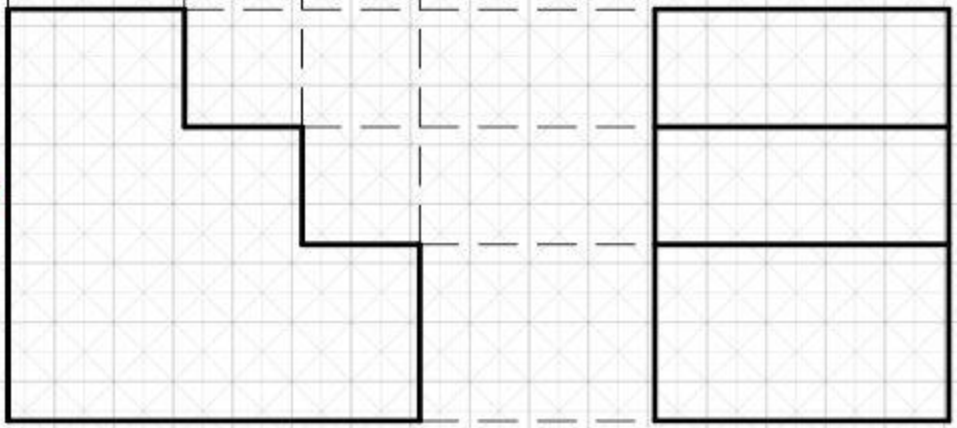
Orthographic Projection

Now look at this example using a set of steps, I have included the dimensions on the ISOMETRIC DRAWING.



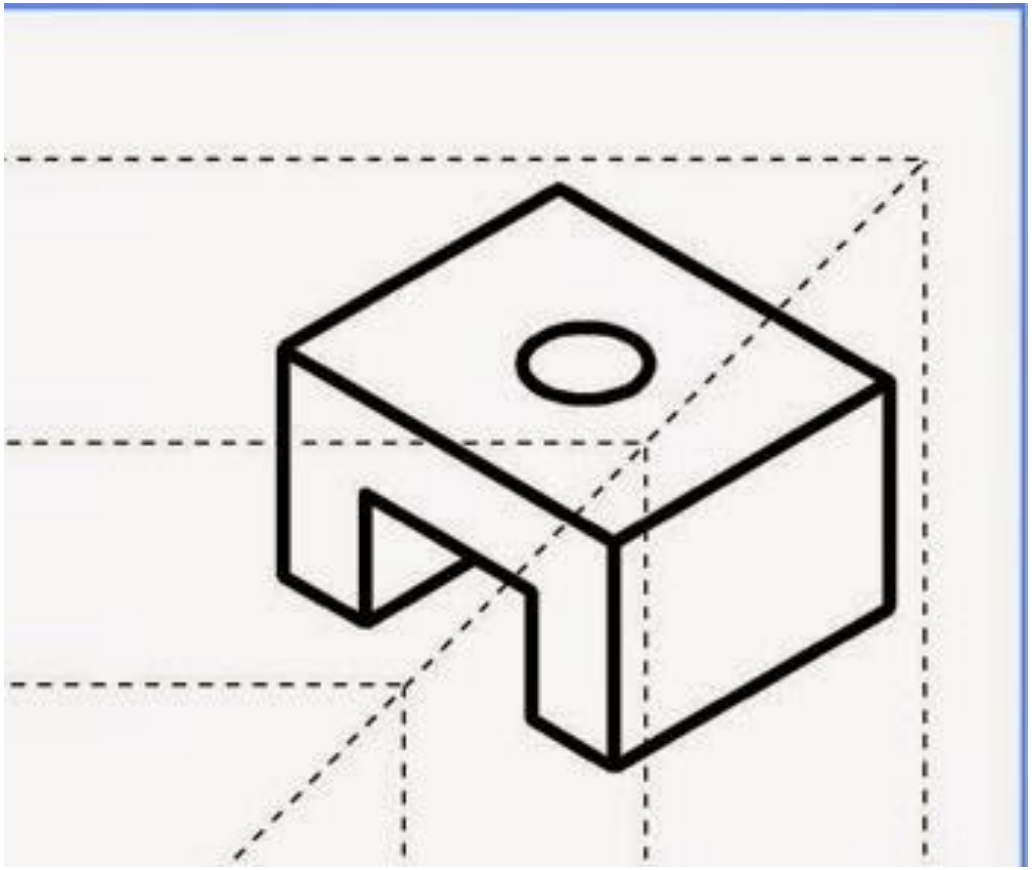
Plan View (Top)

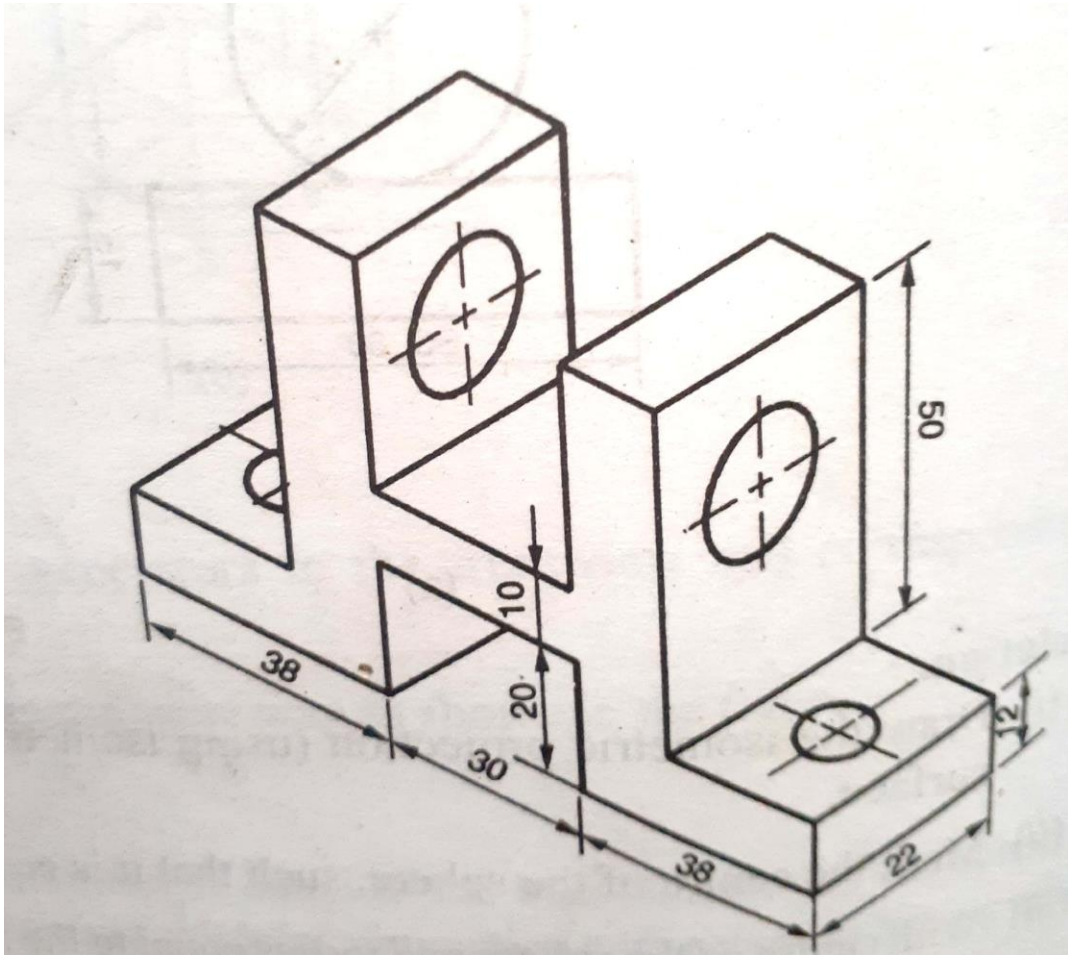




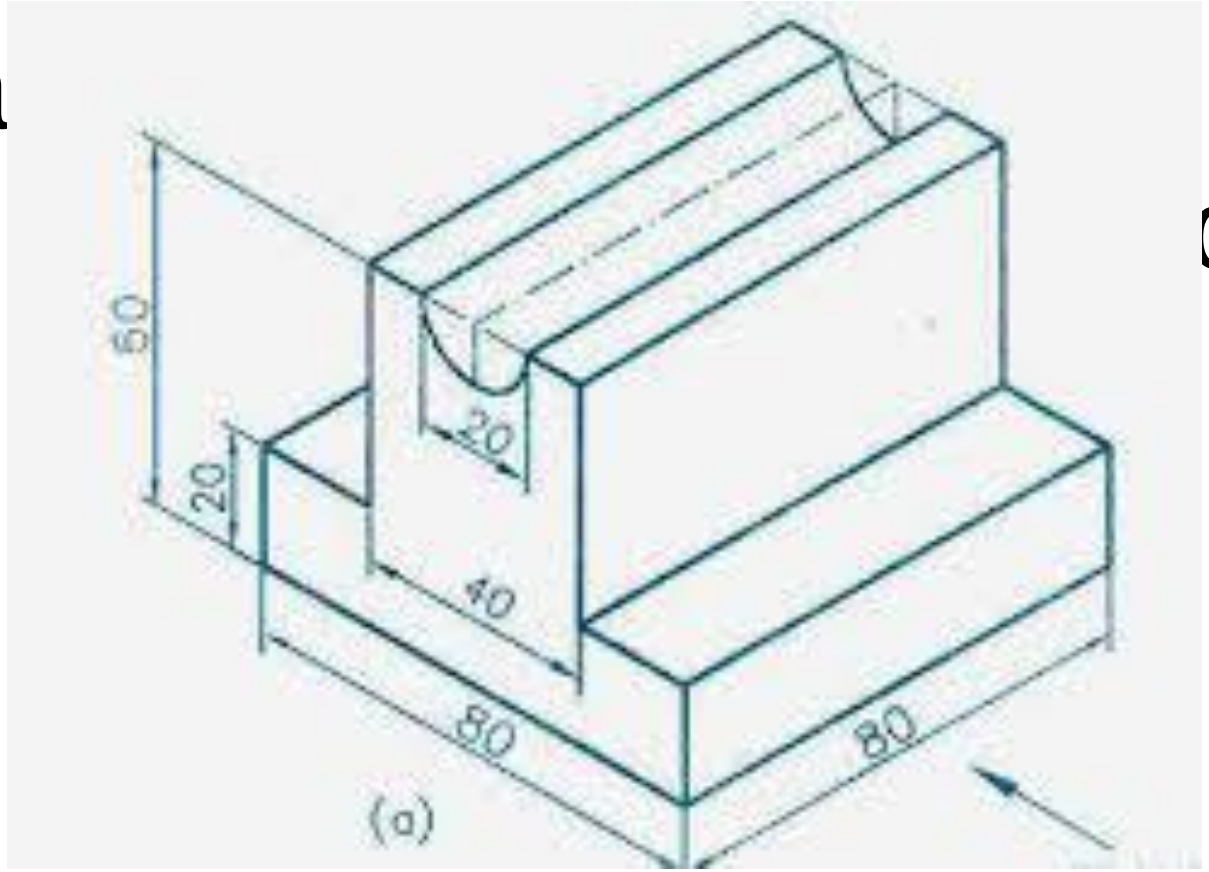
Front View

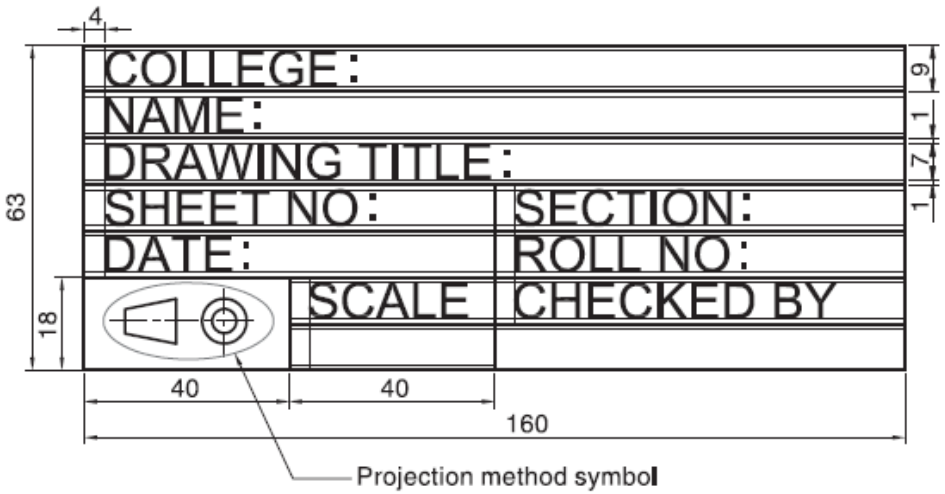
End View (Side)

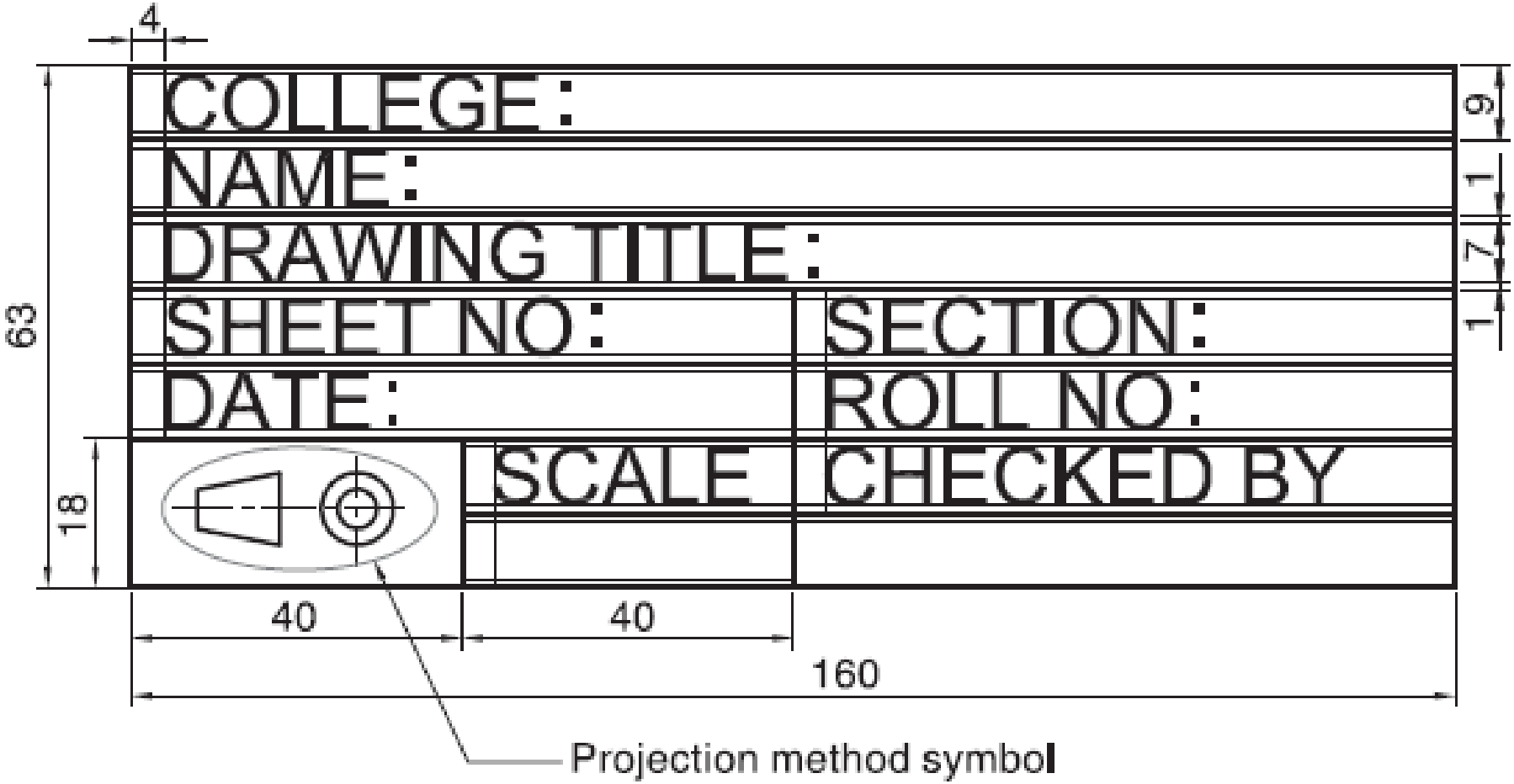



50
10
38
20
30
38
22
12

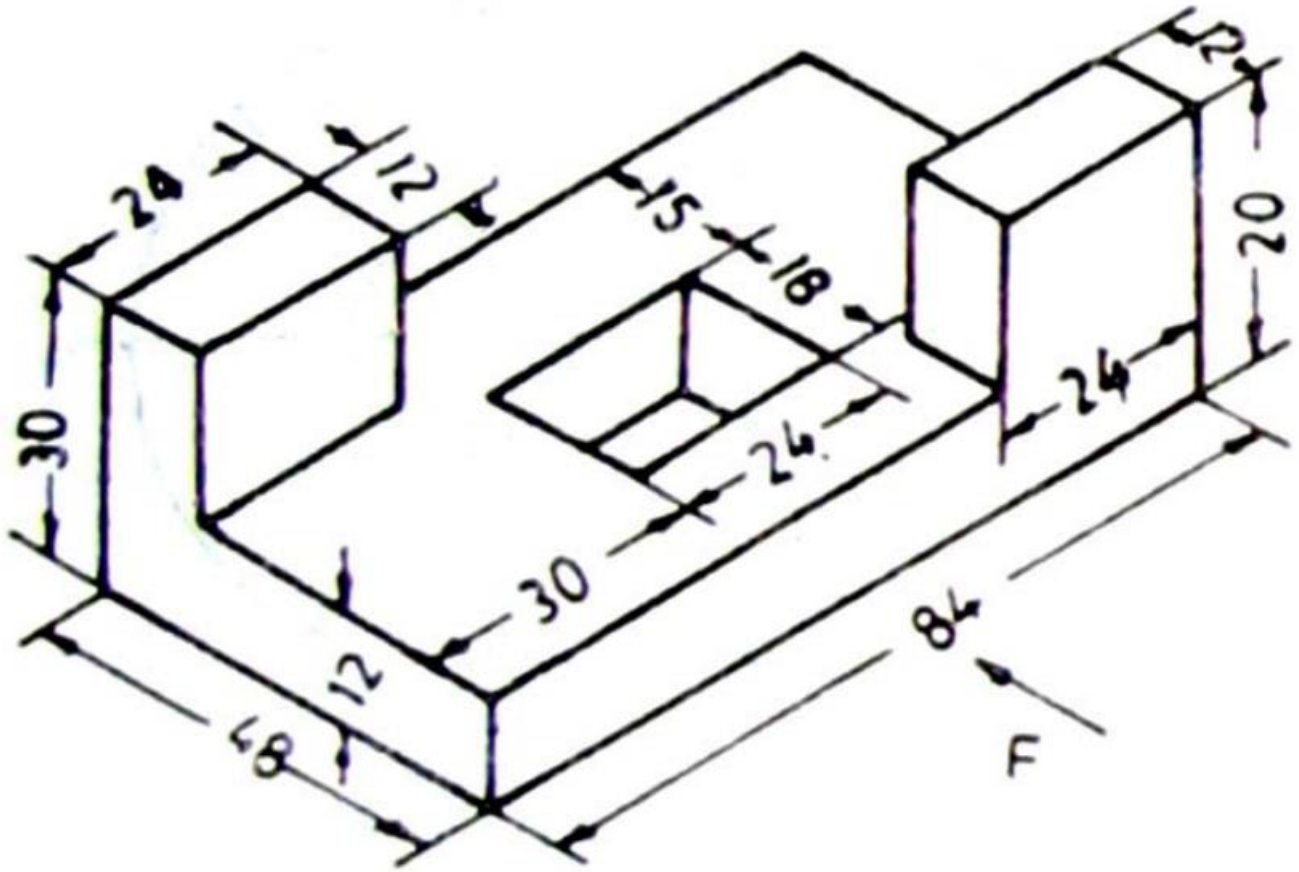
Dra First a on



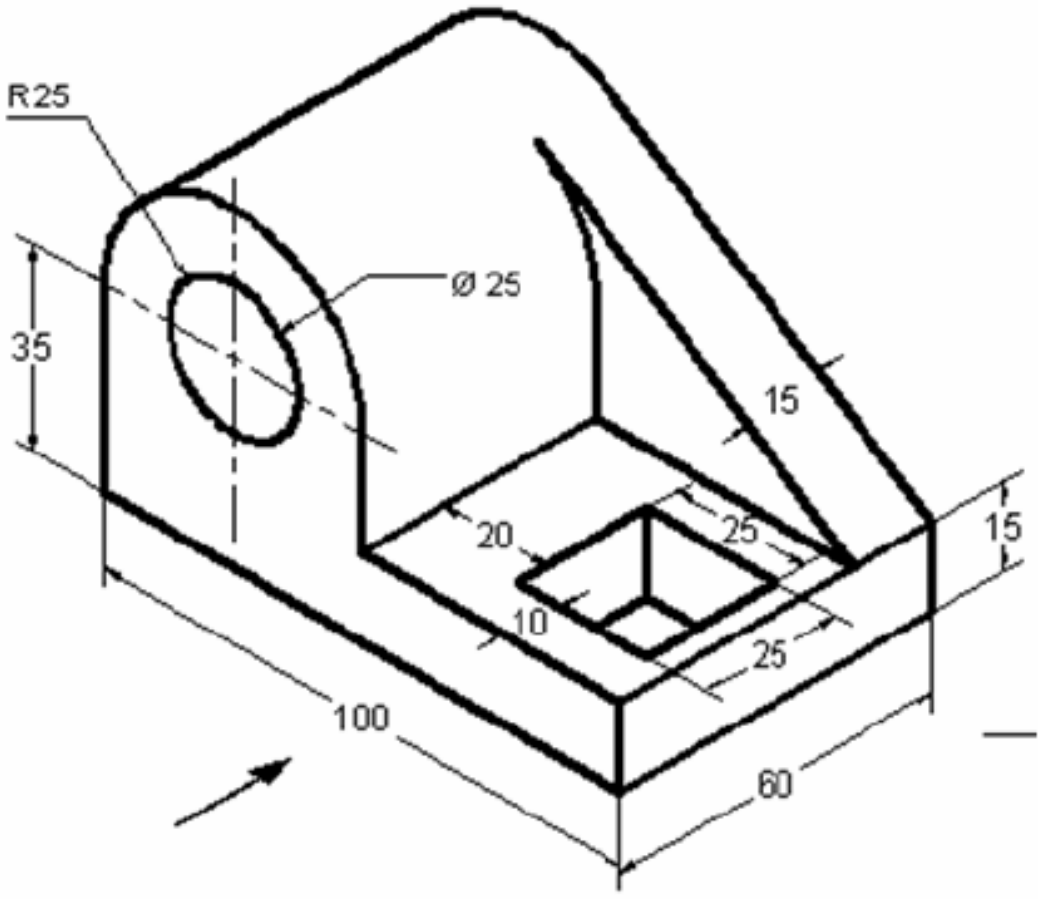



4
COLLEGE :
NAME :
DRAWING TITLE :
SHEET NO :
SECTION :
DATE :
ROLL NO :
SCALE
CHECKED BY
63
18
9
1
7
1
40
40
160
Projection method symbol

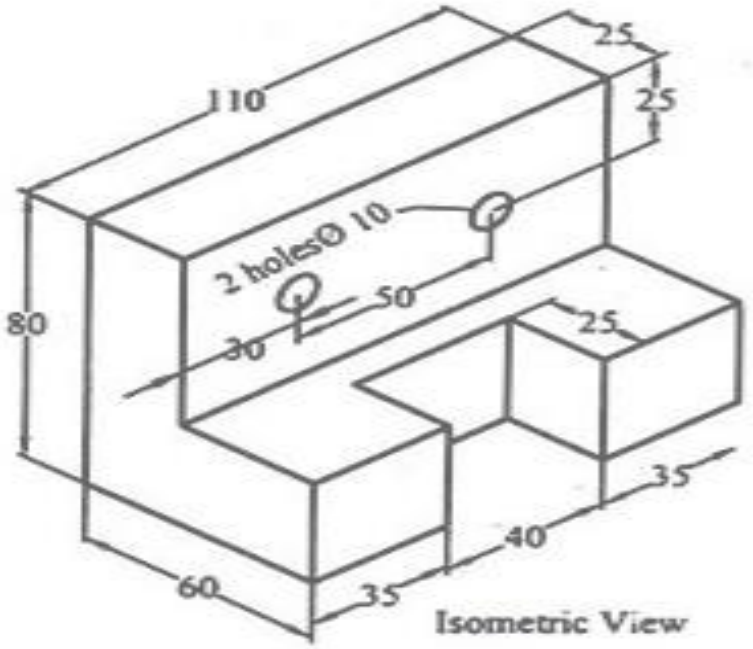
Draw orthographic view in First angle method of projection



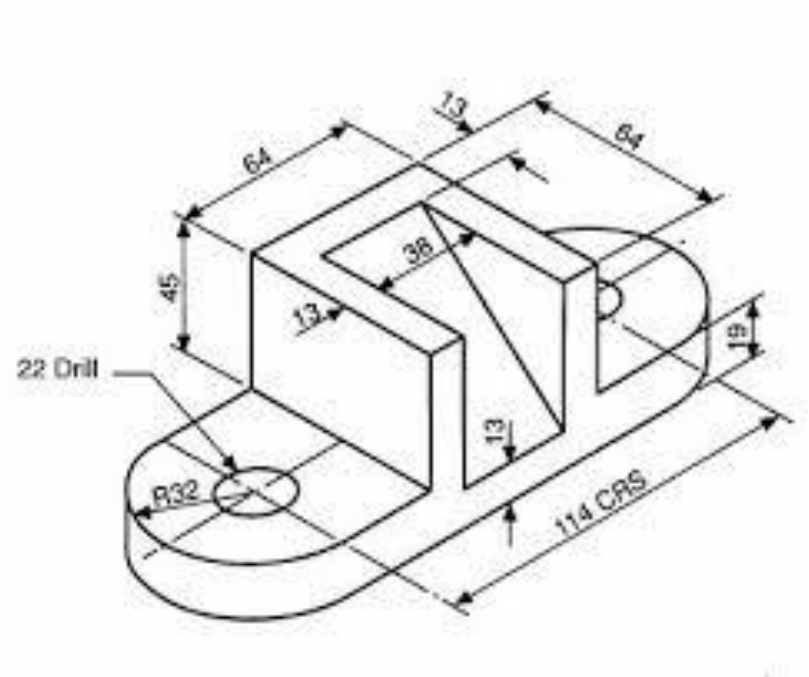
Draw orthographic view in First angle method of projection



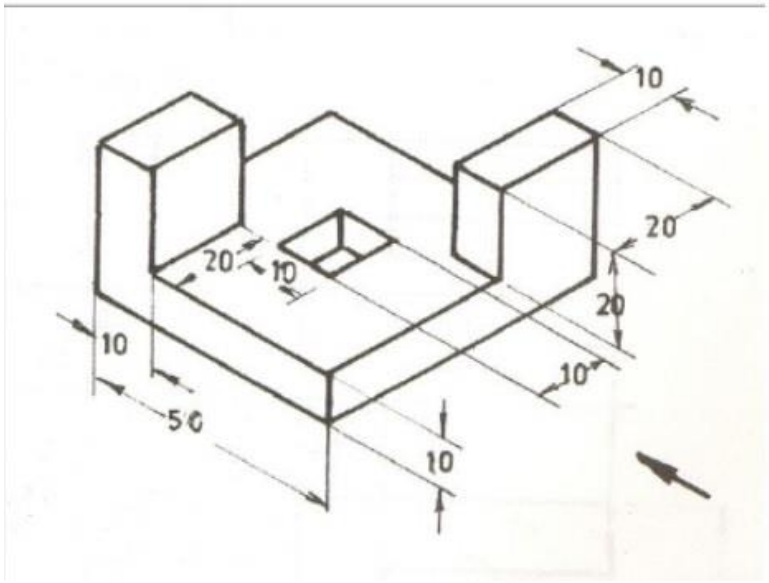
Draw orthographic view in Third angle method of projection

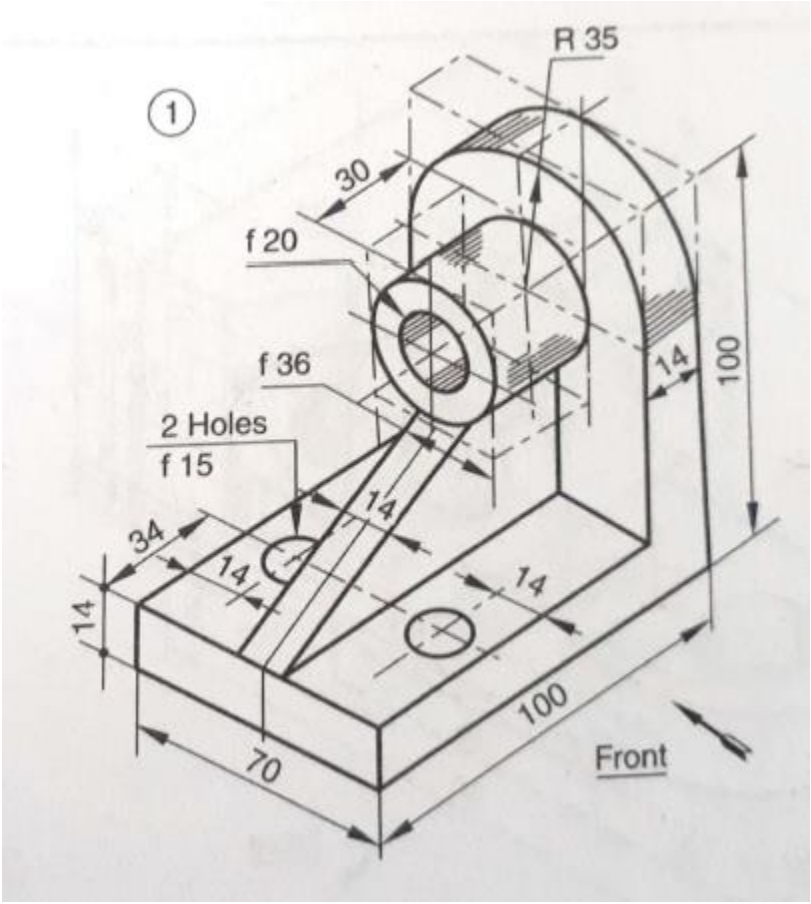


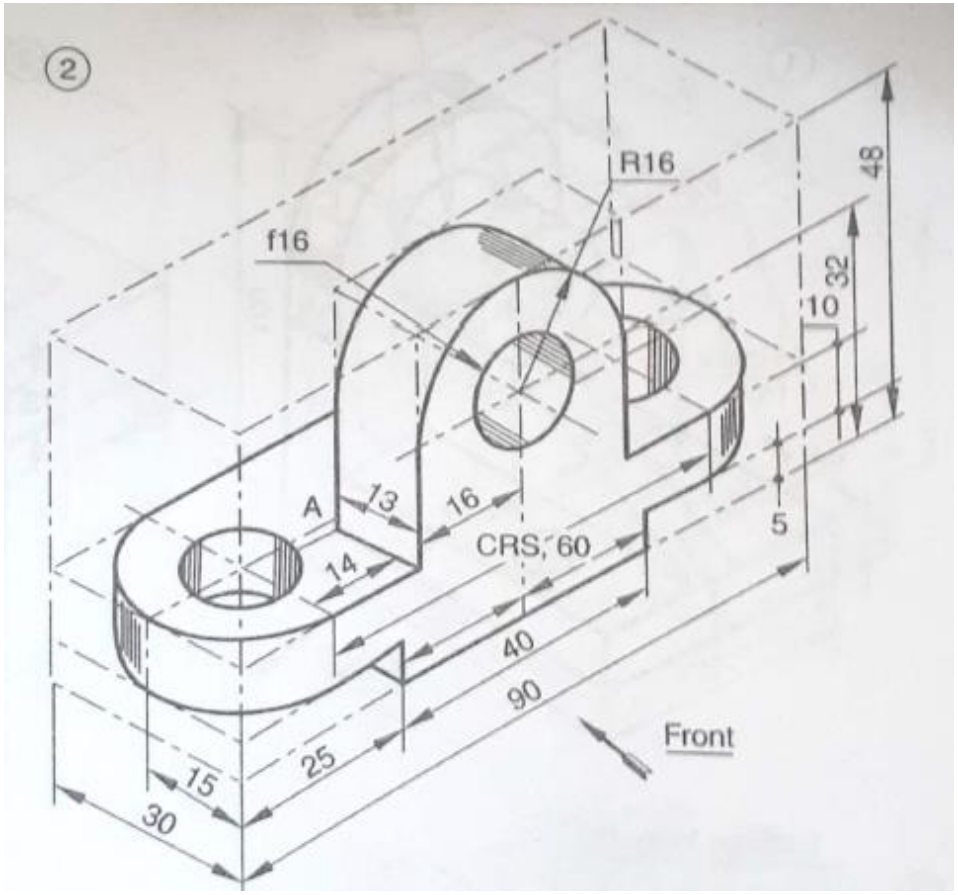
Draw orthographic view in Third angle method of projection



Draw orthographic view in Third angle method of projection




①
R 35
30
f 20
f 36
2 Holes
f 15
14
34
14
14
14
14
100
100
70
Front


②
R16
f16
48
32
10
A
13
16
CRS, 60
14
5
40
90
Front
15
25
30

Lines on an engineering drawing signify more than just the geometry of the object and it is important that the appropriate line type is used.

Line Thickness

For most engineering drawings you will require two thickness', a thick and thin line.
The general recommendation are that thick lines are twice as thick as thin lines.

A thick continuous line is used for visible edges and outlines.

A thin line is used for hatching, leader lines, short centre lines, dimensions and projections.

Line Styles

Other line styles used to clarify important features on drawings are:

Thin chain lines are a common feature on engineering drawings used to indicate centre lines. Centre lines are used to identify the centre of a circle, cylindrical features, or a line of symmetry.

Dashed lines are used to show important hidden detail for example wall thickness and holes..

Precedence of Lines

- *Visible lines* takes precedence over all other lines

0.6 mm

- *Hidden lines* and *cutting plane lines* take precedence over center lines

0.3 mm

- *Center lines* have lowest precedence

0.6 mm