



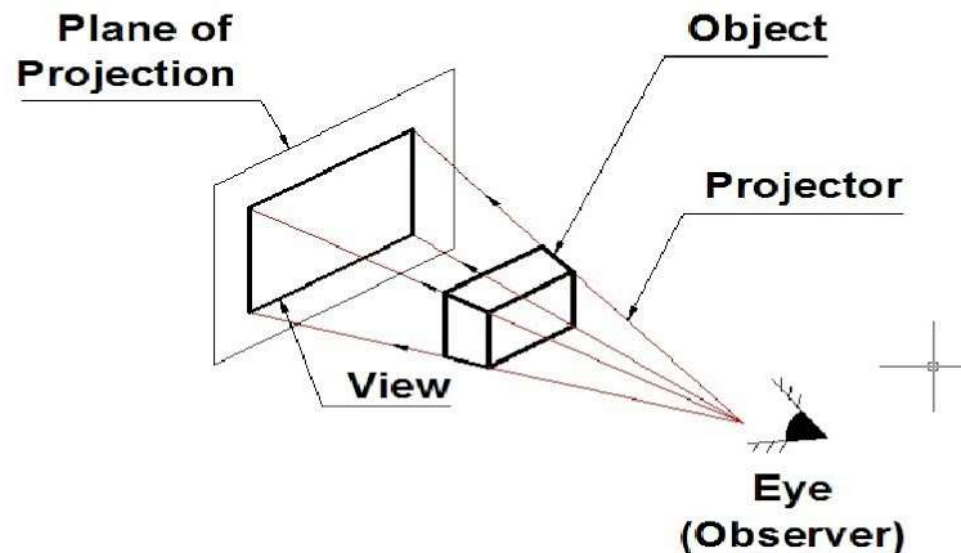
ORTHOGRAPHIC PROJECTION

INTRODUCTION

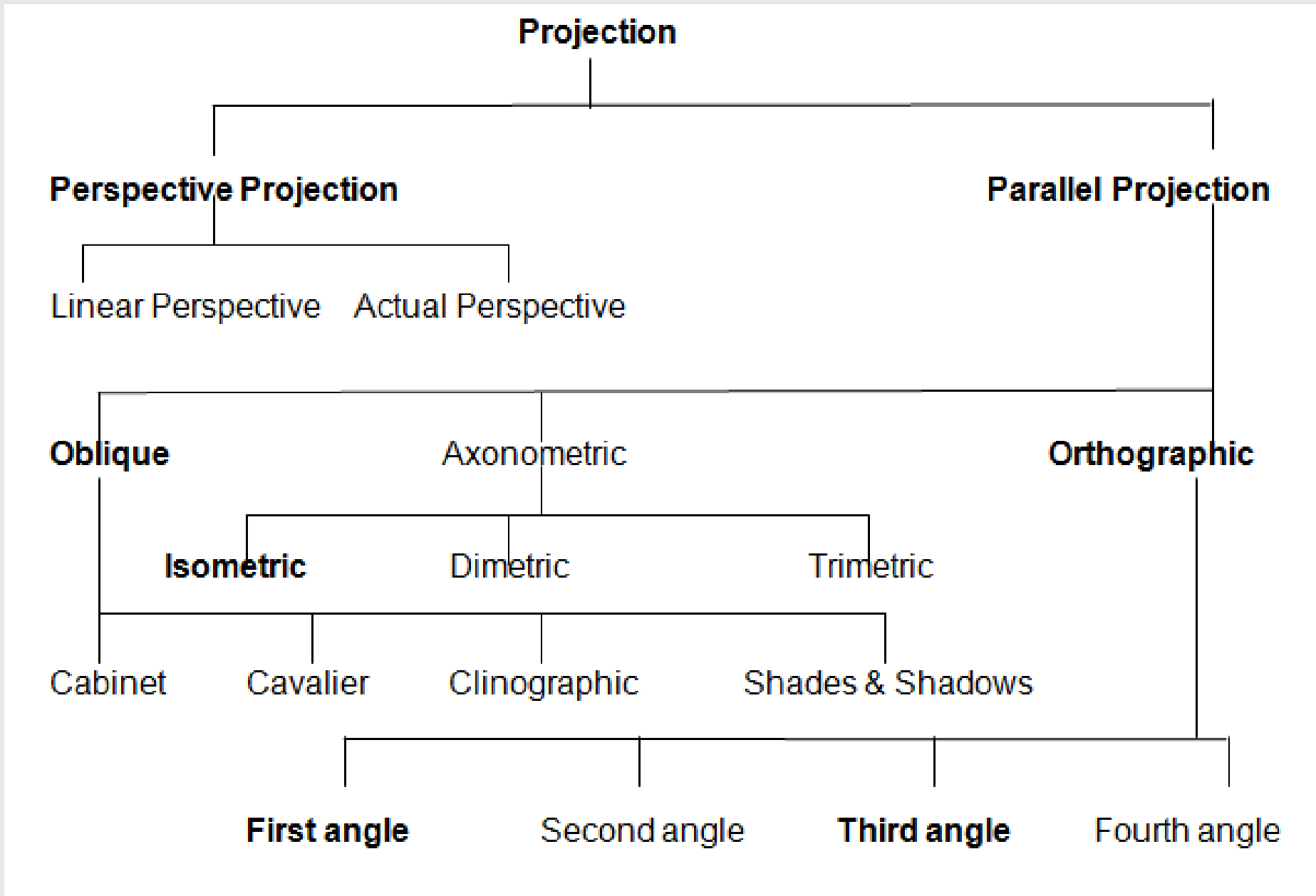
PREPARED BY
J.CYRIL LONGTON
FOR ARCHITECTURAL DRAUGHTSMAN

INTRODUCTION

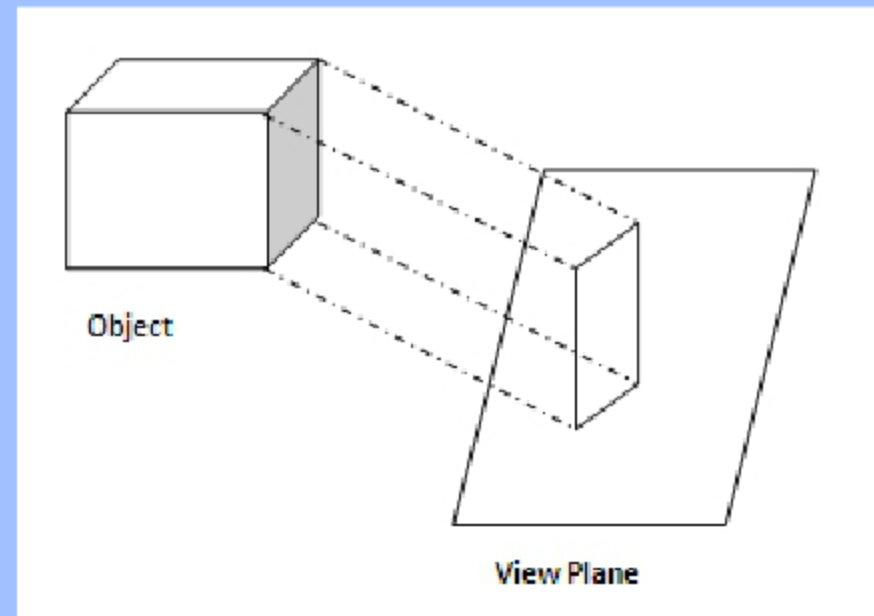
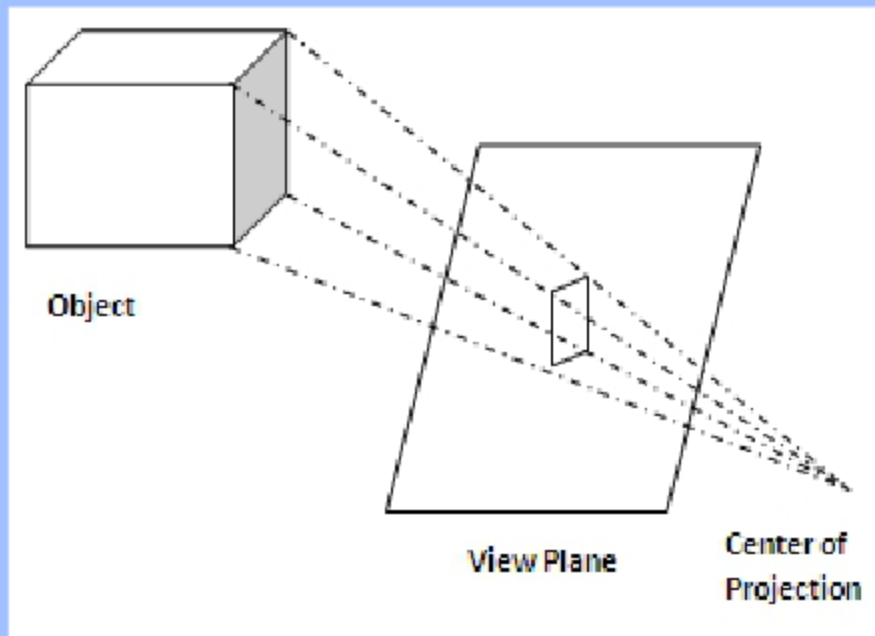
What is Projection

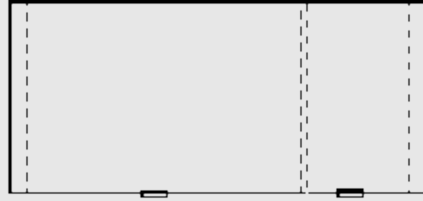


- Any object in this world we see, feel, produce has three dimensions : length, breadth, height, we represent any object by these values only.
- In engineering, for various kinds of works, we need to invent and recreate many new objects and materials by thinking out of our own imaginations
- So Engineers should have a clear vision of the machines, materials and all of the objects we create and use
- To study and understand them in a better way, Engineers started to draw them by various means of methods which are then called as Engineering Drawings
- The word projection means creating a visual image of the object by drawing them on a 2 dimensional paper

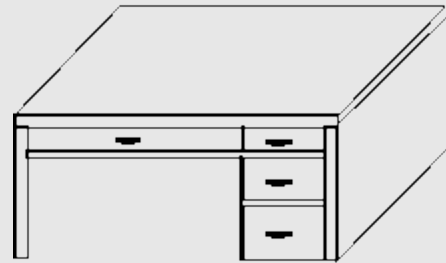


Perspective & Parallel Projection





multiview orthographic



cavalier



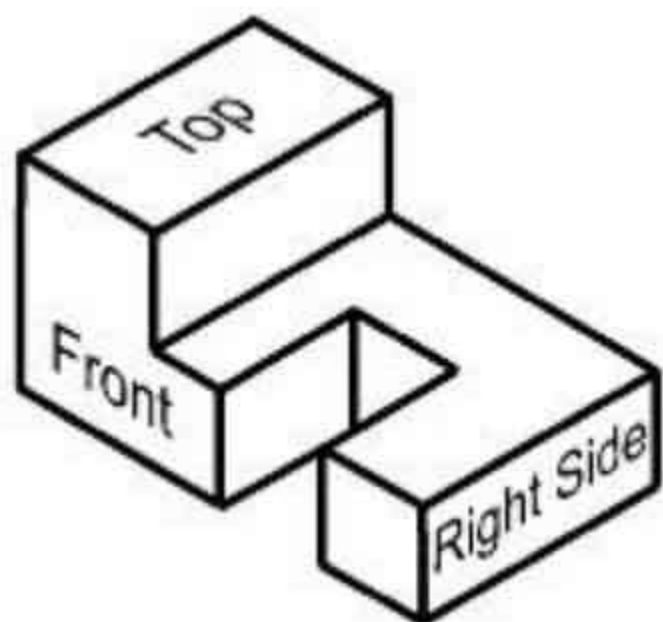
cabinet

Carlbon Fig. 3-2

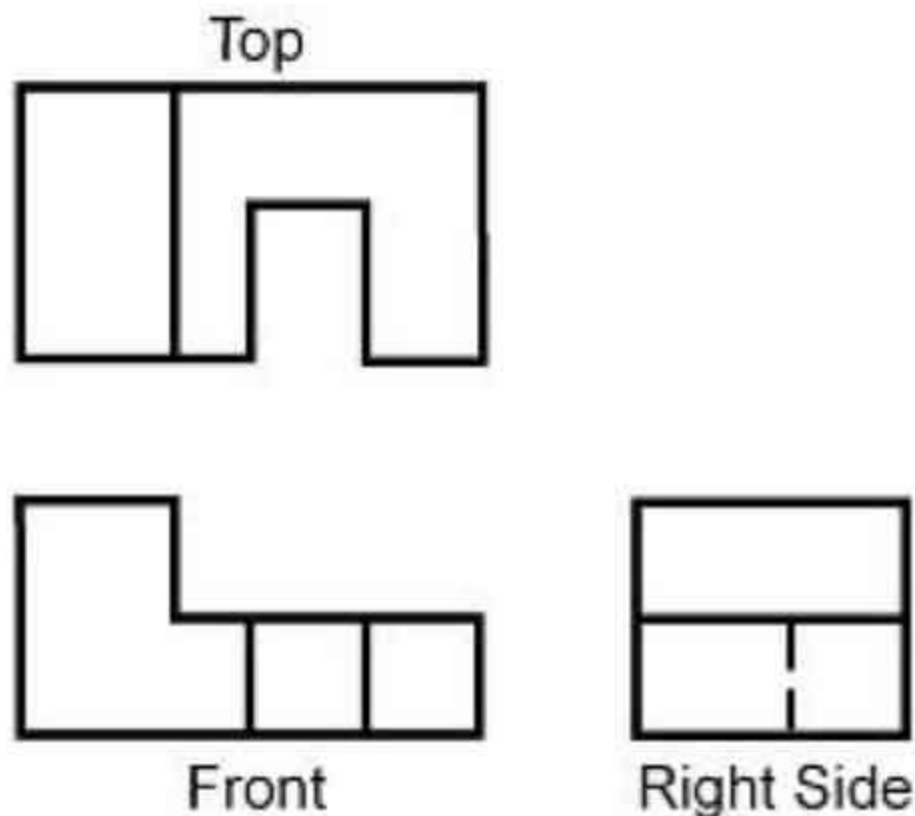
ORTHOGRAPHIC PROJECTION

- In ORTHOGRAPHIC PROJECTION THE PRINCIPLE VIEWS (FRONT VIEW, TOP VIEW, SIDE VIEW) ARE DRAWN BY DIRECT OBSERVATION
- SOMETIMES THREE DIMENSIONAL REPRESENTATION OF AN OBJECT IS NOT ENOUGH TO KNOW THE DETAILS (DIMENSION & SIZES), THUS ORTHOGRAPHIC VIEW HELPS TO UNDERSTAND THE OBJECT BY DRAWING EACH VIEWS SEPERATELY
- WHILE ISOMETRIC 3D VIEW SHOWS THE OBJECT'S FORMATIONS, 2D ORTHOGRAPHIC VIEWS GIVES ACCURATE DIMENSION AND DETAILING WHICH IS MUCH NEEDED FOR ENGINEERING WORKS

ORTHOGRAPHIC PROJECTION.

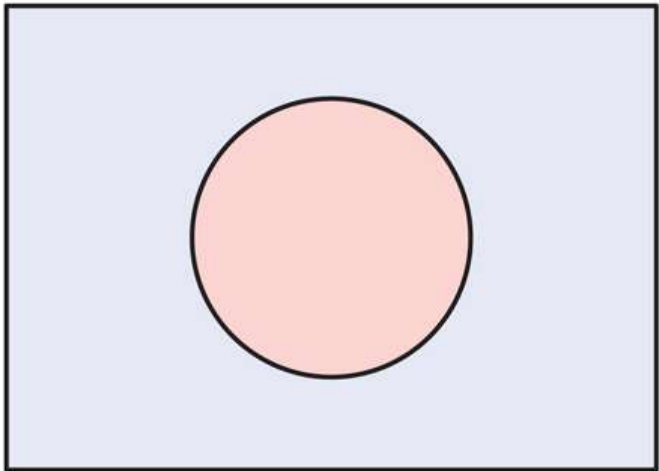


3D Representation

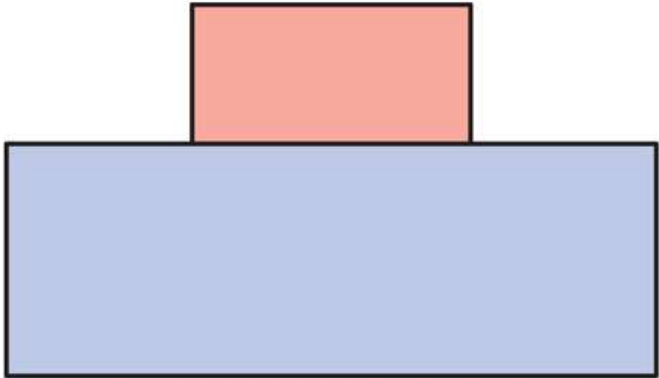


2D Orthographic Projection

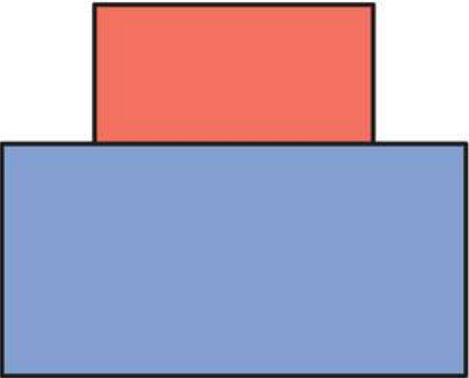
Orthographic and isometric projections of an object



top view

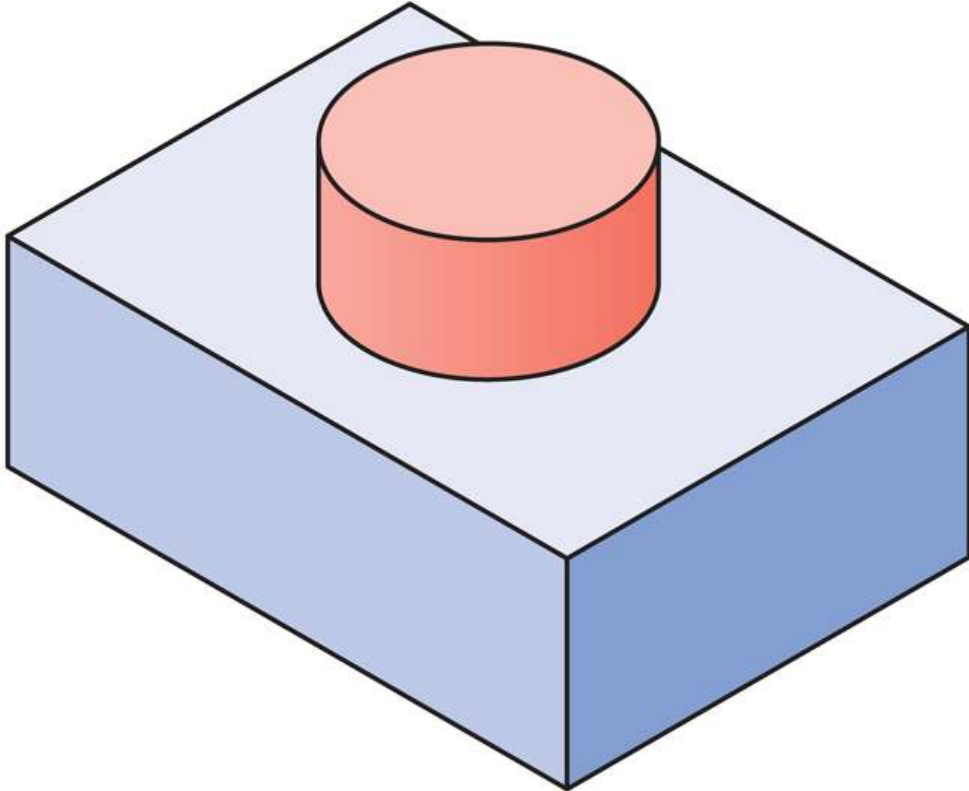


front view



side view

2-dimensional orthographic projection



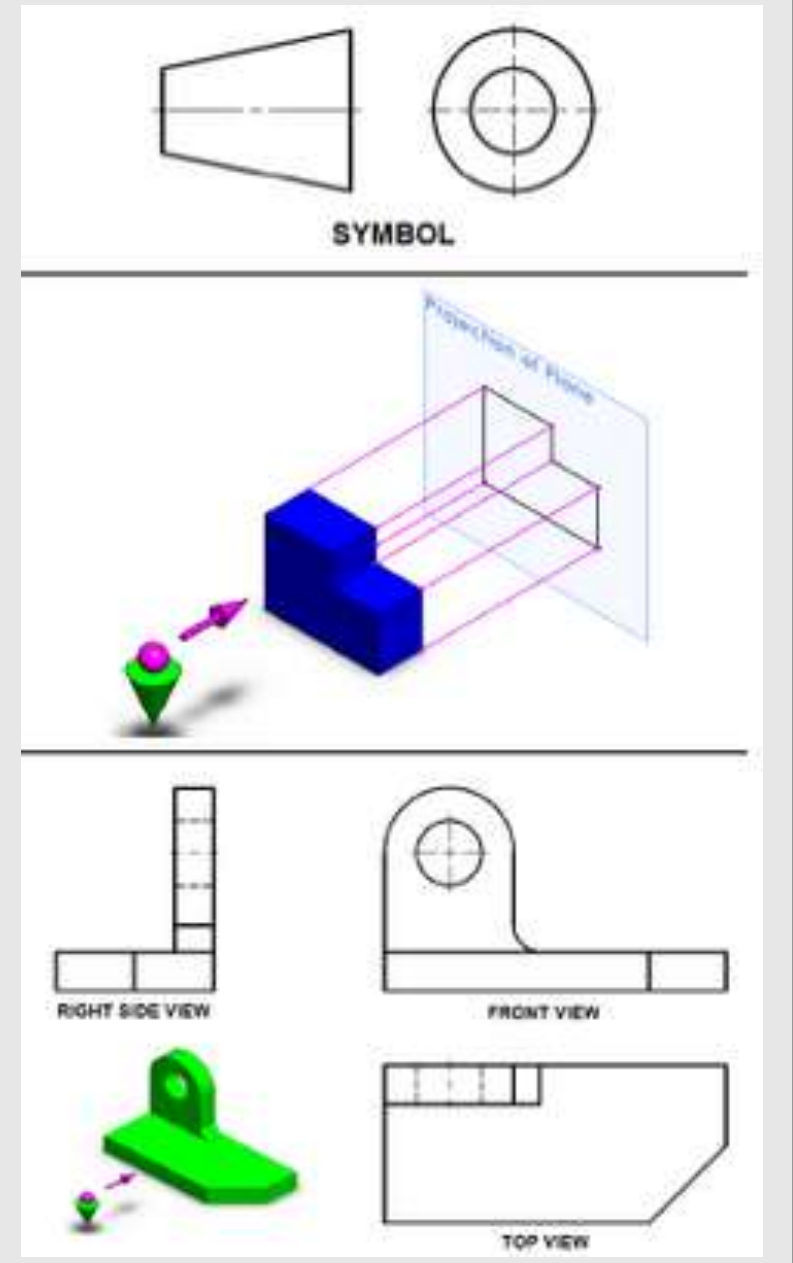
3-dimensional isometric projection

SYSTEM OF PROJECTIONS

THERE ARE TWO SYSTEM OF PROJECTION WE PRACTICE:

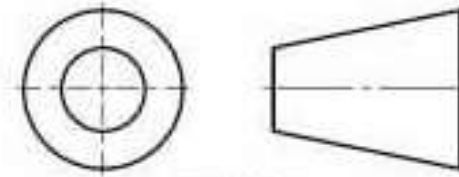
1. FIRST ANGLE PROJECTION

- IN THIS SYTEM THE PROJECTION IS OBSERVED FROM BEHIND
- OBSERVER – OBJECT – PROJECTION
- IMAGINE YOU ARE DRAWING THE VIEWS BY PLACING ABOVE THE PAPER AND DIRECTLY TRACING OUT THE EDGES
- (USED IN EUROPE, ASIA, FORMER EUROPEAN COLONIES IN AFRICA, PARTS OF AUSTRALIA)

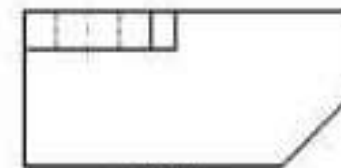
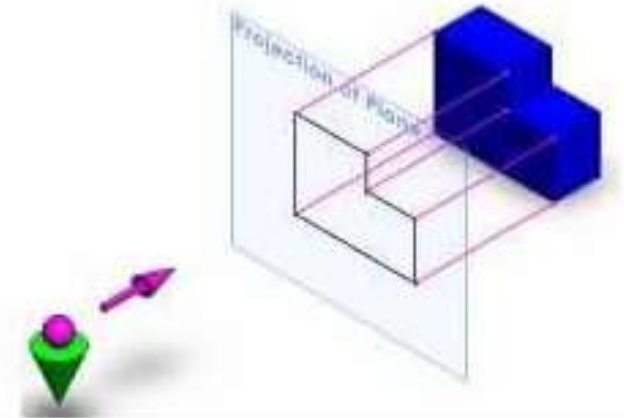


2. THIRD ANGLE PROJECTION

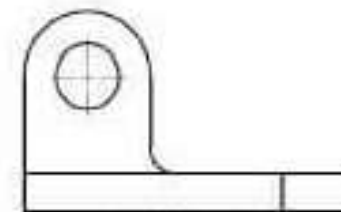
- IN THIS SYSTEM THE PROJECTION IS OBSERVED INFRONT OF THE OBJECT
- OBSERVER – PROJECTION – OBJECT
- IMAGINE YOU ARE TRACING OUT A COIN BY PLACING IT UNDER THE TRACING PAPER
- (USED IN USA, CANADA, SOME PARTS OF AFRICA AND AUSTRALIA)



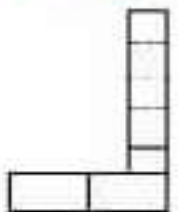
SYMBOL



TOP VIEW



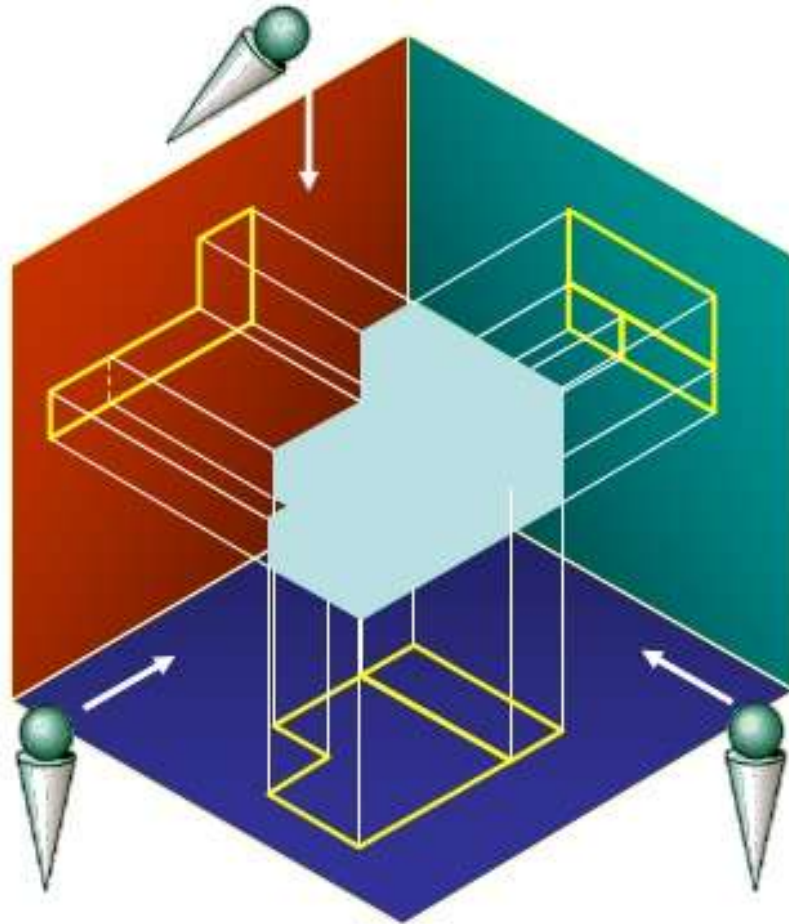
FRONT VIEW



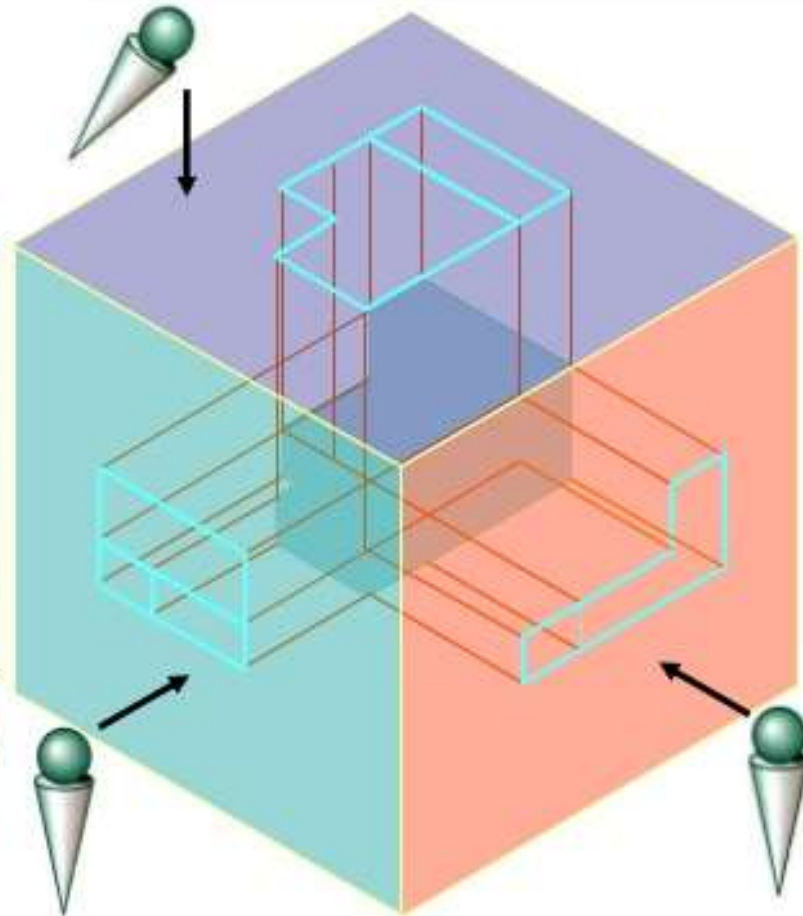
RIGHT SIDE VIEW

ORTHOGRAPHIC PROJECTION

1st angle system

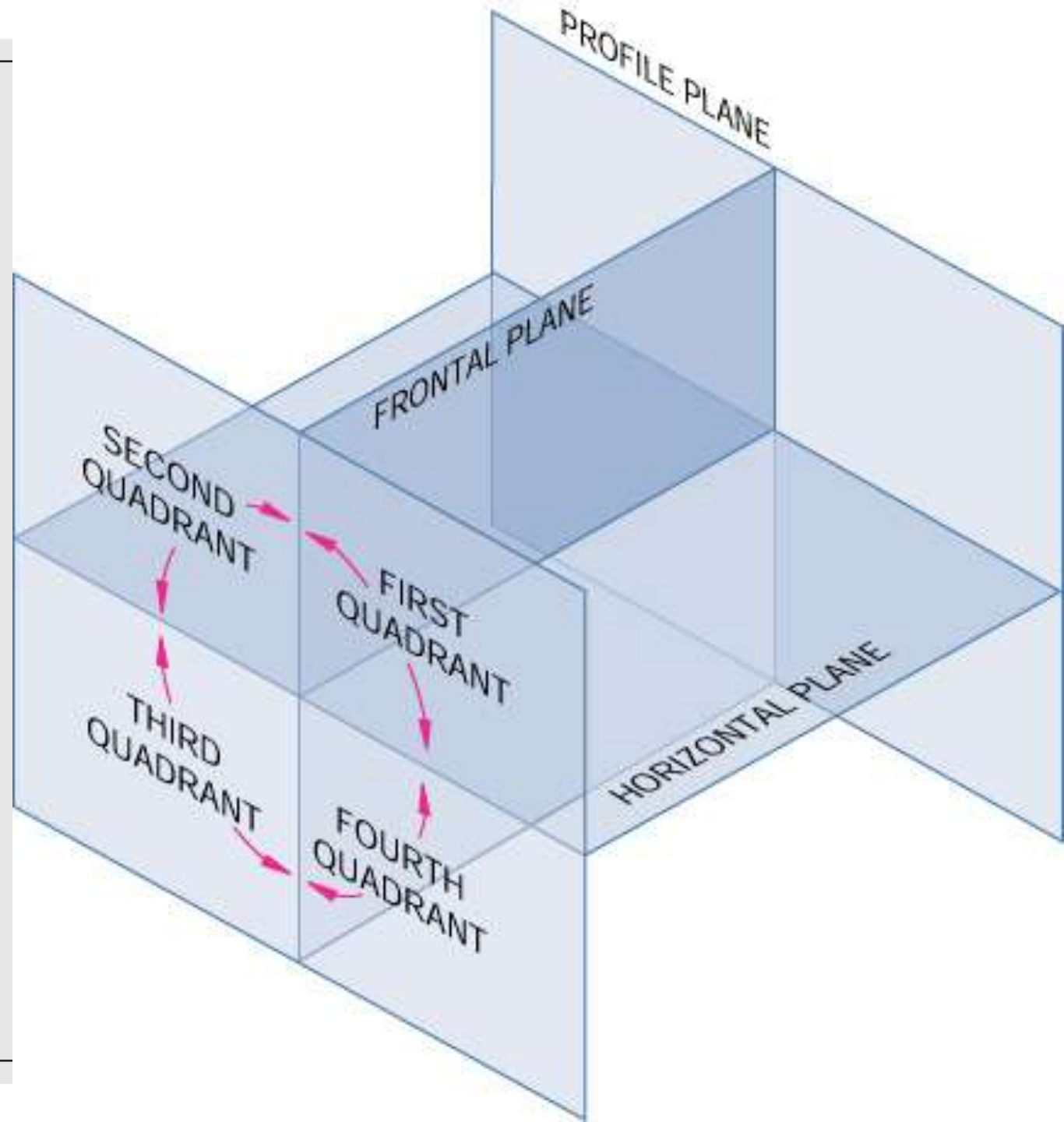


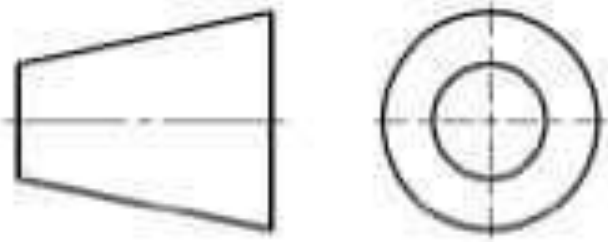
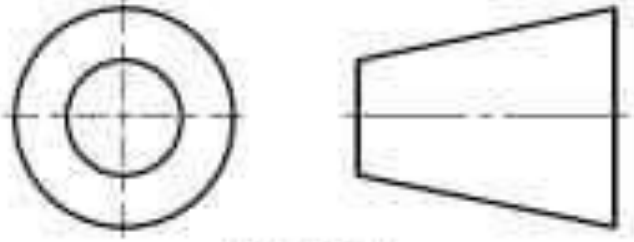
3rd angle system



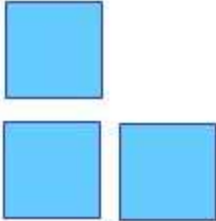
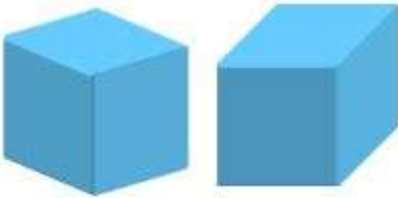
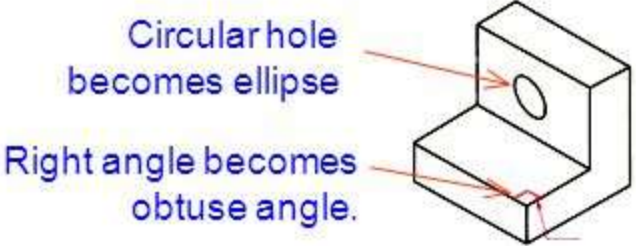

PROJECTION PLANES

- TOP VIEW – HORIZONTAL PLANE (HP)
- FRONT VIEW – VERTICAL PLANE (VP)
- SIDE VIEW – PROFILE PLANE (PP)
- FIRST QUADRANT – 1ST ANGLE
- THIRD QUADRANT – 3RD ANGLE



First Angle Projection	Third Angle Projection
The object is imagined to be in first quadrant.	The object is imagined to be in third quadrant.
The object is lies between the observer and plane of projection.	The plane of projection lies between the observer and object.
The plane of projection is assumed to be non transparent.	The plane of projection is assumed to be transparent.
When view are drawn in their relative position Top view comes below Front view, Right side view drawn to the left side of elevation.	When view are drawn in their relative position Top view comes above Front view, Right side view drawn to the right side of elevation.
 <p data-bbox="690 1296 868 1339">SYMBOL</p>	 <p data-bbox="1702 1286 1880 1329">SYMBOL</p>

View comparison

Type	Advantage	Disadvantage
Multiview drawing 	<ul style="list-style-type: none">● Accurate represents an object's details, i.e. size and shape.	<ul style="list-style-type: none">● Require an enough practice to visualization.
Pictorial drawing 	<ul style="list-style-type: none">● Easy to understand	<ul style="list-style-type: none">● Shape and angle distortion Circular hole becomes ellipse Right angle becomes obtuse angle. 
Perspective drawing 	<ul style="list-style-type: none">● Object looks more like what our eyes perceive.	<ul style="list-style-type: none">● Difficult to create● Size and shape distortion 