CHANDIGARH UNIVERSITY

Discover. Learn. Empower.

University Institute of Engineering

Academic Unit-1

Bachelor of Engineering (CSE, IT, CSE-IBM)

Computer Graphics using CAD Lab. (20MEP114)

Experiment No. 9 & 10

Prepared By: Paras Khullar

ORTHOGRAPHIC PROJECTIONS

ORTHOGRAPHIC PROJECTIONS

Course Outcome

CO Number	Title After completion of the course the students may be able to:	Level
CO1	Sketch the different conventions and representations of engineering graphics on AutoCAD software.	Remember & Understand
CO2	Explain the use of engineering drawing, compare and predict the geometrical details of common engineering objects.	Understand
CO3	Classify, examine and draw the dimensioned figures expressing information about the shape and size of physical objects	Understand
CO4	**Identify and express the geometrical features of a product on AutoCAD software.**	**Understand**
CO5	**Draw orthographic views of computer components.**	**Understand**

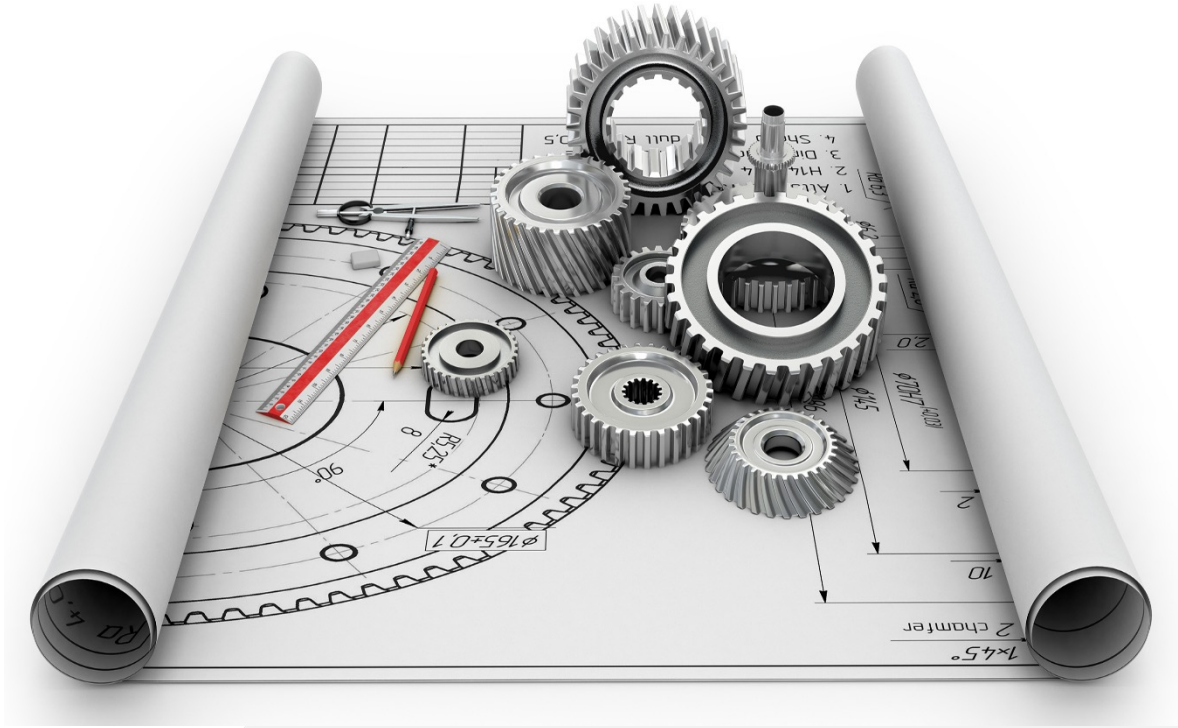


Image Source: http://cadmasters.guru/2d-to-3d-conversions/

Will be covered in this lecture

COURSE OBJECTIVES

Students may be able to

- understand the difference between 1st angle and 3rd angle projection.
- draw orthographic projections in 1st and 3rd angle projections
- identify the three dimensions of an object
- determine the views necessary to describe an object in multi-view drawing

Image Source: https://img-a.udemycdn.com/course/750x422/1925256_3592_5.jpg

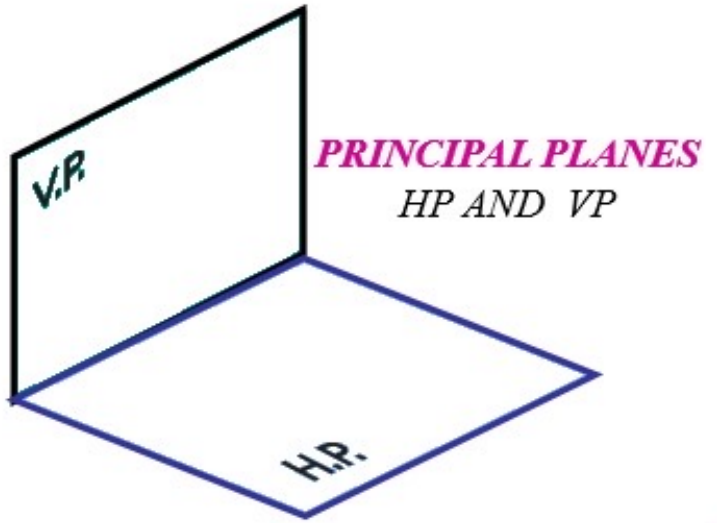
Introduction

- Orthographic Projections:-
- Type of technical drawing in which different views of an object are projected on different reference planes
- Views are observed perpendicular to the different reference planes
- All the views are observed at right angles to each other.
- For example front view, top view and side views are drawn by observing perpendicular to each other.

Planes

There are two types of planes

1. Principal Planes:
   - Horizontal Plane
   - Vertical Plane
2. Auxiliary Planes:
   - Auxiliary Inclined Plane
   - Auxiliary Vertical Plane
   - Profile Plane



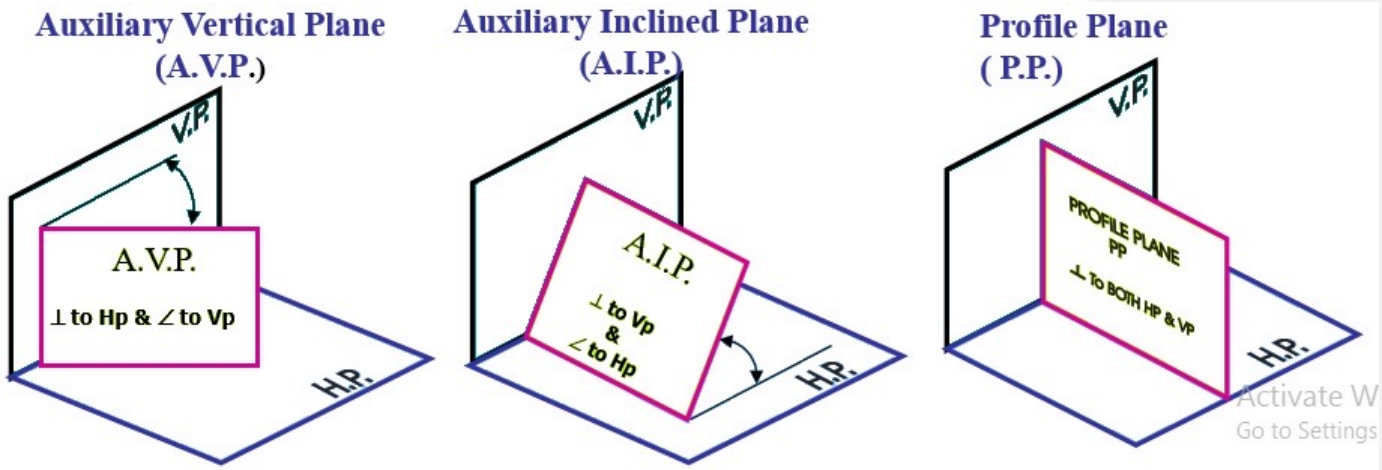
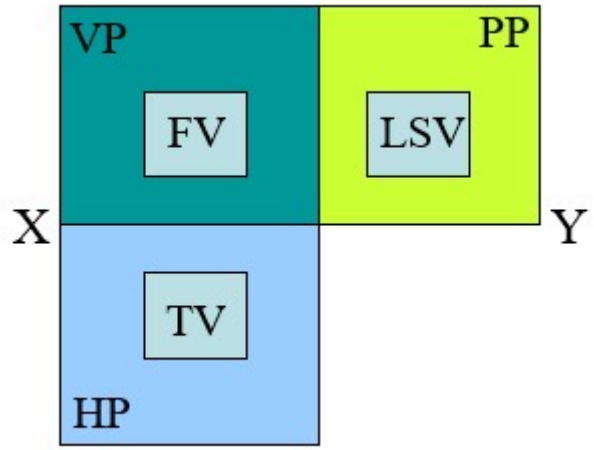


Image Source: www.slideshare.net

Methods of Drawing Orthographic Projections

1st Angle Projection

- The object is assumed to be placed in 1st quadrant accordingly the projections are drawn
- Object is placed between the observer and plane of projection



Orthographic Projections in 1st quadrant

Image Source: www.slideshare.net

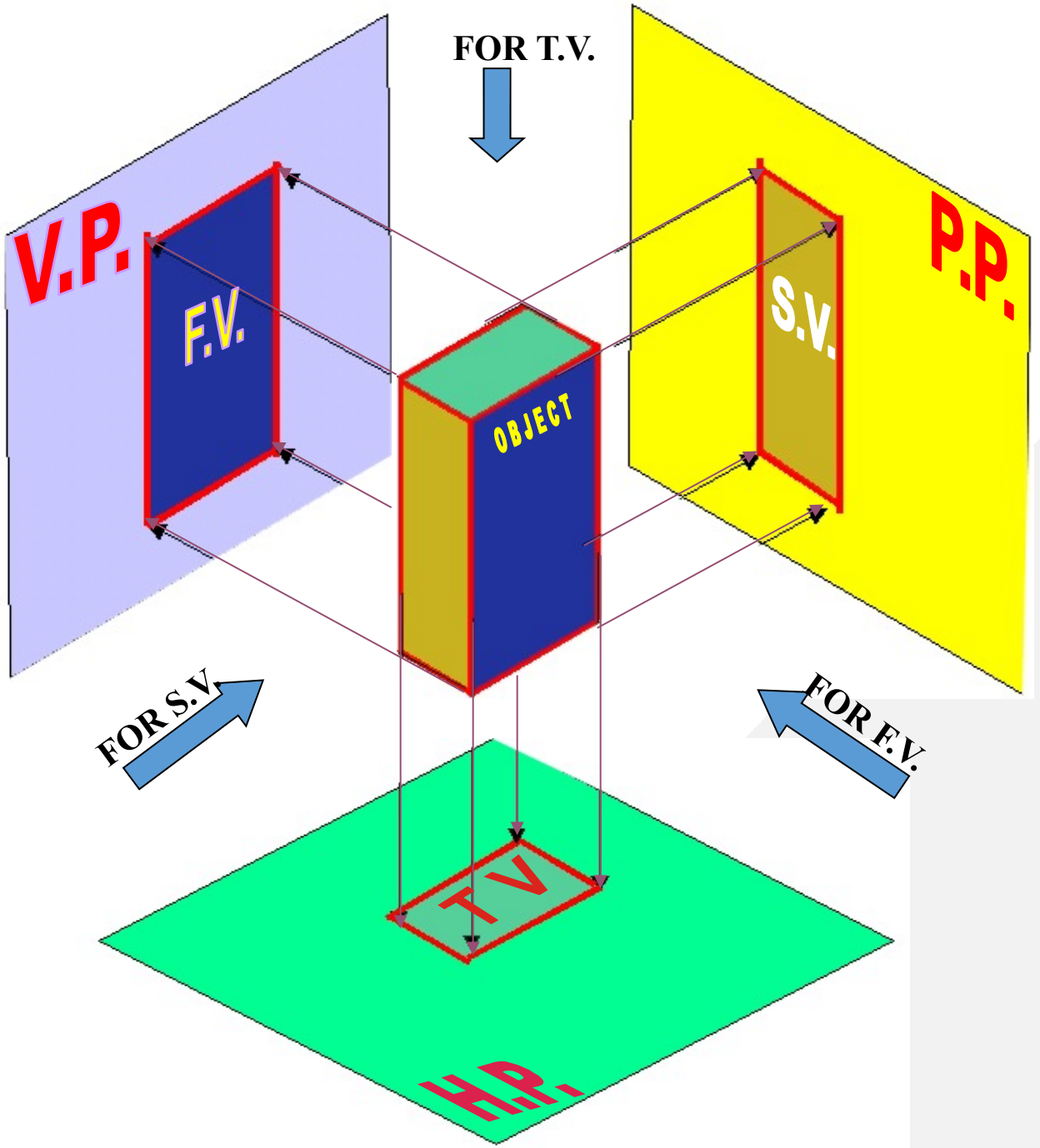
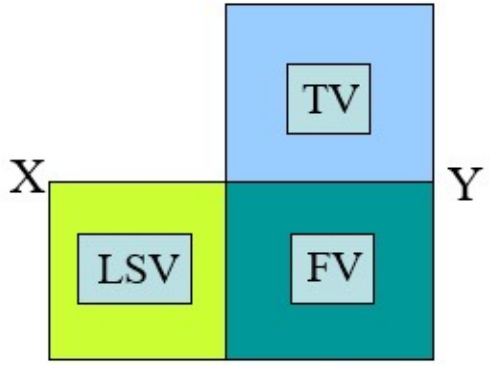


Image Source: www.slideshare.net

Methods of Drawing Orthographic Projections

3rd Angle Projection

- The object is assumed to be placed in 3rd quadrant accordingly the projections are drawn
- Transparent plane of projection is placed between the object and observer



Orthographic Projections in 3rd quadrant

Image Source: www.slideshare.net

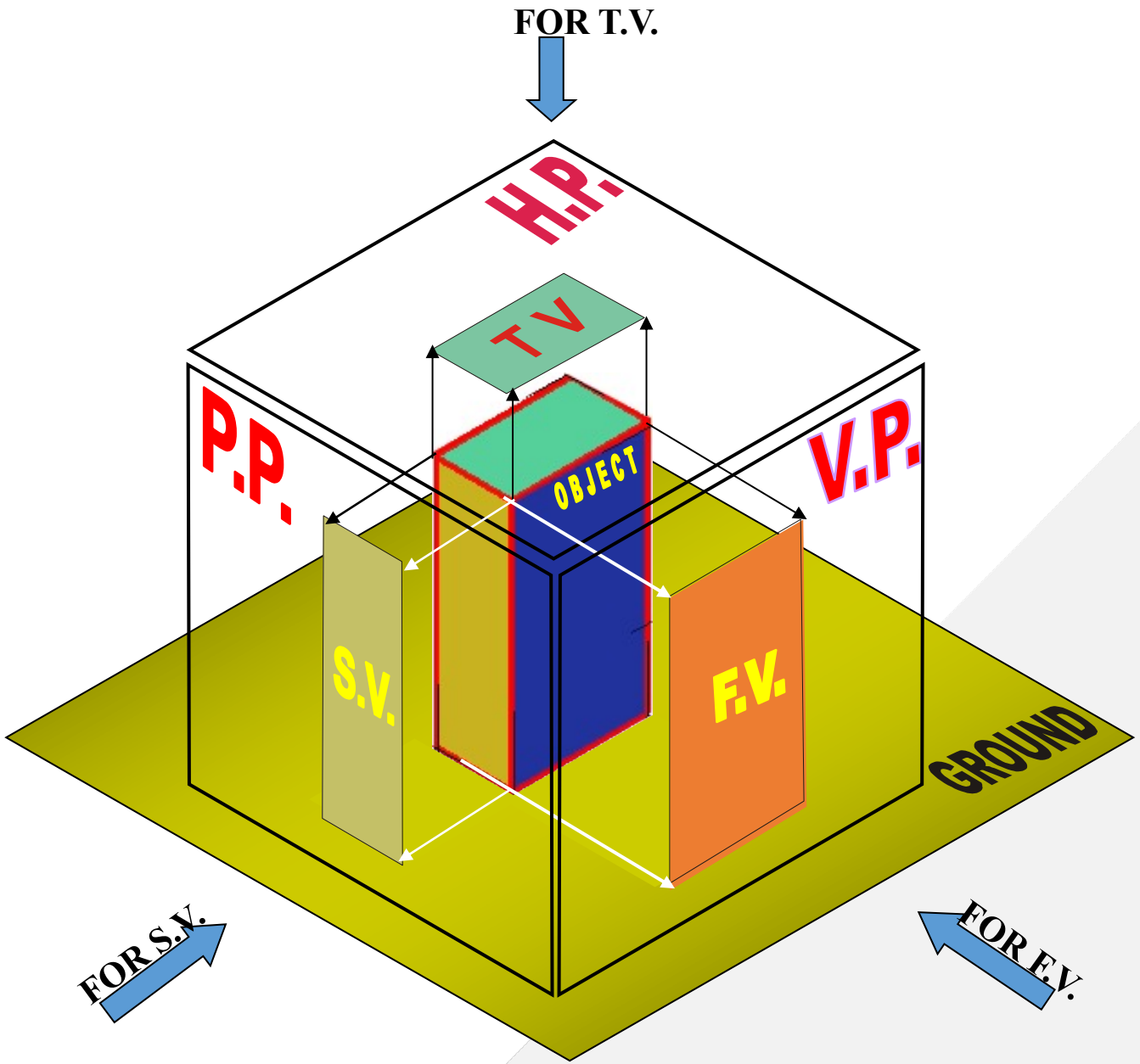
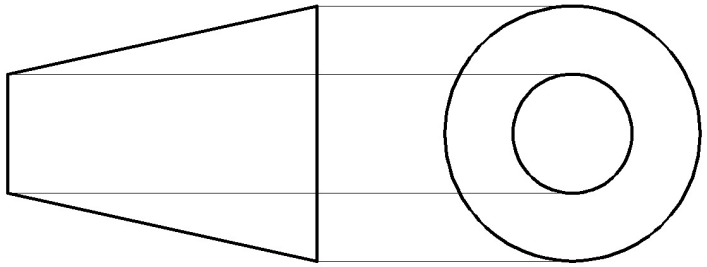


Image Source: www.slideshare.net

Methods of Drawing Orthographic Projections

Symbol of 1st Angle Projection



Symbol of 3rd Angle Projection

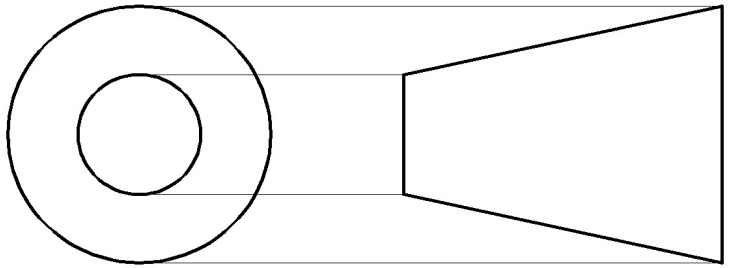


Image Source: *self-made*

Pictorial representation of 1st angle and 3rd angle projection

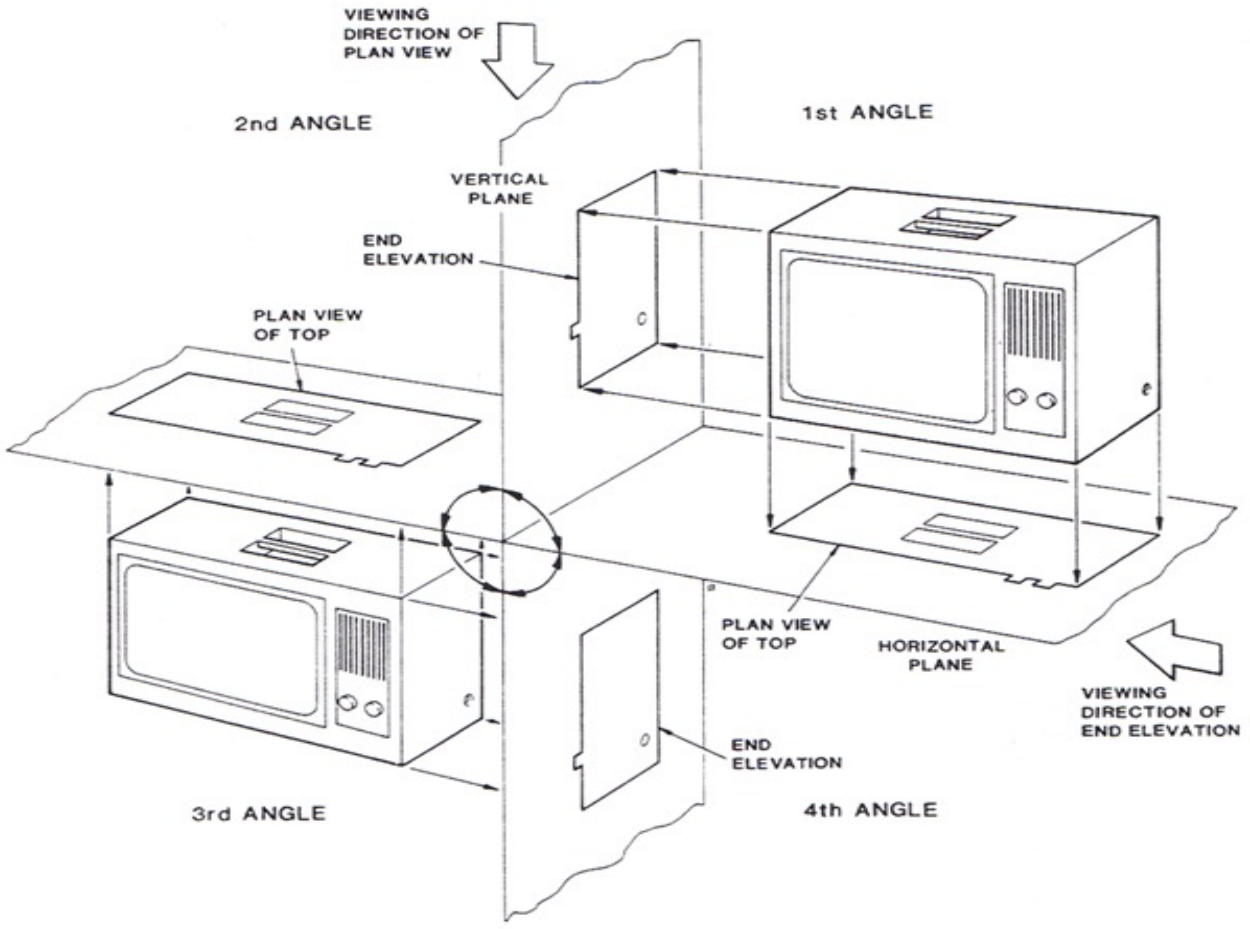
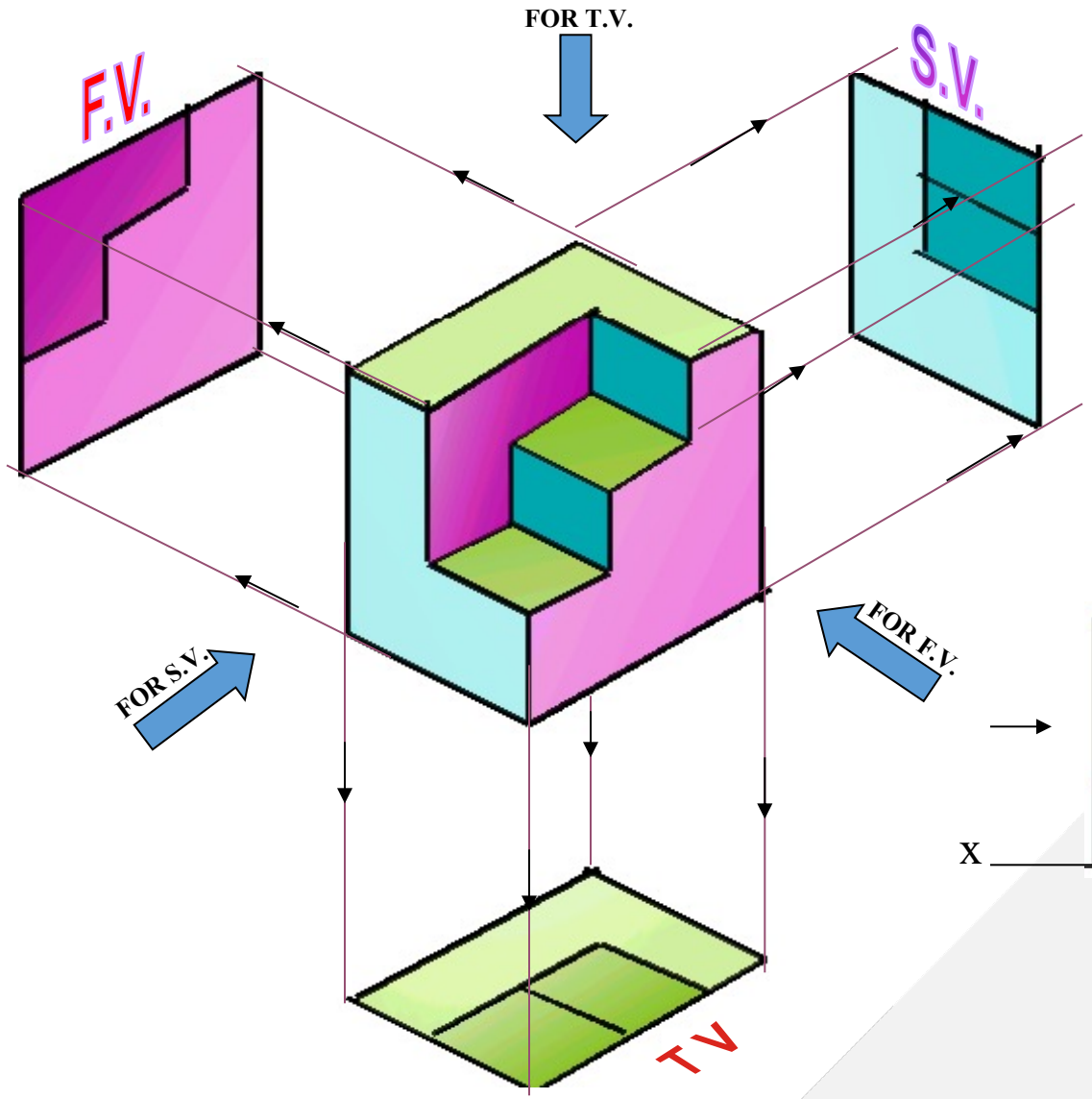
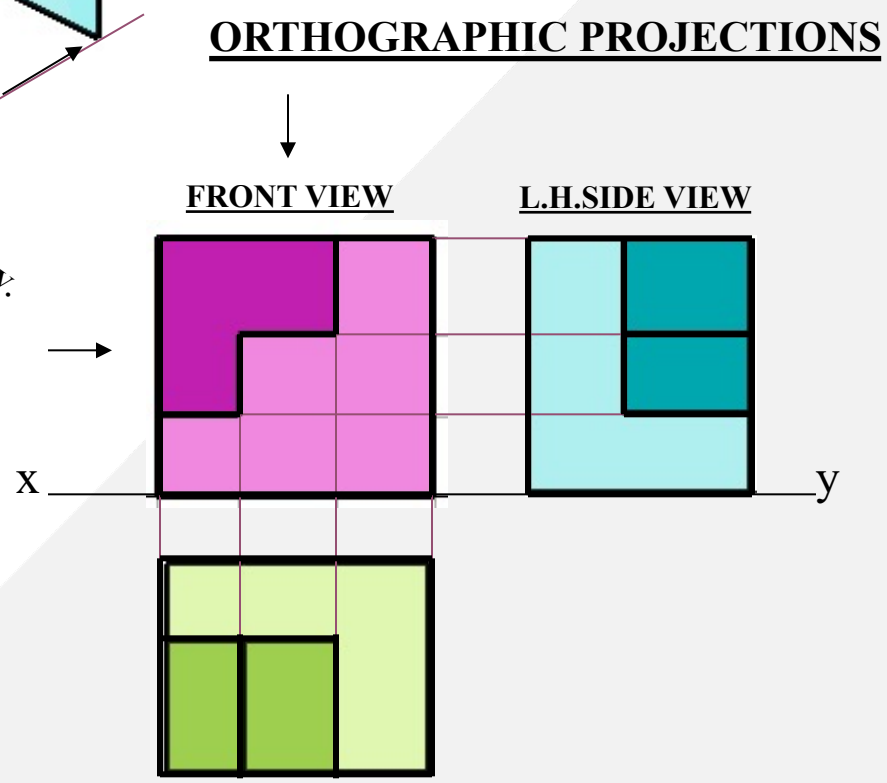


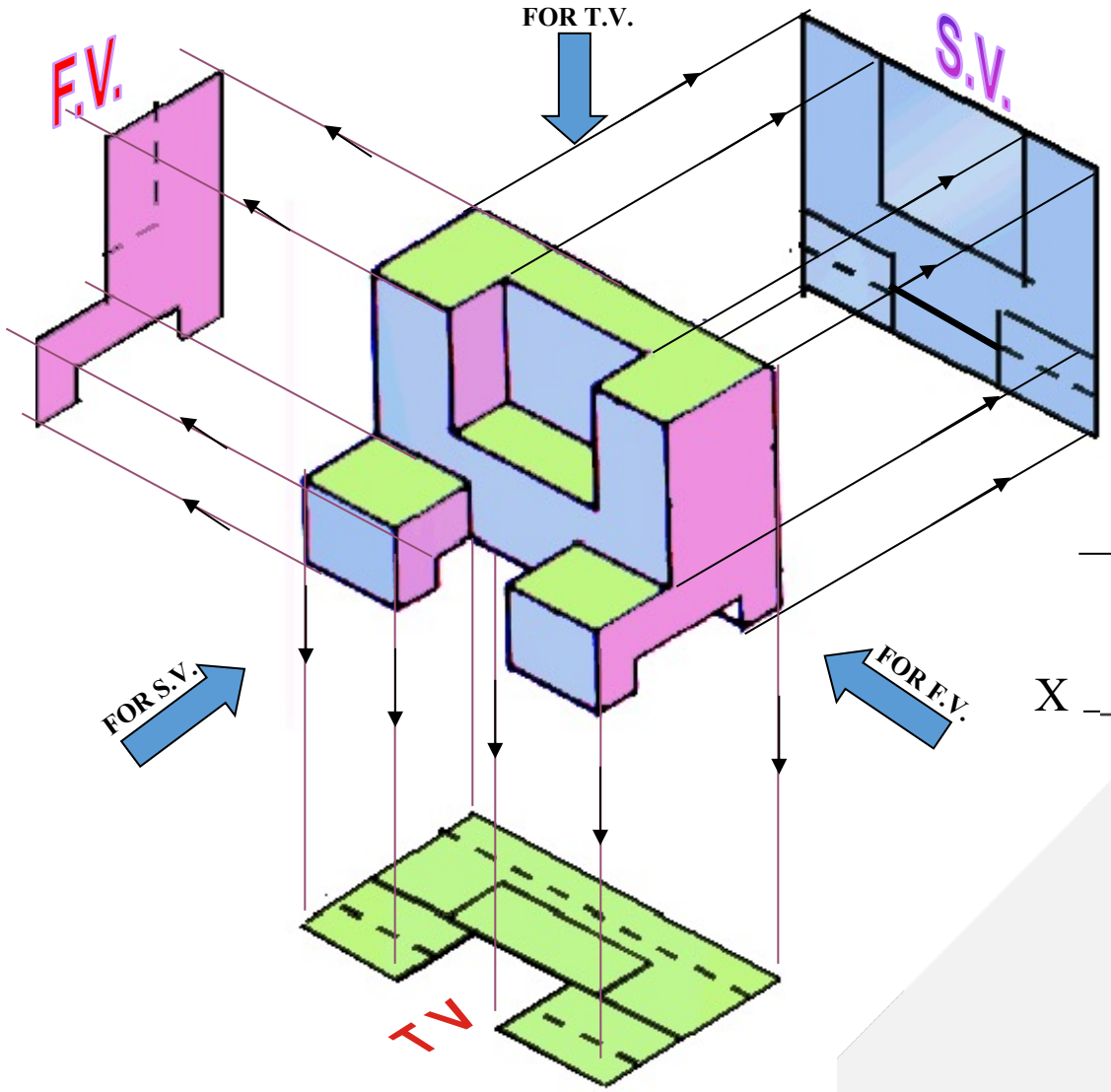
Image Source: www.technicalauthoring.com

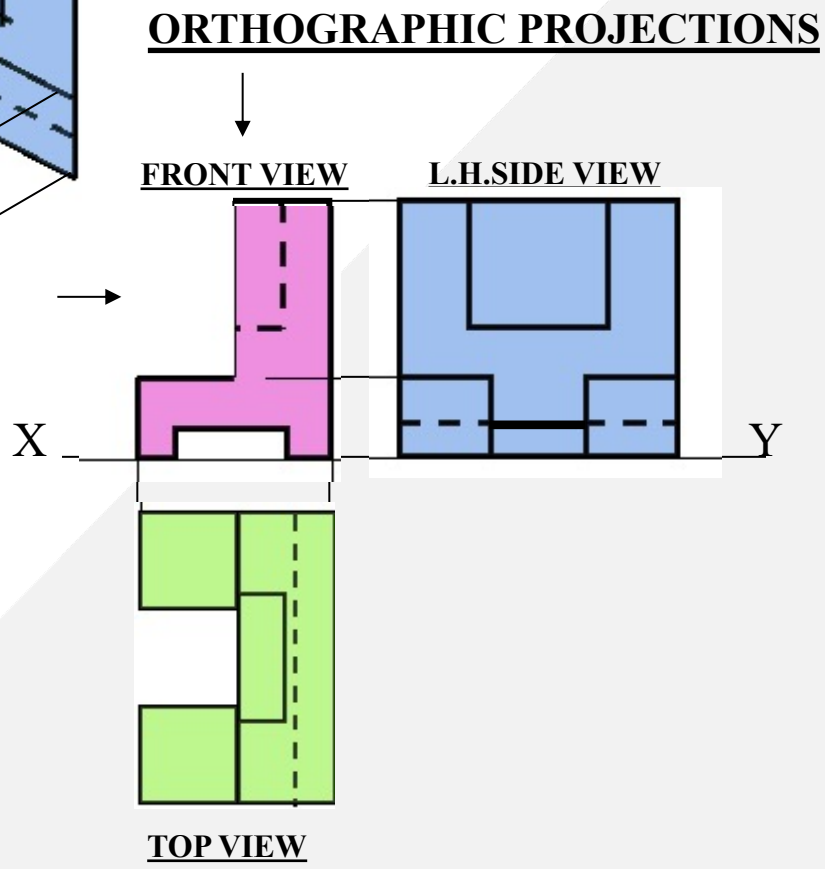
Orthographic Projections



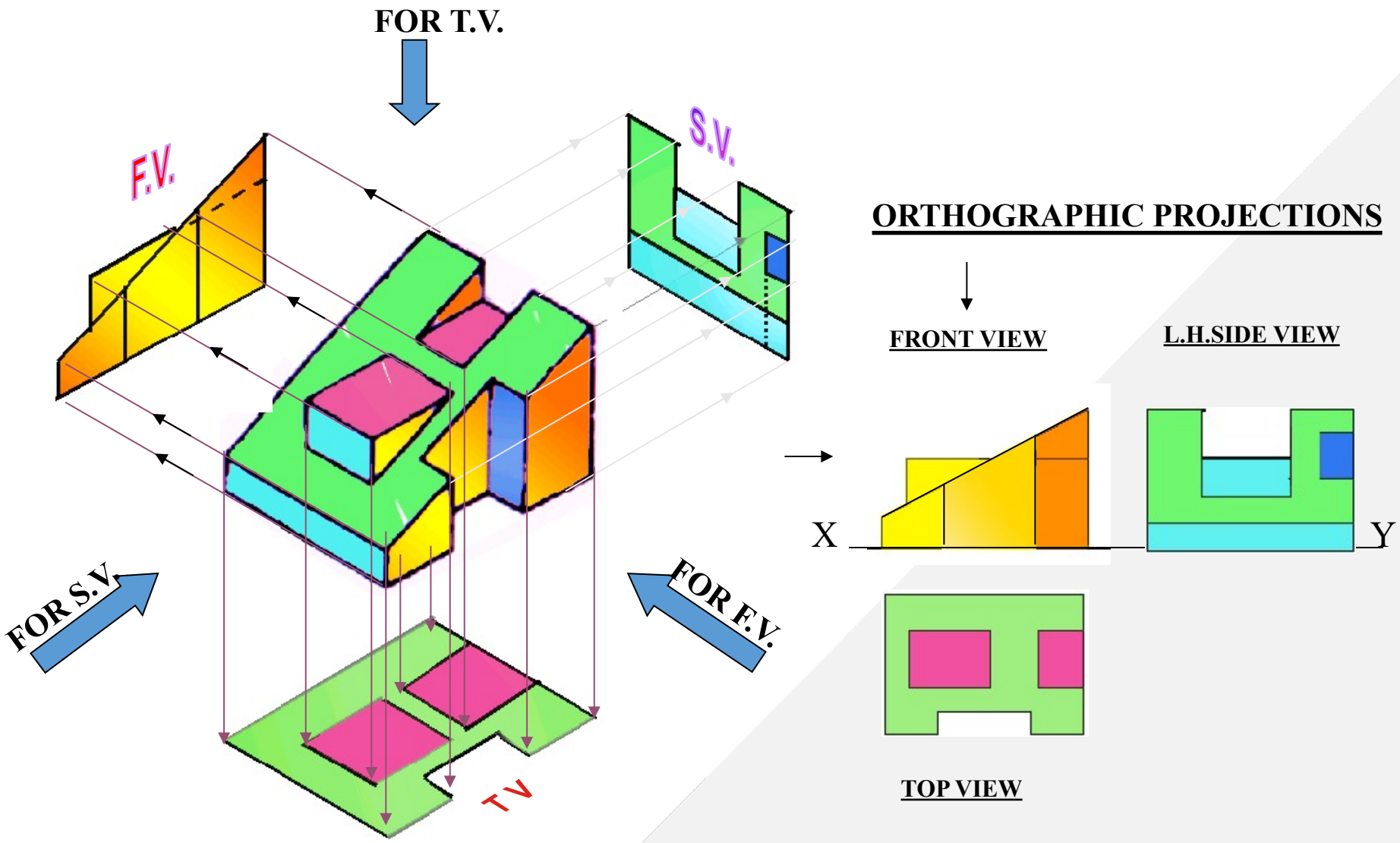


Orthographic Projections





Orthographic Projections



Assessment Pattern

Sr. No.	Type of Assessment Task	Weightage of actual conduct	Frequency of task	Final Weightage in Internal Assessment (Prorated Marks)	Remarks
1.	Practical Worksheet (In Journal Category) and Class-room Learning	20 marks for each experiment	8-10 experiments	40 marks	Depending upon no. of experiments
2.	Mid-Term Test	20 marks	1 per semester	12 marks	At-least after the completion of 5 experiments.
3.	Discussion Forum/Short Digital Assignment/Journal to submit design/Portfolio	4 marks for each task	1 per semester	4 marks	
4.	Presentation*	------		Non Graded: Engagement Task	
5.	Attendance and BB Engagement Score	-----		4 marks	End Semester

Applications

- Orthographic projections are used to see the front view, top view & side view of different parts of various machines.
- Applicable to see the detailed drawing of buildings.

Frequently Asked Questions

- What are symbols for 1st and 3rd angle projections?
- How can the views drawn in 1st and 3rd angle projection differentiated?
- What is the position of object, observer and plane of projection in 1st angle projection?
- Why are the views drawn on opposite sides in 1st angle projection?

Recommended Books

- Rhodes R.S, Cook L.B; Basic Engineering Drawing, Pitman Publishers,
- Rana and Shah; Engineering Drawing, Pearson Education India Publishers.
- Jolhe D.A; Engineering Drawing: With an Introduction to AutoCAD, Tata McGraw Hill
- Gill P.S; Engineering Drawing, S.K. Kataria and Sons Publications.
- Dhawan R. K; Engineering Drawing, S. Chand and Sons Publishers.

References

- Text book of engineering drawing by R.K.Dhawan
- Text book of engineering drawing by P.S.Gill
- Text book of engineering drawing by Dhanajay & Johle
- http://www.technicalauthoring.com/wiki/index.php/Illustrations:_Orthographic_drawings
- https://www.slideshare.net/kashyapshah11/orthographic-projection

THANK YOU

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