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. 4

Prepared By: Paras Khullar

PROJECTIONS OF LINES

PROJECTION OF LINES

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

Will be covered in this lecture

COURSE OBJECTIVES

Students may be able to

- Understand the different cases of positions of lines w.r.t. the reference planes
- Locate a line in orthographic projections
- Understand the placement of a line in different quadrants
- Label the projections in different planes

Straight Line

- A straight line is a locus of a point.
- Straight line is the shortest distance between any two given points.
- It is also the one dimensional geometric primitive having only length but no thickness.

Projection of Line

- To draw the front vies and top view of a line
- The difference between Projection of Point and Projection of Lines is the change of object i.e. Line instead of a Point
- The projection of a straight line is obtained by projecting its end points on planes of projections and then joining the points of projections.

Method to draw the Projection of Lines

- Obtained by projecting end points of the line on planes of projections and then joining the points of projections
- The length of the projections can be different compared to true length of line and is known as apparent length
- For drawing the projections the following information is required

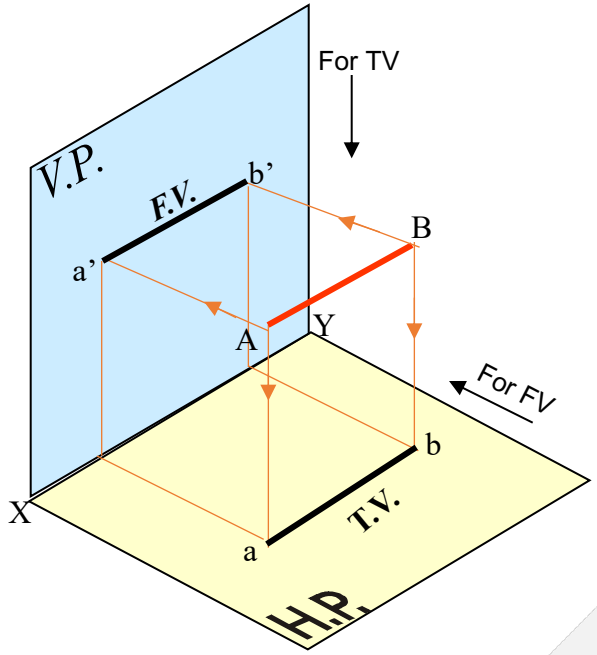
I. Length of line

II. Distance of its end points w.r.t. HP & VP

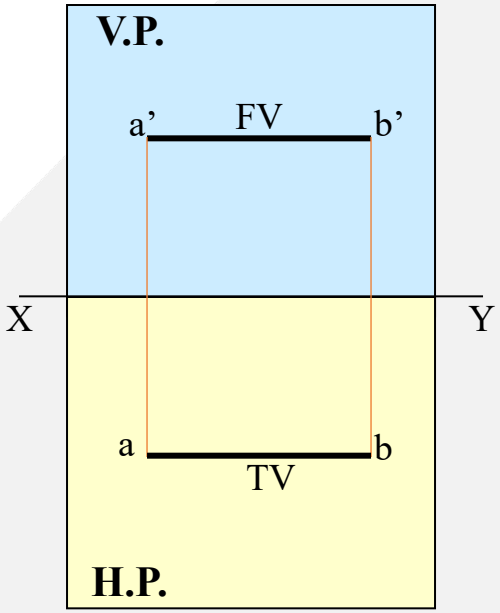
III. Inclinations of line with HP & VP

Orientation of Line w.r.t. Reference Planes

- As the object is a line instead of a point, the line can be parallel, perpendicular and inclined to the principal planes
- The various orientations of the line w.r.t. the principal planes are:
  - Line parallel to both the principal planes



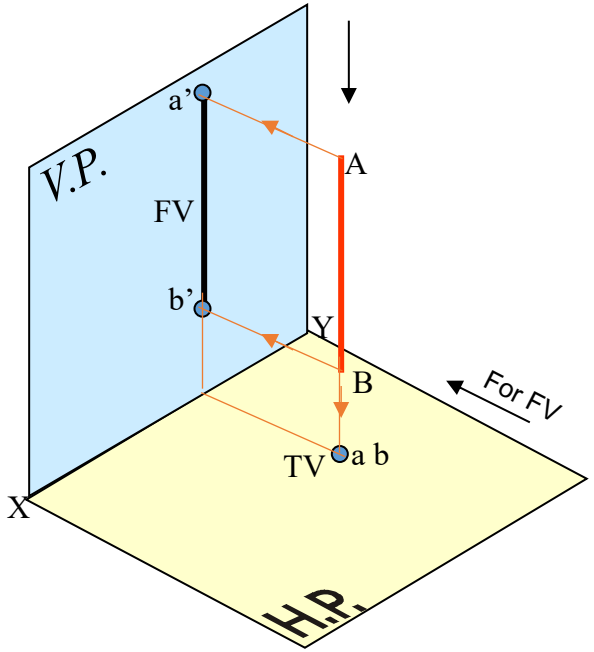
Orthographic Pattern

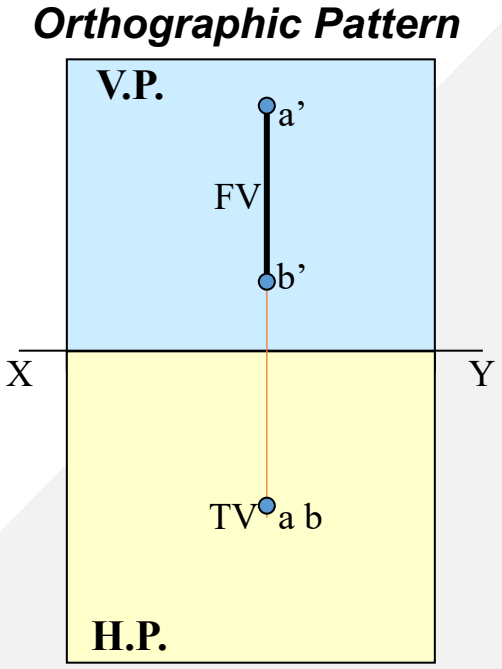


Animation Source: www.slideshare.net

Orientation of Line w.r.t. Reference Planes

- Line perpendicular to one plane and parallel to the other

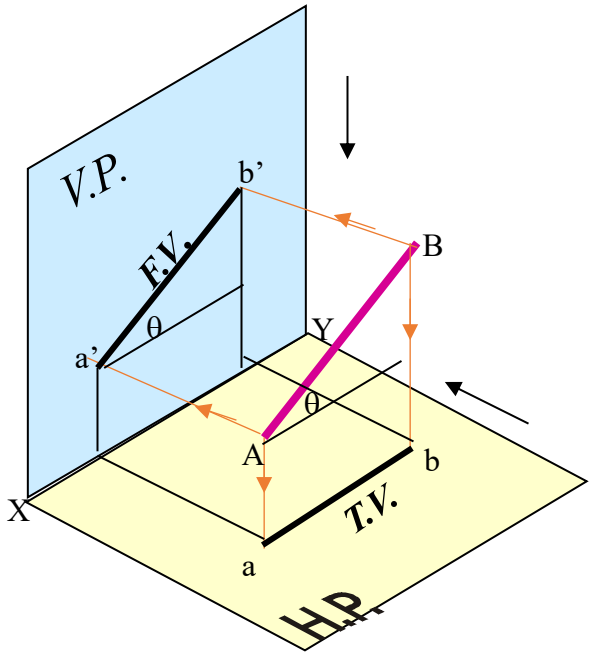




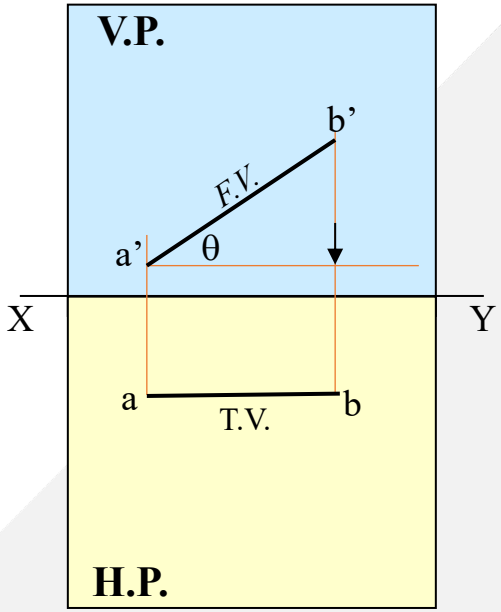
Animation Source: www.slideshare.net

Orientation of Line w.r.t. Reference Planes

- Line inclined to HP and parallel to VP



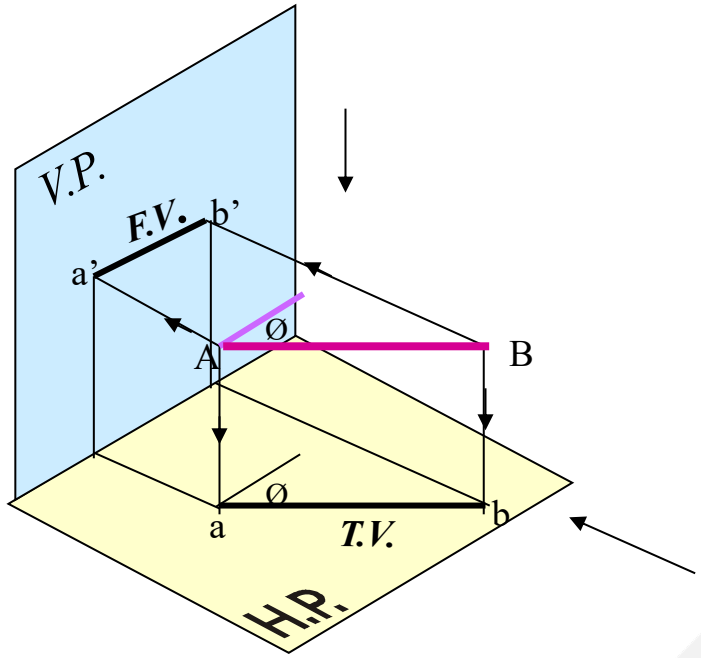
Orthographic Projections



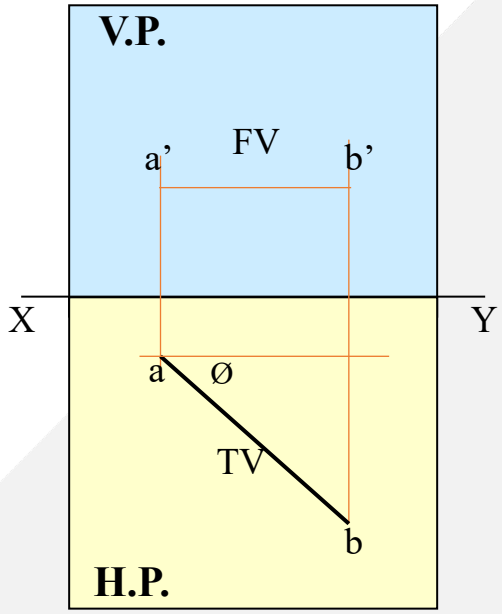
Animation Source: www.slideshare.net

Orientation of Line w.r.t. Reference Planes

- Line inclined to VP and parallel to HP



Orthographic Projections



Animation Source: www.slideshare.net

Projection of lines video links

- https://www.youtube.com/watch?v=FtugLo9DMw8&list=PLIhUrsYr8yHz_FkG5tGWXaNbIxVcibQvV
- https://www.youtube.com/watch?v=o1YPja2wCYQ

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

- Projection of lines are used for connecting the inclined roads on hills.
- These are also used for the installation of chimneys in the factory.

Frequently Asked Questions

- What are different orientations of lines?
- What are the representations of inclinations of the line with HP and VP?
- What are minimum steps in which projections are drawn?

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

- Gill P.S; Engineering Drawing ,5th Edition, S.K. Kataria and Sons Publications, 2011.
- Aggarwal B; Engineering Drawing, 1st Edition, Tata McGraw Hill Publications,2008
- https://www.slideshare.net/kashyapshah11/projection-of-lines-12770216

THANK YOU

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