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Lecture 17 –Space Geometry IV

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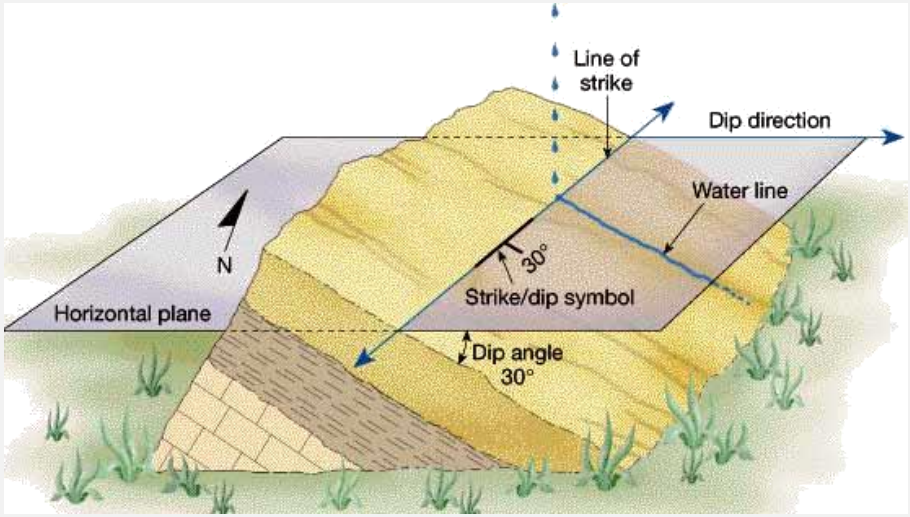
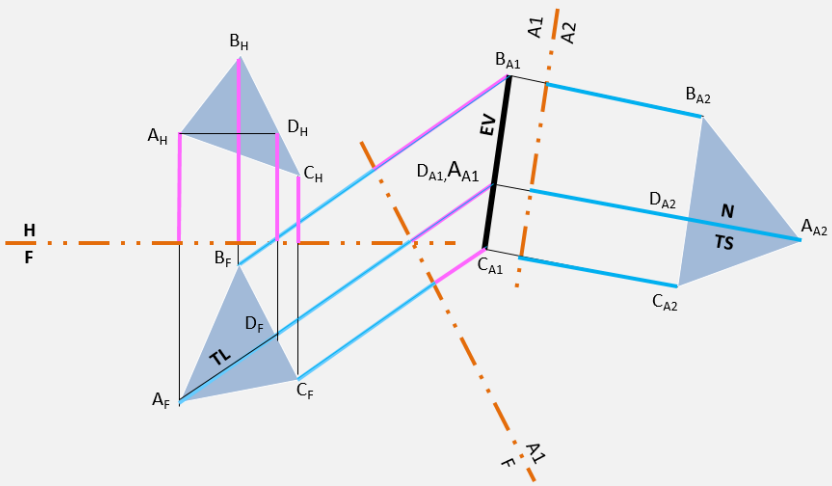
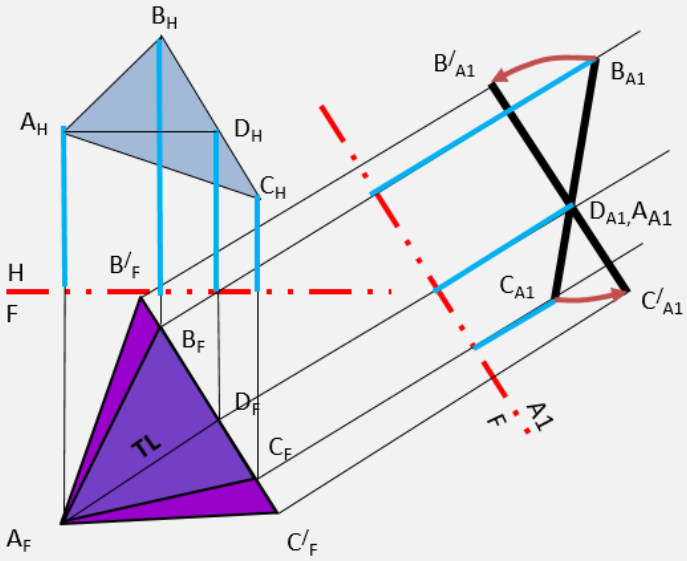
Recapitulation



Classification of planes

- H
- F
- P
- Perpendicular to H
- Perpendicular to F
- Perpendicular to P
- Oblique



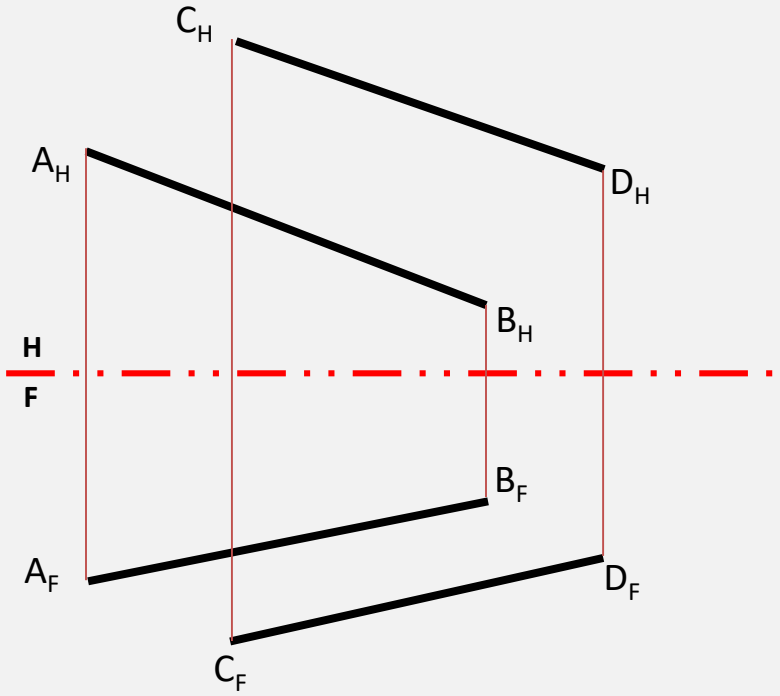


Interaction of Lines and Planes

- **Test for parallelism of lines**

- The two lines are parallel if they appear parallel in two adjacent views
  - However, there is a catch

- Lines AB and CD are parallel.

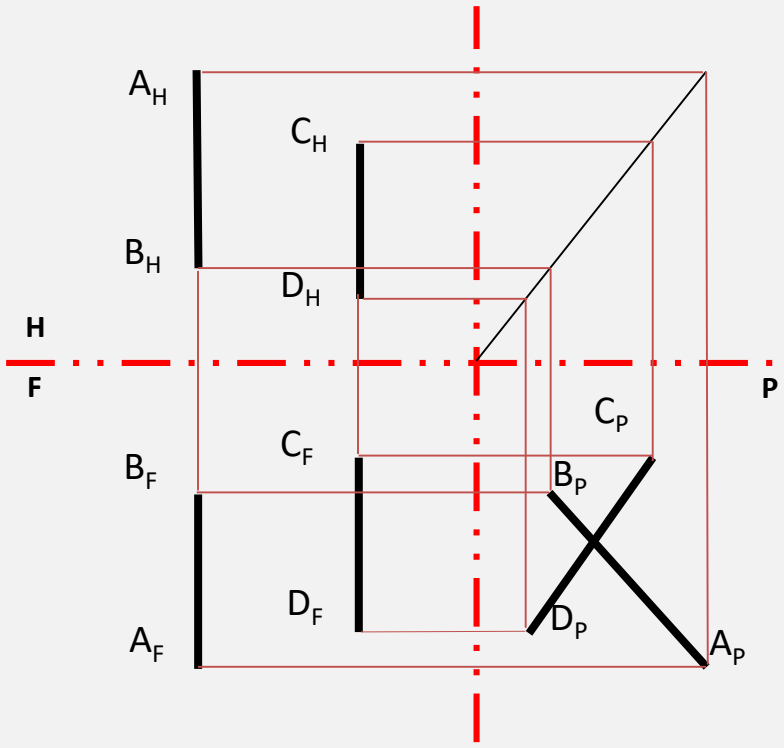


Are lines AB and CD parallel?

Interaction of Lines and Planes

- **Test for Parallelism of Lines**

- Lines which appear normal, such as lines AB and CD, may appear parallel in the F and H Views but not really be parallel.
- A check in the P View shows that the lines are not actually parallel.
- Therefore, lines may need to be checked in all three principal views: F, H and P.

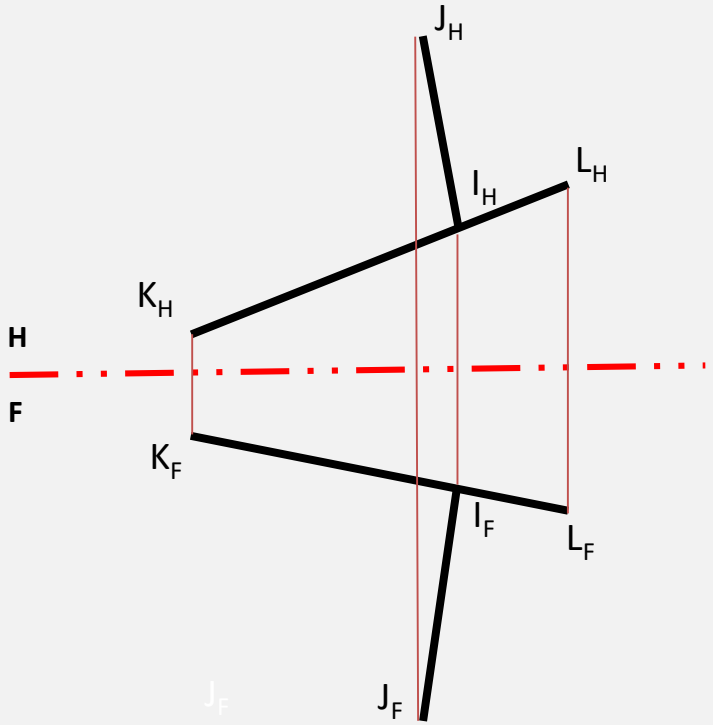


Are lines AB and CD parallel?

Draw profile view.

Interaction of Lines and Planes

- **Test for Perpendicularity of Lines**
- In a view of two lines in which no line is True Length (TL) and a 90° angle exists in that view
  - The lines can not be said to be perpendicular.
- Can answer only through an auxiliary view that shows one of the lines as True Length.
- If a 90° angle exists between the lines in auxiliary view, then the lines are perpendicular.

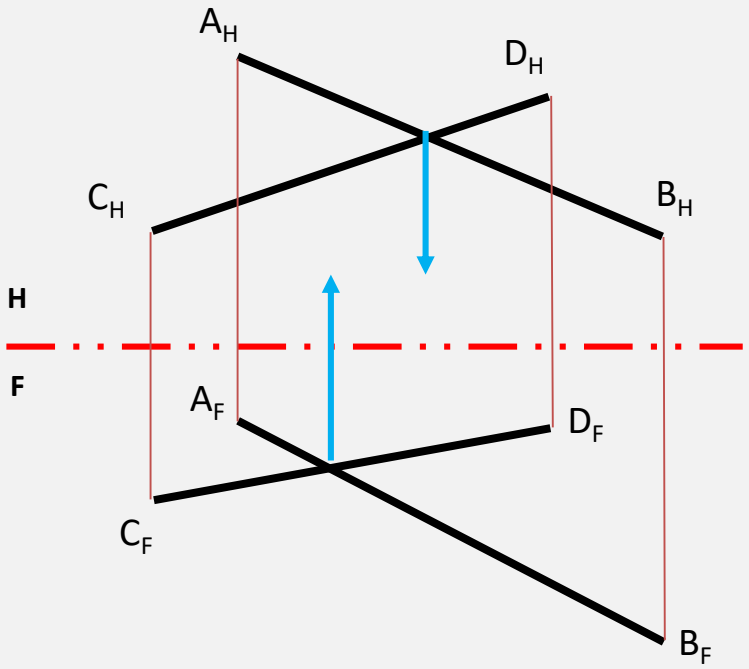


Are the lines JI and KL perpendicular?

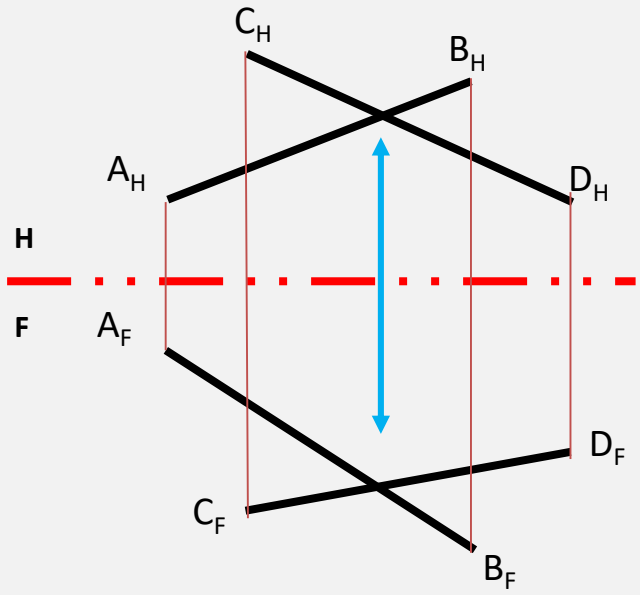
No line in True Length

Interaction of Lines and Planes

- **Test for Intersection of Lines**



Do lines intersect? NO

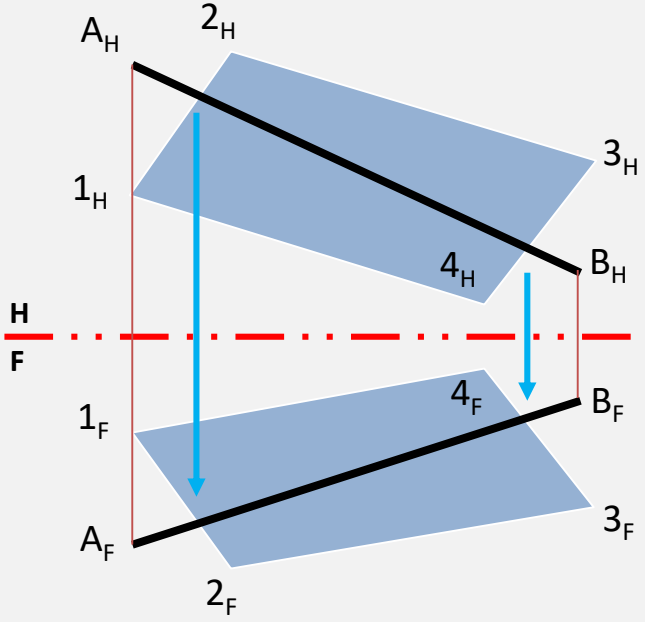


Do lines intersect? YES

The point of intersection of two lines must stay aligned in all views

Interaction of Lines and Planes

- **Is a Line on a Plane ?**
- The common points between plane and line should be aligned in H and F views.
- The intersection of line AB with lines 1-2 and 3-4 are aligned in both H and F view.
- The line AB is in the Plane 1-2-3-4.

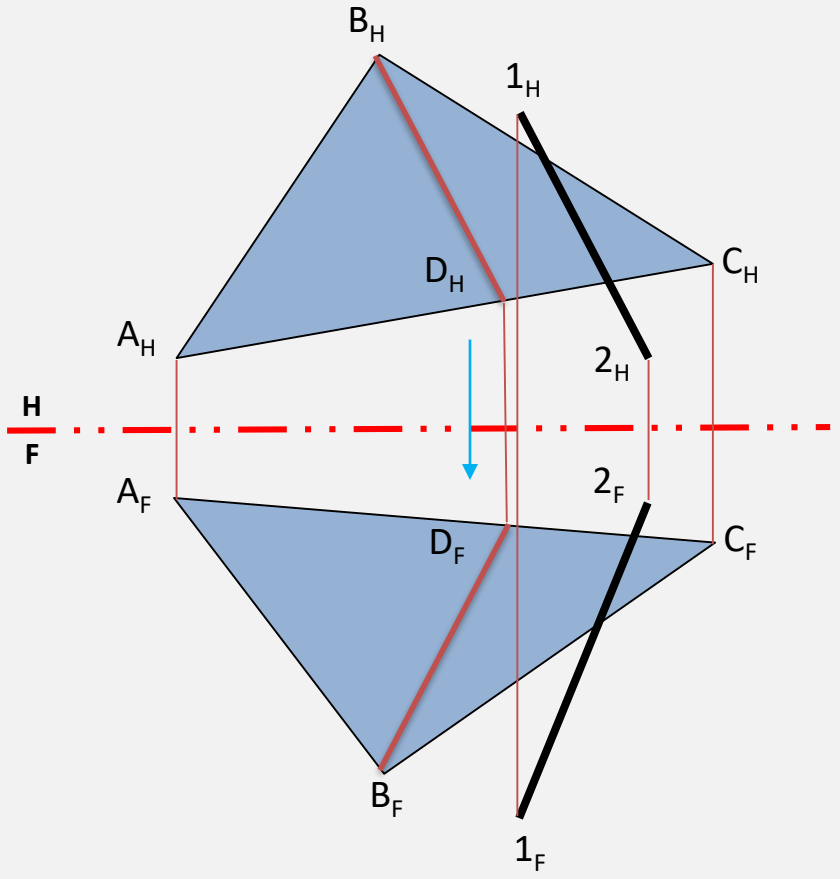


Is line AB on plane 1-2-3-4 ?

Interaction of Lines and Planes

- **Test if a Line is Parallel to a Plane**

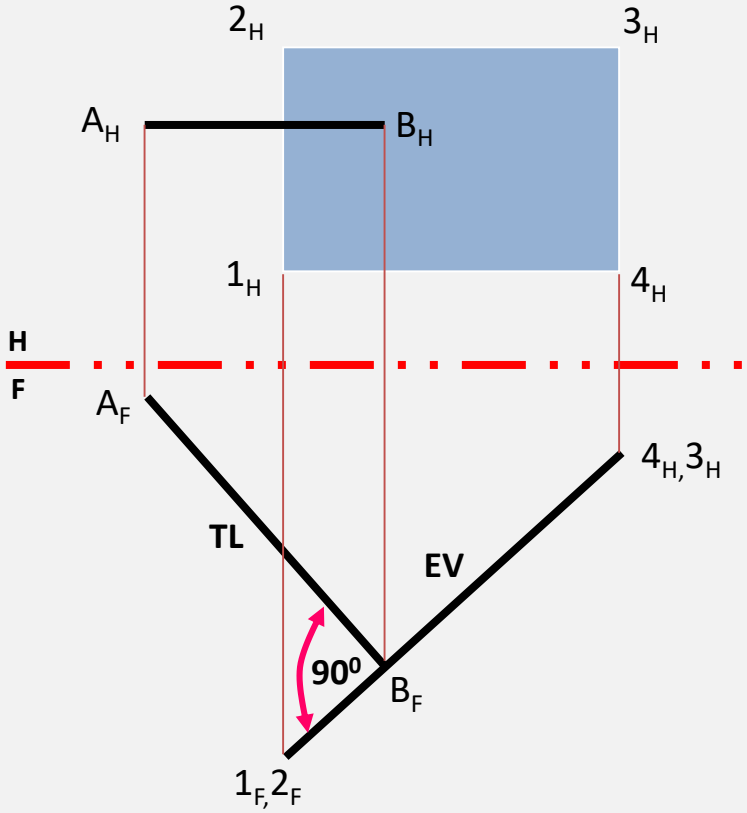
- A line is parallel to a plane if the line remains parallel to a corresponding line on the plane in all views.
- Using the principle of parallelism of lines !
- Or project edge view of plane and then check
- The line 1-2 is parallel to the plane ABC



Is line 1-2 parallel to plane ABC ?

Interaction of Lines and Planes

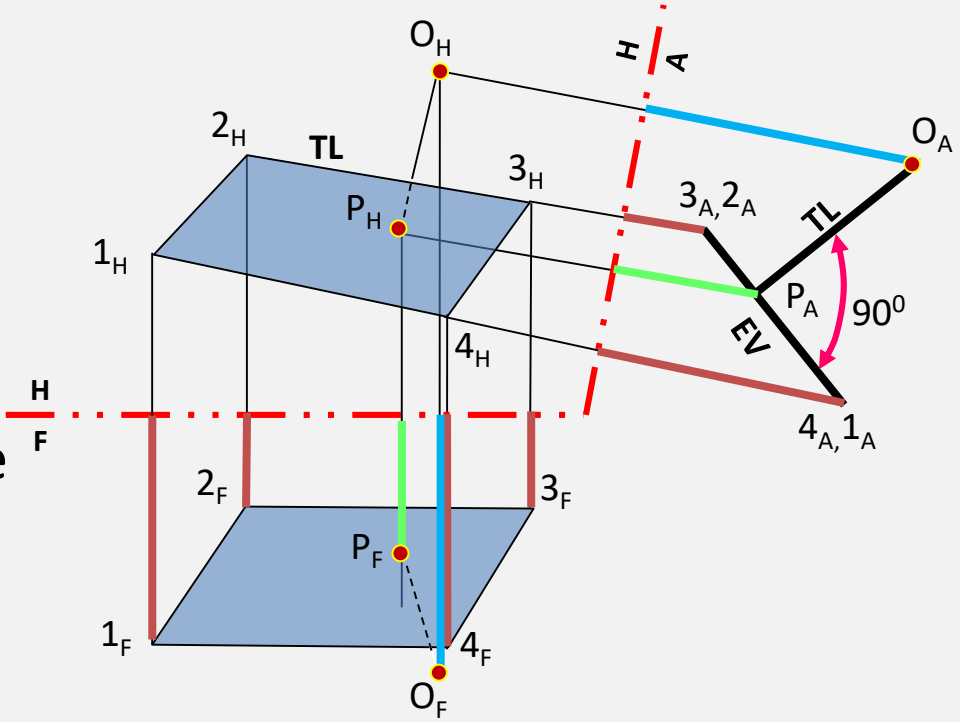
- **Test for a Line to be Perpendicular to a Plane**



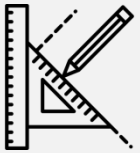
Why is the projection of line on Hz is above the plane 1 2 3 4?

Interaction of Lines and Planes

- **Draw a Line Perpendicular to a Plane from a given point**
- Construct an edge view to draw perpendicular from the point to the plane
- The perpendicular on edge view will be true length so its projection in Horizontal Plane will be parallel to Auxiliary Plane. Using this we determine the foot of perpendicular on Hz plane.



How about visibility of line— is the perpendicular OP hidden by the projection of plane?



Thank you !