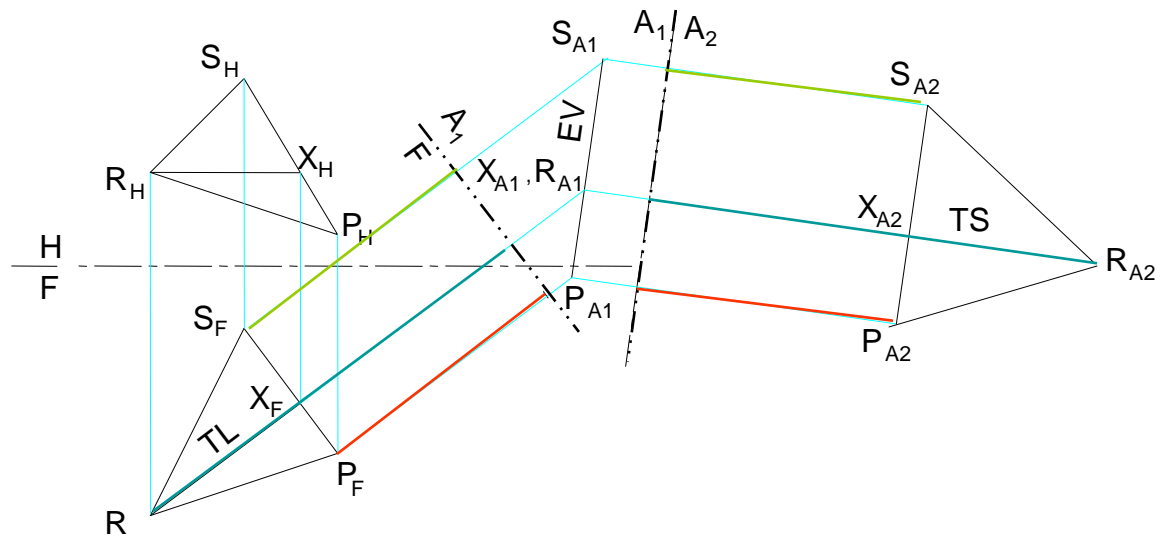


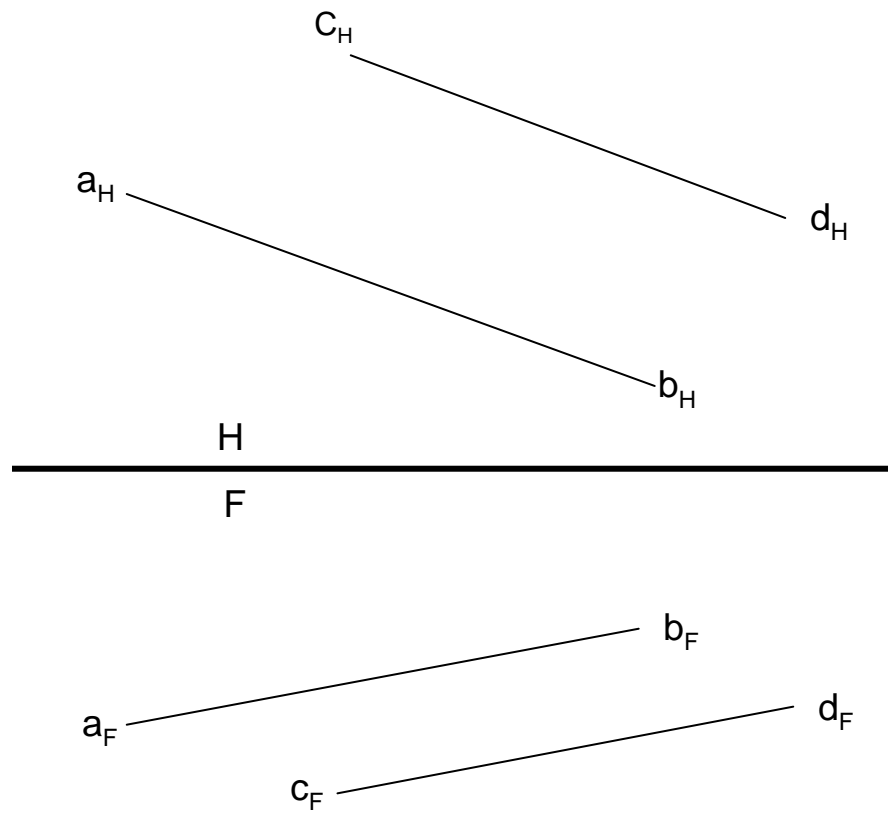
# TA 101

Lecture -17

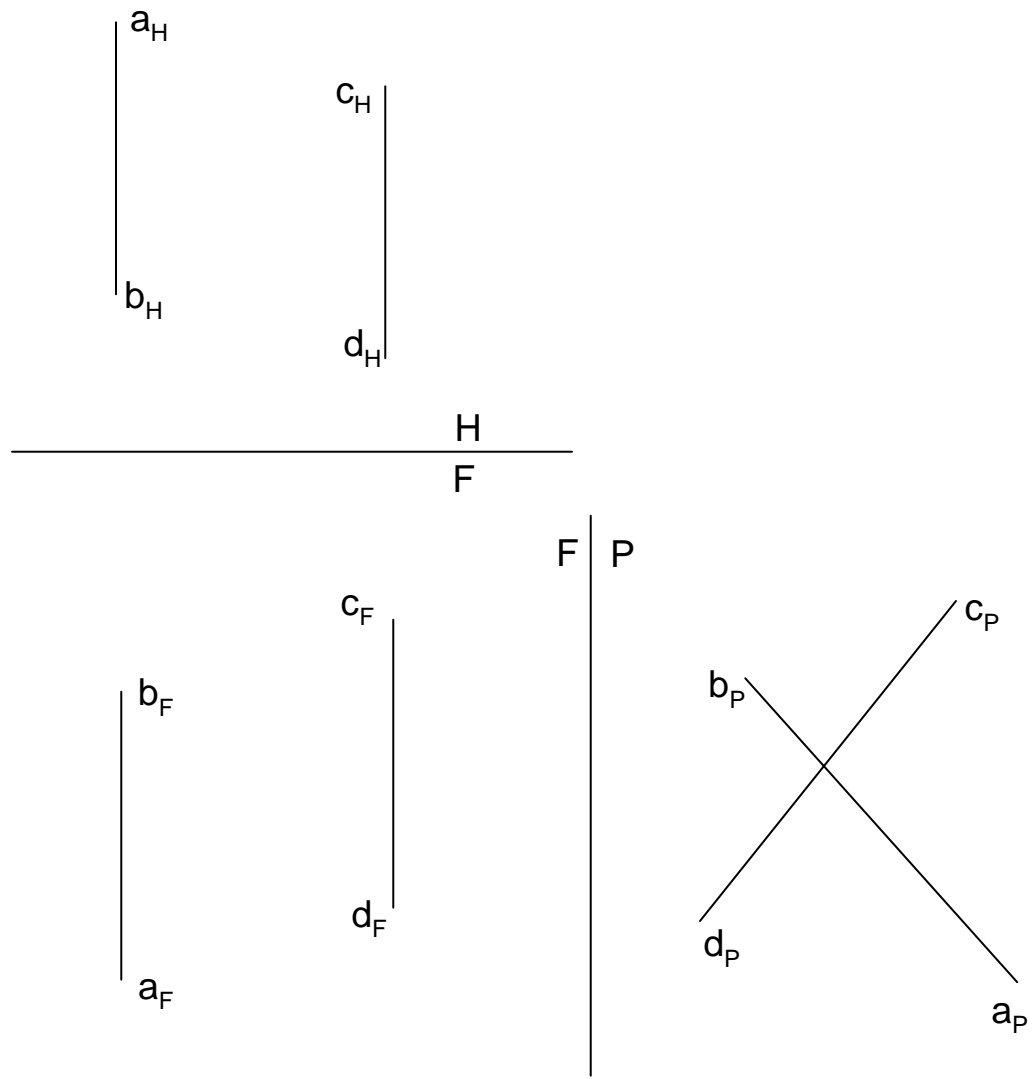
<http://home.iitk.ac.in/~mukesh/>

# True Shape of Plane through EV and Auxiliary Plane





Are the lines parallel?

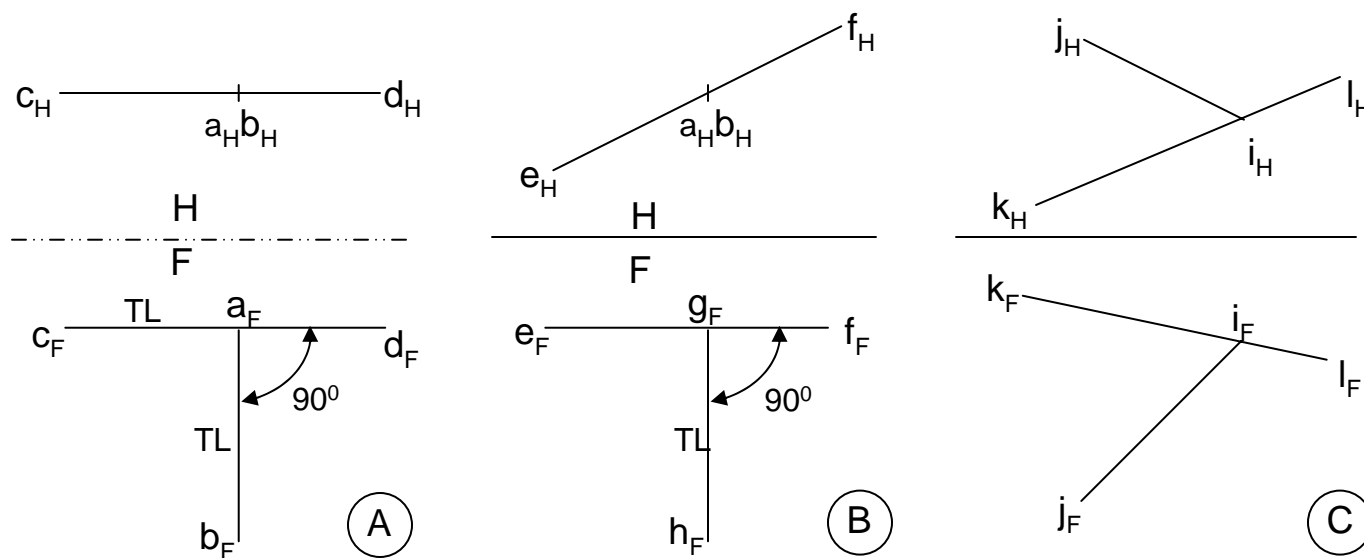


Are the lines parallel?

## **Conditions for lines to be parallel**

- Lines appear parallel in all views**
- If oblique lines appear parallel in two adjacent views; they are necessarily parallel (no need to see third view)**

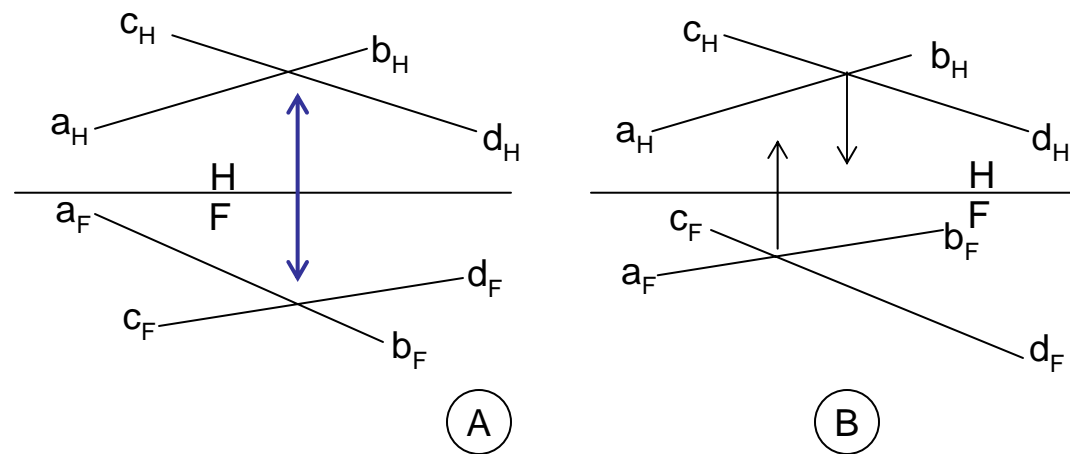
## Test for Perpendicularity



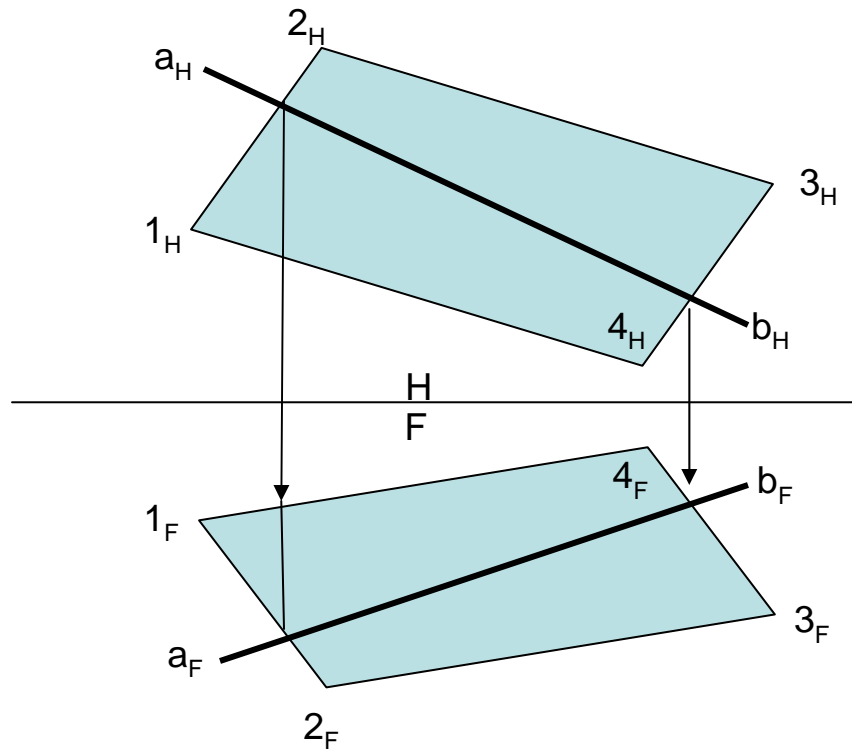
Are the lines perpendicular?

condition: at least one of the lines should be in TL and make  $90^\circ$  angle with other line.  
 If none of the lines is in TL and show  $90^\circ$  angle between them, they are not perpendicular

## Test for intersection

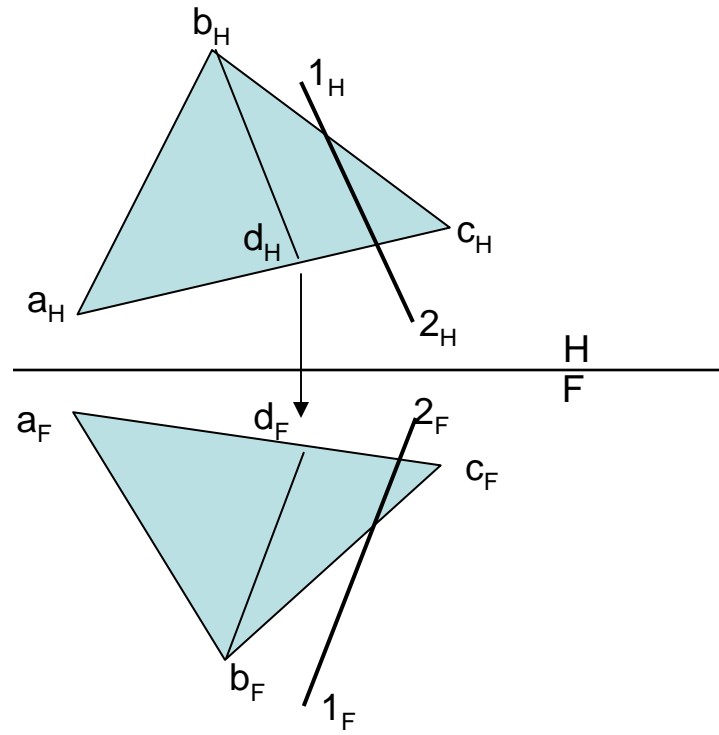


Conclusion – point of intersection of two lines must stay aligned in all views



A Line in a plane – if a line is in the plane, all points of intersection should stay align  
In all views

## Construct a line parallel to a plane

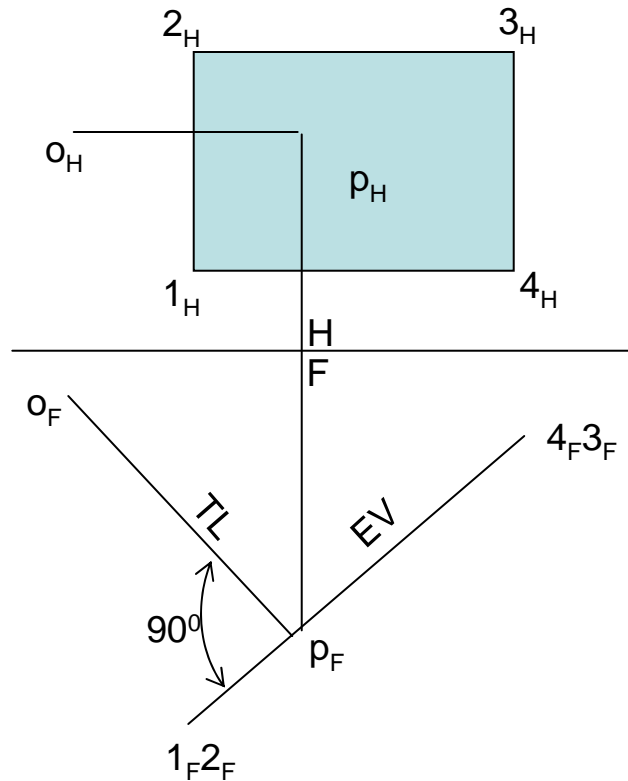


See we forced the line 1-2 to be parallel to line b-d in front view

As a result, line 1-2 is parallel to the given plane (abc)

A line perpendicular to a plane

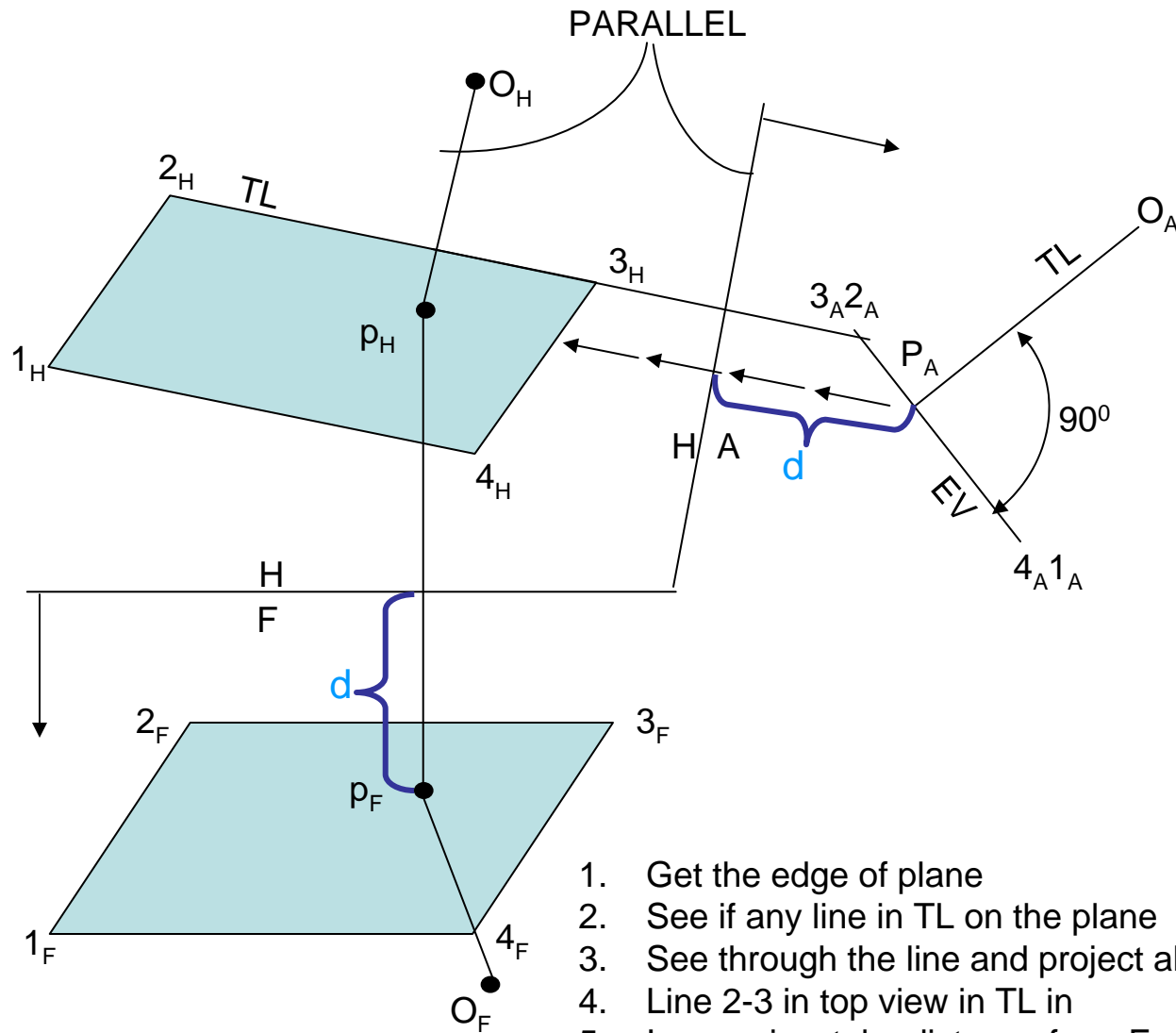
Very useful in finding shortest distance from a point to a plane



A line is perpendicular to plane when the line is in true length at a  $90^\circ$  angle to an edge view of the plane. Line  $OP$  is perpendicular to plane 1-2-3-4

How to draw a perpendicular from a point with this concept?

Draw a perpendicular to a plane from point – Recall edge view of plane and perpendicular at 90° needed



1. Get the edge of plane
2. See if any line in TL on the plane
3. See through the line and project all points
4. Line 2-3 in top view in TL in
5. In aux view take distance from Front and locate points
6. Draw a perpendicular from  $O_A$  on EV ~  $O_A P_A$  (in TL?)
7. Project  $P_A$  to Top view (see the arrows)
8. Project  $P_H$  to Front view see  $P_F$