

Trapezoidal Method: Demonstration Model

Course: Engineering Drawing

Topic: Projections of Straight Lines

Class: B.E. I-Semester

Objective: To understand the

- Projections of straight line (AB) inclined to both the principal planes
- Traces of the Line (HT & VT)
- Collinearity of Front View Projections, h & VT ($a' b' h VT$)
- Collinearity of Top View Projections, v & HT ($a b v HT$)
- Determination of true length of the line given the projections
- Determination of true inclinations of line with the principal planes

Method: Demonstration

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Description: Drawing the projections of straight lines inclined to both the principal planes of projections can be challenging in some cases with the tricky combination of the given data. In this context the Trapezoidal Method is very useful in completing the solution. The method involves identifying the two trapezoidal planes each containing the given straight line in 3-dimensional space and the top view projection of the line and the front view projection of the line, respectively. The trapezoids are then opened up and are made to lie on the VP and the HP. The vertical trace (VT) of the line is identified as the intersection of the extensions of the true line and the front view projection and the angle included is the true inclination of the line with the VP. Similarly, the horizontal trace (HT) is located as the intersection of the extensions of the true line and the top view projection and the angle included is the true inclination of the line with the HP. The collinearity of the front view projections $a' b', h$ & VT and the top view projections $a b, v$ & HT can also be clearly demonstrated from this method.



