



# Auxiliary Views

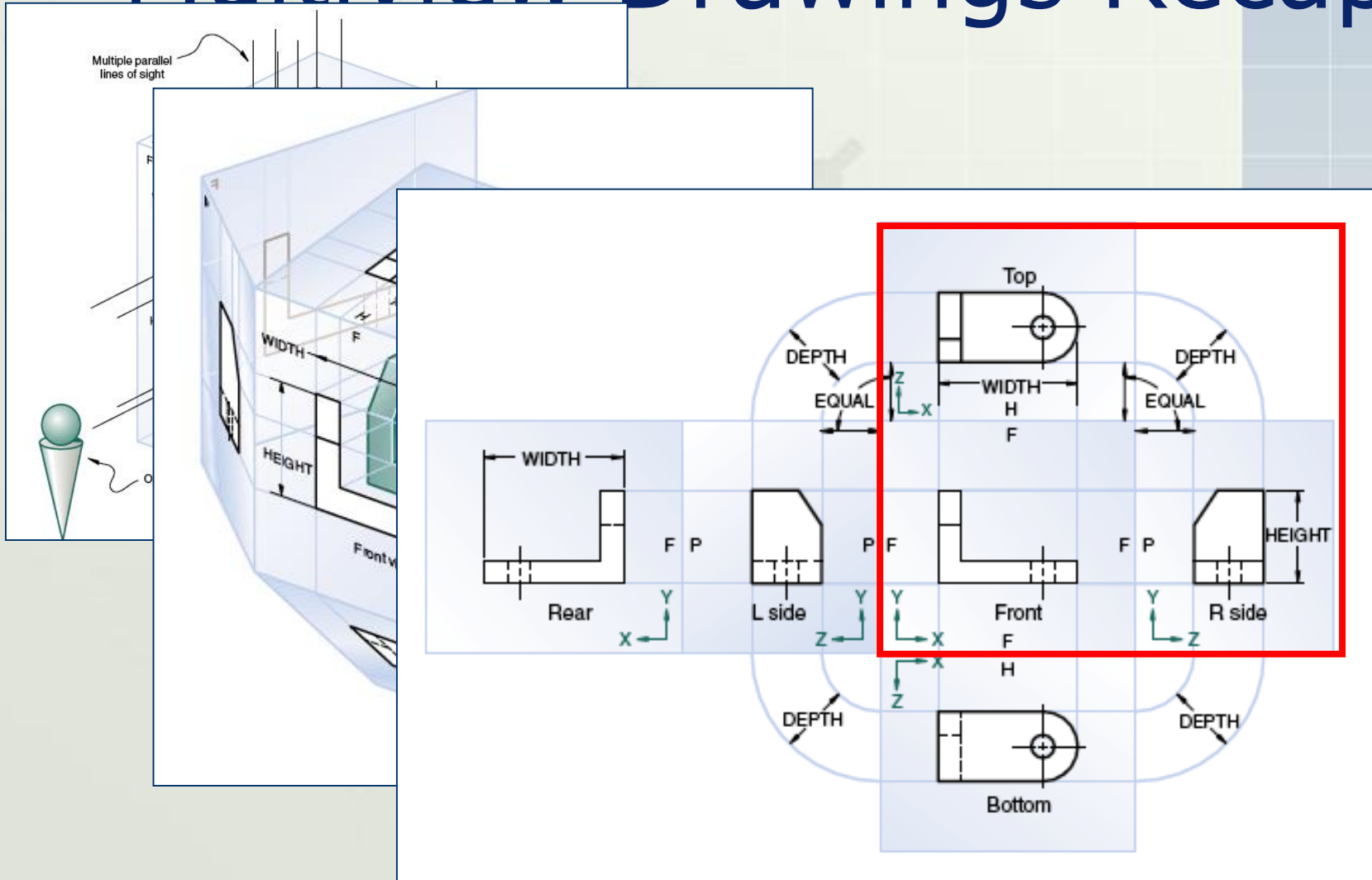
October 11, 2017



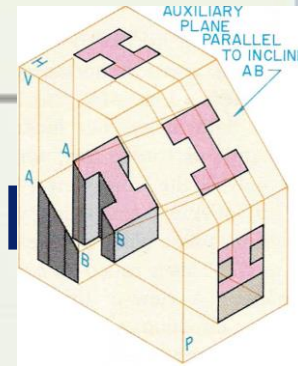
# Learning Objectives

- ◆ Understand the need for aux. views
- ◆ Describe the differences between partial and full aux.
- ◆ Create an aux. view

# Multiview Drawings Recap



# Introduction



- ◆ With "*Multiview or Three View Projections*," we learned to describe an object with views on the three regular planes of projection. These are the *top*, or horizontal plane; the *front*, or vertical plane; and the *side*, or profile plane. With these planes, you can solve many graphic problems.



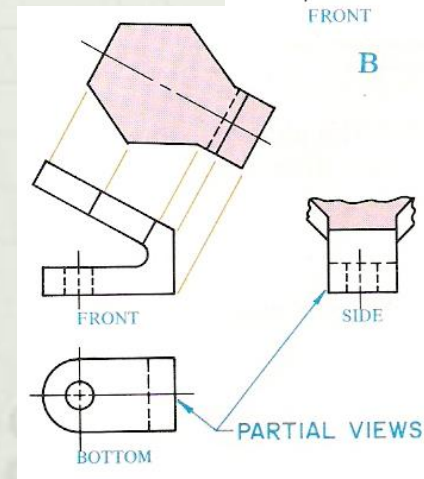
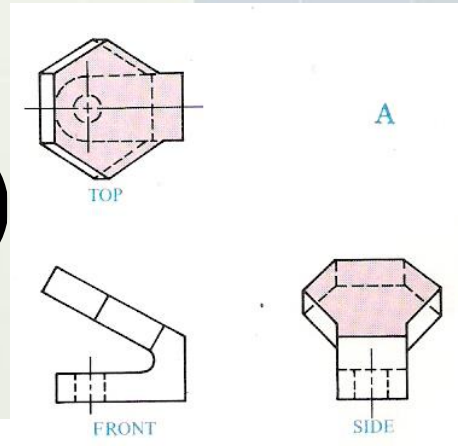
# Introduction (Con't)

- ◆ However, to solve problems involving inclined (slanted) surfaces, you will need to learn to draw views on auxiliary (additional) planes of projection. These are called auxiliary views. In this lesson we will explore how to draw these views on planes that are parallel to the inclined surfaces.

# AUXILIARY VIEWS ARE "HELPER VIEWS"

- ◆ When an object has inclined surfaces, these do not show up in true shape or size in regular views.
- ◆ However, a view on a plane parallel to the inclined surface does show its true size and shape.
- ◆ This is an *auxiliary view*. It, along with the other regular views describe the object better.

Regular  
Views



Regular  
Views  
with  
Auxiliary  
View



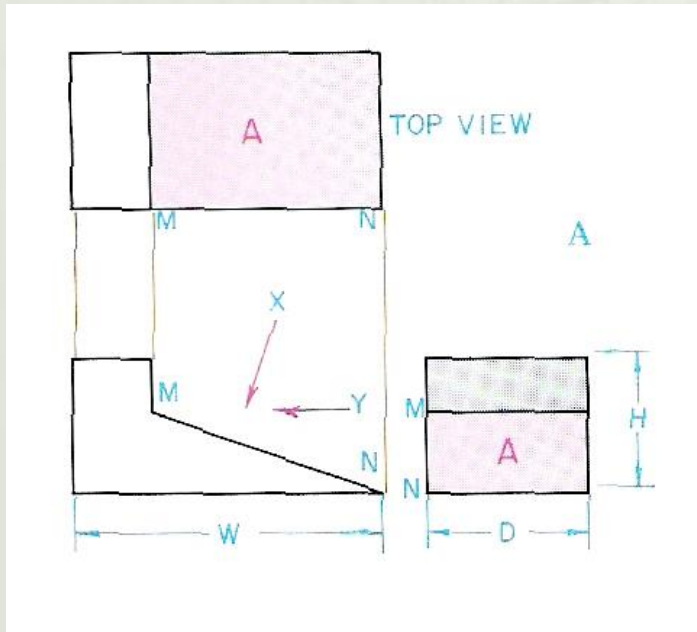


# Why Do We Use Them?

- ◆ An auxiliary view is a projection on an auxiliary plane that is parallel to an inclined (slanting) surface.
- ◆ It is a view looking directly at the inclined surface in a direction perpendicular to it.
- ◆ Auxiliary projections are important for describing the true geometric shapes of inclined surfaces.
- ◆ You also use them for dimensioning these shapes.



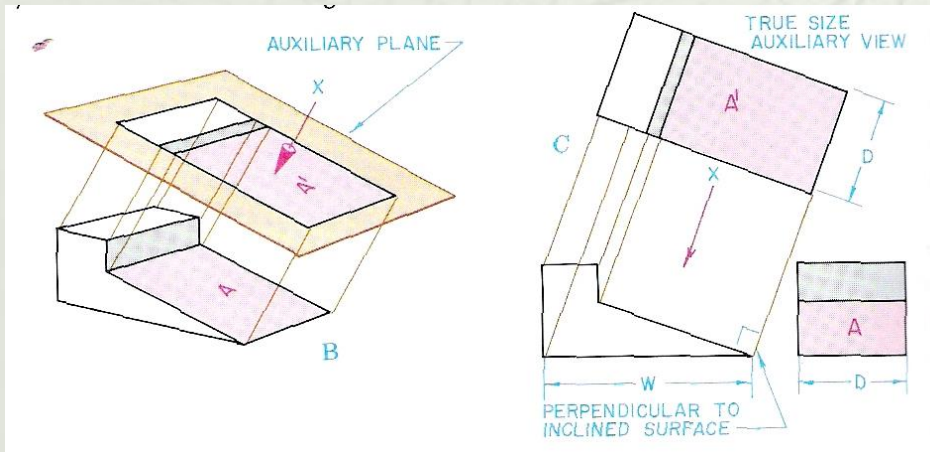
# Why Do We Use Them?



- ◆ In the figure to the left, a simple inclined wedge block is shown in the regular views. In none of these views does the slanted surface, called “A”, appear in its true shape.
- ◆ In the front view, all that shows is its edge line  $MN$ . In the side view, which is made by looking in the direction of arrow  $Y$ , surface  $A$  appears, but it is fore-shortened.
- ◆ **Surface A** is also foreshortened in the top view. Line  $MN$  also appears in both views, but looking shorter than its true length, which shows only in the front view.



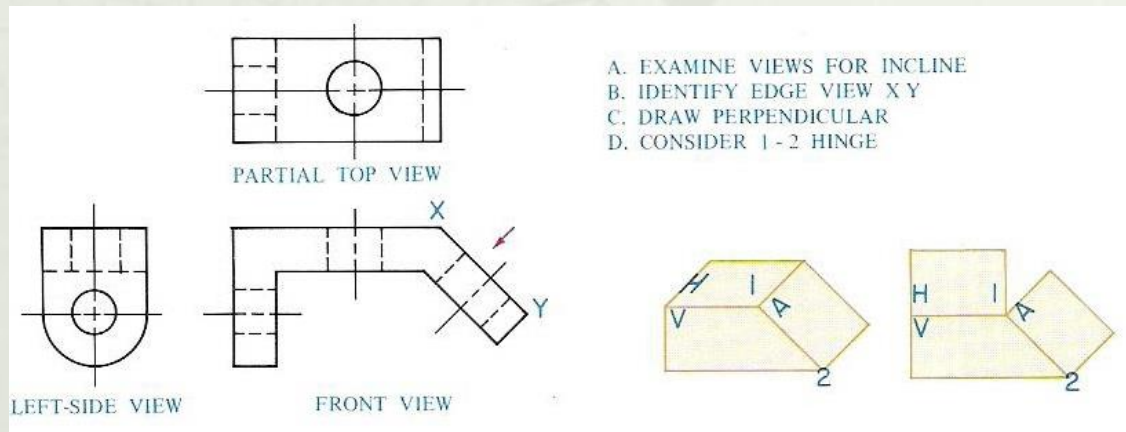
# THE RELATIONSHIP OF AUXILIARY VIEWS TO REGULAR VIEWS



- ◆ To show **Surface A** in its true shape, you need to imagine a plane parallel to it, as in Diagram “B”. This is called an *auxiliary plane*.
- ◆ A view of this plane from the direction of arrow **X**, which is perpendicular to it, will show the true size and shape of **Surface A** at A1.
- ◆ Looking at Diagram “C” this *auxiliary view* has been *revolved* (turned) to align with the plane of the paper.
- ◆ By following this method, you can show the true size and shape of any inclined surface.



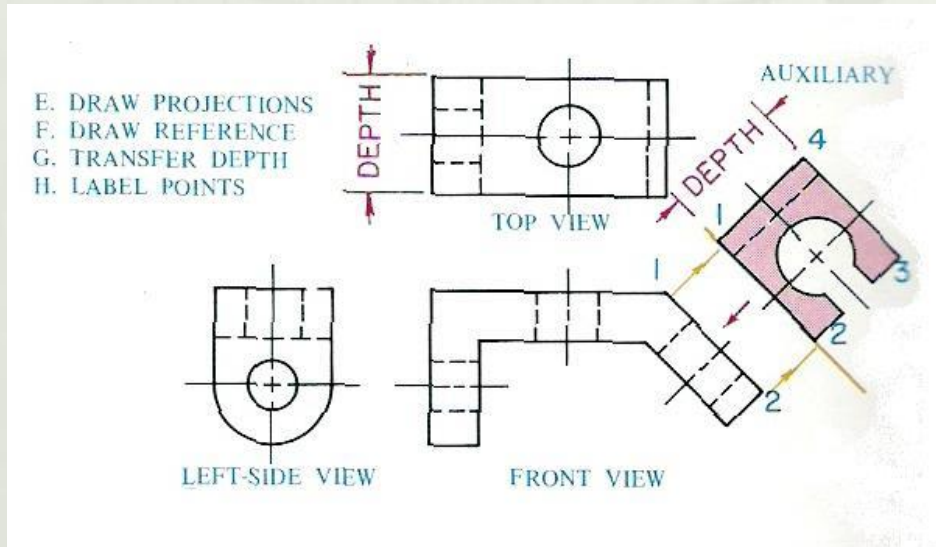
# Step by Step Directions for Making Auxiliary Views



- ♦ A. Examine the views that are given for an inclined surface.
- ♦ B. Find the line that is considered the edge view of the inclined plane.
- ♦ C. In the front view, draw a light construction line at right angles to the inclined surface. This is the line of sight.
- ♦ D. Think of the auxiliary plane as being attached by hinges to the front (vertical) plane from which it is developed.



# Step by Step Directions for Making Auxiliary Views



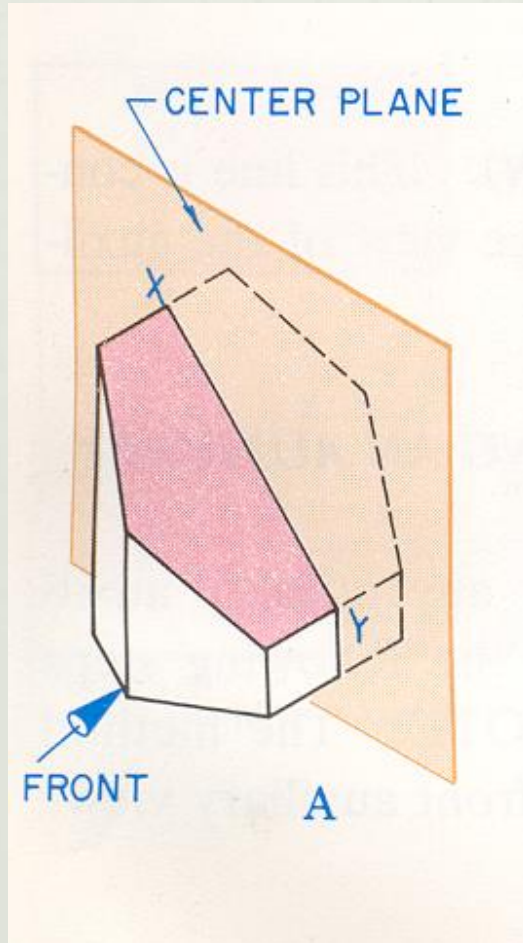
E. From all points labeled on the front view, draw projection lines at right angles to the inclined surface (parallel to the line of sight)

F. Draw a reference line parallel to the edge view of the inclined surface and at a convenient distance from it.

G. Transfer the depth dimension, which in this case is the primary reference, to the reference line as shown.

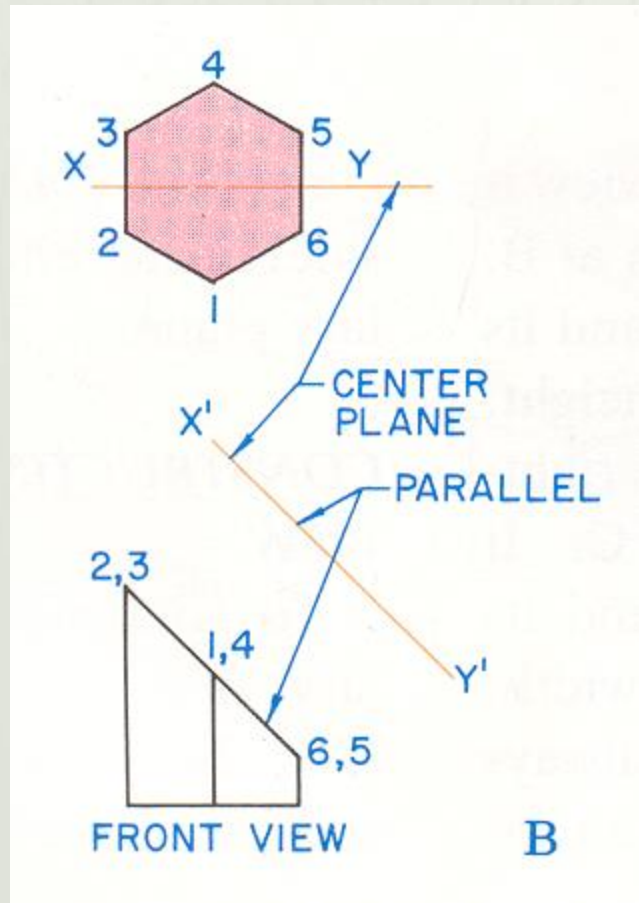
H. Project the labeled points and connect them in sequence to form the auxiliary view. The points used to identify the shape are for solving difficult problems (instructional purposes).

# How to Draw an Auxiliary View Using the Center Plane Reference



- ◆ In diagram A, (to the left) the object is shown in a pictorial view.
- ◆ Because the object is symmetrical, you use a center plane as a reference plane, to make the auxiliary view using the following steps.

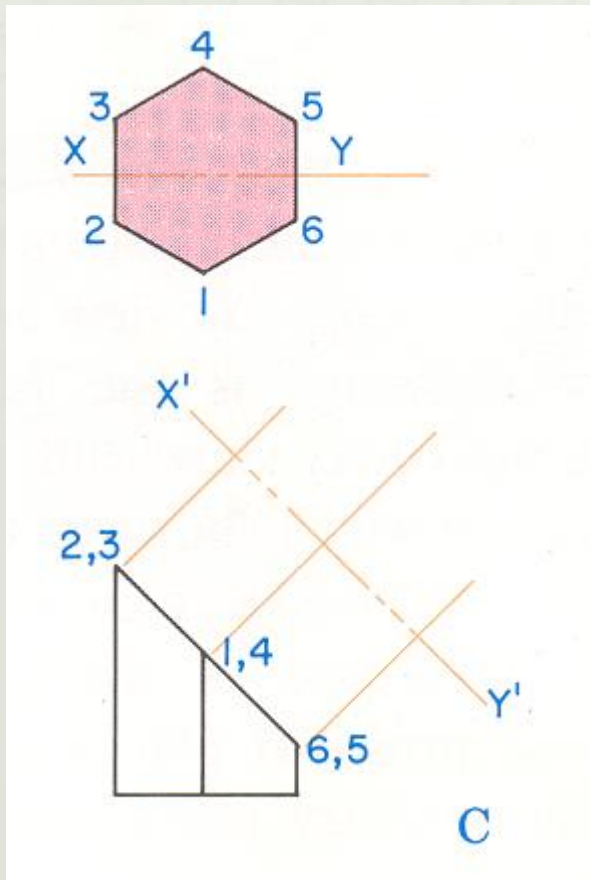
# How to Draw an Auxiliary View Using the Center Plane Reference



- ◆ Diagram B shows you use a center plane as a reference plane, (center plane construction).
- ◆ The edge view of this plane appears as a centerline, line  $XY$ , on the top view.
- ◆ Number the intersection points on the top view.
- ◆ Then transfer these numbers to the edge view of the inclined surface on the front view, as shown.

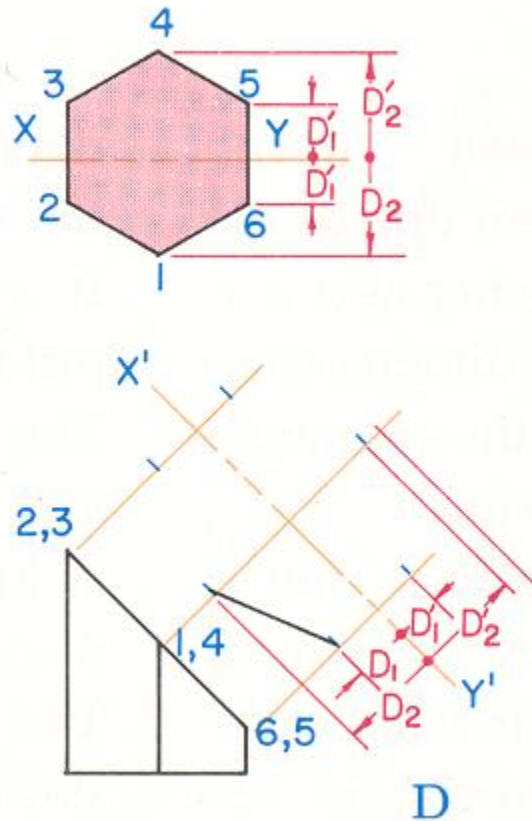


# How to Draw an Auxiliary View Using the Center Plane Reference



- ◆ Parallel to this edge view of the angled surface and at a convenient distance from it, draw the line  $X'Y'$ , as shown in Diagram C to the left.

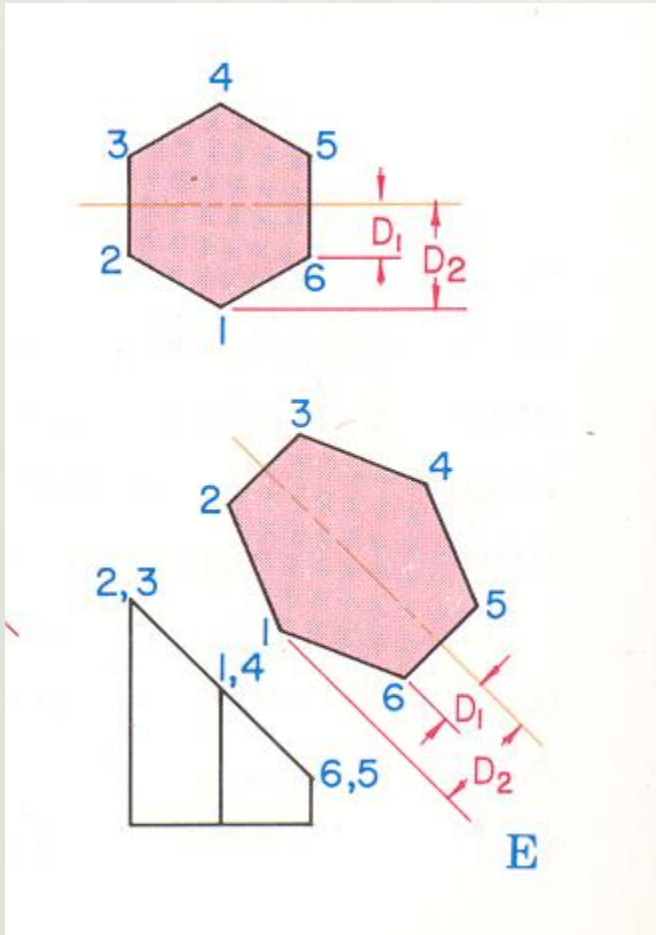
# How to Draw an Auxiliary View Using the Center Plane Reference



- ◆ Now, in the top view, find the distances ( $D_1$  &  $D_2$ ) from the numbered points to the centerline. These are the depth measurement. Transfer them onto the corresponding construction lines (gold color) that you have just drawn, measuring them off on either side of line  $X'Y'$  as shown in Diagram D.



# How to Draw an Auxiliary View Using the Center Plane Reference

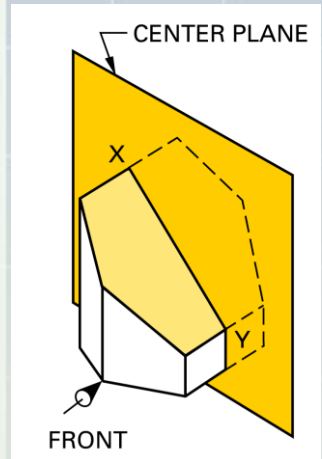
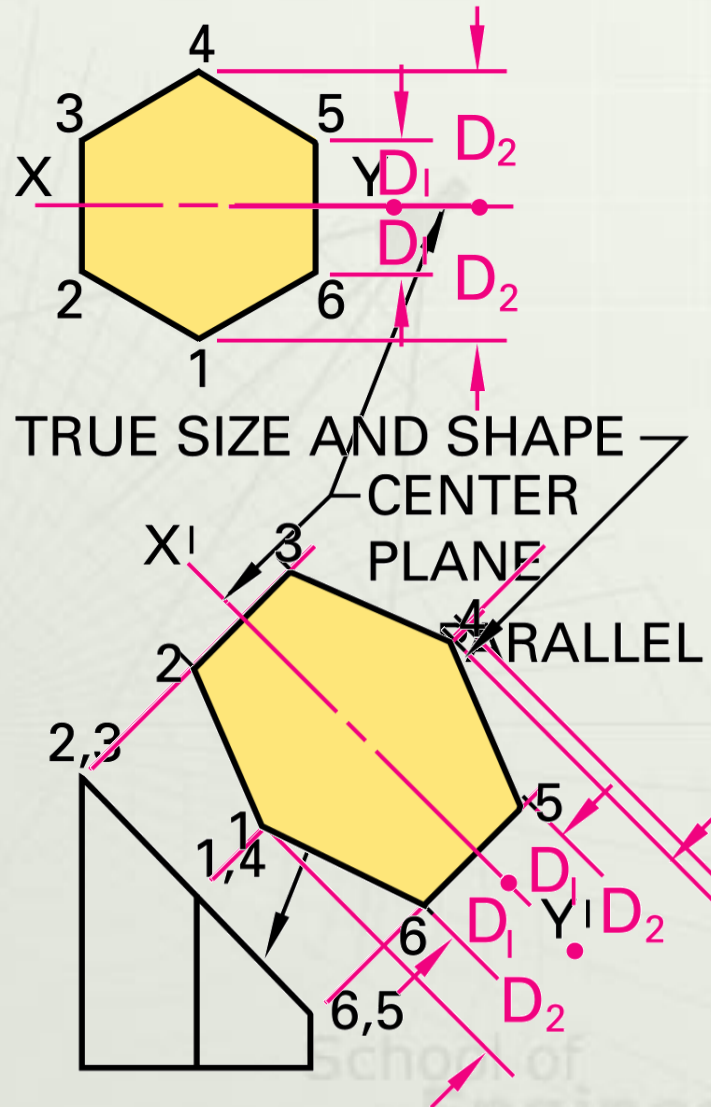


- ◆ Connect and number these points as in Diagram E and you will have the auxiliary view of the inclined surface. Now let's watch it done all together along with how its done with an *ellipse*.



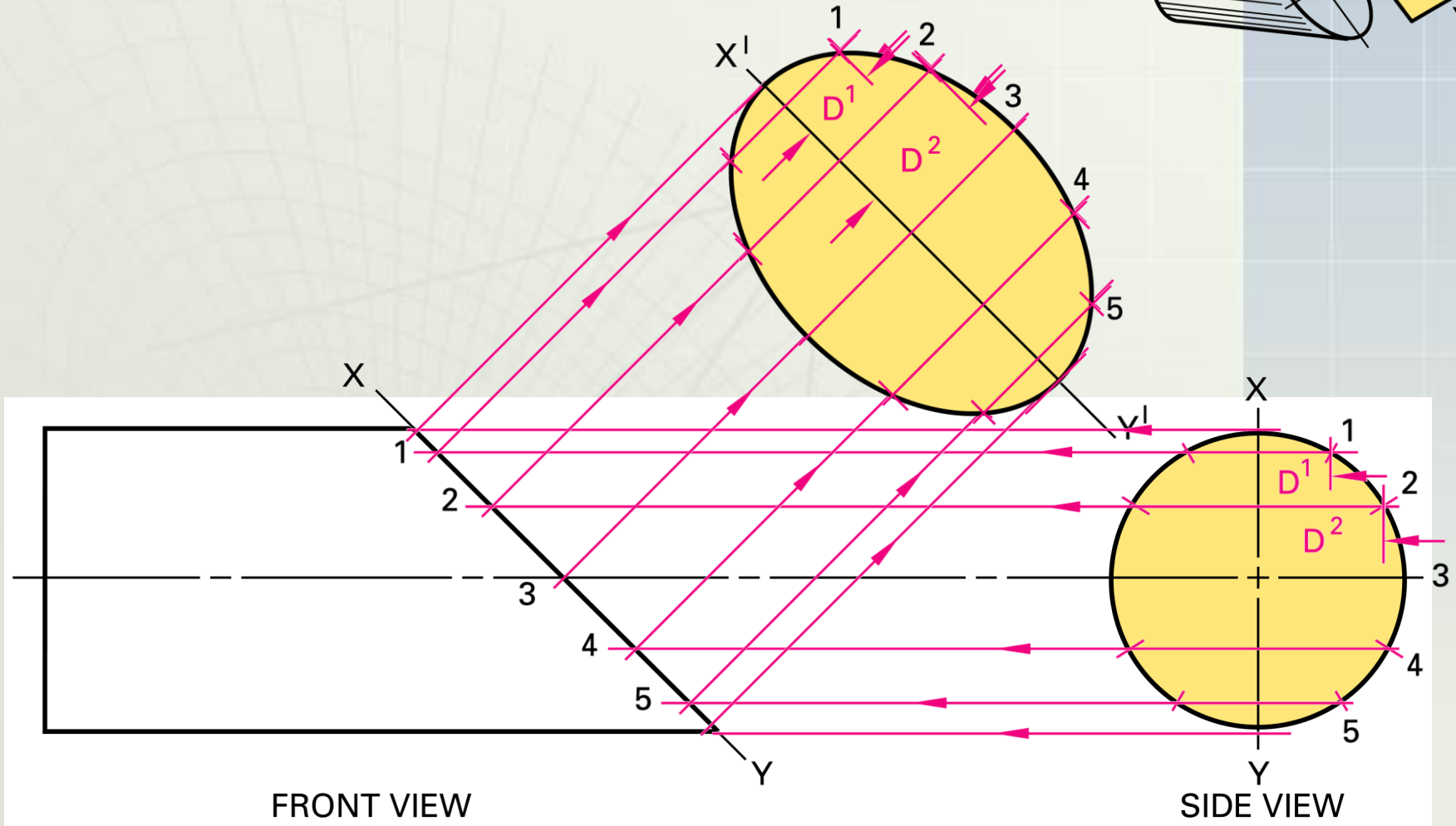
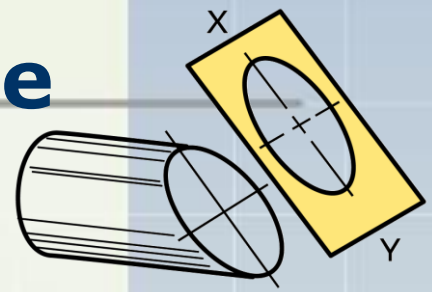
# Auxiliary View

## Center-Plane Reference Method

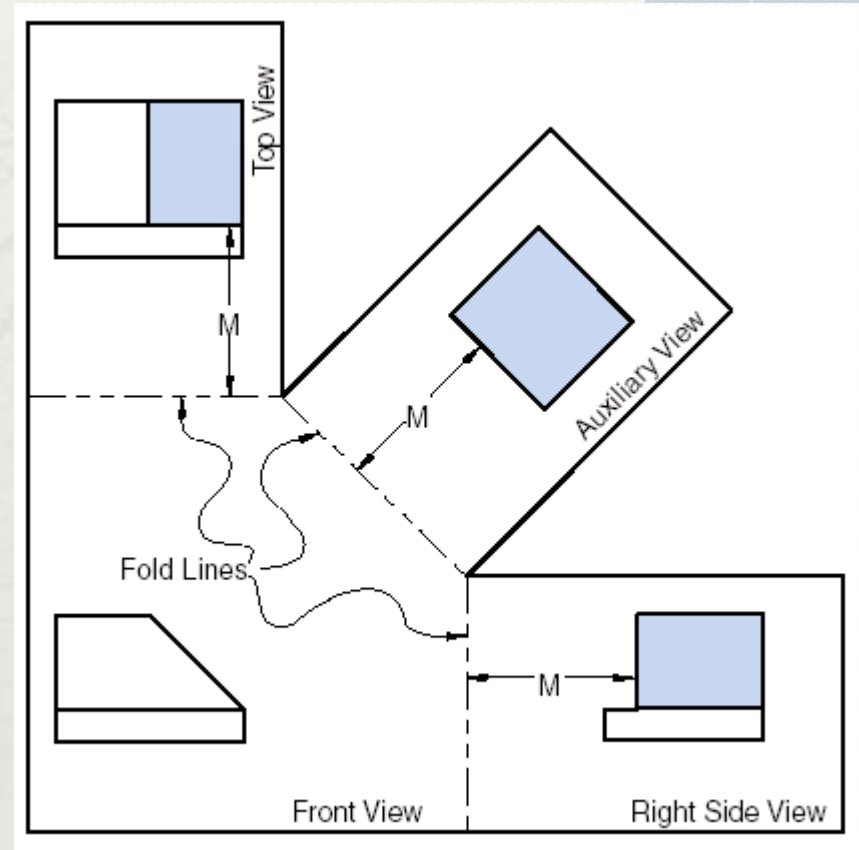
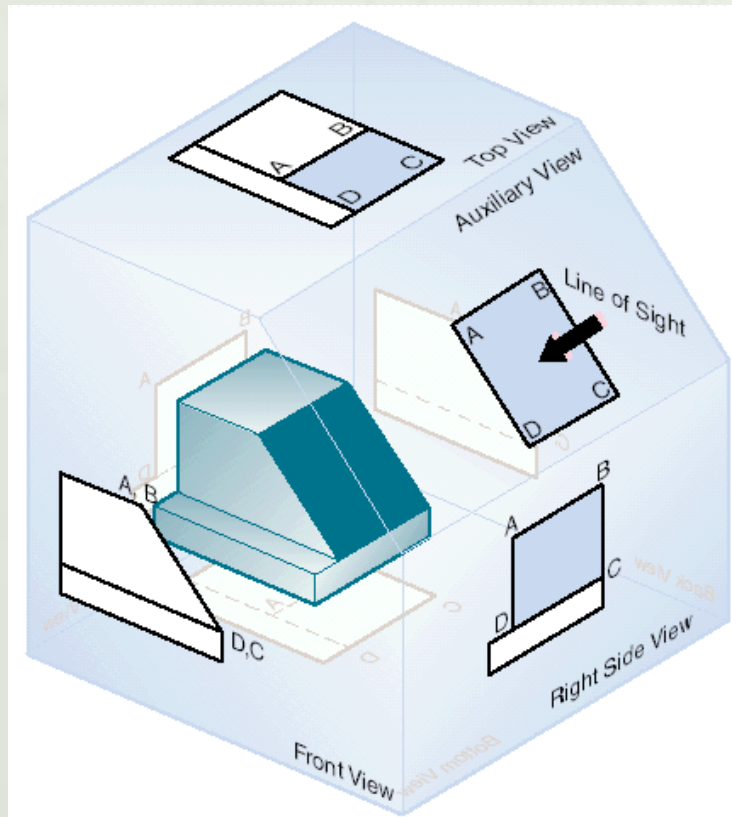




# Auxiliary View of an Ellipse

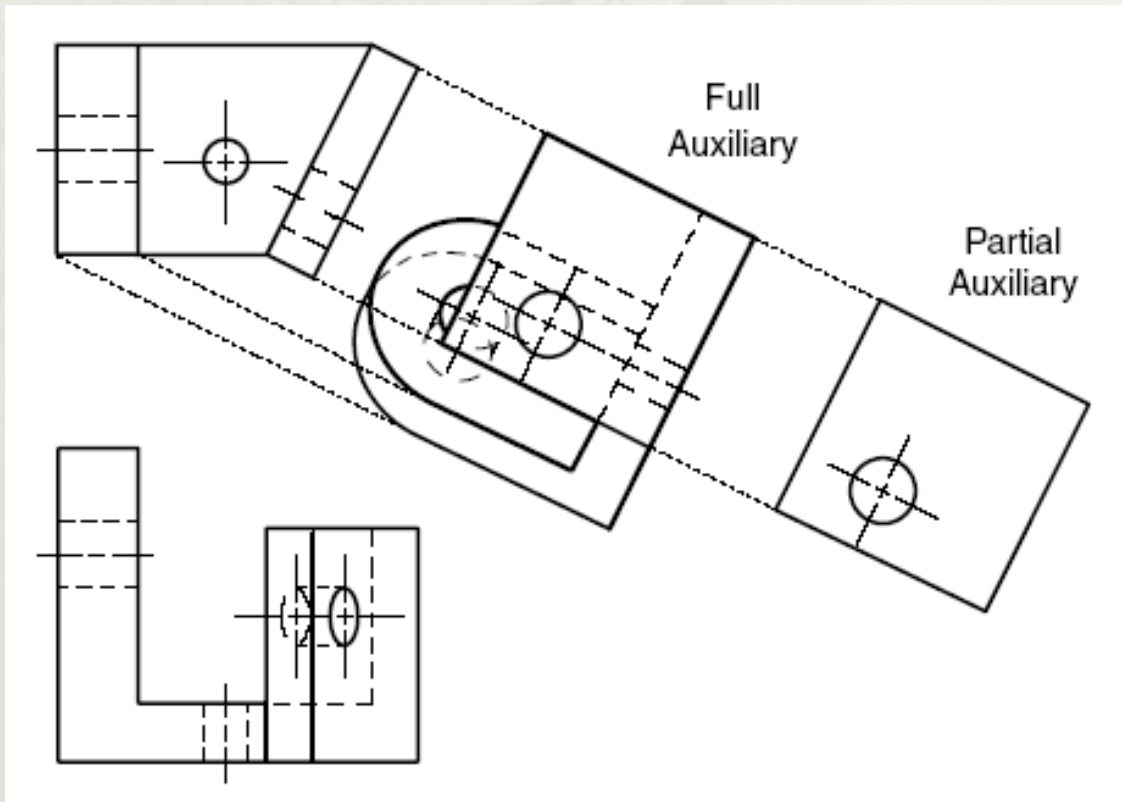


# How to create an Aux View



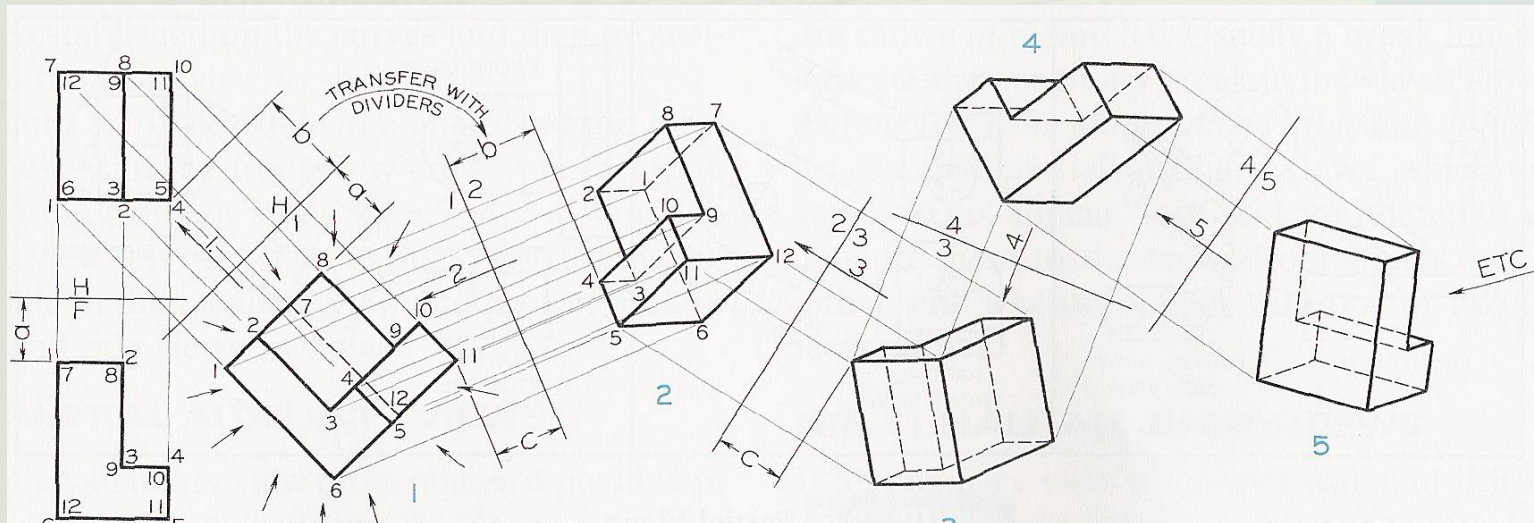
# Partial Aux Views

- ◆ Don't show other features
- ◆ Easier to draw
- ◆ Easier to understand



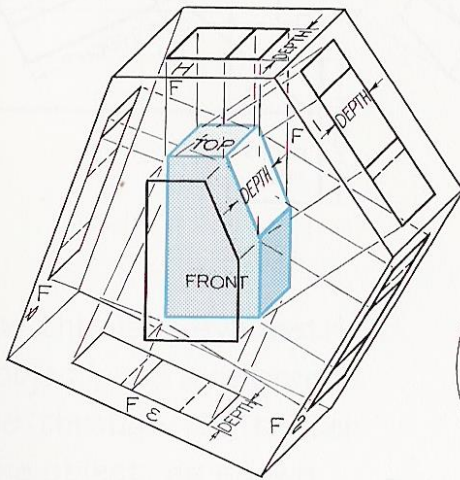
# Types of Auxiliary Views

- ♦ **Primary Auxiliary View:** projection from one of the six principle views
- ♦ **Secondary Auxiliary View:** projected from a primary auxiliary view
- ♦ **Tertiary Auxiliary View:** projected from a secondary or another tertiary auxiliary view

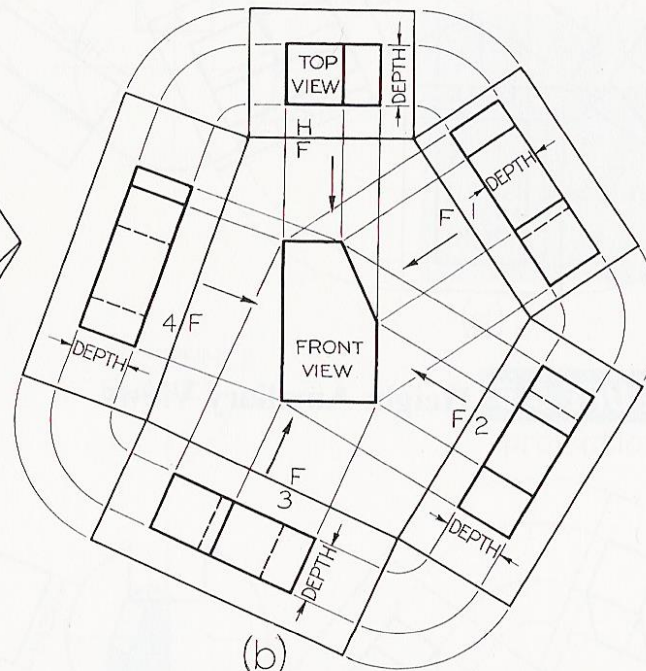




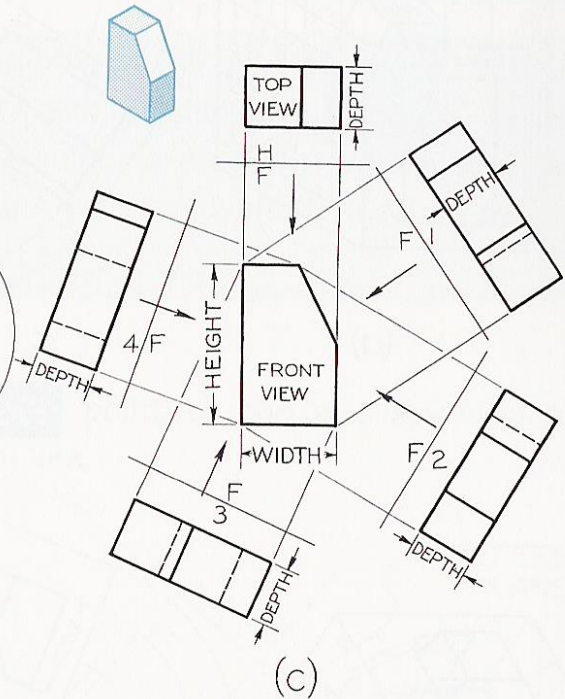
# Depth Aux Views



(a)



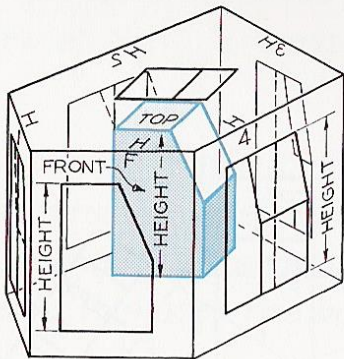
(b)



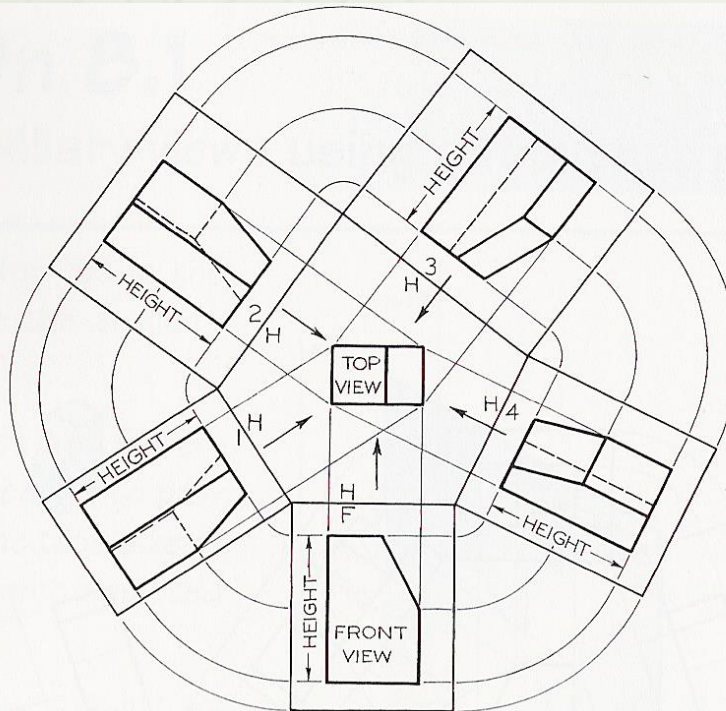
(c)



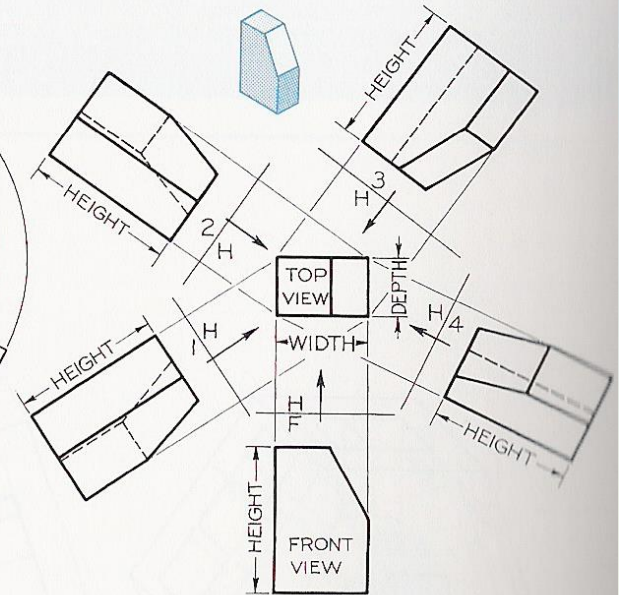
# Height Aux View



(a)

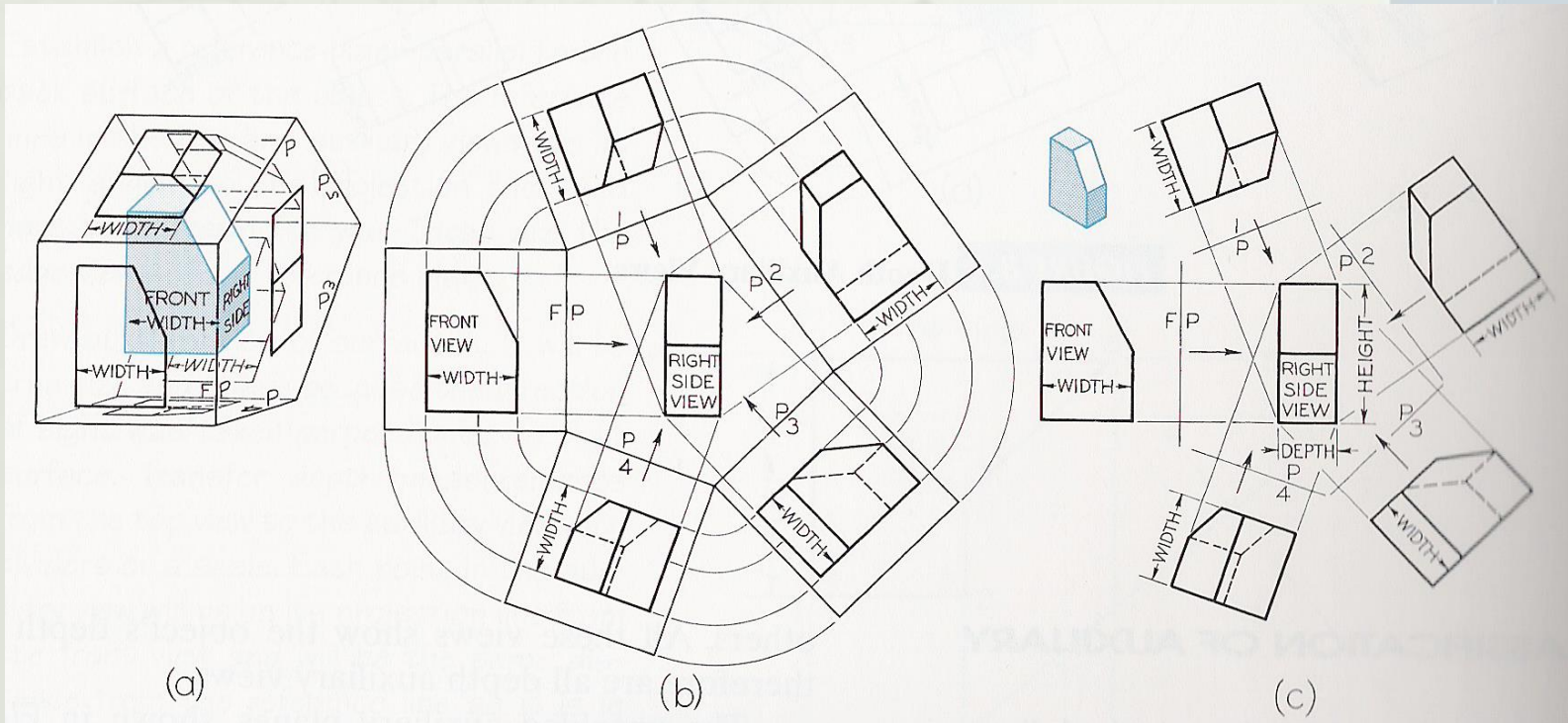


(b)

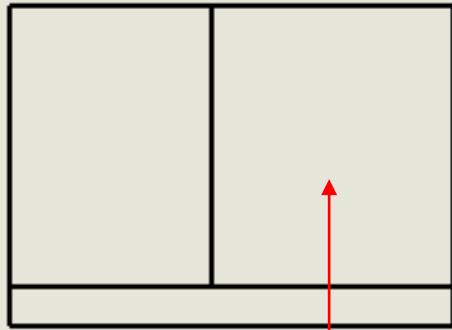


(c)

# Width Aux View

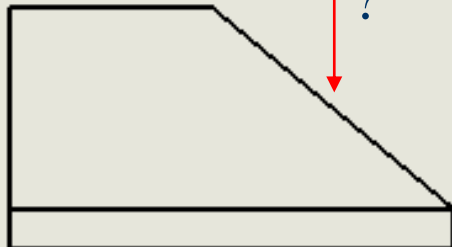
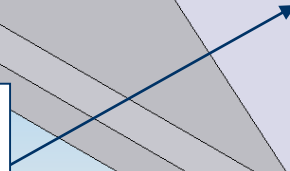
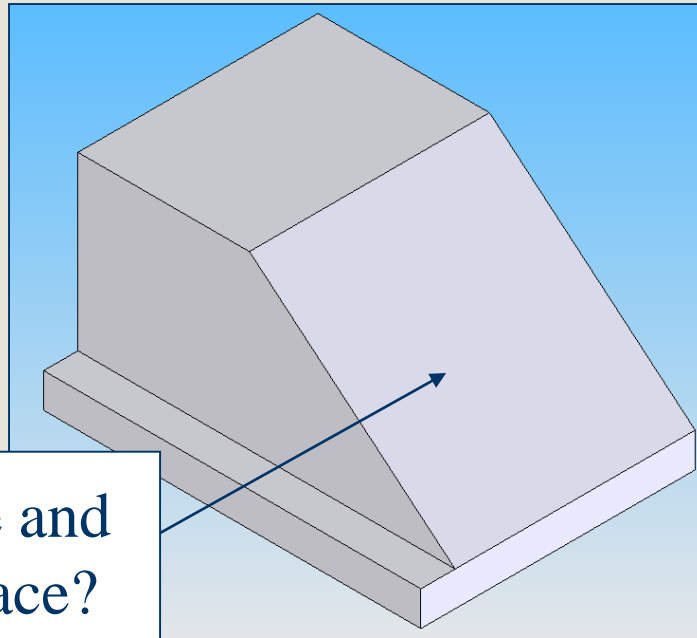


# Creating an Aux View



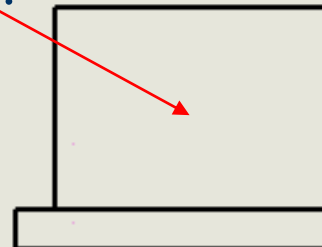
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What is the true shape and size of the inclined face?



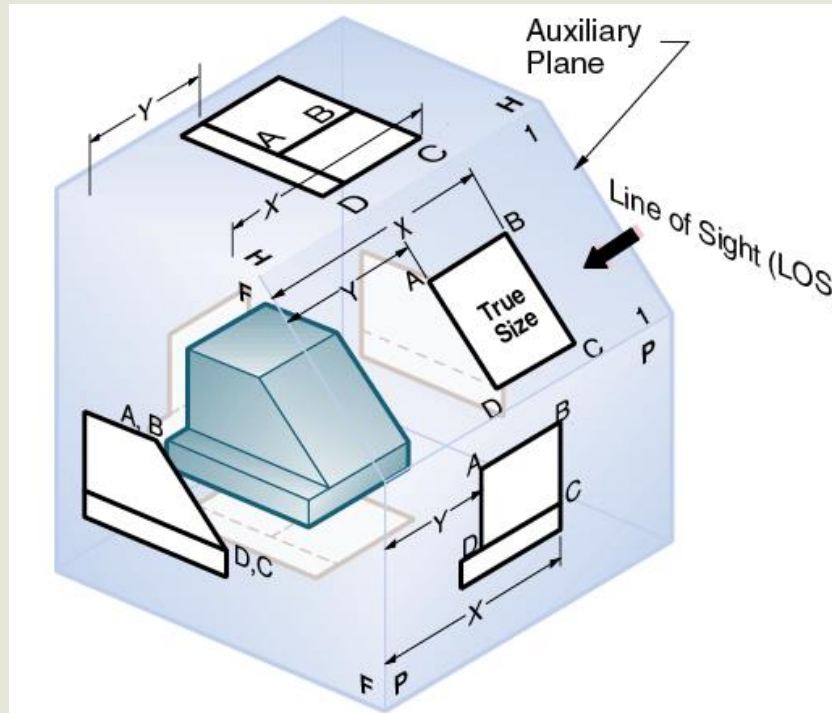
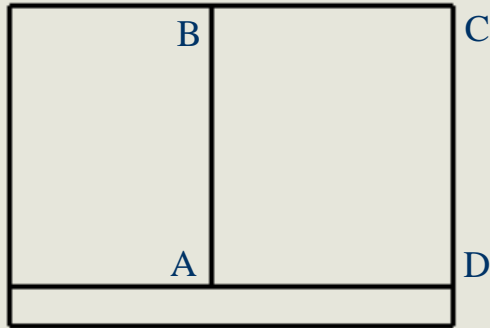
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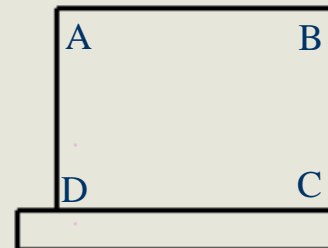
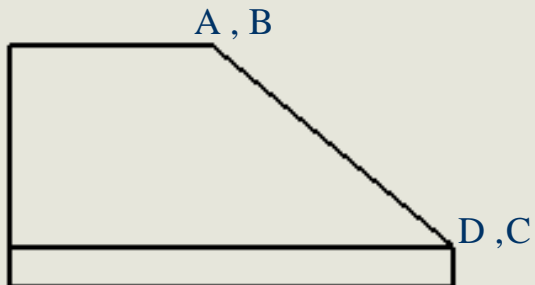


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# Creating an Aux View (2)

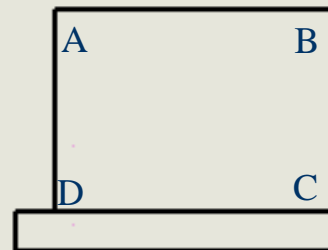
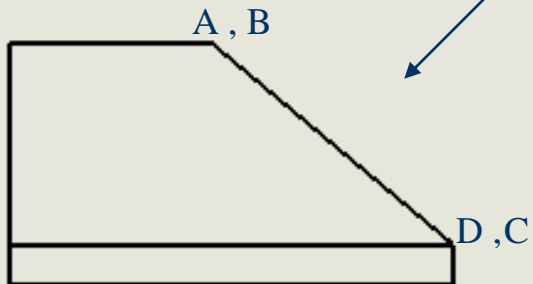
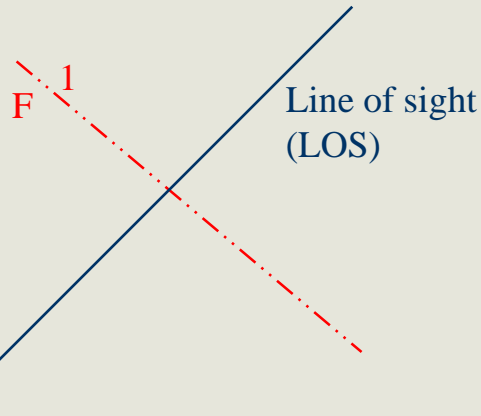
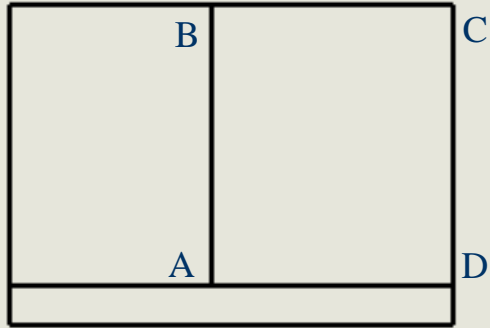


Steps  
1) Label points





# Creating an Aux View (3)

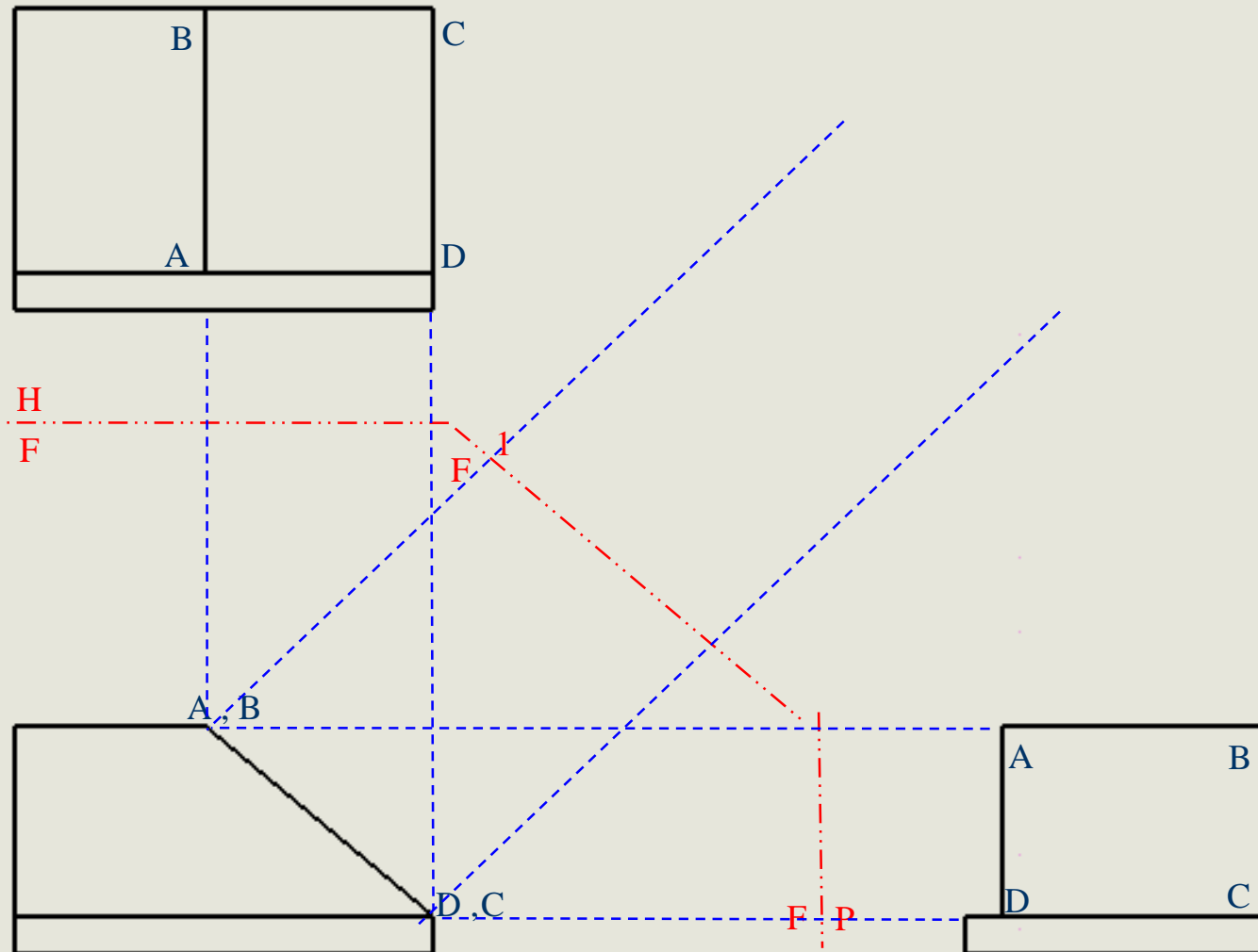


## Steps

- 1) Label points
- 2) Create fold line



# Creating an Aux View (4)

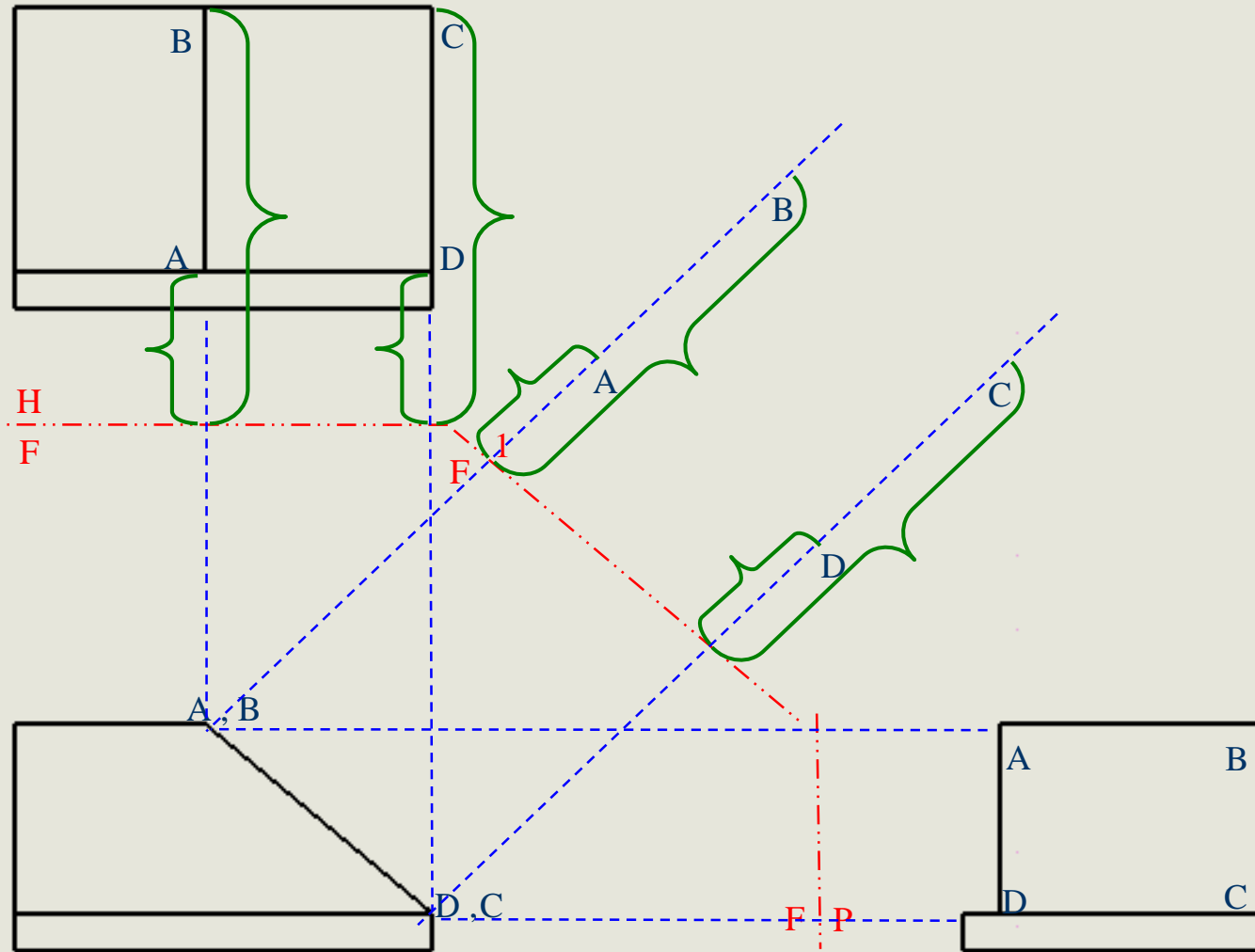


## Steps

- 1) Label points
- 2) Create fold line
- 3) Create other fold lines
- 4) Put in projectors



# Creating an Aux View (5)



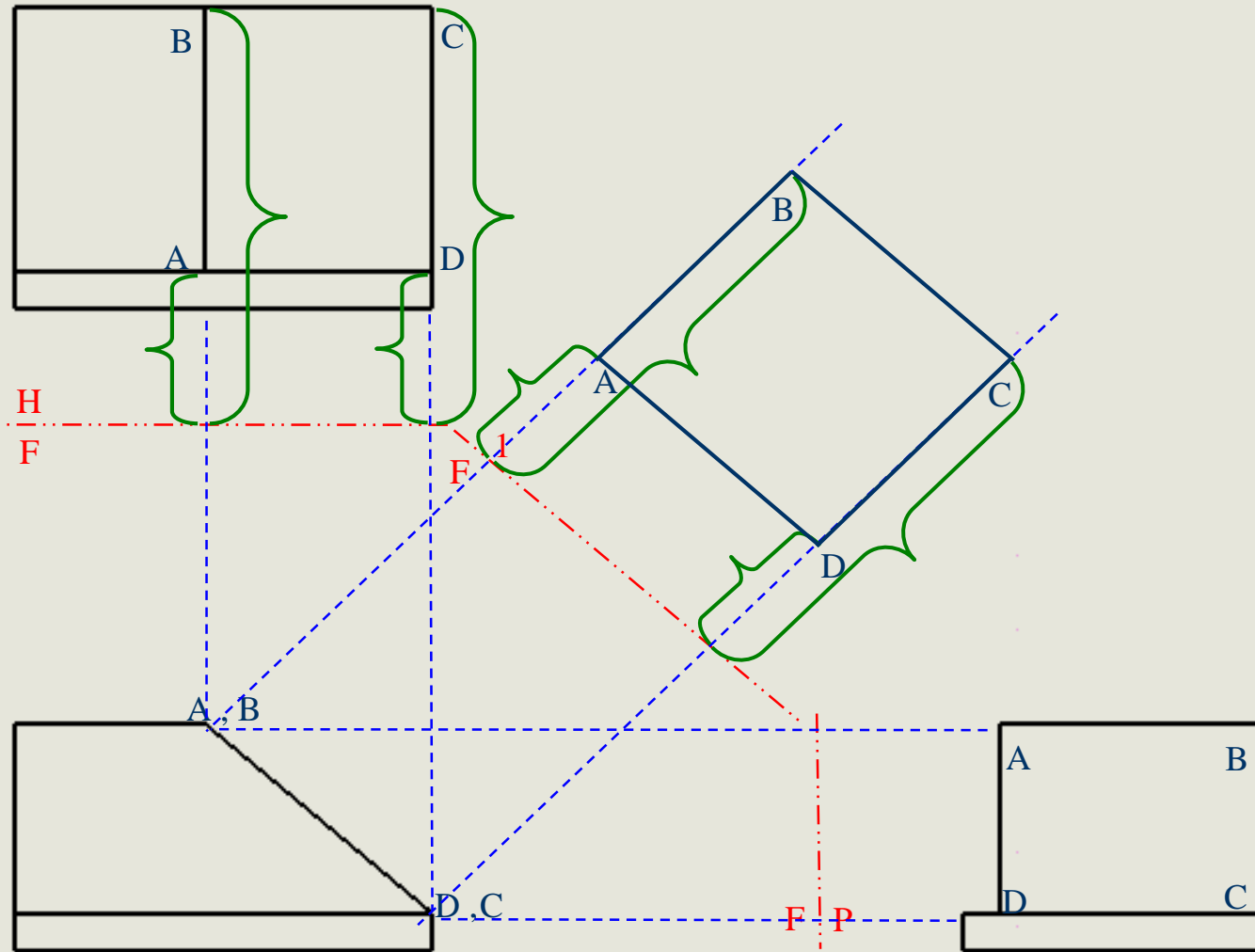
## Steps

- 1) Label points
- 2) Create fold line
- 3) Create other fold lines
- 4) Put in projectors
- 5) Transfer measurements





# Creating an Aux View (6)

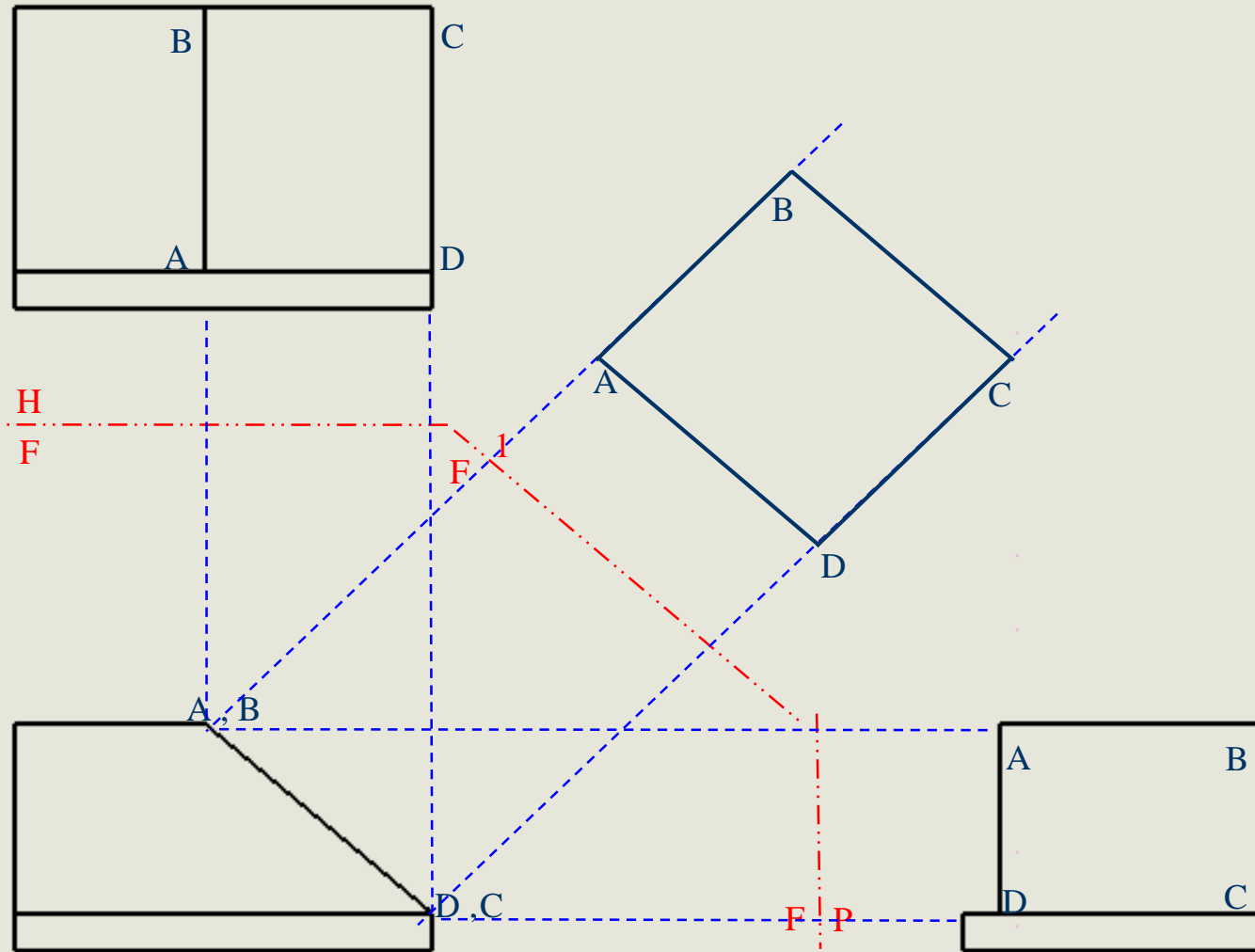


## Steps

- 1) Label points
- 2) Create fold line
- 3) Create other fold lines
- 4) Put in projectors
- 5) Transfer measurements
- 6) Connect points



# Creating an Aux View (6)



## Steps

- 1) Label points
- 2) Create fold line
- 3) Create other fold lines
- 4) Put in projectors
- 5) Transfer measurements
- 6) Connect points