Missing Views

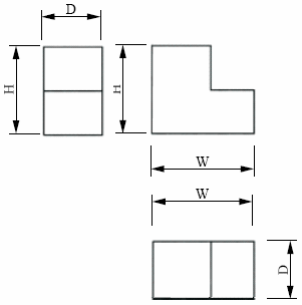
Constructing the third view helps visualization skills

3−D object has edges and surfaces and they appear differently in various views.

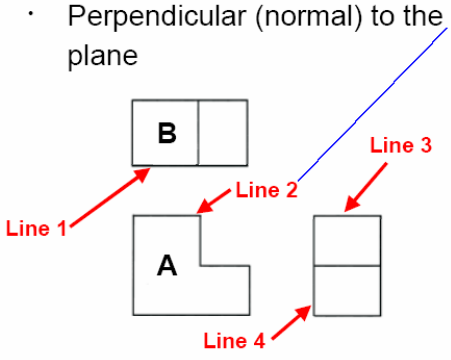
- Edge: a point, edge or surface
- Surface: surface or edge

When constructing the third view, recall:

- Points project perpendicularly from one view to the next
- Object dimensions (height, width and depth) are preserved from one view to the next



- Parallel to one of the six glass panes of our transparent cube
- Perpendicular (normal) to the projectors to/from that plane

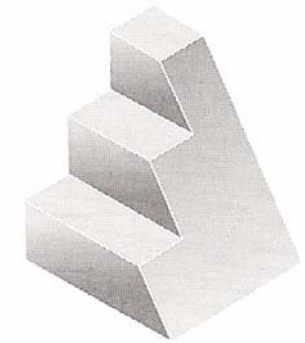


Shown true size and shape in the view that they are parallel to

Seen as edges (lines) in the other principal views

A is 1 and 4
B is 2 and 3

Using a milter line



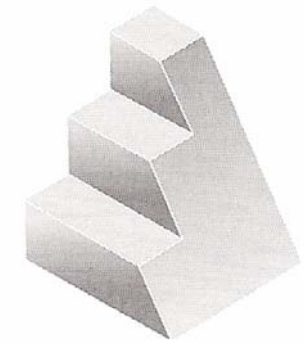
Given two completed views you can use a milter line to transfer the depths and draw the side view of the object.

To move the left side view to the right or the top view downward by moving the milter line closer of further from view.

You do not need to draw continues lines between the top and side view via the milter line.

The 45° milter line method is convenient for transferring a large number of points.

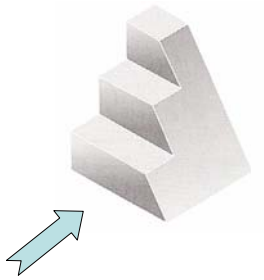
Using a milter line

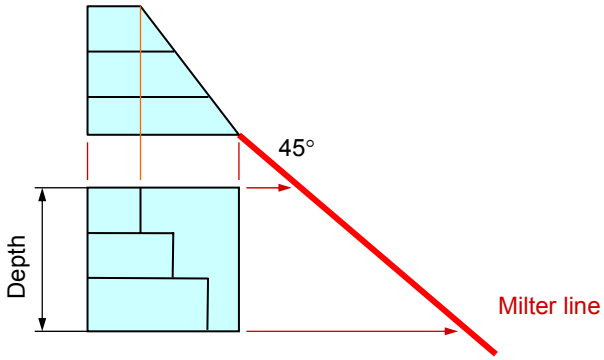


The use of milter line provides a fast and accurate method of constructing the third view once two views are estanblished.

Using a milter line

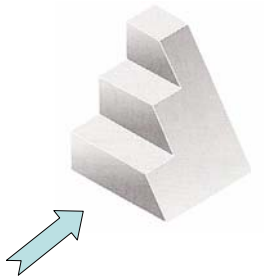
① Locate the milter line a convenient distance away from the object to produce the desired spacing between views.

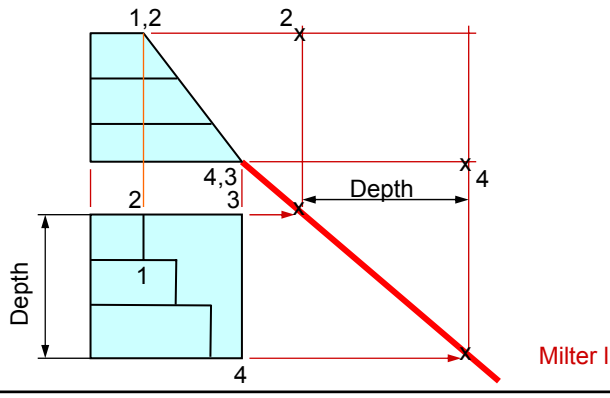




Using a milter line

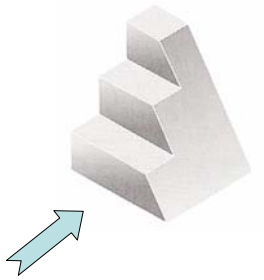
②. Sketch light lines projecting depth locations for points to milter line and then down into side as shown.

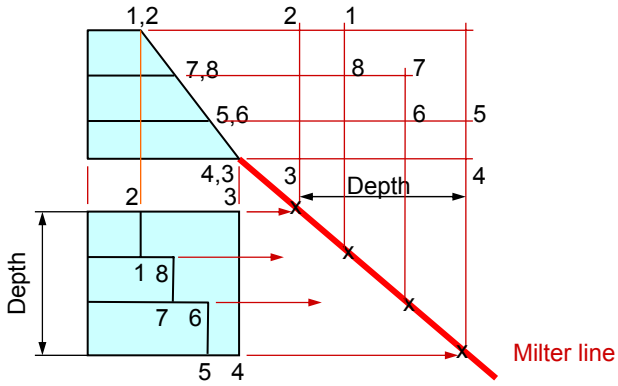




Using a milter line

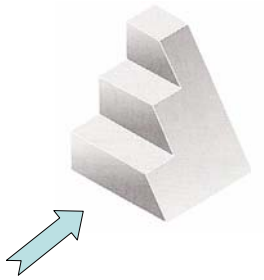
③. Project the remaining points

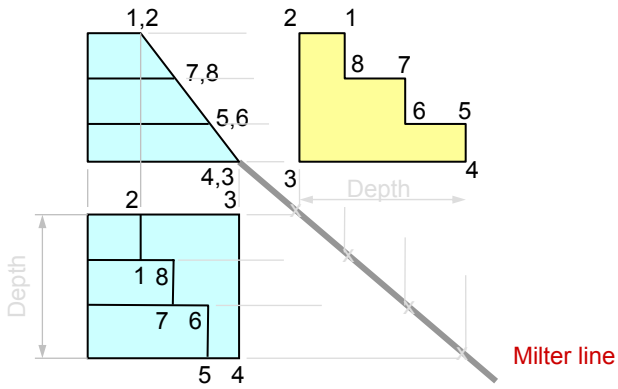




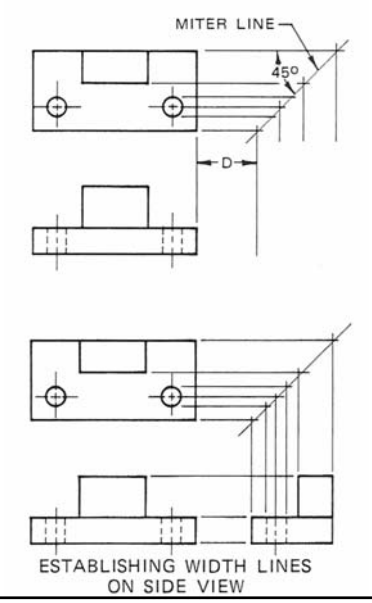
Using a milter line

③. Draw view locating each vertex of surface on projection line and milter line.



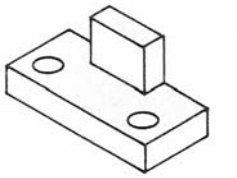


Using a milter line

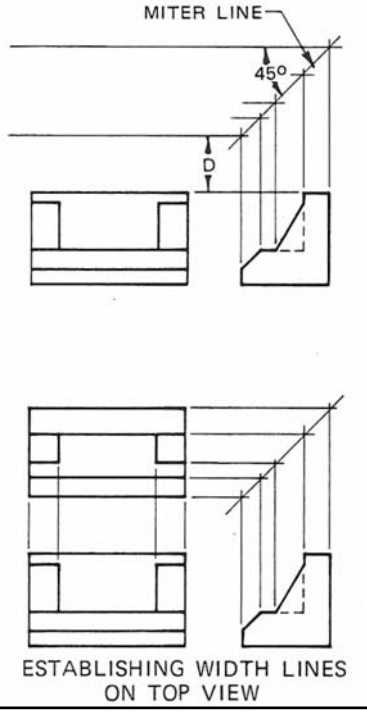


Using a Miter Line to Construct the Right Side View

1. Given the top and front views, project lines to the right of the top view.
2. Establish how far from the front view the side view is to be drawn (distance *D*).
3. Construct the miter line at 45° to the horizon.
4. Where the horizontal projection lines of the top view intersect the miter line, drop vertical projection lines.
5. Project horizontal lines to the right of the front view and complete the side view.

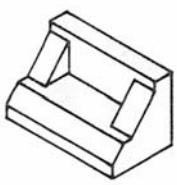


Using a milter line



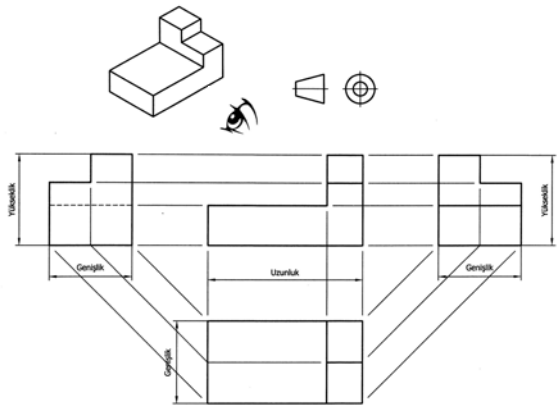
Using a Miter Line to Construct the Top View

1. Given the front and side views, project vertical lines up from the side view.
2. Establish how far away from the front view the top view is to be drawn (distance *D*).
3. Construct the miter line at 45° to the horizon.
4. Where the vertical projection lines of the side view intersect the miter line, project horizontal lines to the left.
5. Project vertical lines up from the front view and complete the top view.



Görünüşlerin Çizilmesi

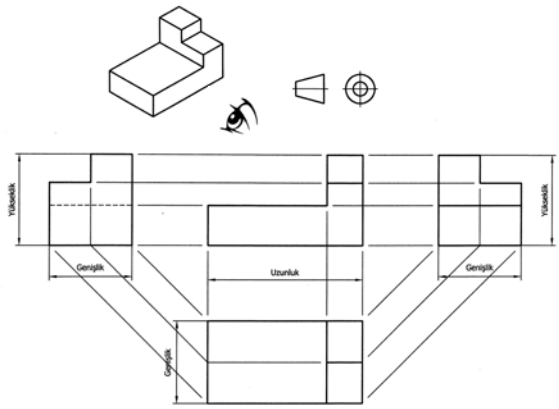
- Cismin görünüşlerini çizme işlemine önden görünüşü çizerek başlanır ve izdüşüm yöntemine göre diğer görünüşlerin çizimi ile devam edilir.



11

Görünüşlerin Çizilmesi

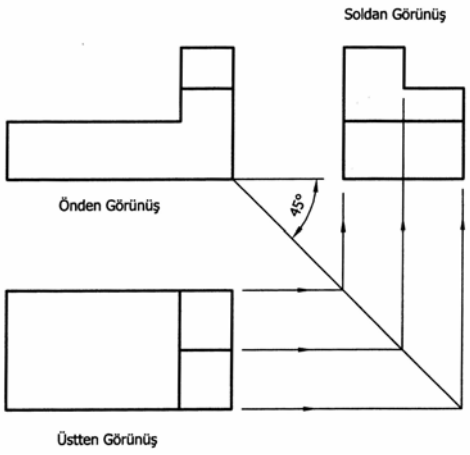
- İki görünüşü verilen (önden ve üstten) bir parçanın, üçüncü görünüşünün (soldan) elde edilmesi için önden ve üstten görünüşlerin hizasında çizilmiş olması gerekir.



12

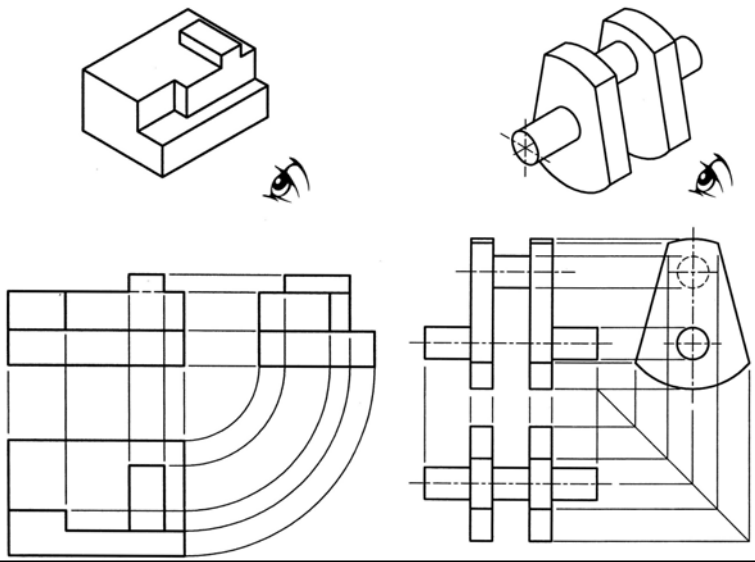
Görünüşlerin Çizilmesi

- İki görünüşü verilen parçanın üçüncü görünüşünü çıkartmak için, izdüşüm çizgilerinden faydalanılır.
- Önden görünüşten çizilen 45º açılı taşıma düzlemi yardımıyla çizgiler taşınır.



13

Görünüşlerin Çizilmesi



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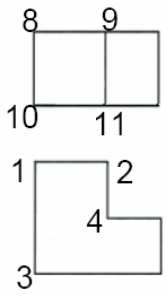
Surface Identification

For the indicated surfaces and edges, where are they located in the adjacent view?



1, 2	Surface	8, 9, 11, 10
3	Edge	10, 8
9,11	Edge	2 or 4

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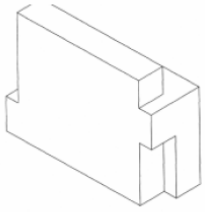
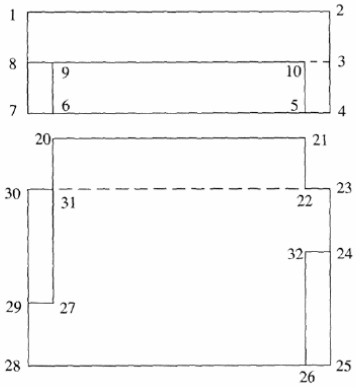
Surface Identification

For the indicated surfaces and edges, where are they located in the adjacent view?





30, 23	surface
8, 9	surface
9, 10	surface
10, 3	surface
25	edge
20, 27	edge
29, 27	edge
10, 5	edge

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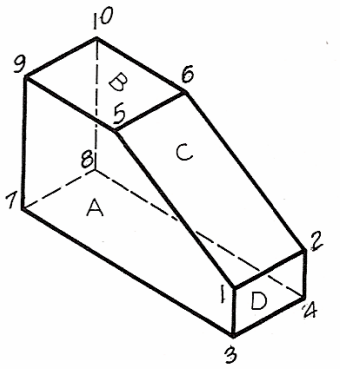
Projecting a third view

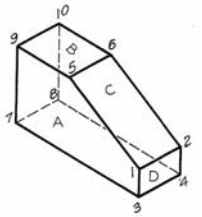
Follow the steps to project a third view.

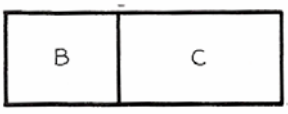
The figure at right is a pictorial drawing of an object that has three necessary views. It has numbers on it identifying each corner (vertex) of the object and letters identifying some of the major surfaces. You are given the top and front view. You will use point numbers to project the side view.

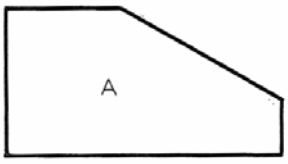


Projecting a third view

1. To number points effectively you first need to identify surfaces and interpret the views that are given. First label visible surfaces that have an easy to identify shape in one view. Then locate that same surface in the adjacent view. (The surfaces on the pictorial object have been labeled to make it easy.)

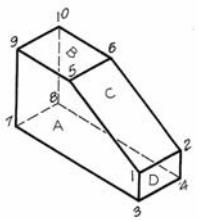


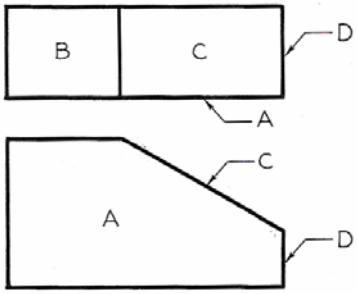




Projecting a third view

2. Surface A in the front view is a normal surface. It will appear as a horizontal line in the top view. The two rectangular surfaces, B and C in the top view are a normal surface and an inclined surface. They will show as a horizontal line and an inclined line in the front view, respectively.

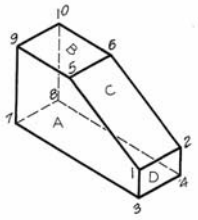


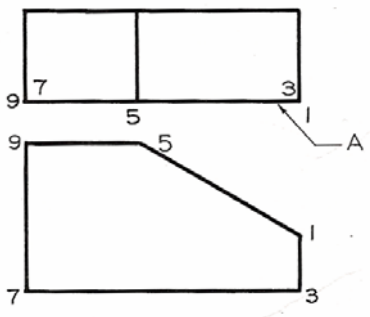


Projecting a third view

3. Once you have identified the surfaces, label the vertices of a surface that has an easy to recognize shape, in this case surface A.

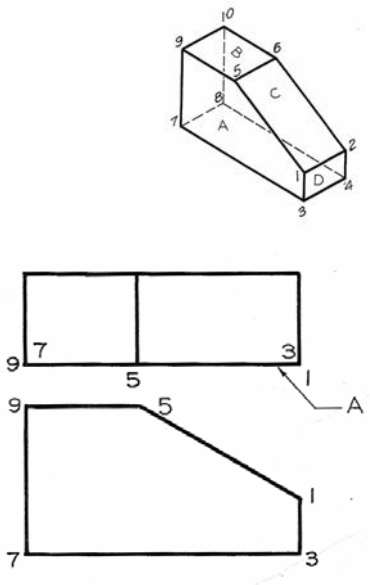
   Label its vertices with numbers at each corner as shown. If a point is directly visible in the view, place the number outside the corner





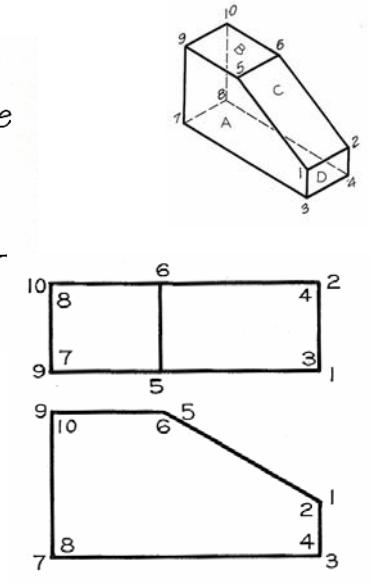
Projecting a third view

If the point not directly visible in that view, place the numeral inside the corner. Using the same numbers to identify the same points in different views will help you to project known points in two views to unknown positions in a third view.



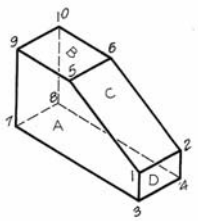
Projecting a third view

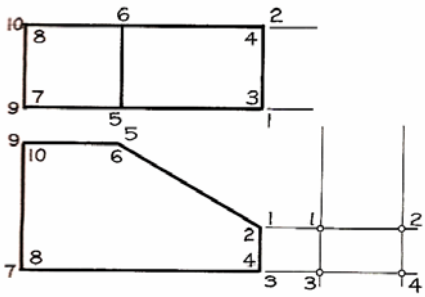
4. Continue on surface by surface until you have numbered all of the vertices in the given views as shown below. Do not use two different numbers for the same vertex as it can be confusing.



Projecting a third view

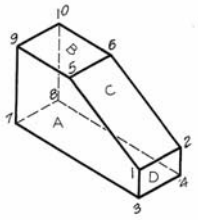
6. Project points 2, 3, and 4 in a similar manner to complete the vertical end surface of the object.

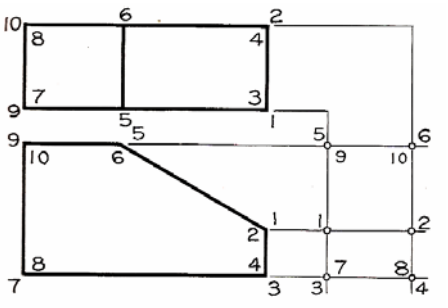




Projecting a third view

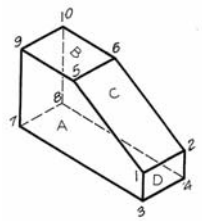
7. Project the remaining points using the same method, proceeding surface by surface.





Projecting a third view

8. Use the points that you have projected into the side view to draw the surfaces of the object as in the example at right.

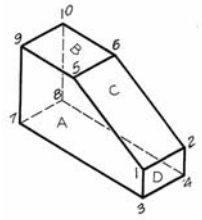


If surface A extended between points 1-3-7-9-5 in the front view where you can see its shape clearly, it will extend between those same points in every other view.

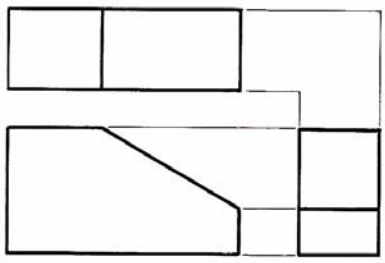
Continue connecting vertices to define the surfaces on the object, to complete the third view.

Projecting a third view

9. Inspect your drawing to see if all of the surfaces are shown and darken the final lines.



You should also consider the visibility of surfaces. Surfaces that are hidden behind other surfaces should be shown with hidden lines.

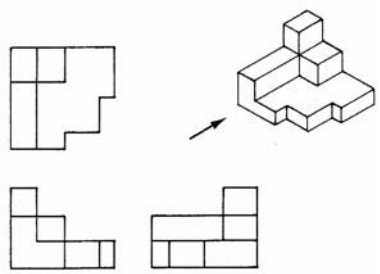


Spacing of views

It is important for clarity and good appearance that the views be well balanced on the drawing paper.

This is determined from

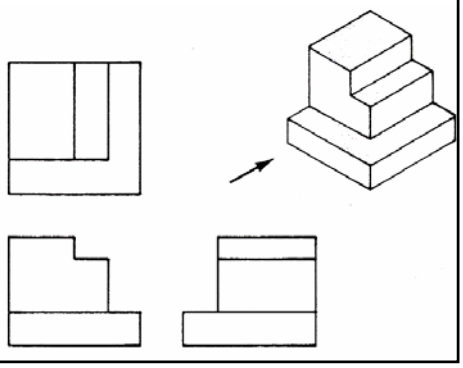
- The size of the object to be drawn
- The number of views
- The scale used
- The space between views.



Spacing of views

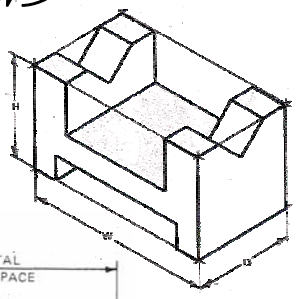
Ample space should be provided between views to permit placement of dimensions on the drawing without crowding.

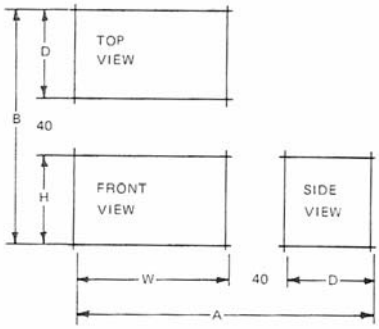
However, space between views should not be excessive.



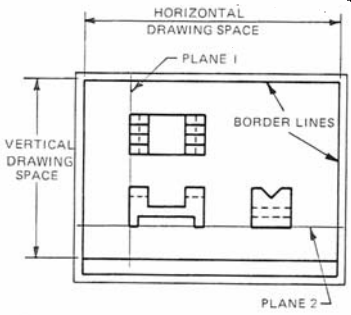
Spacing of views

A simple method of positioning the views on the drawing paper





(B) CALCULATING DISTANCES A AND B



(C) ESTABLISHING LOCATION OF PLANES 1 AND 2