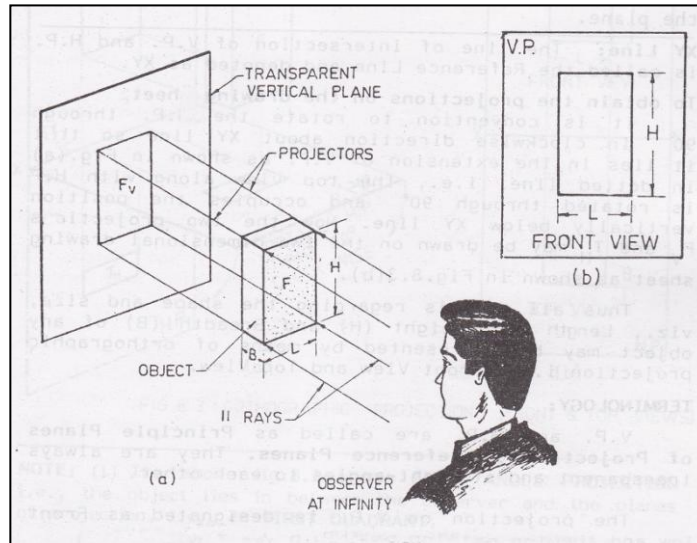


PROJECTION

PROJECTION:

The figure or view formed by joining, in correct sequence, the points at which these lines meet the plane is called the projection of the object. (It is obvious that the outlines of the shadow are the projections of an object).



PROJECTORS:

The lines or rays drawn from the object to the plane are called projectors.

PLANE OF PROJECTIONS:

The transparent plane on which the projections are drawn is known as plane of projectors.

TYPES OF PROJECTIONS:

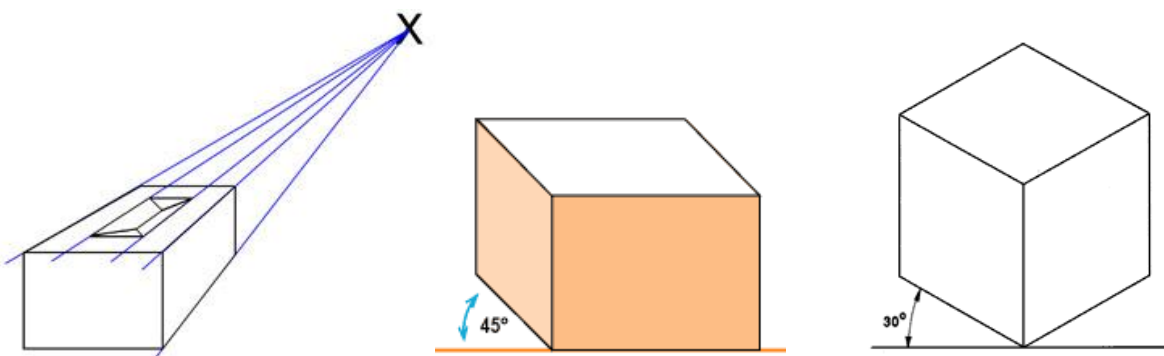
1. Pictorial Projections
 - Perspective Projection
 - Isometric Projections
 - Oblique Projections
2. Orthographic Projections

PICTORIAL PROJECTIONS

The projection in which the description of the object is completely understood in one view is known as **Pictorial Projection**. The Pictorial projections have the advantage of conveying an immediate impression of the general shape and details of the object, but not its true dimensions or sizes.

Note:

Isometric projection gives true shape of the object, while Perspective and Oblique Projections do not.



PERSPECTIVE PROJECTION:

Imagine that the observer looks at the object form an infinite distance. The rays will now be parallel to each other and perpendicular in both the front surface of the object and the plane, when the observer is at a finite distance from the object, the rays converge to the eye as in the case of Perspective Projection.

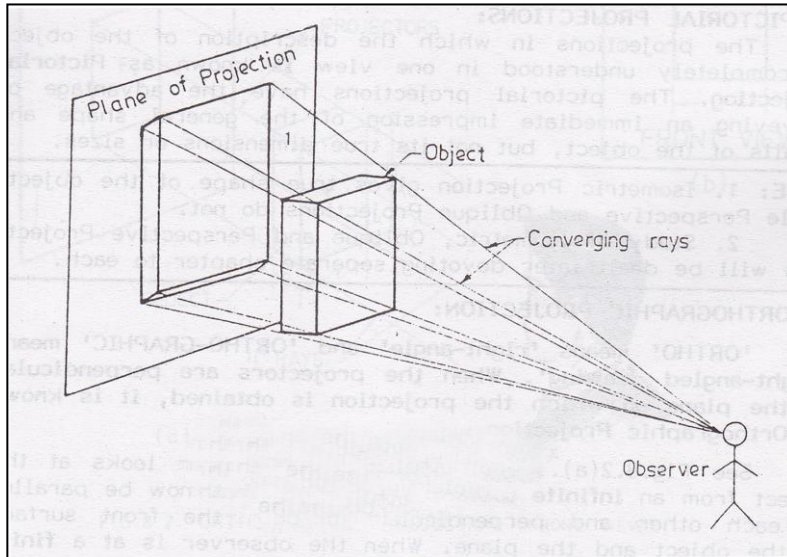
The observer looks from the front. The front surface F of the block is seen in its true shape and size.

Note:

Orthographic Projection is the standard drawing form of the industrial world. The form is unreal in that we don't see an object as it is drawn orthographically. Pictorial drawing however has photographic realism.

PERSPECTIVE VIEW:

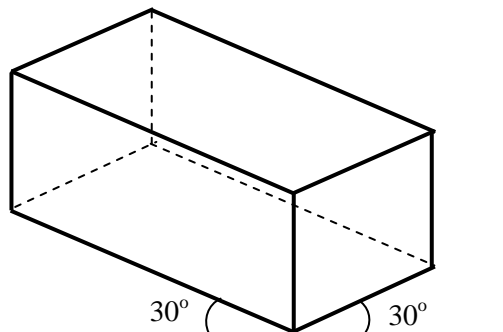
If any imaginary transparent plane is introduced such that the object is in between the observer and the plane. The image obtained on the plane/screen is as shown. This is called perspective view of the object.



ISOMETRIC PROJECTION

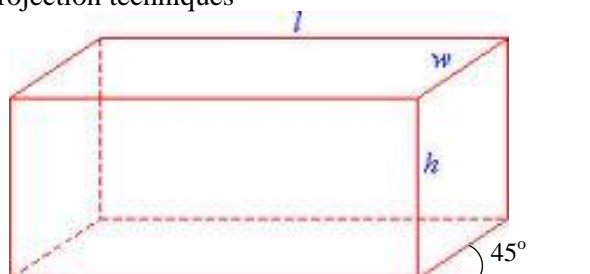
“Iso” means ‘equal’ and “metric projection” means ‘a projection to a reduced measure’.

An *Isometric Projection* is one type of pictorial projection in which the three dimensions of a solid are not only shown in one view, but also their dimension can be scaled from this drawing.



OBLIQUE PROJECTION

The word “oblique” means “slanting” There are three axes-vertical, horizontal and oblique. The oblique axis, called receding axis is drawn either at 30° or 45°. Thus an oblique drawing can be drawn directly without resorting to projection techniques



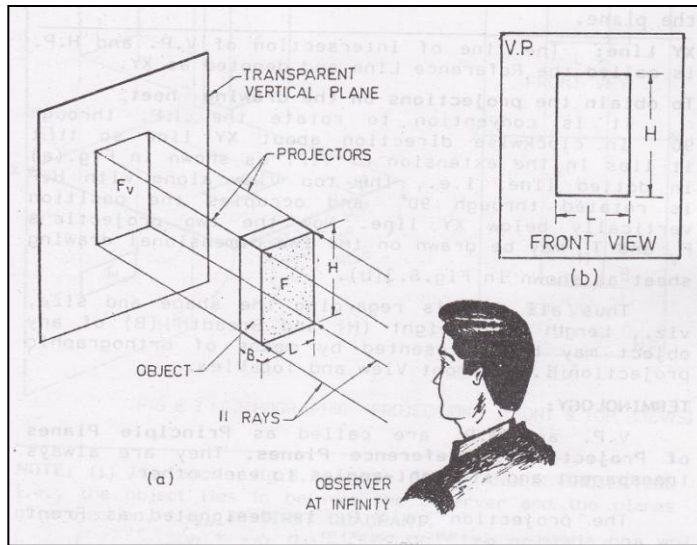
ORTHOGRAPHIC PROJECTION:

‘Ortho’ means ‘right-angle’ and ‘Ortho-graphic’ means ‘right-angled drawing.’ When the projections are perpendicular to the plane on which the projection is obtained, it is known as Orthographic Projection.

Vertical Plane:

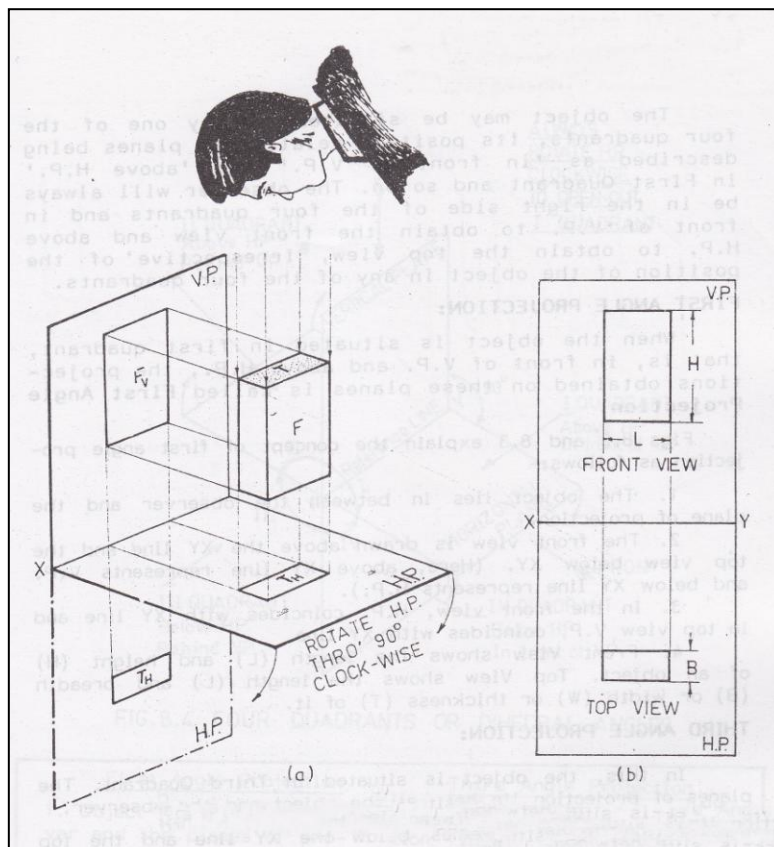
Extend the rays or projectors further to meet a Vertical (Transparent) Plane (V.P) located behind the object. Join the points at which the projectors meet the plane, in correct sequence. The resulting view (Fv) is called the Front View of the object which is shown in fig. (b)

Front view shown only two dimensions of the object i.e. Length (L) and Height (H). It does not show the breadth (B). Thus one view or projection is insufficient for the complete description of the object.



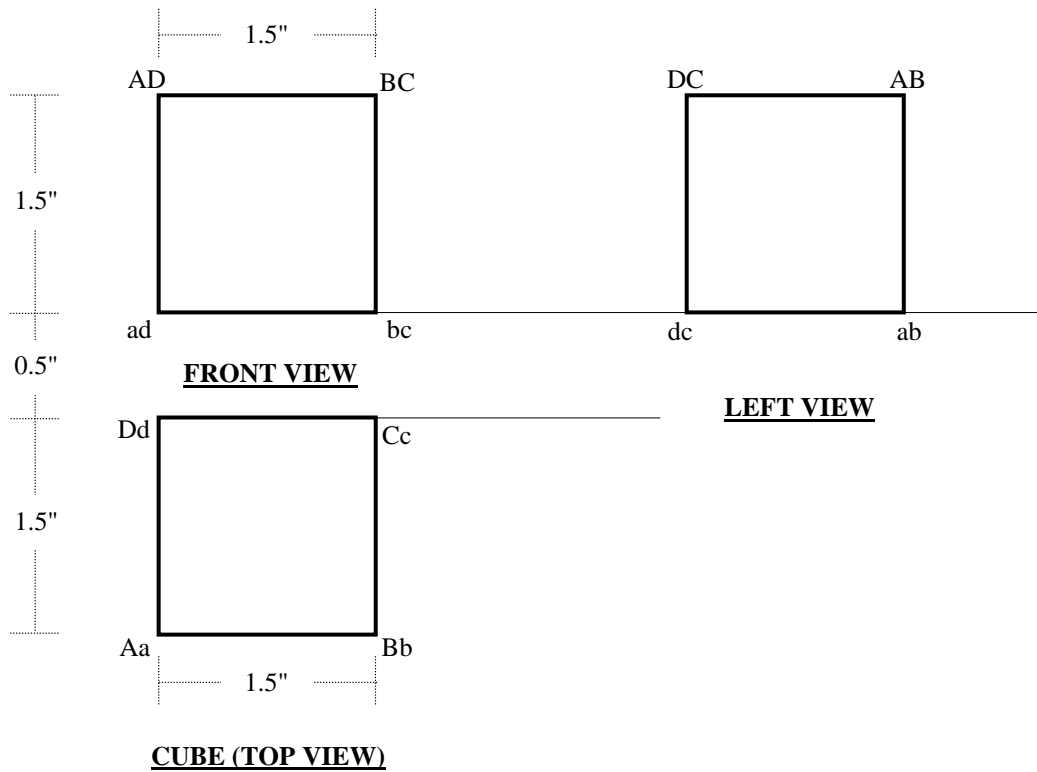
Look at the object from the top. The projection of the top surface T is T_H . T_H is the Top View of the object. Both T and T_H are of exactly the same shape and size.

Thus T_H gives the Length (L) and Breadth (B) of the block but not the Height (H).

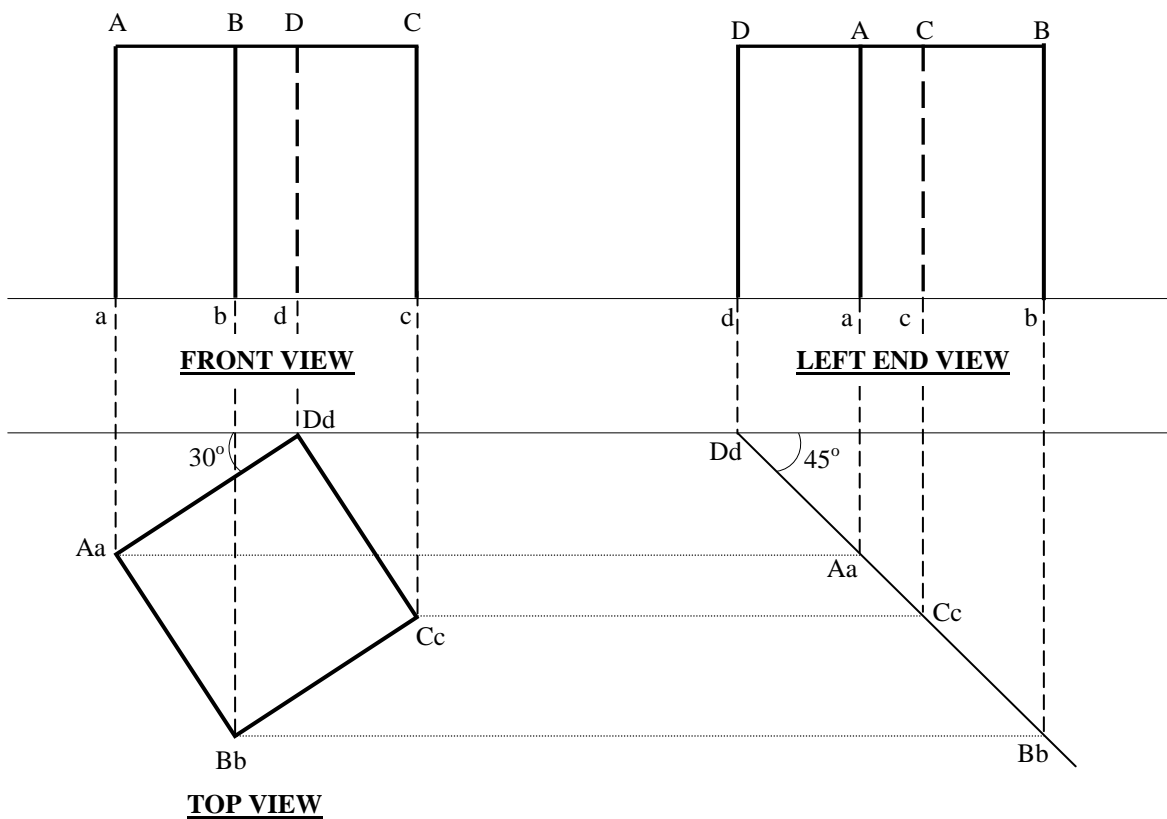


EXAMPLES OF ORTHOGRAPHIC PROJECTION

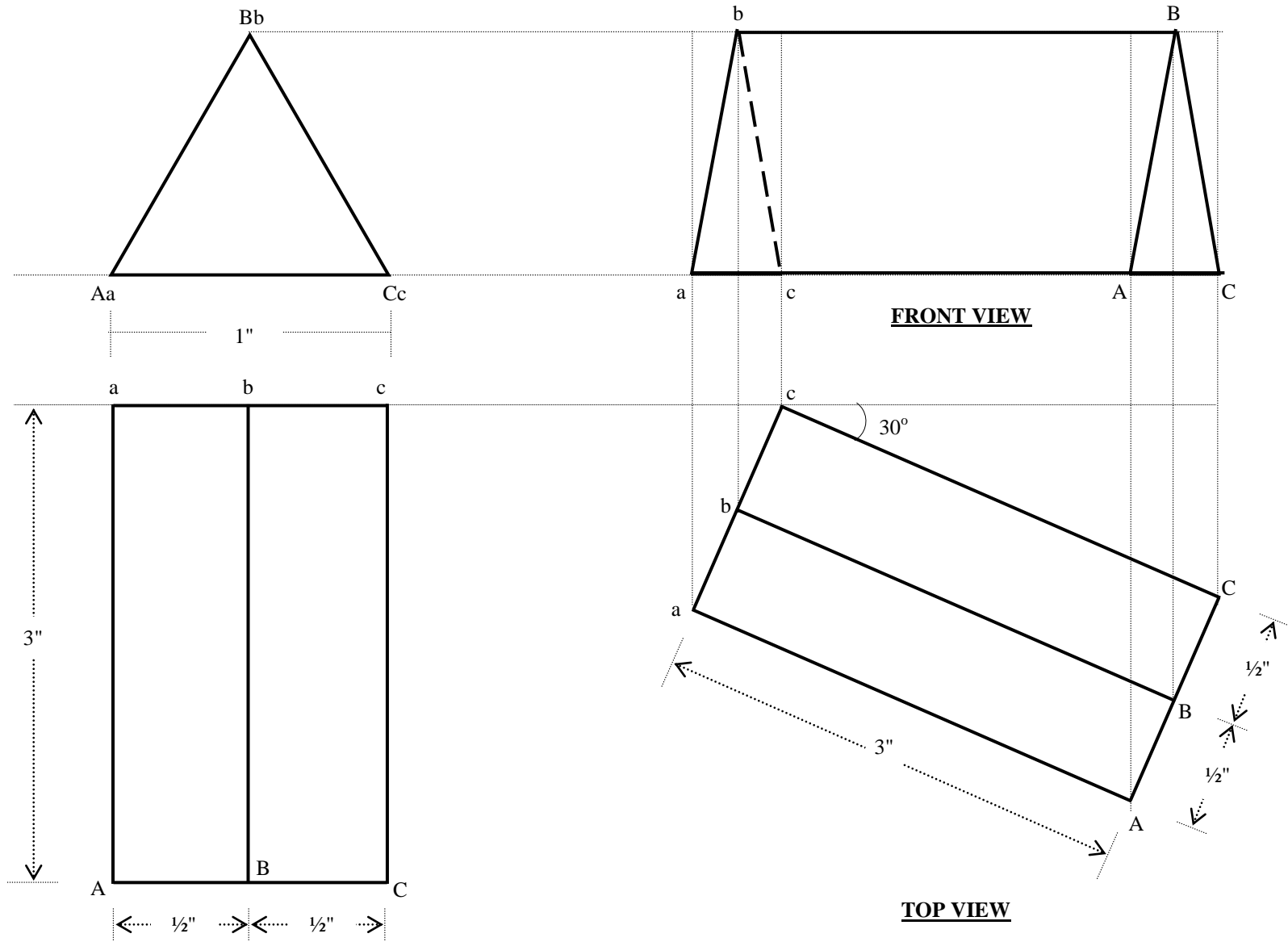
- A cube of 1.5" rests on one of its square faces on horizontal plane with another square face being parallel to the vertical plane. Draw its plan, front elevation and left-end view.



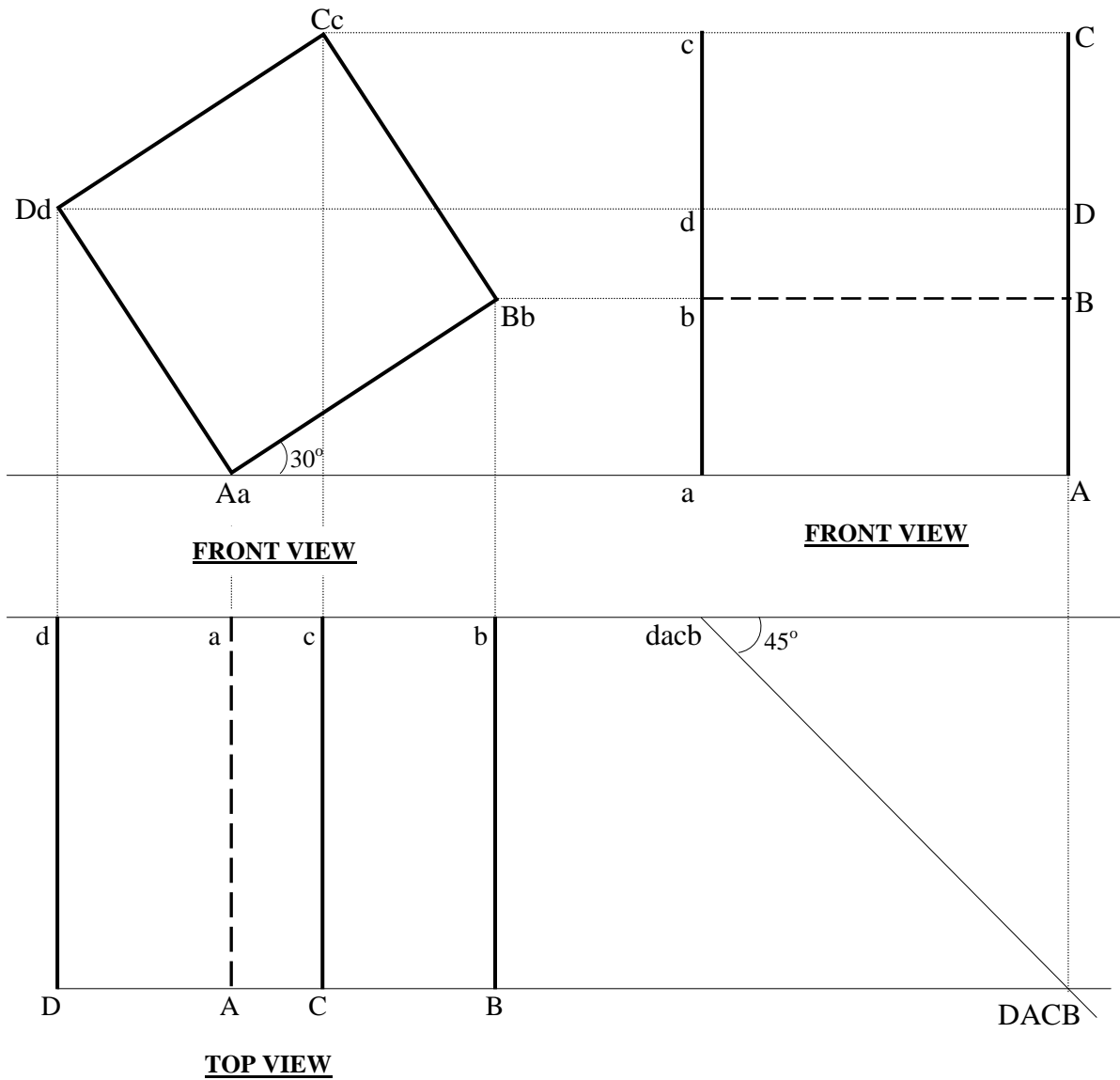
- A cube of 1.0" sides rests on one of its square faces in horizontal plane with another square faces making an angle of 30° with the vertical plane. Draw its plan, front elevation and left end view.



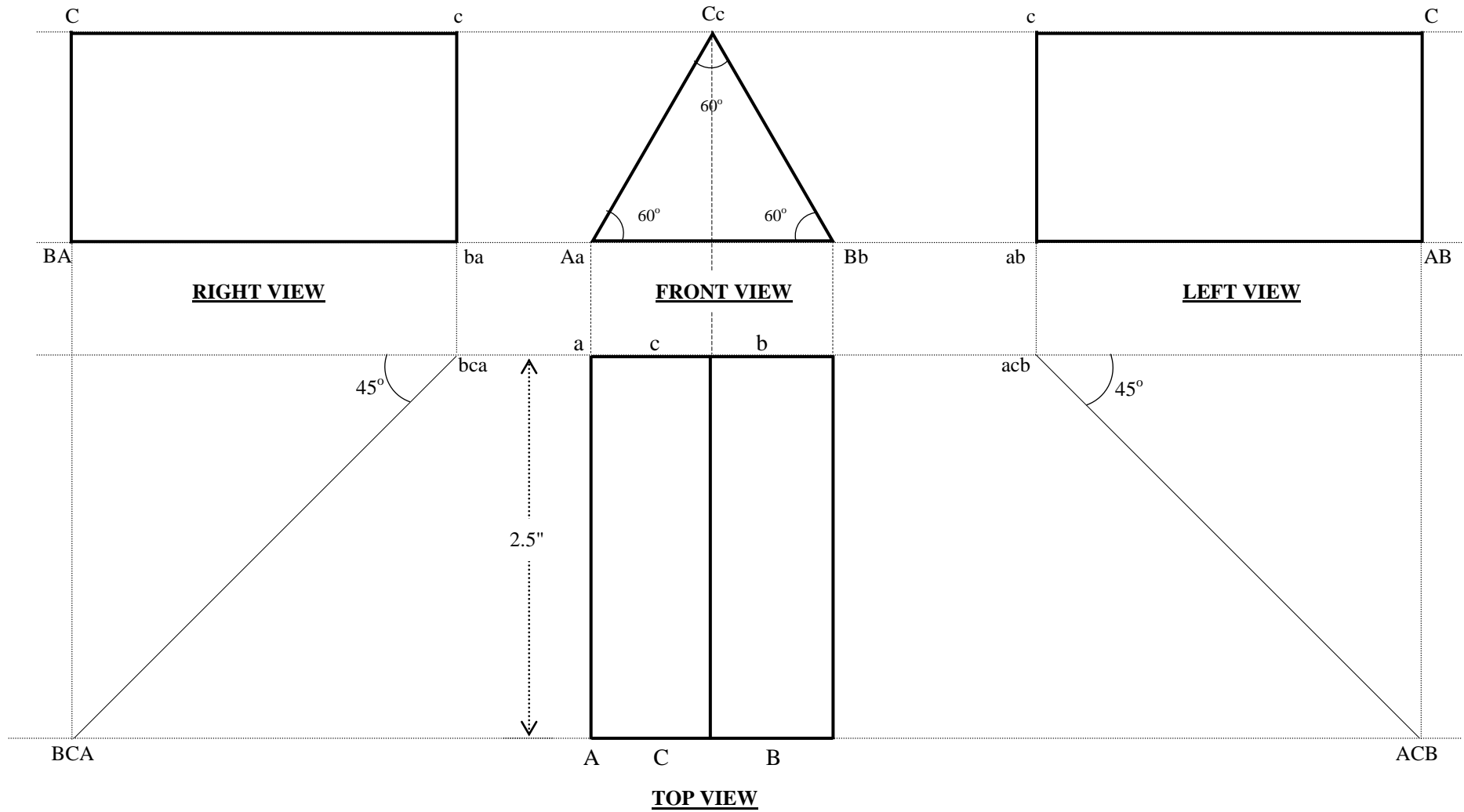
- An equilateral triangular prism of 1" sides and 3" height rests on one of its rectangular faces on horizontal plane with its axis inclined at 30° to vertical plane. Draw its plan and front elevation



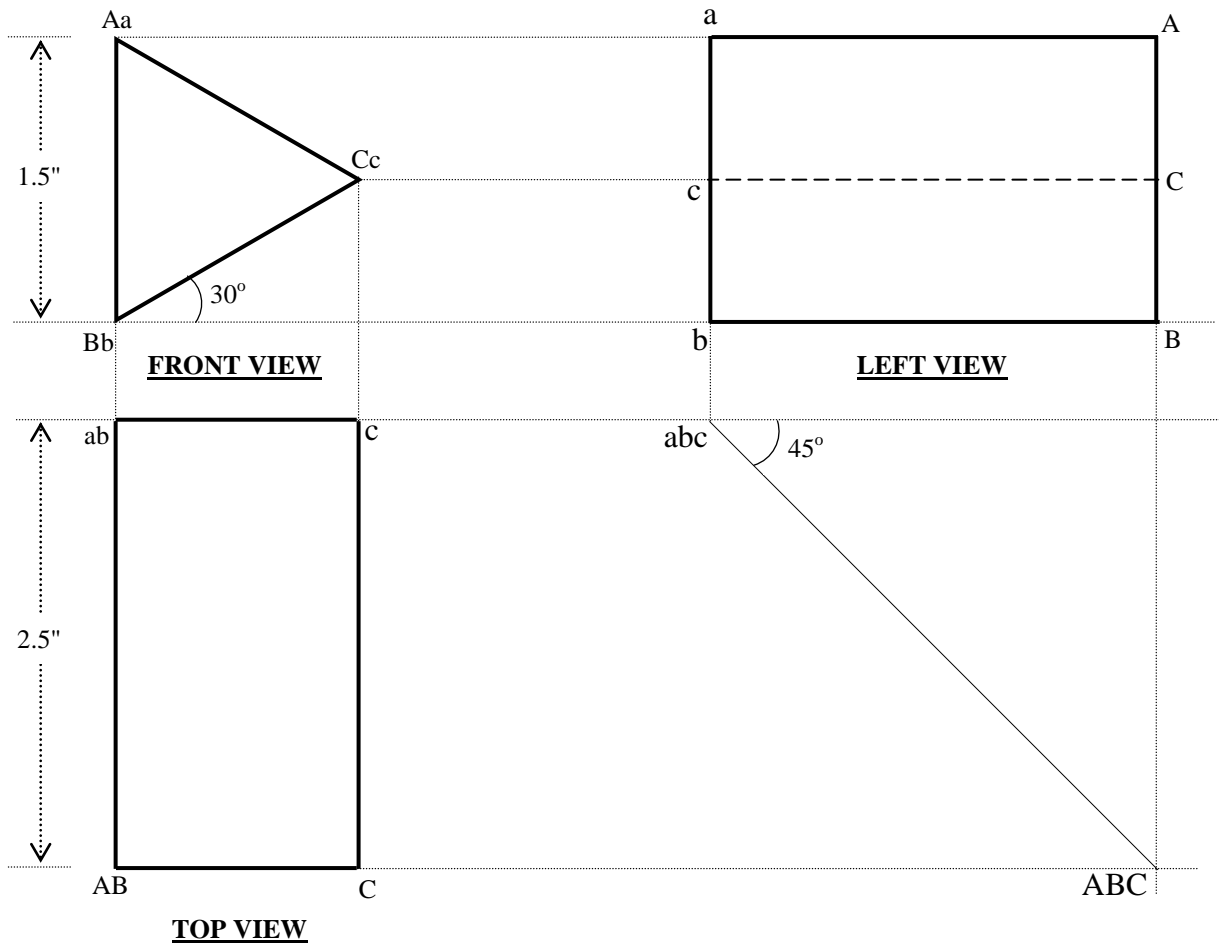
- A cube of 1" sides rests on one of its edges in horizontal plane with one square face making an angle of 30° with it and another square face being parallel to vertical plane. Draw its plan, front elevation and left end view.



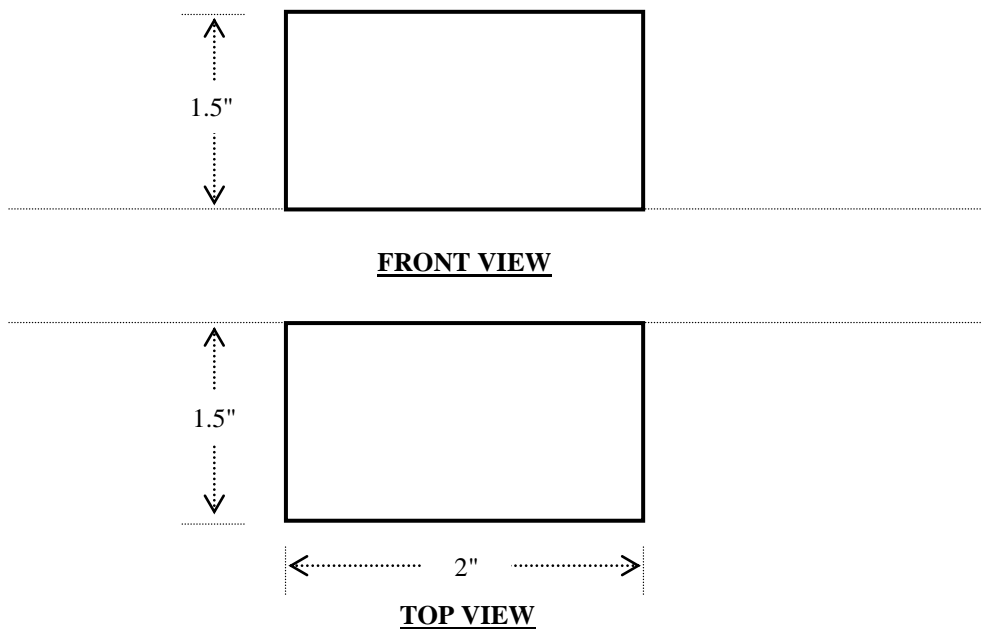
- An equilateral triangular prism 1.5" sides and 2.5" height rests on one of its rectangular faces on horizontal plane with its axis perpendicular to vertical plane. Draw its plan, front elevation and left end view.



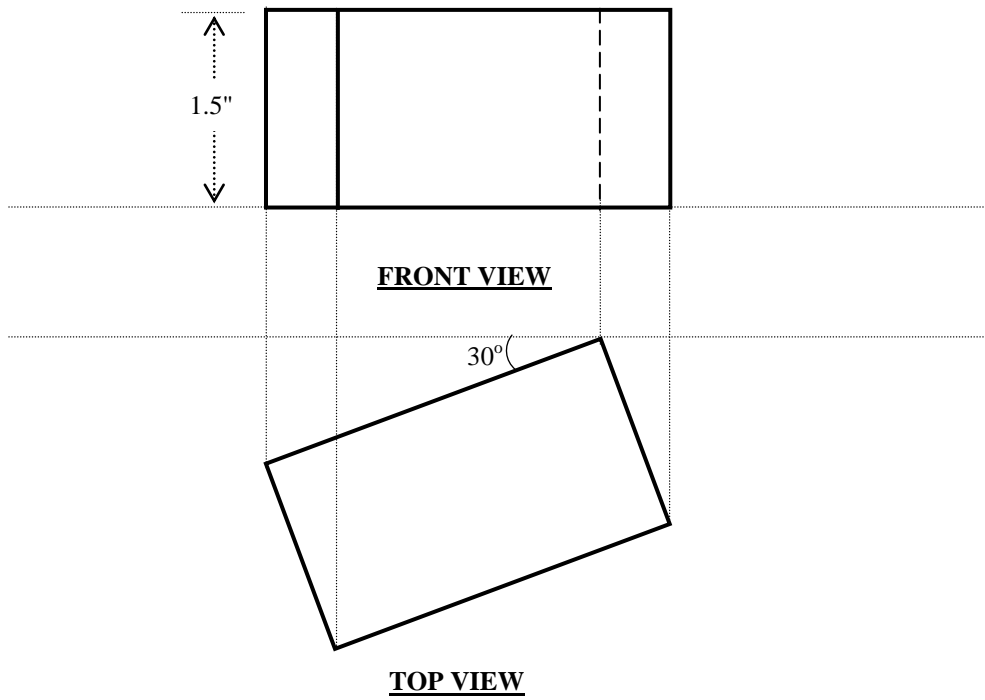
- An equilateral triangular prism of 1.5" sides and 2.5" height rests on one of its edges in horizontal plane with its axis perpendicular to vertical plane and one rectangular face making an angle of 30° with horizontal plane. Draw its plan, front elevation, left end view.



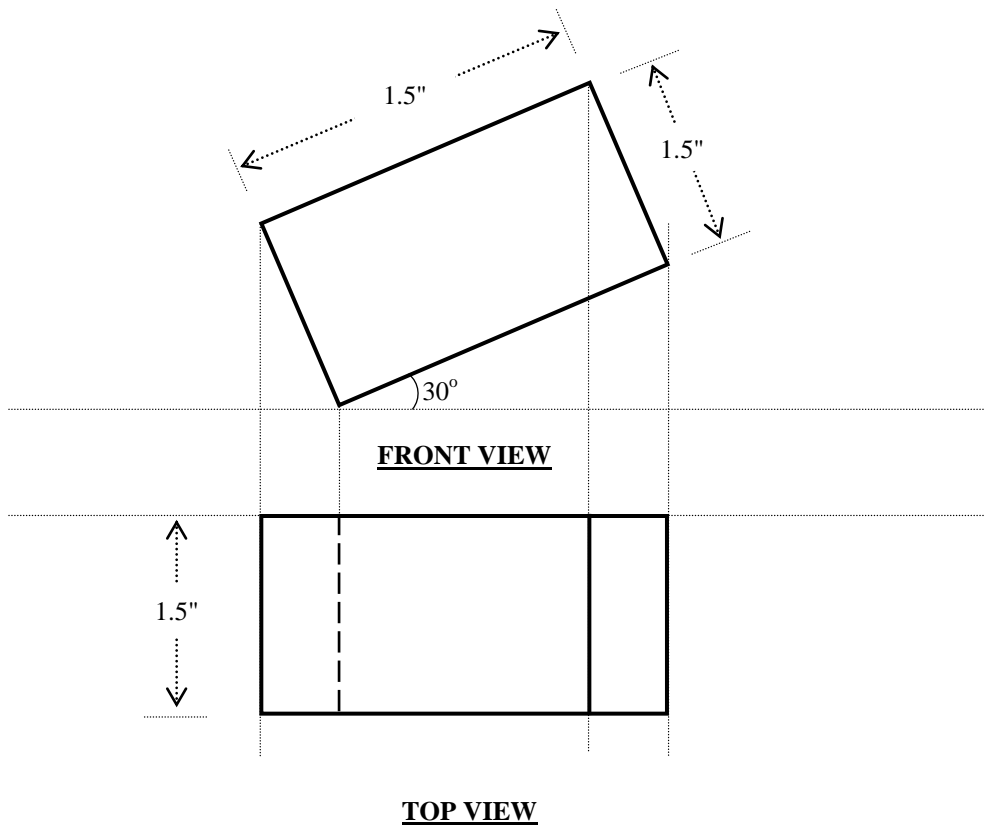
- A rectangular prism of 1.5" width, 2" length and 1.5" height rests on one of its edges in horizontal plane with its axis perpendicular to vertical plane. Draw its plan, front elevation.



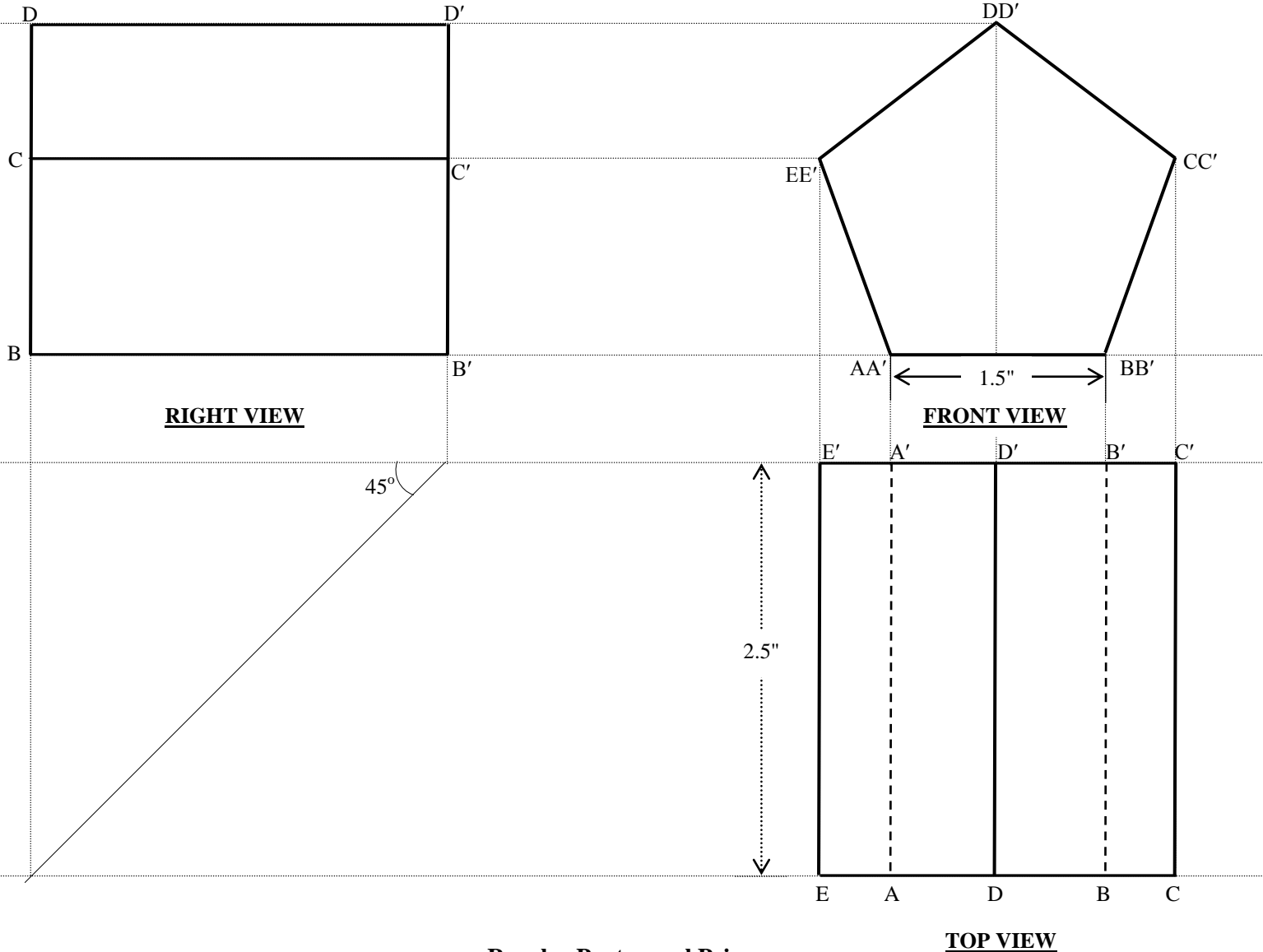
- A rectangular prism of 1.5" width and 2" length rests on one of its edges in horizontal plane with its axis perpendicular to vertical plane and one length making an angle of 30° with V.P. Draw its plan, front elevation.



- A rectangular prism of 1.5" width and 2" length rests on one of its edges in horizontal plane with its axis perpendicular to vertical plane and one rectangular face making an angle of 30° with H.P. Draw its plan, front elevation.

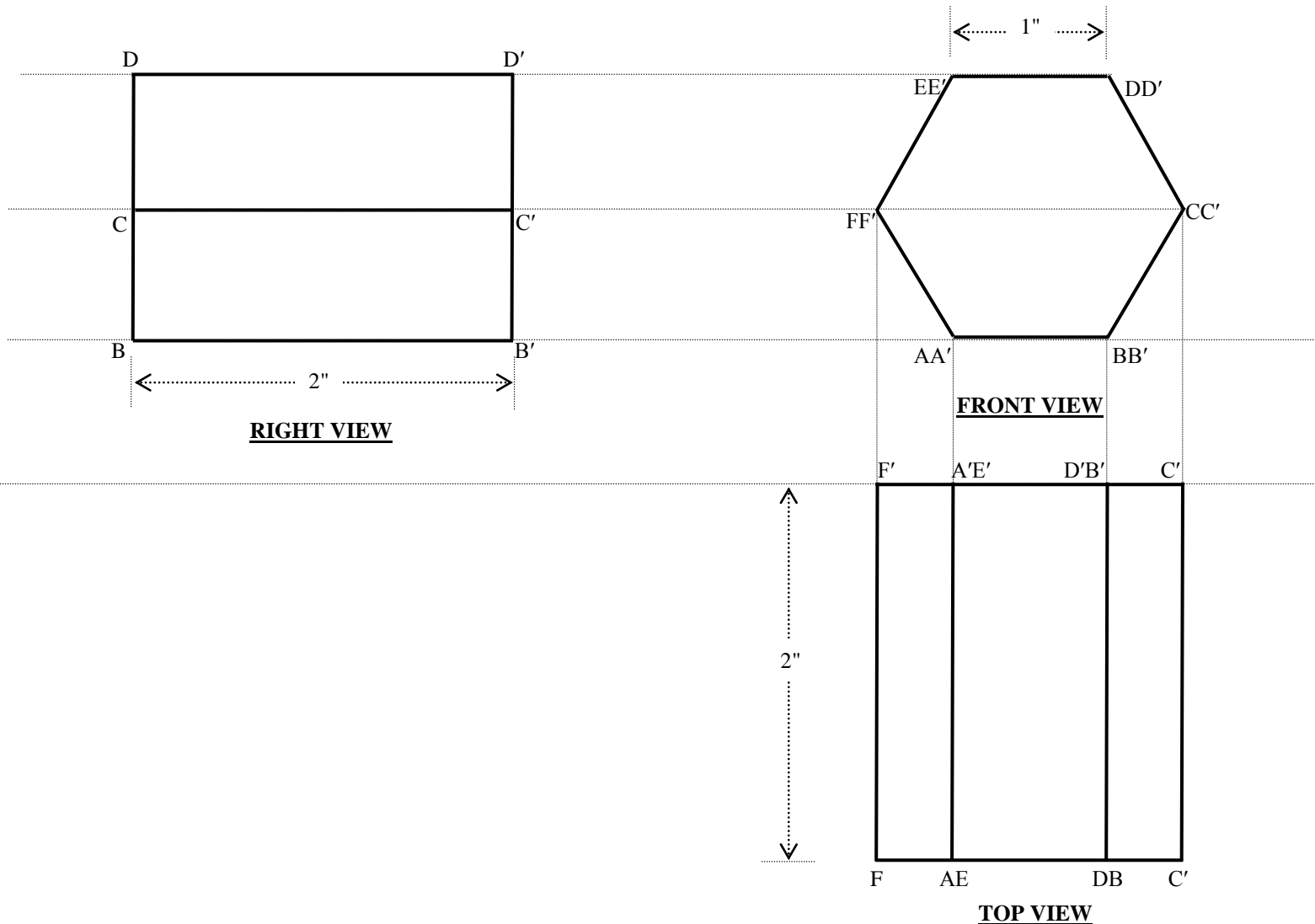


■ A regular pentagonal prism of 1.5" sides and 2.5" heights rest on horizontal plane with its axis perpendicular of vertical plane. Draw its top view, front view and right view.



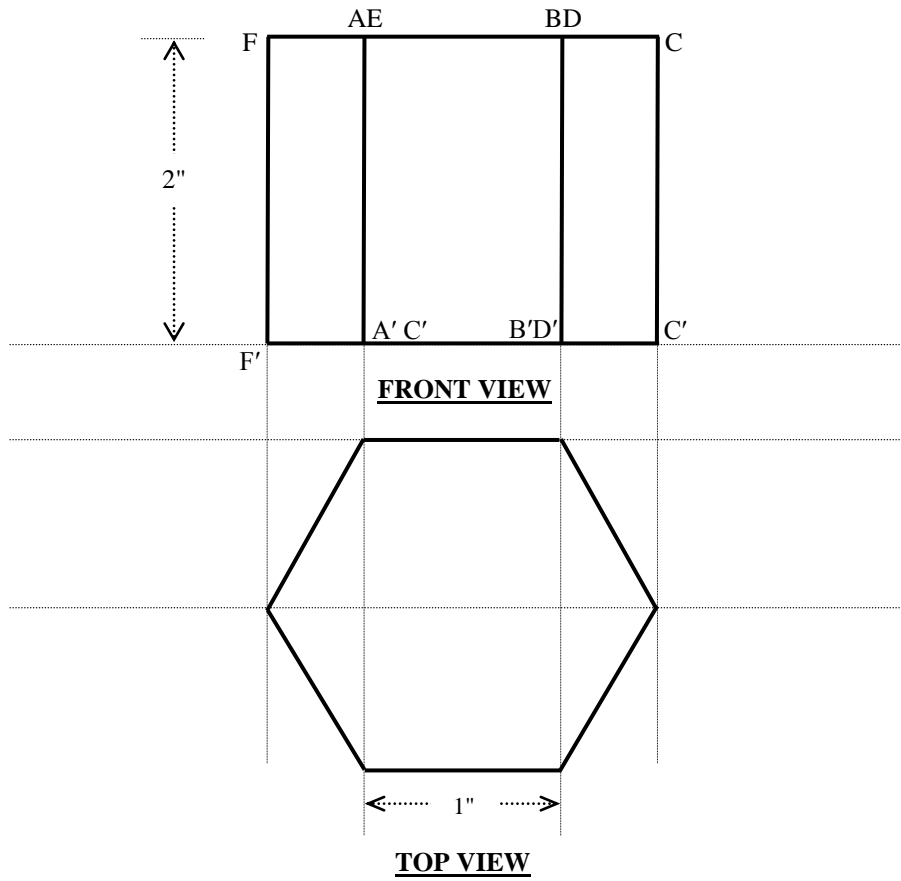
Regular Pentagonal Prism

■ A hexagonal prism of 1" sides and 2" heights rest on horizontal plane with its axis perpendicular of vertical plane. Draw its top view, front view and right view.

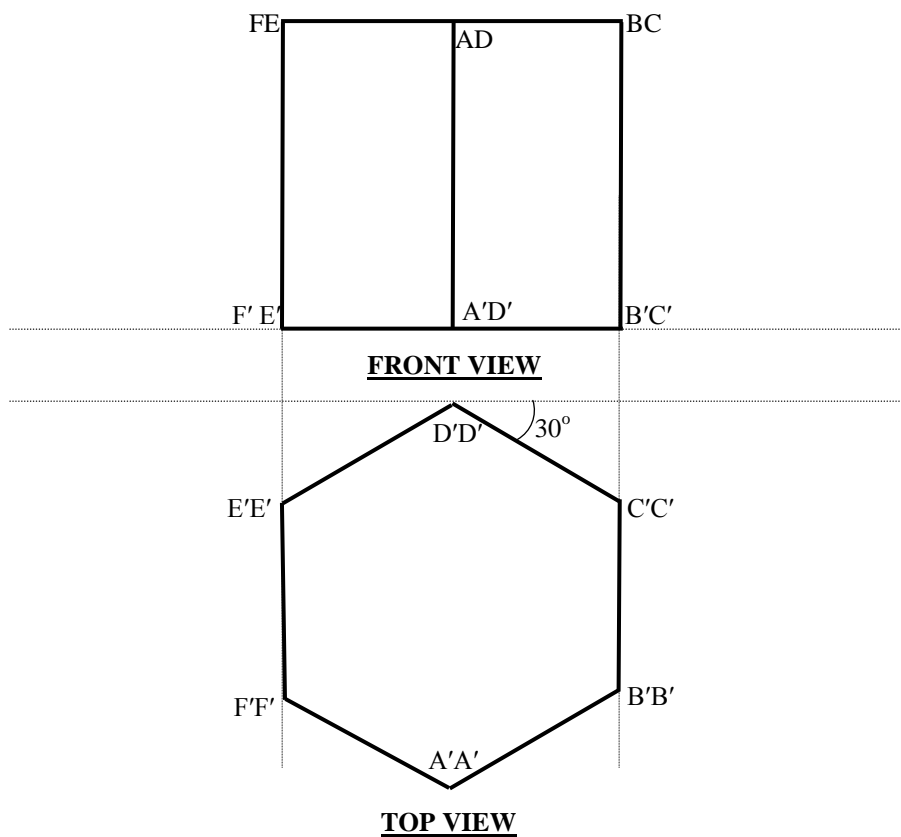


REGULAR HEXAGONAL PRISM

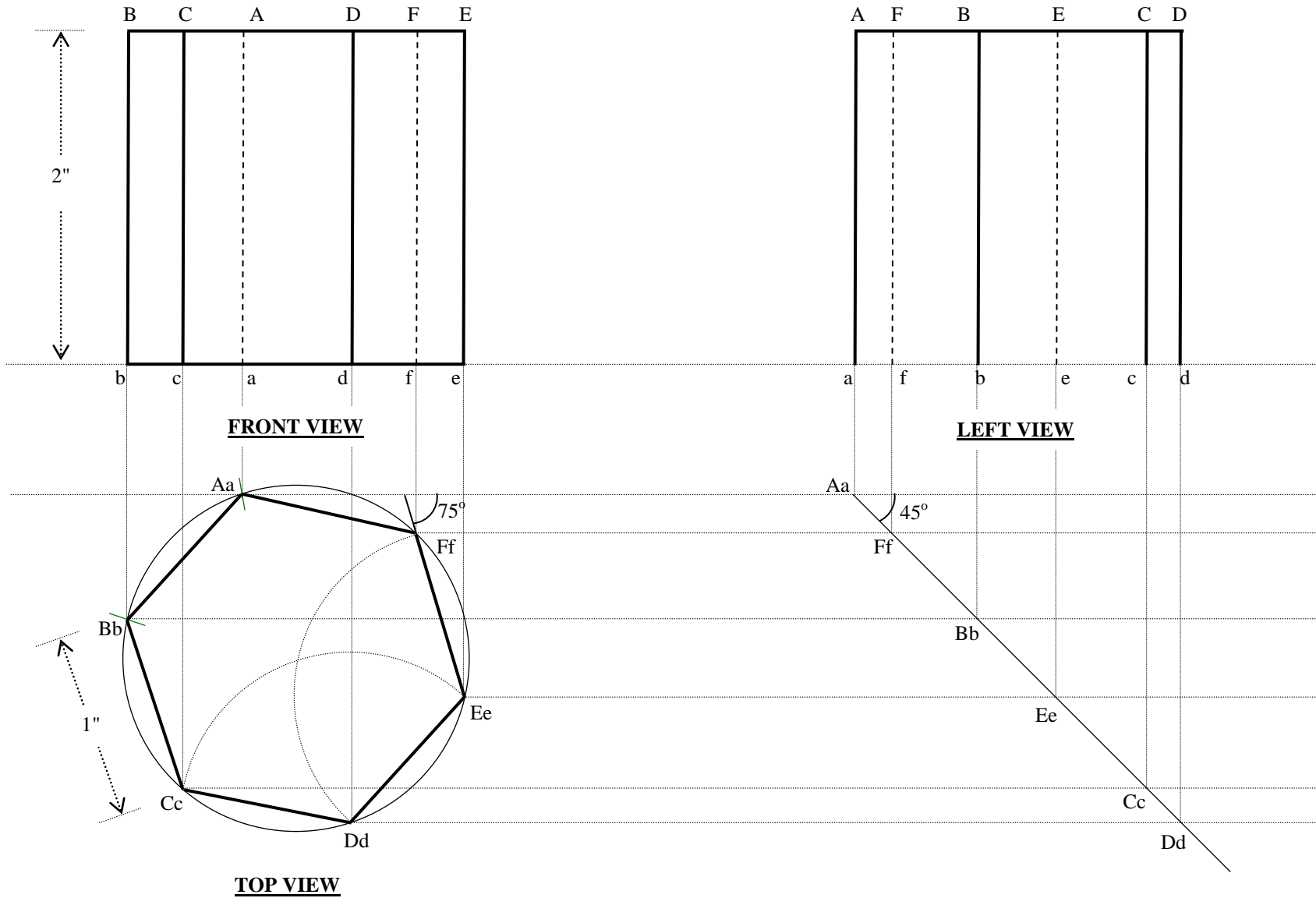
- A hexagonal prism of 1" sides and 2" heights rests vertically on its base on horizontal plane and its one edge of base is parallel to vertical plane. Draw top view and front view.



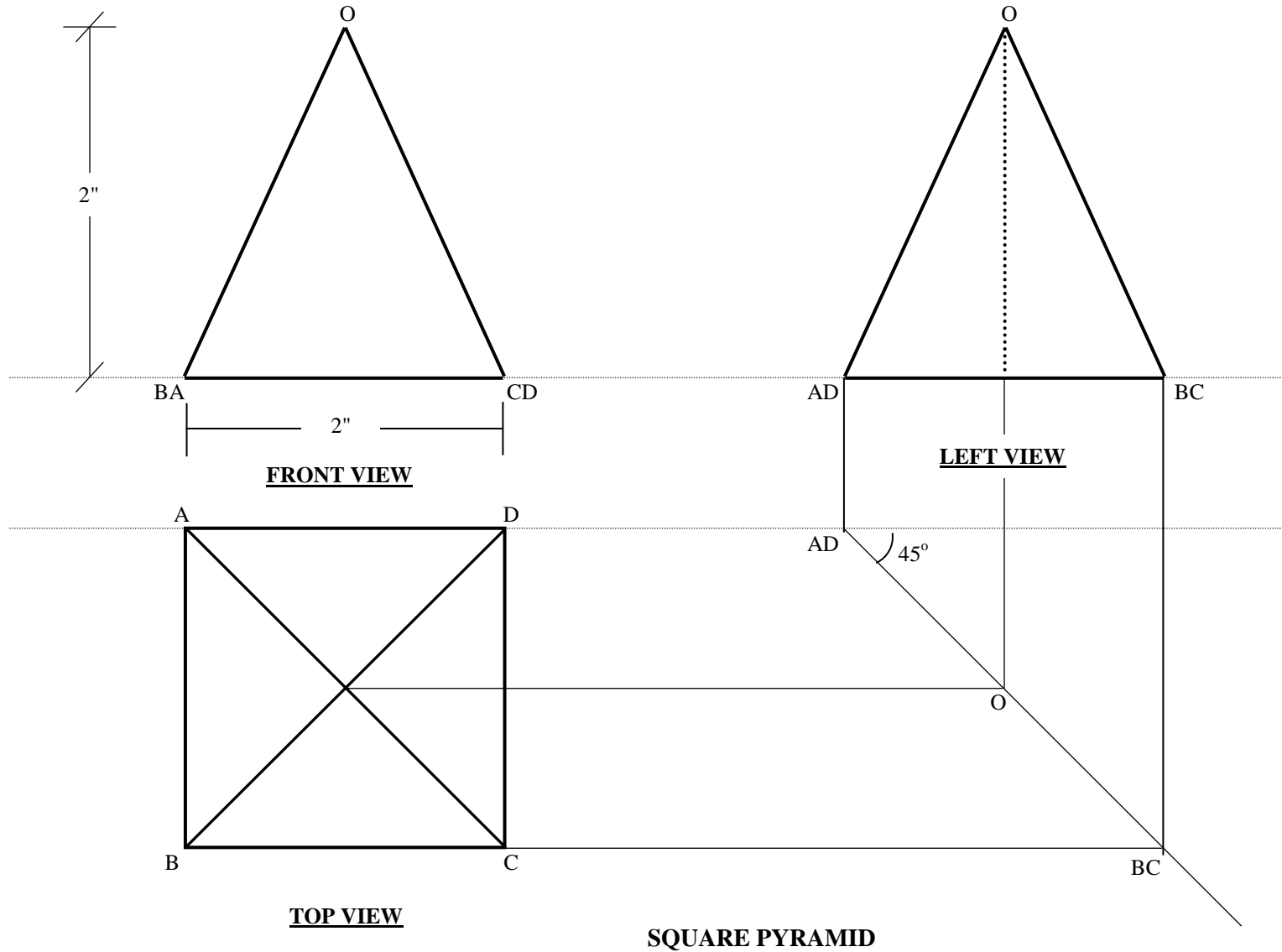
- A hexagonal prism of 1" inch sides and 2" inch heights rests vertically on its base on horizontal plane and its one edge of base makes an angle of 30° with vertical plane. Draw top view and front view.



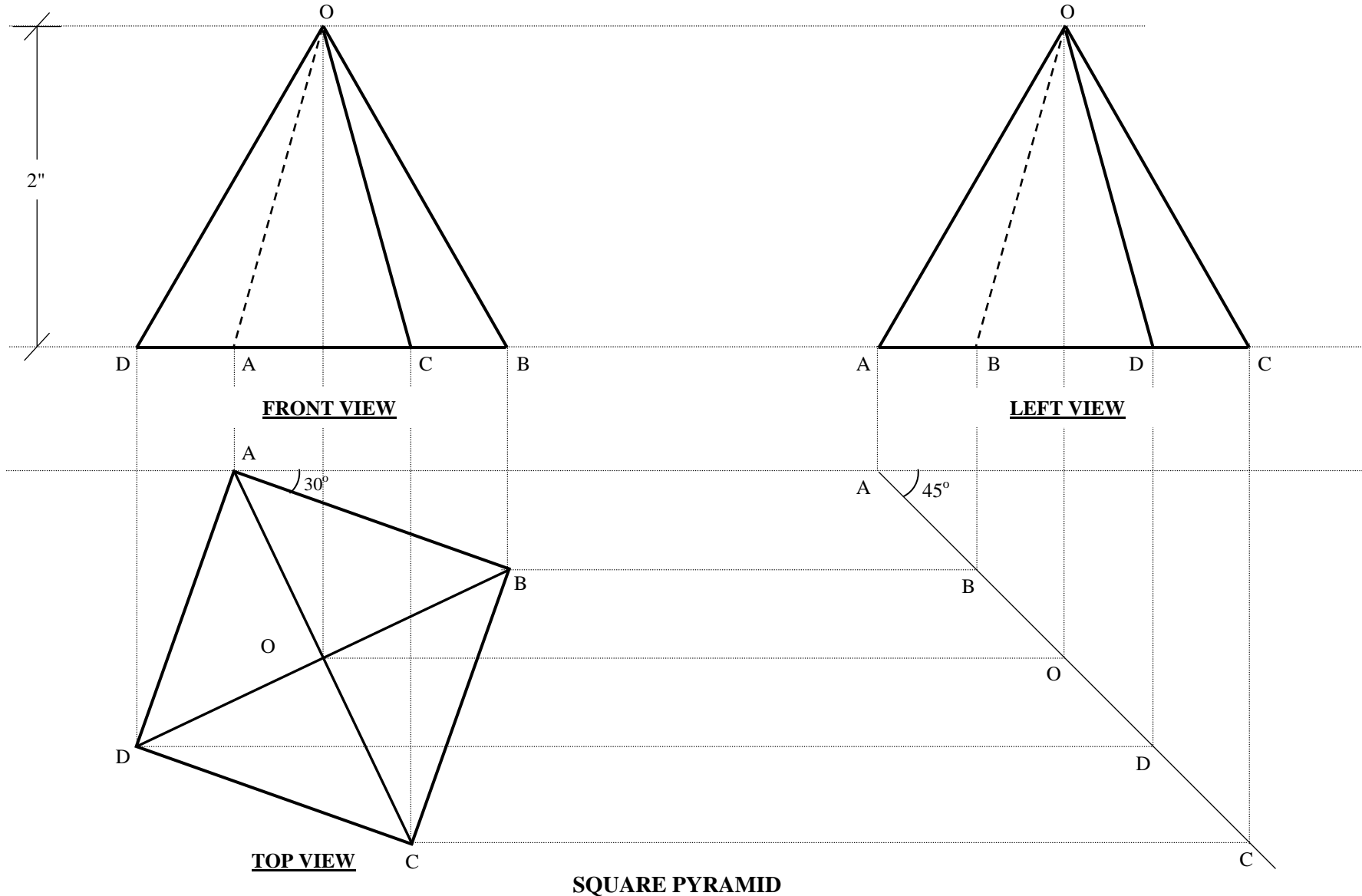
■ A hexagonal prism of 1" sides and 2" heights rests vertically on its base on horizontal plane and its one edge of the base makes an angle of 75° with vertical plane. Draw top view, front view and left view.



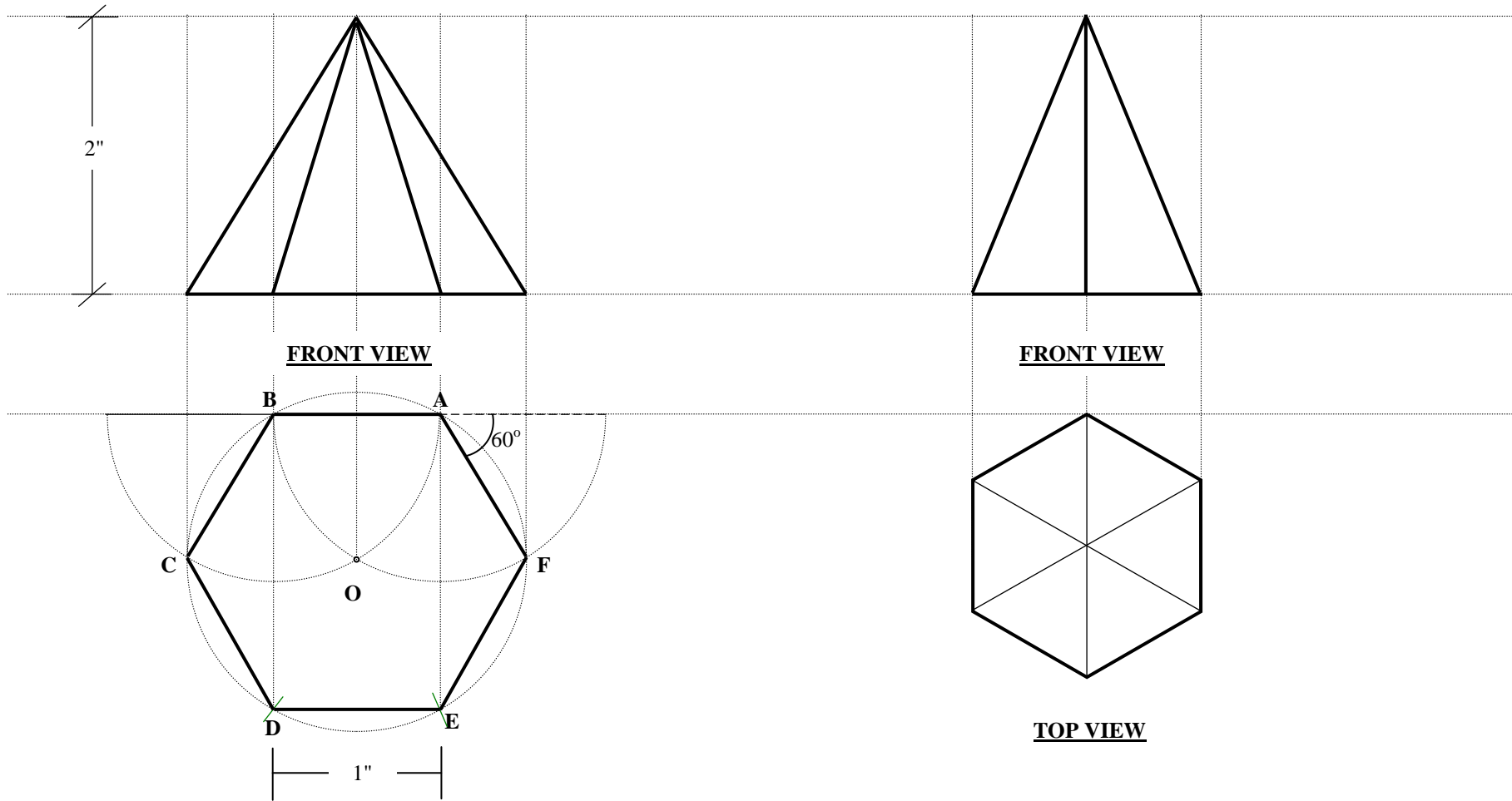
- A square pyramid of base 2" sides and vertical height 2" rests vertically on its base on horizontal plane and its one edge of axis/base is parallel to vertical plane. Draw top view, front view and left view.



■ A square pyramid of base 2" sides and vertical height 2" rests vertically on its base on horizontal plane with one edge of the base making an angle of 30° with the vertical plane. Draw its top view, front view and left view.

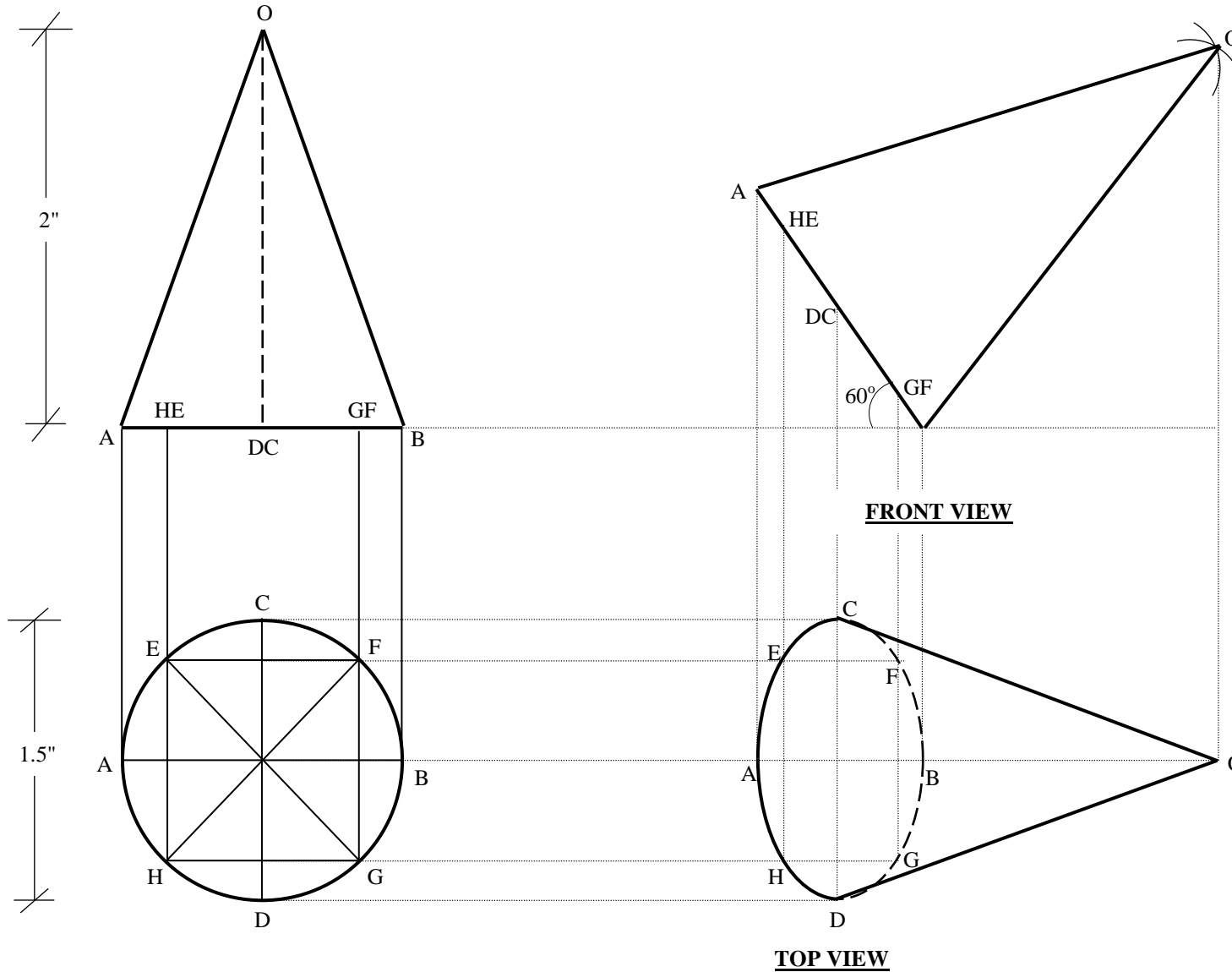


- A hexagonal pyramid of base 1" sides and vertical height 2" rests vertically on its base on H.P and its one edge of base is parallel to V.P. Draw top view or plan, front elevation.



HEXAGONAL PYRAMID

- A cone of 1.5" base diameter and 2" vertical height rests on edge of its base on horizontal plane with the base making an angle of 60° with horizontal plane and its axis parallel to vertical plane. Draw its plan, front elevation.



- A cylinder of 1.5" diameter and 3" length rests on edge of its end on H.P with the end making an angle of 30° with H.P and its axis parallel to V.P. Draw its plan, front elevation.

