Engineering Drawing Projections

مساقط الاجسام الهندسية

Lecture 6

المسقط:

هو المنظر المُشاهد من اتجاه معين من خلال تسطيح المجسمات وفك أبعادها الثلاث، ويتم إنشاء المسقط لشكلٍ ما بتخيل رؤيته من اتجاهات مختلفة ورسمه على مستويات مختلفة:

1. المستوى الرأسي: وفيه تتم رؤية المجسم من الأمام.
2. المستوى الأفقي: وفيه تتم رؤية المجسم من الأعلى.
3. المستوى الجانبي: وفيه تتم رؤية المجسم من الجانب.

وتعتمد عملية إنشاء المساقط على القدرة التخيلية البصرية لزوايا رؤية مختلفة، وفهم دقيق للمستويات البصرية.

فمثلا:

تخيل المنظر أمامك غرفة:

* كل ما يمكنك مشاهدته على (الأرض) وأنتِ (فوق) يدخل ضمن المستوى الأفقي.
* كل ما يمكنك مشاهدته على (الجدار الجانبي الأيمن) وأنتِ (واقفة في الجهة اليسرى) يدخل ضمن المستوى الجانبي.
* كل ما يمكنك مشاهدته على (الجدار أمامك) وأنتِ (في المقدمة) يدخل ضمن المستوى الرأسي.

ولأي شكل في الفراغ أحد الوضعين التاليين:

1- معلق في الهواء.

2- موضوع على الأرض.

3- ركني.

المساقط اتبع الخطوات التالية:

1- ارسم خط التقاطع بين المستويات: وهو خطان متعامدان ينصفان المستوى إلى أربعة أقسام:

- الأيسر العلوي: المستوى الرأسي.
- الأيسر السفلي: المستوى الأفقي.
- الأيمن العلوي: المستوى الجانبي.
- الأيمن السفلي: مساحة لنقل الأطوال بواسطة الفرجار.

2- حدد نوع الشكل المطلوب رسمه وأبعاده طولا وعرضا ارتفاعا.

3- حدد وضعة في الفراغ:

- معلق في الهواء.
- موضوع على الأرض (على المستوى الأفقي).

4- حدد وضعه بالنسبة للمستويات الأخرى:

1- ركني.
2- ملاصق للمستوى الرأسي.
3- ملاصق للمستوى الجانبي.
4- حسب المساحة المطلوبة.

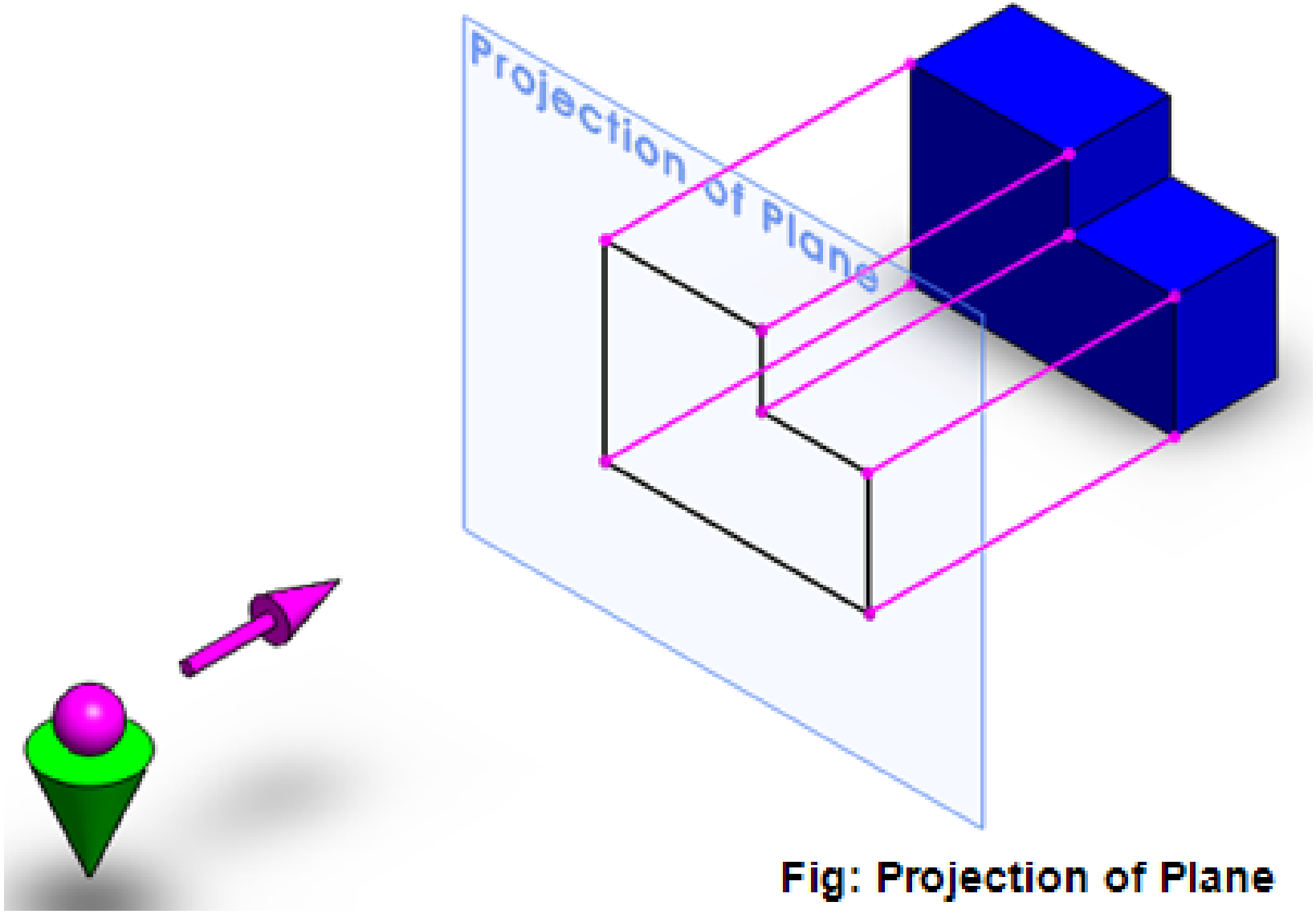
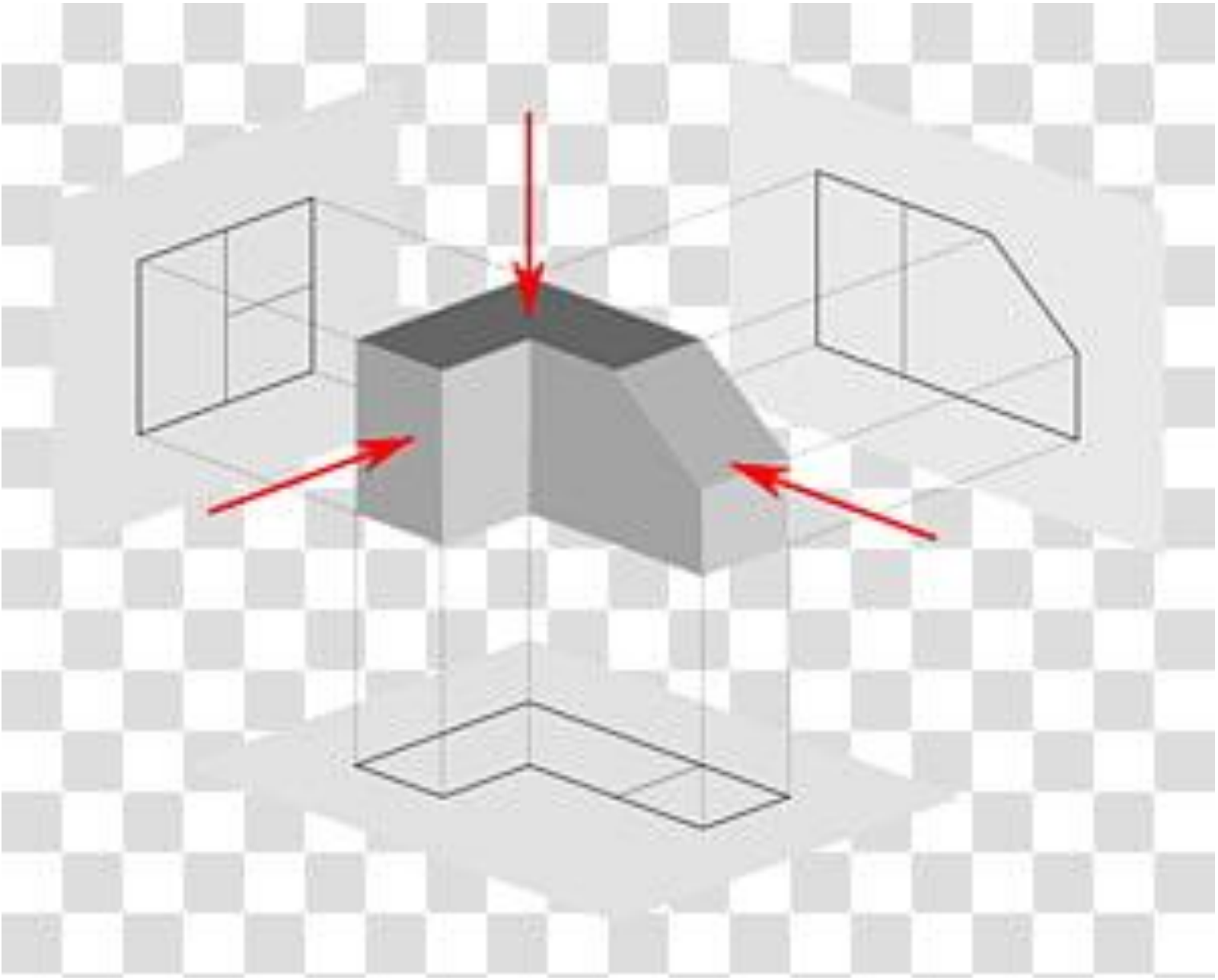
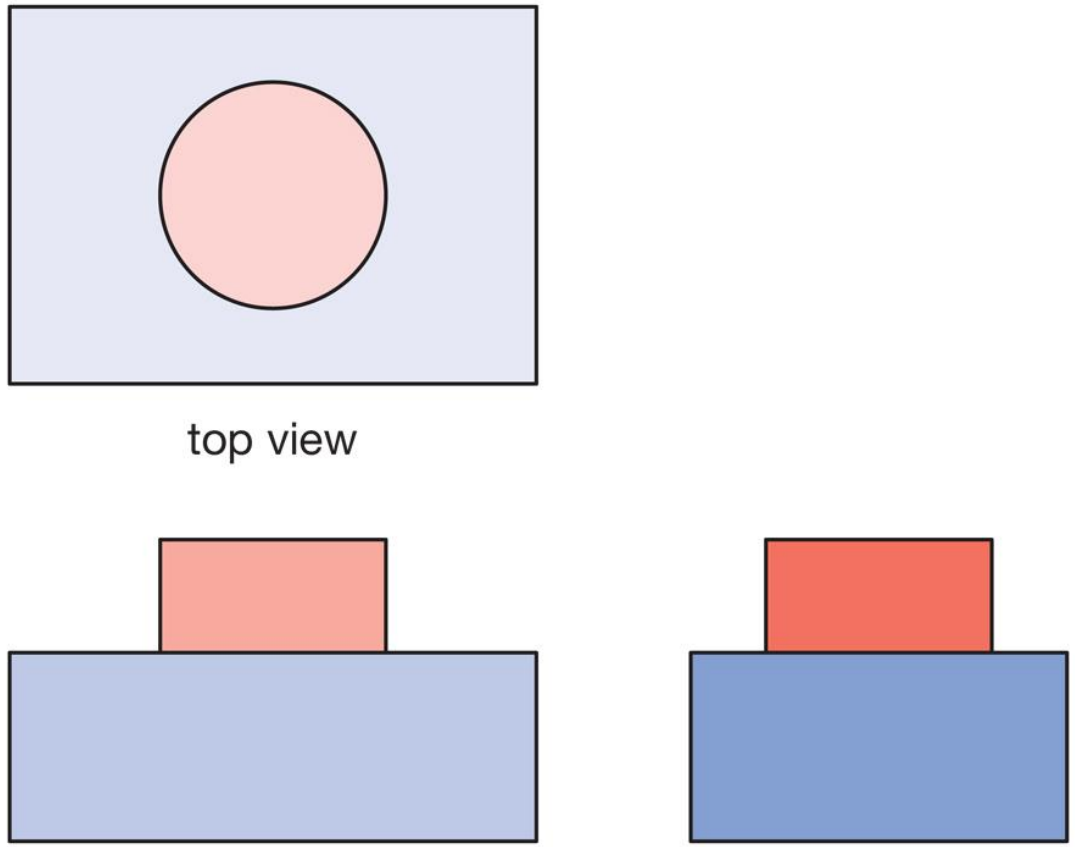


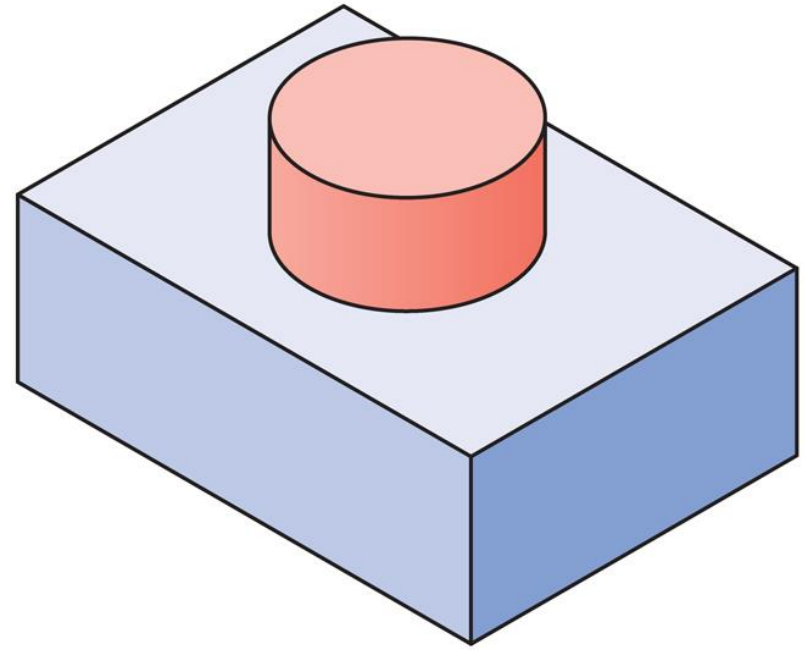
Fig: Projection of Plane



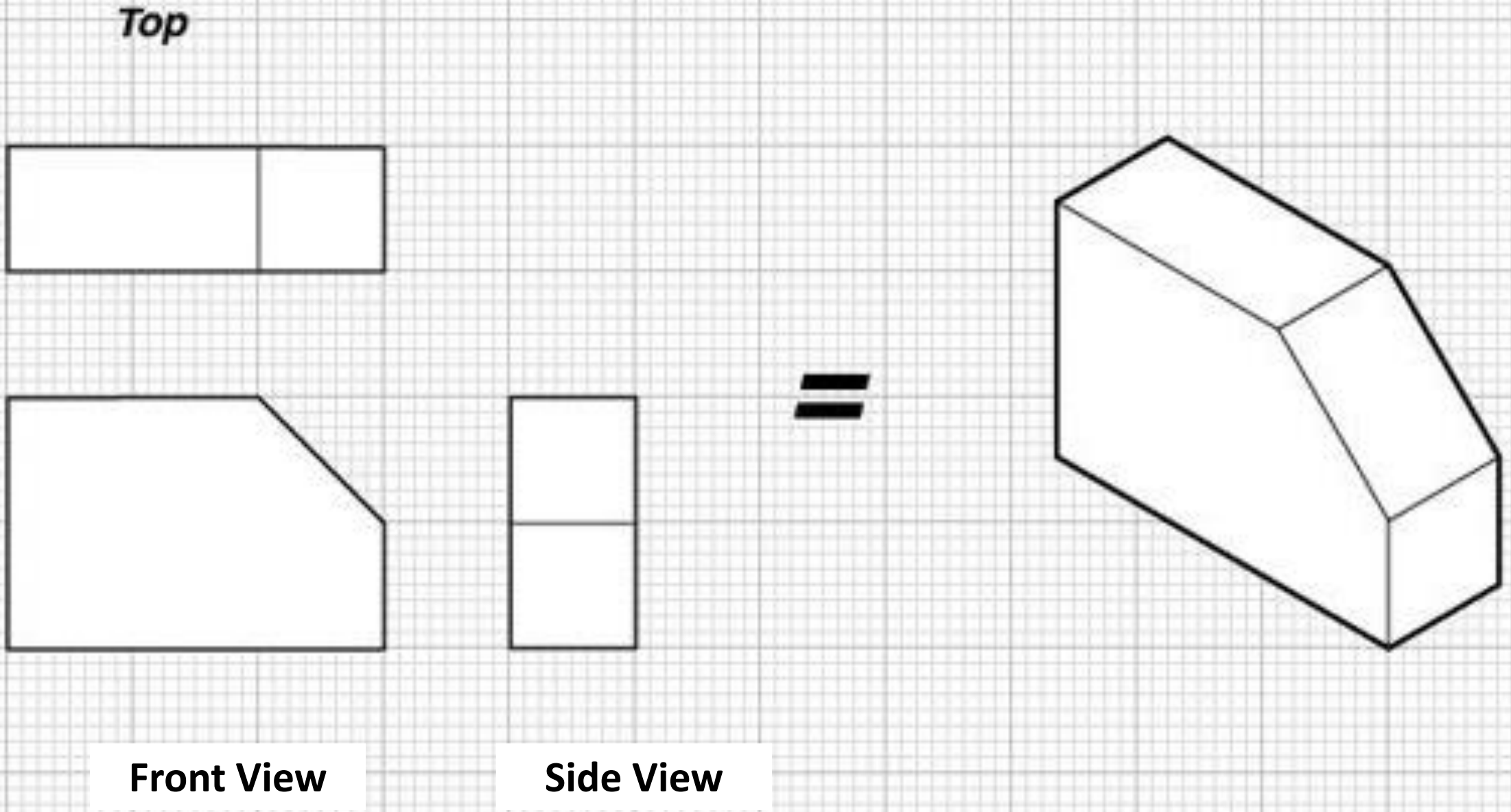
Orthographic and isometric projections of an object

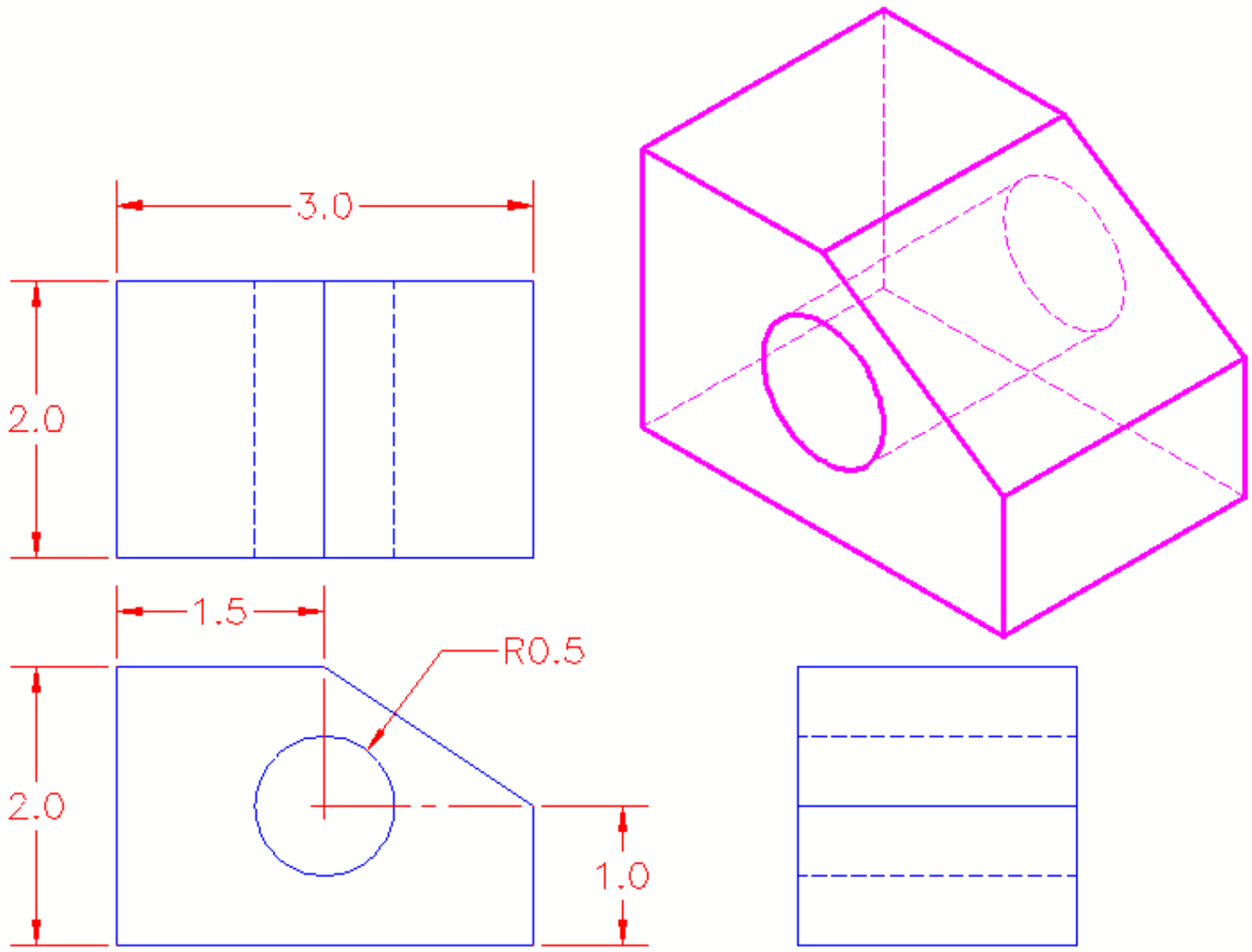


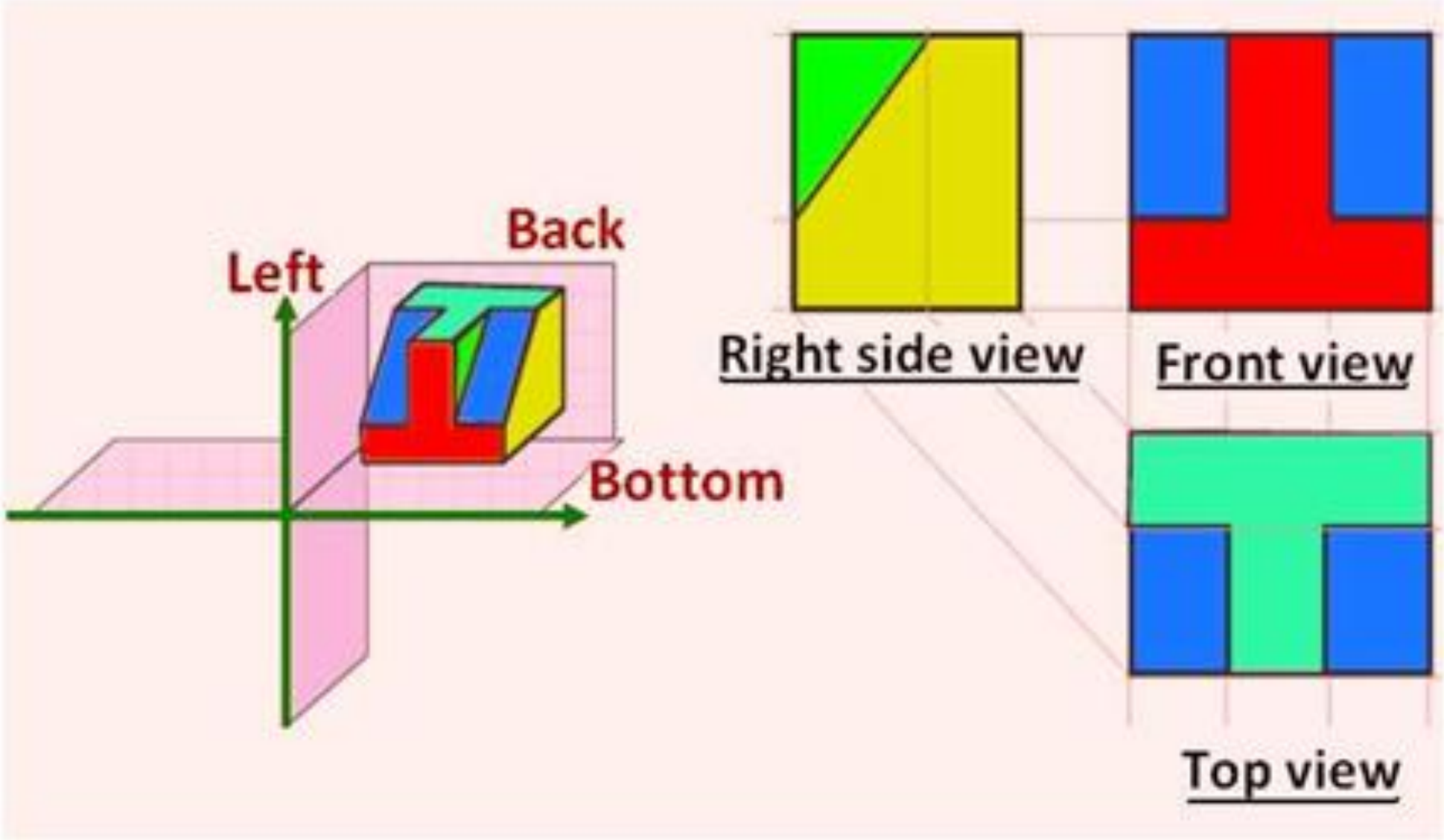
2-dimensional orthographic projection

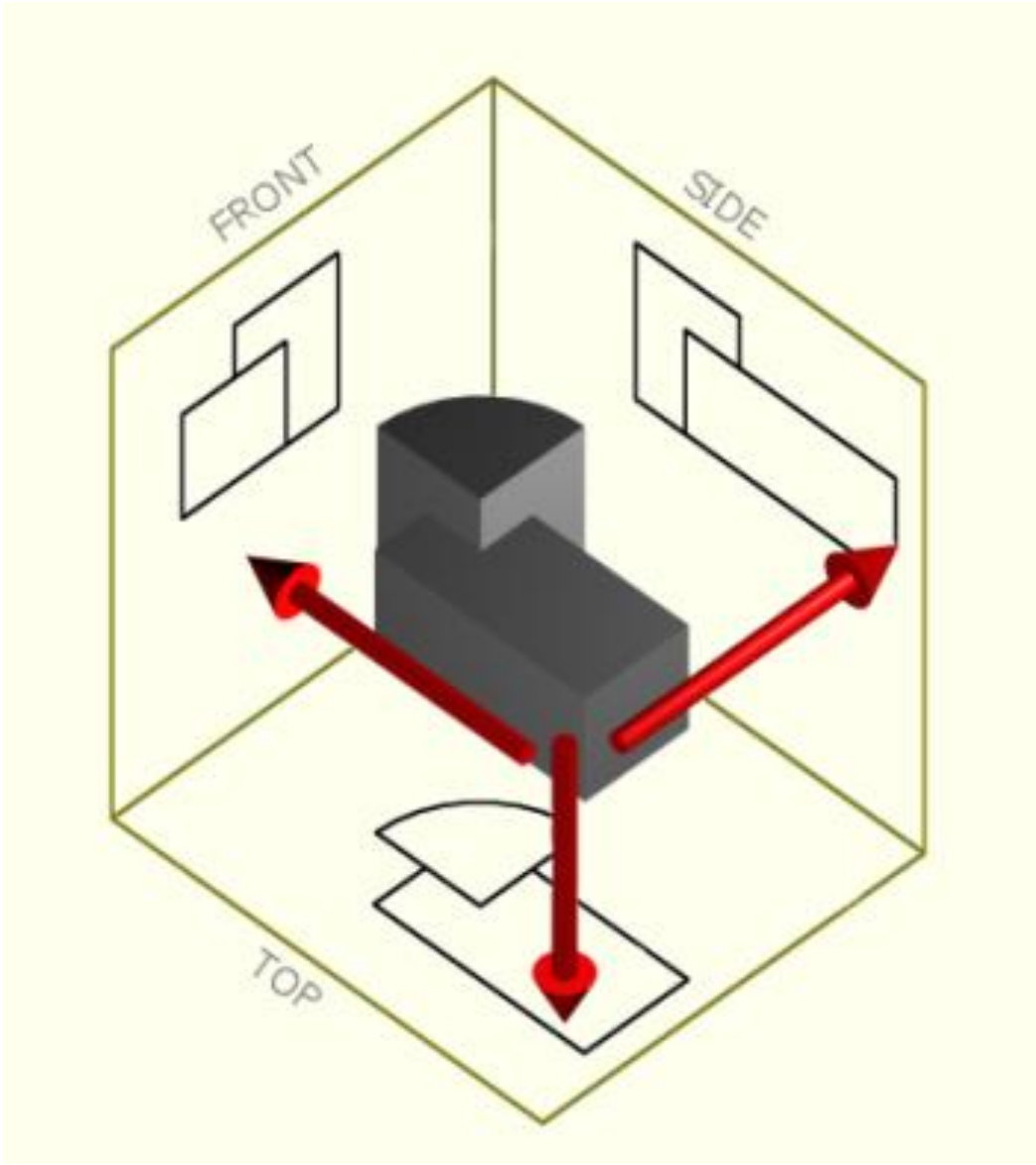


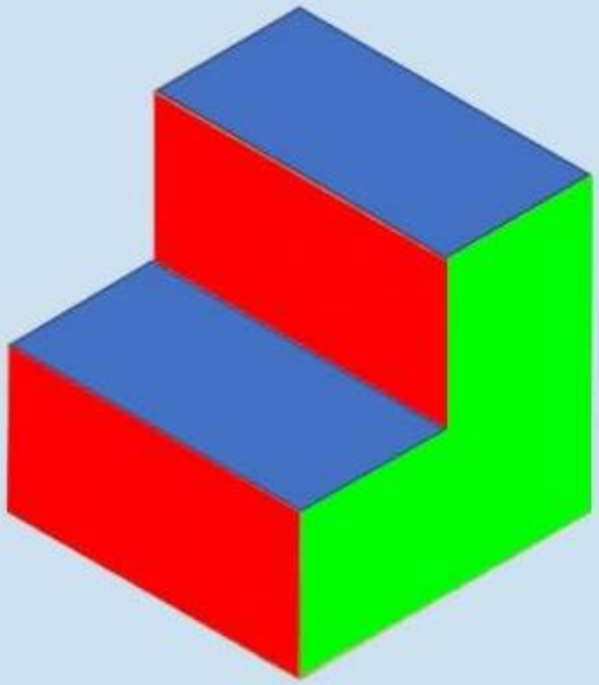
3-dimensional isometric projection


Top
Front View
Side View


3.0
2.0
1.5
R0.5
2.0
1.0


Back
Left
Bottom
Right side view
Front view
Top view


FRONT
SIDE
TOP



First Angle Isometric Projection

ISOMETRIC 3D BOX / CUBE

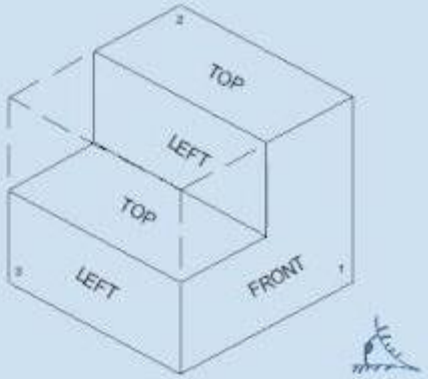


Fig. 1

2D ORTHOGRAPHIC VIEWS

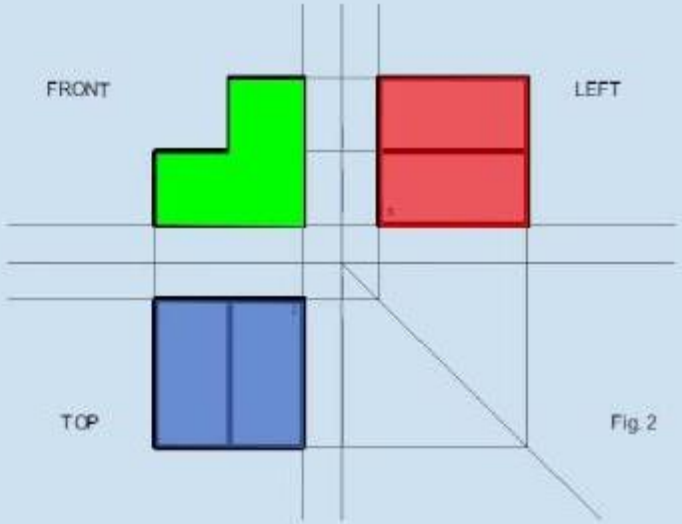
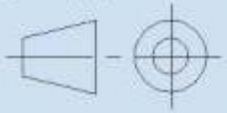
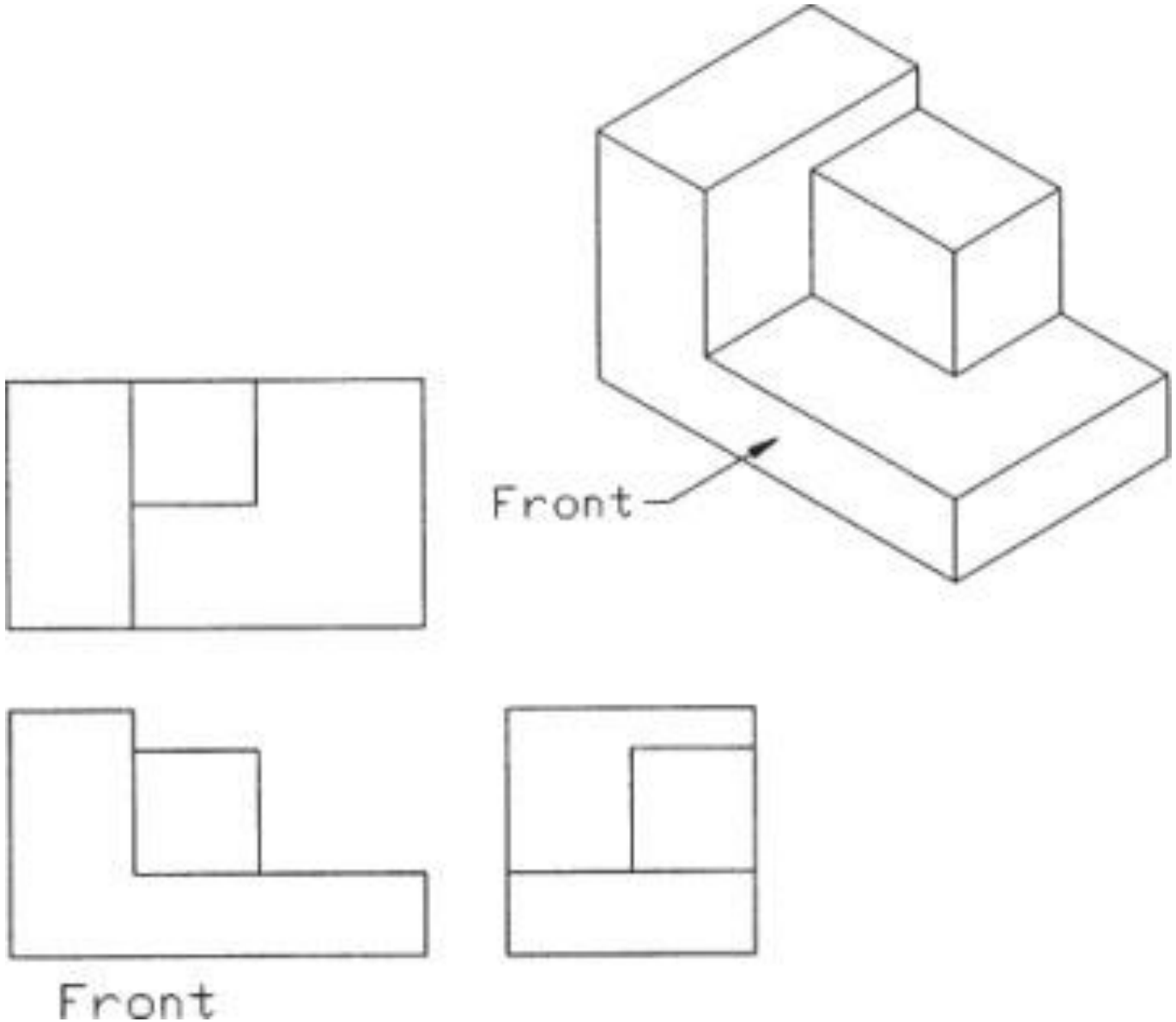
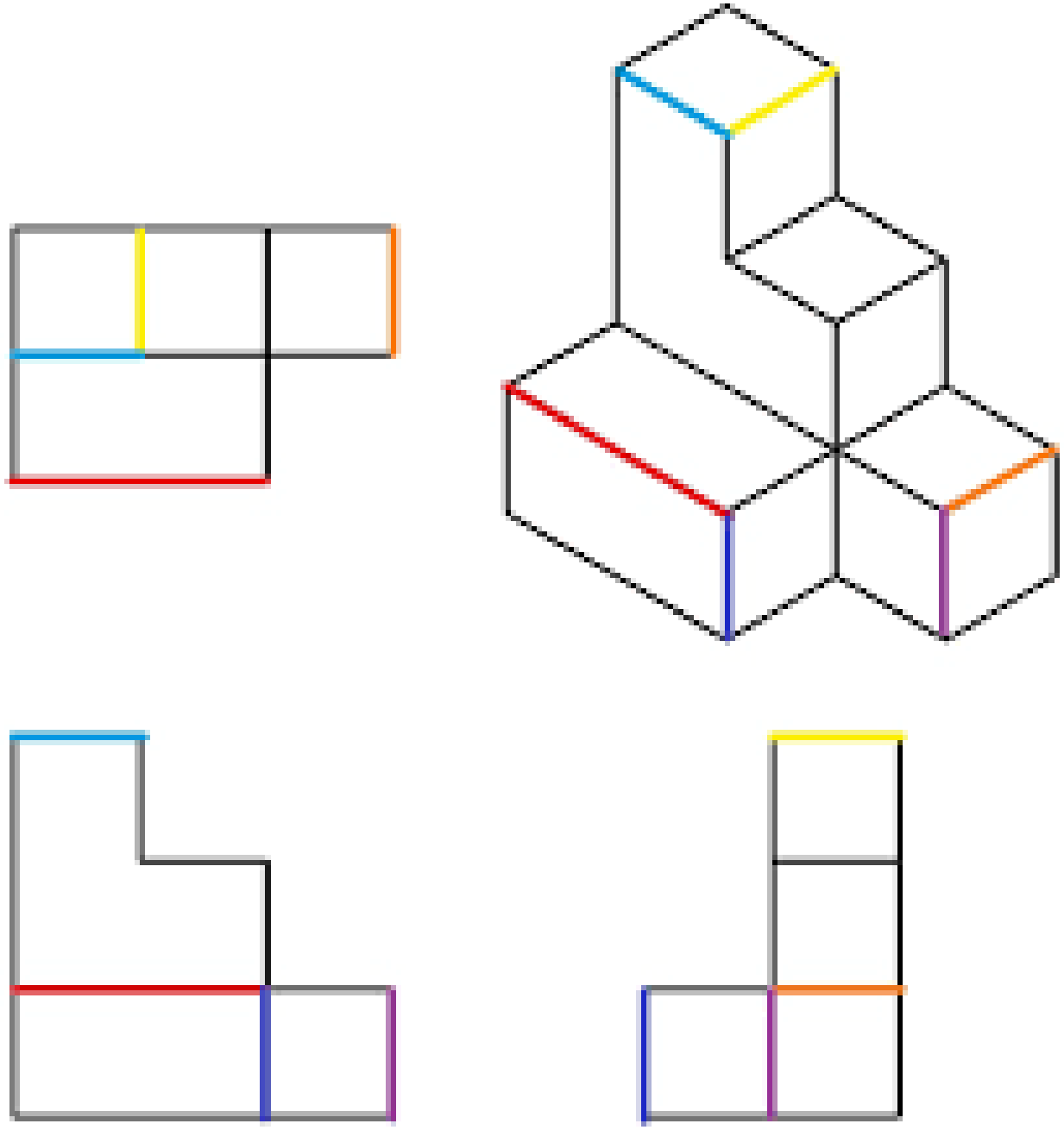


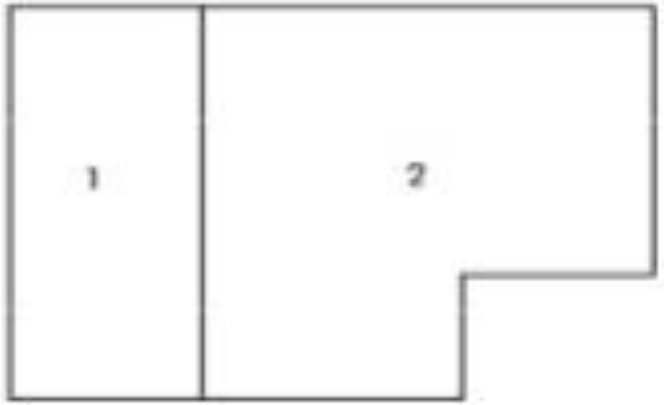
Fig. 2

First Angle Orthographic Projection Symbol

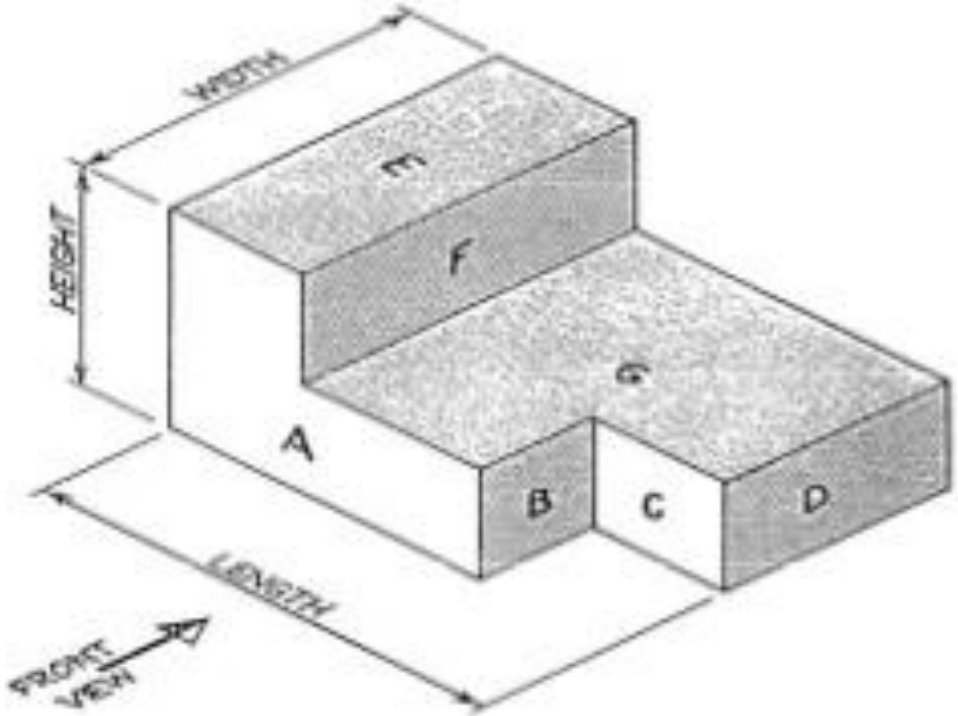


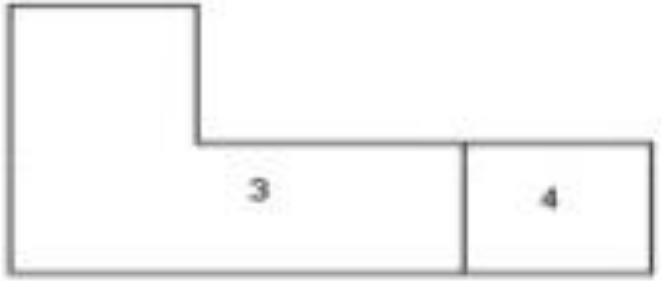

Front
Front



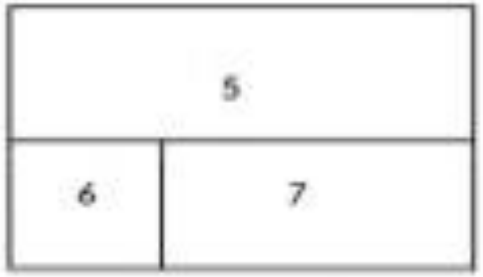


TOP VIEW





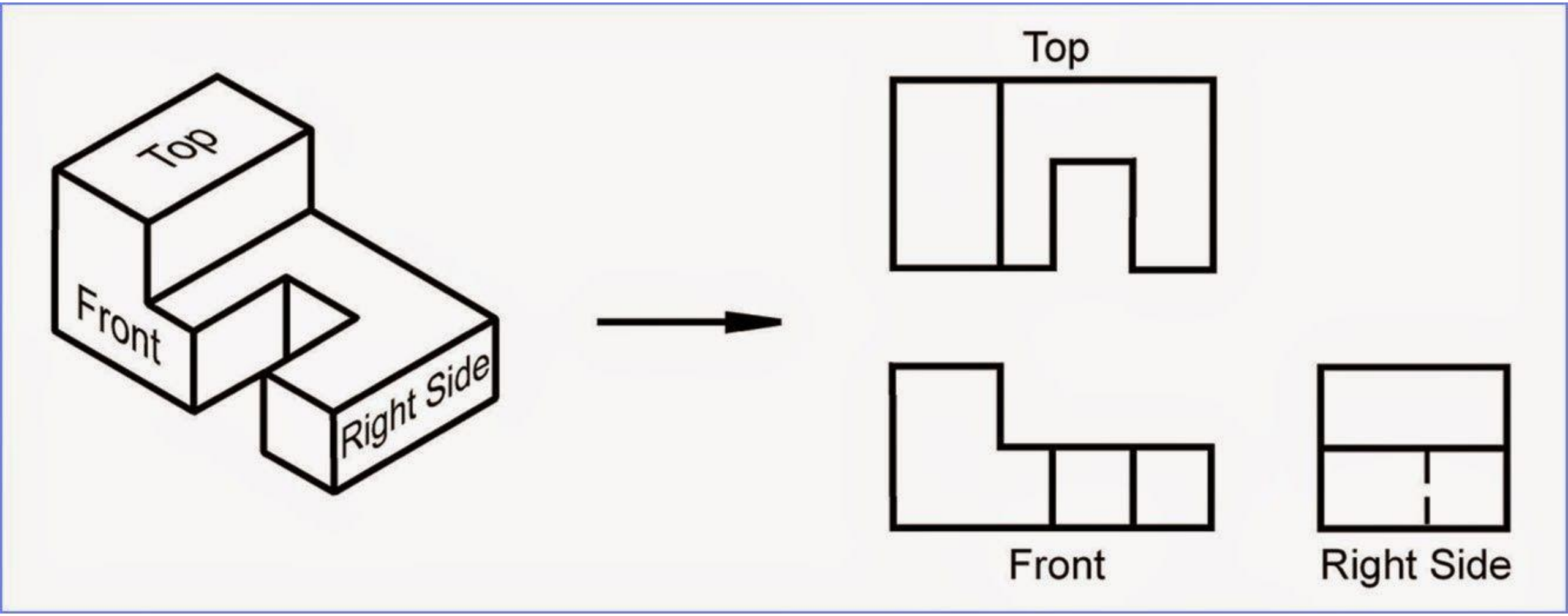
FRONT VIEW

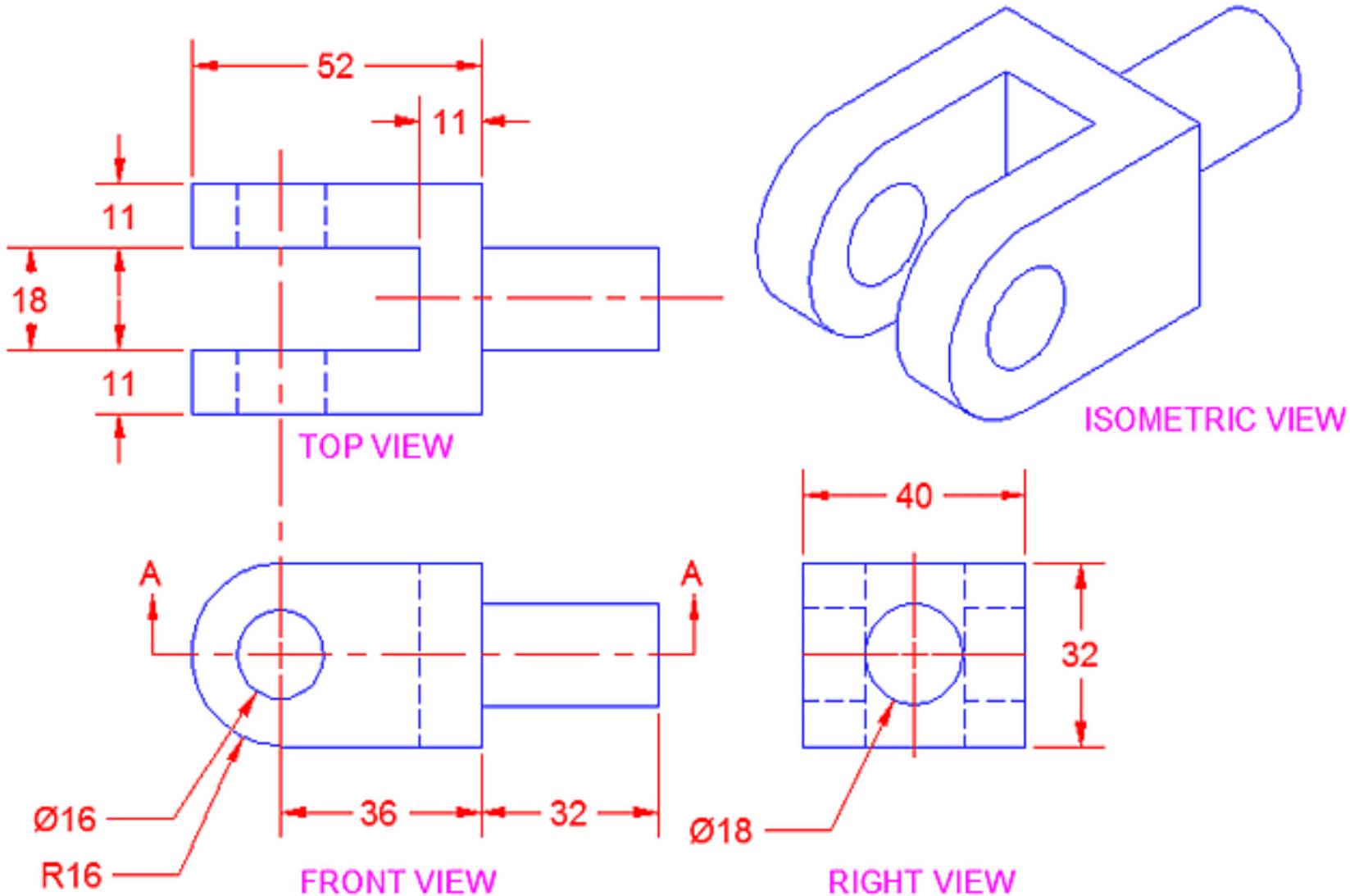


SIDE VIEW

A	B	C	D	E	F	G

DRG.	ORTHOGRAPHIC PROJECTION	EXERCISE 2


Top
Front
Right Side
Top
Front
Right Side


52
11
11
18
11
TOP VIEW
ISOMETRIC VIEW
40
A
A
32
Ø16
R16
36
32
Ø18
FRONT VIEW
RIGHT VIEW

Isometric Drawing

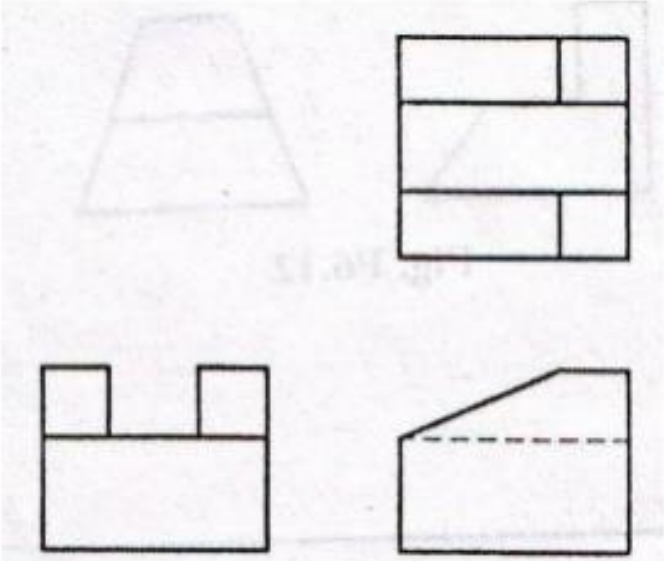
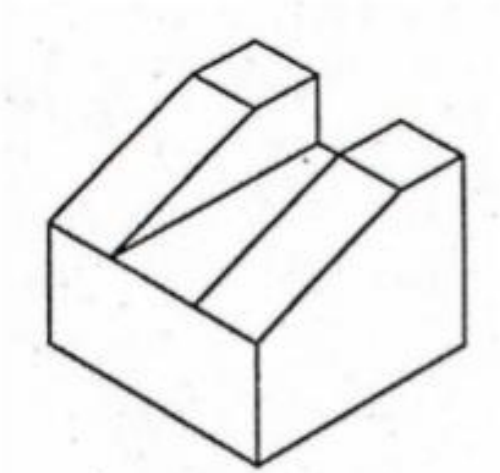


Fig. P6.3



Solution of P6.3

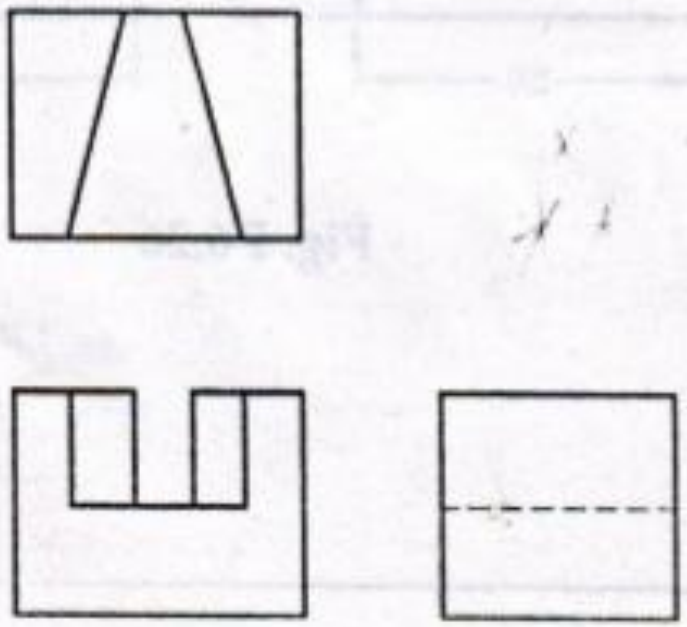
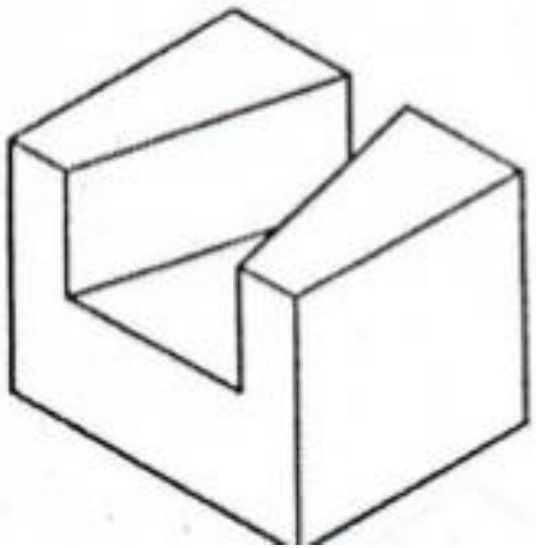
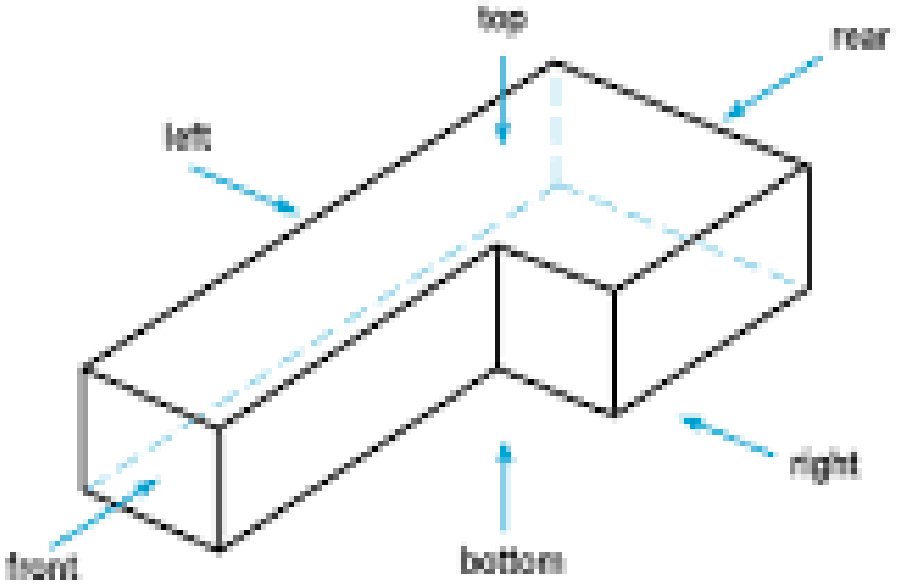
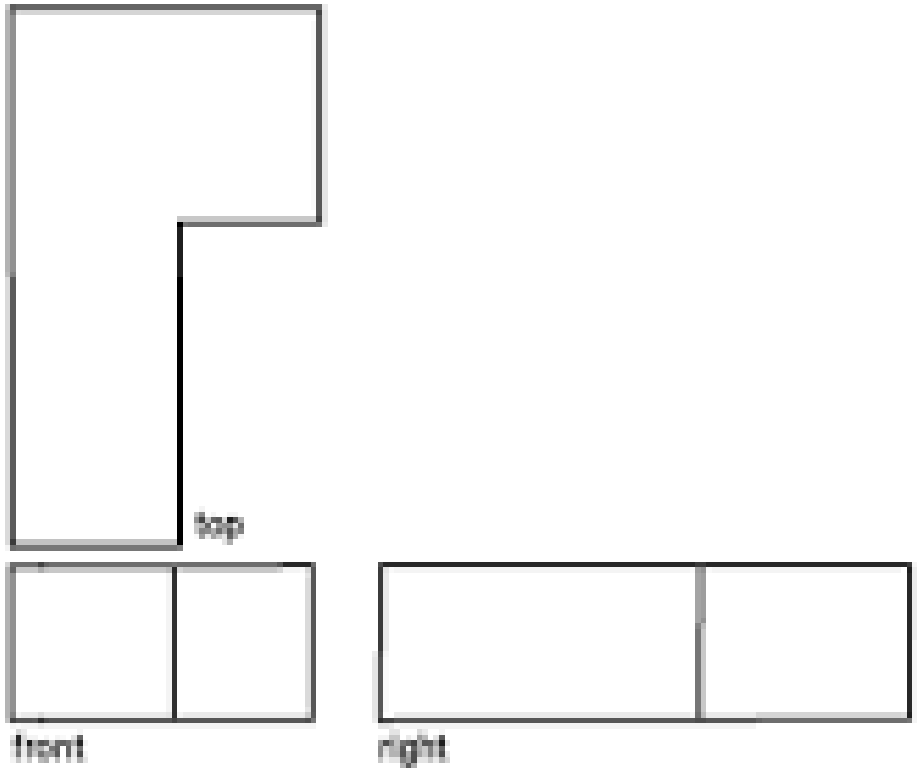


Fig. P6.19

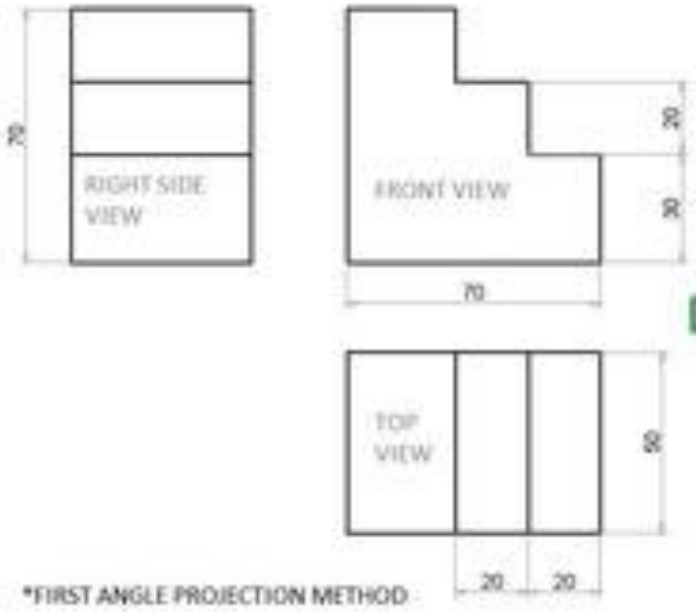


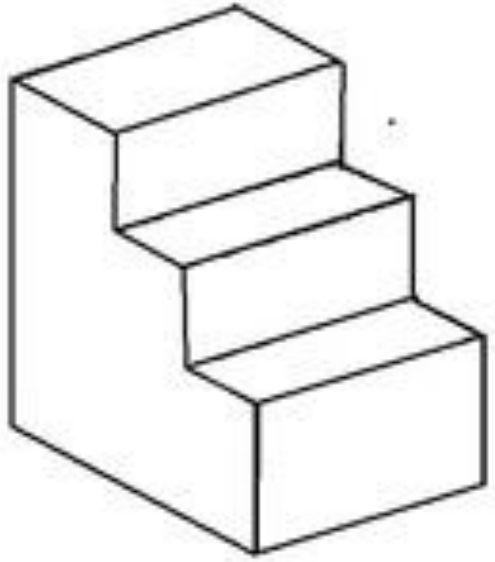


ISOMETRIC VIEW



ORTHOGRAPHIC VIEW





Orthographic Views

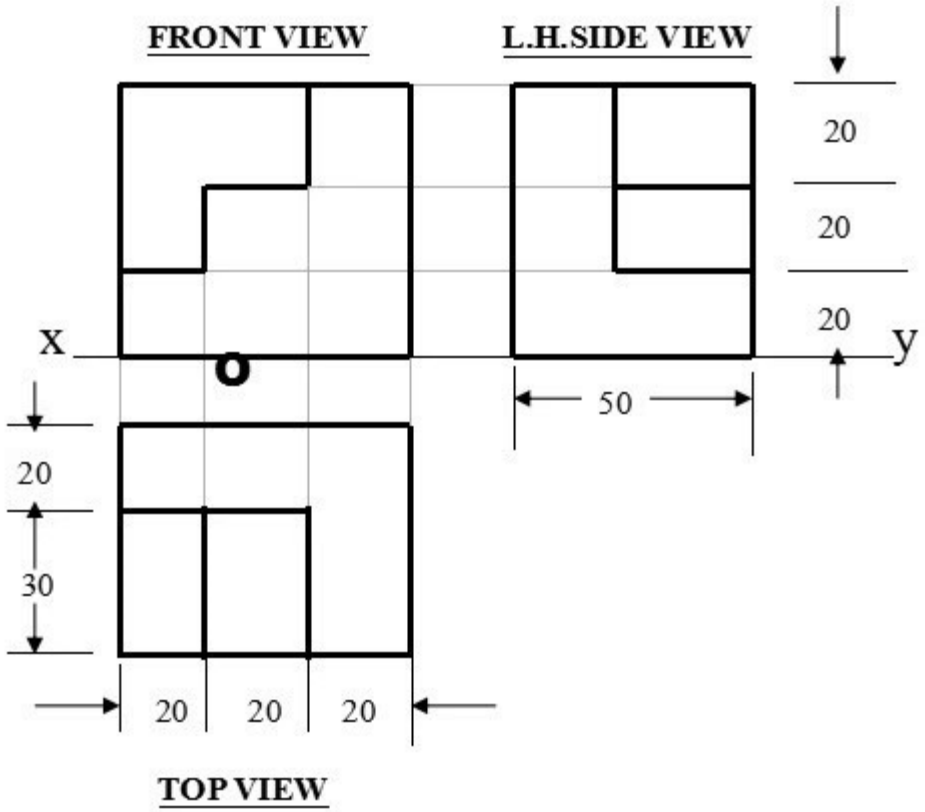
Multiple 2D Views

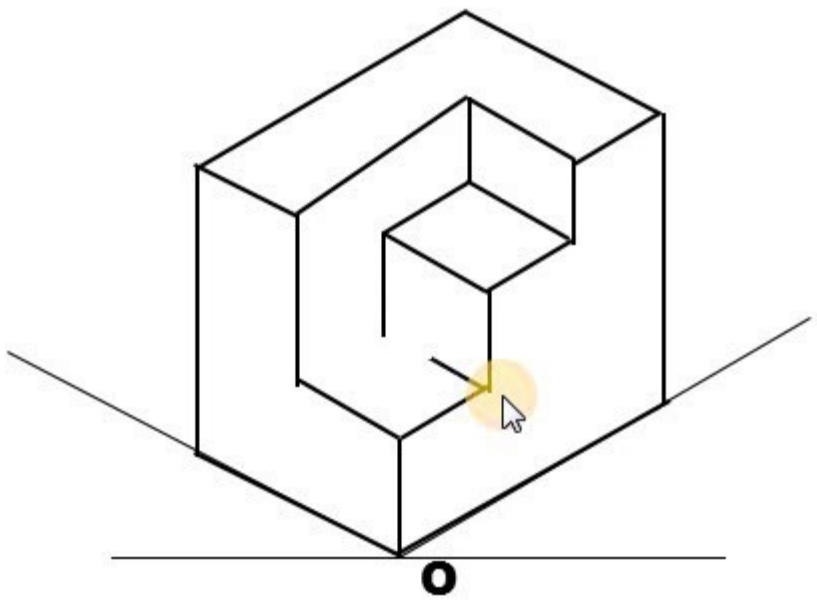
Isometric View

One 3D View

Realistic View

F.V. & T.V. and S.V.of an object are given. Draw it's isometric view.

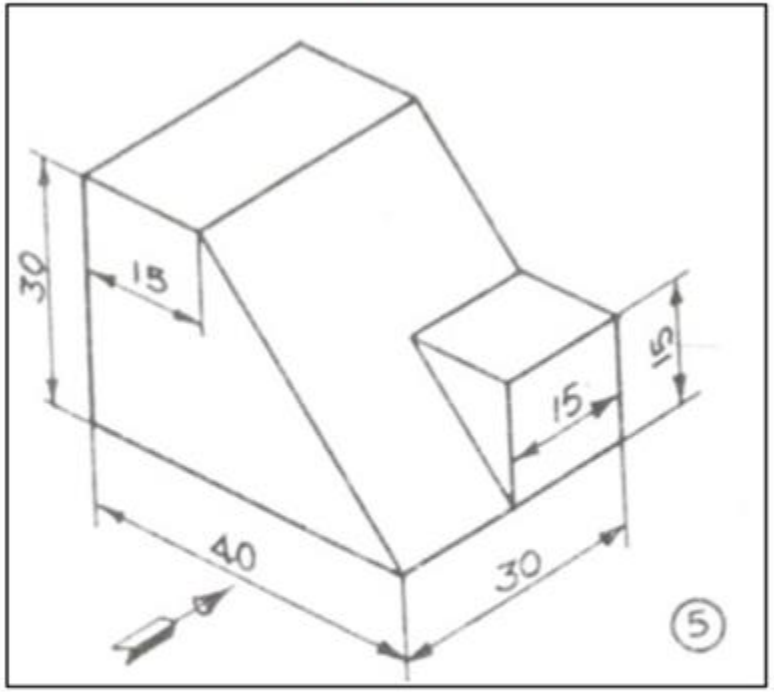




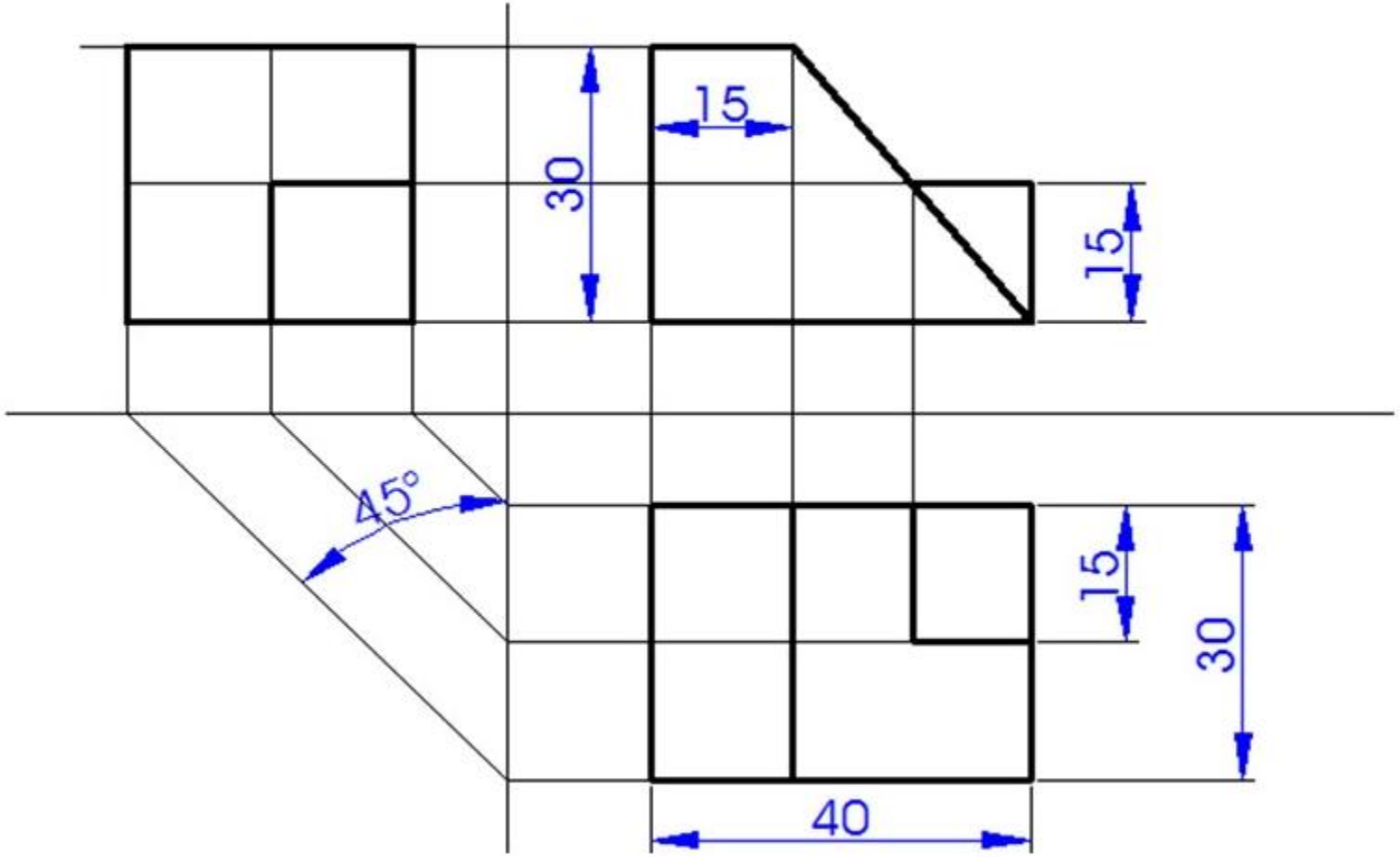
ISOMETRIC VIEW

ORTHOGRAPHIC PROJECTIONS

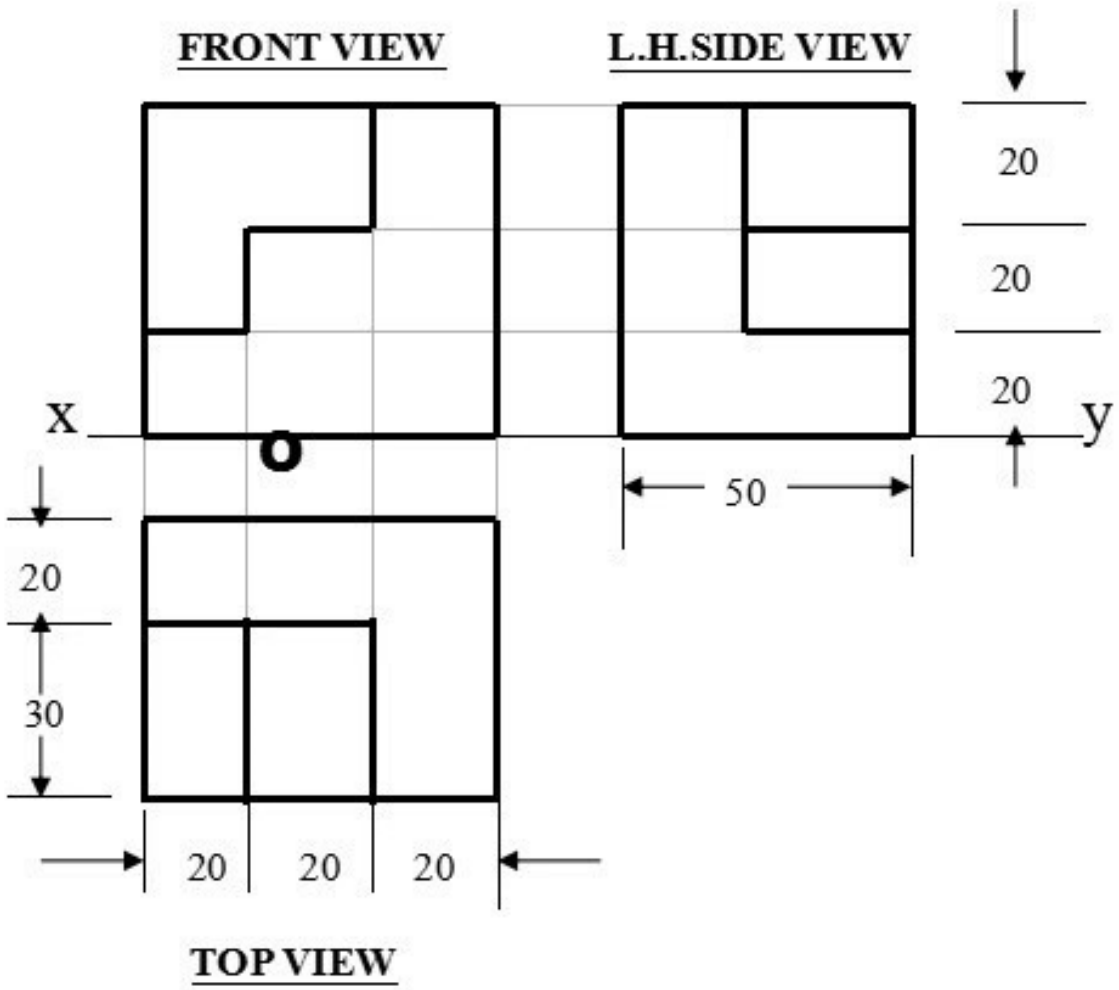
Pictorial Representation

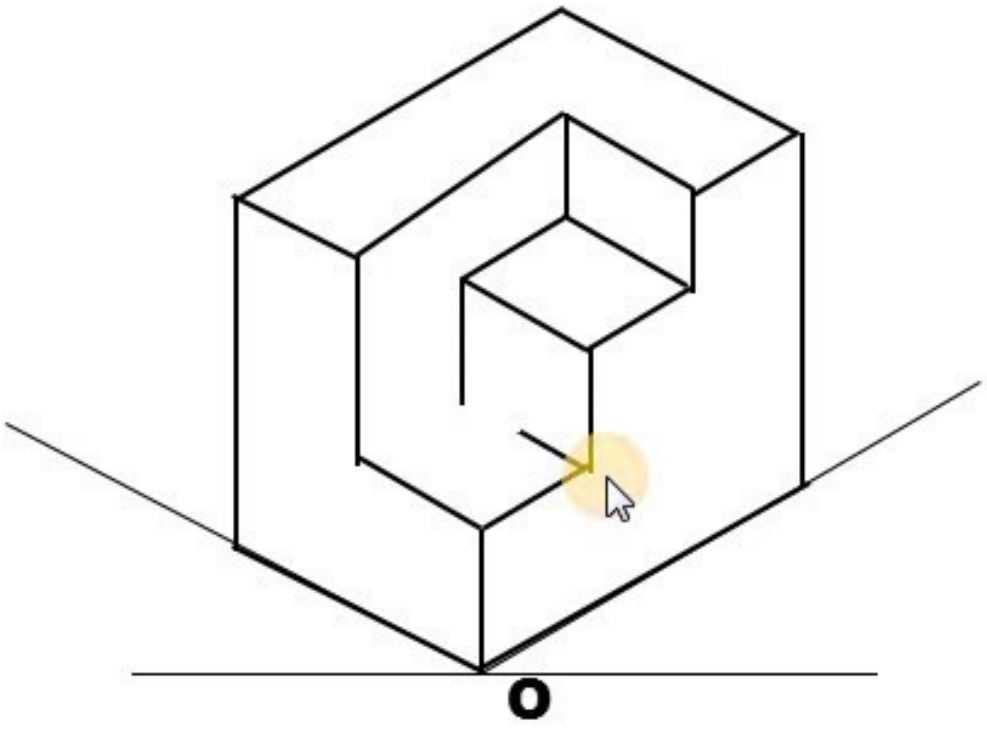


Orthographic Projection (I Angle)



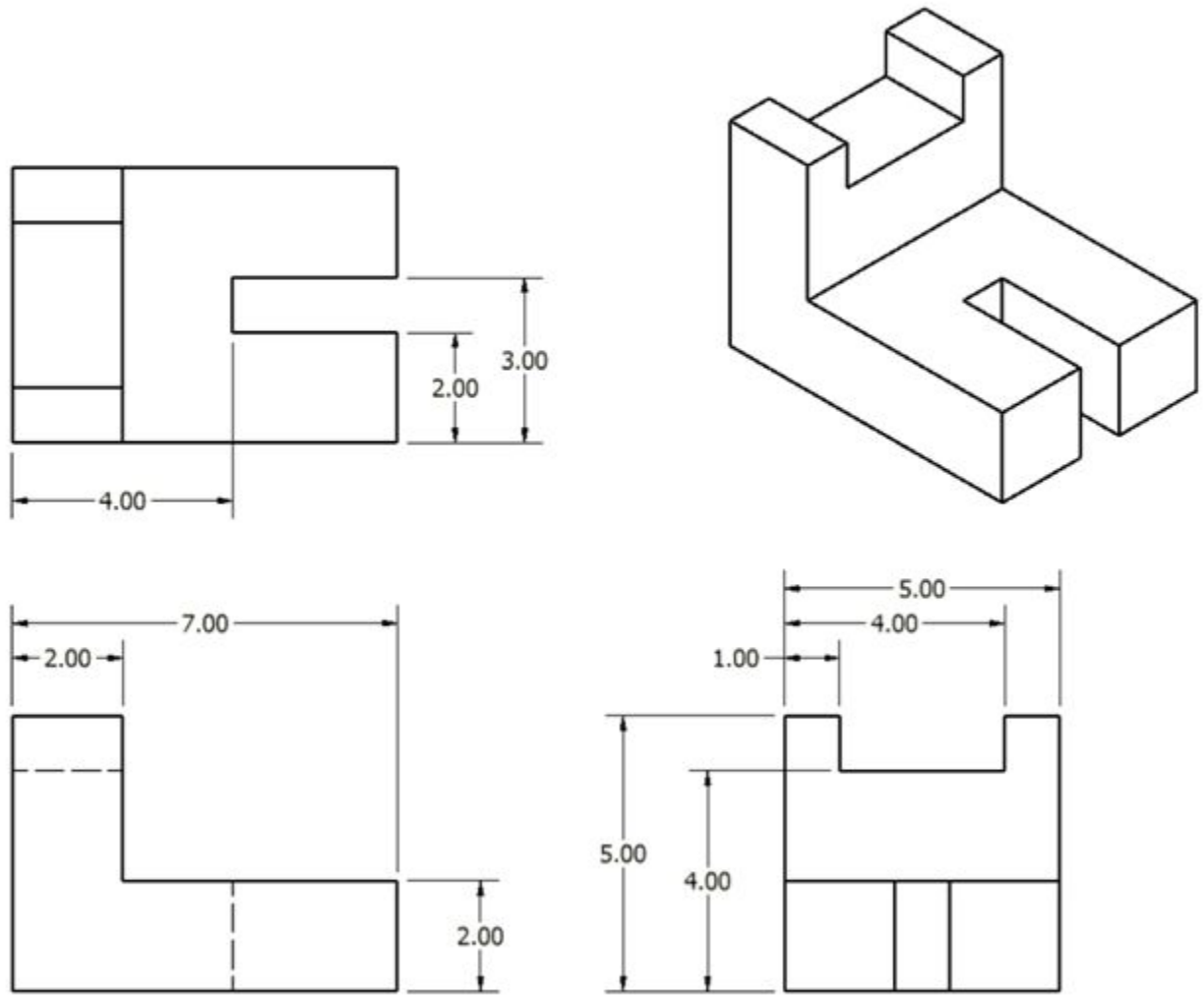
Problem 1

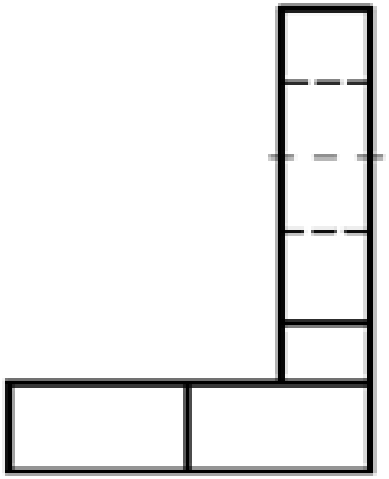




ISOMETRIC VIEW

Multi-View Drawing





RIGHT SIDE VIEW

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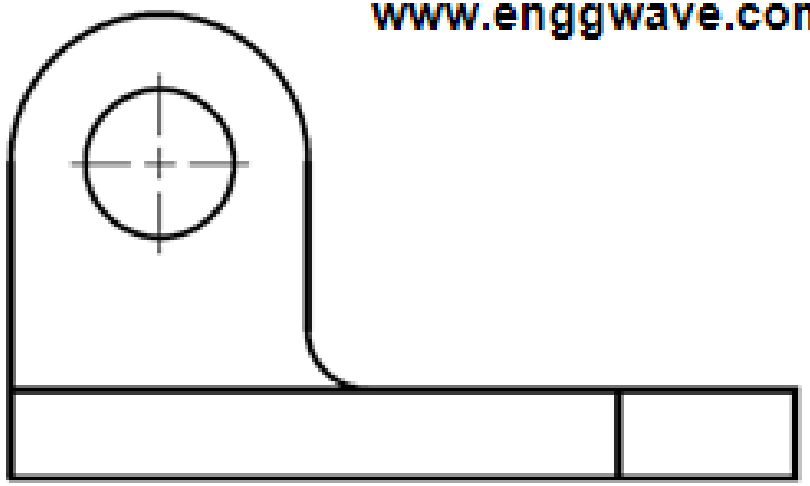
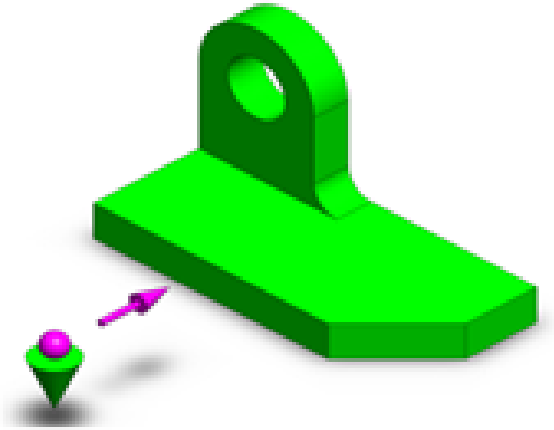
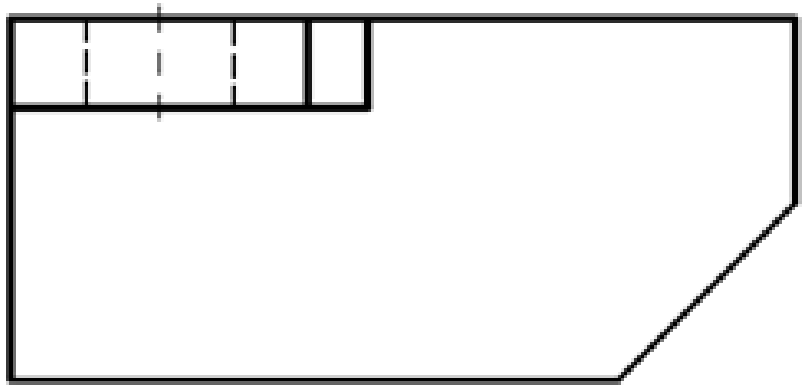


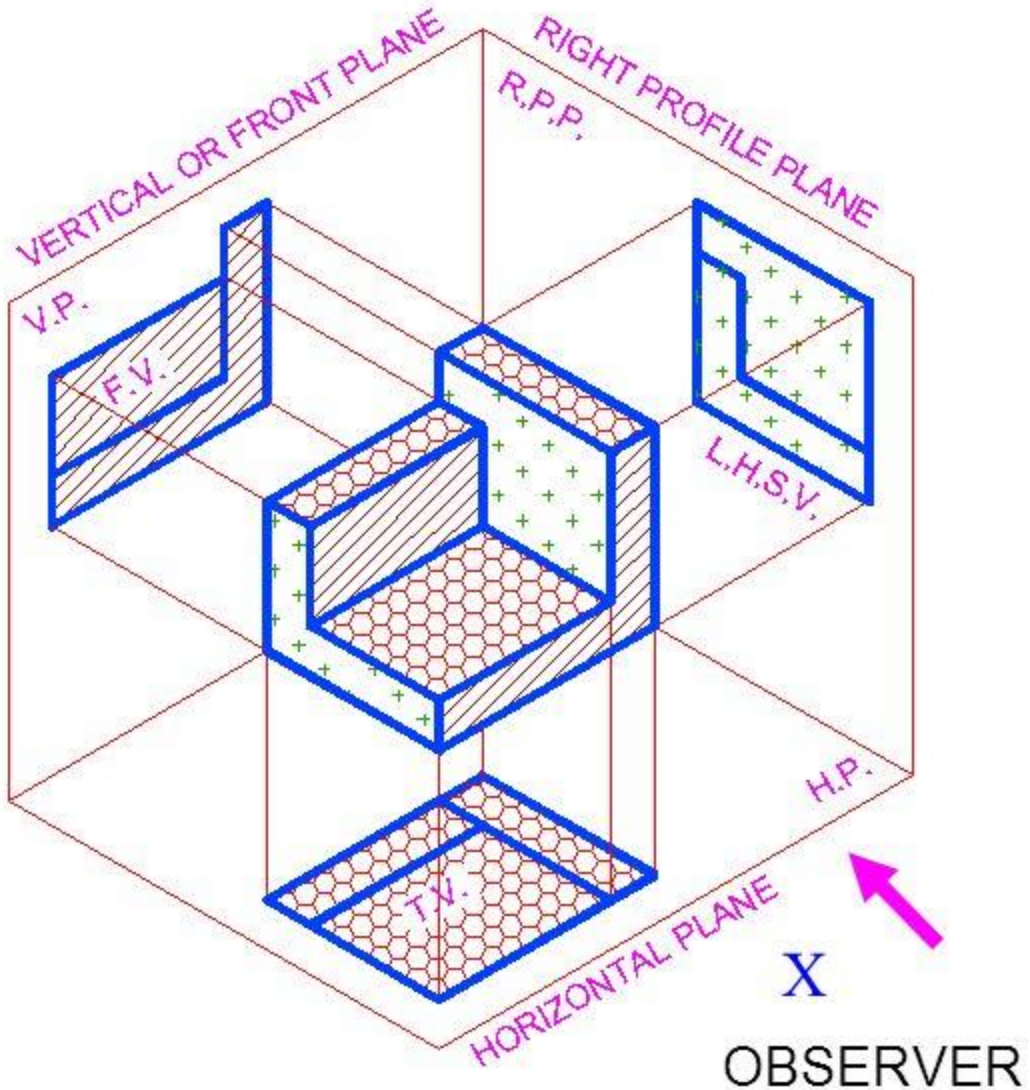
FRONT VIEW

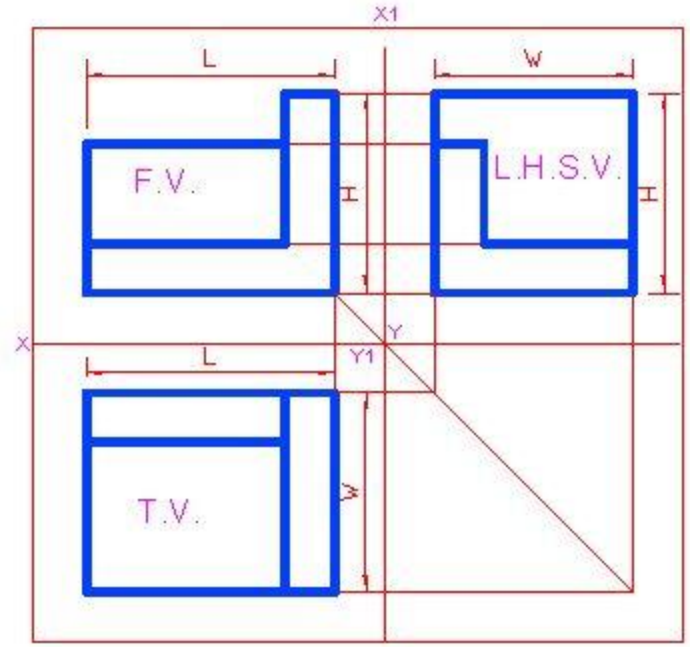




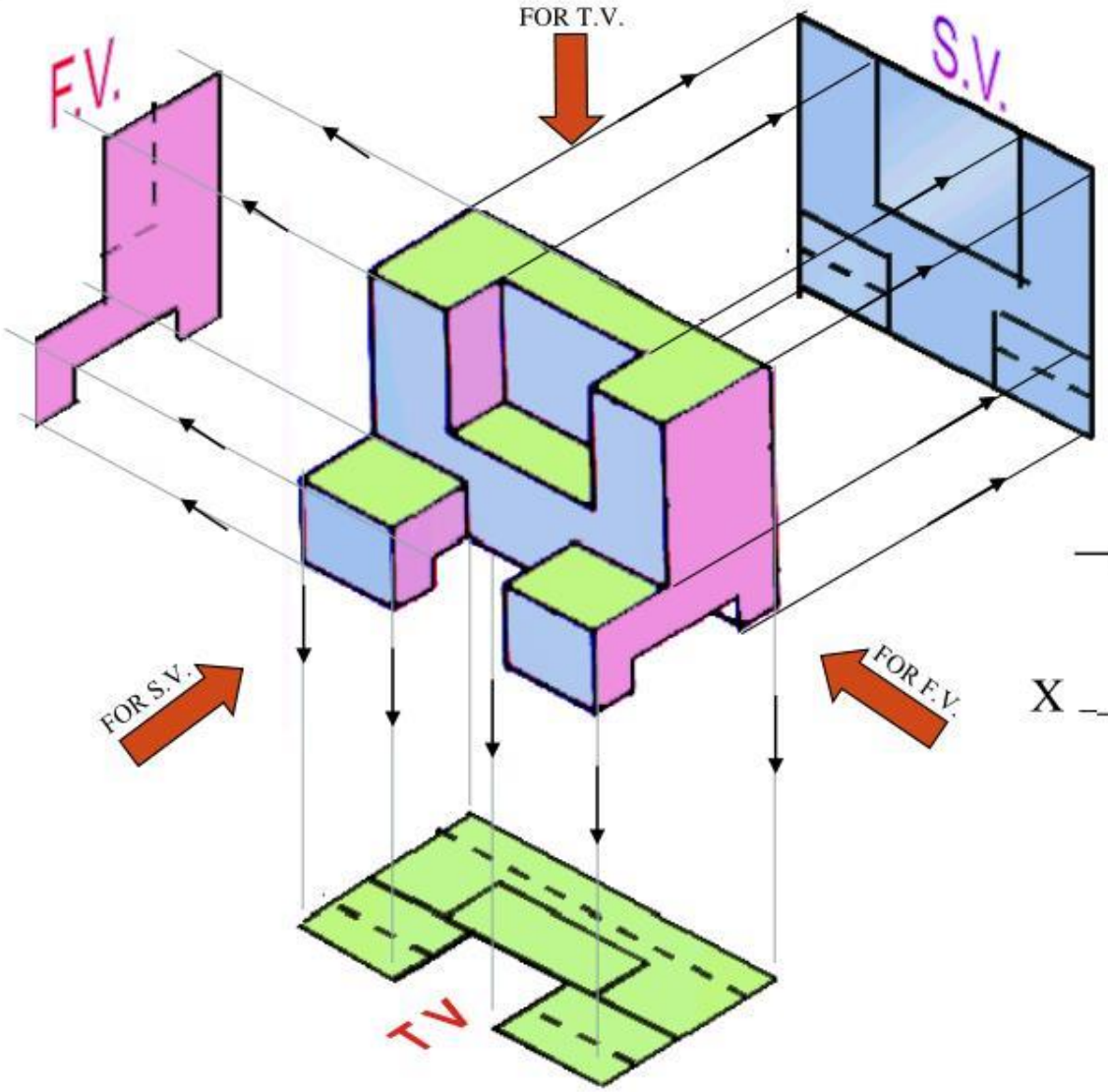
TOP VIEW

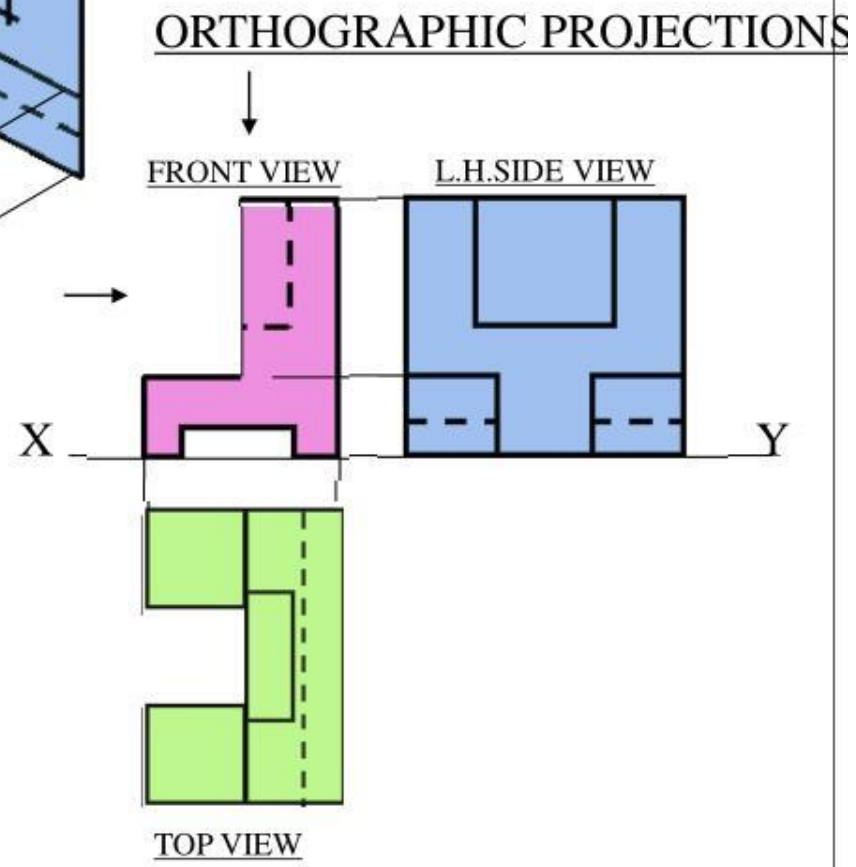
Fig: Projection of Views





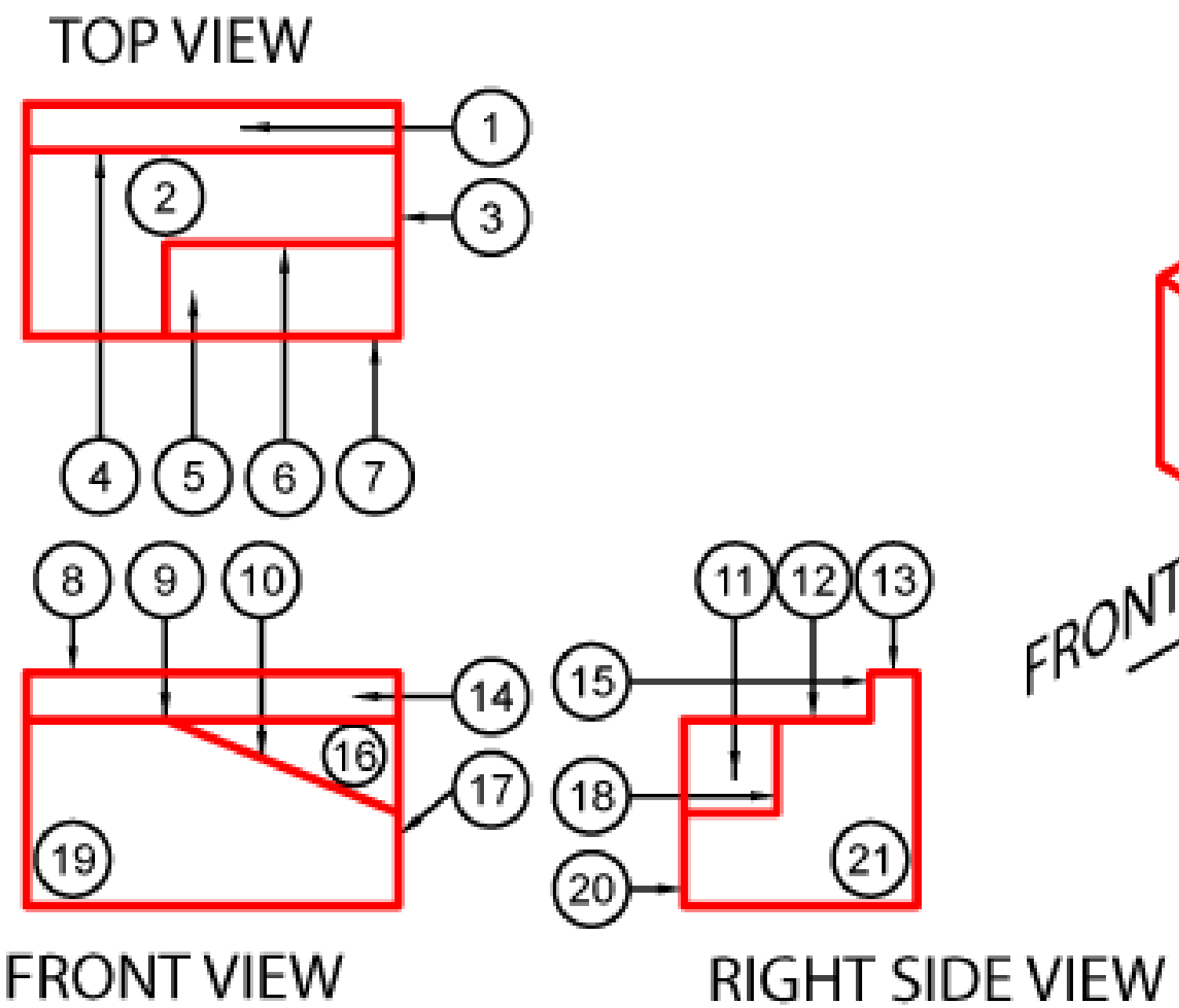
ARRAY OF VIEWS IN 1 ST ANGLE

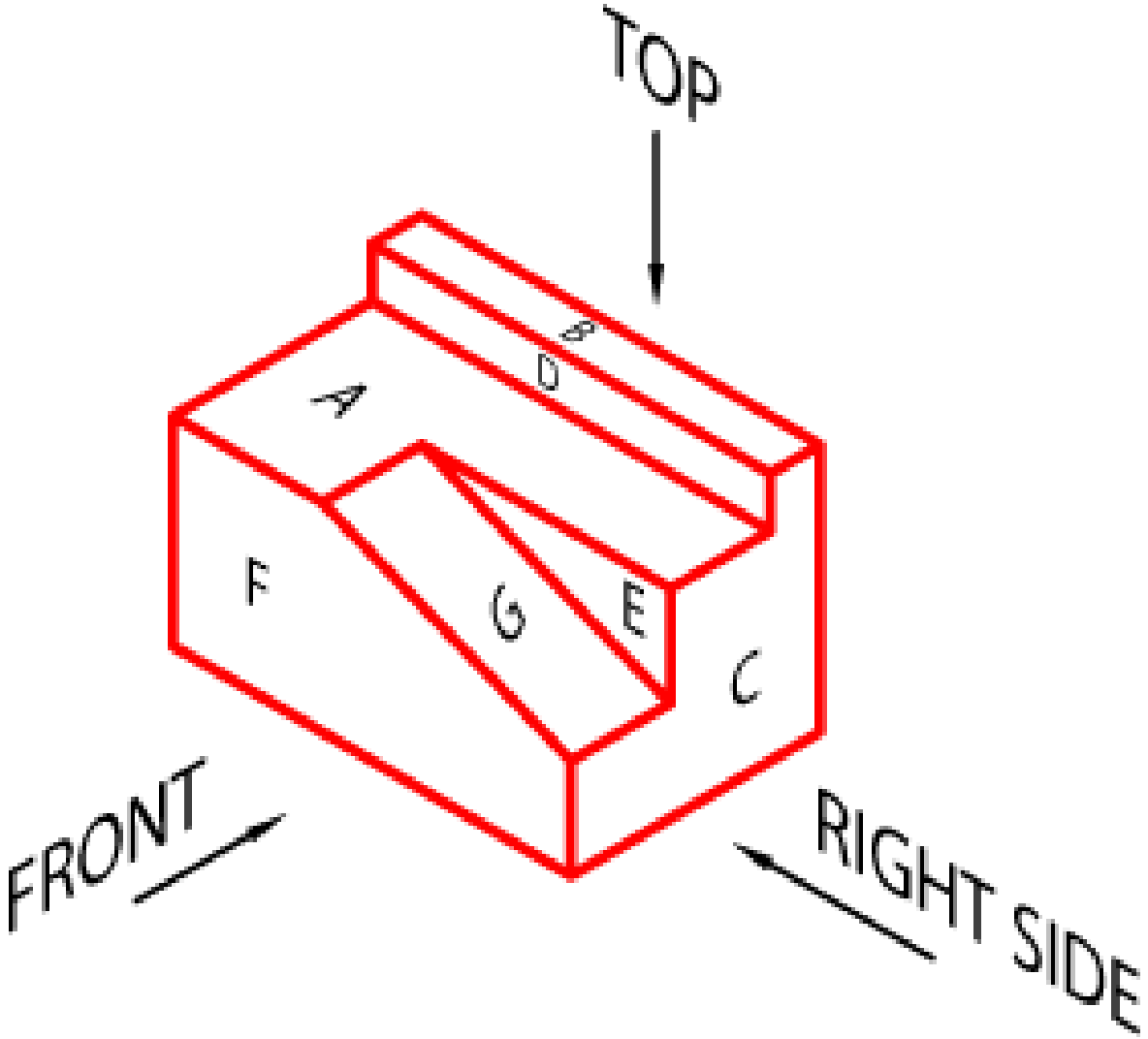


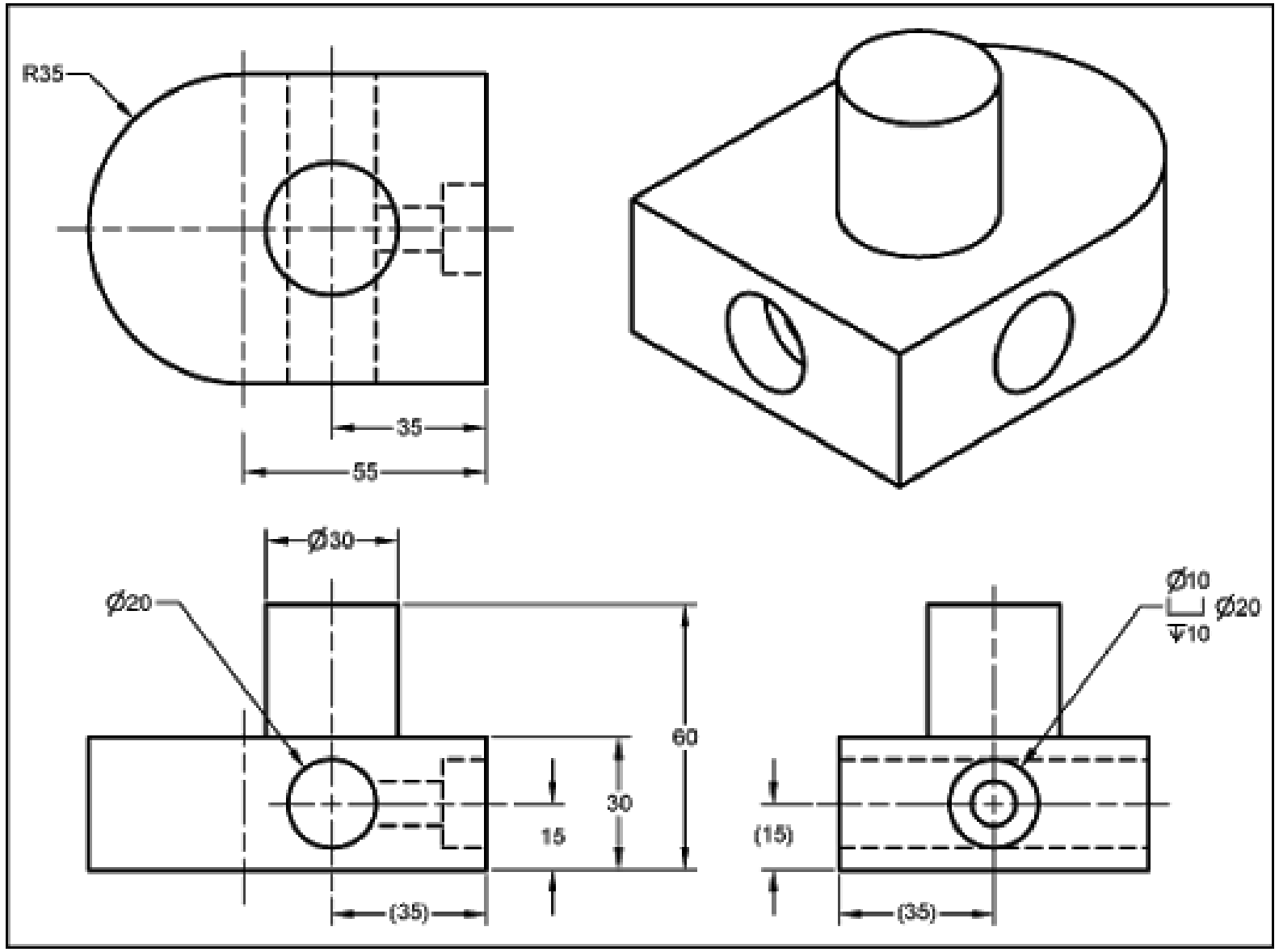


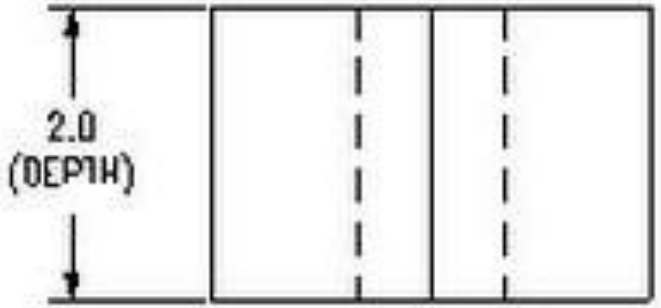
PICTORIAL PRESENTATION IS GIVEN

DRAW THREE VIEWS OF THIS OBJECT
BY FIRST ANGLE PROJECTION METHOD

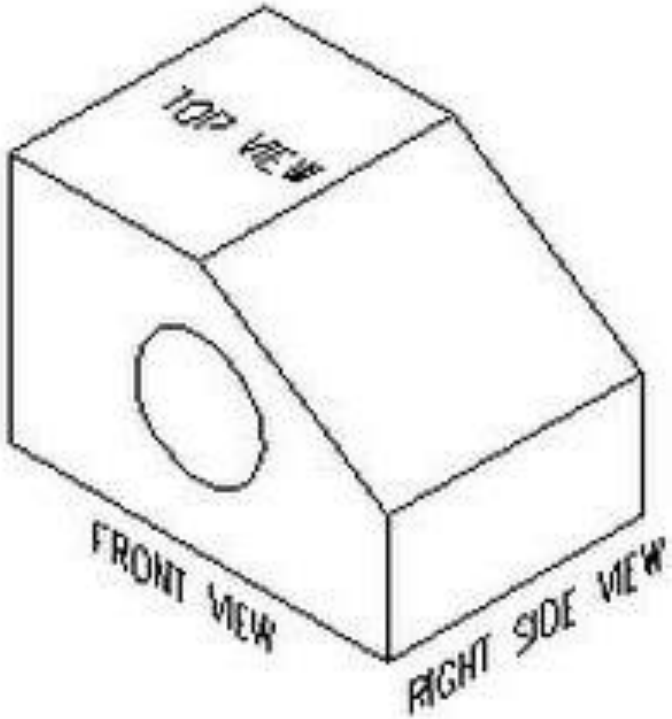

TOP VIEW
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
FRONT VIEW
RIGHT SIDE VIEW

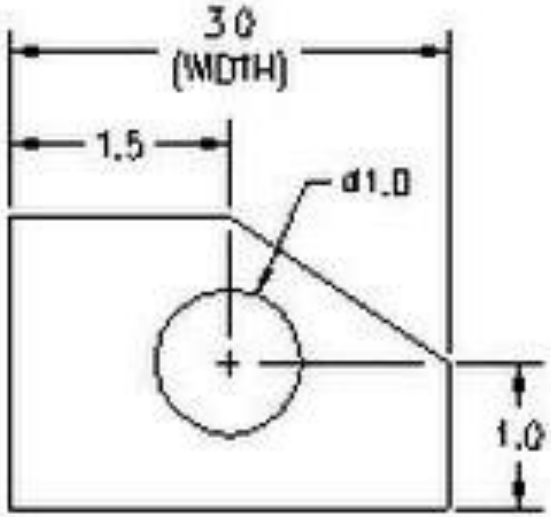

TOp
A
B
D
F
G
E
C
FRONT
RIGHT SIDE


R35
35
55
Ø30
Ø20
60
30
15
(35)
Ø10
Ø20
↧10
(15)
(35)

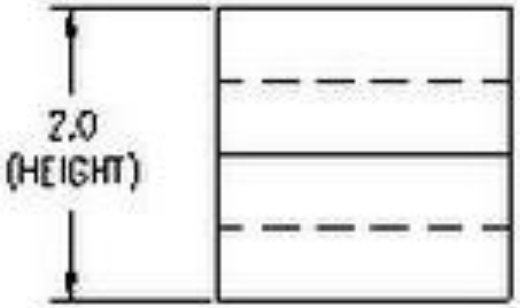


TOP VIEW





FRONT VIEW



RIGHT SIDE VIEW