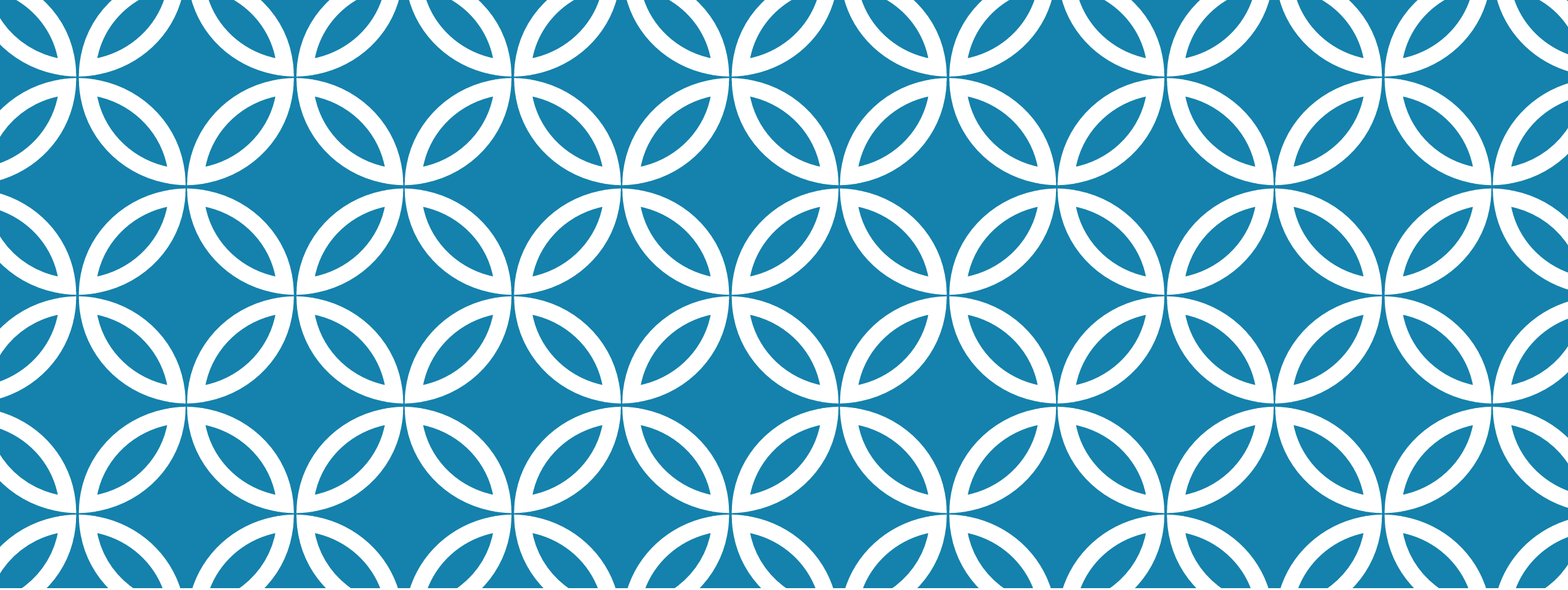
ENGINEERING DESIGN AND PROTOTYPE
(BITS F103)

Practical Sessions
on
a
ORTHOGRAPHIC PROJECTIONS
(*Demonstration and Practice questions*)

Birla Institute Of Technology And Science, Pilani

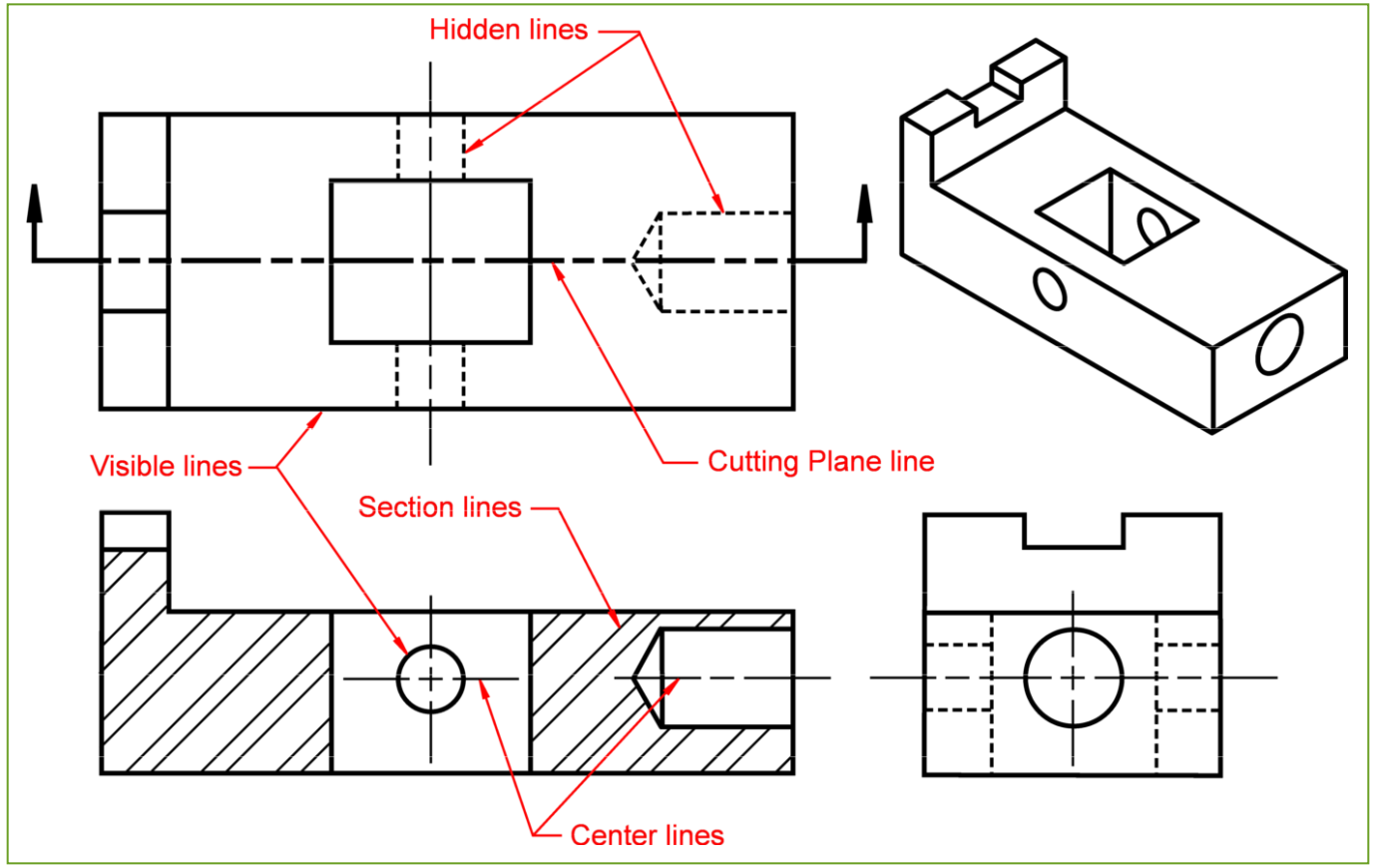


CREATING ORTHOGRAPHIC PROJECTIONS IN AUTOCAD

Introduction

INTRODUCTION

Line types and line weights give valuable information to the print reader.



INTRODUCTION

- AutoCAD enables you to create different line types and to print using different line weights.

- This is accomplished through the use of layers.

CREATING ORTHOGRAPHIC PROJECTIONS IN AUTOCAD

Layers

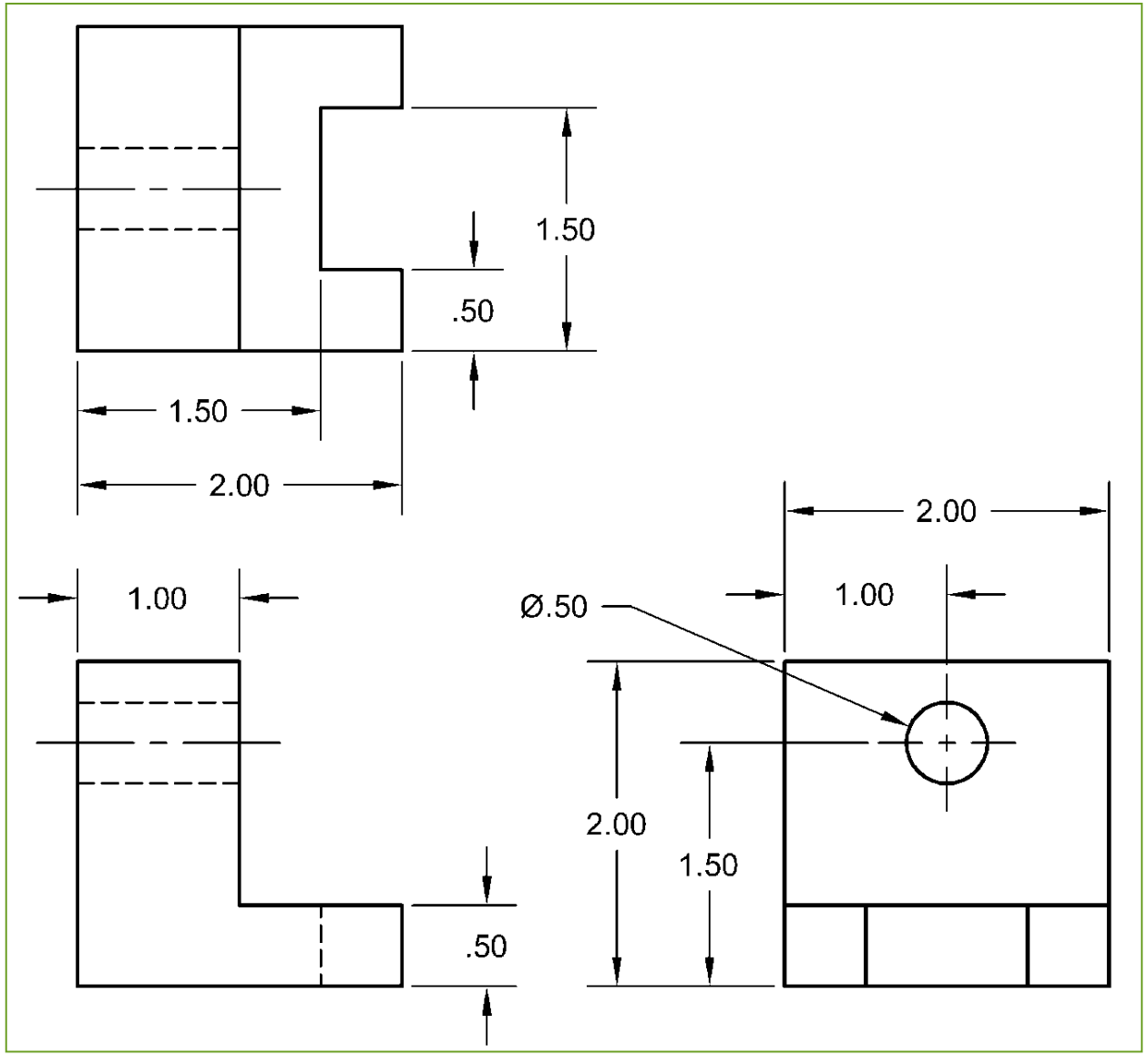
LAYERS

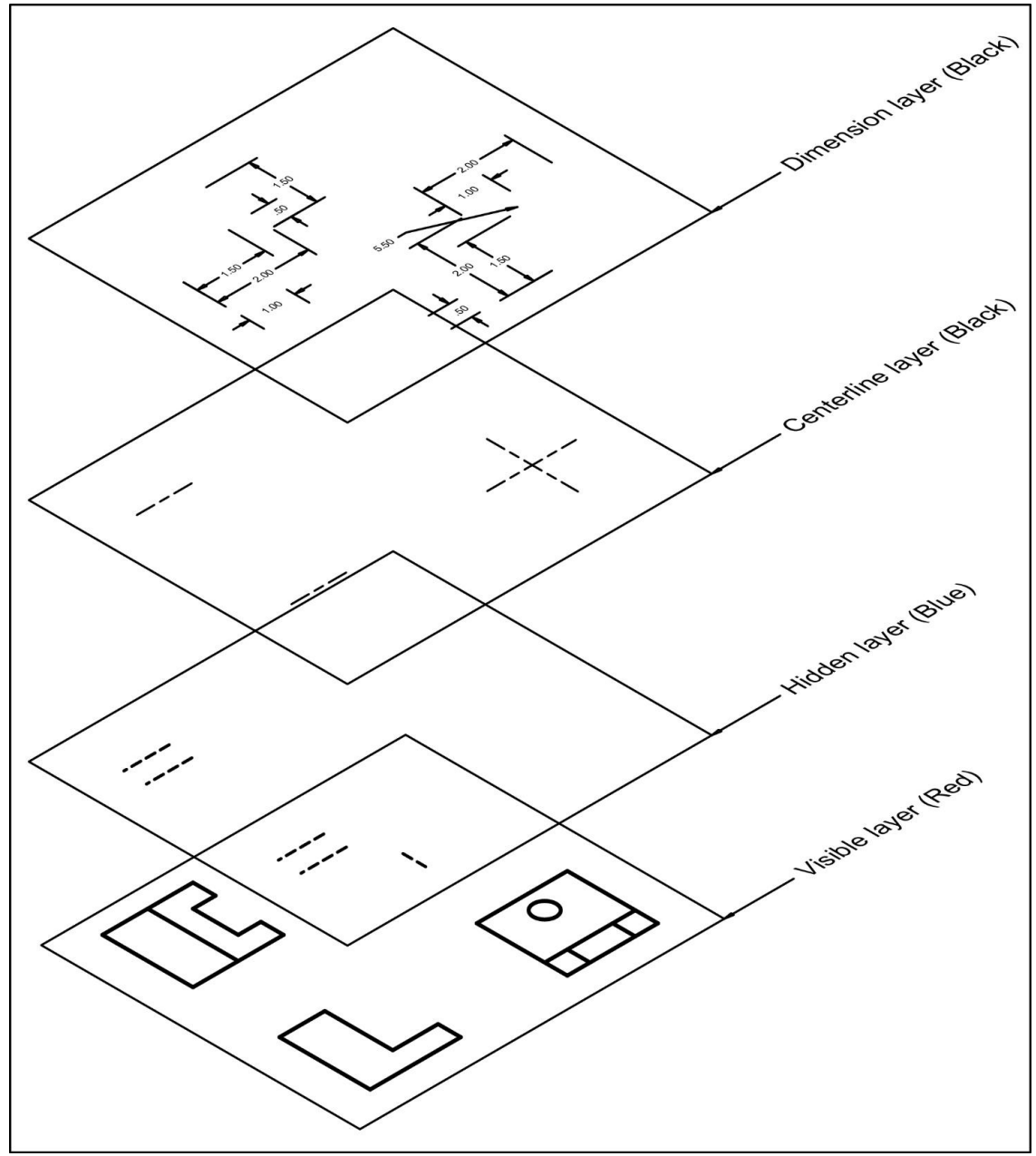
Layers are like transparencies, one laid over the top of another.

- Each layer contains its own line type.
- The line **color** controls the printed line thickness.

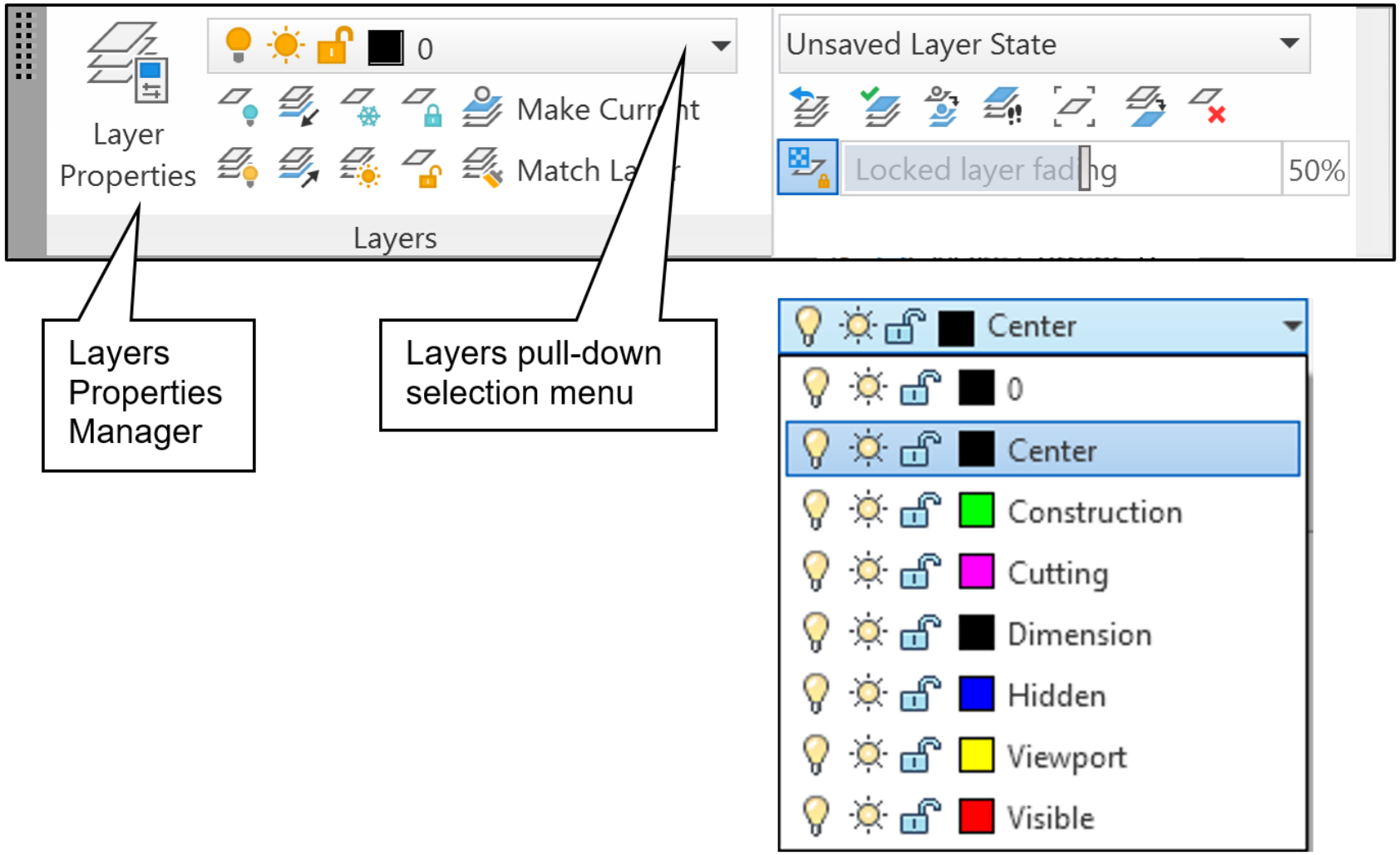
LAYERS

Let’s use layers to organize this drawing.




Dimension layer (Black)
Centerline layer (Black)
Hidden layer (Blue)
Visible layer (Red)
1.50
.50
1.50
2.00
1.00
2.00
1.00
5.50
2.50
1.50
.50

THE LAYERS PANEL



THE LAYER PROPERTIES MANAGER

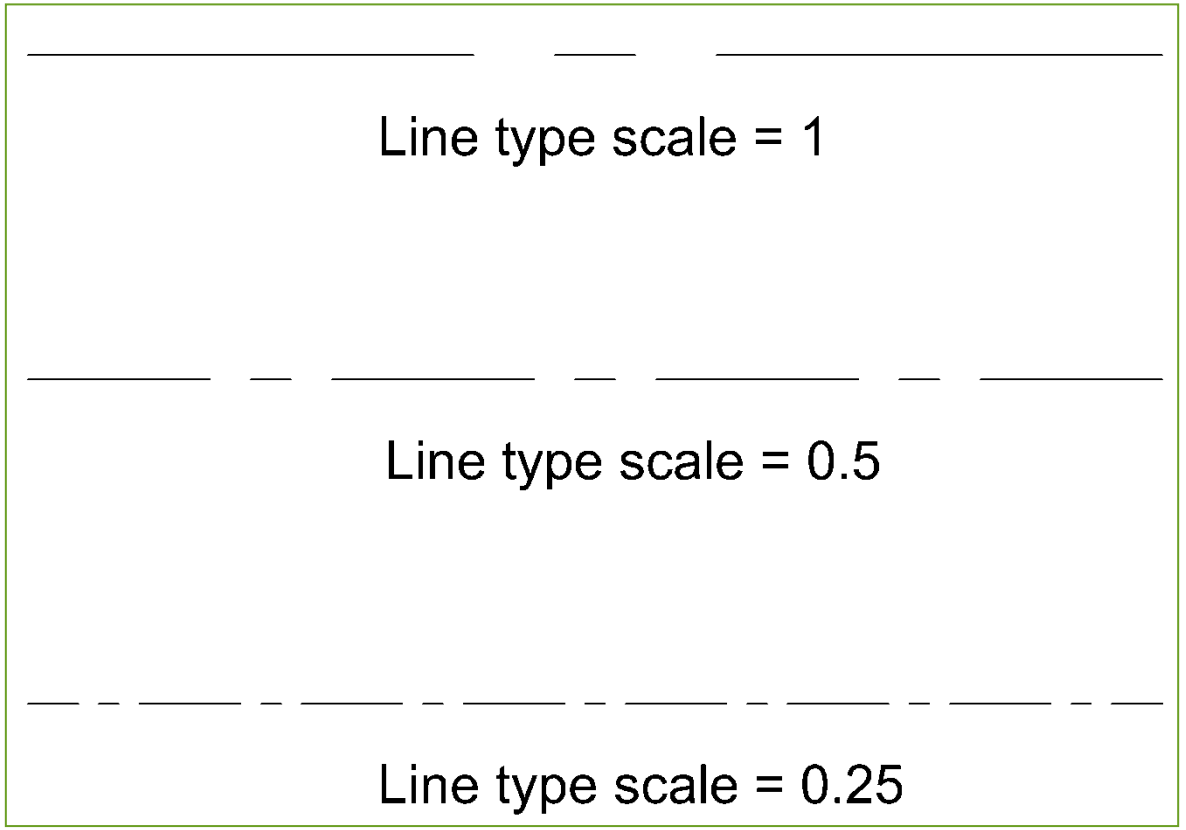
Sl. No.	Line Name	Colour codes	Line type	Line thickness
1	Visible Lines	White	Continuous	default
2.	Hidden lines	Red	Hidden2	default
2	Centre lines	Blue	Center	default
3	Dimension lines	Magenta	Continuous	default
4	Section lines	Orange	Phantom	default
5	Construction lines	Cyan	Continuous	default
6	Locus Lines	Yellow	Continuous	default

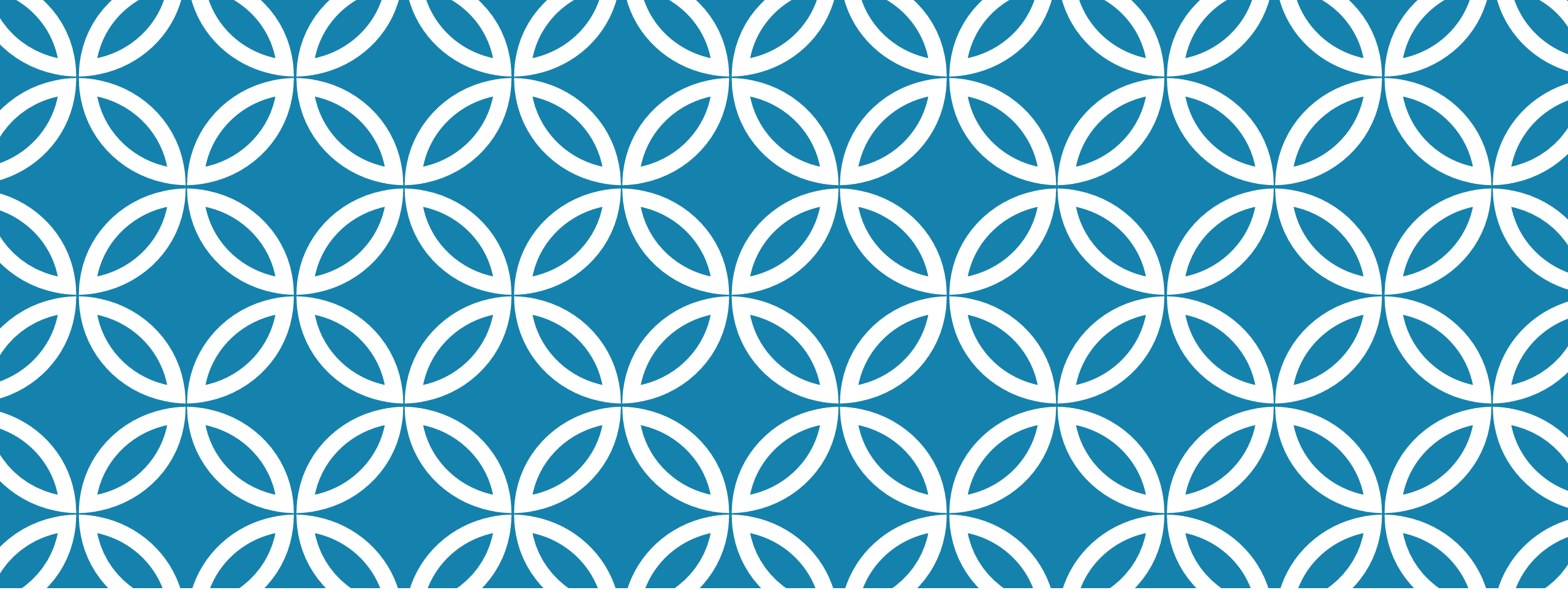
CREATING ORTHOGRAPHIC PROJECTIONS IN AUTOCAD

Line Type Scale

LINE TYPE SCALE

LTSCALE: Controls the size of the dashes and the spaces between dashes or dots.



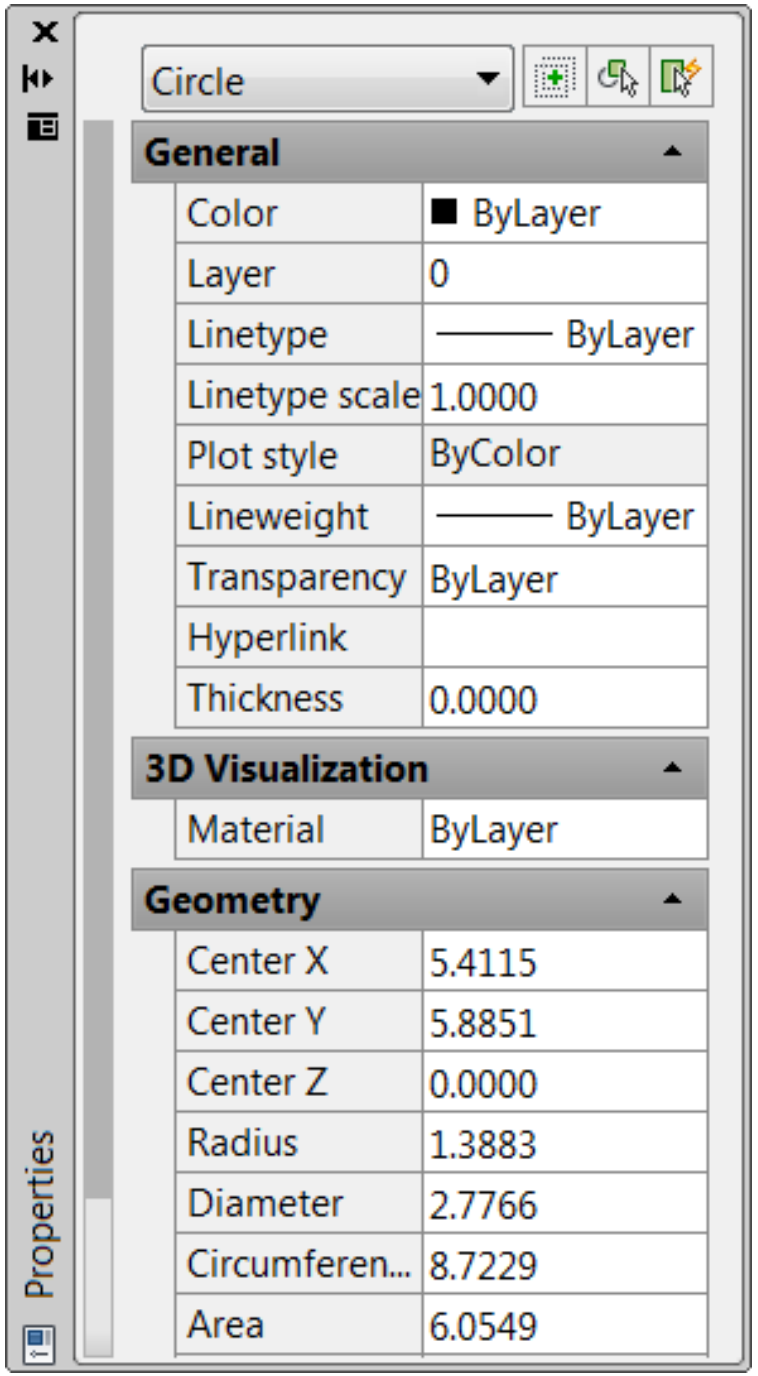


CREATING ORTHOGRAPHIC PROJECTIONS IN AUTOCAD

Properties

PROPERTIES

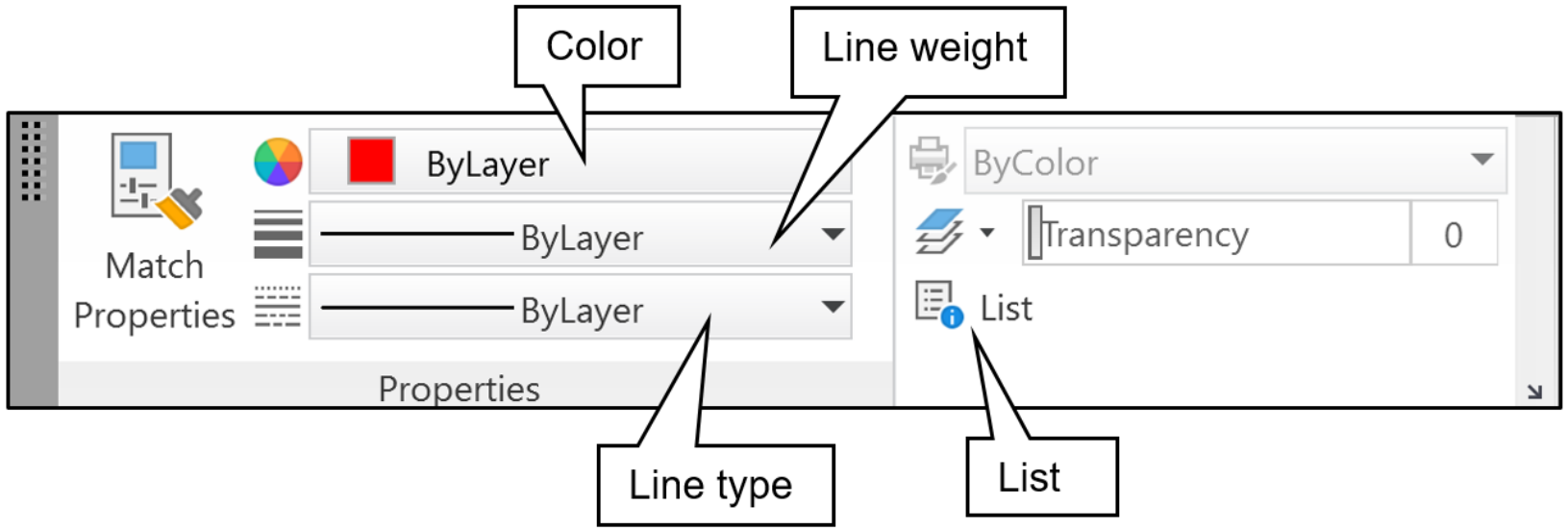
The properties of an individual object may be changed by selecting the object and then selecting the *Properties* icon in the *View* tab - *Palettes* panel.


Circle
General
Color
ByLayer
Layer
0
Linetype
ByLayer
Linetype scale
1.0000
Plot style
ByColor
Lineweight
ByLayer
Transparency
ByLayer
Hyperlink
Thickness
0.0000
3D Visualization
Material
ByLayer
Geometry
Center X
5.4115
Center Y
5.8851
Center Z
0.0000
Radius
1.3883
Diameter
2.7766
Circumferen...
8.7229
Area
6.0549
Properties

THE PROPERTIES PANEL

If these properties need to be changed, your first action should be to use layer properties.

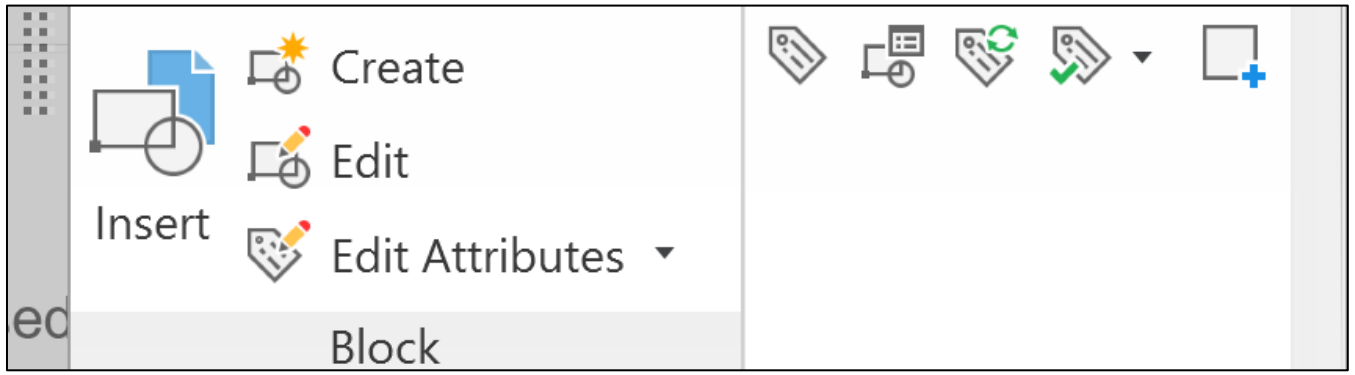
- This creates a much more organized drawing.



BLOCKING

Commands used

- **BLOCK:** Allows you to create a grouping of objects that can be used repeatedly in the current drawing.
- **WBLOCK:** This command writes a BLOCK to a file. This allows you to use the BLOCK in all drawings not just the current one.



BLOCKING

Commands used

- **INSERT:** Allows you to retrieve a BLOCK or WBLOCK.
- **EXPLODE:** (*Modify* panel ) Allows you to separate a BLOCK into its individual parts.

MODEL AND LAYOUT SPACE

Model Space:

- In model space, you draw your design/model at a 1:1 scale.

Layout/Paper Space:

- The model is scaled to fit on the paper used to print the drawing .

MODEL AND LAYOUT SPACE

Model Space:

- Annotations (dimension, text) may be included on 2-D drawings and one view 3-D drawings.

Layout/Paper Space:

- Annotations may be included in any view port.

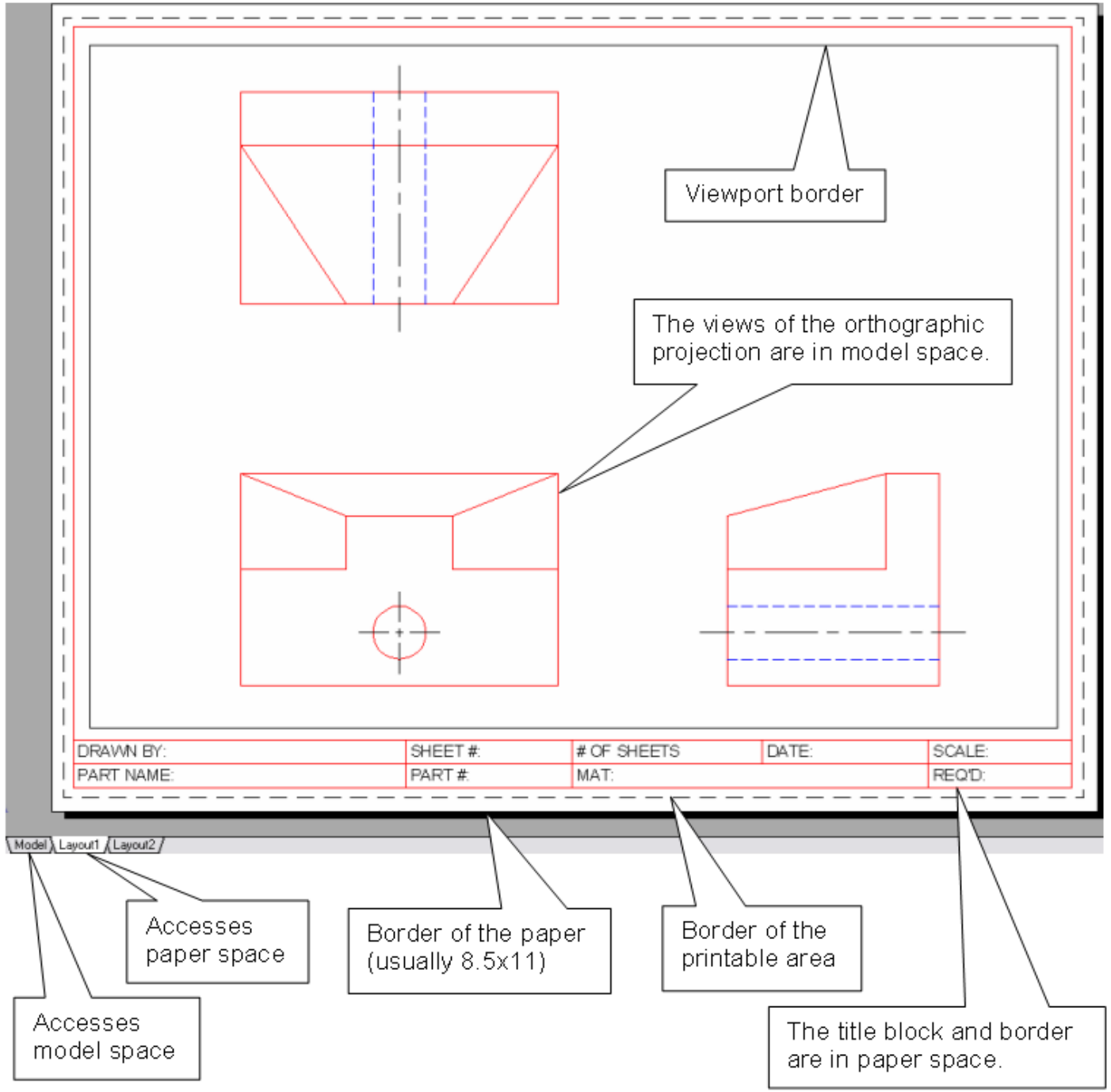
MODEL AND LAYOUT SPACE

Model Space:

- Annotations will not scale automatically.

Layout/Paper Space:

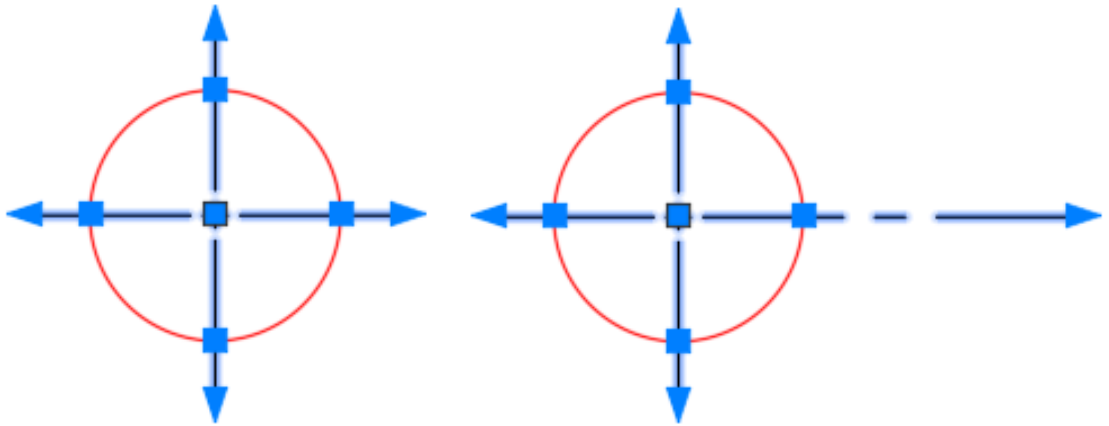
- Annotations will scale automatically if the object is defined as annotative.

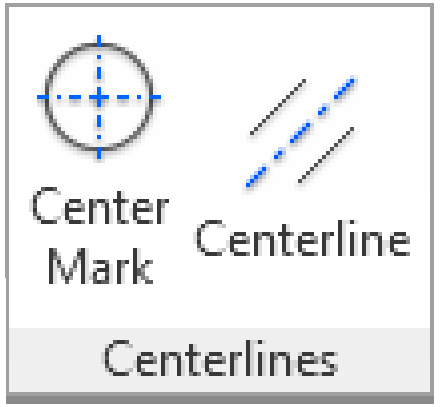

Viewport border
The views of the orthographic projection are in model space.
DRAWN BY:
SHEET #:
OF SHEETS
DATE:
SCALE:
PART NAME:
PART #:
MAT:
REQ'D:
Model
Layout1
Layout2
Accesses paper space
Accesses model space
Border of the paper (usually 8.5x11)
Border of the printable area
The title block and border are in paper space.

CENTERLINES

Can be modified using

- Grip boxes

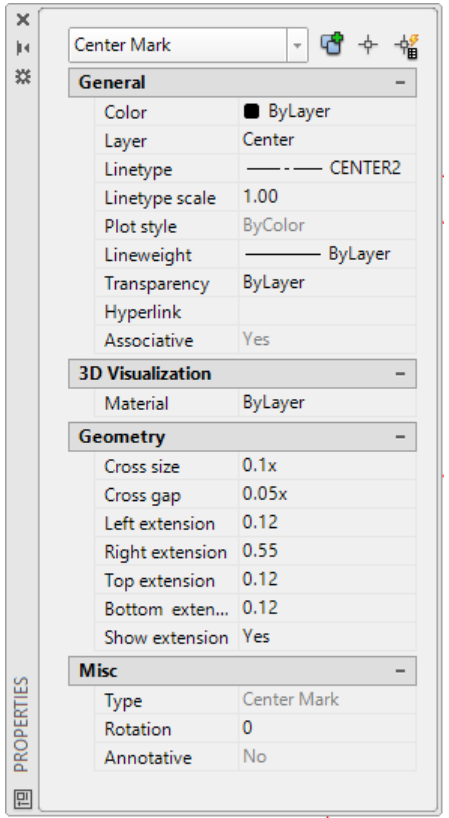


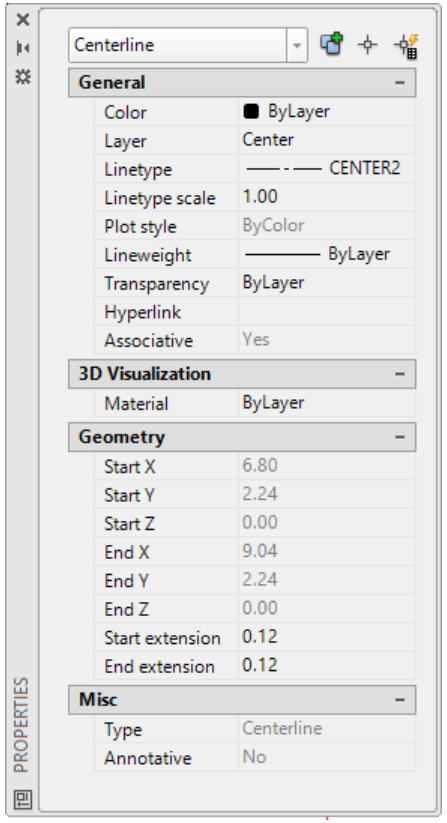


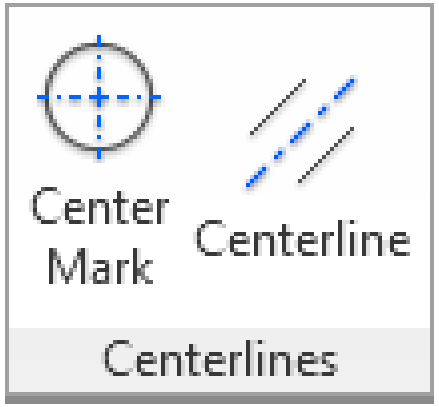
CENTERLINES

Can be modified using

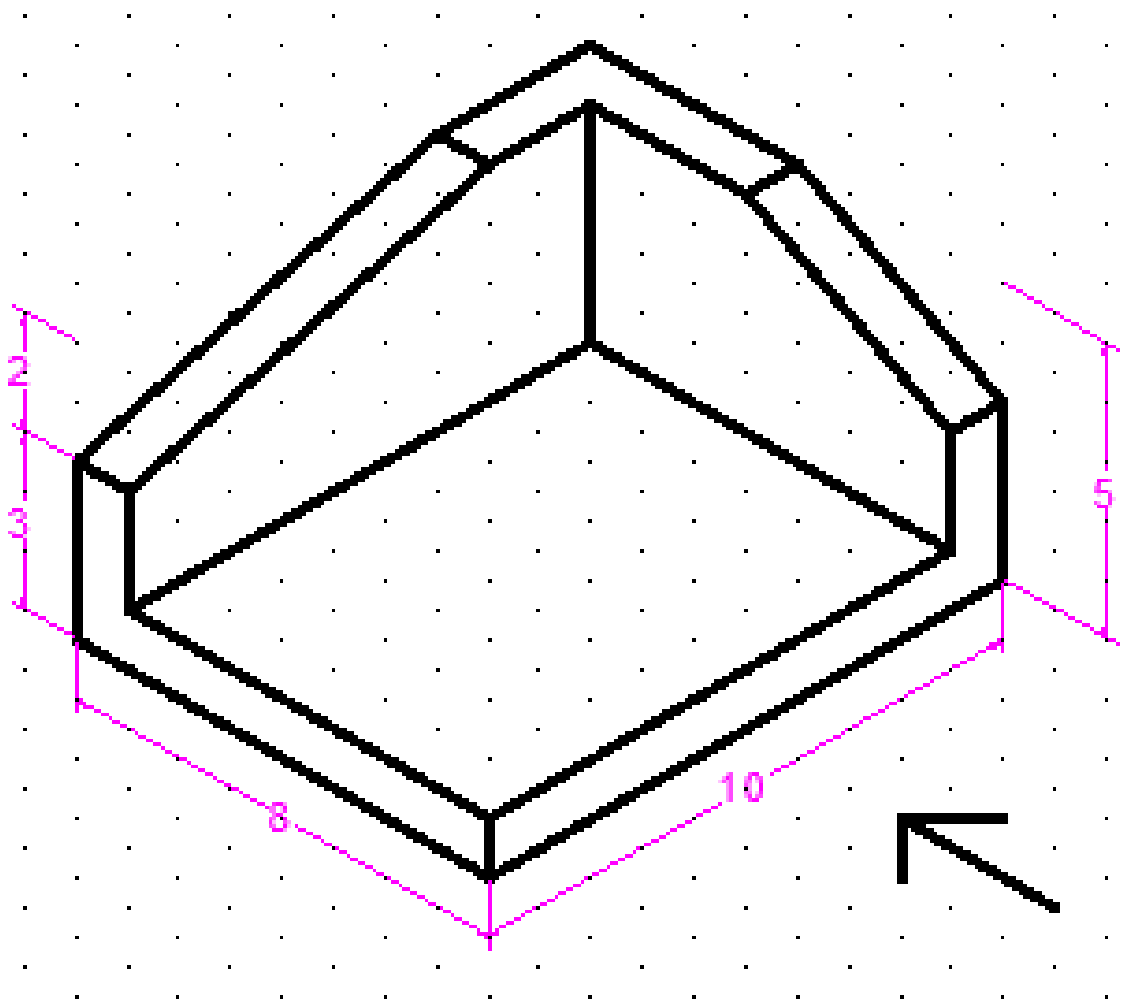
- Properties window



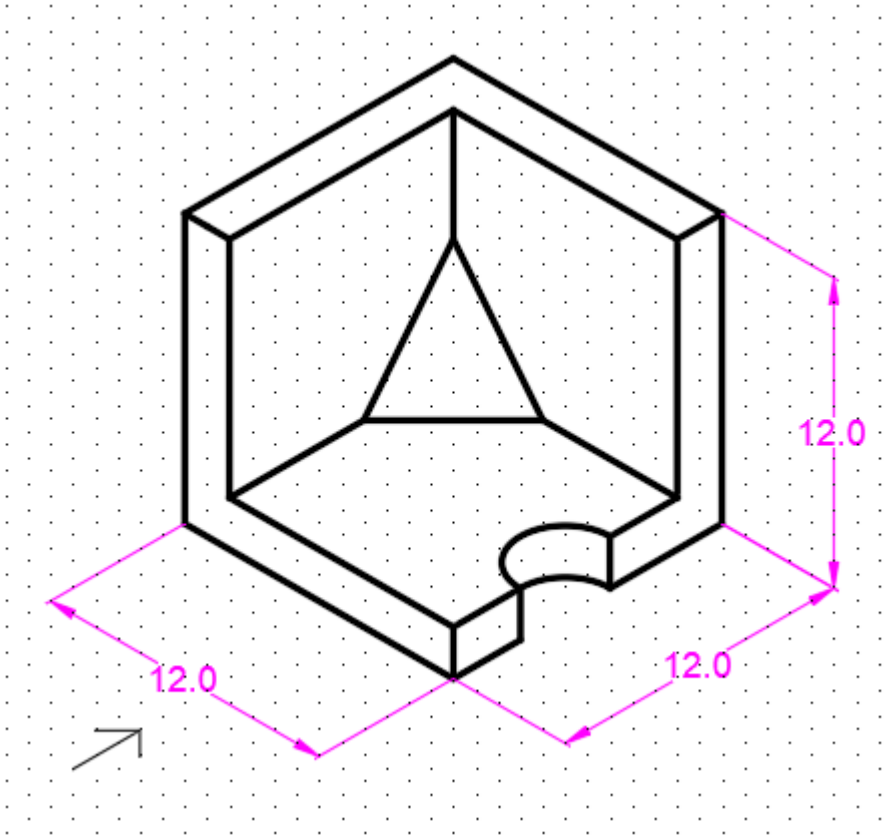




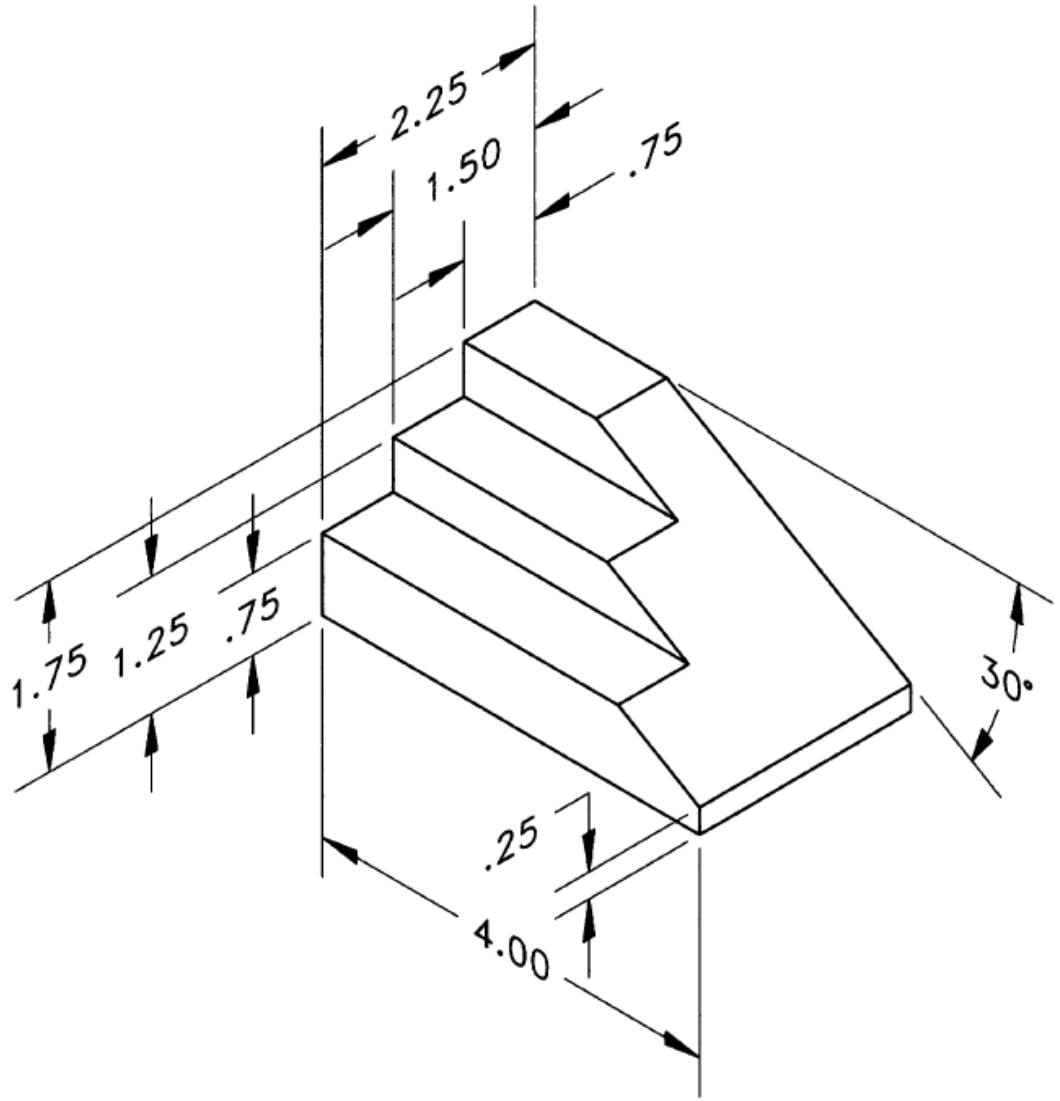
DEMONSTRATION QUESTION - 1



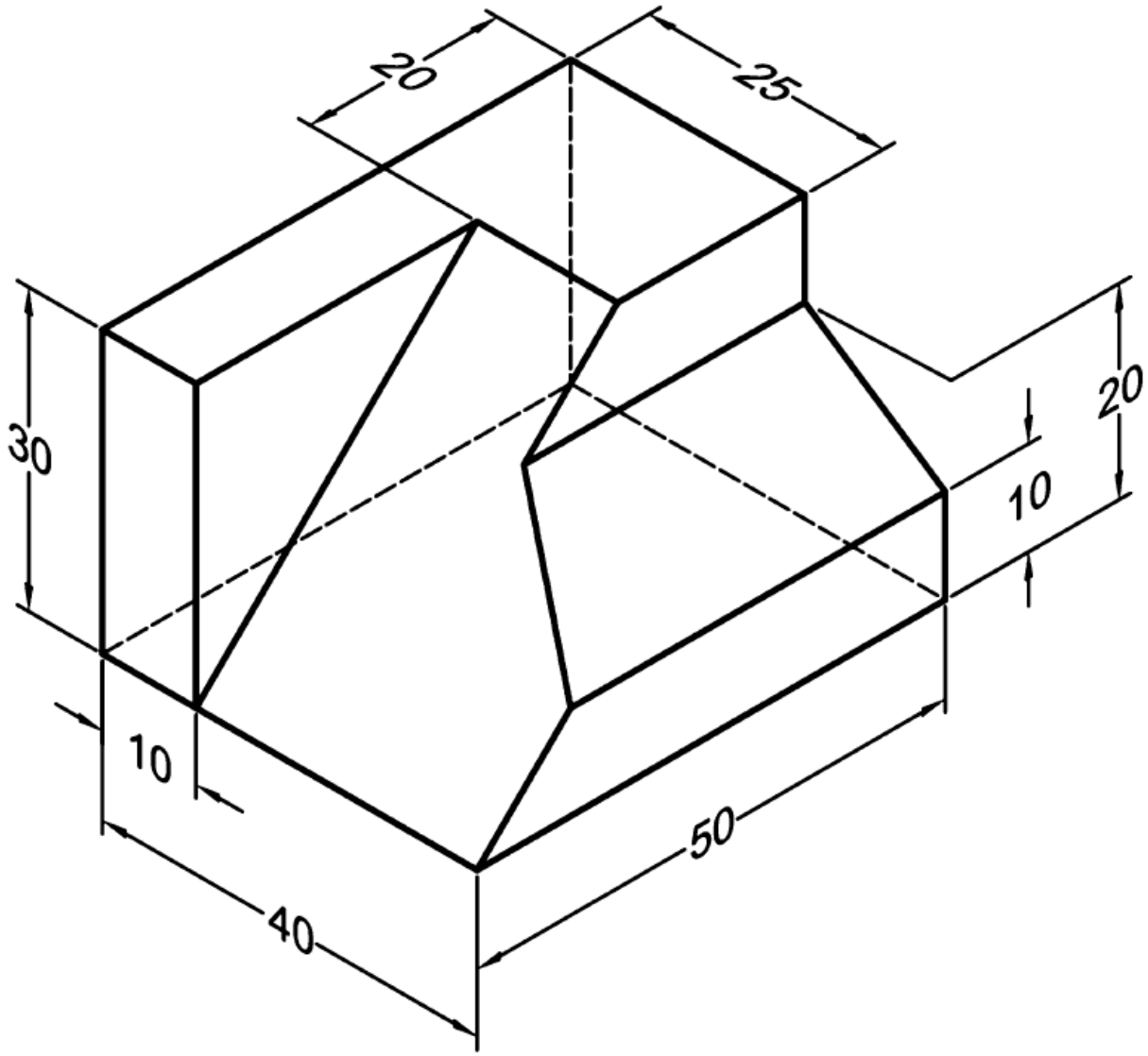
DEMONSTRATION QUESTION - 2



PRACTICE QUESTION - 1



PRACTICE QUESTION - 2



PRACTICE QUESTION - 3