CHANDIGARH UNIVERSITY

Discover. Learn. Empower.

UIE

Academic Unit-1 & 4

Bachelor of Engineering (CSE, IT, CSE-IBM, EE, ECE)

Engineering Graphics using CAD Lab.

MEP-117

ISOMETRIC PROJECTIONS

DISCOVER . LEARN . EMPOWER

ISOMETRIC PROJECTIONS

Course Outcome

CO Number	Title	Level
CO1	To make the students thorough in understanding and using the various concepts, elements and grammar of engineering graphics.	Remember & Understand
CO2	Enhancing imagination, visualization, presentation and interpretation skills.	Understand
CO3	To understand engineering drawing as a formal and precise way of communicating information about the shape, size, feature and precision of physical objects.	Understand
CO4	To accurately and unambiguously capture all the geometric features of a product or a component.	Understand
CO5	The conversion of 2D drawings into 3D and vice versa.	Understand

Will be covered in this lecture

COURSE OBJECTIVES

Students may be able to

- draw isometric front, top and side views of the objects
- differentiate between isometric projection and isometric view.
- create an isometric drawing using a multiview drawing
- draw basic isometric views and projections of solids

Introduction

- Isometric Drawing:-
- All the views of an object are visible in the single view i.e. front, top and side views are visible in a single view.
- This type of drawing is also known as 3D drawing of an object.
- All the 3D axes are maintained at 120° to each other.

Isometric View and Isometric Projection

- Isometric View: To draw Isometric View of an object, the actual dimensions of the object are used
- Isometric Projections: To draw the isometric projections of an object the isometric lengths of the object are used.
- Isometric Lengths can be determined by drawing Isometric Scales

Terms in Isometric Drawing

- Isometric Axes: The lines OA, OB and OC are all known as Isometric Axes. These all make an angle 120° with each other.
- Isometric Planes: The planes OAPB, OARC and OCQB are all known as Isometric Planes.
- Isometric Lines: All the lines in this cube except and parallel to Isometric Axes are known as Isometric Lines.

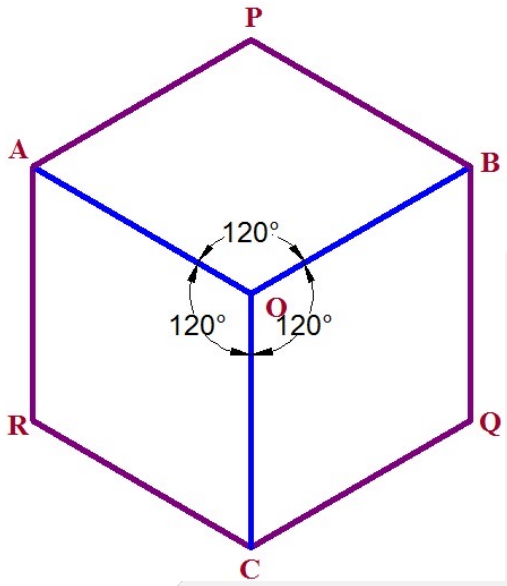
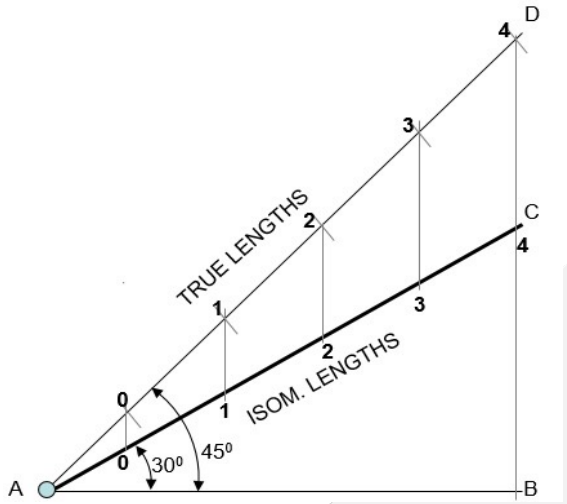


Image Source: ***Self-Made***

Isometric Scale

- When an object is viewed in Isometric Projections, all its sides become inclined to our vision
- True length of the object can't be seen in Isometric Projection
- Isometric Scale is used to find out the length of the sides which are visible to us
- Isometric Length = 0.815 X Actual length



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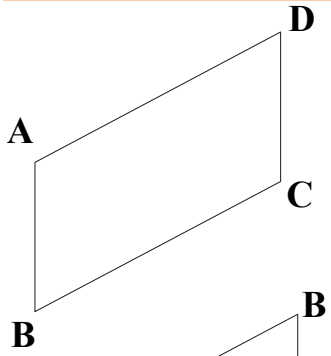
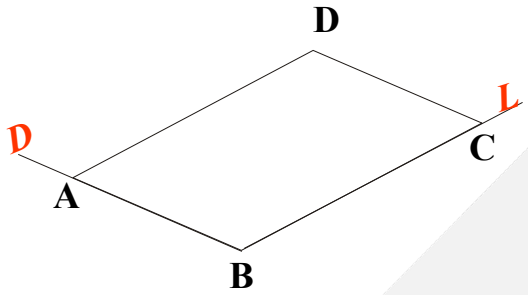
Isometric Views of Plane Figures

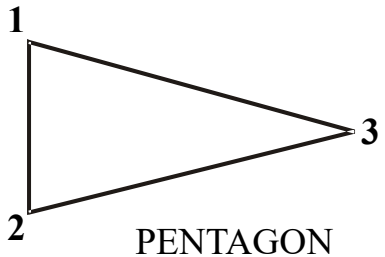
SHAPE	Isometric view if the Shape is F.V. or T.V.

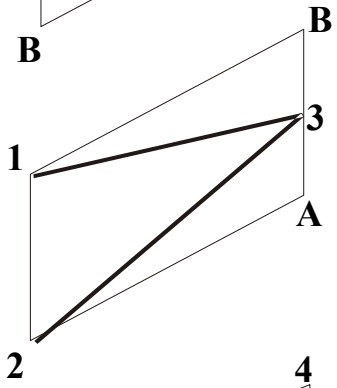
RECTANGLE

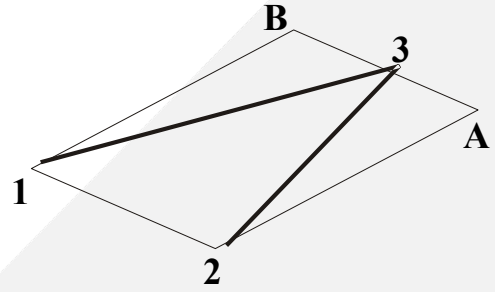




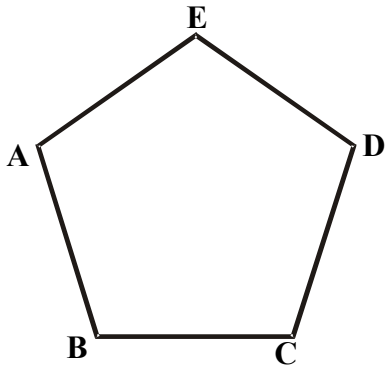
TRIANGLE

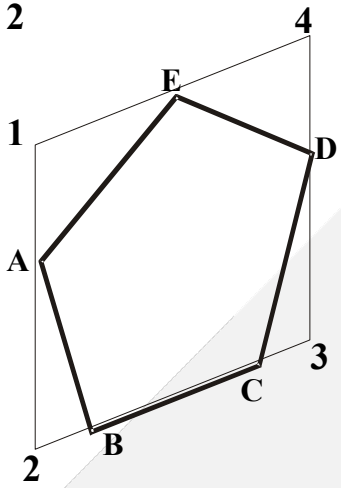






PENTAGON





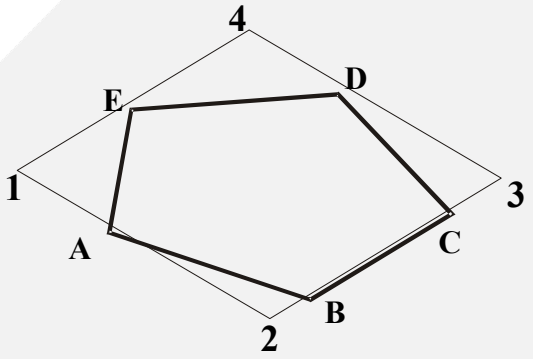
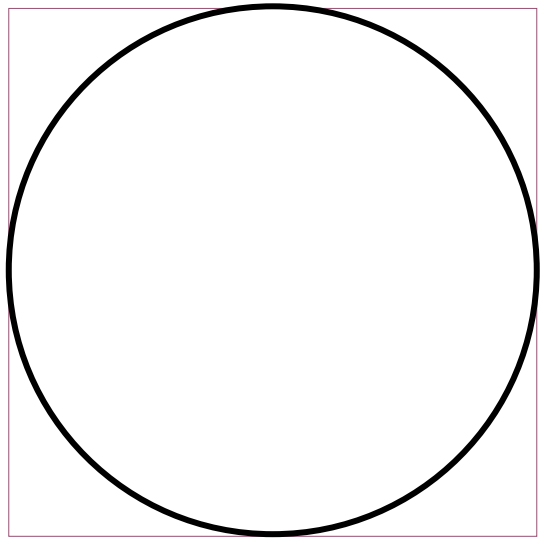
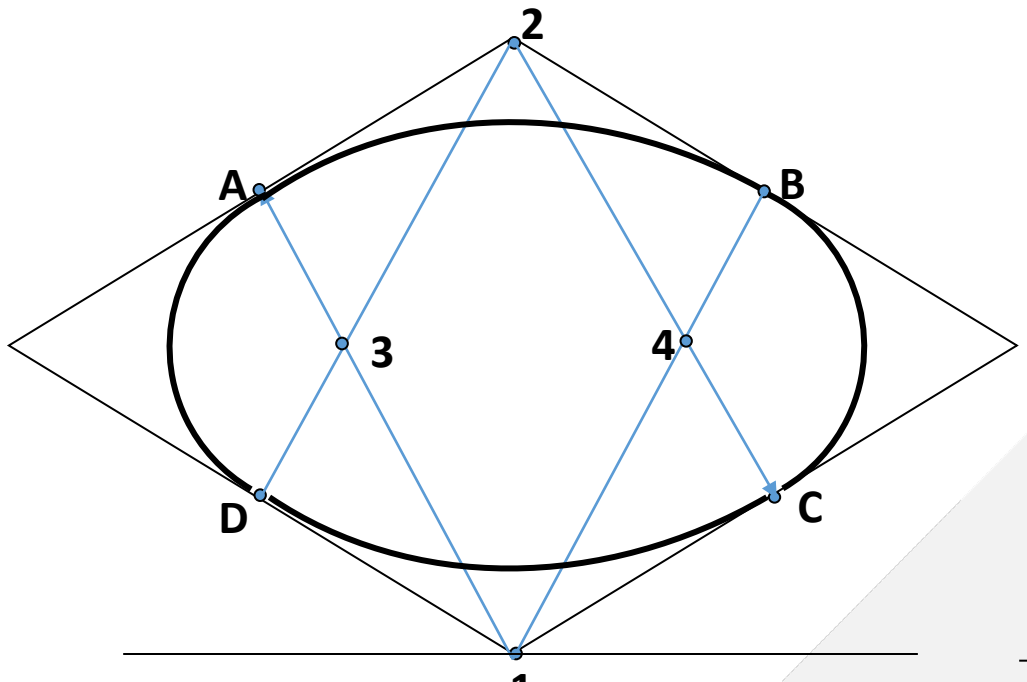
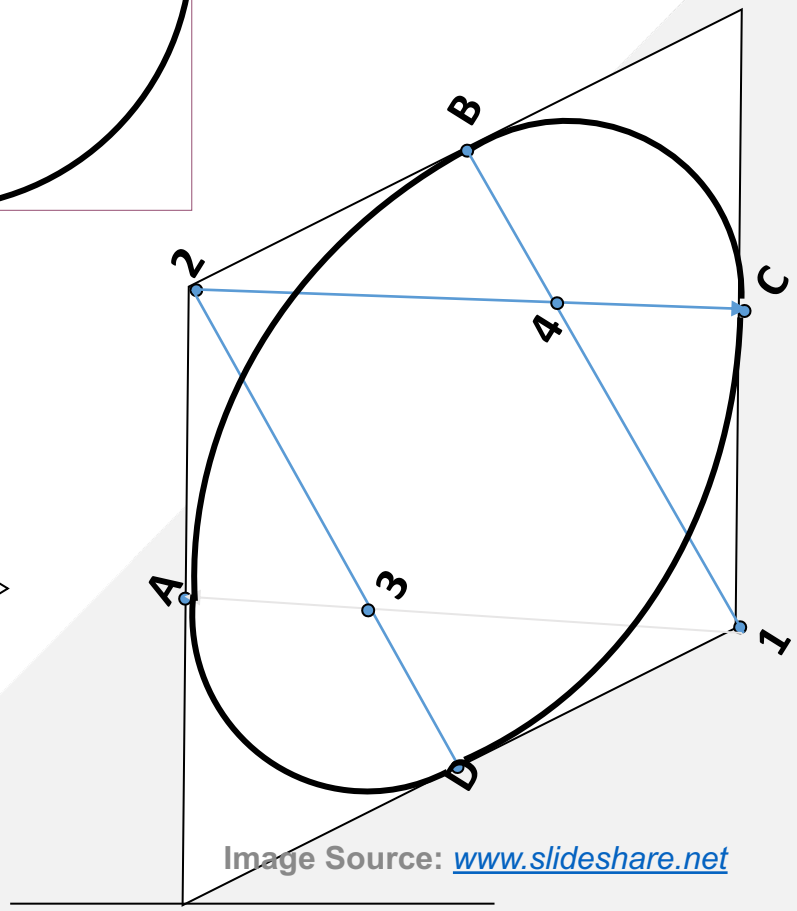


Image Source: www.slideshare.net

Isometric View of a Circle







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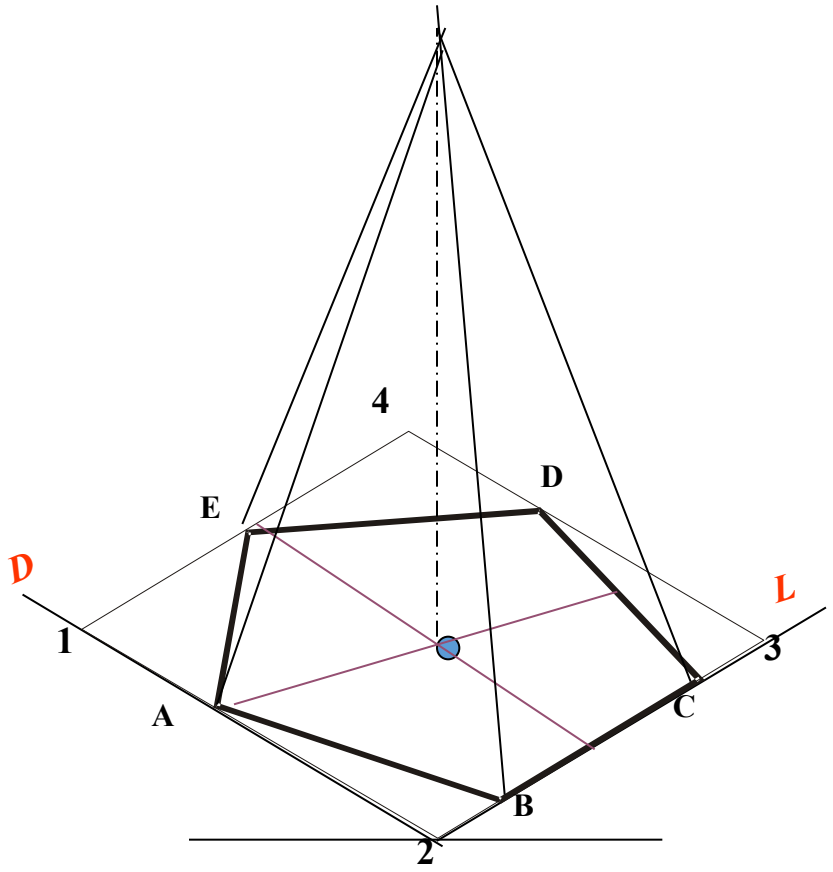
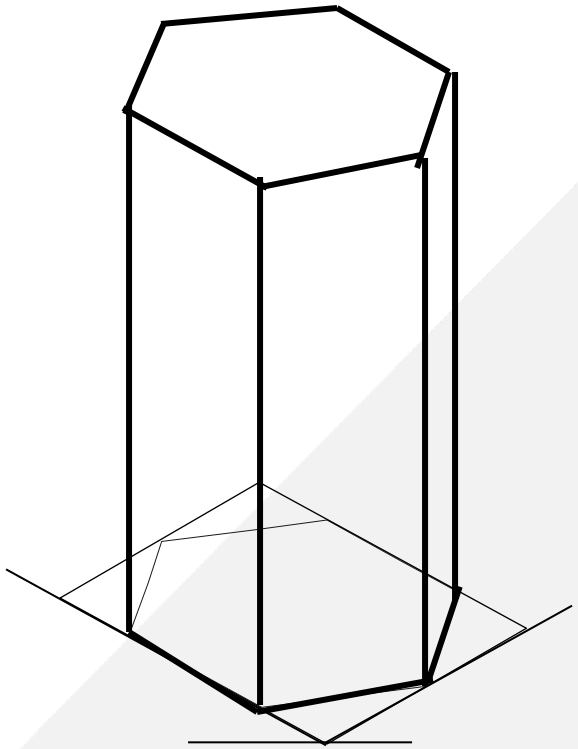
Isometric Views of Solids



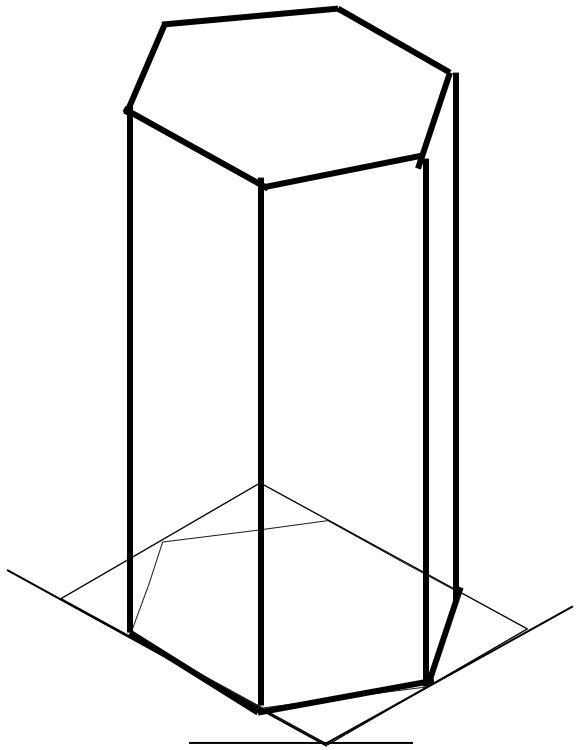
ISOMETRIC VIEW OF **PENTAGONAL PYRAMID** STANDING ON H.P.
(Height is added from center of pentagon)



ISOMETRIC VIEW OF
HEXAGONAL PRISM STANDING ON H.P.

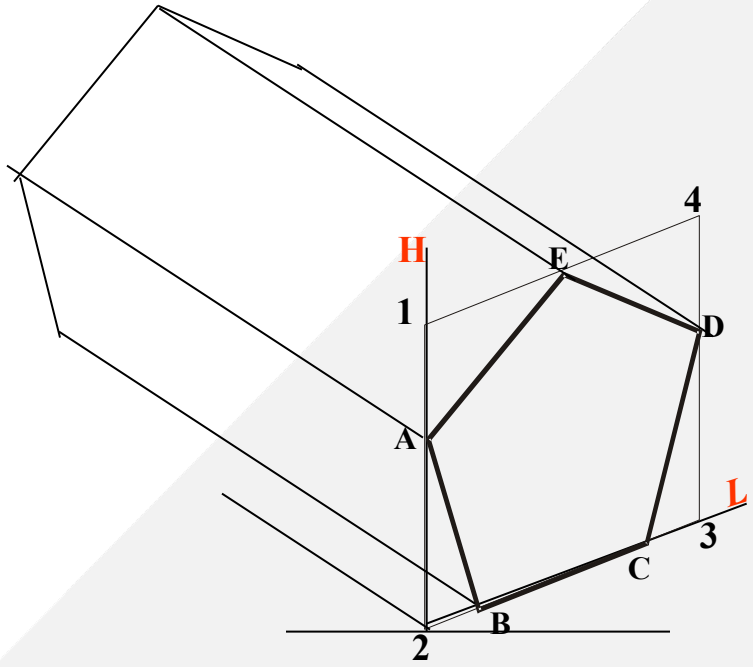
Image Source: www.slideshare.net

Isometric Views of Solids



ISOMETRIC VIEW OF
HEXAGONAL PRISM
STANDING ON H.P.

ISOMETRIC VIEW OF
PENTAGONALL PRISM
LYING ON H.P.



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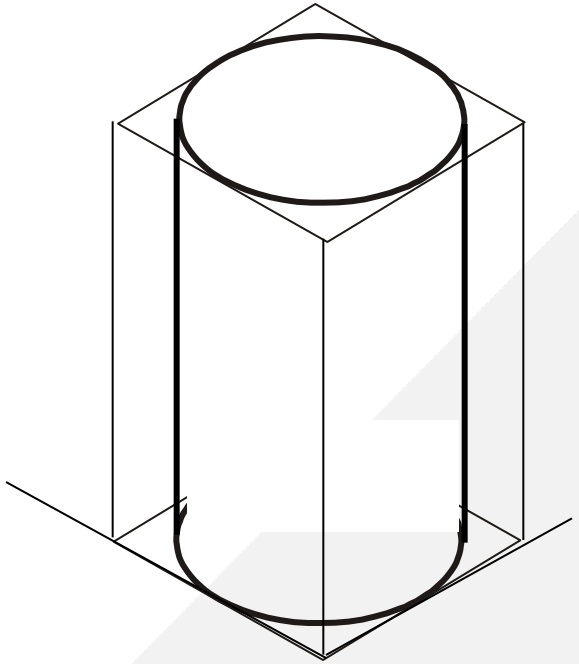
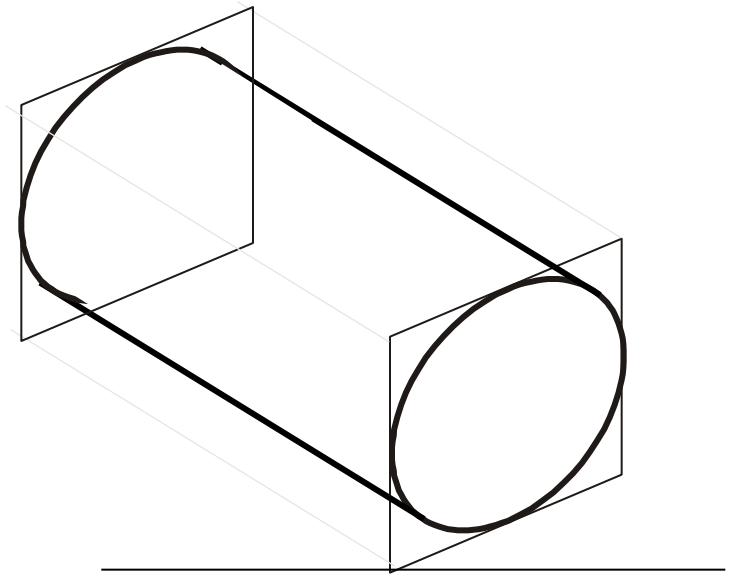
Isometric Views of Solids

CYLINDER STANDING ON H.P.



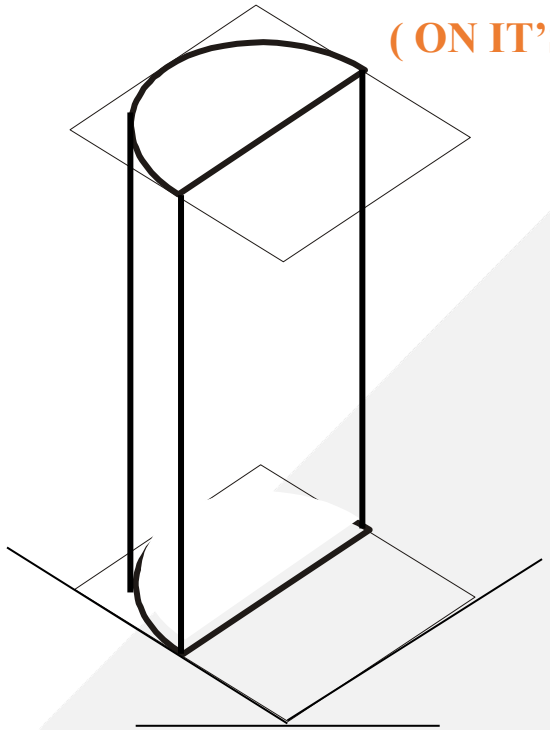


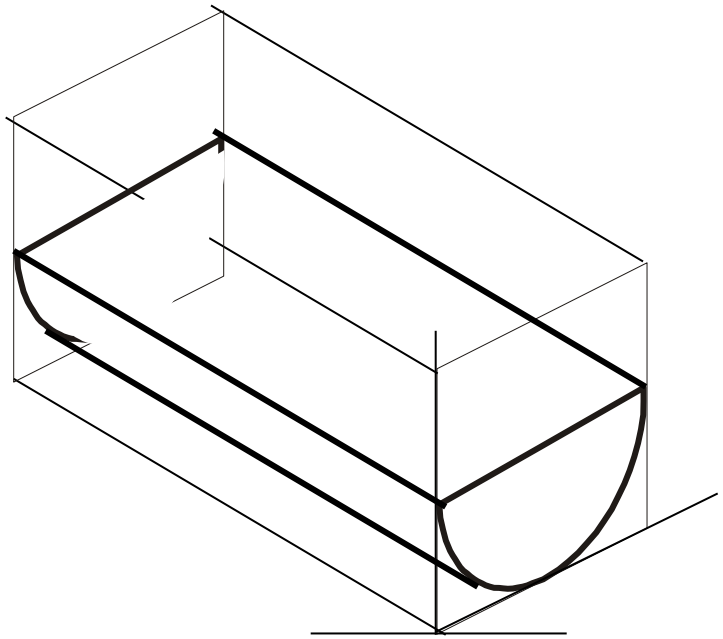
CYLINDER LYING ON H.P.

Image Source: www.slideshare.net

Isometric Views of Solids

HALF CYLINDER STANDING ON H.P.
(ON IT'S SEMICIRCULAR BASE)



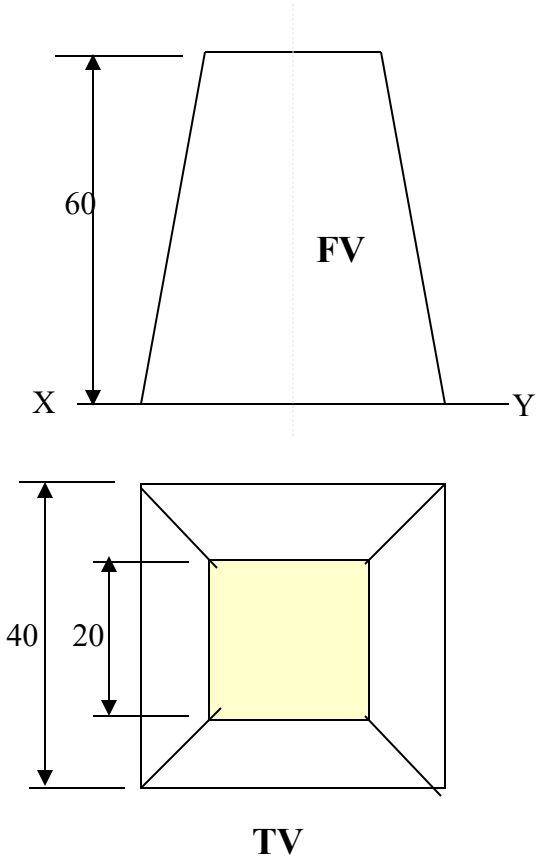


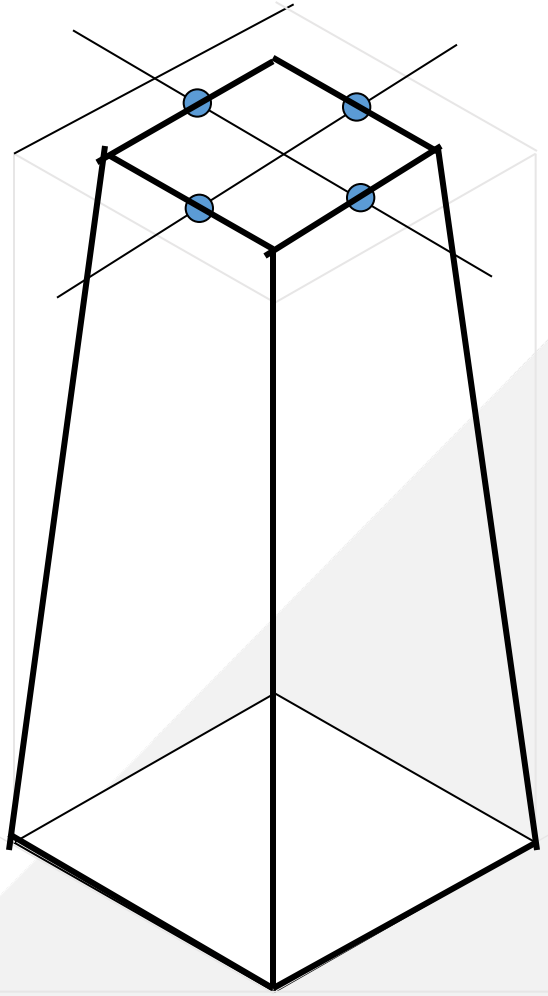
HALF CYLINDER LYING ON H.P.
(with flat face // to H.P.)

Image Source: www.slideshare.net

Isometric Views of Solids

ISOMETRIC VIEW OF
A FRUSTOM OF SQUARE PYRAMID
STANDING ON H.P. ON IT'S LARGER BASE.





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Assessment Pattern

S.NO.	ELEMENTS	MARKS
1	MST-1	36
2	MST-2	36
3	ASSIGNMENT (1+2+3)	12
4	SURPRISE TEST	09
5	TUTORIAL TEST	09
6	QUIZ	12

Applications

- Isometric projections are used to view the three dimensional drawings of machines.
- These are also used to show the front view, top view and side view in a single view.

Frequently Asked Questions

- What are isometric lines, planes and axes?
- Why is isometric drawing known as 3-D drawing?
- What is the significance of projection line in isometric projections?

Recommended Books

- Rhodes R.S, Cook L.B; Basic Engineering Drawing, Pitman Publishers,
- Rana and Shah; Engineering Drawing, Pearson Education India Publishers.
- Jolhe D.A; Engineering Drawing: With an Introduction to AutoCAD, Tata McGraw Hill
- Gill P.S; Engineering Drawing, S.K. Kataria and Sons Publications.
- Dhawan R. K; Engineering Drawing, S. Chand and Sons Publishers.

References

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- Basant Agrawal, Engineering Drawing, McGraw-Hill Education, 2014
- R.K.Dhawan, A Text Book of Engineering Drawing, S. Chand Publishing, 2012
- B. Bhattacharyya, Engineering Graphics, I. K. International Pvt Ltd, 21-Nov-2008
- Dean Estes Hobart, Engineering drawing, D. C. Heath and Company, 1947
- https://www.slideshare.net/hareeshang/isometric-projections

THANK YOU

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