21MES102L
Engineering Graphics and Design
School of Mechanical Engineering

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SRM IST, Kattankulathur.

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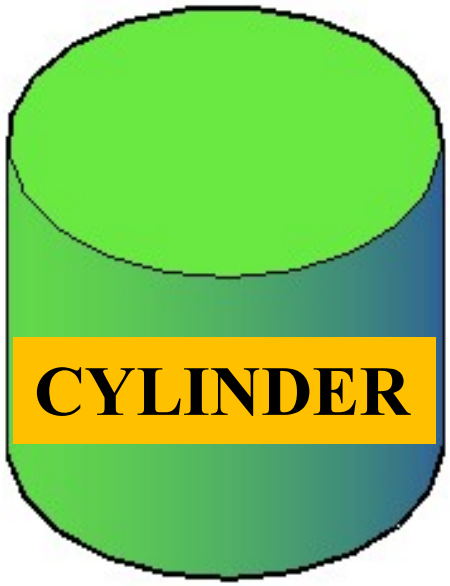
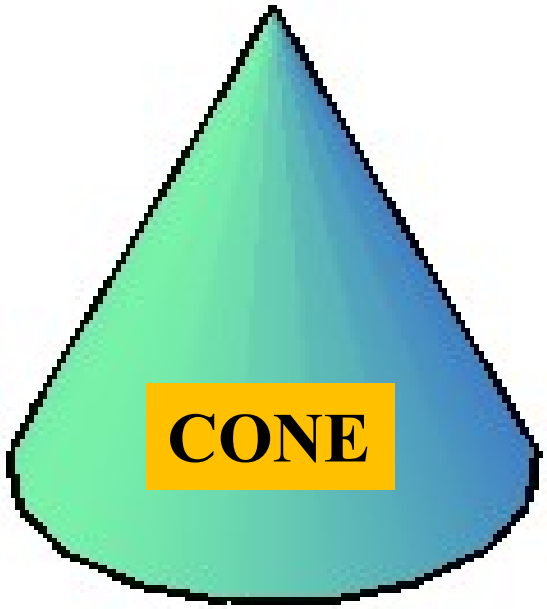
21MES102L
Engineering Graphics and Design

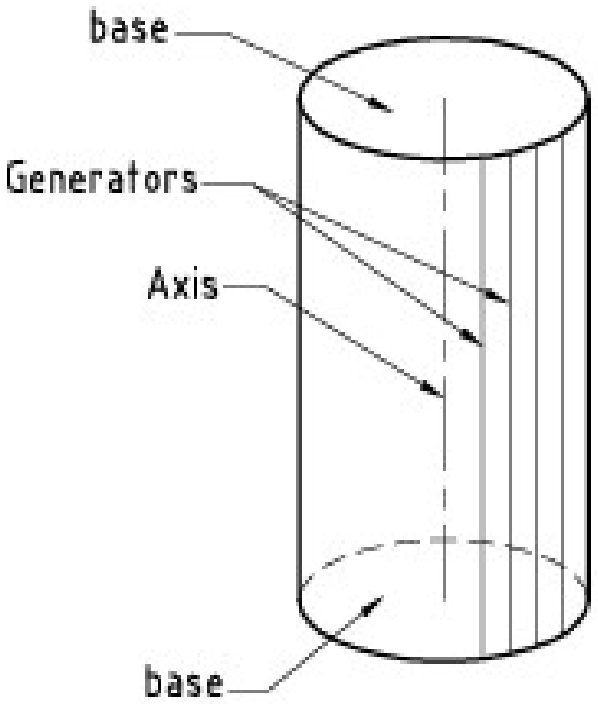
E7 Orthographic Projection of Solid of Revolutions



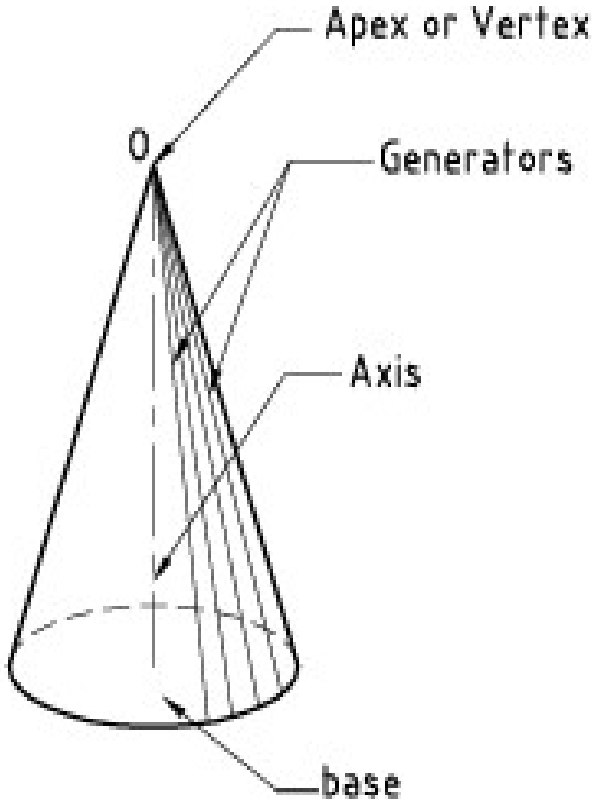


Topics Covered

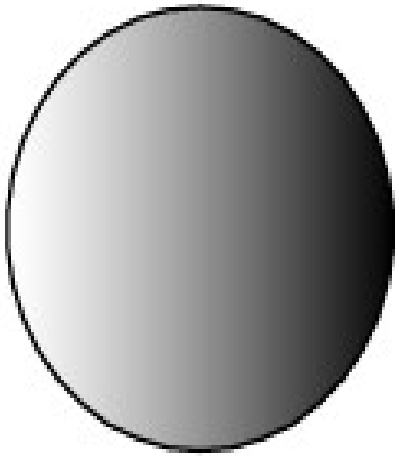
- Projection of Solids of Revolution with its Axis Inclined to one Principal Plane and Parallel to other Plane



Cylinder



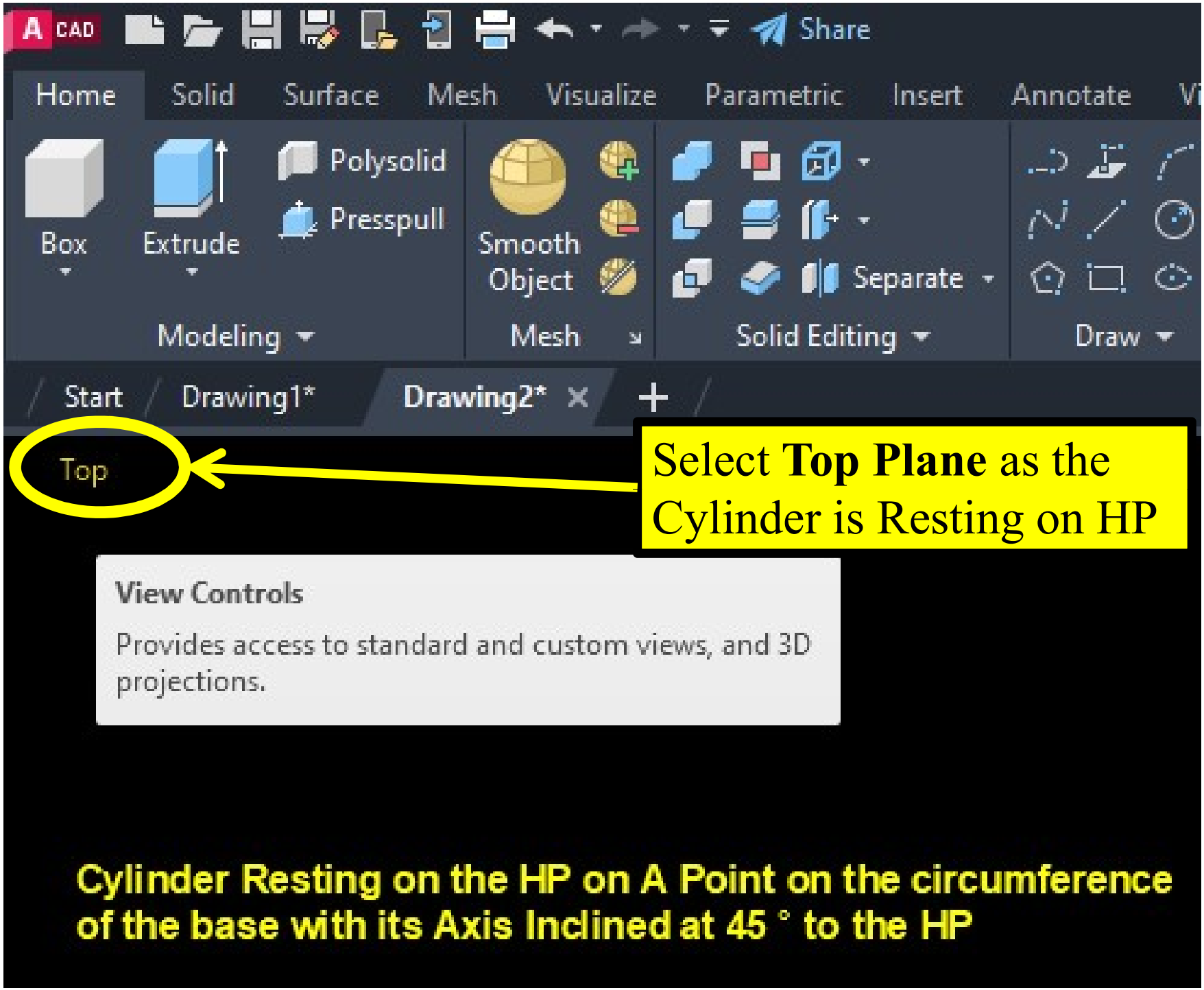
Cone



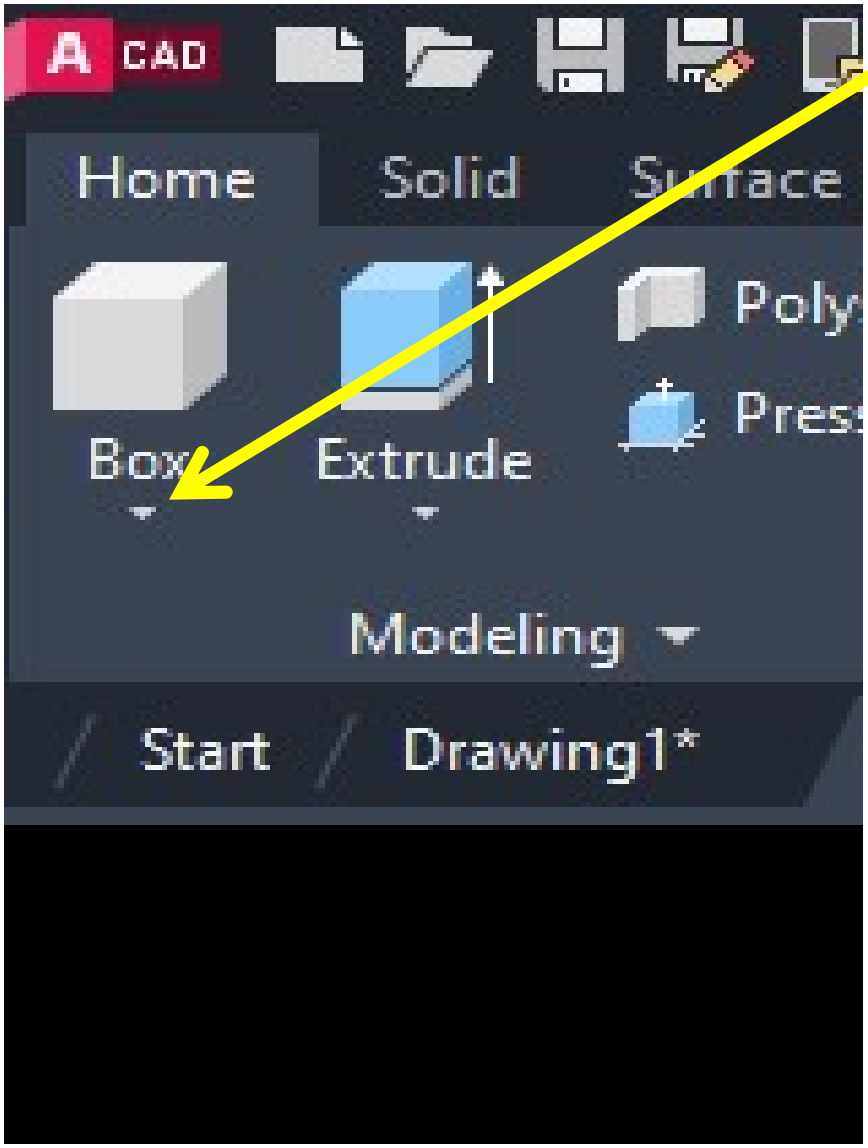
Sphere

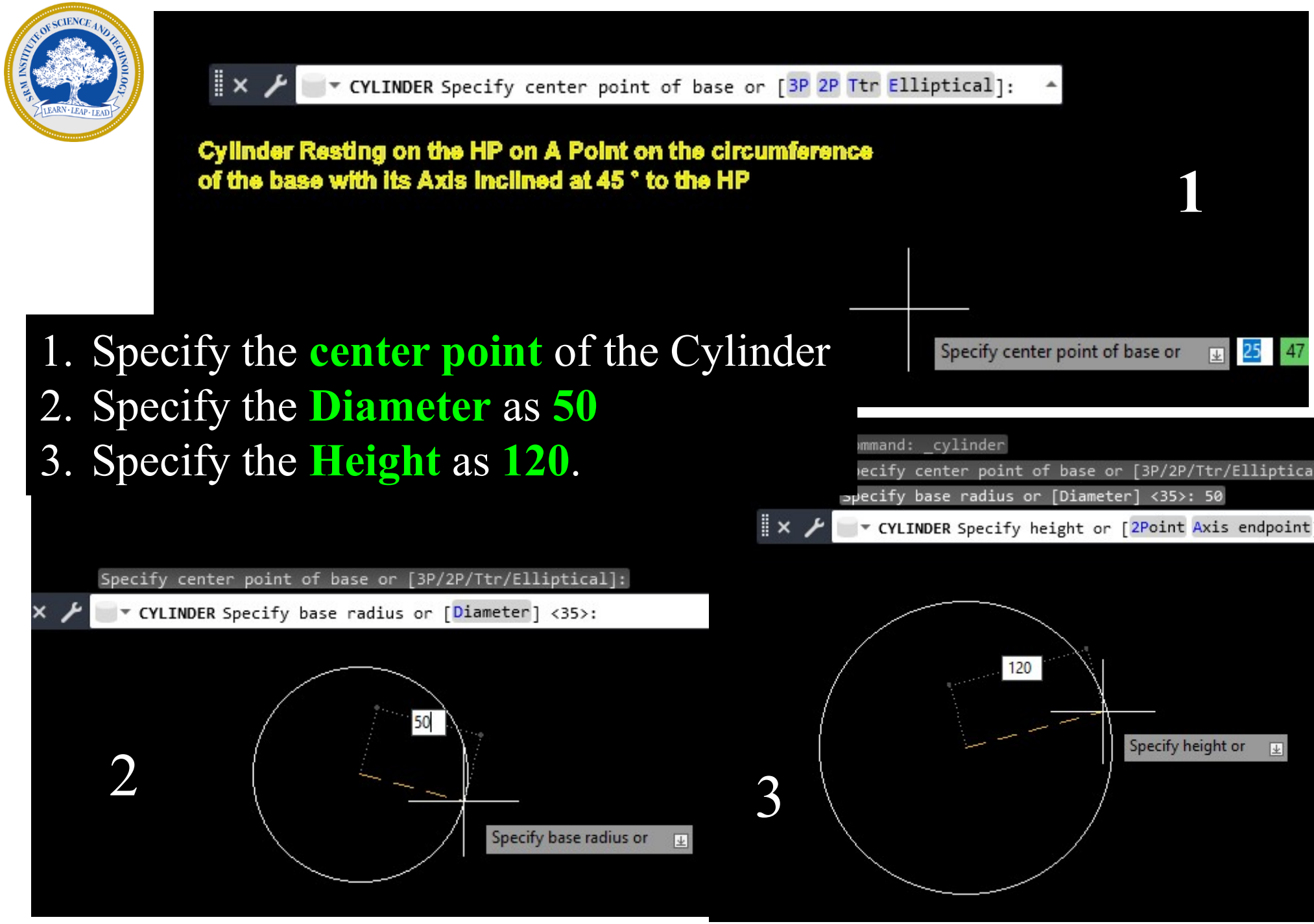
Cylinder of Base Diameter **50** mm & Height **120** mm Resting on the HP on a Point on the Circumference of the base with its Axis Inclined **45°** to the HP

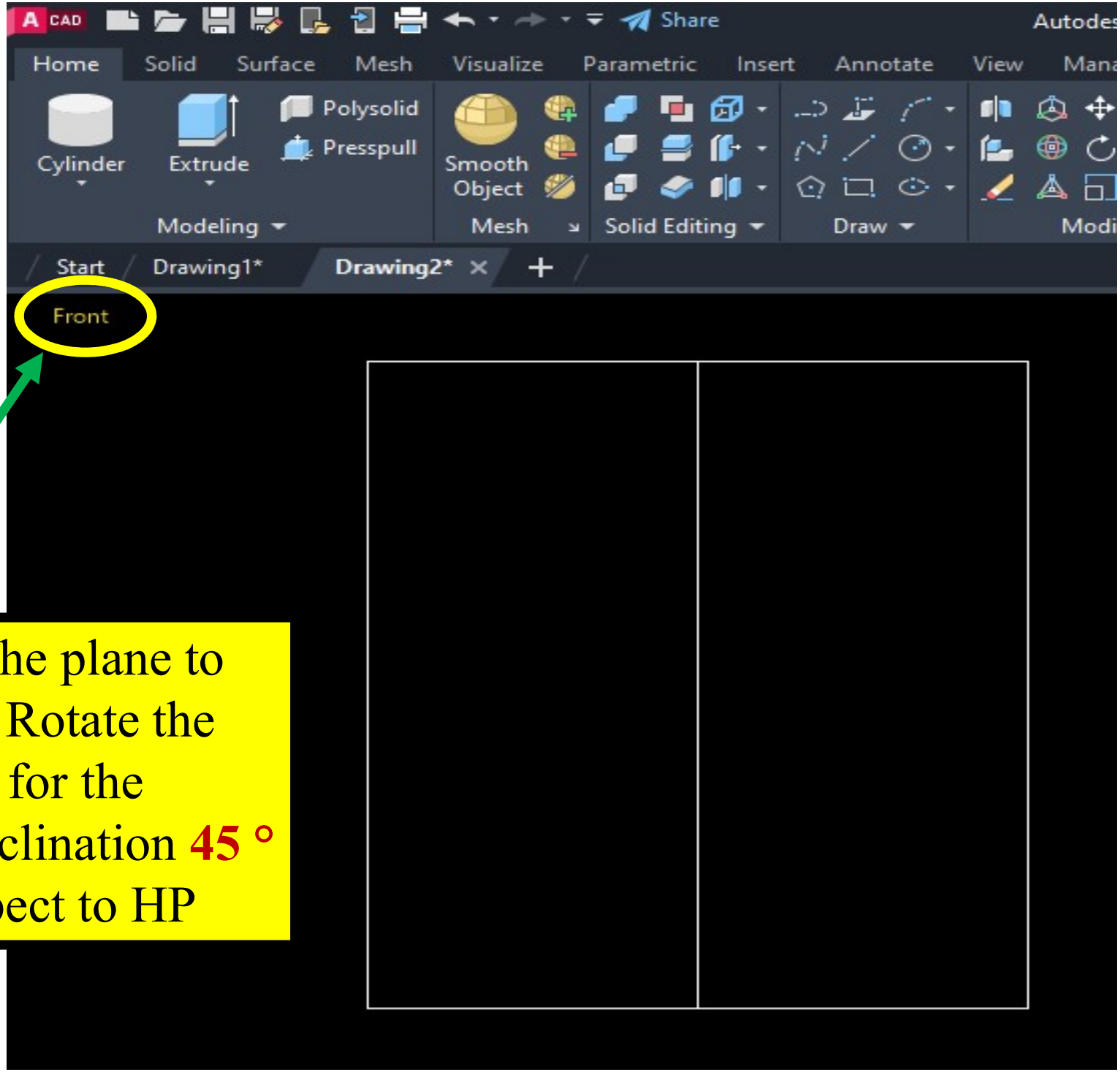
- Change the work space environment to **3D Modeling** (**WORKSPACE SWITCHING**)
- Complete the preliminary steps (setting **UNITS** & **LIMITS**)
- Select the **TOP** plane in **VIEW CONTROLS**
- Start with **TOP** View (as the True Shape is visible in **TOP** view)
- Use Cylinder command from **MODELLING** tool bar to create the Cylinder with given height


CAD
Share
Home
Solid
Surface
Mesh
Visualize
Parametric
Insert
Annotate
Box
Extrude
Polysolid
Presspull
Smooth Object
Separate
Modeling
Mesh
Solid Editing
Draw
Start
Drawing1*
Drawing2*
Top
Select Top Plane as the Cylinder is Resting on HP
View Controls
Provides access to standard and custom views, and 3D projections.
Cylinder Resting on the HP on A Point on the circumference of the base with its Axis Inclined at 45 ° to the HP

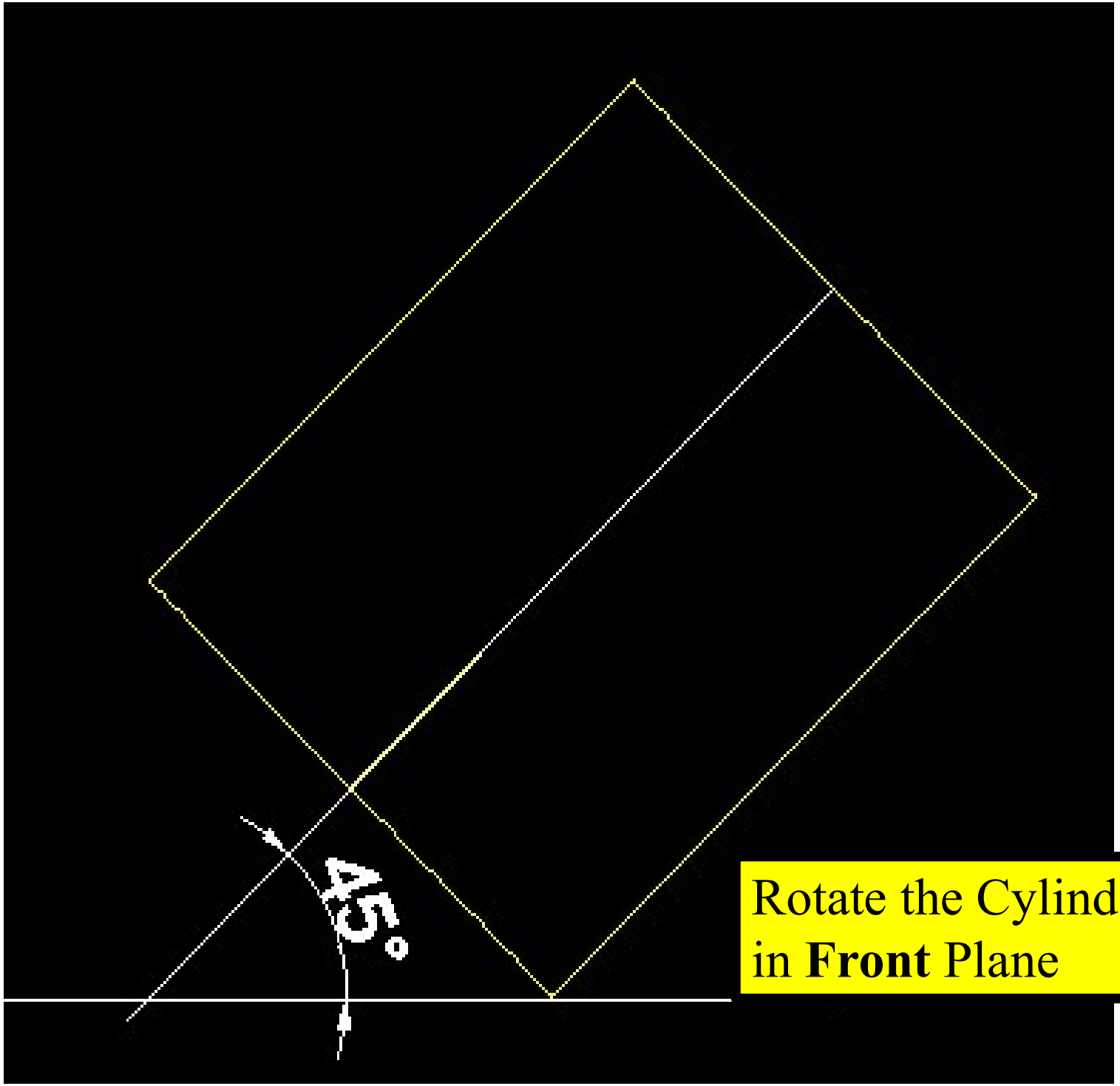
Click on the Pull Down to Select the Cylinder




CYLINDER Specify center point of base or [3P 2P Ttr Elliptical]:
Cylinder Resting on the HP on A Point on the circumference of the base with its Axis Inclined at 45 ° to the HP
1
Specify center point of base or
25
47
1. Specify the center point of the Cylinder
2. Specify the Diameter as 50
3. Specify the Height as 120.
Specify center point of base or [3P/2P/Ttr/Elliptical]:
CYLINDER Specify base radius or [Diameter] <35>:
50
Specify base radius or
2
Command: _cylinder
Specify center point of base or [3P/2P/Ttr/Elliptical]
Specify base radius or [Diameter] <35>: 50
CYLINDER Specify height or [2Point Axis endpoint]
120
Specify height or
3

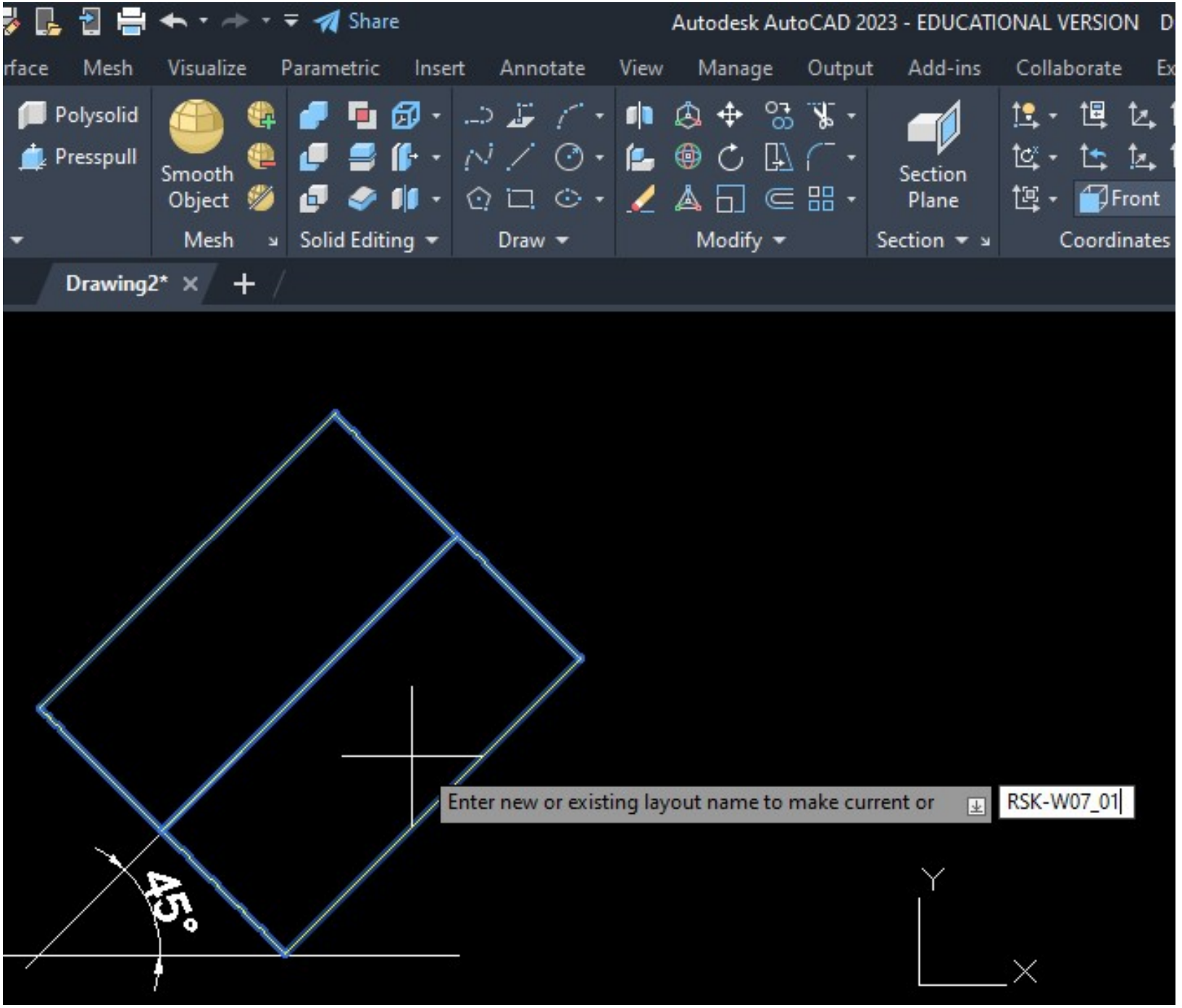


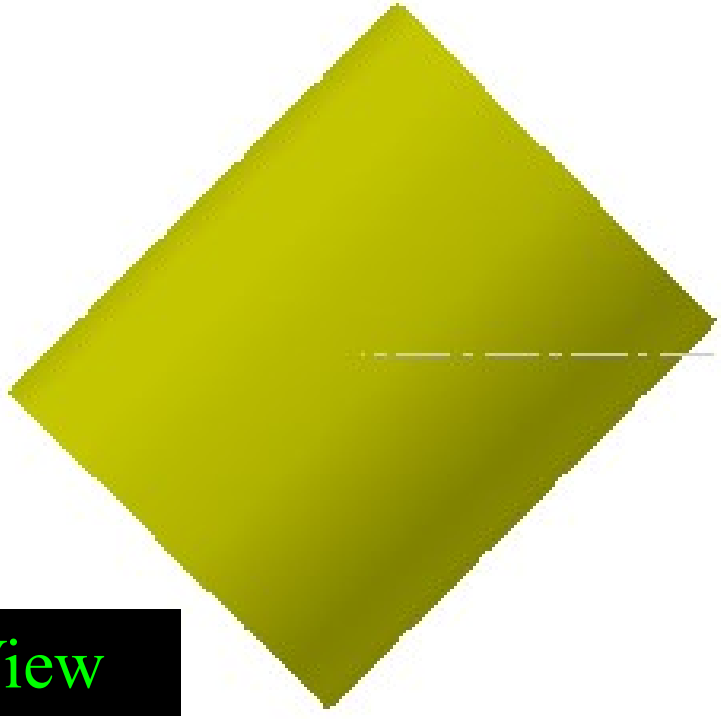
- Change the plane to **Front** to Rotate the Cylinder for the Given Inclination **45 °** with respect to HP



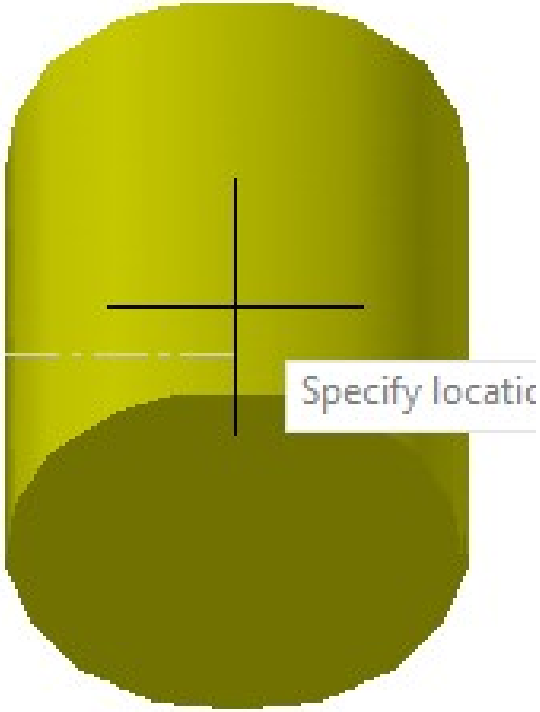
Rotate the Cylinder for **45°** in **Front** Plane

- Use **DRAFTING STANDARD** from **VIEW BASE** tool bar for setting the **FIRST ANGLE** of projection.
- Use **BASE** command from **VIEW BASE** tool bar & select the command **FROM MODEL SPACE** to the select solid & press **ENTER** & assign the **LAYOUT NAME** & press enter.

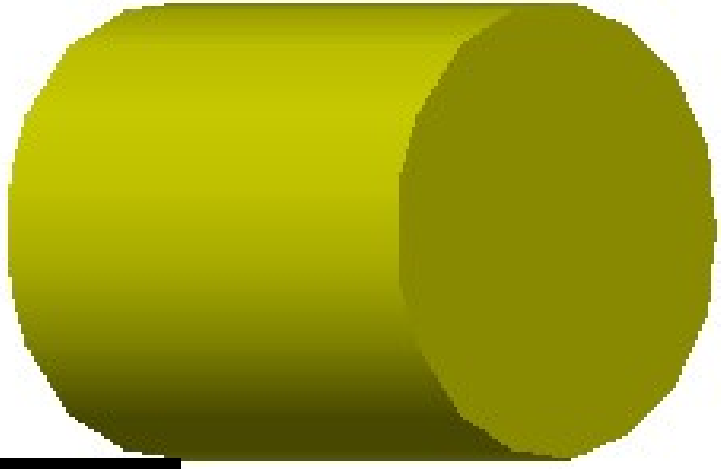

Share
Autodesk AutoCAD 2023 - EDUCATIONAL VERSION
Mesh
Visualize
Parametric
Insert
Annotate
View
Manage
Output
Add-ins
Collaborate
Polysolid
Presspull
Smooth Object
Mesh
Solid Editing
Draw
Modify
Section Plane
Section
Front
Coordinates
Drawing2*
Enter new or existing layout name to make current or
RSK-W07_01
45°
Y



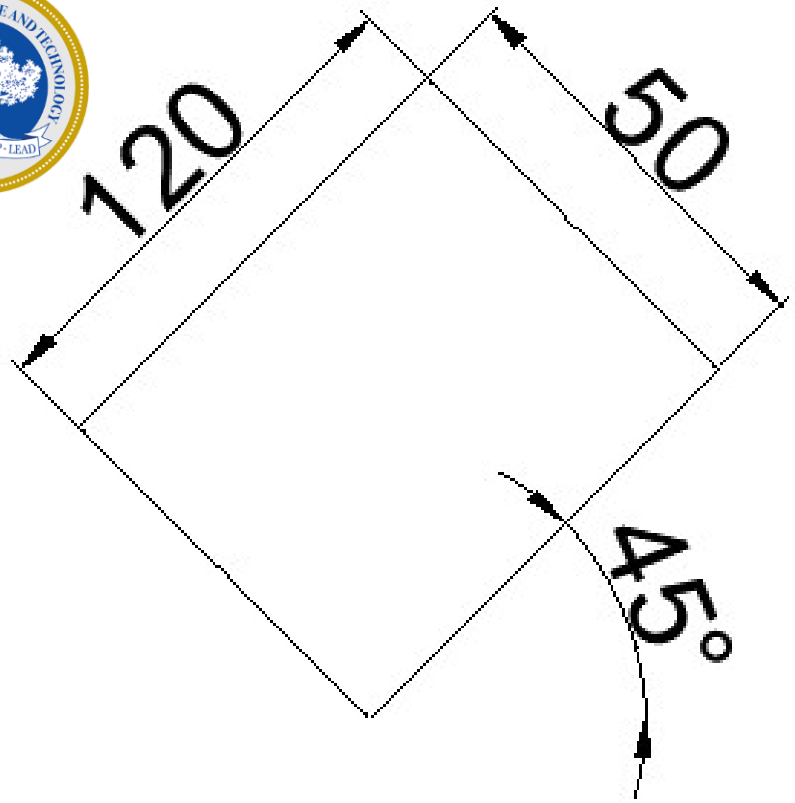
Front View

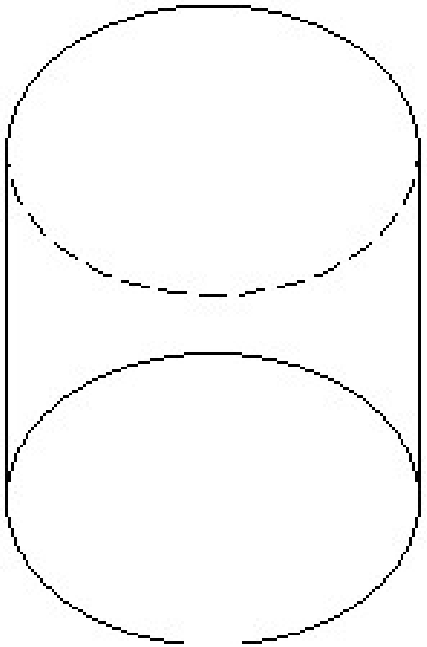


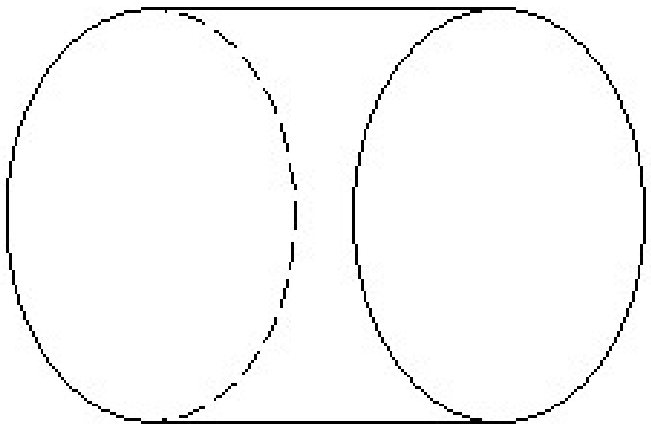
Side View



Top View





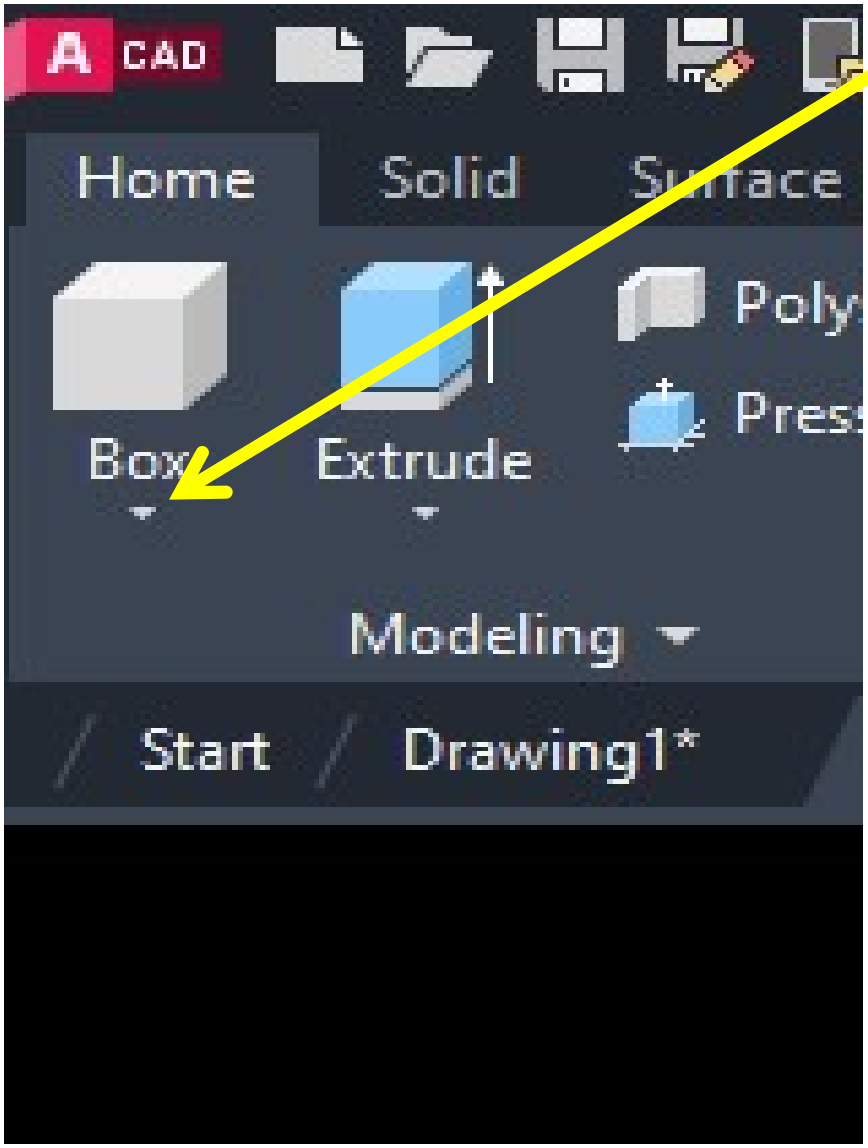


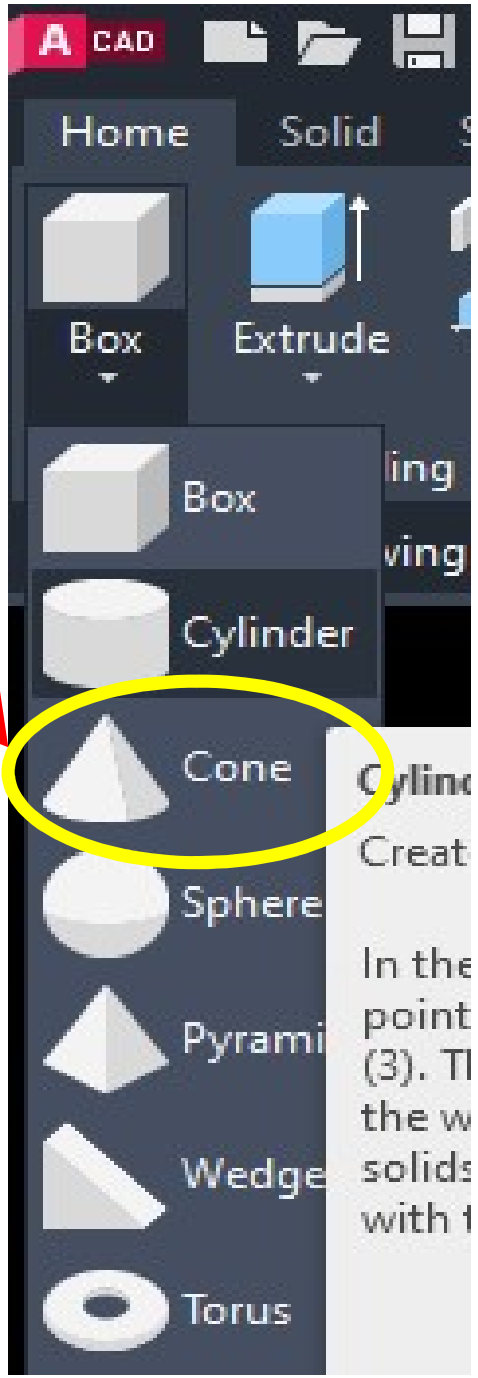
- Use **DIMENSION** tool from **ANNOTATION** tool bar & mark the relevant dimensions.

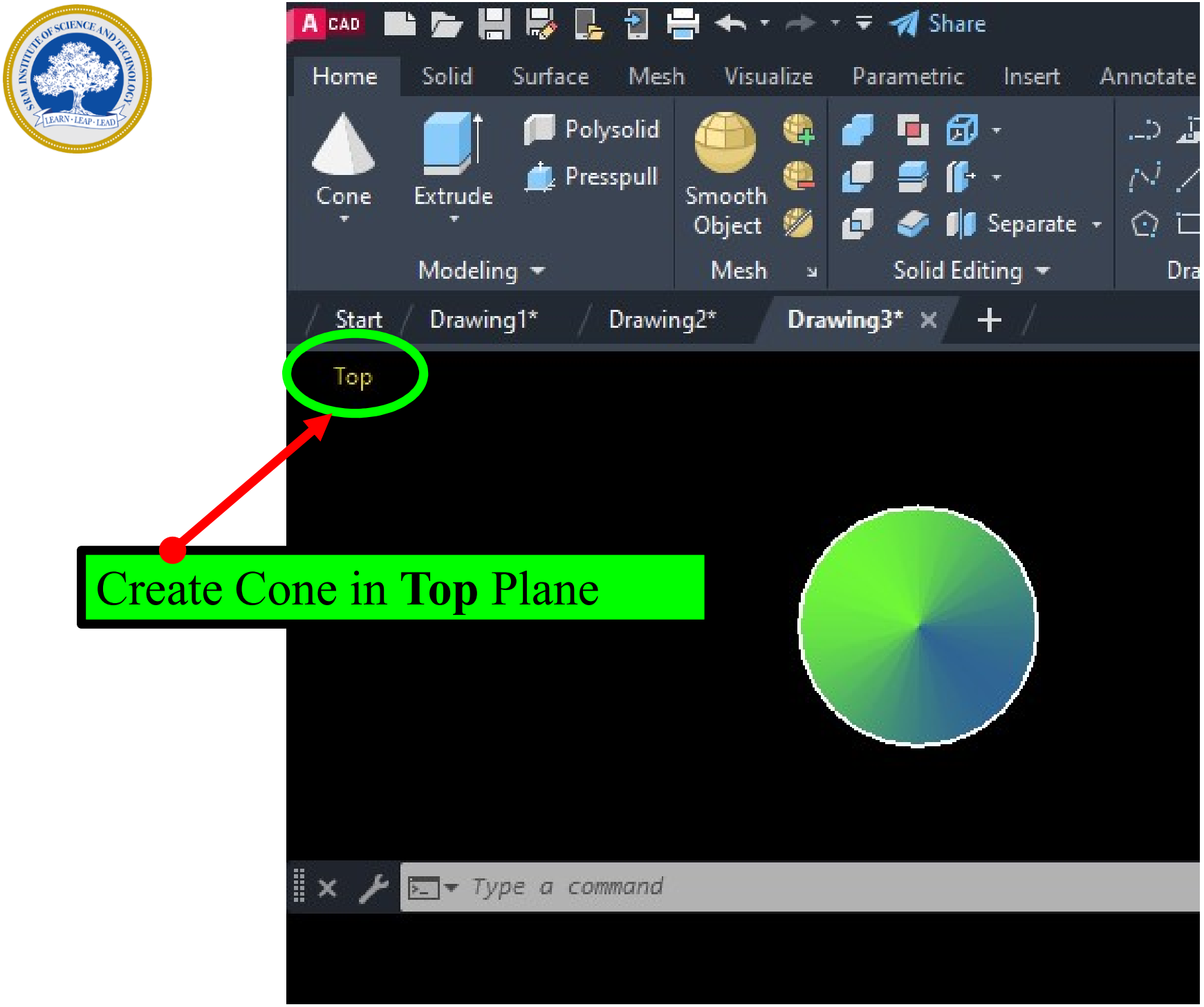
A cone of base diameter **42** mm and axis length **65** mm rests on the HP on a point in the circumference of the base with one of its slant generators perpendicular to the HP and parallel to the VP. Draw its projections.

- Change the work space environment to **3D Modeling** (**WORKSPACE SWITCHING**)
- Complete the preliminary steps (setting **UNITS** & **LIMITS**)
- Select the **TOP** plane in **VIEW CONTROLS**
- Start with **Top** view (since **True** shape of the solid is visible in **Top** view)
- Use Cone command from **MODELLING** tool bar to create the Cone with given Base Diameter & Axis length.

Click on the Pull Down to Select the Cone






CAD
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Polysolid
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Modeling
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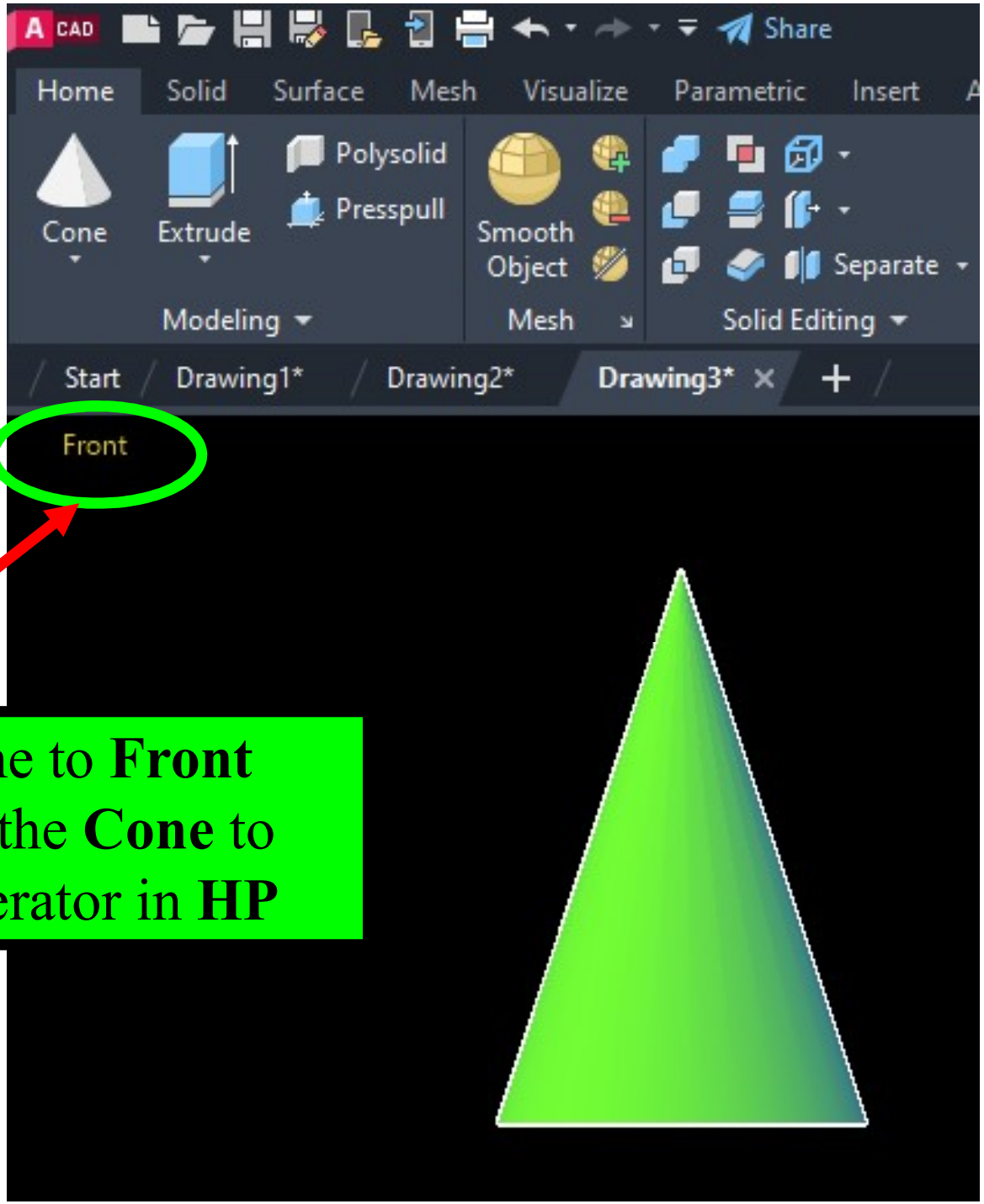
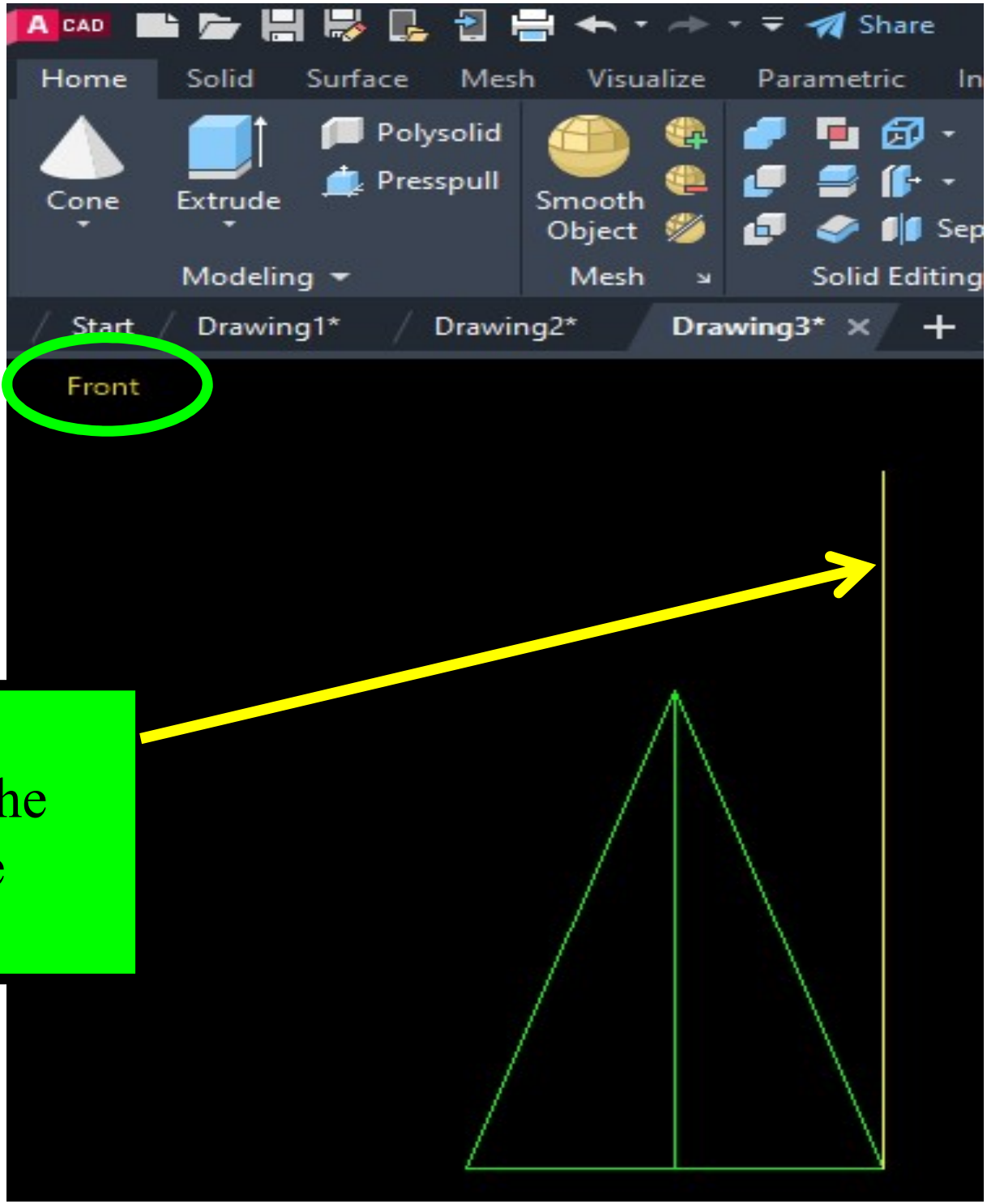
Solid Editing
Start
Drawing1*
Drawing2*
Drawing3*
Top
Create Cone in Top Plane
Type a command

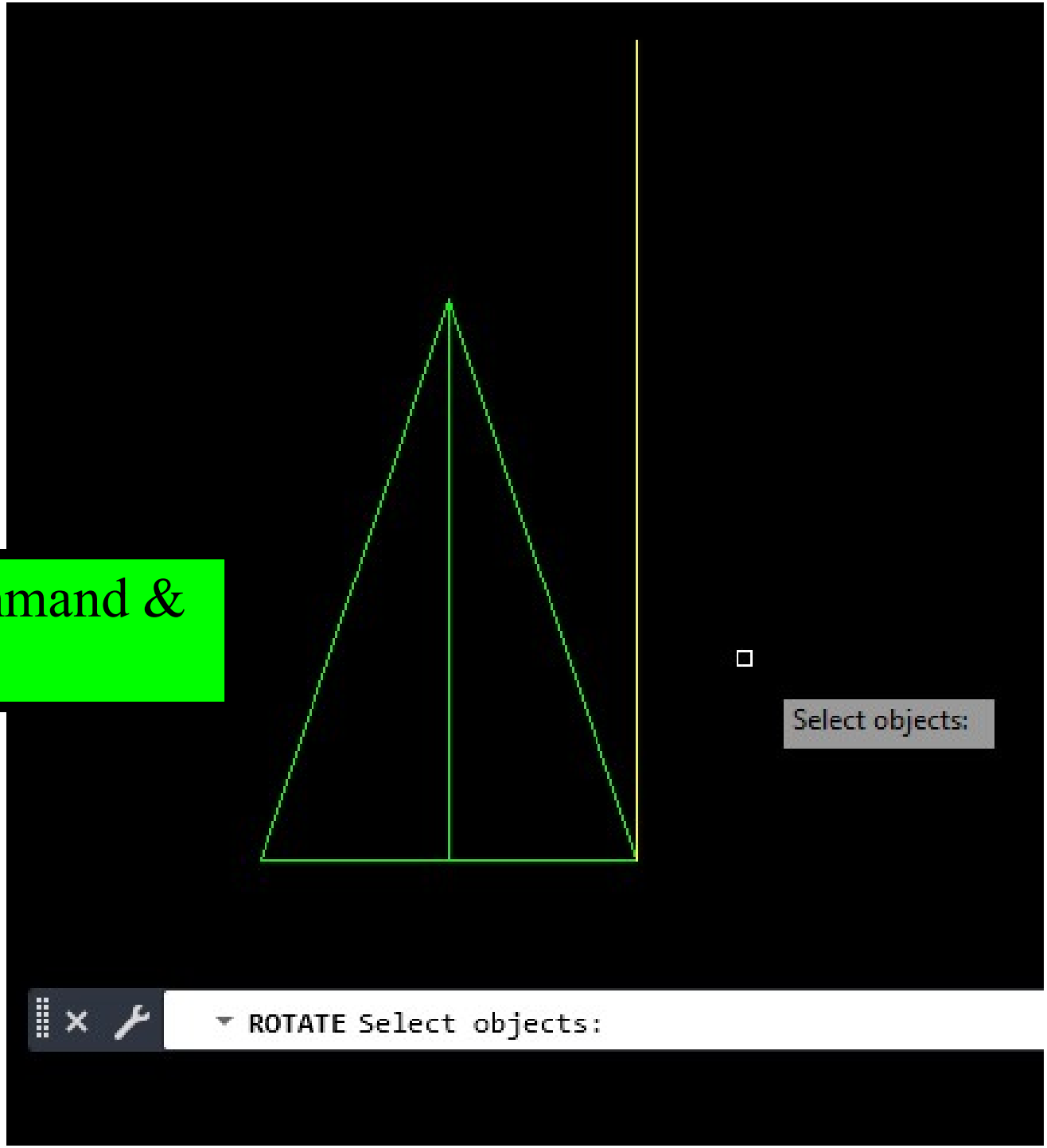


- Change the Plane to **Front** Plane to Rotate the **Cone** to Rest on its Generator in **HP**

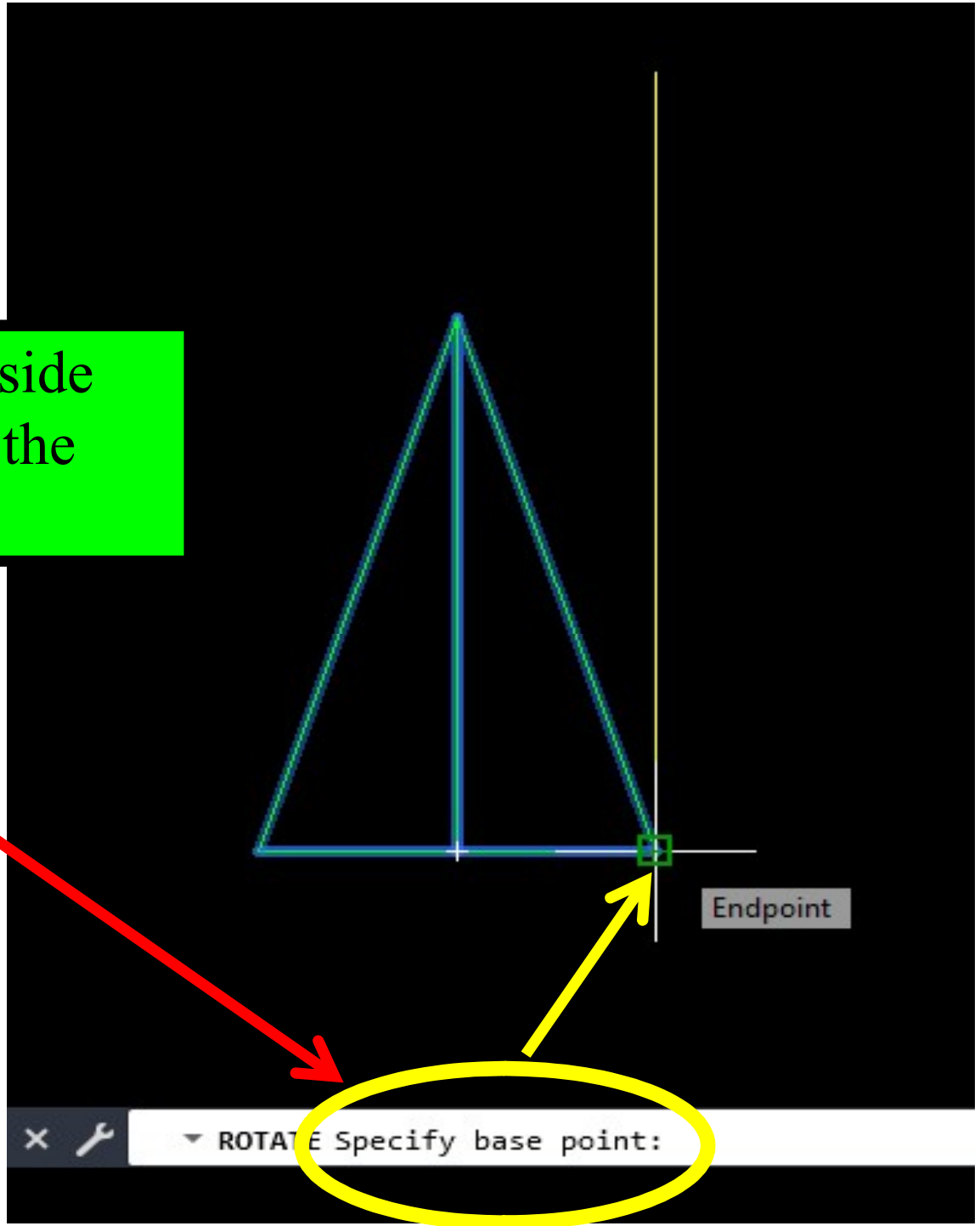


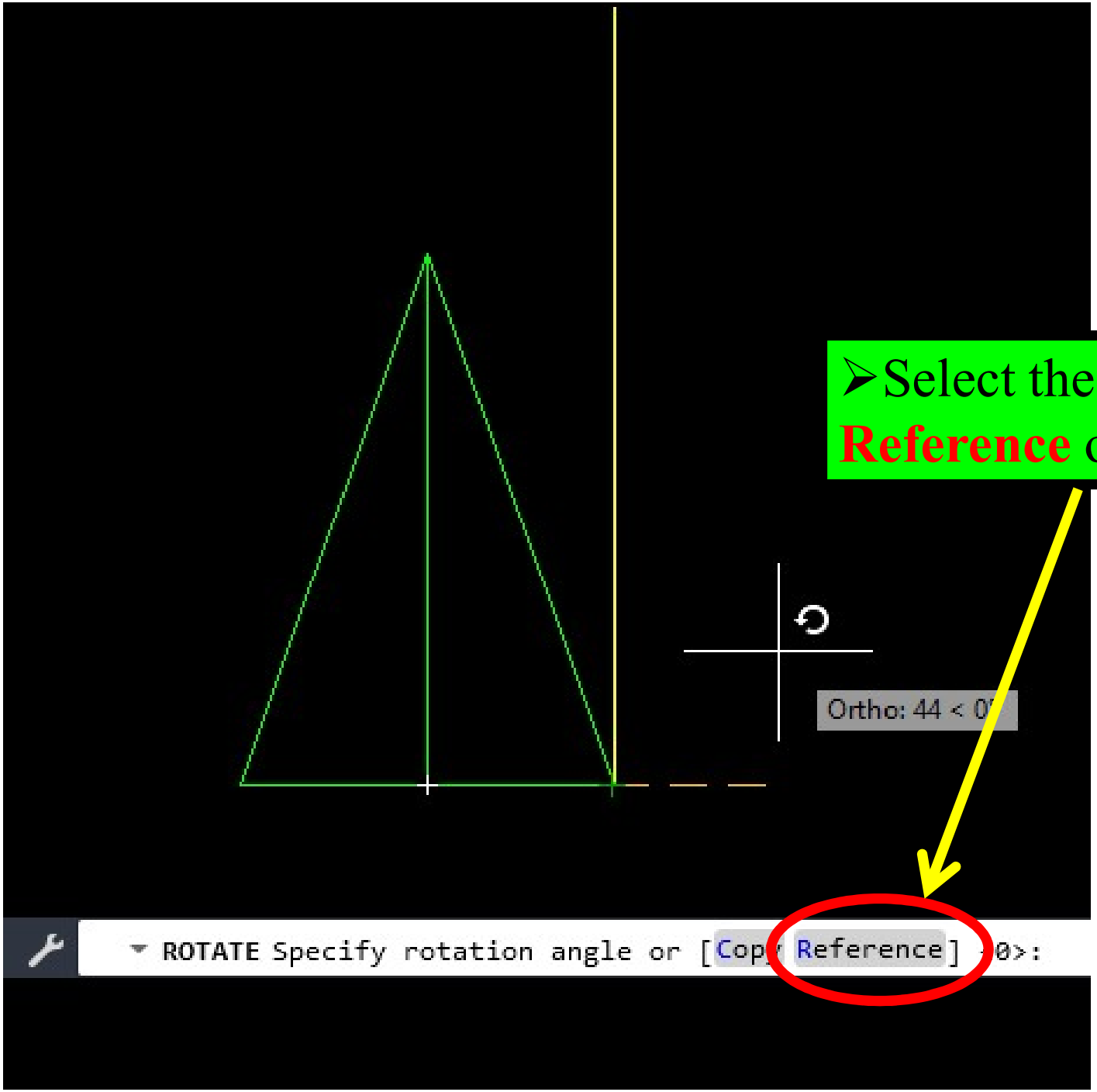
➢Draw a Vertical Reference Line from the **Right side** of the Base Point.

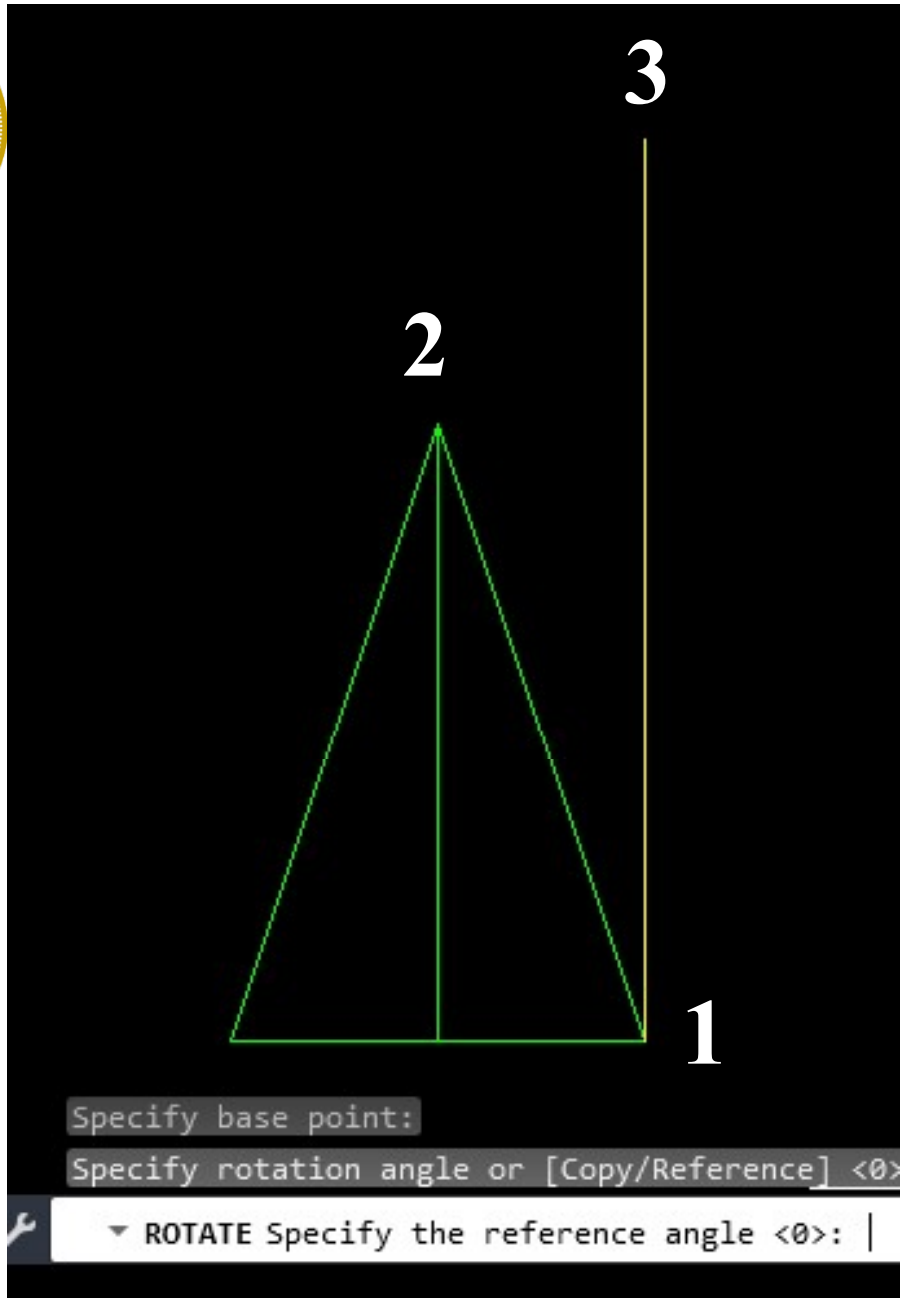
➢Use Rotate Command & Select the Cone



➢Specify the **Right** side Base of the **Cone** as the Base Point

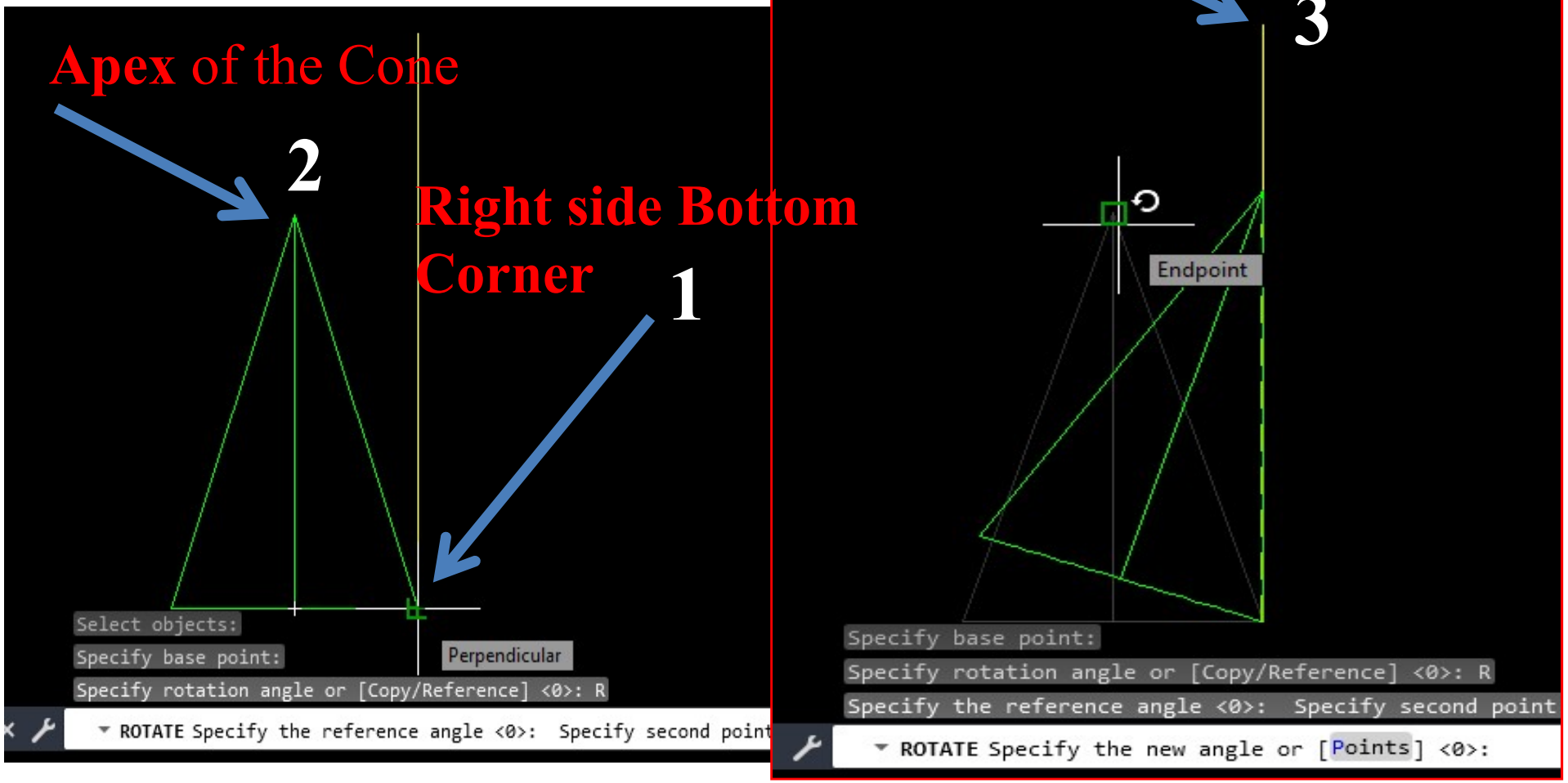



➢Select the Reference option
Ortho: 44 < 0
ROTATE Specify rotation angle or [Copy Reference] 0>:

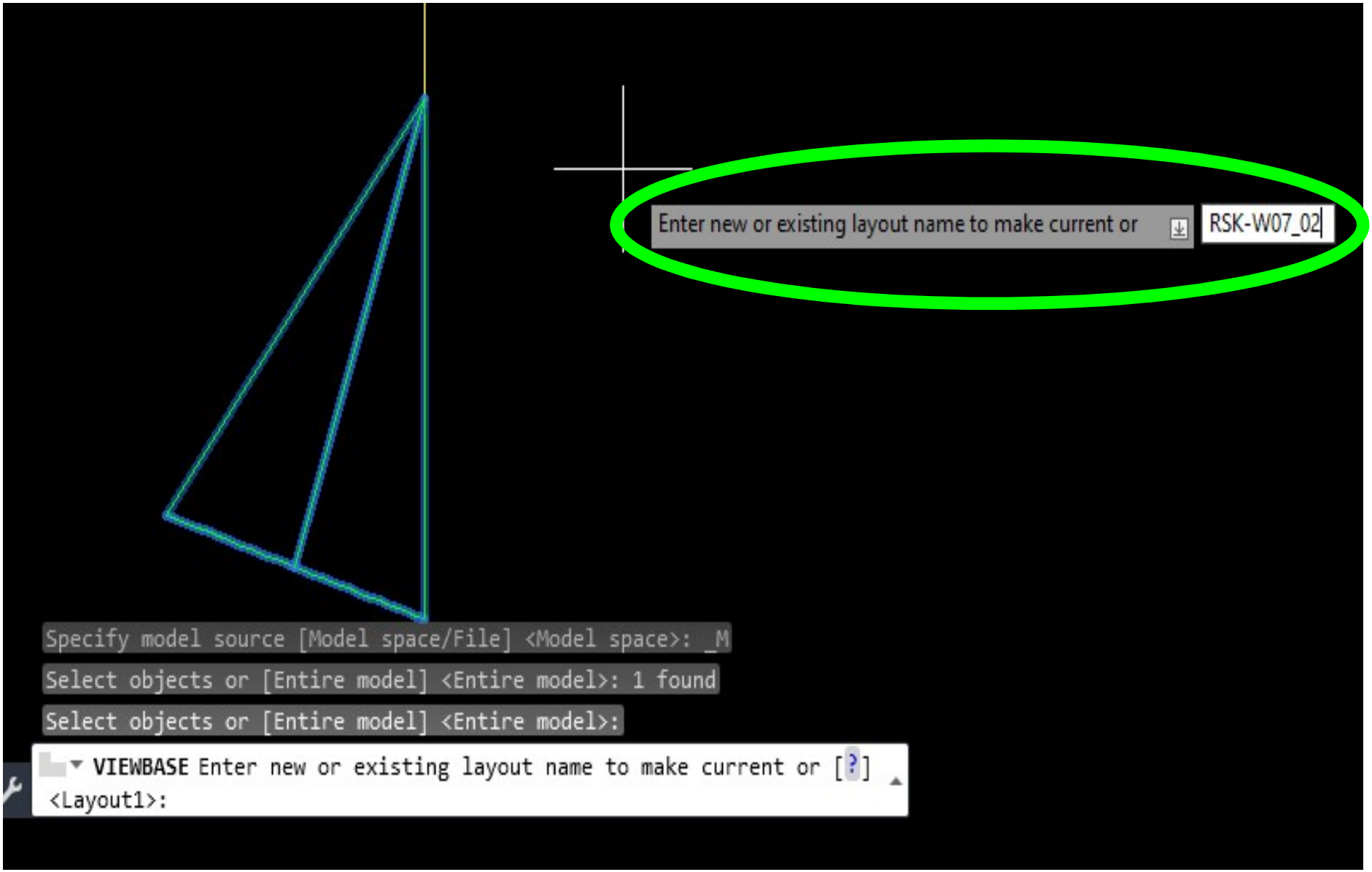


- To Specify the References
- Select **First** the **Right side Bottom Corner** of the Cone
- Select **Second** the **Apex** of Cone
- Select **Third** as the **Top End** point of the **Vertical Reference Line**.

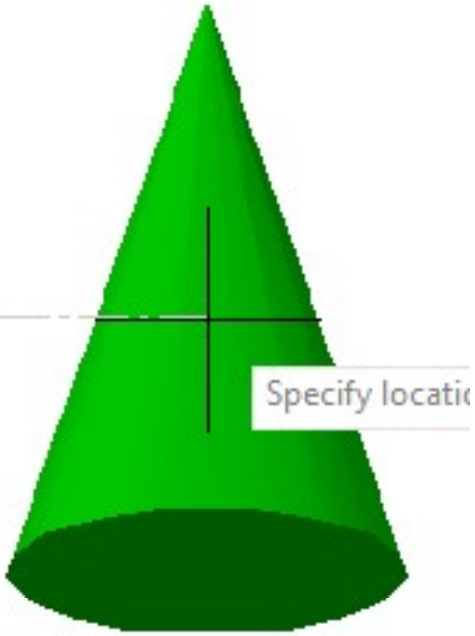
➢Select **First** the **Right side Bottom Corner** of the Cone Select **Second Apex** of the Cone & Select **Third** as the **Top End** point of the **Vertical Reference Line.**



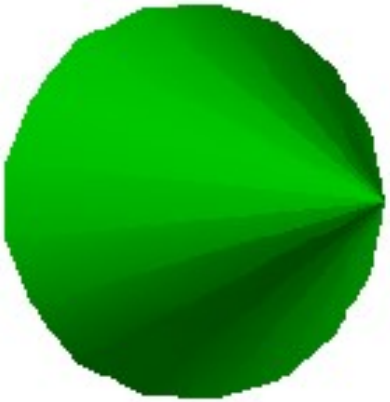
- Use **DRAFTING STANDARD** from **VIEW BASE** tool bar for setting the **FIRST ANGLE** of projection.
- Use **BASE** command from **VIEW BASE** tool bar & select the command **FROM MODEL SPACE** to the select solid & press **ENTER** & assign the **LAYOUT NAME** & press enter.


Enter new or existing layout name to make current or
RSK-W07_02
Specify model source [Model space/File] <Model space>: _M
Select objects or [Entire model] <Entire model>: 1 found
Select objects or [Entire model] <Entire model>:
VIEWBASE Enter new or existing layout name to make current or [?]
<Layout1>:

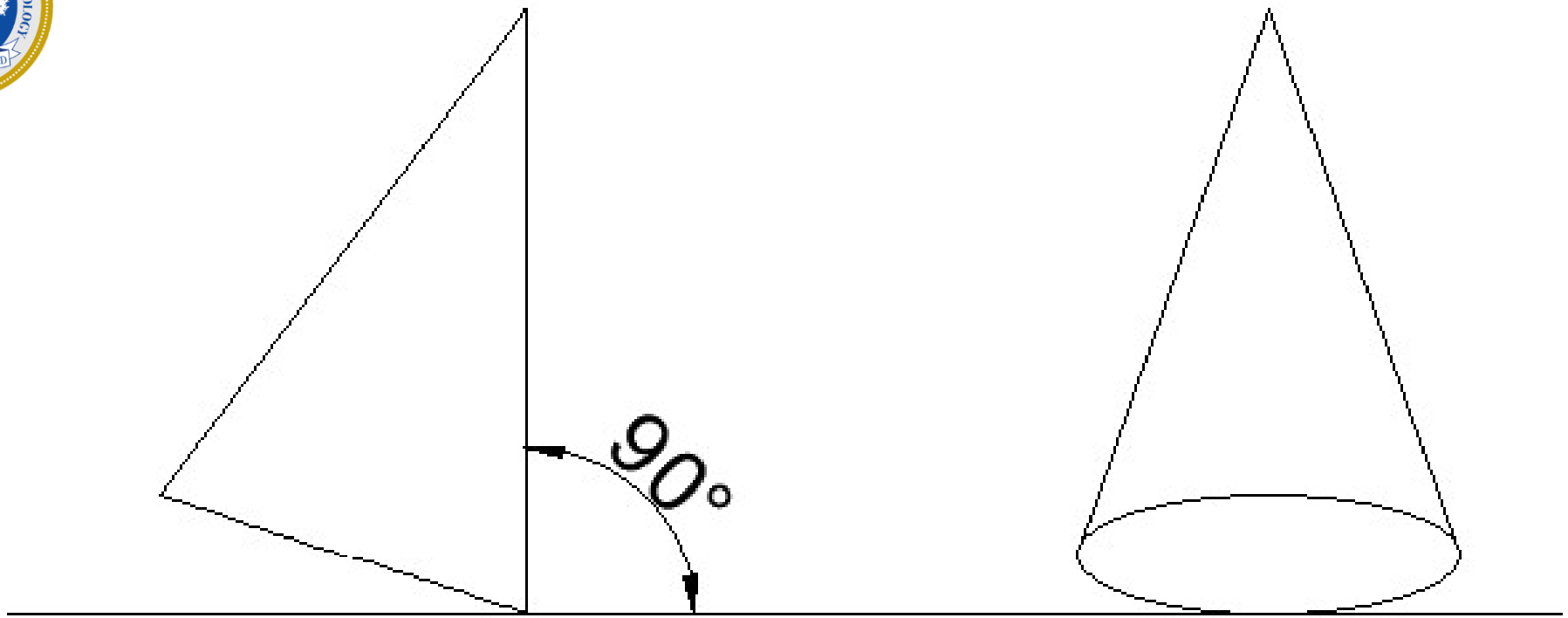
Front View

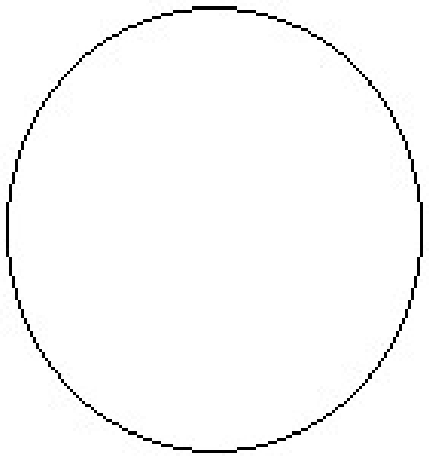


Side View



Top View

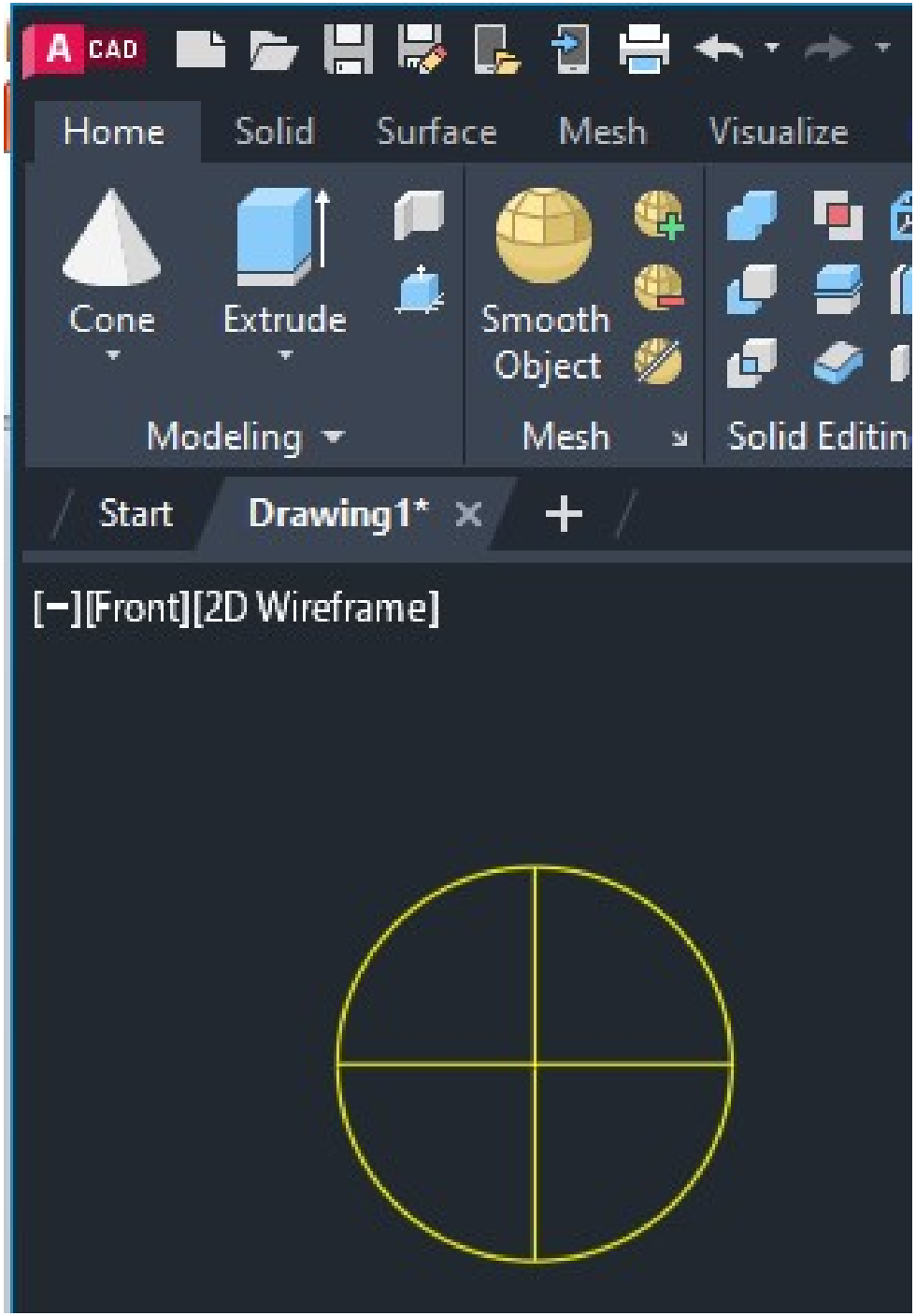

90°

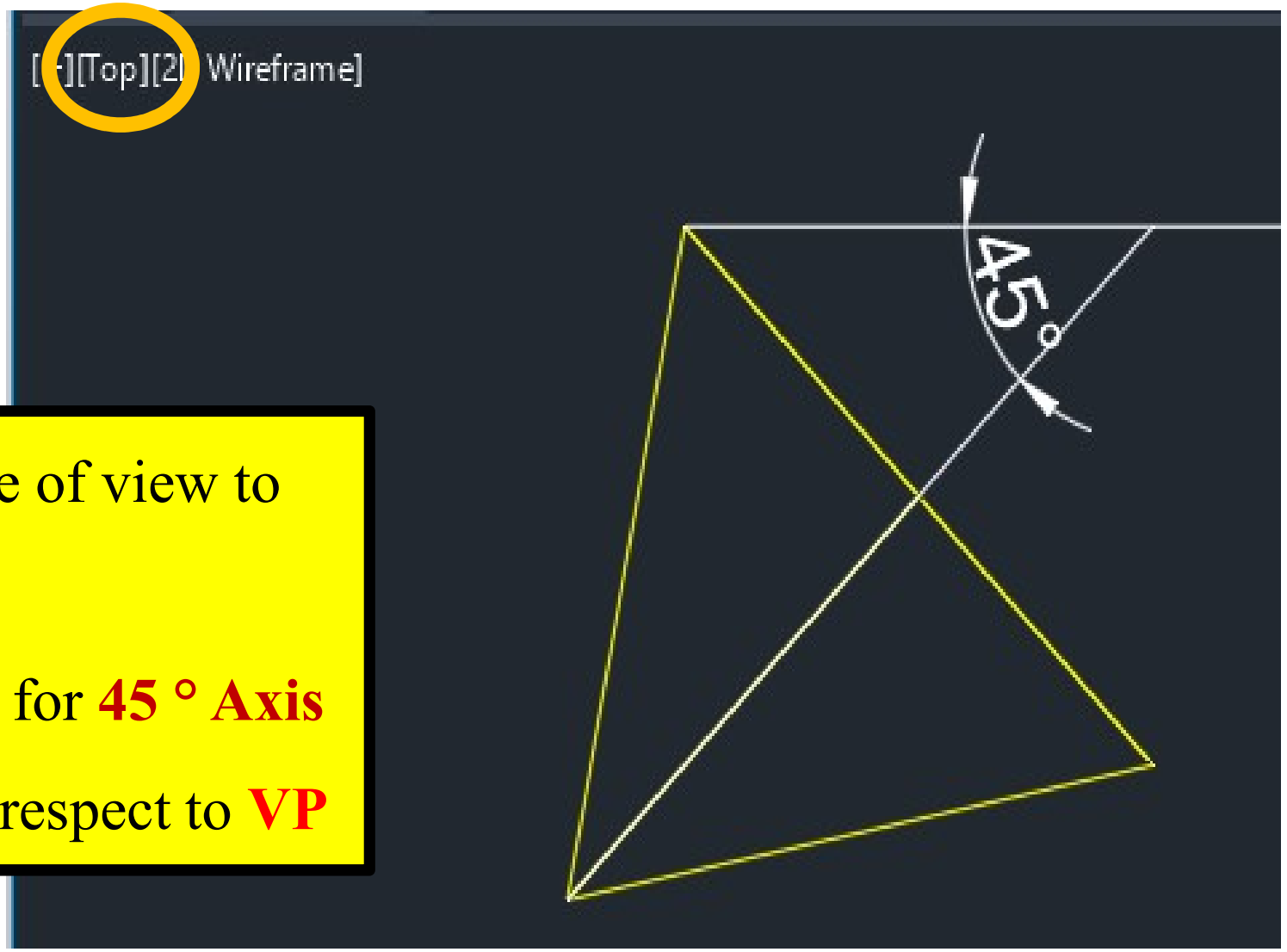


A cone of base diameter **40** mm and axis length **60** mm has a point of its base circle in the VP, **40** mm above HP. Its axis is inclined at **45°** to the VP and parallel to the HP. Draw its Projections.

- Change the work space environment to **3D Modeling** (**WORKSPACE SWITCHING**)
- Complete the preliminary steps (setting **UNITS** & **LIMITS**)
- Select the **Front** plane in **VIEW CONTROLS**
- Start with **Front** view (since **True** shape of the solid is visible in **FRONT** view)
- Use Cone command from **MODELLING** tool bar to create the Cone with given Base Diameter & Axis length.

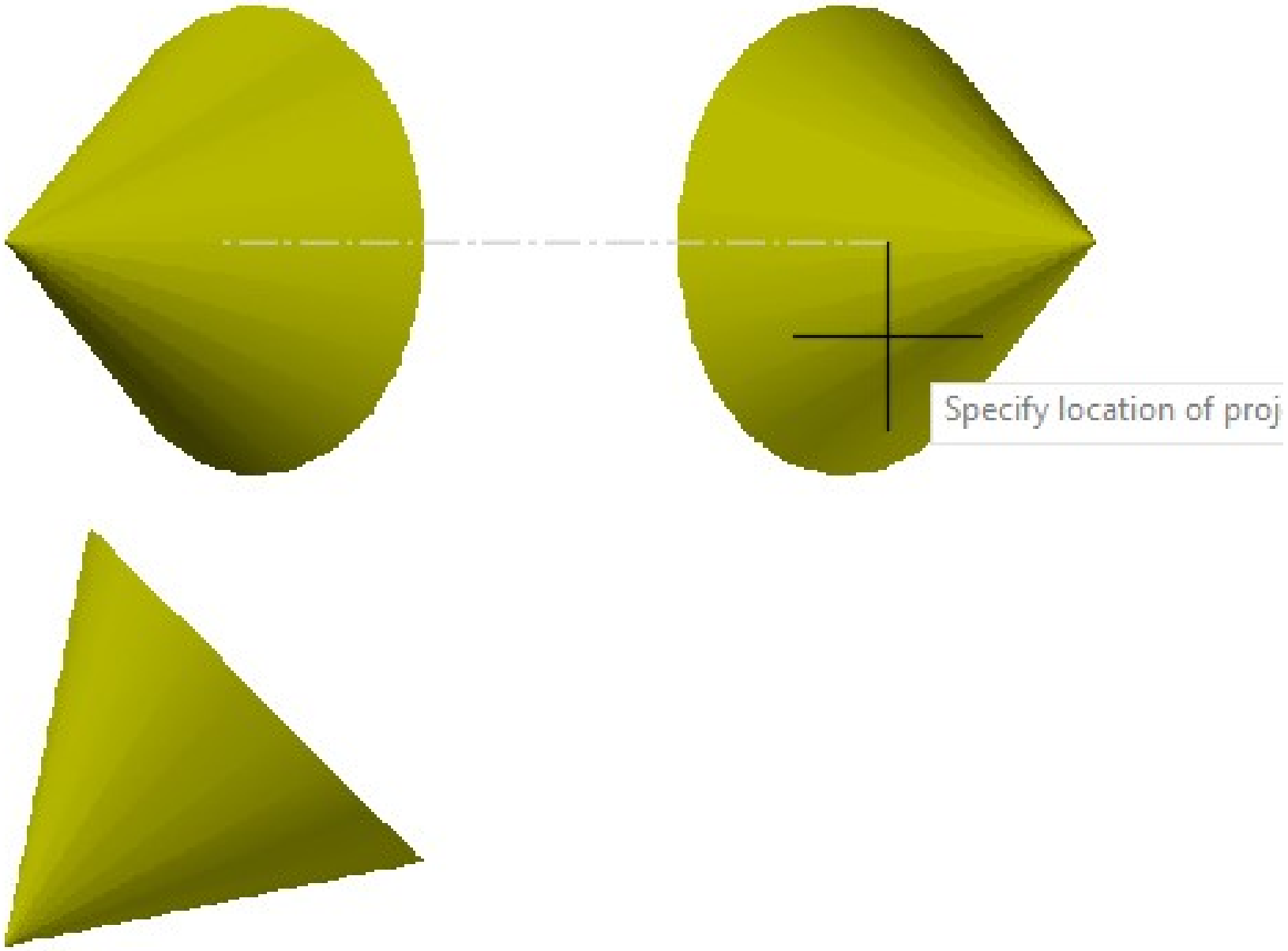
- Select the **FRONT Plane** from **VIEW controls**
- Create the **Cone** For Given Base Diameter (**40**) & Height (**60**)

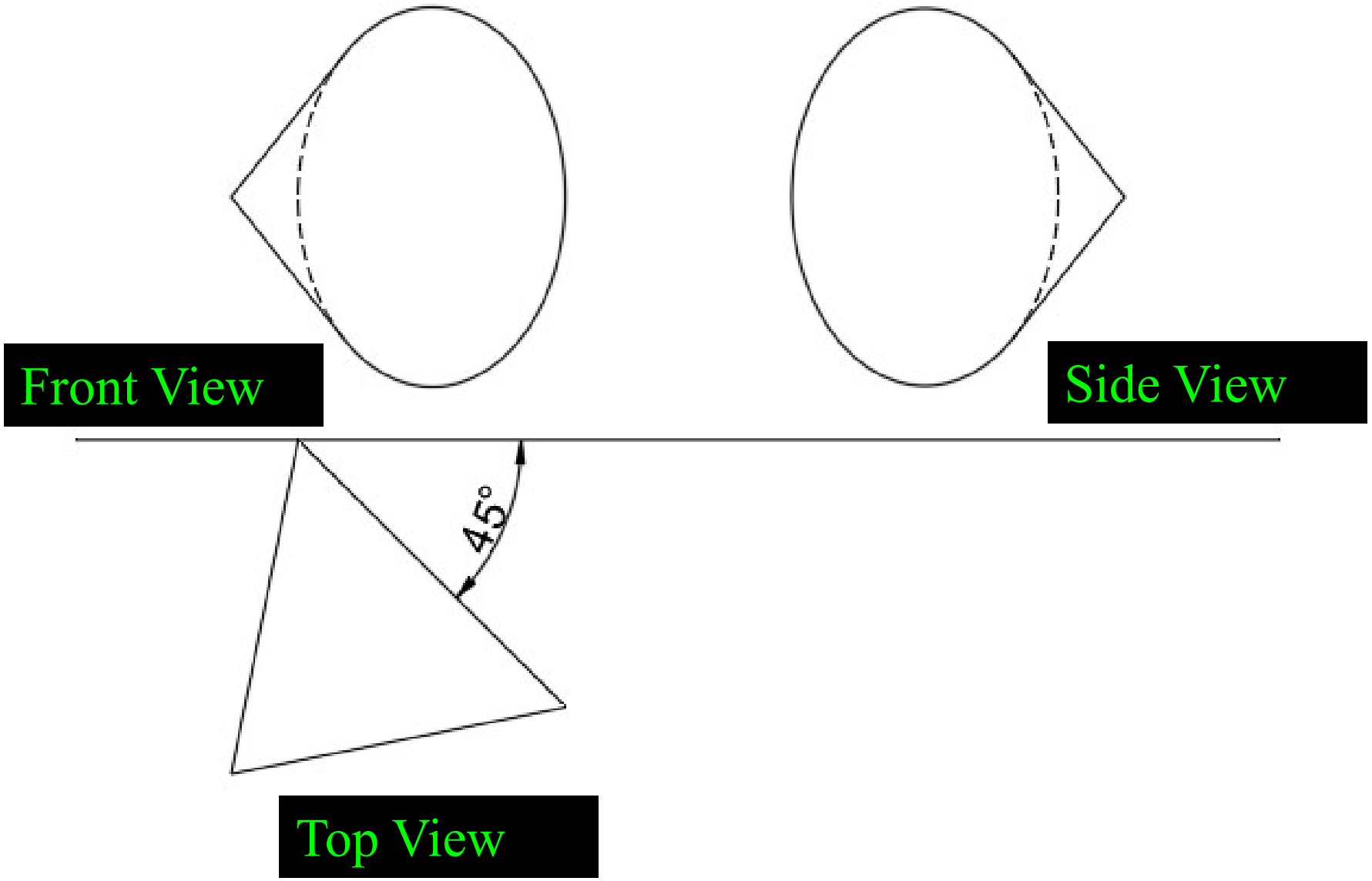




- Change the plane of view to the **TOP**
- Rotate the **Cone** for **45 ° Axis** is **inclined** with respect to **VP**

- Use **DRAFTING STANDARD** from **VIEW BASE** tool bar for setting the **FIRST ANGLE** of projection.
- Use **BASE** command from **VIEW BASE** tool bar & select the command **FROM MODEL SPACE** to the select solid & press **ENTER** & assign the **LAYOUT NAME** & press enter.


Specify location of proj


Front View
Side View
45°
Top View

REFERENCE BOOKS

- JEYAPOOVAN T, “ENGINEERING GRAPHICS AND DESIGN”, 2023, Vikas Publishing House Pvt Ltd,
- K.V.NATARAJAN, “Engineering Graphics”, 2015, Dhanalakshmi Publishers.