Departamento de Computação

Projeto e Manufatura Assistidos por Computador 27260 A

Aula 04 – Lab05

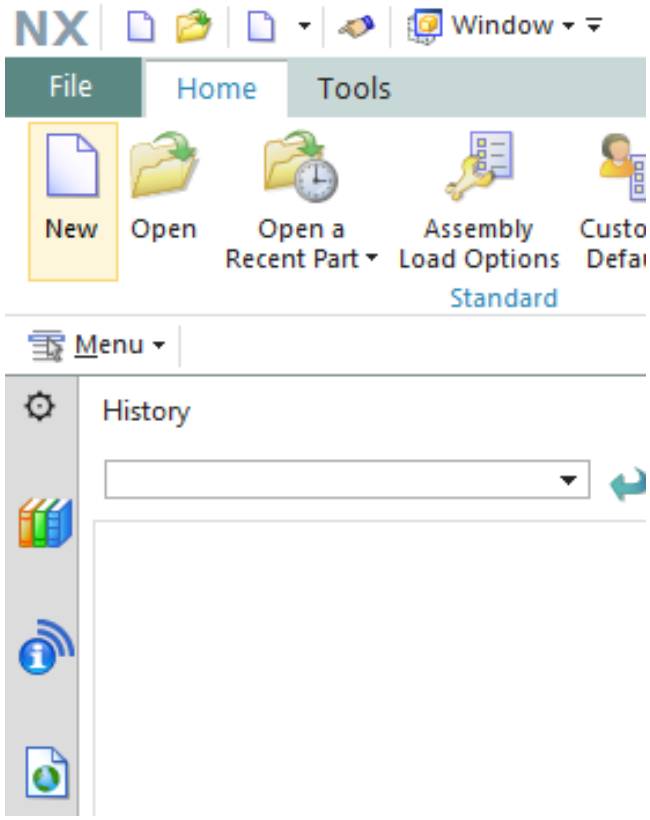
Departamento de Computação
Prof. Kelen Cristiane Teixeira Vivaldini

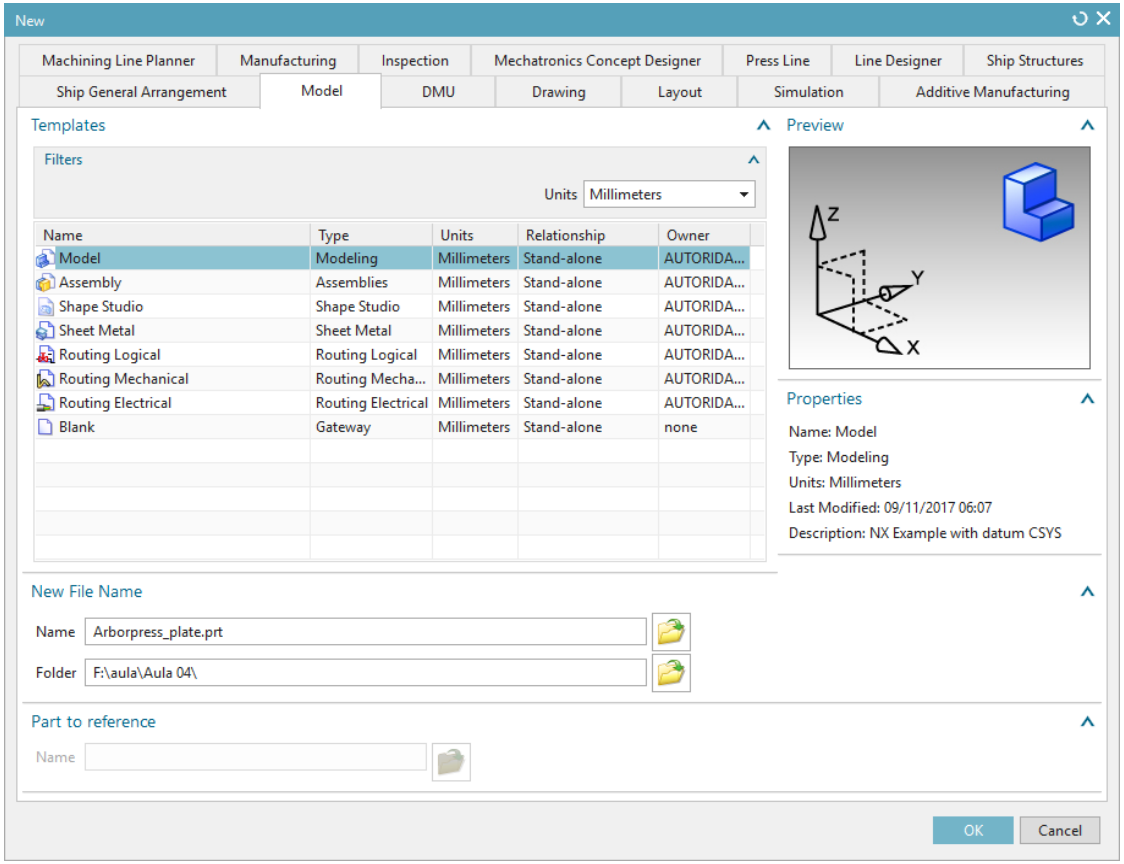
Aula 04

- Nesta aula você aprenderá a construir primitivas e usar recursos de referências na modelagem tridimensional.

Aula 04

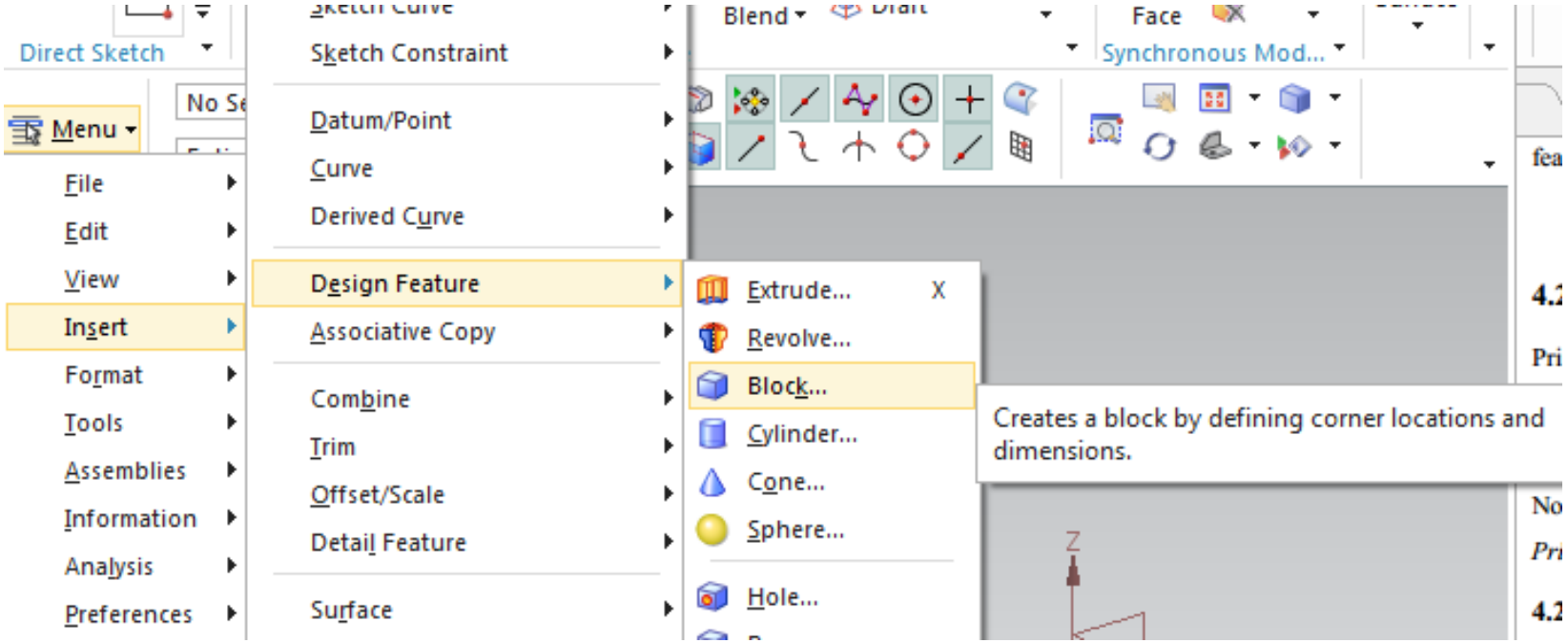
1. “**File**” -> “**New**” - > “Model” -> Create a new file and name it as **Arborpress_plate.prt**





Aula 04

2. Choose **Menu → Insert →Design Feature →Block** or click on the **Block** icon in the **Form Feature Toolbar**



Aula 04

Dimensions of the block. To access the ***Types,*** scroll the drop-down menu under ***Type.*** There are three ways to create a block primitive:

- **Origin and Edge Lengths**
- **Height and Two Points**
- **Two Diagonal Points**

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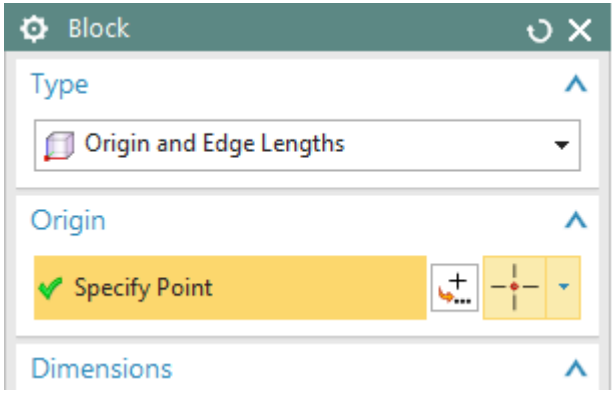
4. Make sure the **Origin and Edge Lengths** method is selected.



Now, we will choose the origin using the Point Constructor.

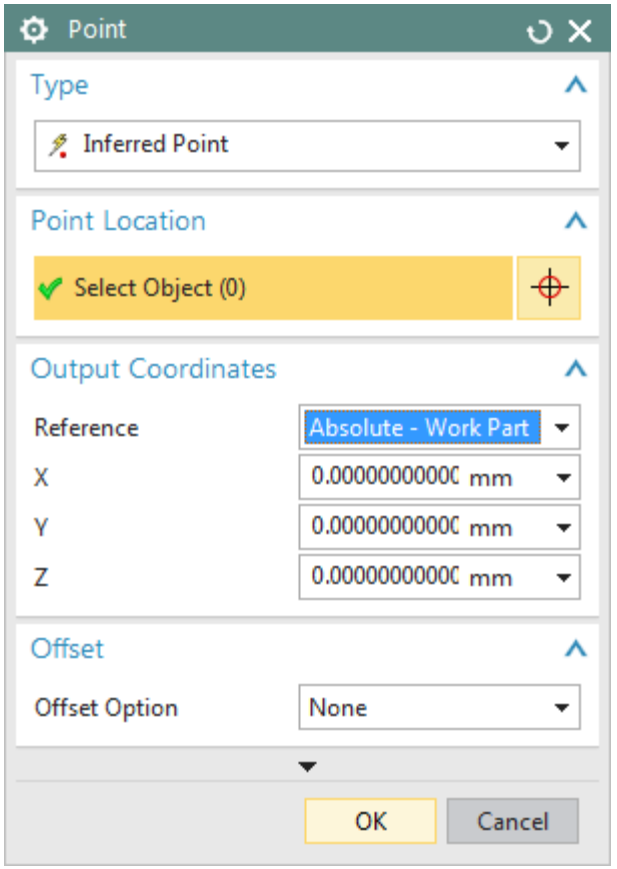
Aula 04

5. Click on the **Point Dialog icon** under the **Origin**

The Point Constructor box will open.

The XC, YC, ZC points should have a default value of 0.

6. Click **OK**



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The Block window will reappear again.

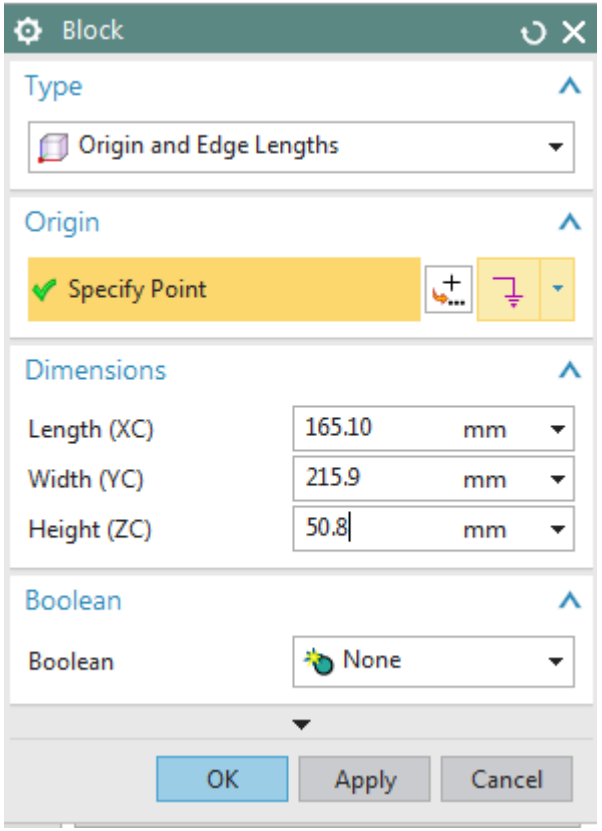
7. Type the following dimensions in the window

Length (XC) = 165,10 mm

Width (YC) = 215,90 mm

Height (ZC) = 50,80 mm

8. Click **OK**



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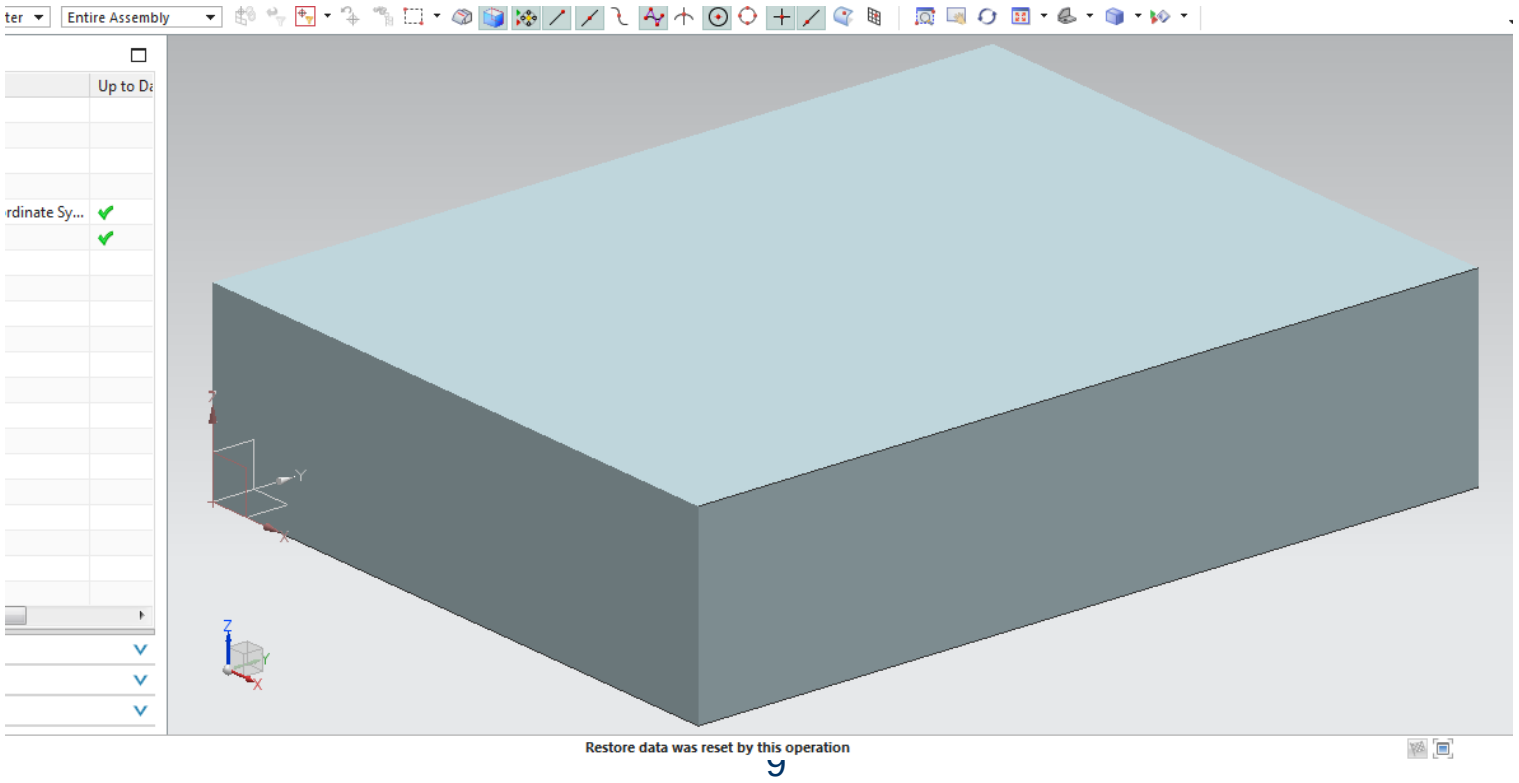
If you do not see anything on the screen,

9. Right-click and select **FIT**. You can also press **<Ctrl> + F**



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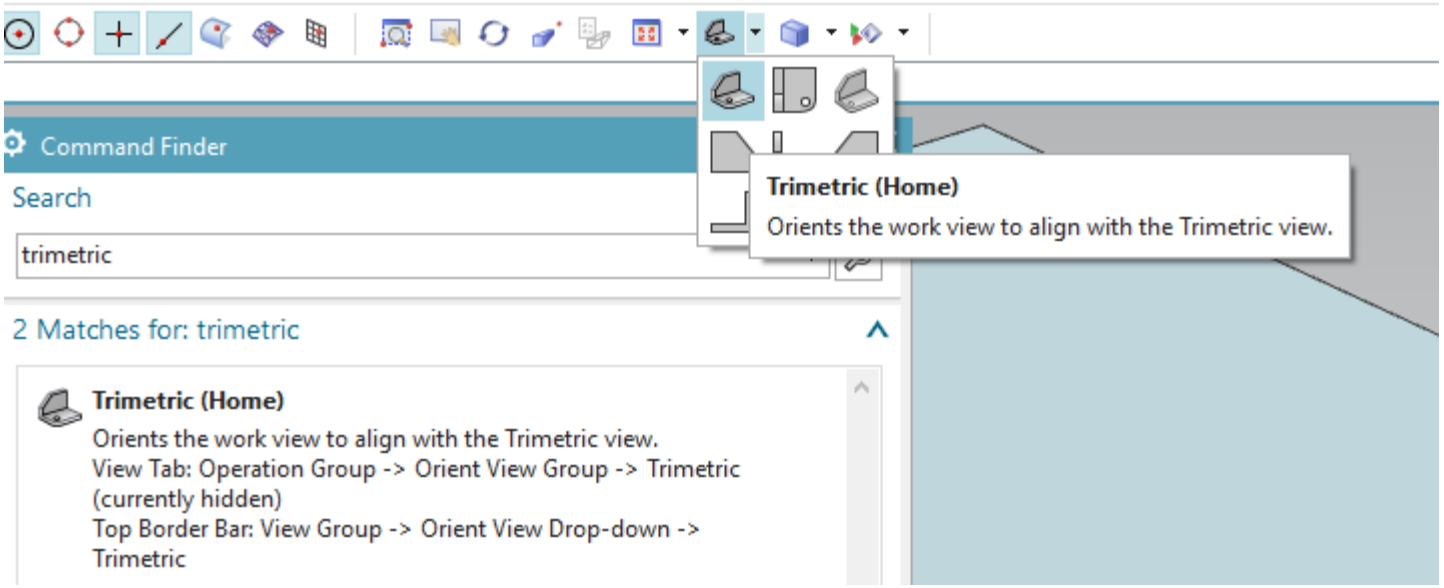
10. Right-click on the screen and click on **Trimetric (Home)**

You should be able to see the complete plate solid model. Save and close the part file.

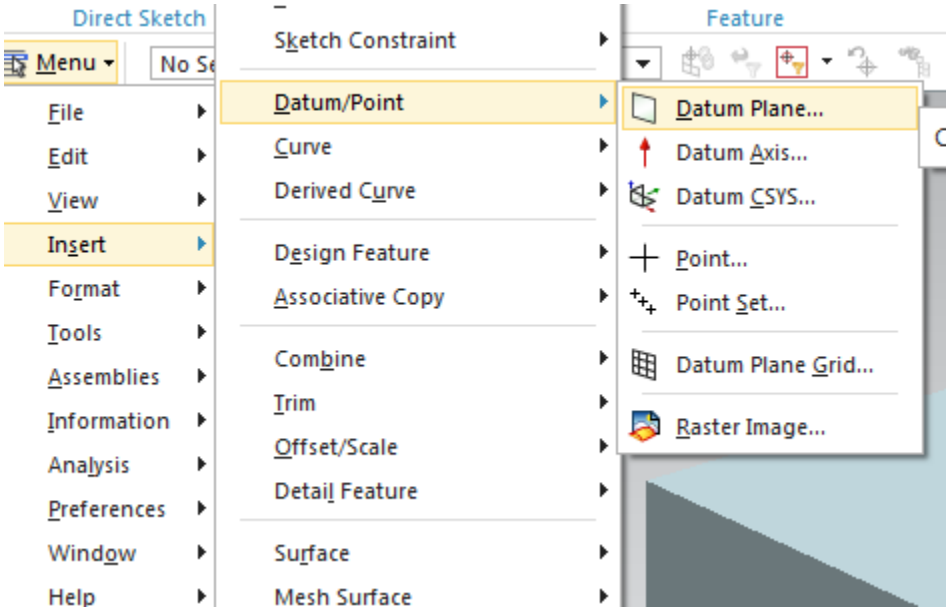


Aula 04

REFERENCE FEATURES

11. Open the model **Arborpress_plate.prt** and **Save as Arborpress_plate_I.prt**

12. Choose **Menu** → **Insert** →**Datum/Point** →**Datum Plane**

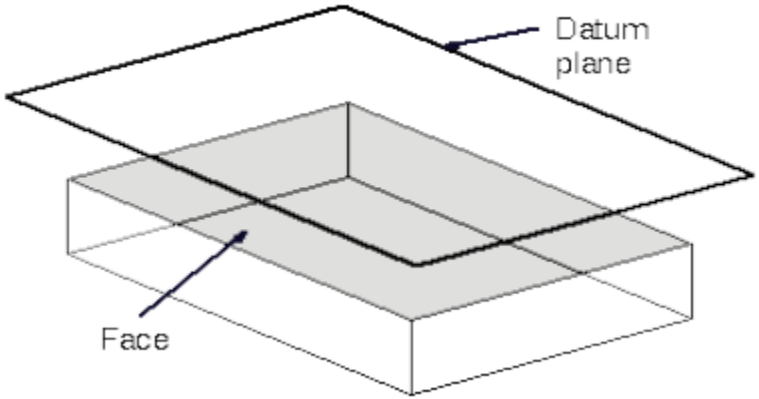


Aula 04

REFERENCE FEATURES

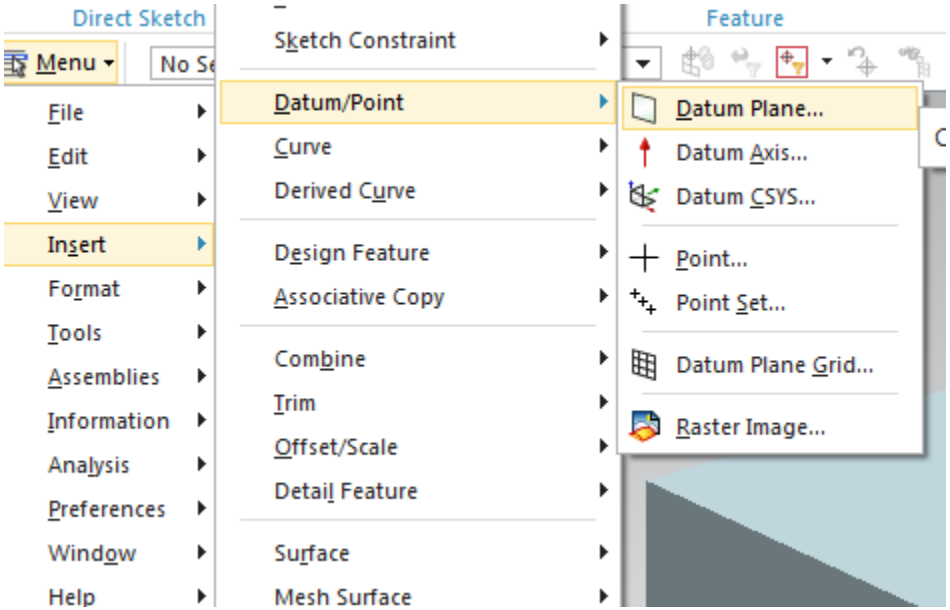
5.1 Datum Plane

Datum Planes are reference features that can be used as a base feature in building a model. They assist in creating features on cylinders, cones, spheres, and revolved solid bodies which do not have a planar surface and also aid in creating features at angles other than normal to the faces of the target solid.



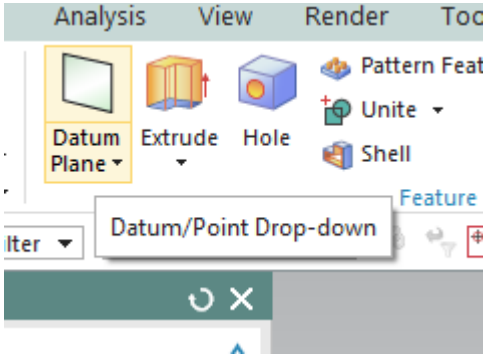
Aula 04

11. Open the model **Arborpress_plate.prt**
12. Choose **Insert** →**Datum/Point** →**Datum Plane**



Or

The Datum Plane dialog can also be opened by clicking the icon as shown in the figure below from the Feature Toolbar



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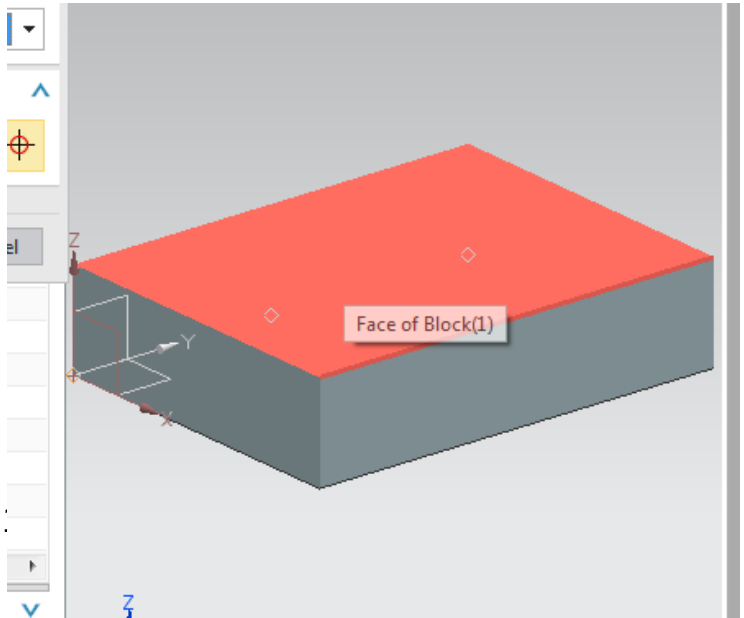
13. **Click** on the **top surface** of the block so that it becomes **highlighted**.

The vector displays the positive offset direction that the datum plane will be created in. If you had selected the bottom face, the vector would have pointed downward, away from the solid.



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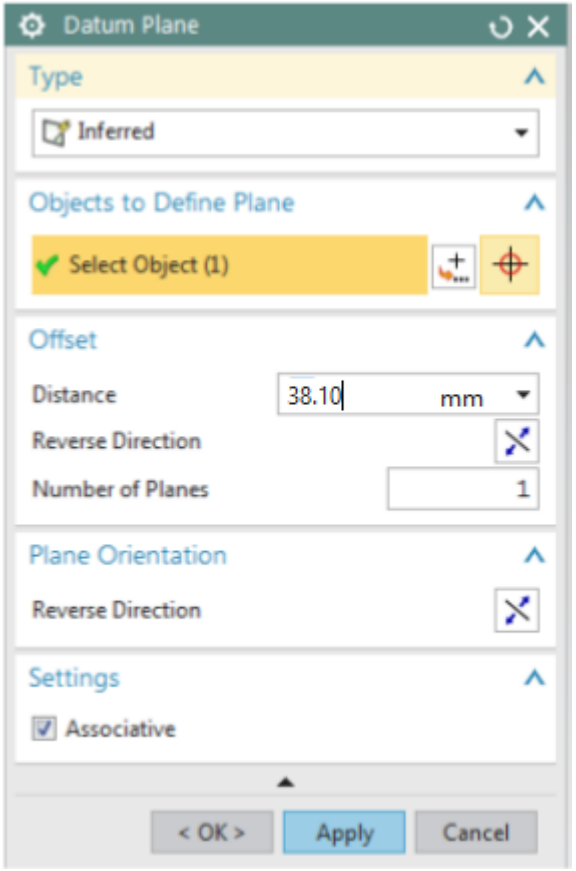
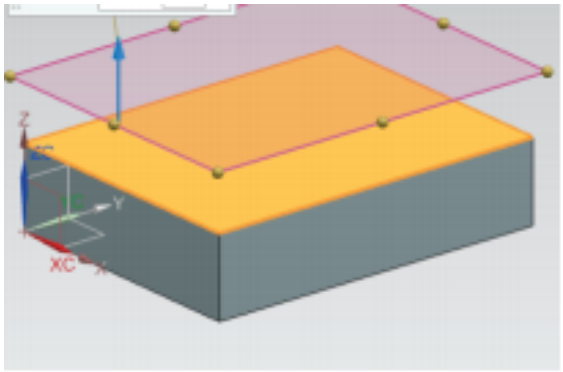
14. Insert the Offset Distance value as 38.10 mm in the dialog box and click OK





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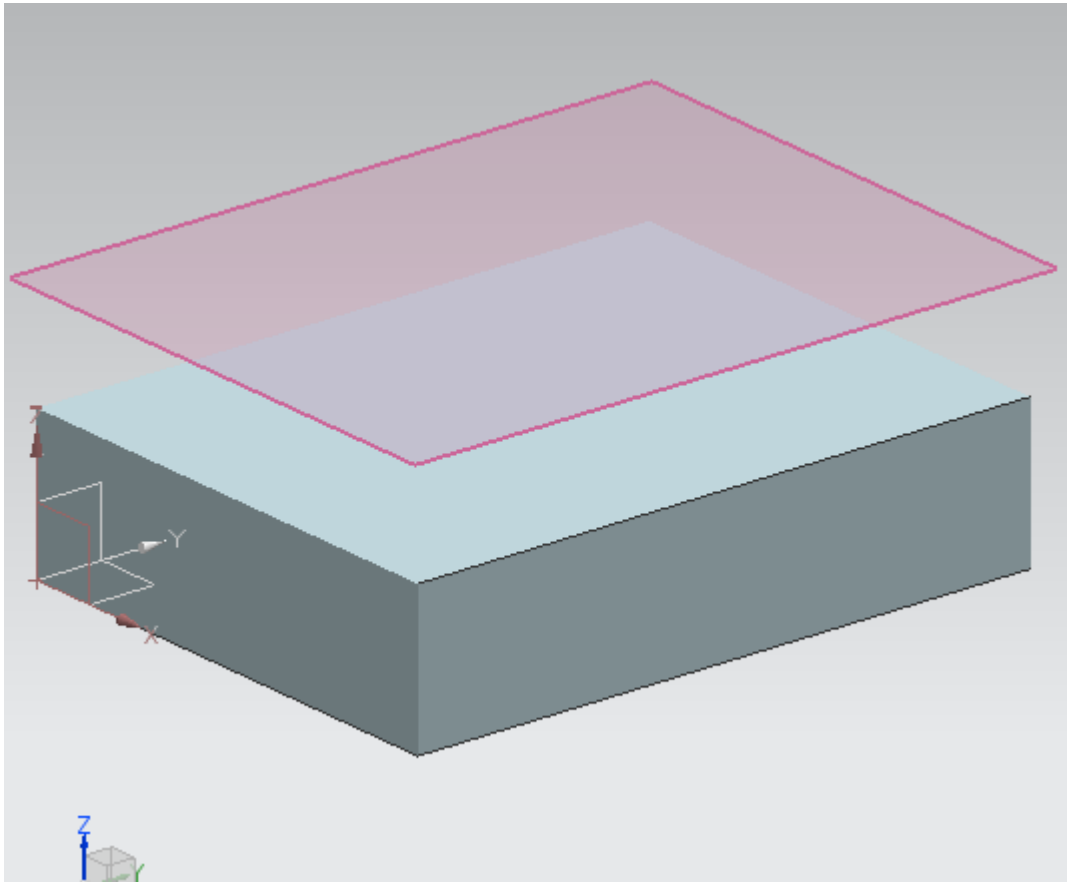

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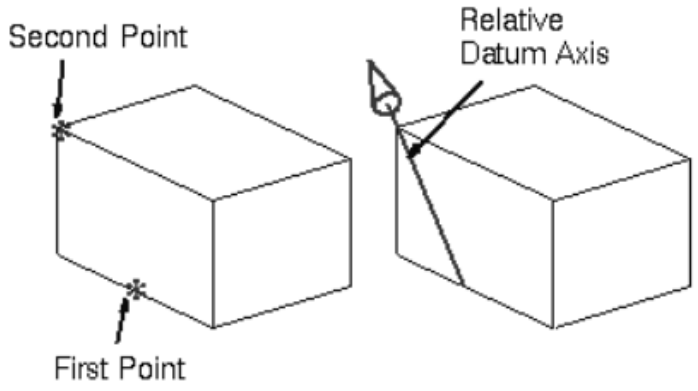
5.2 Datum Axis

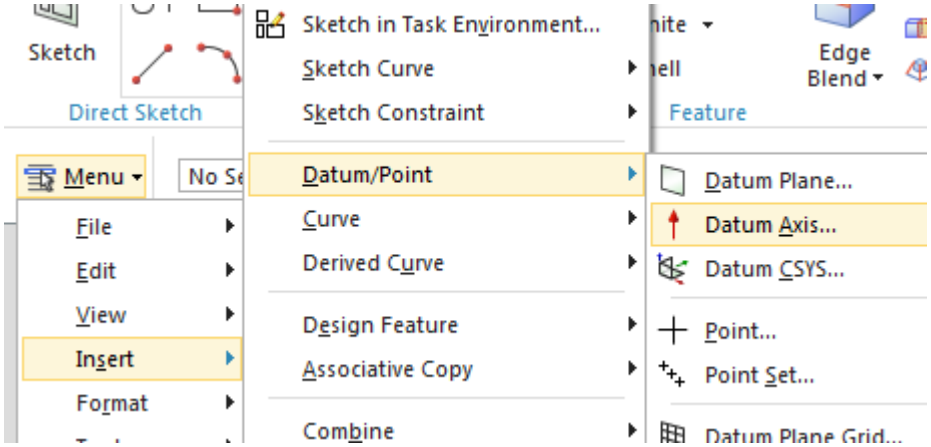
A Datum Axis is a reference feature that can be used to create Datum Planes, Revolved Features, Extruded Bodies, etc. It can be created either relative to another object or as a fixed axis (i.e., not referencing, and not constrained by other geometric objects).



Aula 04

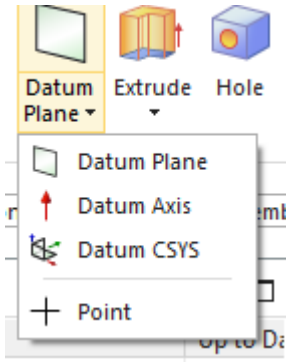
15. Open the model **Arborpress_plate.prt** and **Save as Arborpress_plate_II.prt**

16. Choose **Insert →Datum/Point →Datum Axis**



Or

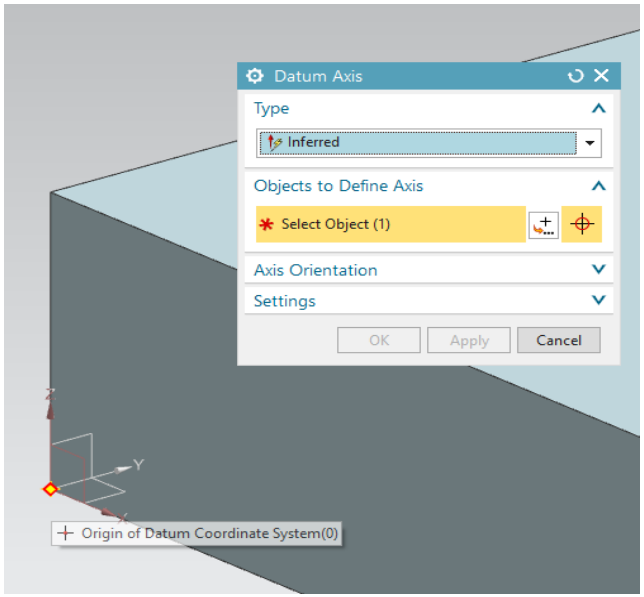
The Datum Axis dialog can also be opened by clicking the icon as shown in the figure below from the **Feature toolbar**.

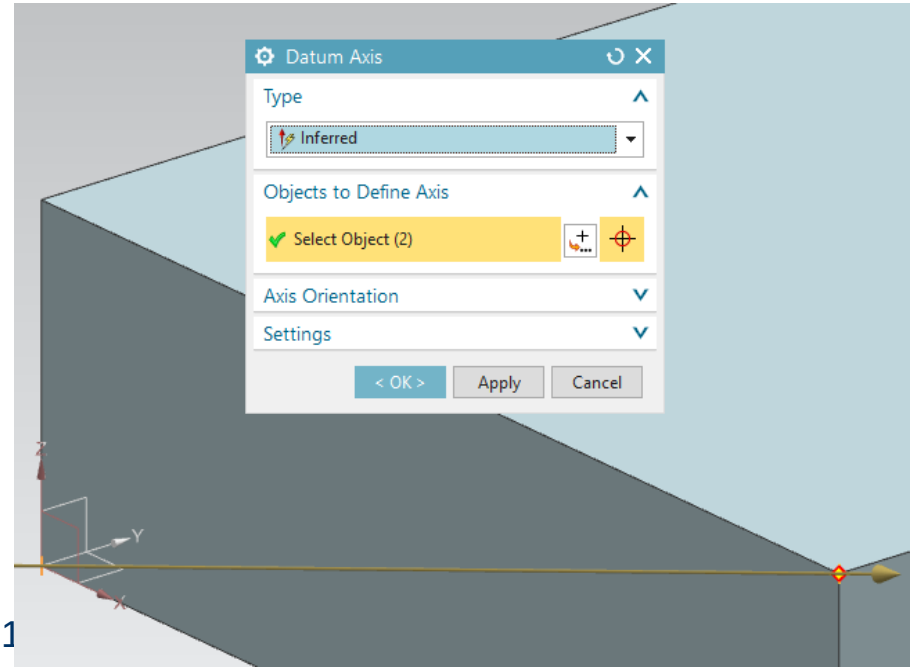


Aula 04

The next window allows you to choose the method of selecting the axis. However, NX 12 can judge which method to use depending on the entity you select. There are various ways to make a *Datum Axis*. They include *Point and Direction*, *Two Points*, *Two Planes*, etc.

17. Select the two points on the block as shown in the figure on the right
18. Click **OK**





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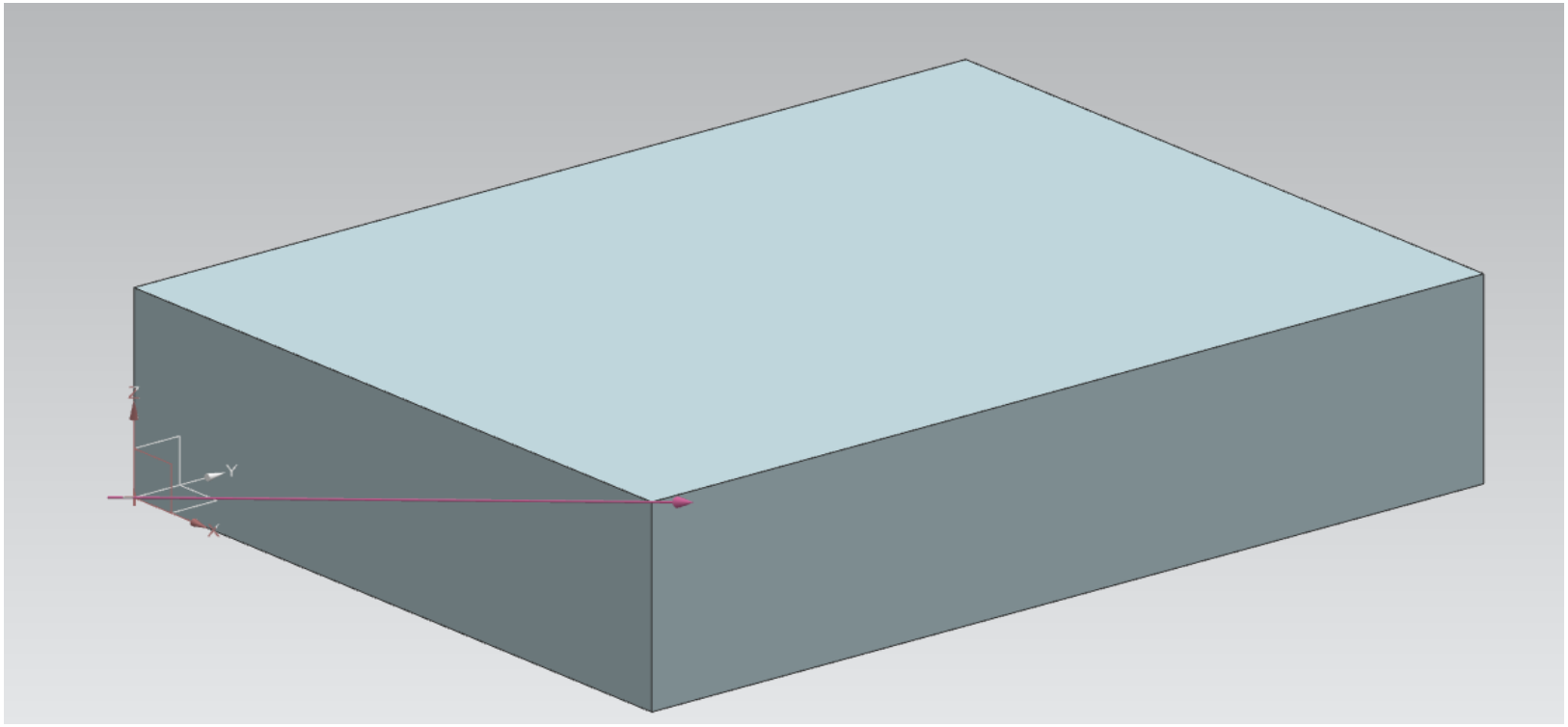
The *Datum Axis* will be a diagonal as shown.



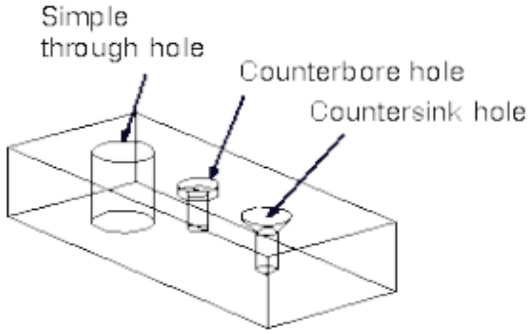
Aula 04

5.3 REMOVE FEATURE

Remove Features allow you to remove a portion of the existing object to create an object with additional features that are part of the design.

5.3.1 General Hole

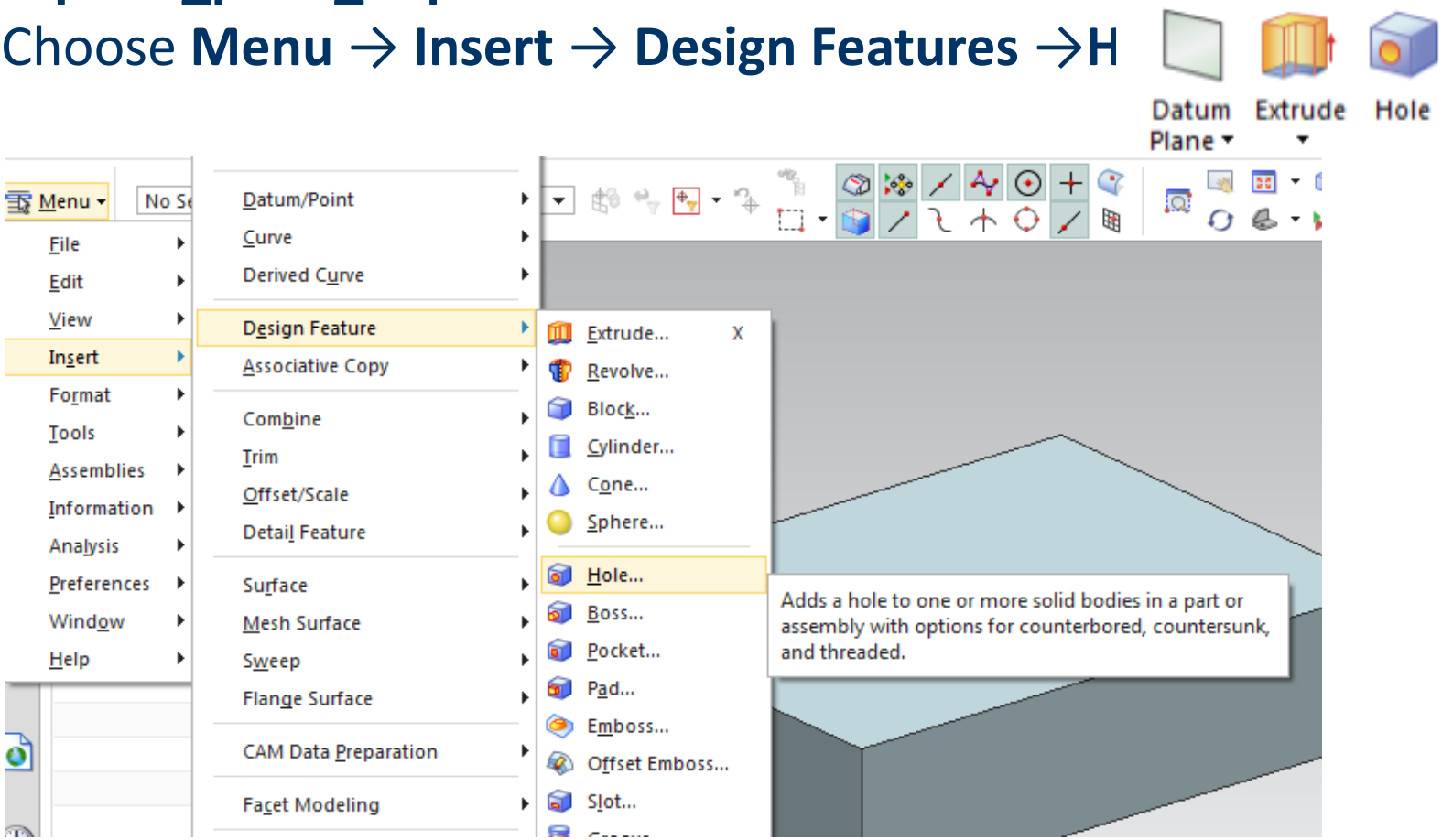
This option lets you create *Simple, Counterbored, Countersunk* and *Tapered* holes in solid bodies.



Aula 04

19. Open the model **Arborpress_plate.prt** and **Save as Arborpress_plate_III.prt**

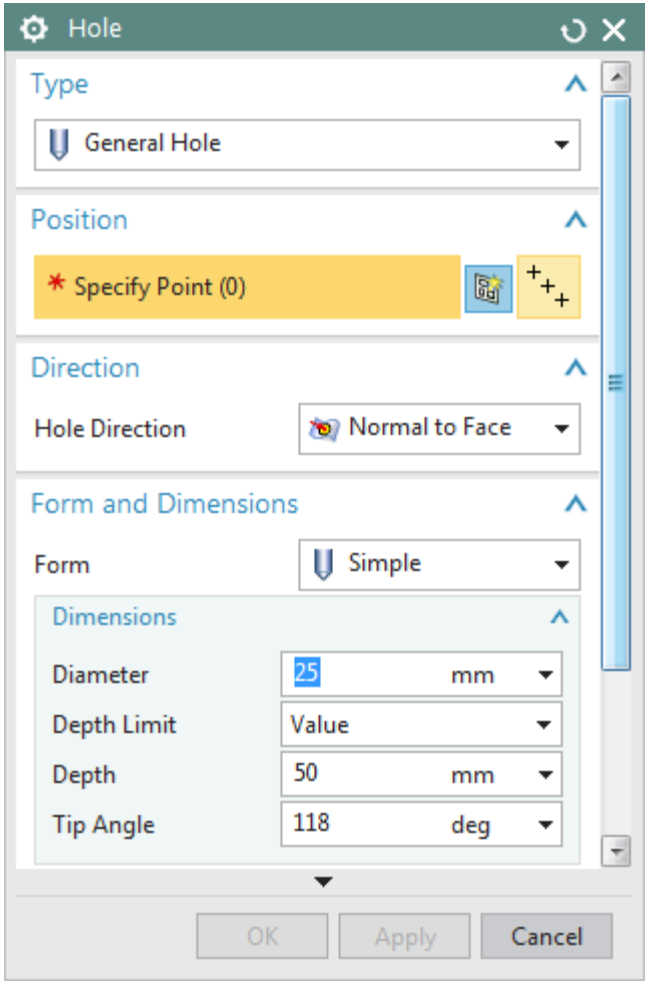
20. Choose **Menu** → **Insert** → **Design Features** →H



Aula 04

The *Hole* window will open. There are various selections that need to be done prior to making the holes. First you need to select the *Type* of the hole.

21. Select the default **General Hole**

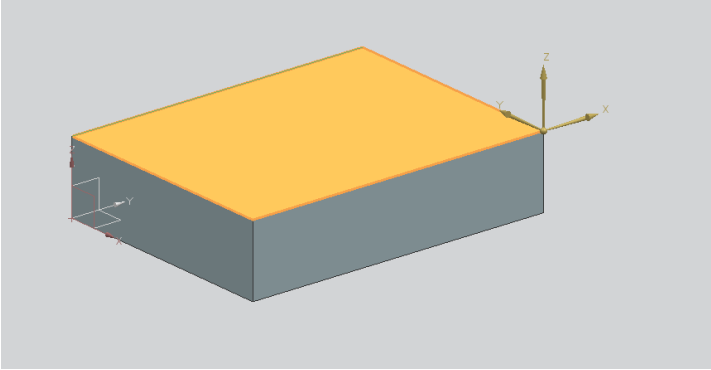


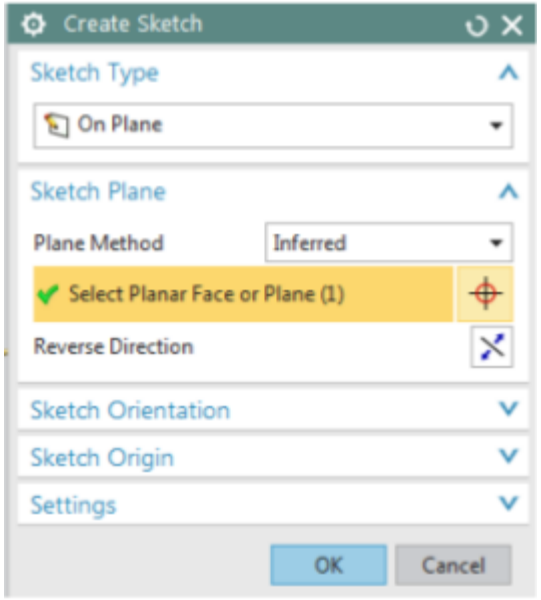
Aula 04

Next, you need to define the points at which you need to make the holes.

22. Click on the **Sketch** icon in the **Position** dialog box and choose the top face of the plate as the **Sketch Plane**

23. Click **OK**



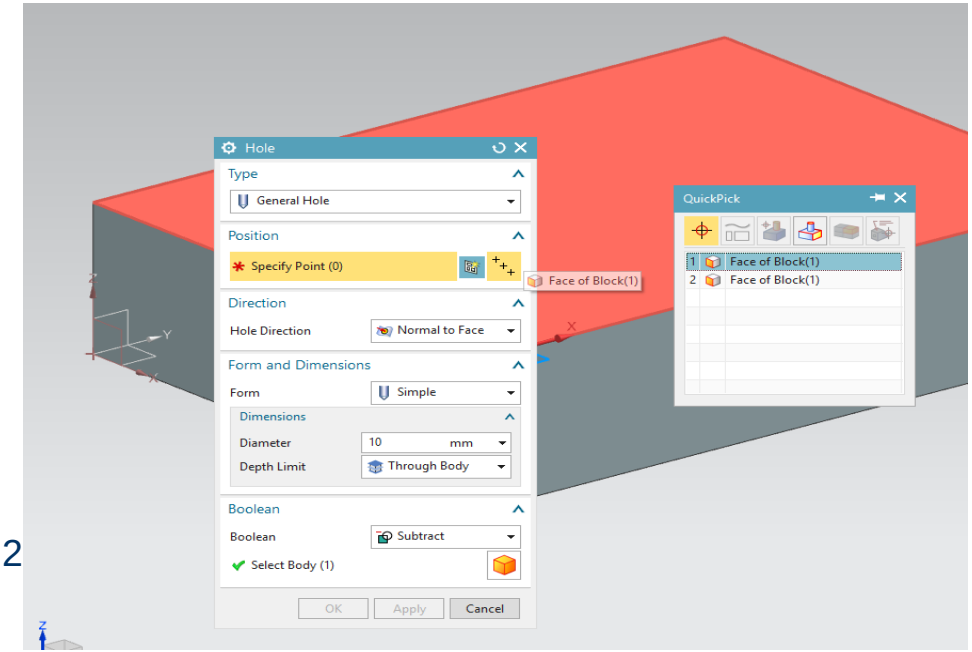


Aula 04

Next, you need to define the points at which you need to make the holes.

22. Click on the **Sketch** icon in the **Position** dialog box and choose the top face of the plate

23. Click **OK**



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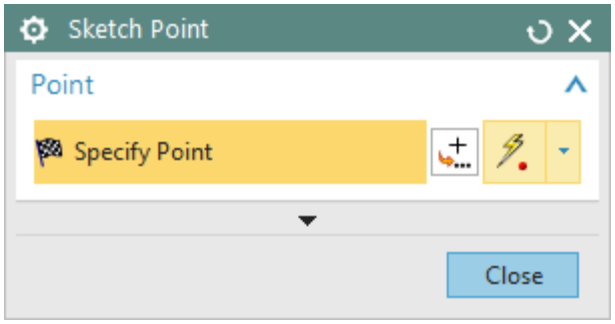
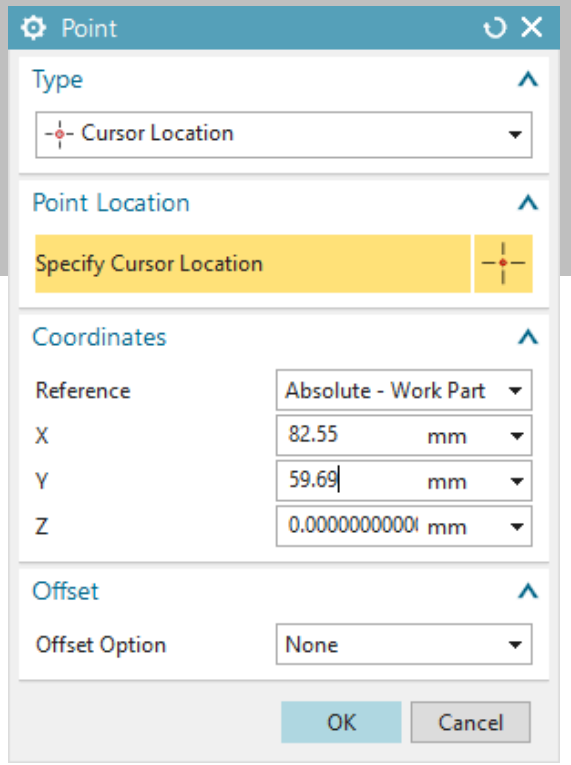
This will take you the ***Sketch Plane.***





24. Click on the **Point Dialog** icon and specify all the points as given in the table below

X	Y	Z
28.58	25.40	0.00
82.55	59.69	0.00
136.53	25.40	0.00
28.58	190.50	0.00
82.55	156.21	0.00
136.53	190.50	0.00

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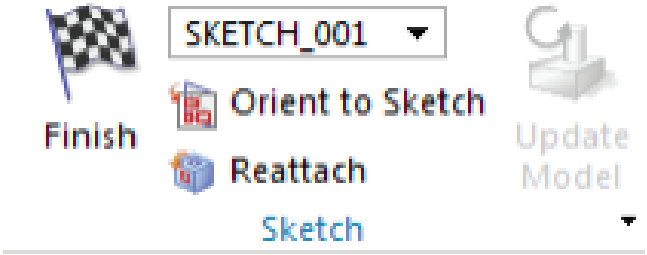
25. Click **OK** after you enter the coordinates of each point

26. Click **Close** once you have entered all the points

27. Click on **Finish** flag in the top left corner of the window



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This will take you out of the Sketch mode and bring back to the original Hole window on the graphics screen.

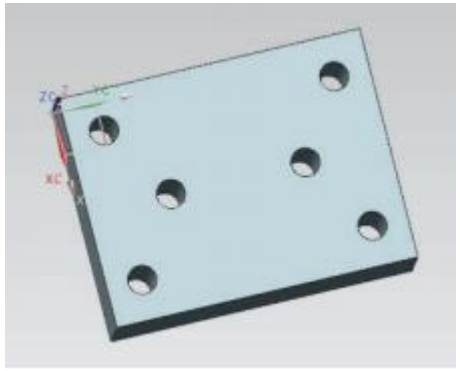
28. In the Form dialog, choose the default option of Simple Hole

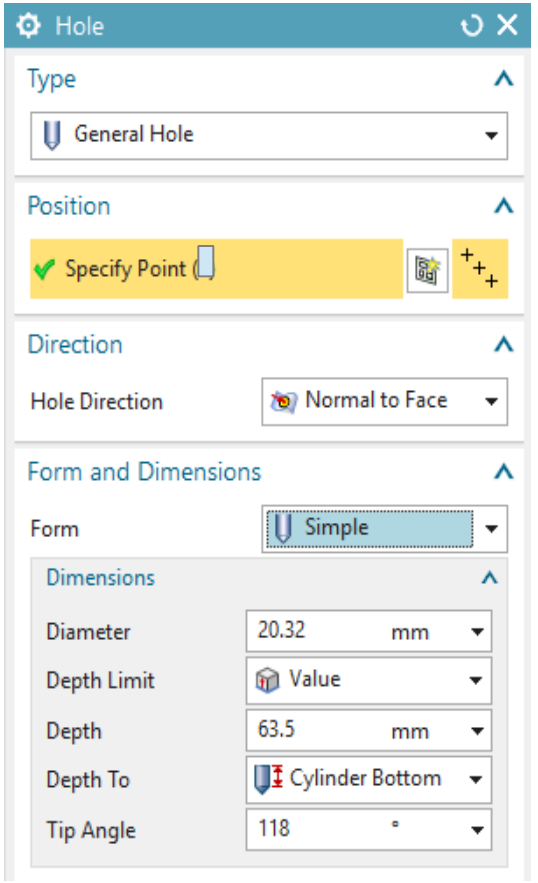
29. Enter the following values in the Dimensions window

Diameter = 20.32 mm

Depth = 63.5 mm

Tip Angle = 118 degrees





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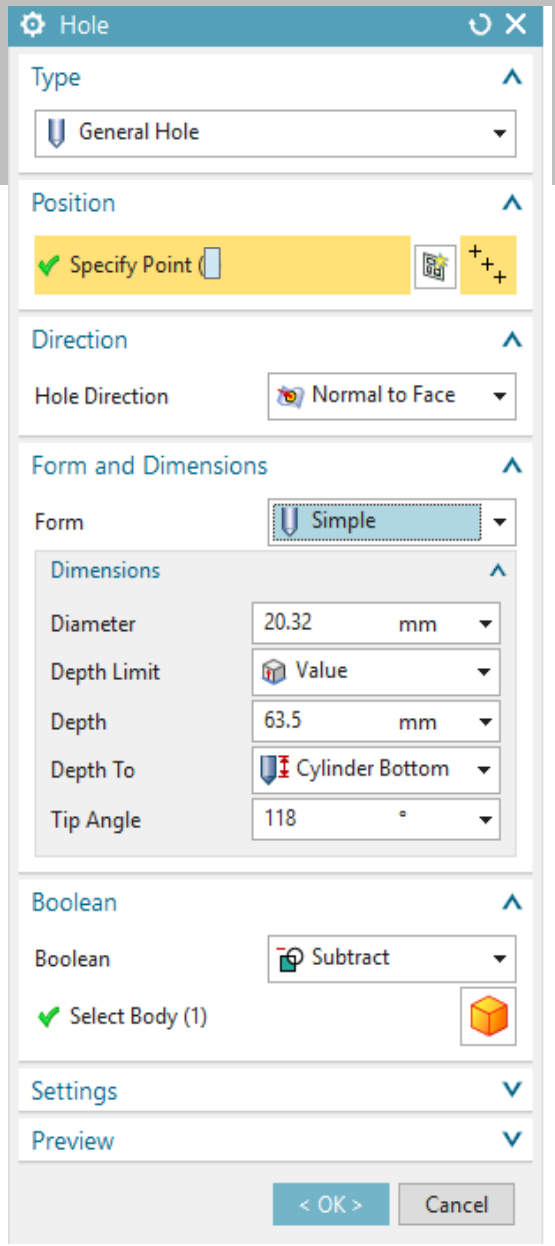
30. Choose **Subtract** in the **Boolean** dialog box and click **OK**

Make sure to save the model.



Aula 04 - Pocket

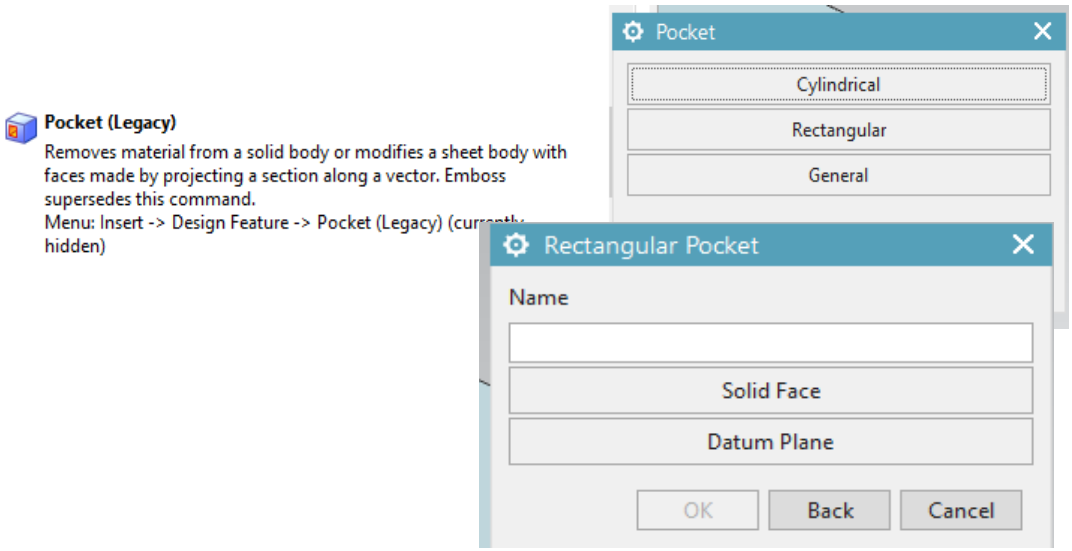
5.4 Pocket

This creates a cavity in an existing body.

31. Create a Block using default values

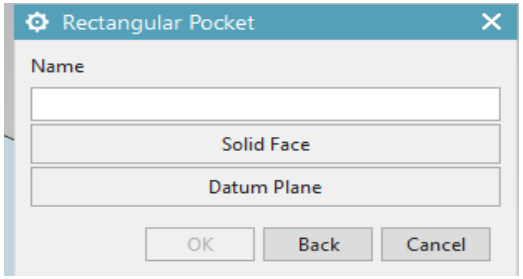
32. Choose Menu → Insert →Design Features →Pocket

33. Select **Rectangular**



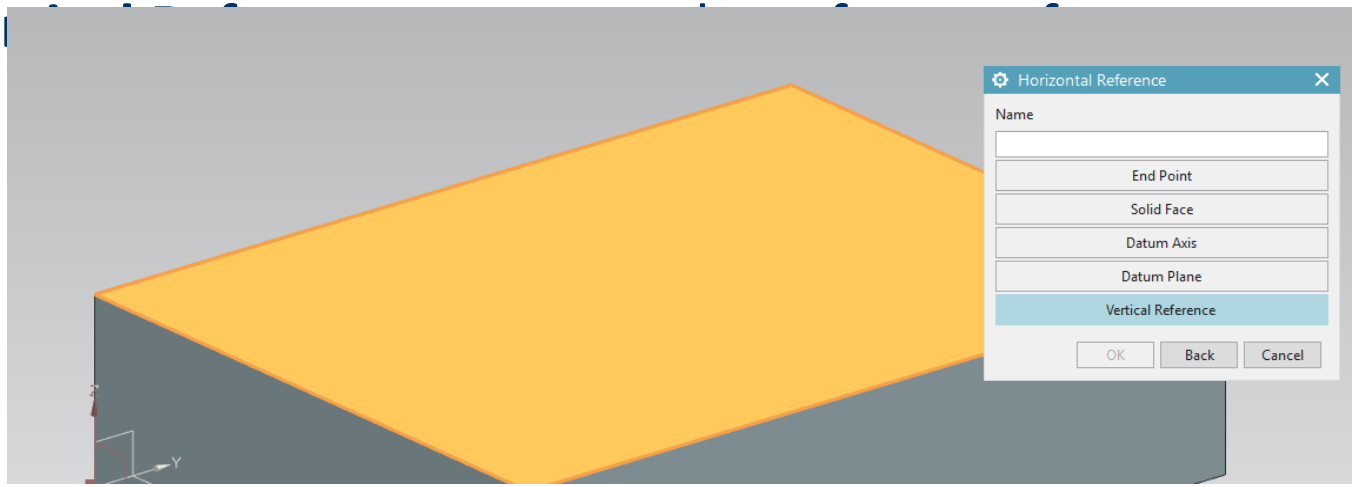
Aula 04 - Pocket

34. Select the “Solid Face” and the Face that you want to create the **Pocket** on it



35. Select a **Ve**

dimensioning

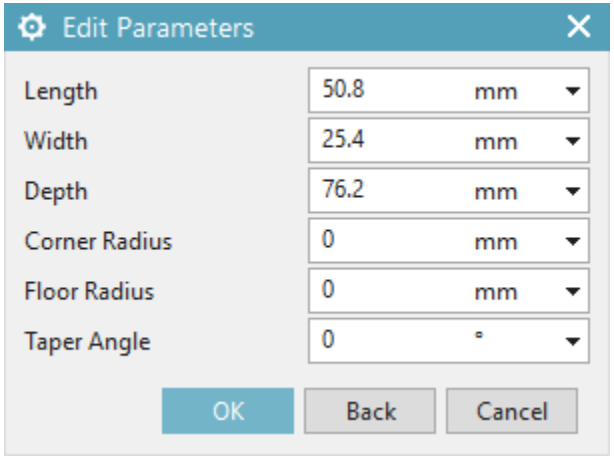


Aula 04 - Pocket

Length = 50.8 mm

Width = 25.4 mm

Depth = 76.2 mm



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36. Enter the dimensions of the **Pocket** as shown

37. Change the **Positioning** if you want

38. **Save as** Pocket