

Primitives Training



Primitives - Overview

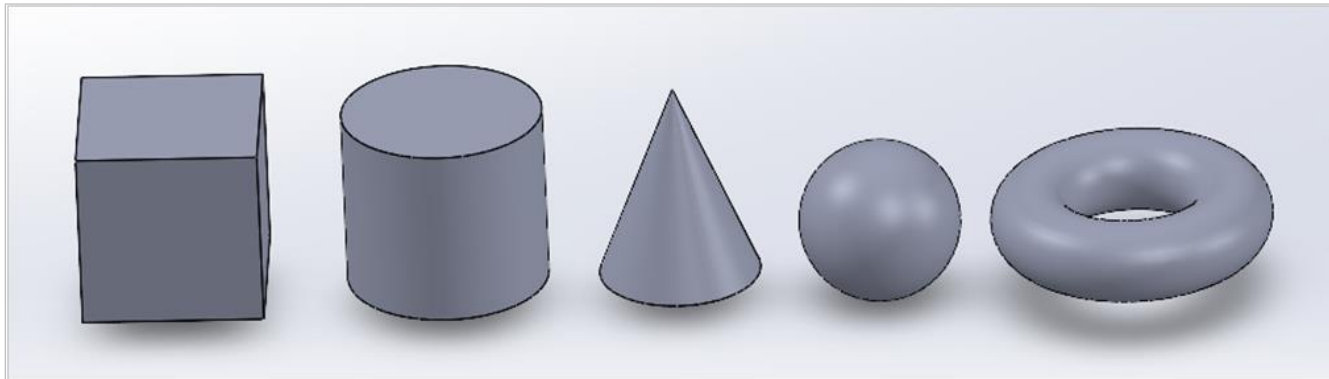
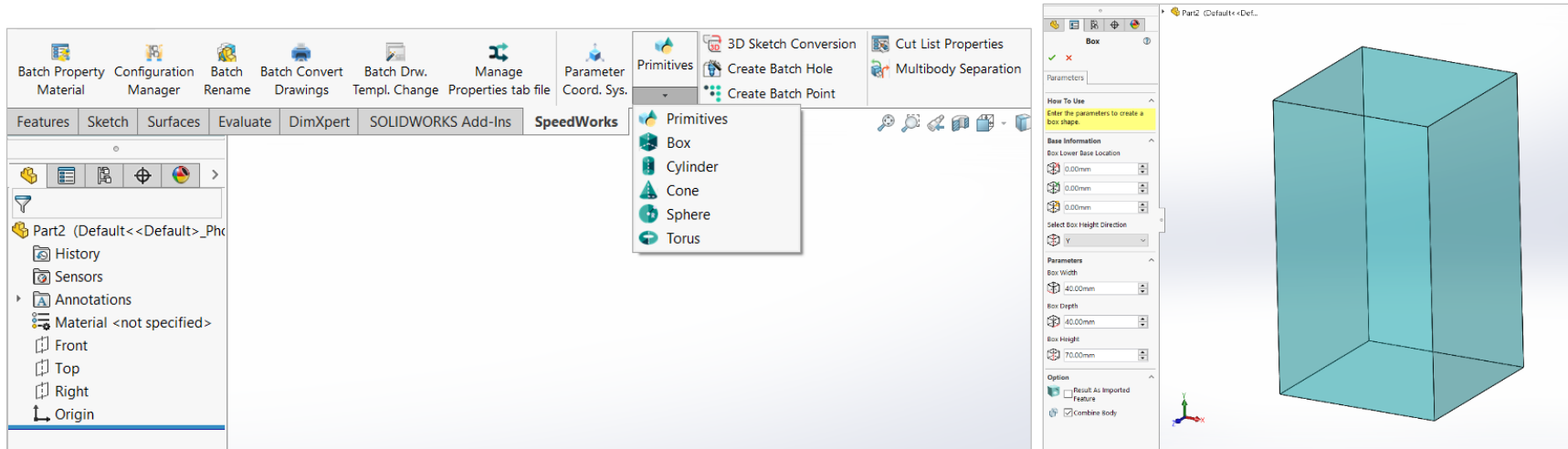
Main Functions

- Create various shapes like a box, a cylinder, a cone, a sphere and a torus
- Create combined body using given shapes

Benefits

- Creates a simple model quickly without sketching
- Creates a shape automatically based on parameters such as coordinates, height direction etc.

Course Objective: Follow instruction through course and learn how to use Primitives.



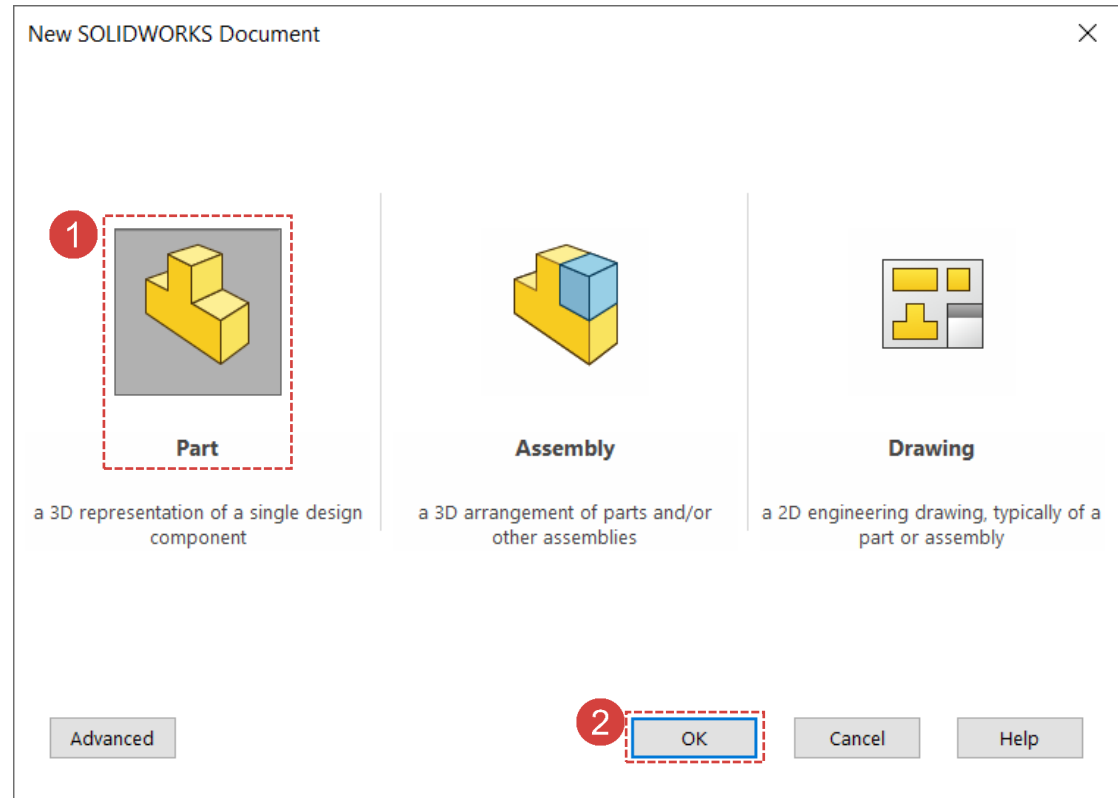
Primitives - Create a new file

Work on the part with the red circle (1) following instructions by yourself.
The part with the black square (1) is an additional explanation or a reference.

1 Click **[New Document] - [Part]**.

2 Click **[OK]** button.

💡 There is no need to use example files in this course. Simply click create a new part to proceed.



Primitives - Create Primitives(Cylinder)

Work on the part with the red circle (1) following instructions by yourself.
The part with the black square (1) is an additional explanation or a reference.

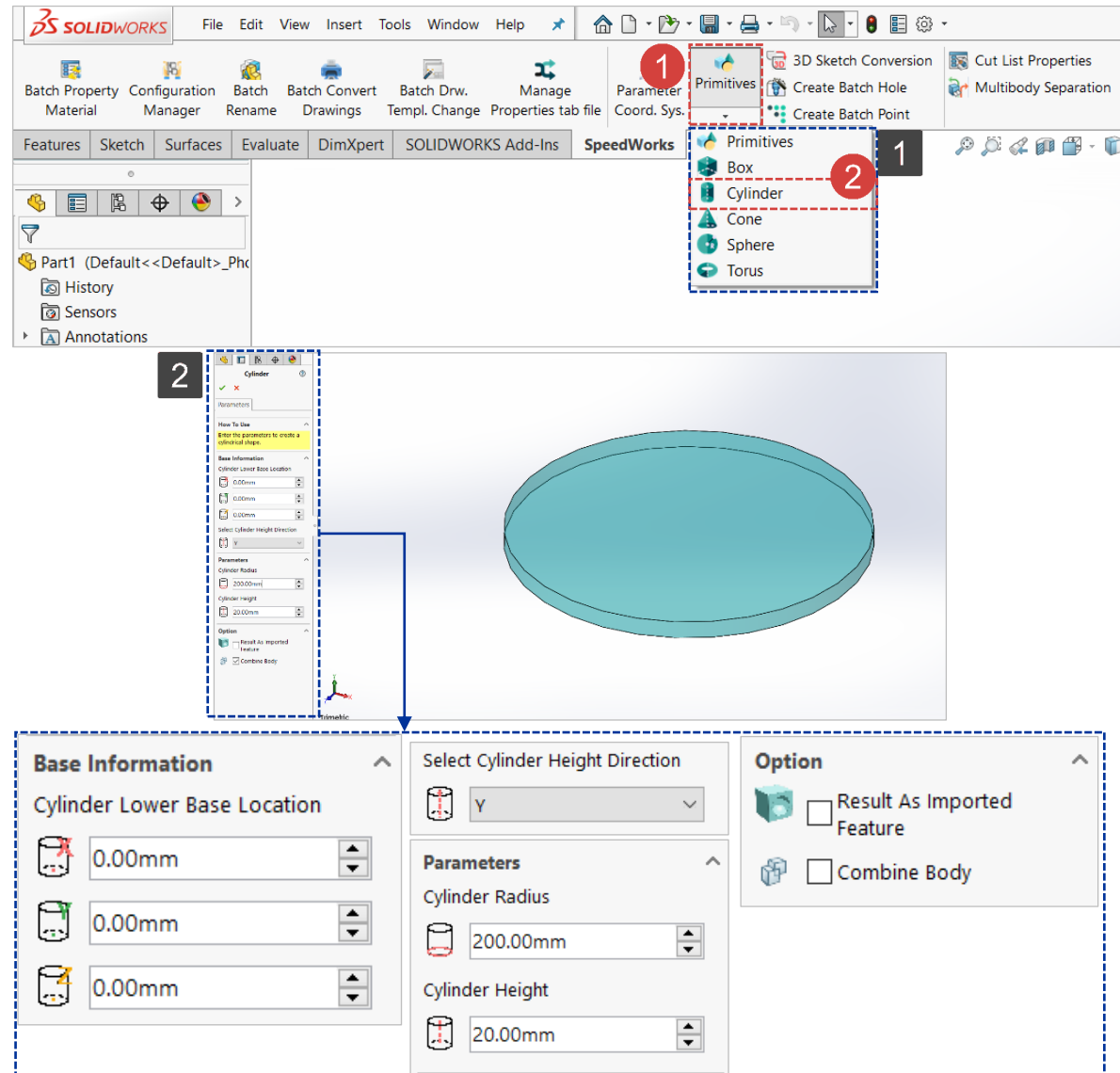
1 Click [SpeedWorks]tab - [Primitive's '▼'] button.

2 Click [Cylinder].

1 The available shapes are listed.

2 Click any shape from the list to check related information of the shape and parameter.

- Enter the center of point located on the lower surface of cylinder by Cartesian coordinates system.
- Select the direction of height (Height Direction) with respect to global coordinates system.
- Enter the radius and height of cylinder.
- Select either [Result As Imported Feature] or [Combine Body]. Explanations of these functions are following instructions.



Primitives - Create a seat (Cylinder)

Work on the part with the red circle (1) following instructions by yourself.
The part with the black square (1) is an additional explanation or a reference.

- 1 Enter the center location of lower surface for a cylinder using **[Cylinder Bottom Base Location]**.

[x - coordinate]: 0.00mm

[y - coordinate]: 0.00mm

[z - coordinate]: 0.00mm

- 2 **[Select Cylinder Height Direction]:** Select 'Y'

X : X-axis direction on YZ Plane

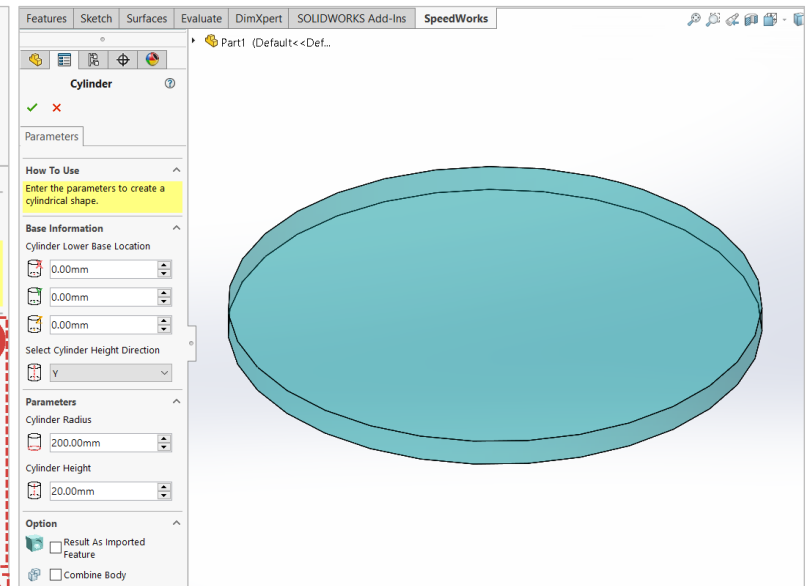
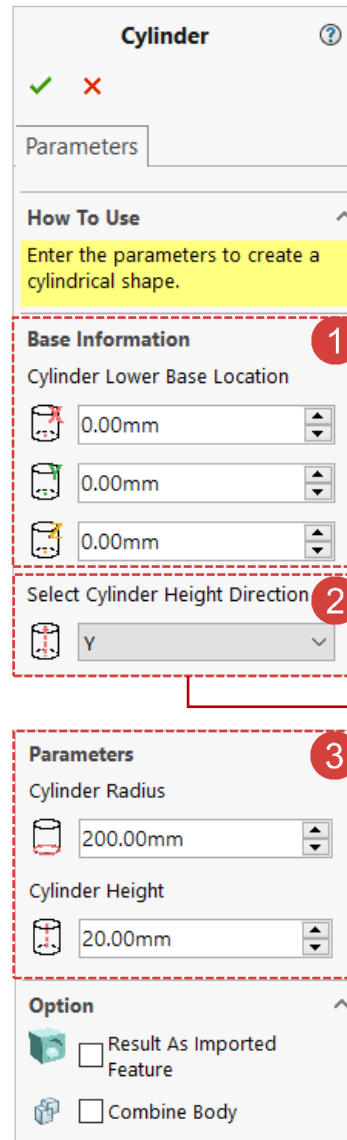
Y : Y-axis direction on XZ Plane

Z : Z-axis direction on XY Plane

- 3 Enter radius and height of cylinder.

[Cylinder Radius]: 200.00mm

[Cylinder Height]: 20.00mm



Primitives - Result As Imported Feature

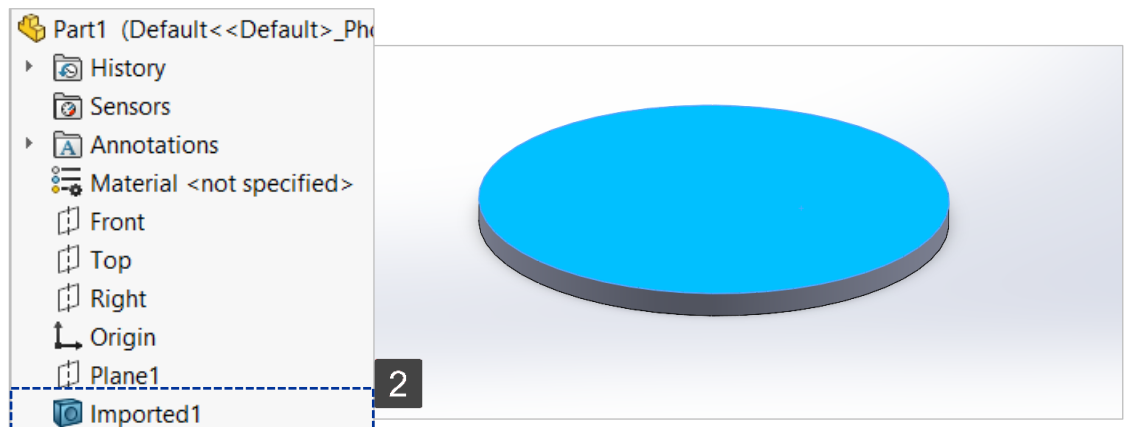
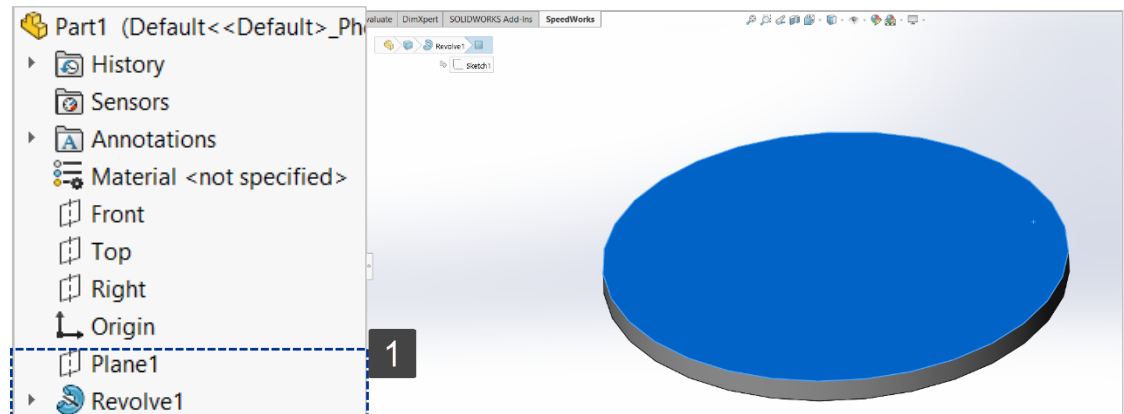
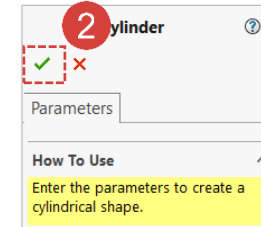
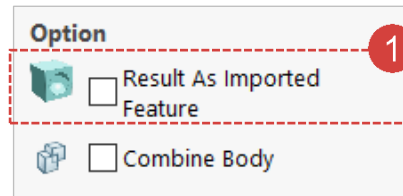
Work on the part with the red circle (1) following instructions by yourself.
The part with the black square (1) is an additional explanation or a reference.

1 Do not check [Result As Imported Feature] at [Option].

2 Click [OK] button.

1 If you have not checked the box, the shape is set as a sketch based Extrude/Revolve Feature.
- An editable model is created based on Sketch/Feature.

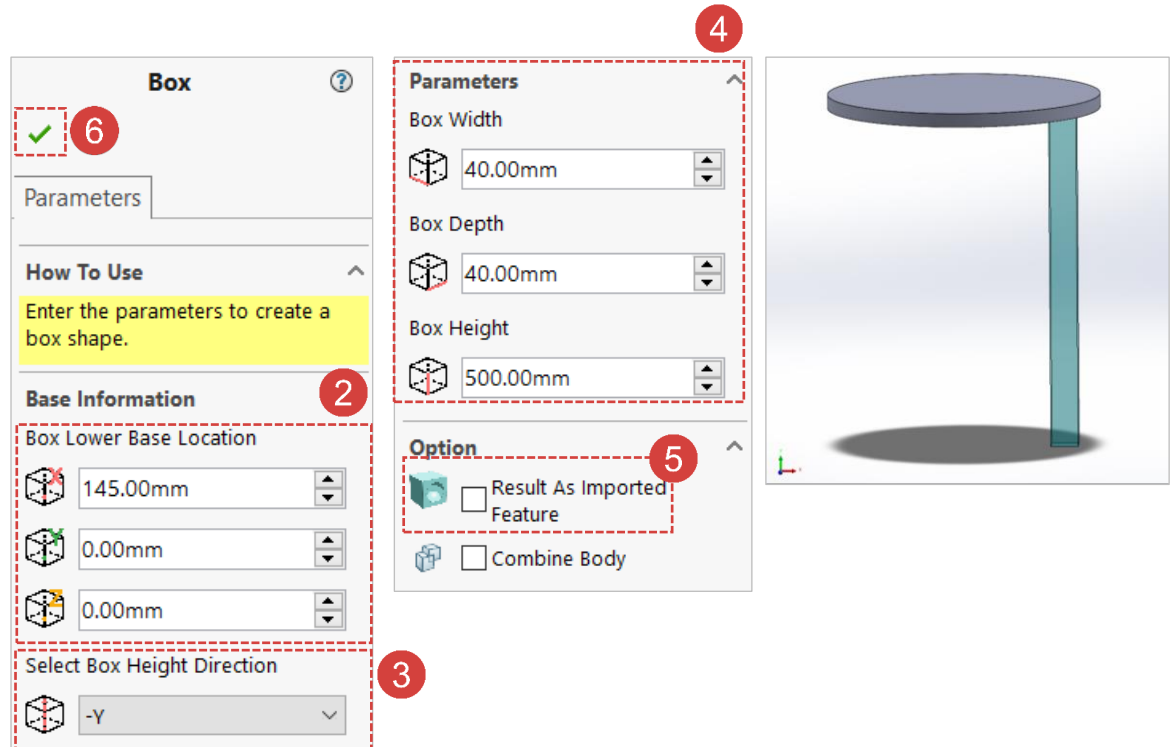
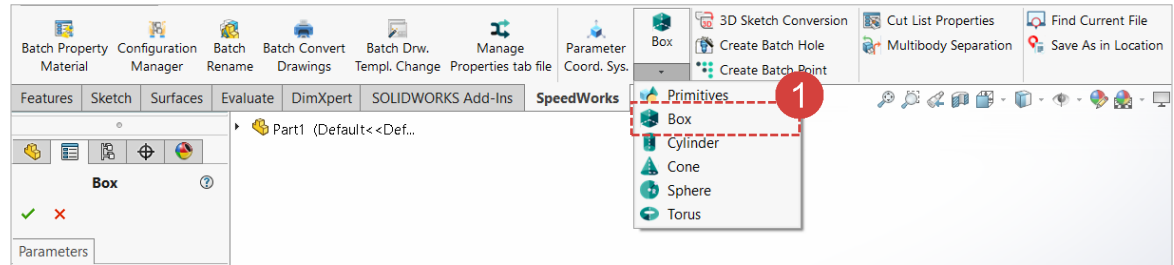
2 If you have checked the box, the shape is set as an imported feature.
-An Imported model is created with no model history.



Primitives - Create a chair leg (Box)

Work on the part with the red circle (1) following instructions by yourself.
The part with the black square (1) is an additional explanation or a reference.

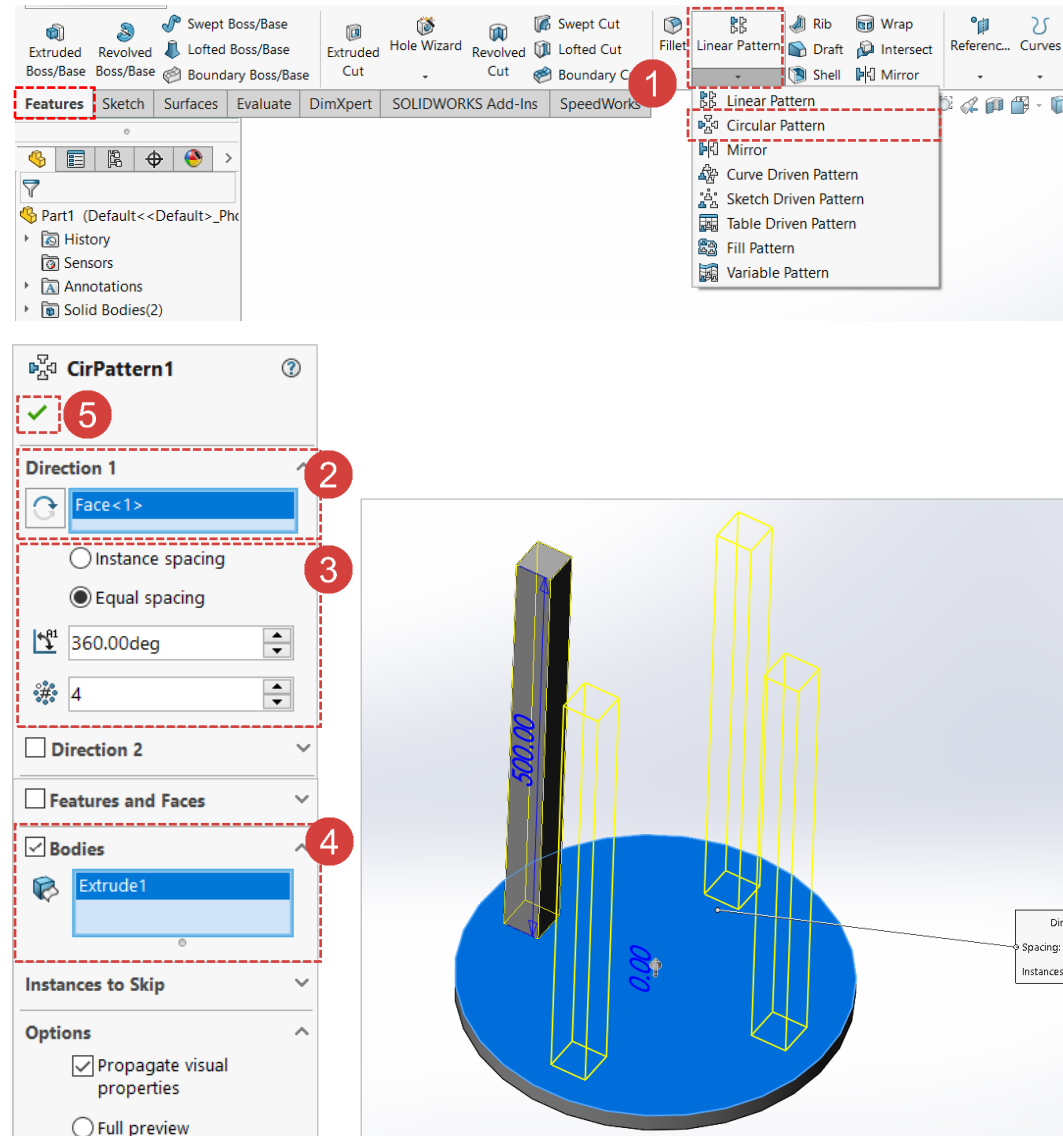
- 1 Click **[Primitives] - [Box]**.
- 2 Enter center location of lower surface for a box using **[Box Lower Base Location]**.
[x - coordinate]: 145.00mm
[y - coordinate]: 0.00mm
[z - coordinate]: 0.00mm
- 3 **[Select Box Height Direction]: Select -Y**
 Select -Y to create the box under the circular pattern.
- 4 Enter parameters of the box.
[Box Width]: 40.00mm
[Box Depth]: 40.00mm
[Box Height]: 500.00mm
- 5 Uncheck **[Combine Body]** if it is checked.
- 6 Click **[OK]** button.



Primitives - Copy pattern of chair leg(Circular Pattern)

Work on the part with the red circle (1) following instructions by yourself.
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- 1 Select the box model created the previous step, click **[Feature]tab - [Linear Pattern] - [Circular Pattern]** button.
- 2 Select the plane where the pattern should be applied.
 - Select the bottom plane of the cylinder. It is the surface on which box is attached.
- 3 Set options regarding direction.
 - Spacing: Equal Spacing
 - Revolve Spacing: 360°
 - Quantity: 4
- 4 Check **[Body]** and select the box-shaped model.
- 5 Click **[OK]** button.



Primitives - Create a reinforcement1(Torus)

Work on the part with the red circle (1) following instructions by yourself.
The part with the black square (1) is an additional explanation or a reference.

1 Click **[Primitives] - [Torus]**.

2 Enter the center location for a torus using **[Torus Center Location]**.

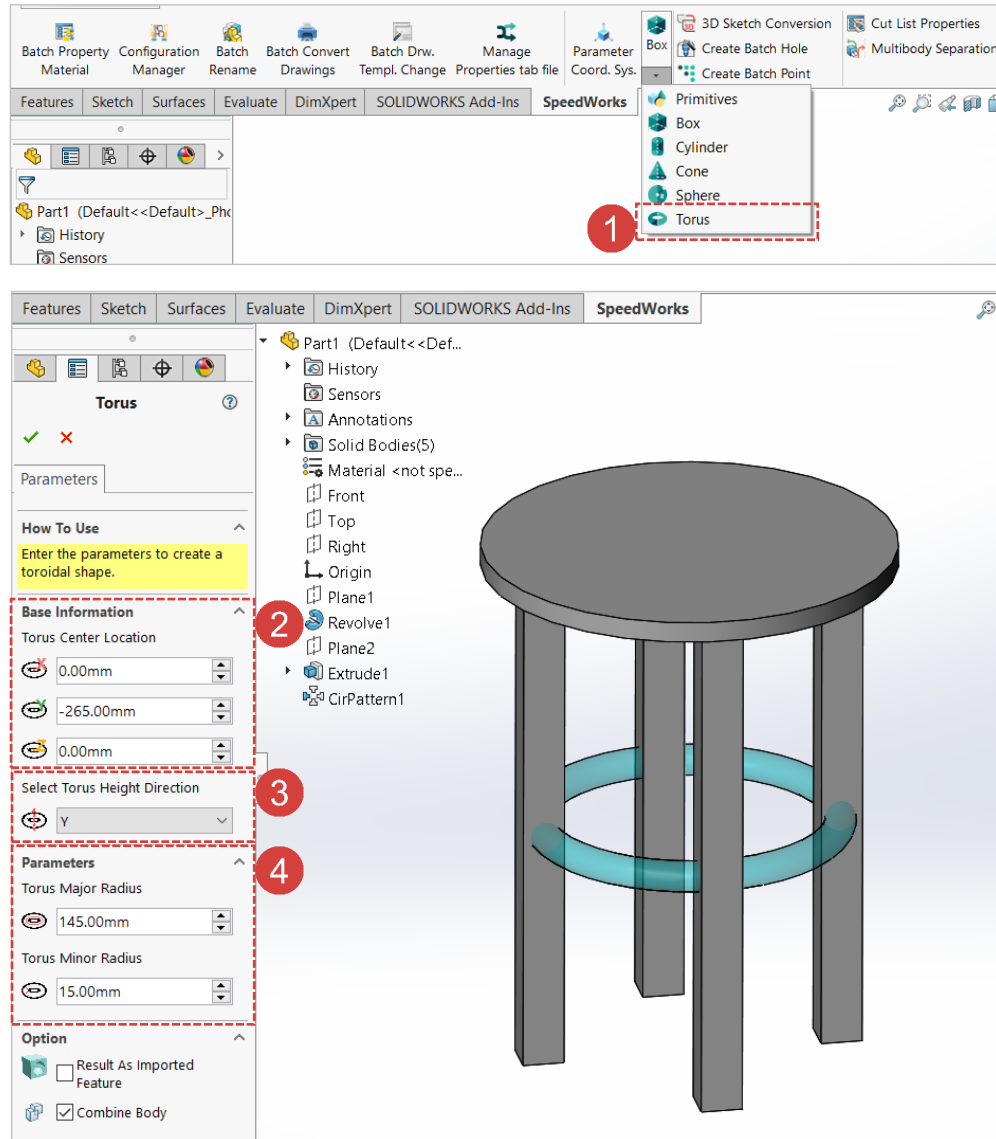
[x - coordinate]: 0.00mm

[y - coordinate]: -265.00mm

[z - coordinate]: 0.00mm

3 **[Select Torus Height Direction]: Y**
Enter parameters of the torus.

4 **[Torus Major Radius]: 145.00mm**
[Torus Minor Radius]: 15.00mm



Primitives - Create a reinforcement2(Combine Body)

Work on the part with the red circle (1) following instructions by yourself.
The part with the black square (1) is an additional explanation or a reference.

1 Check **[Combine Body]** at **[Option]**.

2 Click **[OK]** button.

1 Decide whether to check **[Combine Body]** or not in **[Option]**.

2 If users do not check the box, the separated bodies will be created. The chair legs (Box) and the reinforcement are separated.

3 If users check the box, the body is created as being conjoined. The chair legs (Box) and the reinforcement (Torus) are combined.

