**EXERCISE 6 - DATUM FEATURES**

**Goal**

The goal of this exercise is to become familiar with creating datum features.

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**Task 1:** Create a datum plane in 4455-008.

- **Open** the part called '4455-008.prt'
- Orient the model using the Standard Orientation
- Select the RIGHT datum plane
- Click the **Plane** icon
- Enter < 7 > for the offset value in the **Datum Plane** dialog box then click **OK**
- Click the **View** tab in the ribbon then toggle on the display of the datum nametags as shown below (you may already have the tags for datum planes displayed)

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Toggle on the display of the datum nametags here

- The result is shown here (DTM1)
- Save the part
- Click **File, Close** or click the icon

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Task 2:  Create datum features in 4455-004.

- **Open** the part called '4455-004.prt'
- Select the FRONT datum plane
- Click the **Plane** icon
- Enter < -14 > for the offset value in the **Datum Plane** dialog box then click **OK**
- The result is shown below (DTM1)
- Select the RIGHT datum plane
- Press and hold the 'Ctrl' key and select the DTM1 datum plane
- Click the **Axis** icon
- The result is shown below (A_1)
- Set the selection filter to **Geometry**
- Select this surface in this location

- Click the **Axis** icon
- In the graphics area, drag each of the two 'drag handles' and 'snap' them onto the RIGHT datum plane and the FRONT datum plane
- Double click the dimension to the RIGHT datum and enter < 10.5 > for the value
- Double click the dimension to the FRONT datum and enter < 11.5 > for the value
- Click **OK** in the **Datum Axis** dialog box
The result is shown below (A_2)

Notes
The location where the placement plane is selected determines the positive direction of the locating dimensions.

Using a negative value for the locating dimension moves the feature to the opposite side of the reference.

- Save the part
- Click File, Close or click the icon  

Task 3: Create datum features in 4455-005.

- Open the part called '4455-005.prt'
- Set the selection filter to Geometry
- Select this surface in this location
• Click the **Axis** icon 

• In the graphics area, drag each of the two 'drag handles' and 'snap' them onto the RIGHT datum plane and the FRONT datum plane

• Double click the dimension to the RIGHT datum and enter <10.5> for the value

• Double click the dimension to the FRONT datum and enter <11.5> for the value

• Click **OK** in the **Datum Axis** dialog box

• The result is shown below (A_1)

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**Task 4:** Create a datum curve feature in 4455-009.

• **Open** the part '4455-009.prt'

• Orient the model using the Standard Orientation

• Set the selection filter to **Geometry**

• Select this surface for the sketch plane

• Click the **Sketch** icon 

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- Sketch a vertical construction centerline aligned with the RIGHT datum plane as shown below
- Sketch and dimension two equal size symmetrical rectangles as shown below

- Modify the dimension values as shown above
- Click the checkmark to complete the sketch
- Orient the model using the Standard Orientation
- The result is shown below

- Save the part
- Click File, Close or click the icon ✗
Task 5: Create datum features in 4455-207.

- **Open** the part called '4455-207.prt'
- Select the TOP datum plane
- Click the **Axis** icon
- Click **Offset References** in the RMB popup menu
- Select the RIGHT datum plane and the FRONT datum plane
- Double click the dimension to the RIGHT datum and enter < -10 > for the value
- Double click the dimension to the FRONT datum and enter < 22.5 > for the value
- Click **OK** in the **Datum Axis** dialog box
- In the model tree, select RIGHT and A_1
- Click the **Plane** icon
- Enter < -30 > for the **Rotation** value in the **Datum Plane** dialog box
- Click **OK** in the **Datum Plane** dialog box
- The result is shown below

- **Save** the part
- Click **File, Close** or click the icon
Task 6: Create a datum coordinate system.

- Click the Open icon
- Double click the 'basic' folder
- Double click the 'labs' folder
- Double click the part called '4455-302.prt'
- Set the selection filter to Geometry
- Select this surface of the part first
- Press and hold the 'Ctrl' key and then select this surface second
- Press and hold the 'Ctrl' key and then select the bottom surface of the part
- Click the Coordinate System icon
- In the Coordinate System dialog box, click the Orientation tab and click Flip in the X and Y as shown below

The purpose of this task is to create a datum coordinate system, oriented this direction on this vertex.
• In the **Coordinate System** dialog box, click the **Properties** tab
• Enter `<export>` for the **Name** of the coordinate system
• Click **OK** in the dialog box
• The result is shown below

![Coordinate System](image)

• **Save** the part
• Click **File, Close** or click the icon

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**Task 7:** **Use the hide command.**

• Click the **Open** icon
• Double click the 'basic' folder, then double click the 'labs' folder
• Double click the part called '4455-303.prt'
• Select the RIGHT datum plane
• Click the **View** tab in the ribbon then click the **Hide** icon
• Select the TOP datum plane then click **Hide** in the RMB popup menu
• Notice the icon used in the model tree for the hidden features
• Click the **Save Status** icon
• Read the message in the message area
• **Save** the part then click **File, Close** or click the icon
• Click **File, Exit** then click **Yes**

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**Note**

*The Save Status command forces hidden items to remain hidden after the part is saved and re-opened.*