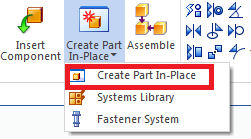
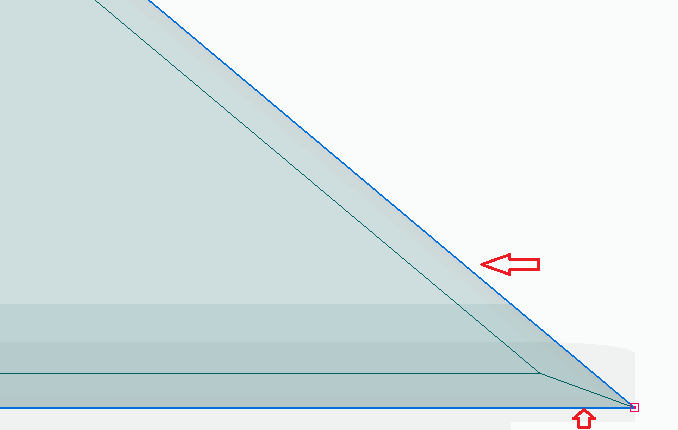
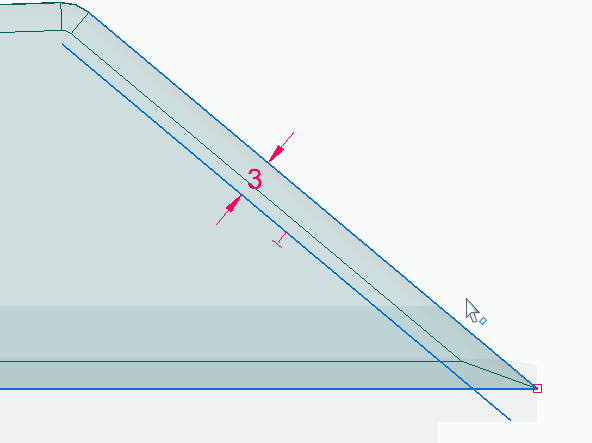
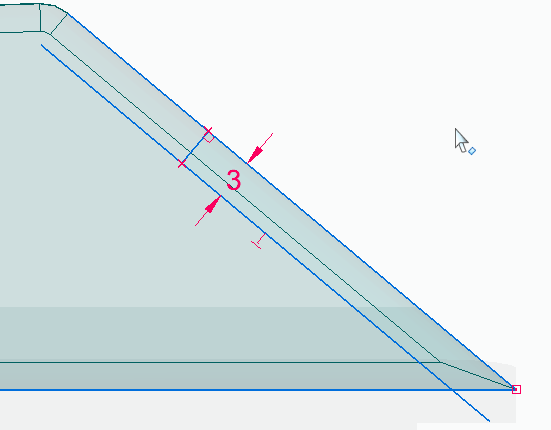
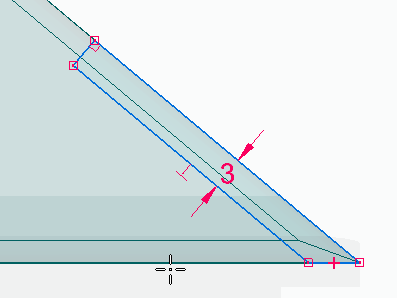
**F1 in Schools Tutorial Script - 02 Front Wing**

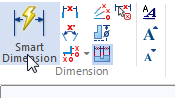
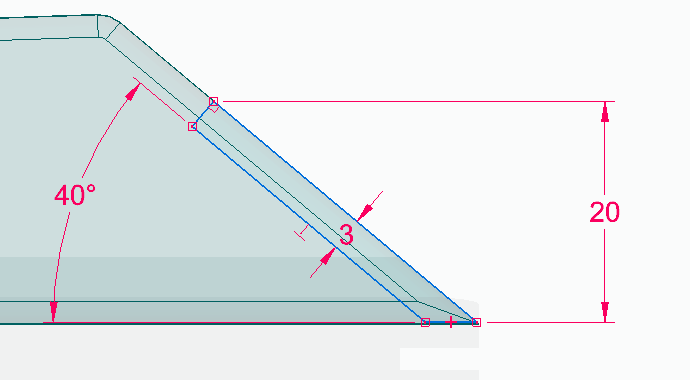
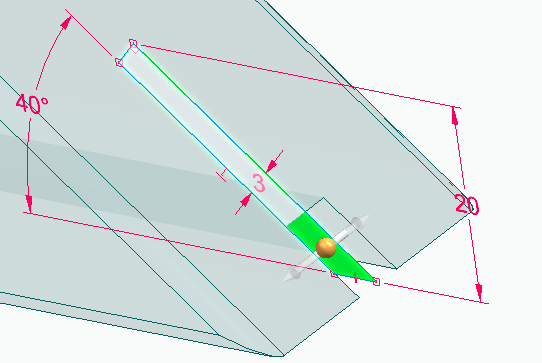
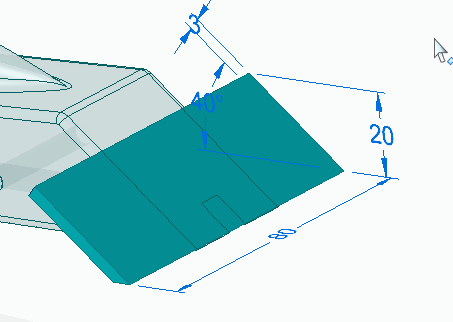
* 2017-10-02 10_37_18-Solid Edge ST10 - Assembly - [Asm1].pngStart your front wing design by using the previously made F1 Body design part. (Car\_Body.par)
* Create a new assembly.
  + Select “Assembly of Active Model” option
  + Save the new F1 assembly ex. (My\_F1\_Car\_Assembly.asm)

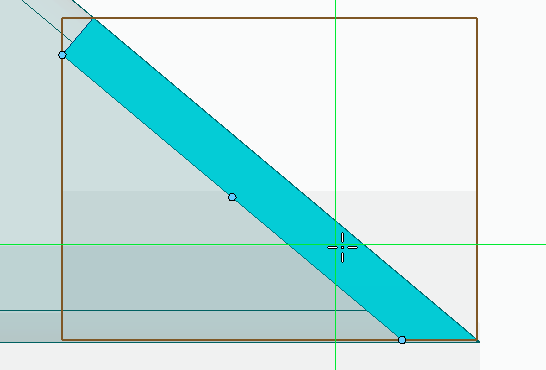
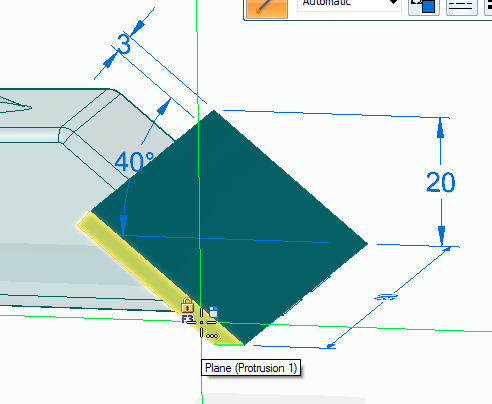
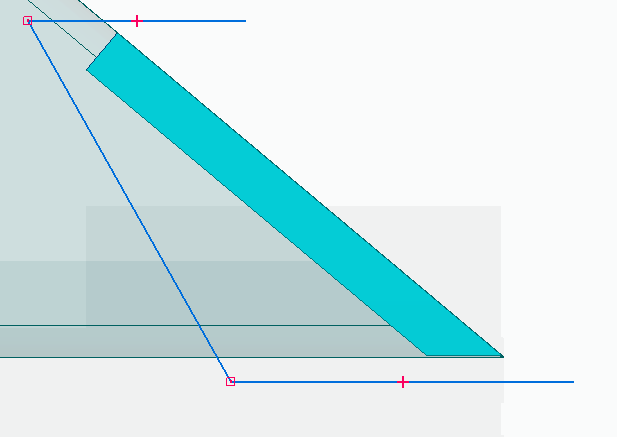


* Create new part in place.
  + Select “Create Part in Place”.
  + Select OK when dialogue box comes up.
  + Select Polyurethane for material in dropdown menu.
  + Click Green checkmark button.
  + 2017-10-02 10_44_33-Solid Edge ST10 - Assembly - [My F1 Car Assembly .asm].pngSave the part file ex. (front\_wing.par)
* Click on the Project to Sketch command.
  + Using the orientation cube in the lower right corner, click on the Right view.
  + Press F3 to lock to the Right plane.
  + Select both front edge and bottom edge of model.
* Click on the offset button to create offset line parallel to front edge.
  + Change the distance to 3 mm.
* Create a line perpendicular to   
  both front edge and offset line.

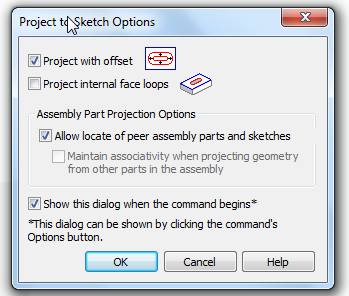


* Select the trim button to trim   
  the remaining line on the sketch.

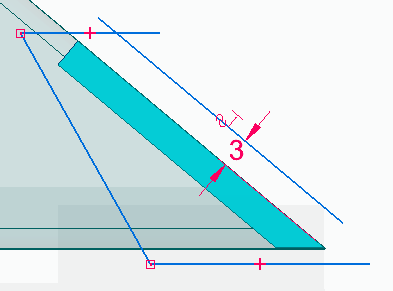
* Create angle dimension for the sketch.
  + Set 40° angle between offset line and bottom edge.
  + Lock the angle using the locking button.
* Set vertical distance for the wing using smart dimension.
  + Select horizontal side and angled side to create the dimensions.
  + Set measurement to 20 mm.
* Click on the region inside the sketch and extrude using the arrow which pops up.
  + Press shift to toggle symmetry.
  + Set extrude to 80 mm.

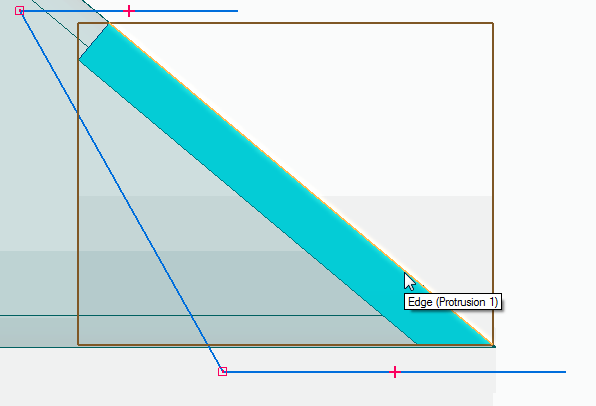
* Click on the line command.
  + Hover the cursor over the end face of the previous extrusion until it highlights.
  + Press F3 to lock the plane.
  + Press CTRL+H to orient the view to  
    the plane

* Sketch 3 lines similar to the ones   
  shown in picture.

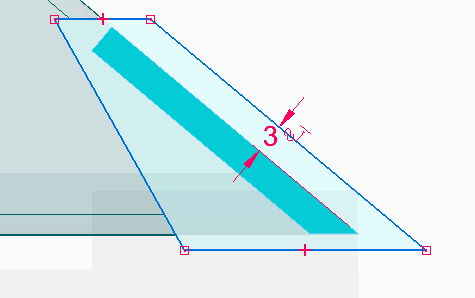
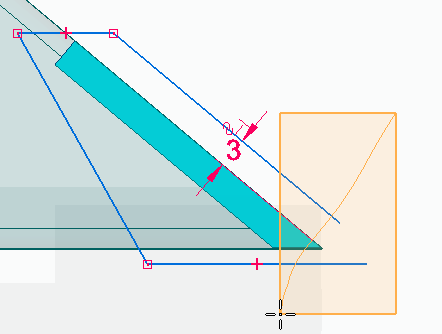


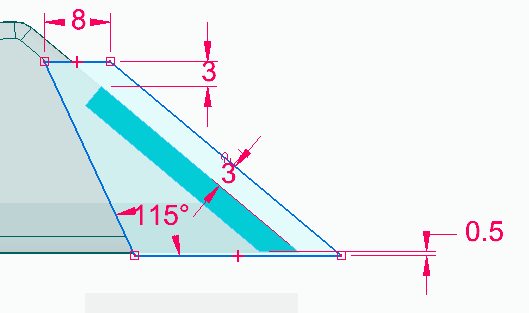
* Create fourth line by offsetting the edge with the wing.
  + Use the Project to Sketch button.
  + Select “Project with offset” option and click OK.
  + Select the edge with the wing and offset by 3 mm.

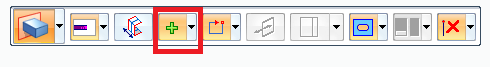
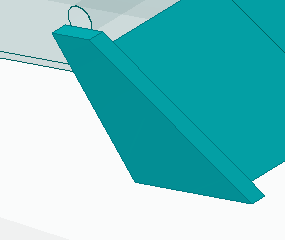
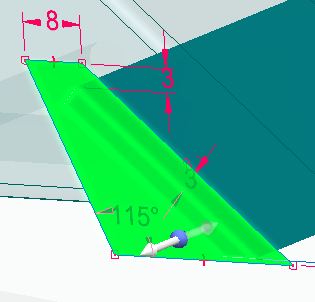
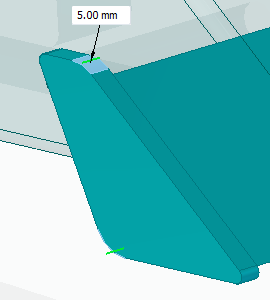


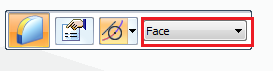
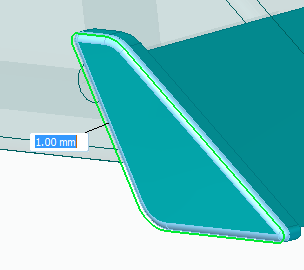
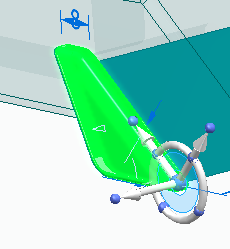
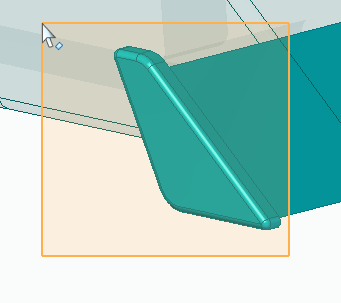
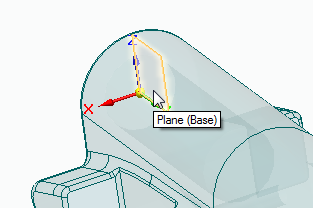


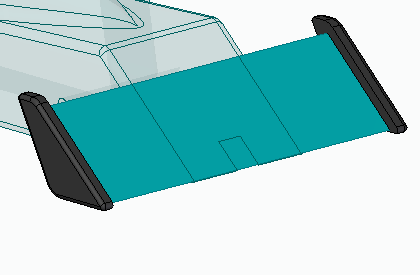
* Use the Trim Corner command to connect the ends of the sketch lines.
  + Click and drag around the corners to remove extra lines or to extend the corners.

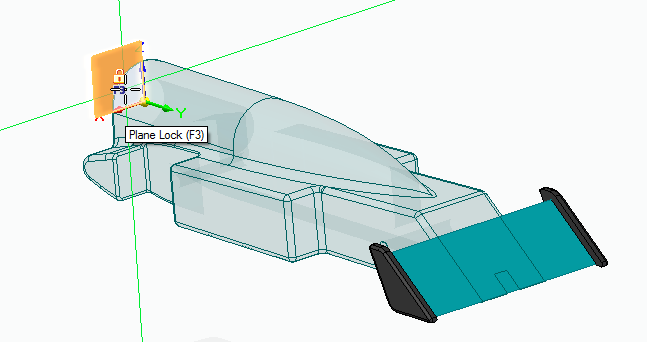
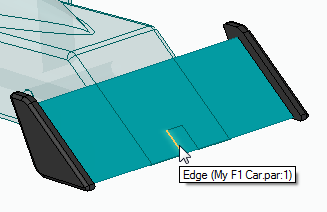
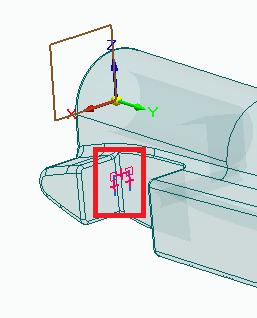
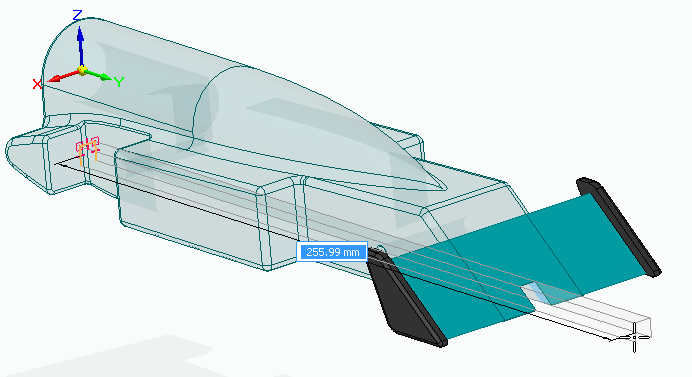
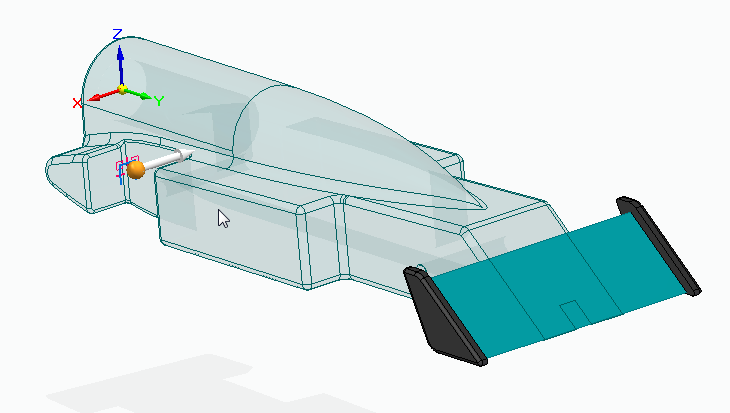


* Using Smart Dimension, add dimension   
  to the sketch as shown.

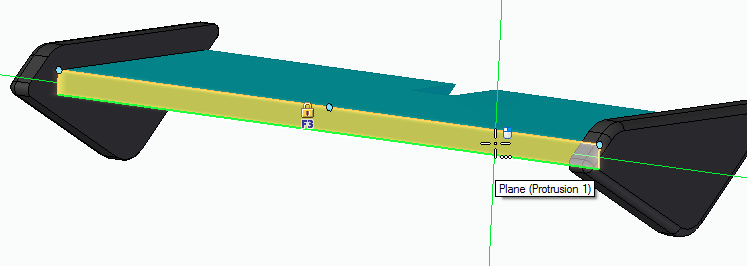
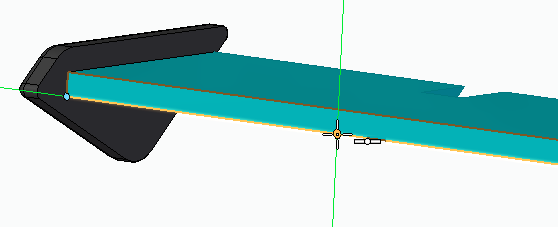
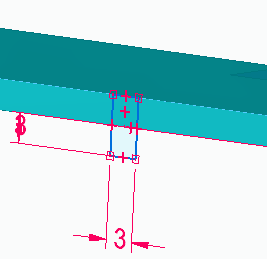
* Select both sketch and outer face of wing to extrude.
  + Select the add options in extrude toolbar.
  + Deselect the symmetric option.
  + Extrude 3 mm into the wing.
* Add rounds to wing’s outer body.
  + Select the edge/corner option from the dropdown menu.
  + Select the two acute edges and set their radius to 1 mm.
  + Select the two obtuse edges and set their radius to 5 mm.

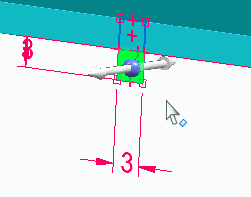
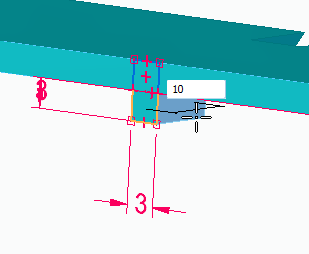
* Use the Face option from dropdown menu to round entire end face.
  + Set radius to 1 mm.
* Use mirror option to copy the outer body on one side of the wing to the other side.
  + Select the entire outer feature by clicking and dragging   
    a box around the geometry.
  + Select the Mirror button.
  + Select the right plane using the coordinate system.

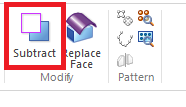
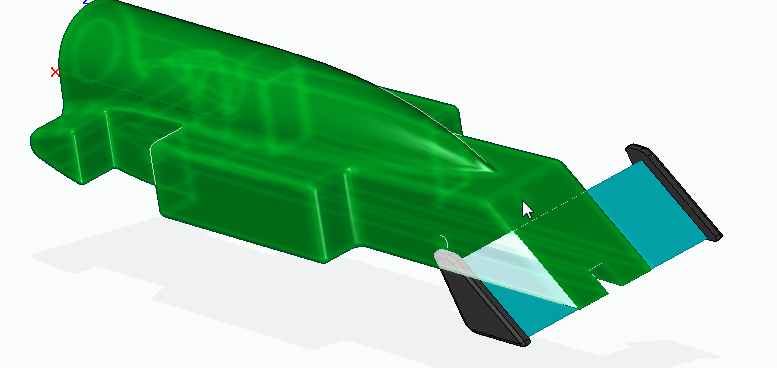
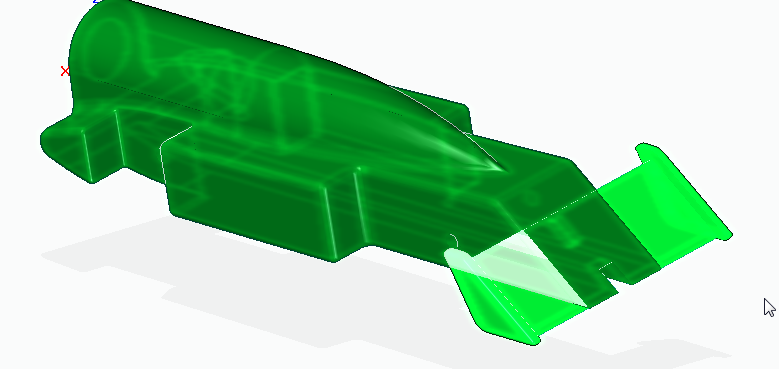
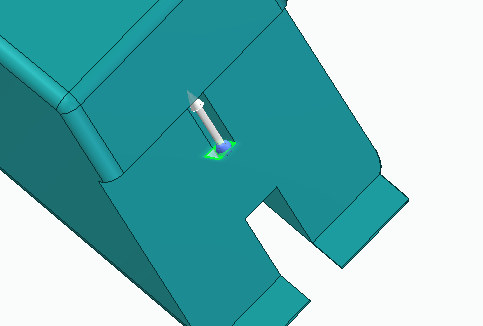


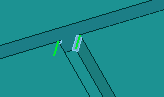
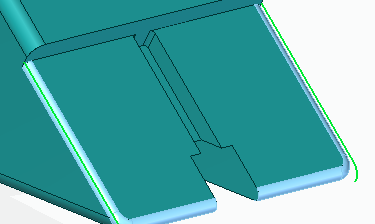
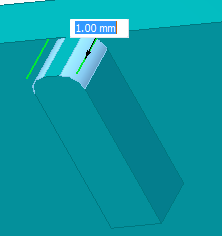
* Use the Part Painter on the View tab to color   
  the wing support structure Black (dull).
  + Click and drag around the structure.
* Create a projection of the slot in the bottom of the car body.
  + Select project to sketch button.
  + Lock to the XZ plane from the coordinate system.
  + ****Select the 3 edges of the slot in the front of the car body.
* ****Add slot in the wing by removing material.
  + Click on the Extrude command.
  + Select chain option from dropdown menu.
  + Select the 3 projected edges on the XZ plane with one click.
  + Select the cut option from dropdown menu.
  + Point the arrow to the inside of the slot shape and click.
  + 2017-10-02 12_19_13-Solid Edge ST10 - Synchronous Part - [Front Wing.par in My F1 Car Assembly .asm].pngDrag the cut through the front wing.
* Isolate the wing by hiding the rest of the body by pressing CTL+Q.



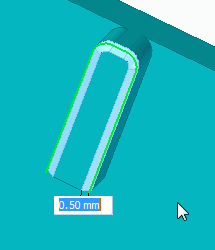
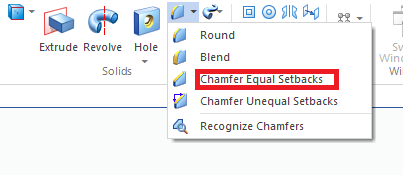
* Add a “Rectangle by center” to the top thickness face of wing.
  + Define the center of the rectangle to be on the   
    midpoint of the edge of the face.
  + Add dimensions to the drawing as shown.
* Click on the region defined by the sketch and select arrow to extrude 10 mm towards the slot.

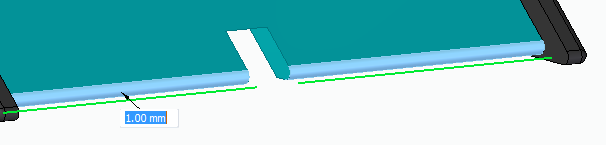
* Show the Car Body (CTRL+Q) and notice how the wing interferes with the body.
  + Click on the Subtract command on the Features tab.
    - Select the Body as the target for the subtraction.
    - Select the Front Wing as the tool body. 
* In place activate into the car body by clicking the Edit in place button   
  after selecting the body, and notice the new pockets in the car body   
  for the Front Wing.
* Select the bottom face of the Front wing key slot.
  + Remove the material by dragging the face downward through the bottom slot.

* Add Rounds to the edge of the extrusion.
  + Use the edge/corner option from dropdown menu.
  + Add 0.5 mm rounds to the edges.
* Add round to the front of the car body.
  + Use the chain option from dropdown menu.
  + Type in radius of 1 mm.
  + Select the edge of the front face of the car body.
* Close and return to the assembly.
* Isolate the Front Wing by selecting it and clicking on the Edit in place icon.
* Click the Round command and select the top edges of the feature.
  + Add 1 mm rounds.

* Click arrow underneath round button for more options.
  + Select Chamfer Equal Setbacks option.
  + Select the edge of the extrusion.
  + Set the setback distance to 0.5mm.



* Finally round the bottom front edge of the wing using the round button.
  + Set round to 1mm.



* Select Close and Return to go back to the top level assembly.
* Save the assembly.
* You have now completed the Front Wing of the F1 Car.

