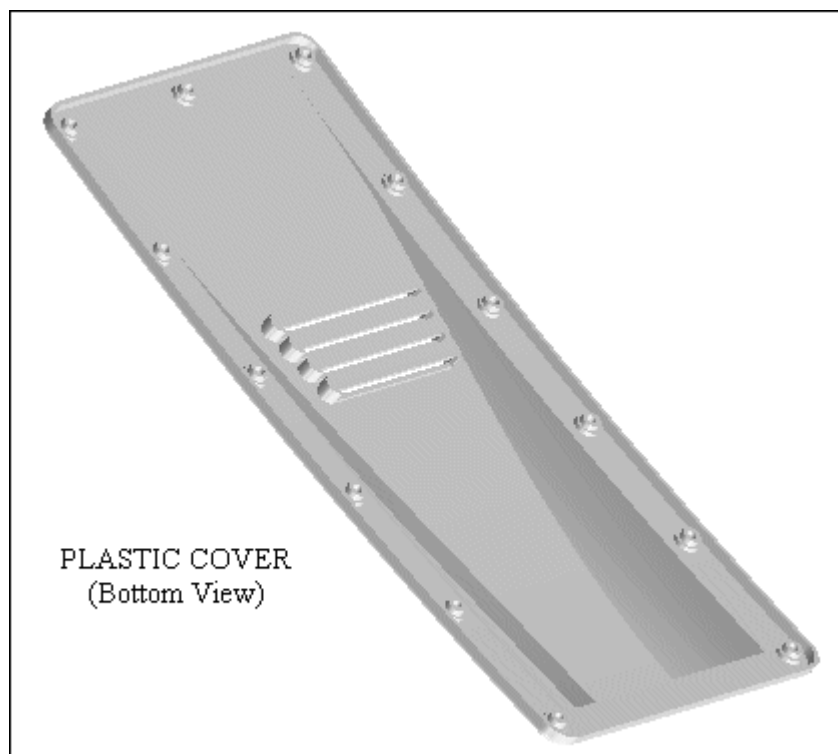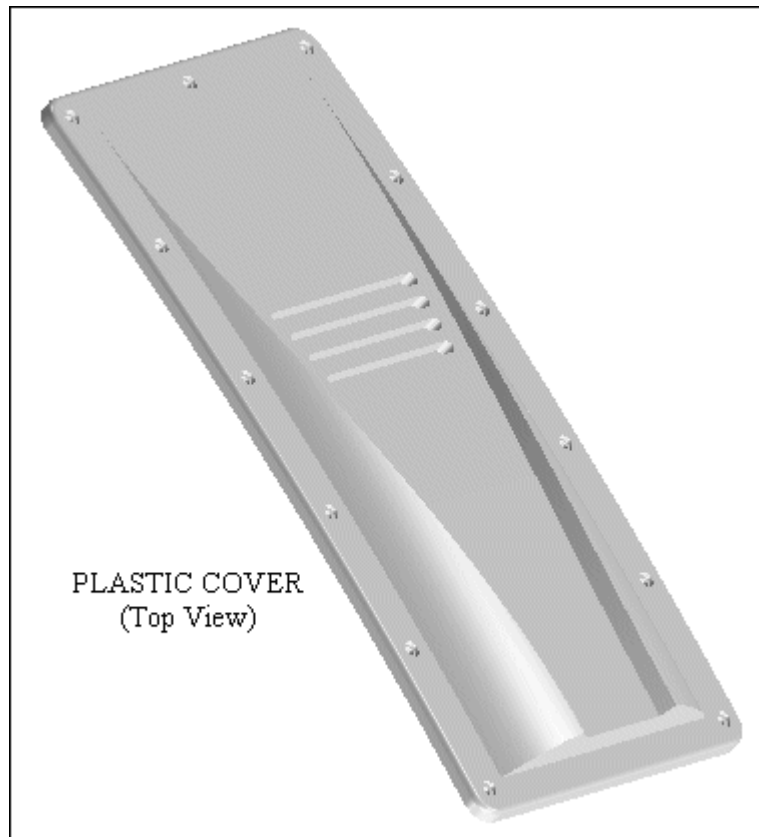# Activity 2 – Modeling a Plastic Part

In this activity, you will model a plastic part. When completed, your plastic part should look like the following two illustrations. While building this model, take time to note the techniques used for obtaining the features.

PLASTIC COVER
(Top View)

PLASTIC COVER
(Bottom View)

1. Create a new metric part file.

2. Create a 125 mm wide protrusion that extends symmetrically from the reference plane. The profile and resulting feature are shown in the following illustrations.
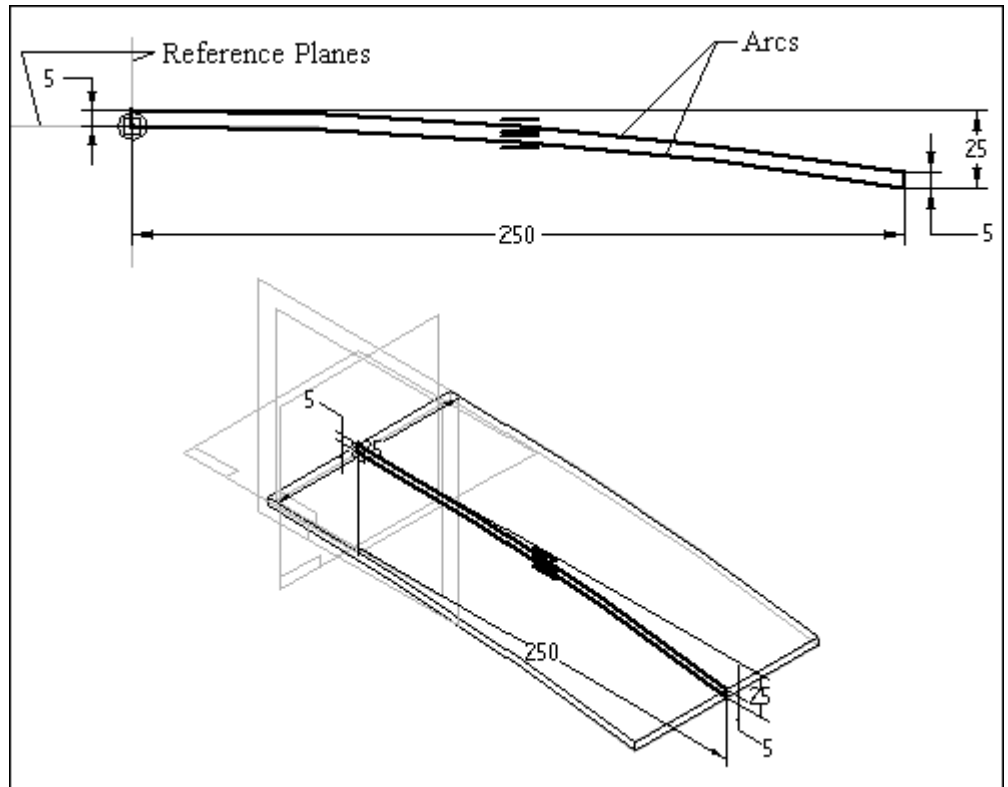

3. Create a sketch that consists of two straight lines. These lines represent the start point and end point of the dome-shaped swept protrusion you will construct later in the activity.

Use Include w/Offset
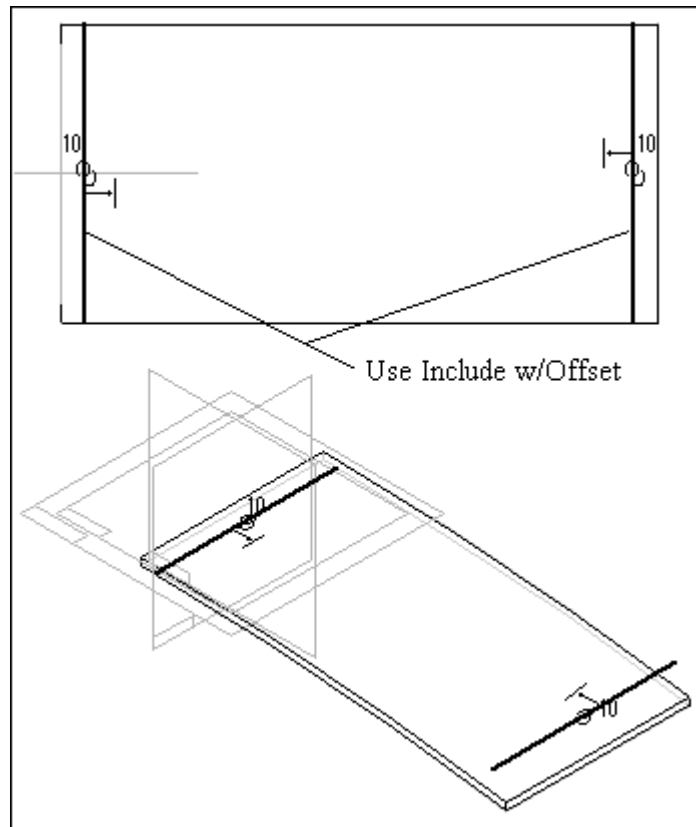
4. Model two construction surfaces from the previous sketch. Be sure the construction surfaces completely intersect the solid model.
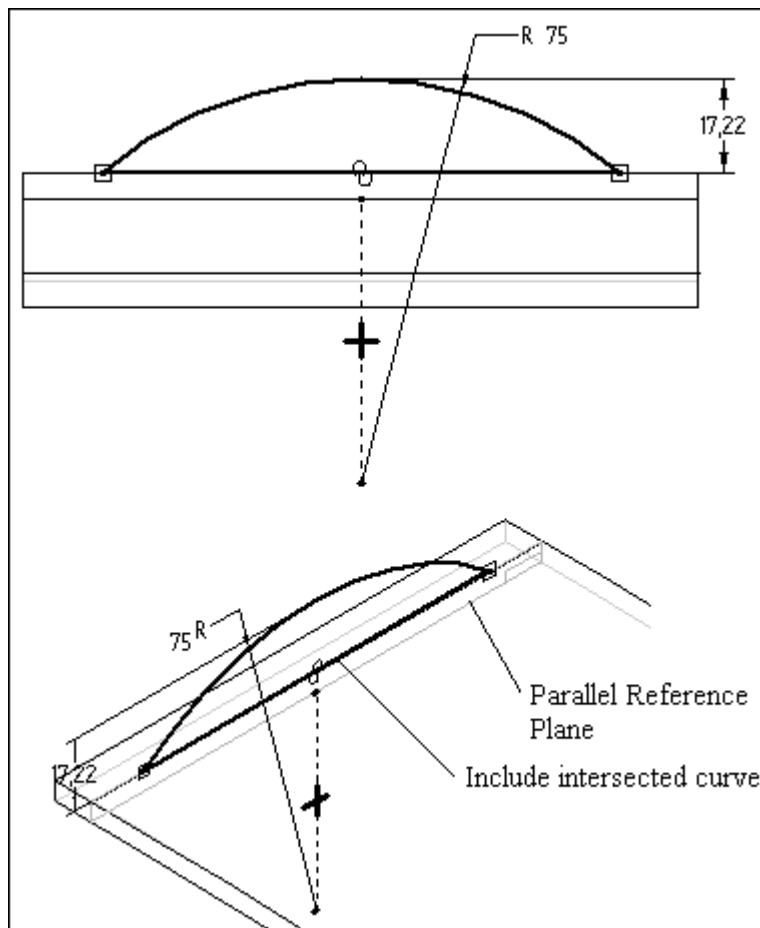

Sketches

Construction Surfaces
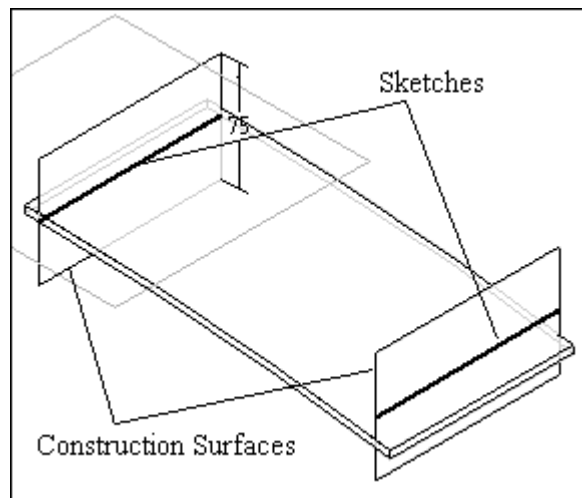
5. Turn off the sketches and click the Intersection Curve command to find the intersection of the construction surfaces with the solid body. In the model shown in the illustration, construction surfaces are turned off – only the solid and the intersection curves are shown.

Intersection Curves
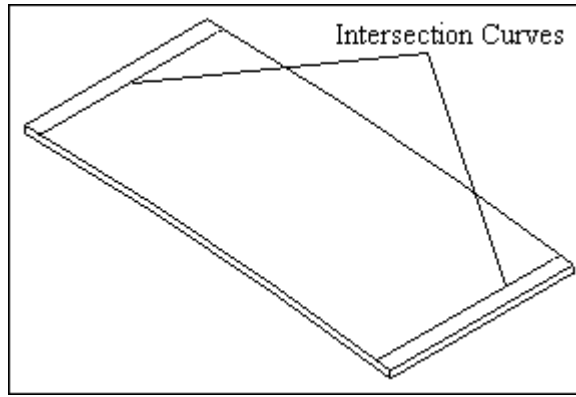
6. Construct a sketch on a parallel plane at the endpoint of the intersection curve you just created. Include the intersection curve (not the reference plane) as the base of the profile. You may have to zoom-in to make sure you select the intersection curve and not the reference plane. They do not occupy the same location.
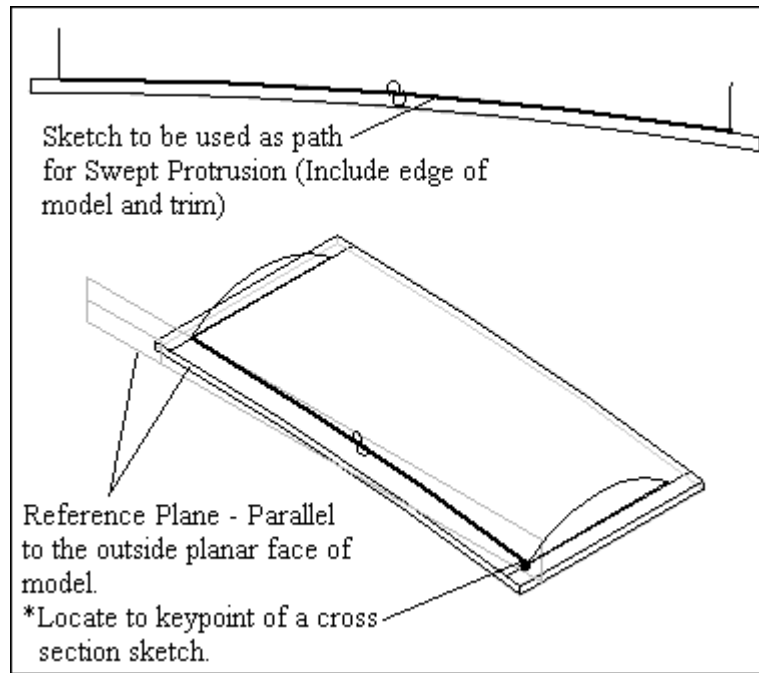
Tip:
On the ribbon bar, use the Keypoints option to place the parallel plane exactly at the endpoint of the intersection curve.
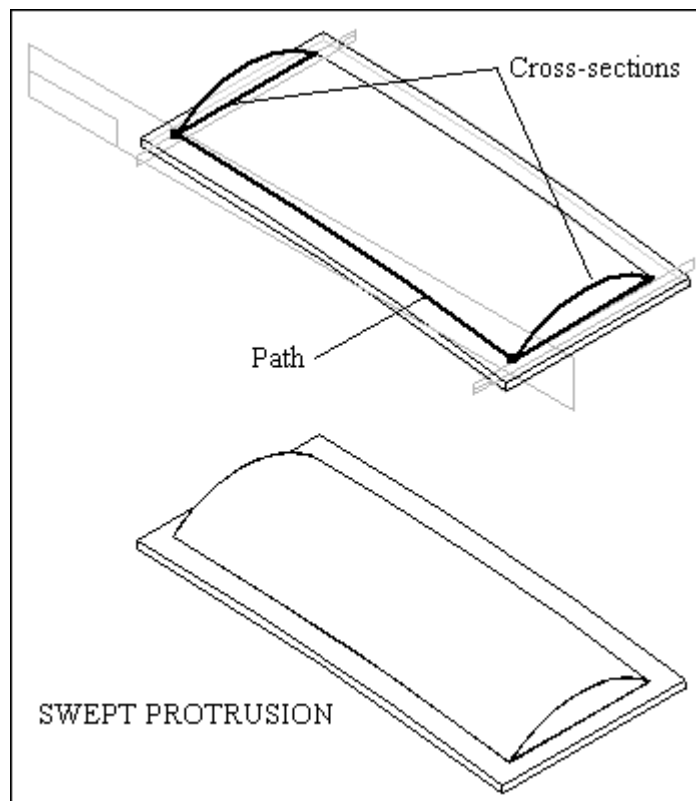

7. Construct a sketch on another parallel plane at the other intersection curve endpoint. The profile must be connected to the included intersection line and not the model edge.

R 75

17,22

R 75

17,22

Intersected Curve

Parallel Reference
Plane
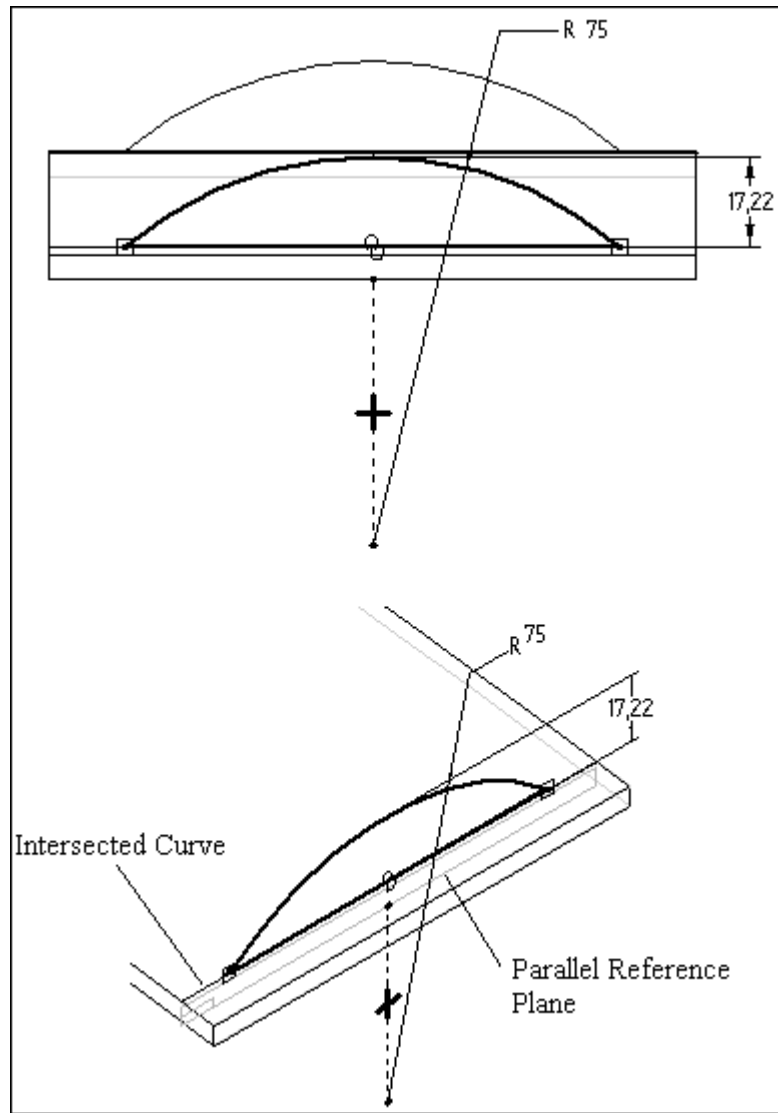
8. Add a sketch on a plane that is parallel to the reference plane
   shown and intersects the right corner of one of the sketches. The
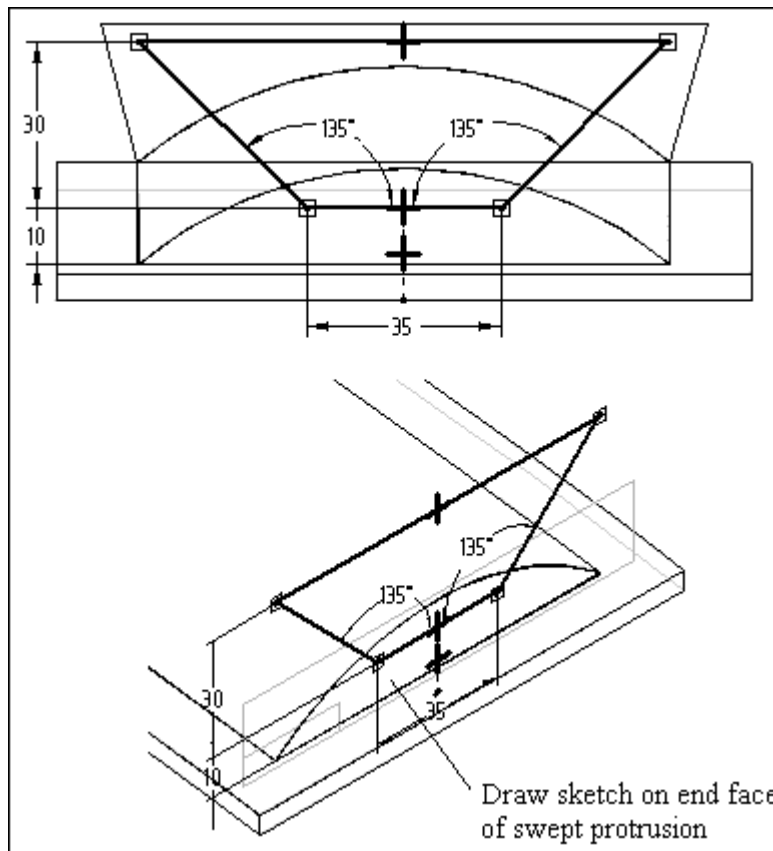   result is shown in the following illustration.

Sketch to be used as path for Swept Protrusion (Include edge of model and trim)

Reference Plane - Parallel to the outside planar face of model.
*Locate to keypoint of a cross section sketch.

9. Add a swept protrusion to the model as shown.
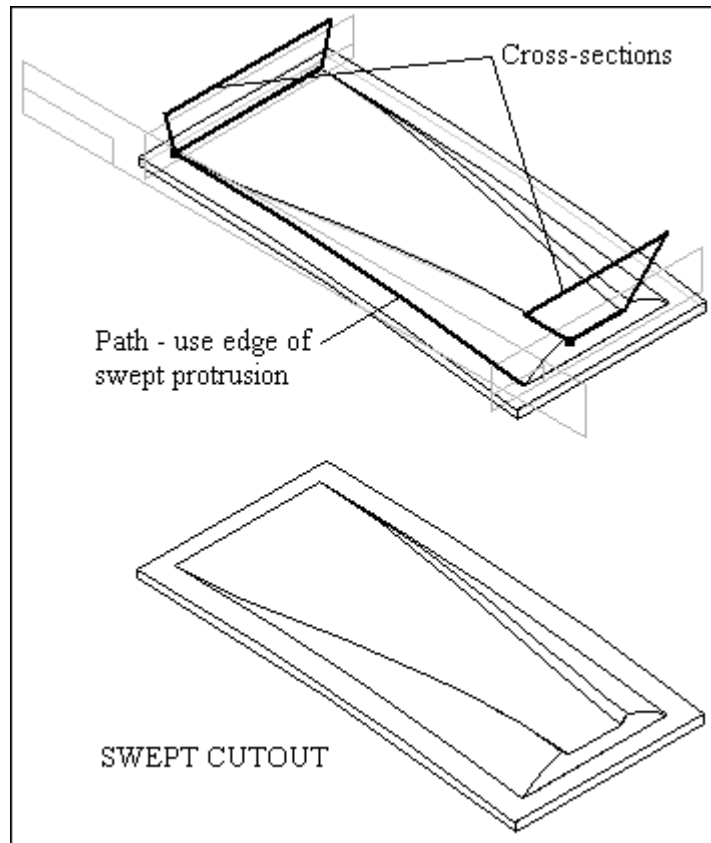

Cross-sections

Path

SWEPT PROTRUSION

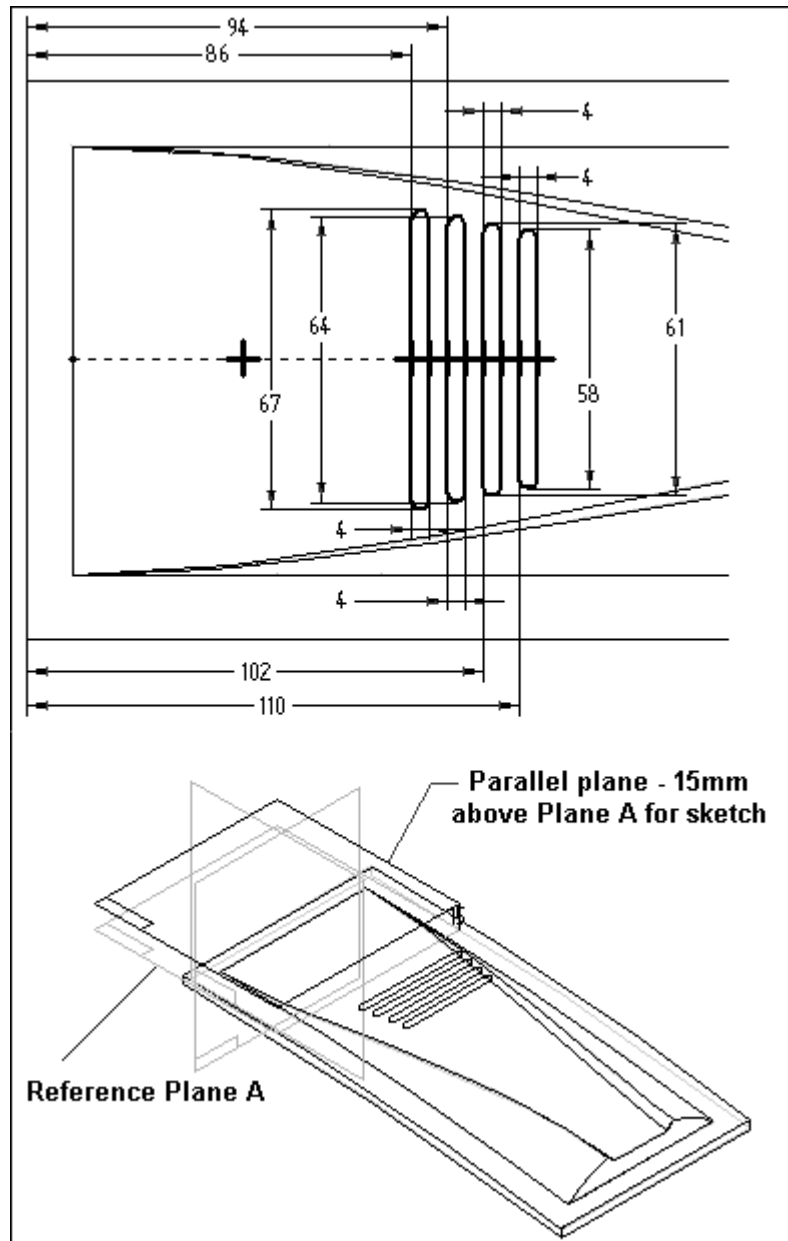10. Create the sketch as shown. This will be used as cross-section1 in a swept cutout.
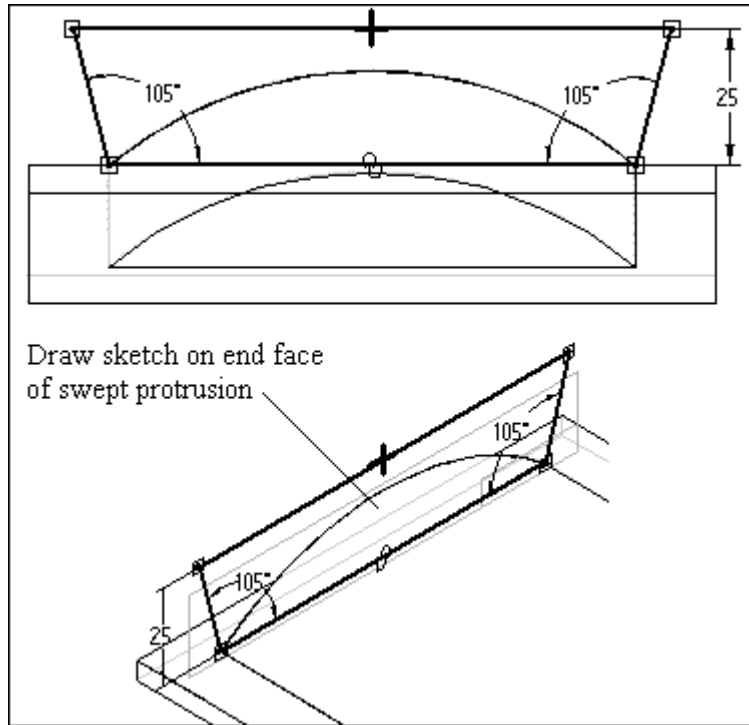
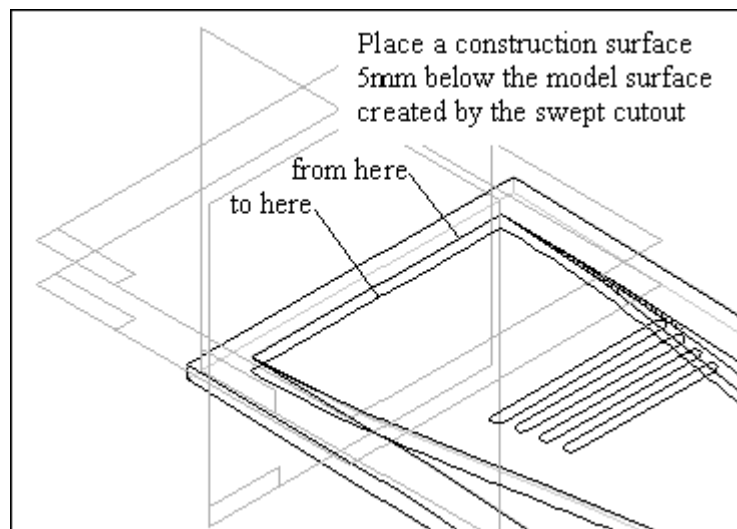11. Create the sketch as shown. This will be used as cross-section2 in a swept cutout.


12. Construct a Swept Cutout as shown.

Cross-sections

Path - use edge of swept protrusion

SWEPT CUTOUT

13. On a reference plane parallel to and 15 mm above reference plane A, add the sketch shown in the following illustration.

Parallel plane - 15mm
above Plane A for sketch

Reference Plane A

14. Offset a construction surface as shown.

Place a construction surface
5mm below the model surface
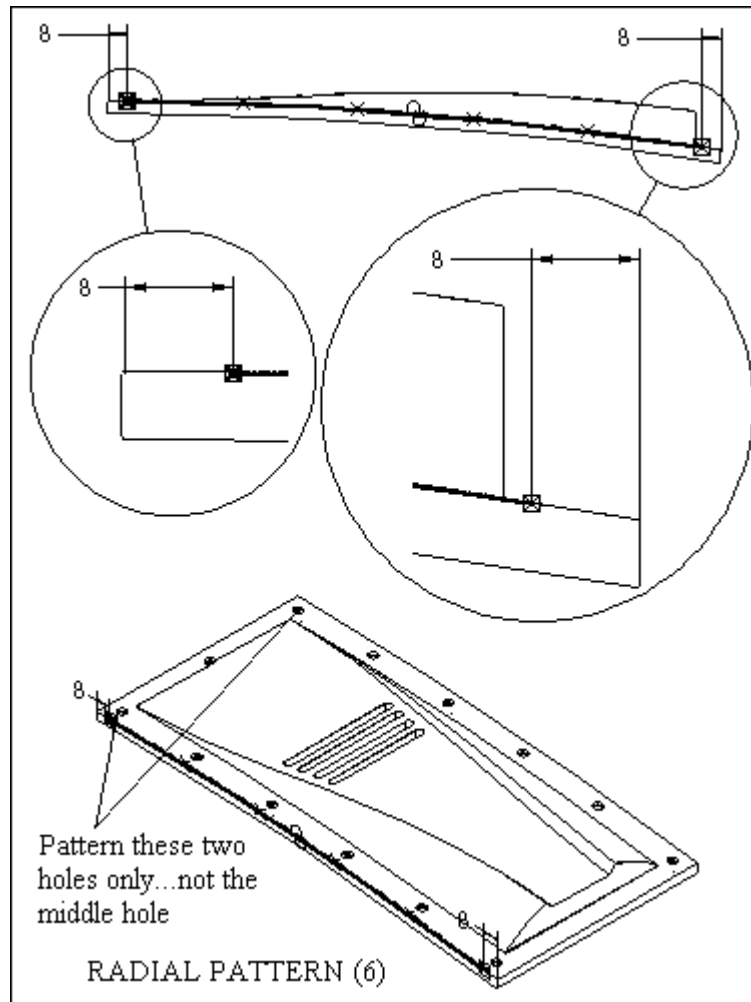created by the swept cutout

from here

to here

15. Construct a cutout as shown. Use the reference plane on which the sketches were drawn, and use the offset surface as the From/To extent for the cutout.
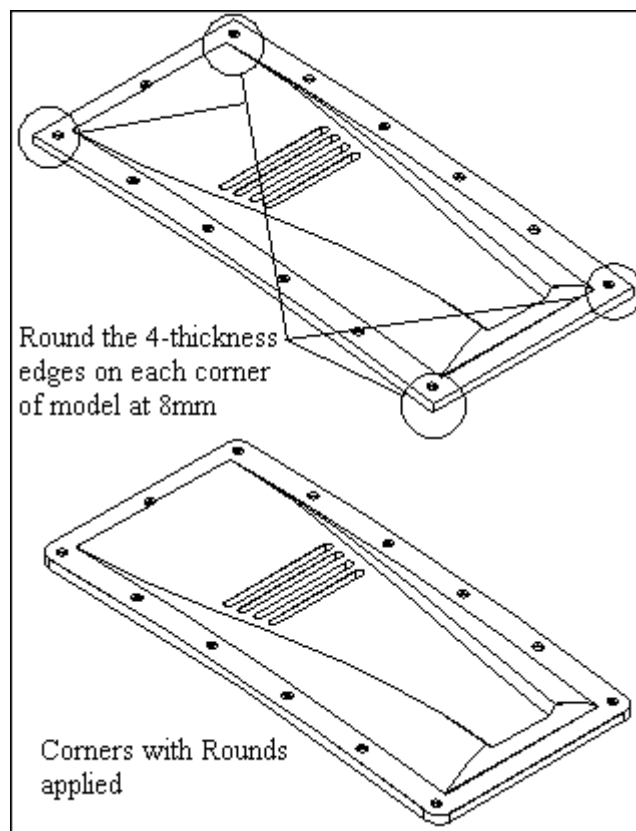

Extent - from

Extent - to

Finished Cutouts
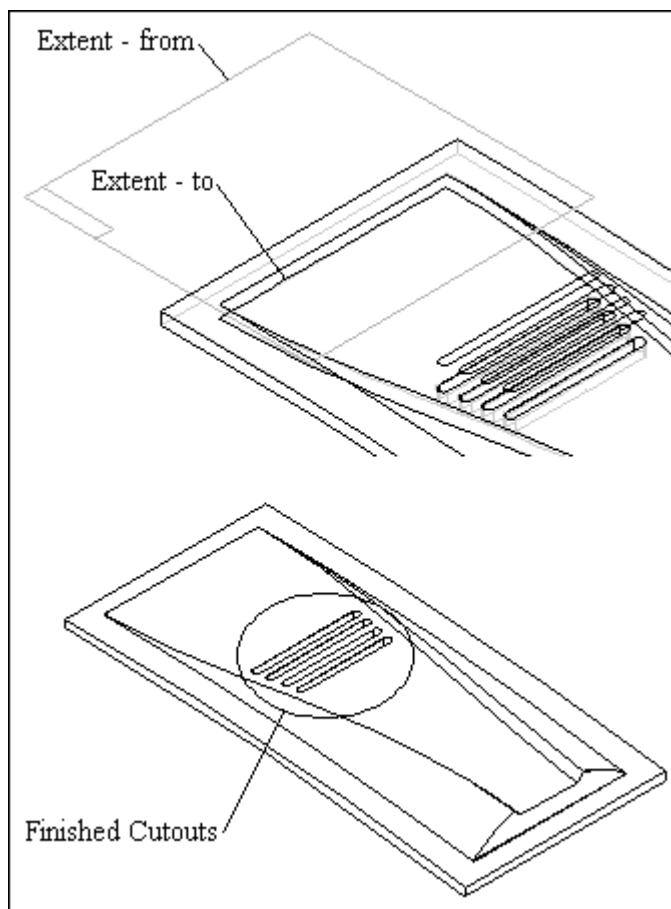
16. Add the three counterbore holes as shown. The hole diameter is 3 mm, counterbore diameter is 5 mm, and counterbore depth is 1.5 mm.
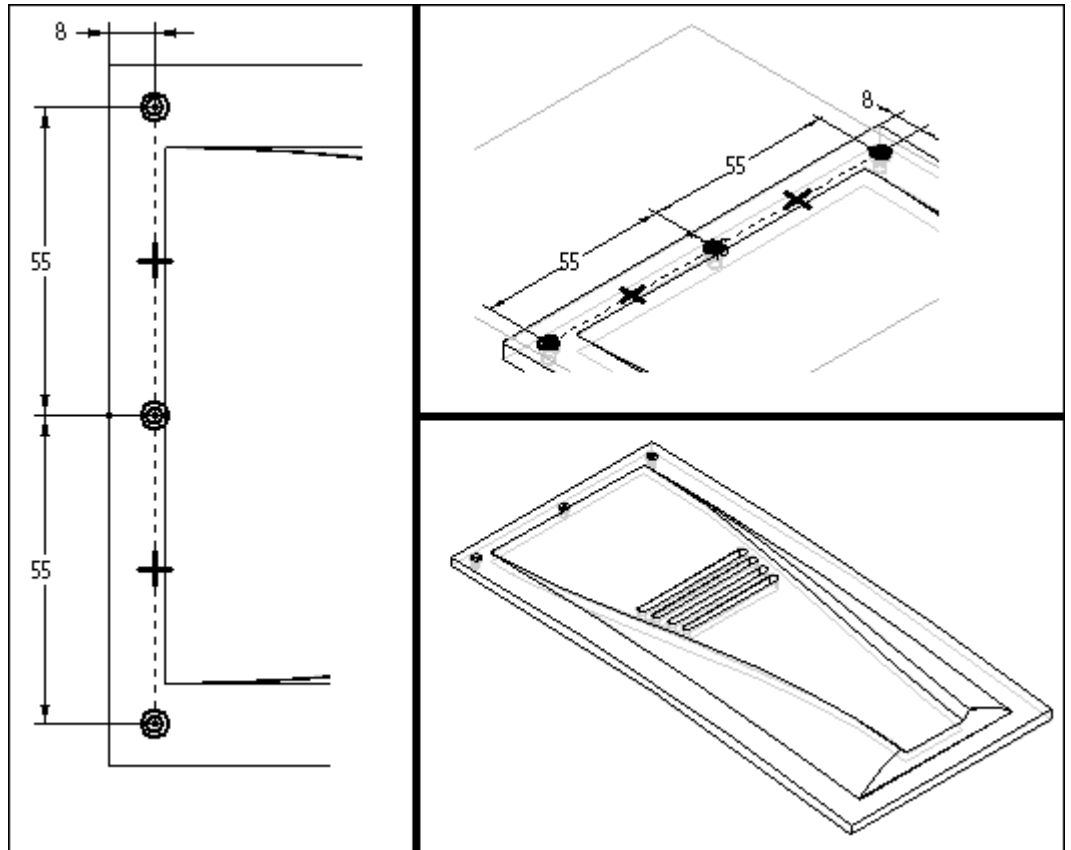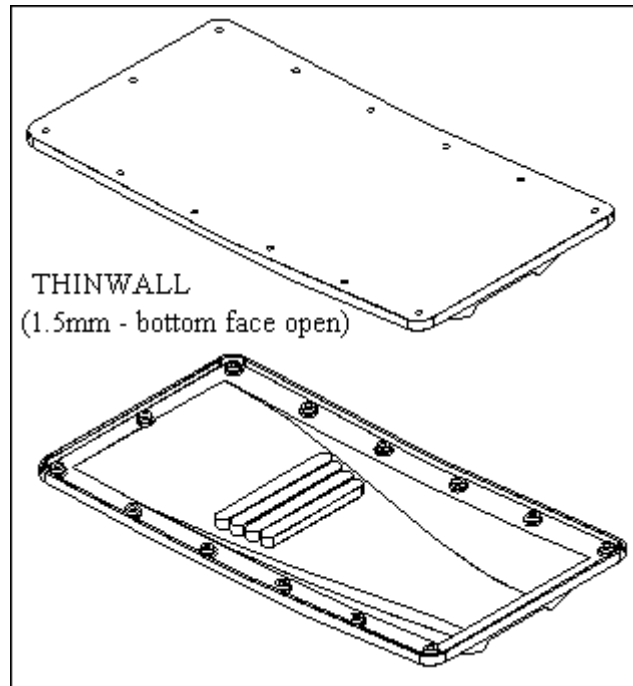
17. Construct a circular Pattern of the holes you placed in the previous step. Pattern the two holes located on the outside corners, not the middle hole. The following illustration provides the remaining details.

8

8

8

8

8

8

Pattern these two
holes only...not the
middle hole

RADIAL PATTERN (6)

18. Add 8 mm rounds to the four edges circled in the illustration.

Round the 4-thickness
edges on each corner
of model at 8mm

Corners with Rounds
applied

19. Add a 1.5 mm thin wall to the model, leaving the bottom face open as shown.

THINWALL
(1.5mm - bottom face open)

20. Add a reference plane 15 mm below and parallel to reference plane A.

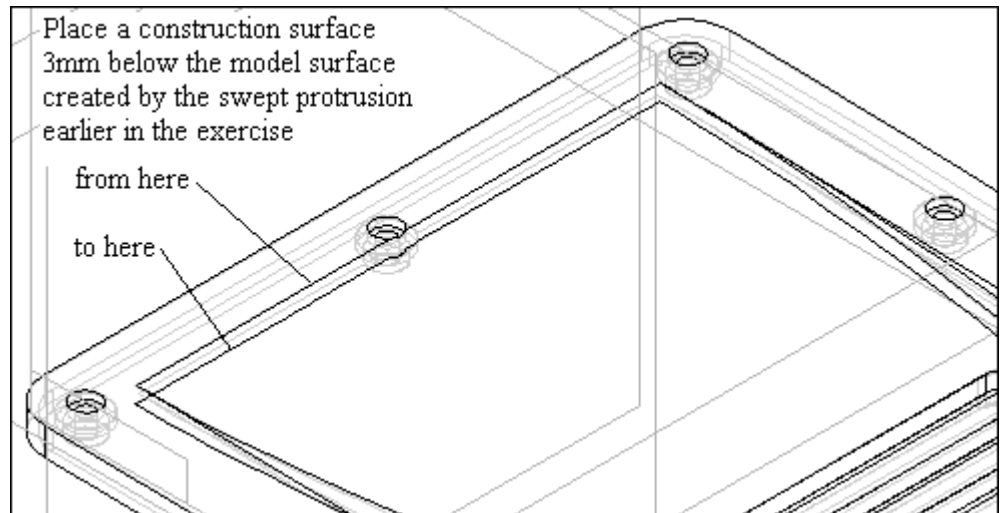Parallel reference plane - 15 mm below plane A

Reference Plane A
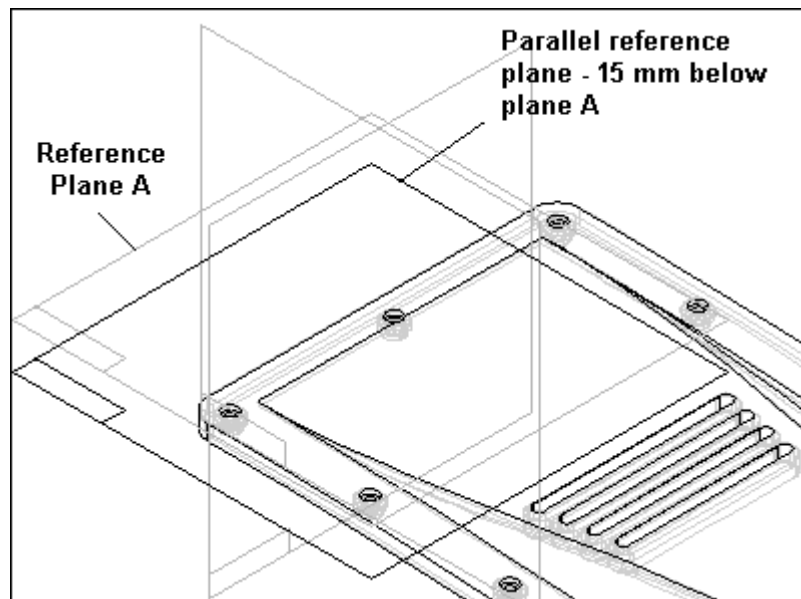
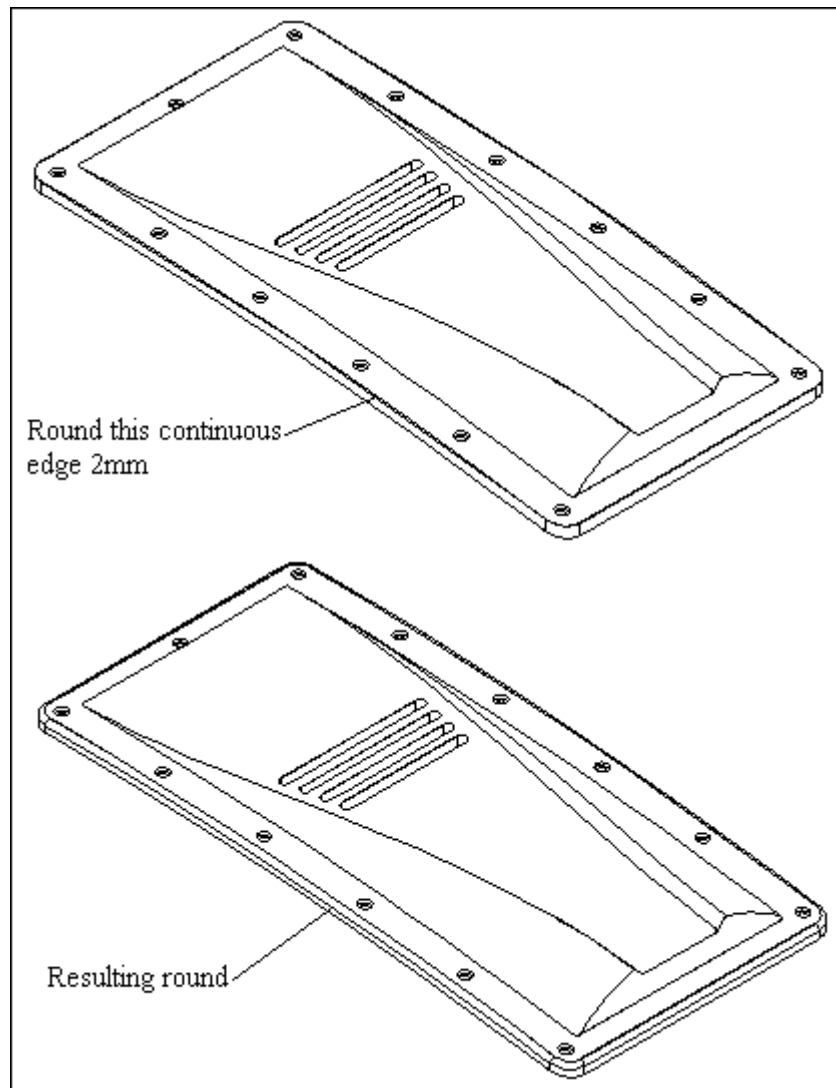21. On the plane you created in the previous step, construct the sketch shown in the illustration.

Complete Sketch   Enlarged Detail of Sketch

22. Offset a construction surface as shown.

Place a construction surface
3mm below the model surface
created by the swept protrusion
earlier in the exercise

from here

to here
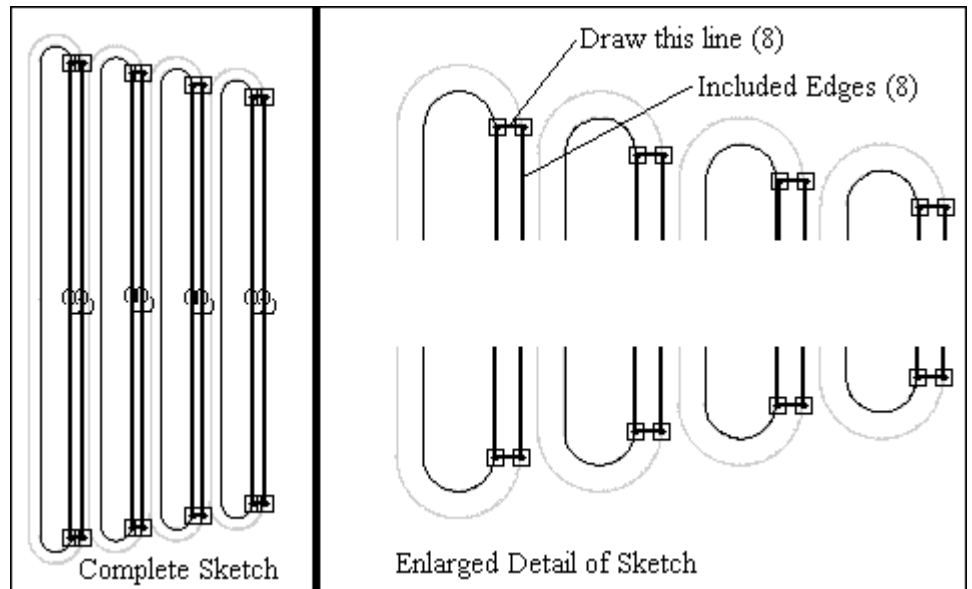
23. Construct a cutout as shown in the following illustration.

Extent...
from plane
to plane

Cutout sketch

Cutout results
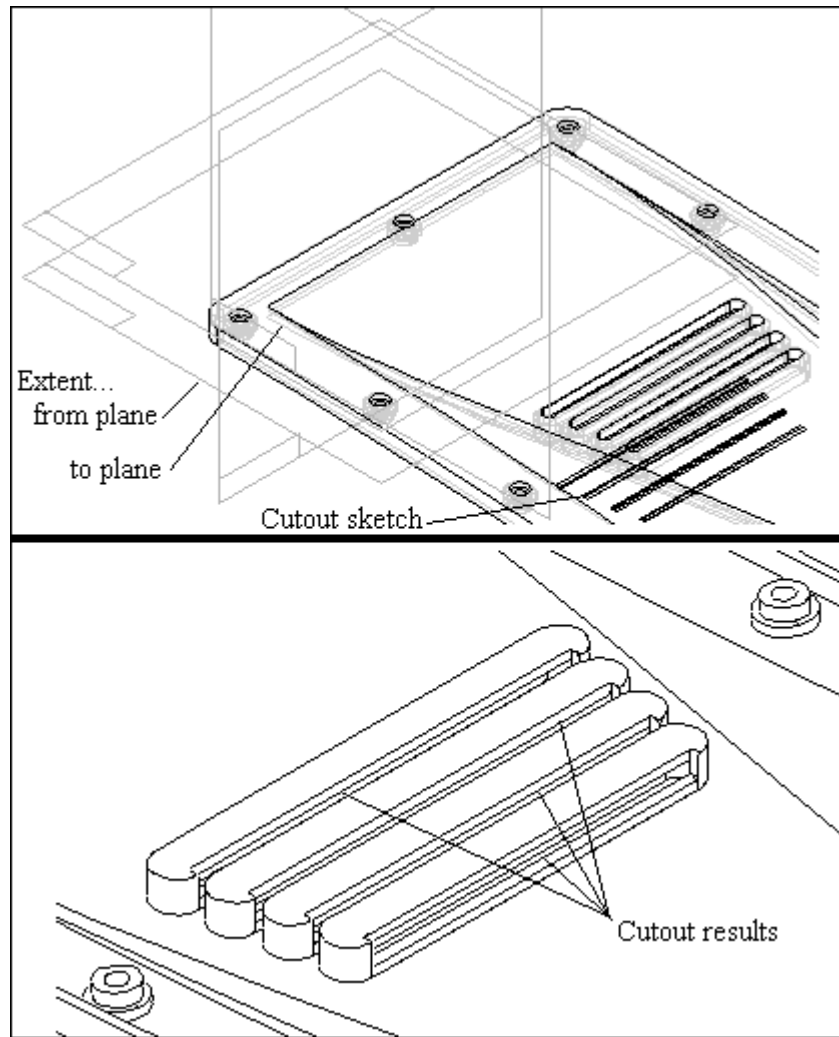
24. Apply the 2 mm round as shown in the following illustration.

Round this continuous edge 2mm

Resulting round

25. The following images are of the completed model.

COMPLETED MODEL
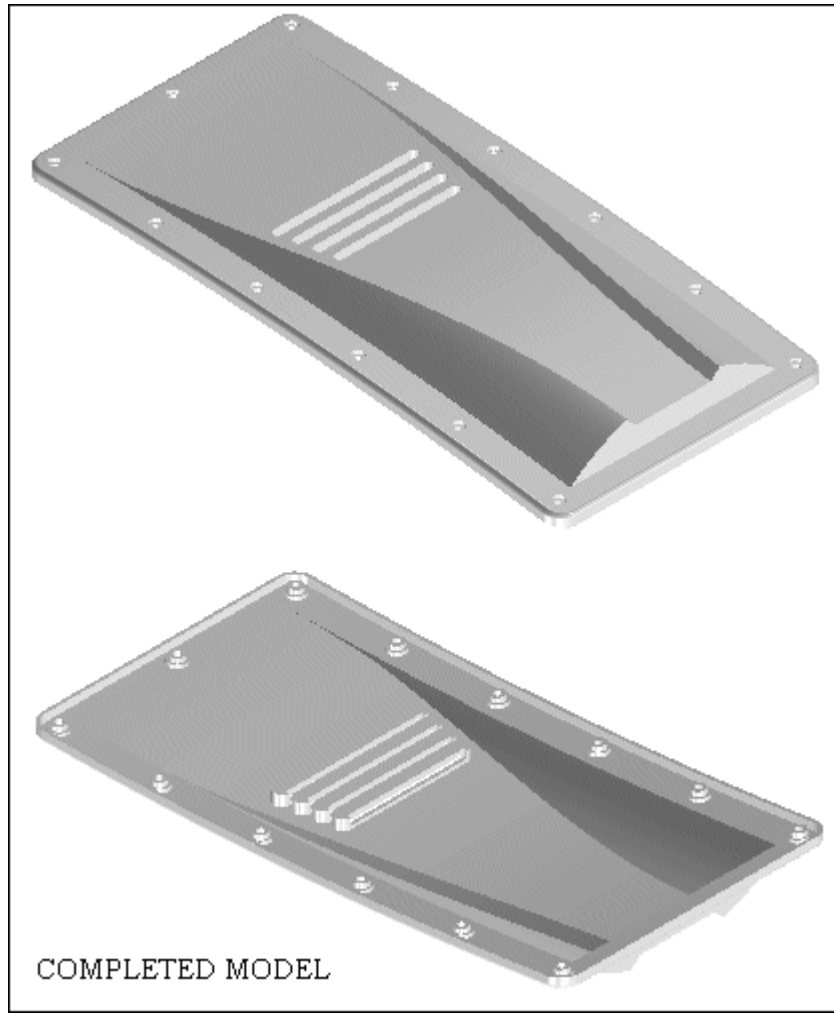
26. Save and close the file. This completes the activity.