

# CSWP Sheet Metal Exam and Lesson

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## Who I am...

- Avelino Rochino, Certification Specialist
- Member of the SW Product Definition Team for 4.5 years before joining Certification
- Specialized in defining Sheet Metal, Weldments, Routing, and Core Functionality



# CSWP Advanced Sheet Metal Certification Exam (CSWP-SMTL)

- CSWP Program
- What the Sheet Metal test covers
- Who it's for?
- Cheater's Guide: Preview and hints for toughest parts of the exam
- New Sheet Metal features in latest revisions
- CSWP and CSWP-SMTL free coupons...



# CSWP Program

- Two core exams:
  - CSWA: Associate level exam, for beginners
  - CSWP: Professional level exam, for experienced users
- Advanced Topic Exams:
  - Sheet Metal
  - Surfacing
  - Mold Tools
  - FEA
  - Weldments
- CSWE exam for SolidWorks *Experts!*



# CSWP Program

- Why get certified?
  - Professional development
    - Management goals
    - Team member bragging rights
    - Real goals for salary adjustment
  - Job seeking
- Why now?
  - Full time access to SolidWorks
  - Height of SolidWorks knowledge



# What the Sheet Metal test covers

The topics covered by the CSWP-SMTL include:

- Linear Edge Flange
- Curved Edge Flange
- Miter Flange
- Closed Corner
- Gauge Tables
- Bending calculation options:
  - Bend Allowance
  - Bend Deduction
  - K-Factor



# What it covers...

## Topics (cont'd):

- Hem
- Jog
- Sketched Bend
- Forming Tool
- Unfold and Fold
- Flatten
- **Solid To Sheet Metal**
- **Sheet Metal Cut List**
- **Multi-body Sheet Metal Parts**





# Inside the CSWP-SMTL Exam

- **Recommended Training Courses:** SolidWorks Essentials, Sheet Metal
- **Recommended SolidWorks Version:** SolidWorks 2011 and later
- **Exam Length:** 120 minutes
- **Minimum Passing grade:** 75%
- 1 Bonus Question worth 15 extra points
- All candidates receive electronic certificates, business card logos and personal listing on the CSWP directory when they pass.





# Cheater's Guide: Hints

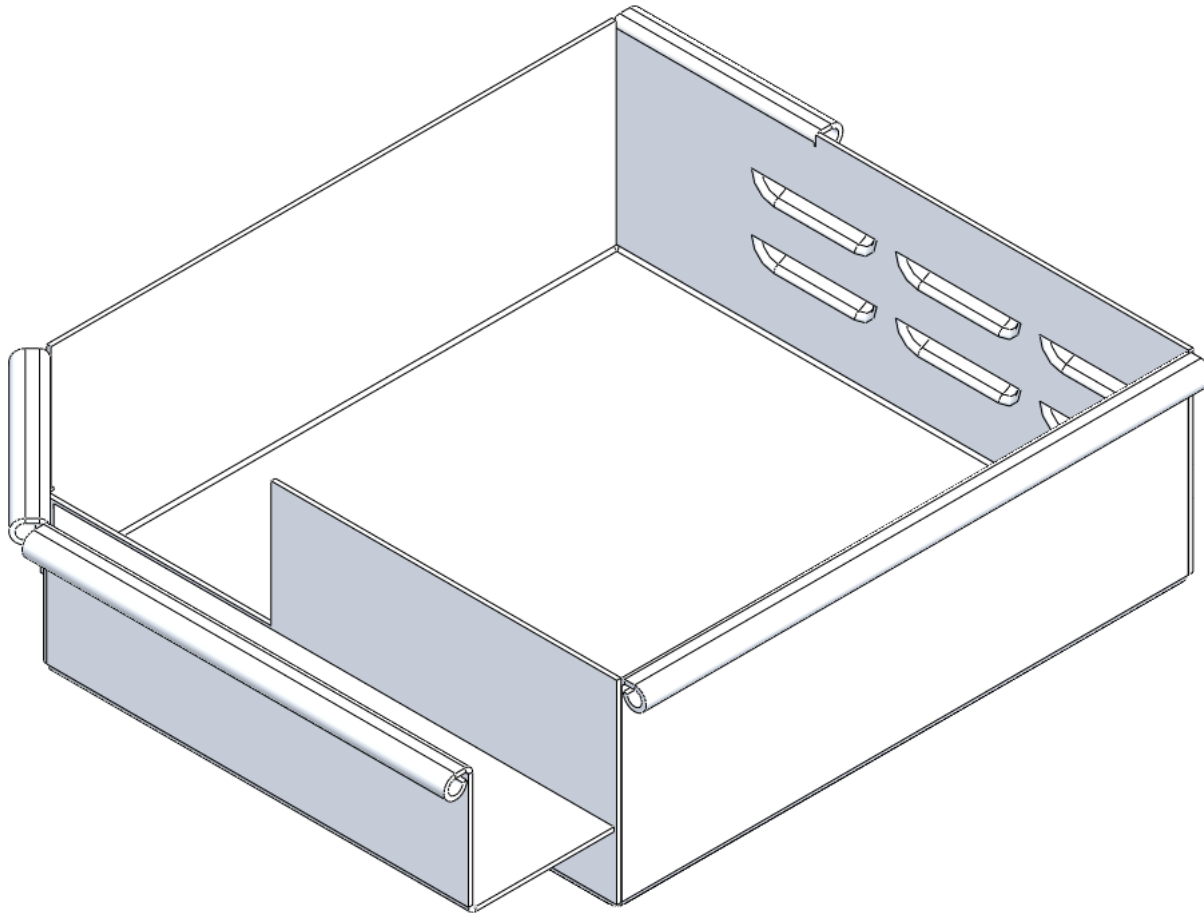
## Hints:

- Test consists of a design that is progressively built with fill in the blank and multiple choice questions.
- Multiple choice questions allow the user to see where he may be “off track” in the creation of his or her sheet metal part.
- The bonus question will give you extra credit
- **PAY ATTENTION TO DIMENSIONS AND THEIR PLACEMENT!!!**
- User's discretion of which Flange Position to use



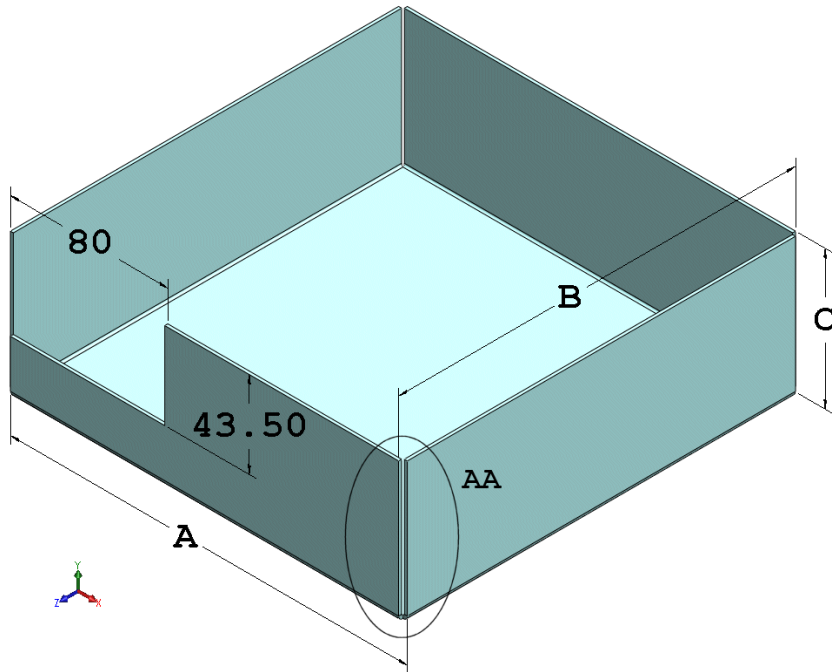
# Cheater's Guide

Here's the part:





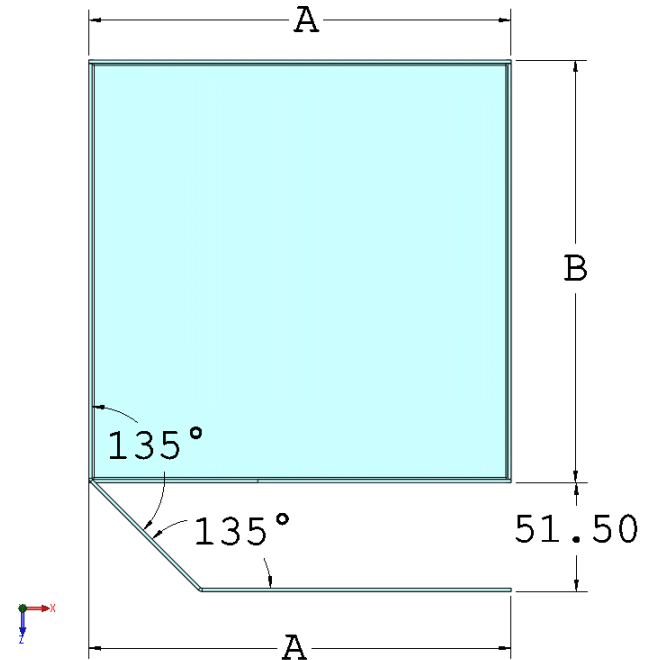
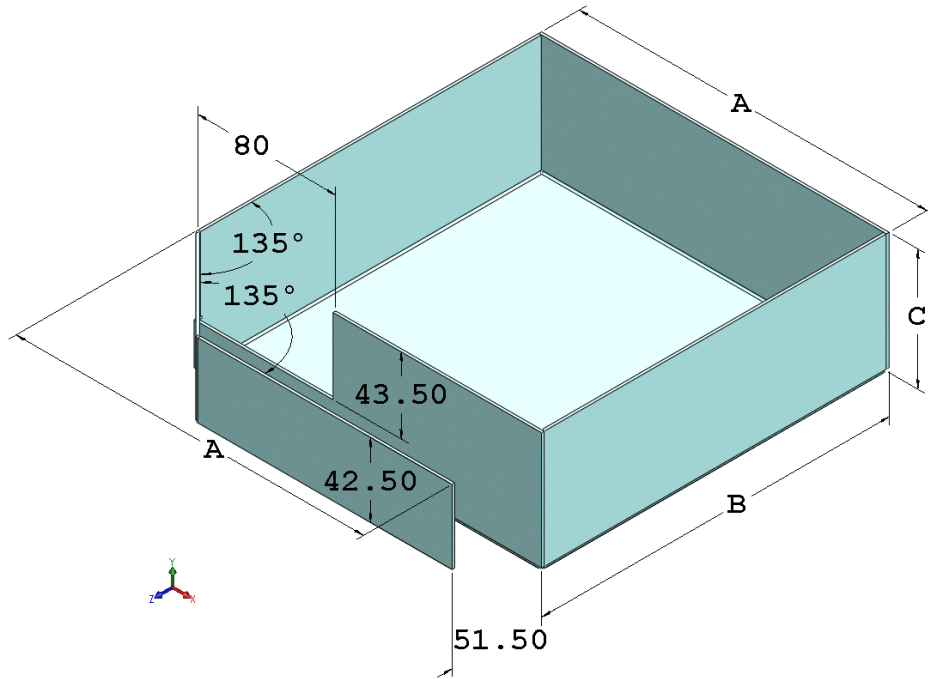
# Cheater's Guide: First Steps



- Use Base Flange method instead of Shell and Insert Bends method
- Note that you can create all initial Edge Flanges in one step
- You can edit the sketches individually of the Edge Flanges of one feature
- Link the height of each sketch to the preceding one to make modification easier



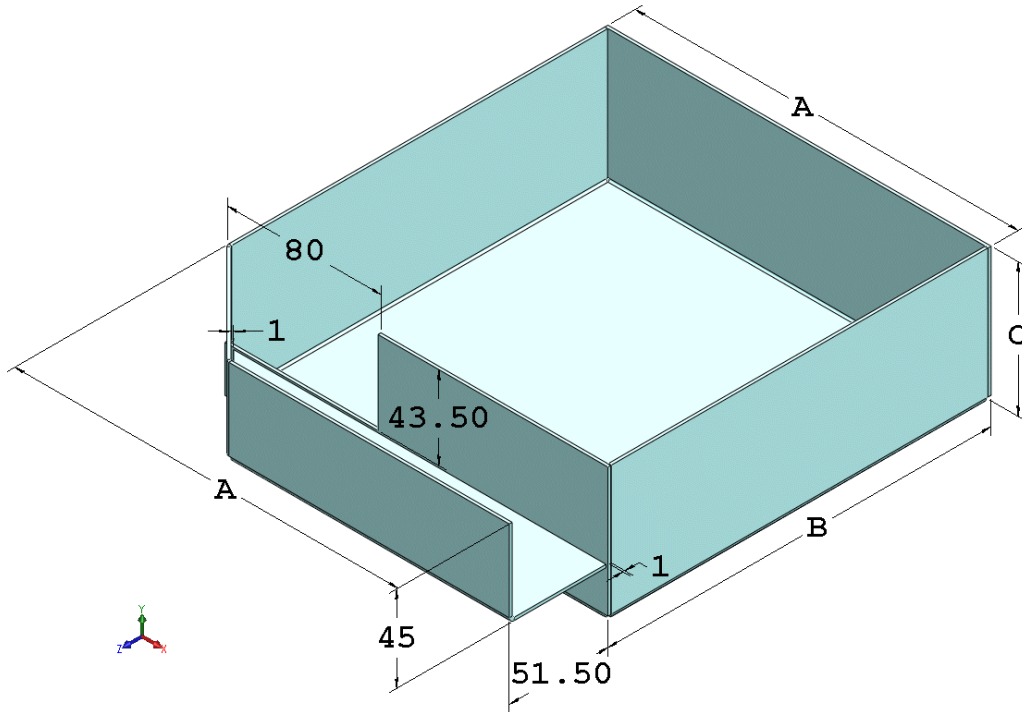
# Cheater's Guide: Shelf Area



- Use Miter Flange for the start of the shelf. Best way to control the offset from the main area while projecting an angled flange



# Cheater's Guide: Shelf Area



- Use Edge Flange for the shelf itself. Edit the Edge Flange sketch to maintain the offsets of the shelf from the rest of the design



# Cheater's Guide: Gauge Tables

- Download Method 1: Place anywhere on your computer. Access it using Browse option later
- Download Method 2: Place Gauge Table in Gauge Table folder defined in *Tools > Options > File Locations > Sheet Metal Gauge Tables*
- After downloading table, edit first Sheet-Metal feature.
- Turn ON Gauge Table option and access downloaded Gauge Table
- Use drop-down values indicated in questions



# Cheater's Guide: Downloading the Louver

- Make sure you know where the Design Library is set on your machine:  
*Tools > Options > File Locations > Design Library*
- Place louver into the default Form Tools folder of the Design Library or in a new folder you create in the Design Library
- Turn ON the **Form Tools Folder** option by using RMB menu of the folder in which you placed the louver. This allows you to drag the louver into the sheet metal part

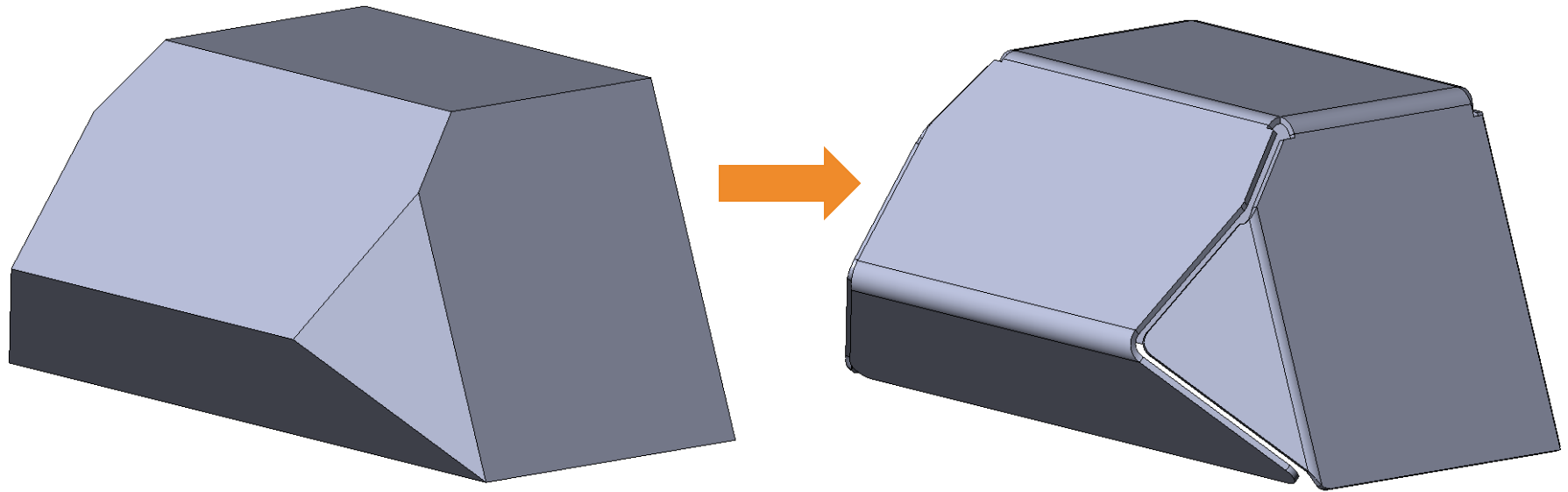


# Cheater's Guide: Editing and Placing the Louver

- After downloading, open the Louver form tool part and edit the Layout Sketch to proper dimensions
- Save part and then drag and drop Louver to proper face. Use TAB key to flip how louver sticks out.
- Once placed on face, use Modify Sketch command to rotate Louver to proper orientation
- Use sketch relations to properly place Louver
- Don't forget to use the coordinate system to measure the COG

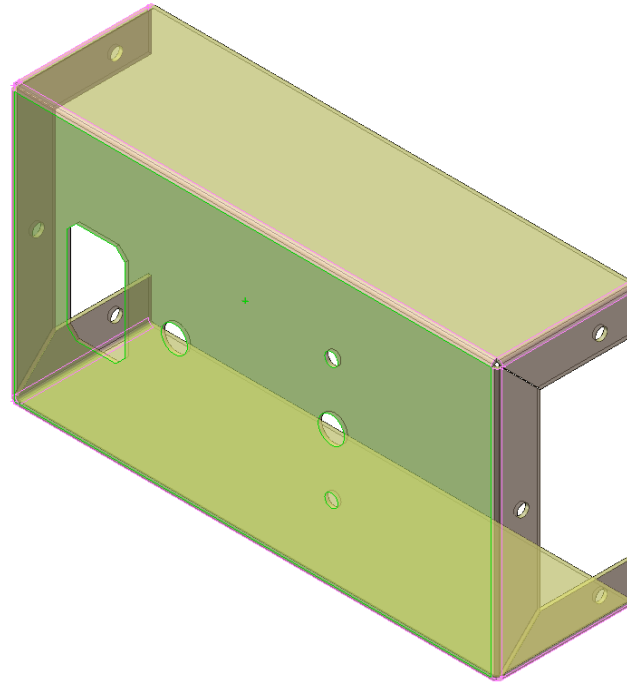


# Sheet Metal Improvements: Convert to Sheet Metal



- Specify the following to create a Sheet Metal part:
  - Base face
  - Bend edges
  - Bend radius
  - Gaps between neighboring faces

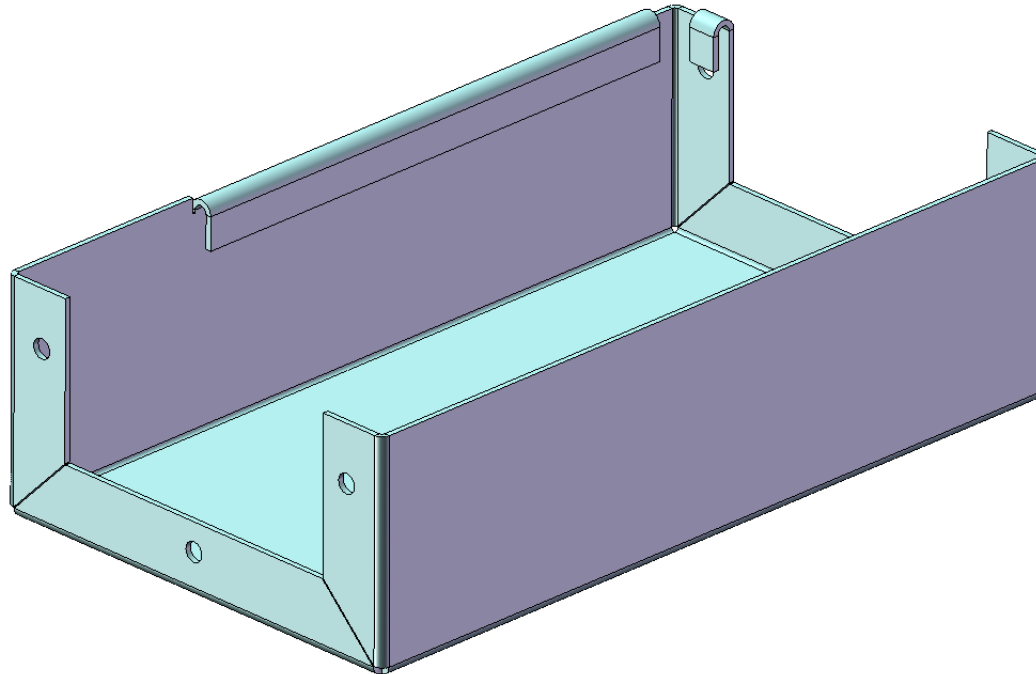
# Sheet Metal Improvements: Convert to Sheet Metal



- ***Convert to Sheet Metal*** can also be used to convert imported parts into sheet metal parts that can be flattened
  - Select Base Face
  - In Bend Edges dialog box, click on “Collect All Bends” button

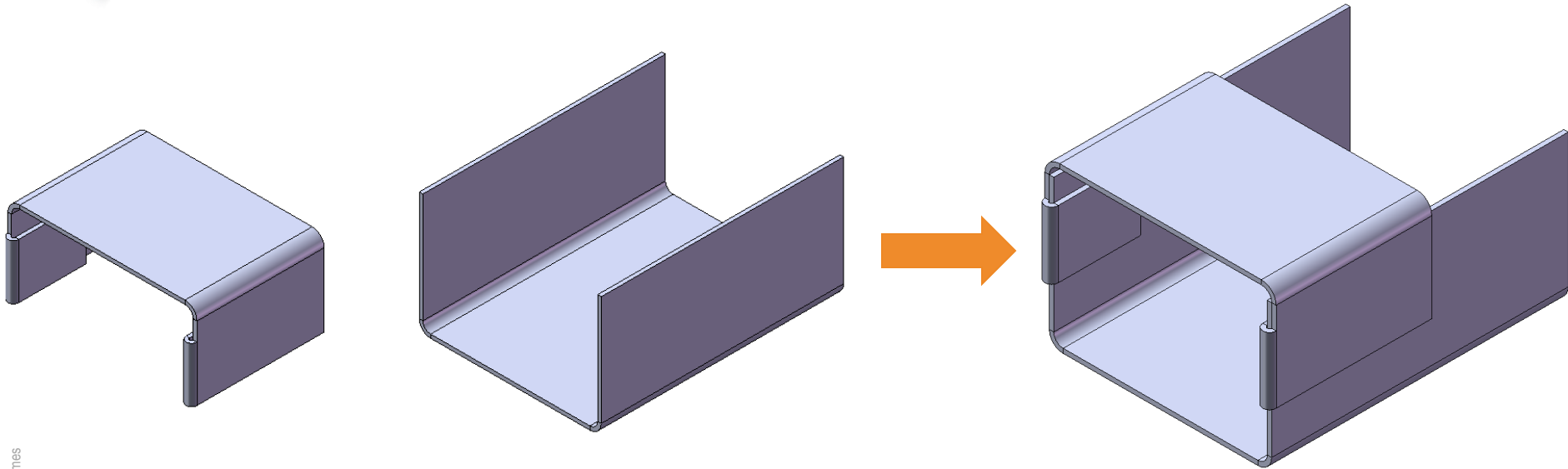


# Sheet Metal Improvements: Hems



- **Hem** improvements
  - Adjustment of Hem width by editing the Hem base sketch
  - Neighboring hems automatically create a space between each other
  - Hems can now be mirrored

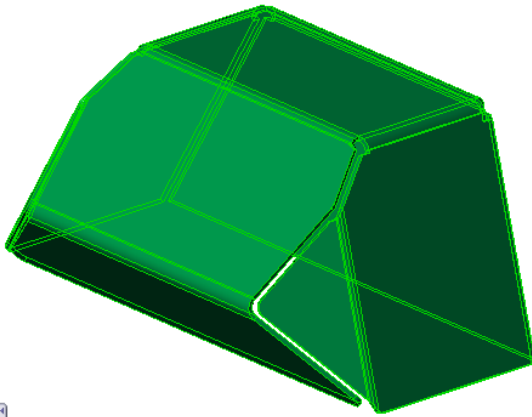
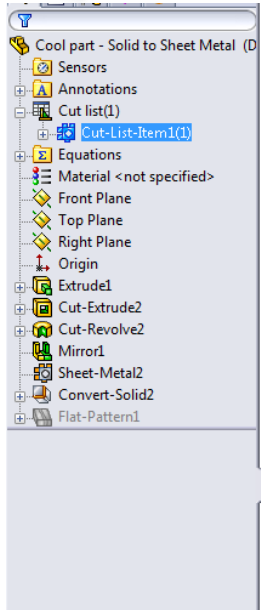
# Sheet Metal Improvements: Multi-body Sheet Metal



- Sheet Metal parts can now be made of multi-body parts
- Multi-body sheet metal parts each flatten separately
- Weld beads can be created between separate sheet metal bodies



# Sheet Metal Improvements: Cut List Properties



Cut-List Properties

Cut List Summary | Properties Summary | Cut List Table

Delete  Exclude from cut list BOM quantity:  Edit List

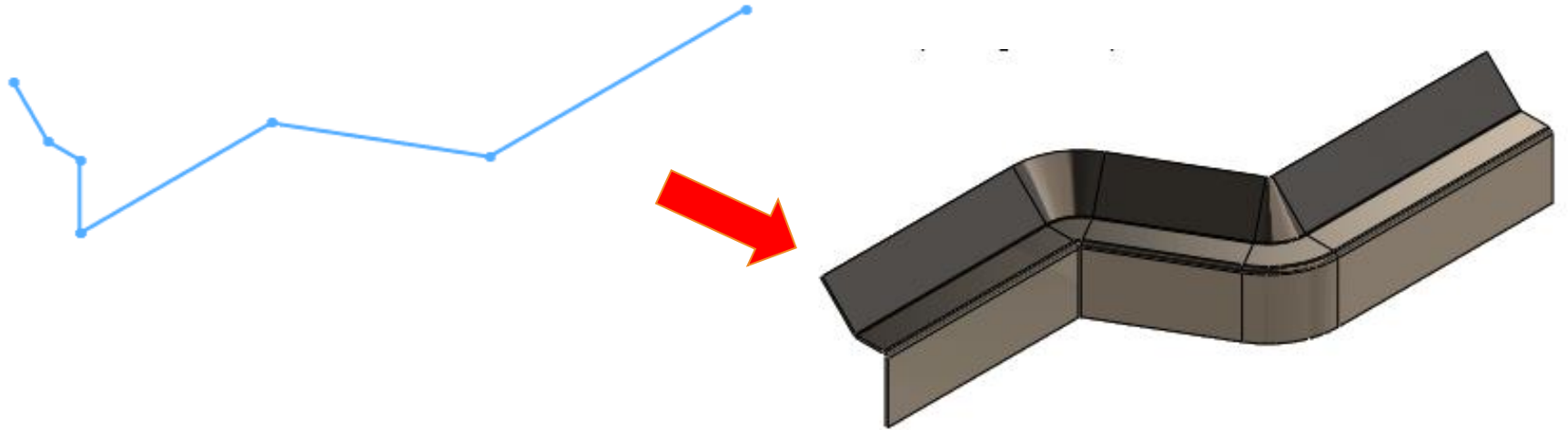
	Property Name	Type	Value / Text Expression	Evaluated Value
1	Bounding Box Length	Text	"SW-Bounding Box Length@@@Cut-List-Item1@	16.54
2	Bounding Box Width	Text	"SW-Bounding Box Width@@@Cut-List-Item1@C	15.58
3	Sheet Metal Thicknes	Text	"SW-Sheet Metal Thickness@@@Cut-List-Item1	0.1
4	Bounding Box Area	Text	"SW-Bounding Box Area@@@Cut-List-Item1@C	257.8
5	Bounding Box Area-Bl	Text	"SW-Bounding Box Area-Blank@@@Cut-List-Item	164.66
6	Cutting Length-Outer	Text	"SW-Cutting Length-Outer@@@Cut-List-Item1@	81.89
7	Cutting Length-Inner	Text	"SW-Cutting Length-Inner@@@Cut-List-Item1@	0
8	Cut Outs	Text	"SW-Cut Outs@@@Cut-List-Item1@Cool part - S	0
9	Bends	Text	"SW-Bends@@@Cut-List-Item1@Cool part - Soli	7
10	Bend Allowance	Text	"SW-Bend Allowance@@@Cut-List-Item1@Cool	0.5
11	Material	Text	"Material@@@Cut-List-Item1@Cool part - Solid t	Material <not specified>
12	Mass	Text	"SW-Mass@@@Cut-List-Item1@Cool part - Solid	269.83
13	Description	Text	Sheet	Sheet
14	Bend Radius	Text	"SW-Bend Radius@@@Cut-List-Item1@Cool part	0.23
15	Surface Treatment	Text	"SW-Surface Treatment@@@Cut-List-Item1@Co	Finish <not specified>
16				

OK Cancel Help

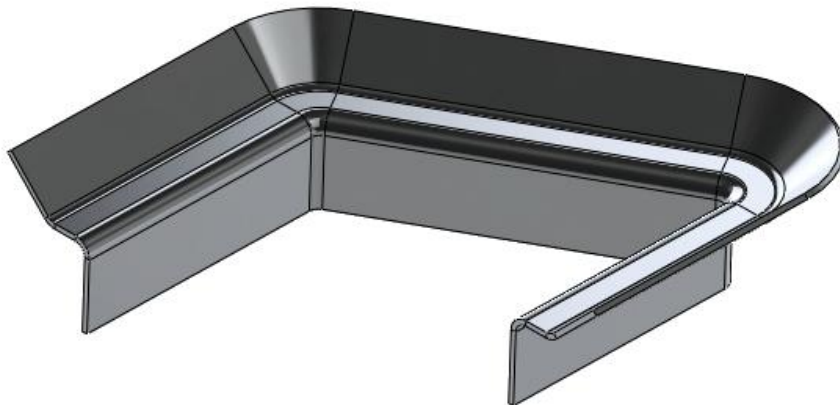
- Cut List properties created for sheet metal parts
- Major data captured to aid in calculating manufacturing info
- Properties can be displayed as a Cut List table in the drawing



# Sheet Metal Improvements 2012: Swept Flange



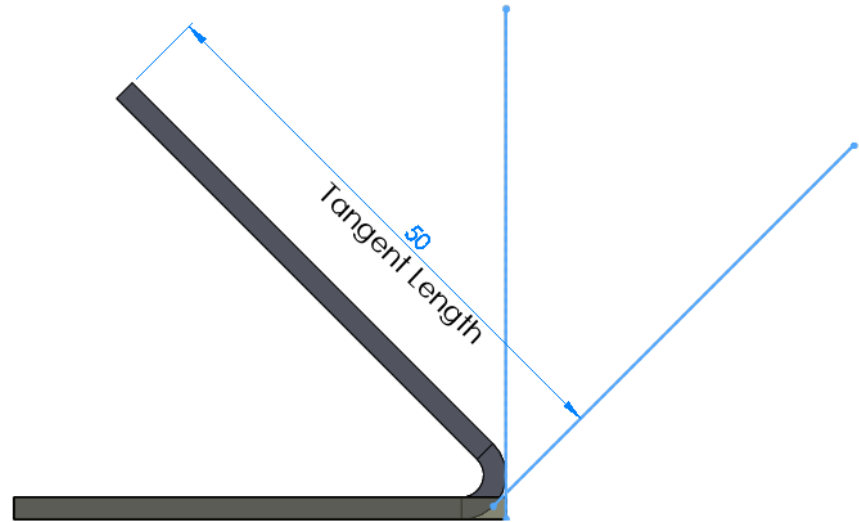
- Ability to create compound bends





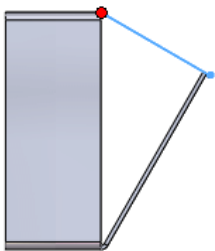
# Sheet Metal Improvements 2012: Edge Flange

- Tangent Bend Flange Length:

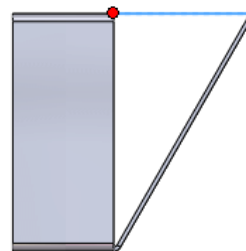


- Up To Vertex Flange Length

Normal to Flange Plane



Parallel to Base Flange





# Sheet Metal Improvements 2012: Form Tools

Totally redone in 2012:

- Placing Form Tools driven by Property Manager: Much easier and intuitive
- Linking and Replacing Forming Tools: Form Tool linked to file in Design Library





# Sheet Metal Improvements: Misc. improvements

- Edge Flanges and Miter Flanges can now be mirrored and flattened
- Edge Flanges and Hems can be patterned
- DWG/DXF of Flat Pattern can be exported directly from Flat Pattern feature (right button menu)



# Free stuff!!!

Free coupon to purchase a CSWA or CSWP exam:

## UGCSWP2

- Coupon good until May 31, 2011
- Good for one CSWA or CSWP exam. Once redeemed the exam credit never expires until the test is taken.
- Only one exam per user
- If purchasing CSWP exam, please add all three CSWP Segments into cart before checking out
- Go to [solidworks.com/cswp](http://solidworks.com/cswp) for purchase and general information



# Free stuff!!!

Free coupons to purchase a CSWP Advanced exam:

## **UGCSWPADV2**

- Coupons are good until May 31, 2011
- Good for one advanced CSWP exam.
  - Weldments
  - Sheet Metal
  - Surfacing
  - Mold Tools
  - FEA
- Once redeemed the exam credit never expires until the test is taken.
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# Questions?

Email me if you need more information:

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