



Chassis & Car Shell Workshop

SME CAD NIGHT 2 - WINTER
2024

Society of Manufacturing Engineers
presents:

CAD Workshops

for **SANDIA Design Competition**

chassis & s
Mon Feb 26th
6:30
Kemp

el & wheels
Feb 7th, 2024
30 PM
er 1131

Workshops are open to ev
even if you are not pla
compete in the comp



Chassis Tutorial

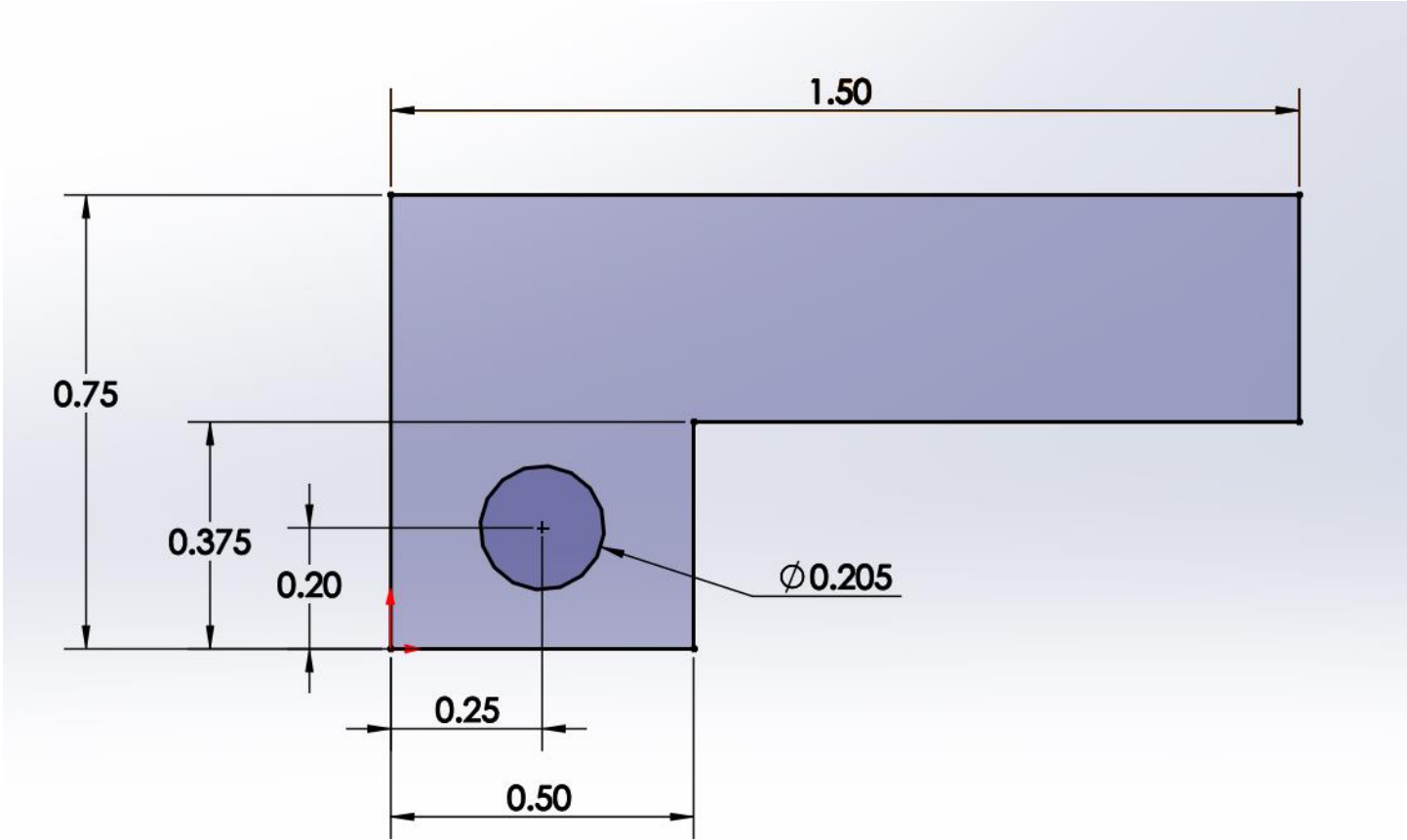
MICHELLE HUO

Chassis

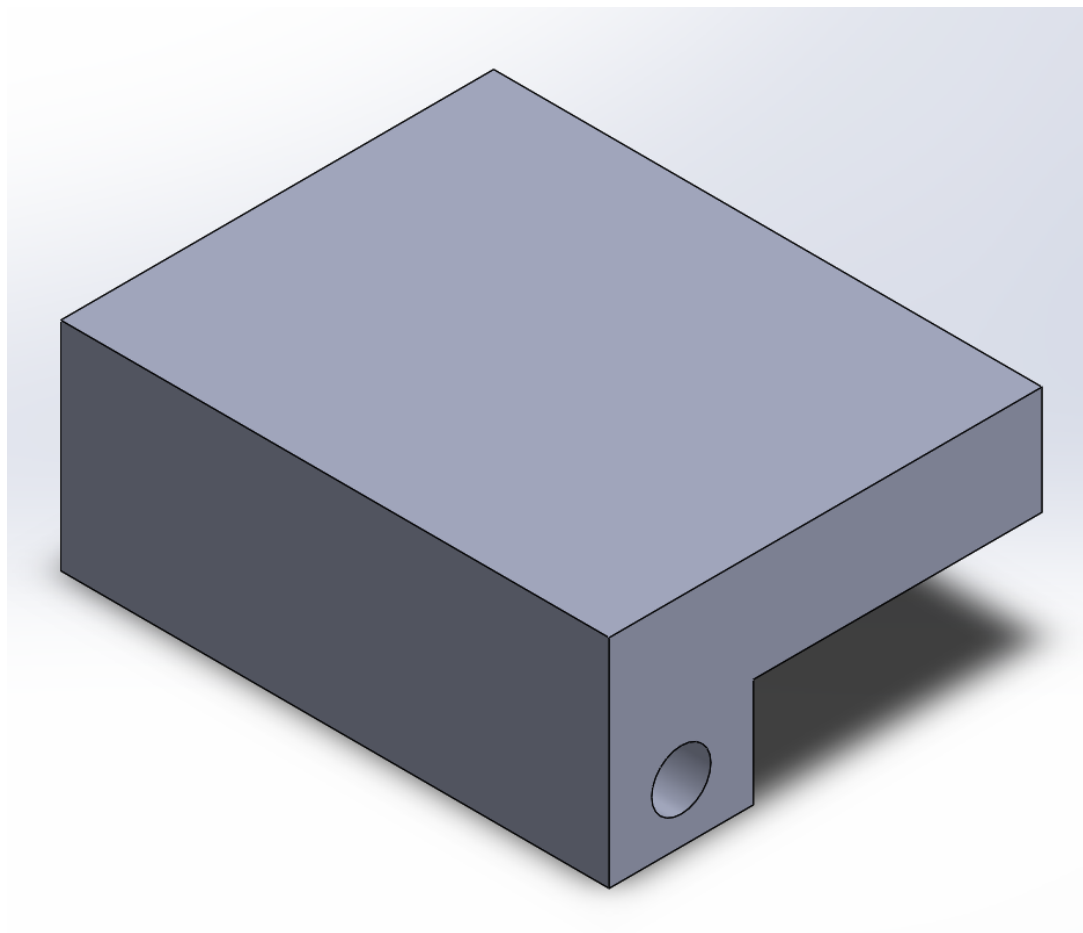
Goal: Create a platform that the shell sits on and the axel slides into

1. Sketch half of the Chassis
2. Extrude the sketch
3. Create a snap fit feature for the shell
4. Mirror the other half of the chassis along the face of the part

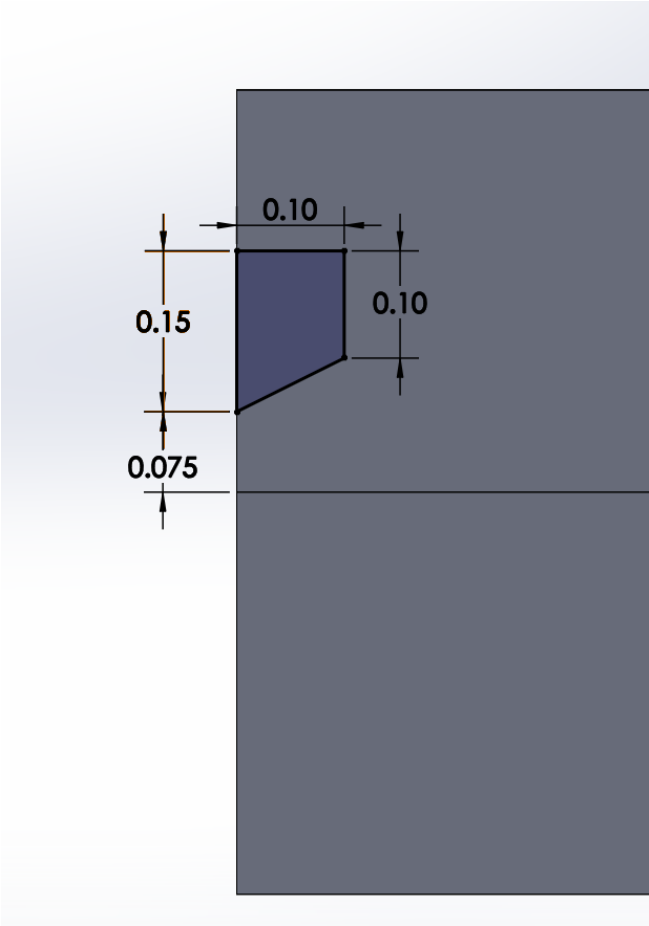
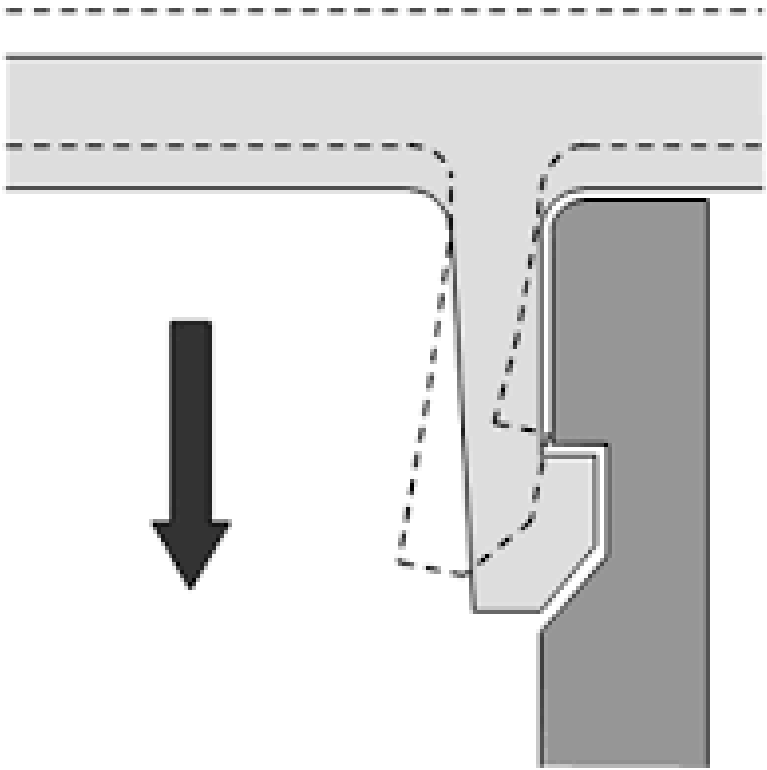
Step 1: Creating the sketch



Step 2: Extrude Chassis

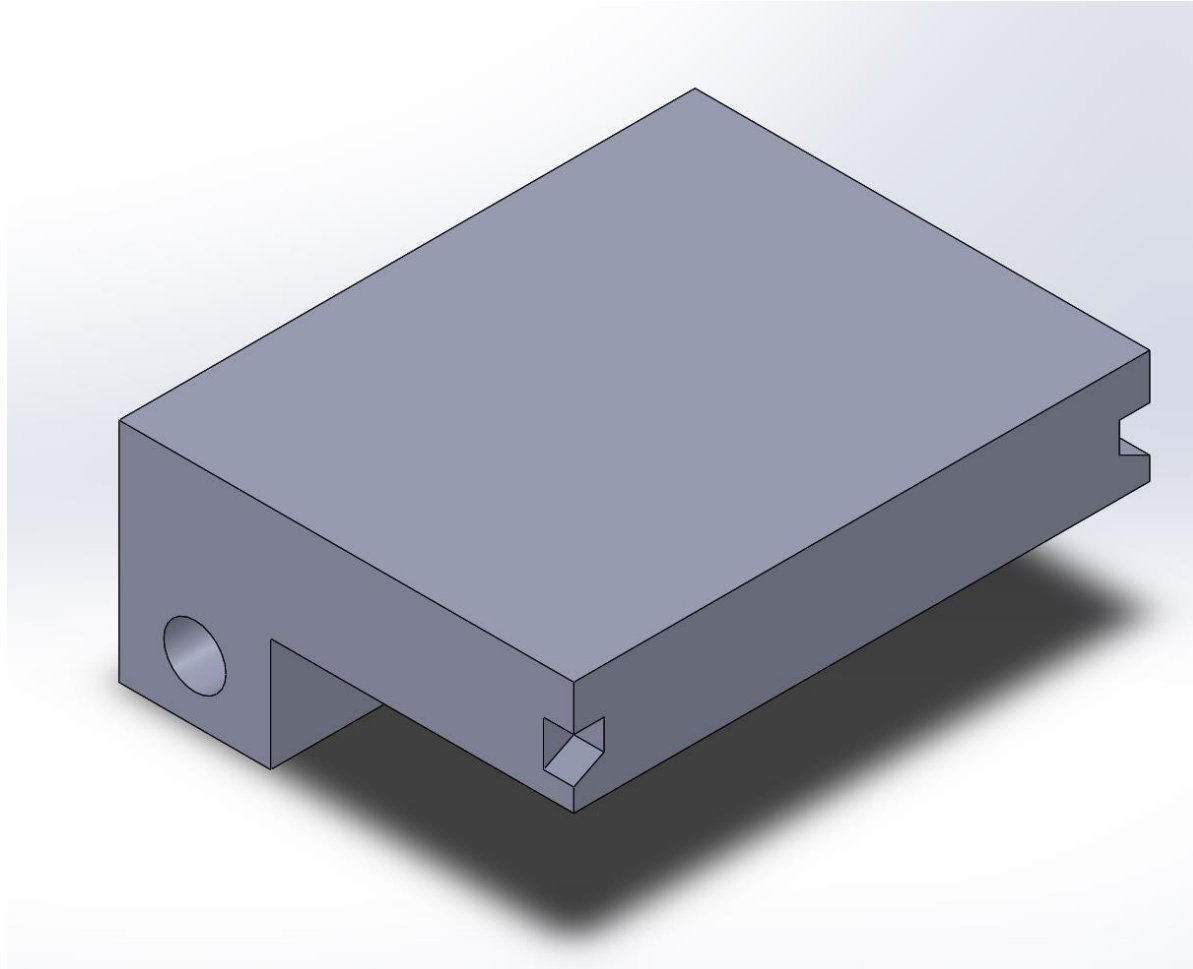


Step 3: Sketch a snap-fit feature



Create a slot for a snap-fit between the chassis and the shell.

Step 4: Extrude cut the snap-fit



Step 5: Mirror the part

Mirror1

Mirror Face/Plane

Face<1>

Secondary Mirror Face/Plane

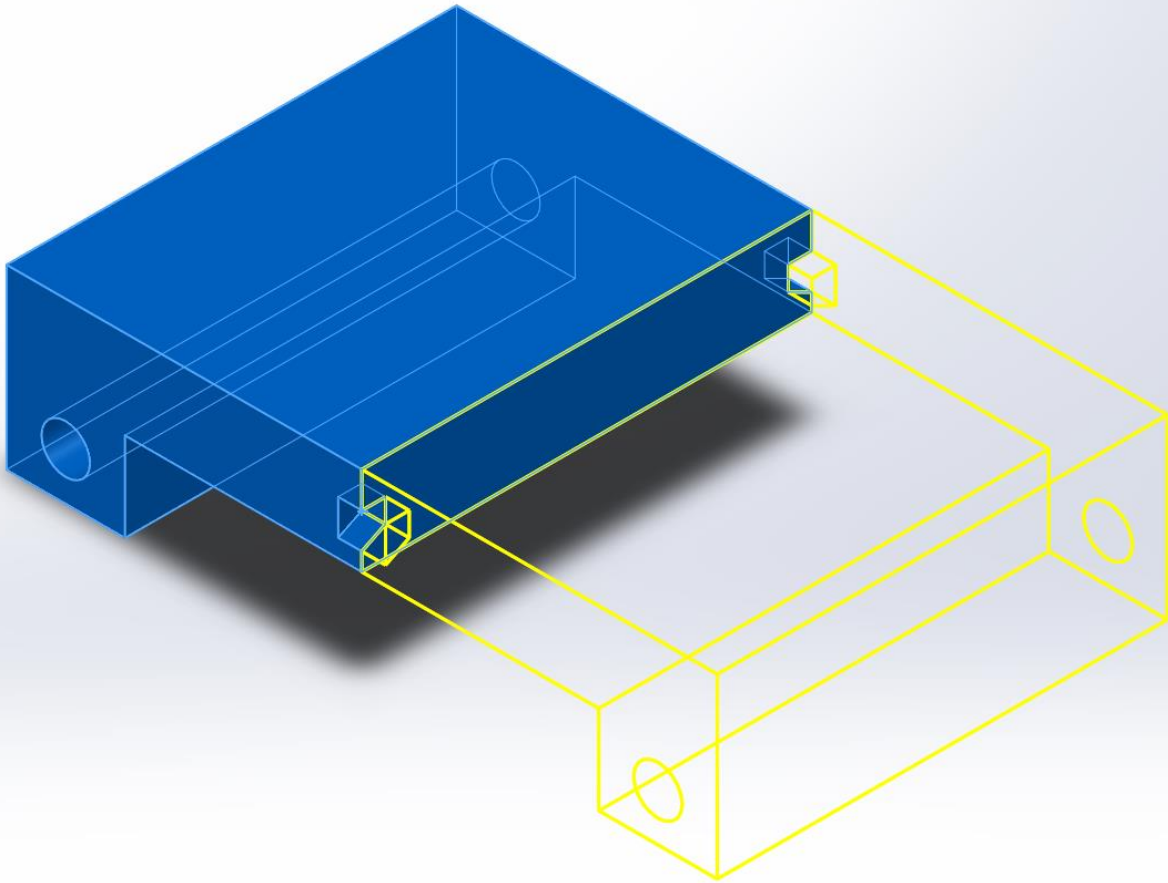
Mirror seed only

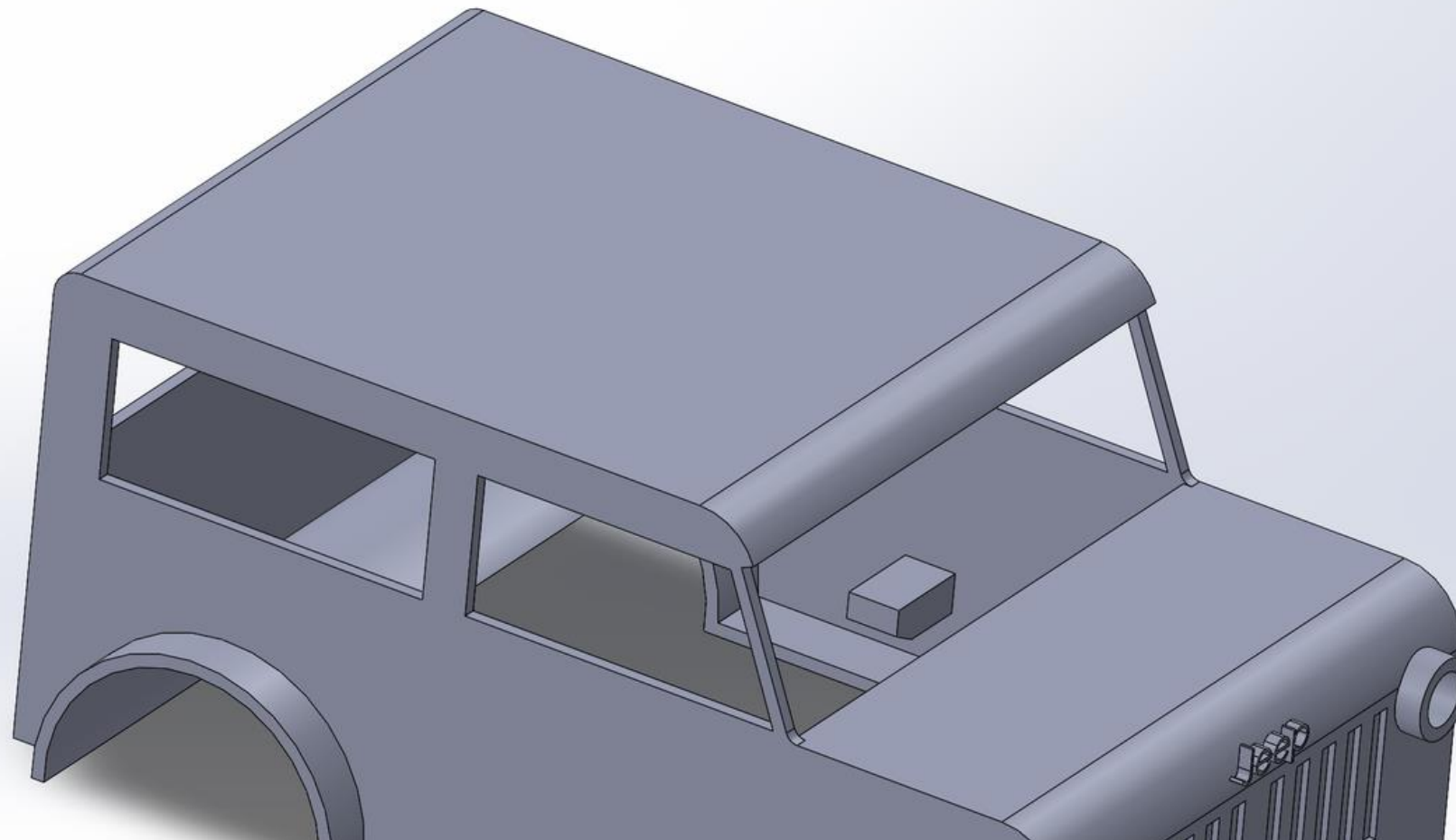
Bodies to Mirror

Cut-Extrude1

Options

- Merge solids
- Knit surfaces
- Propagate visual properties
- Full preview
- Partial preview

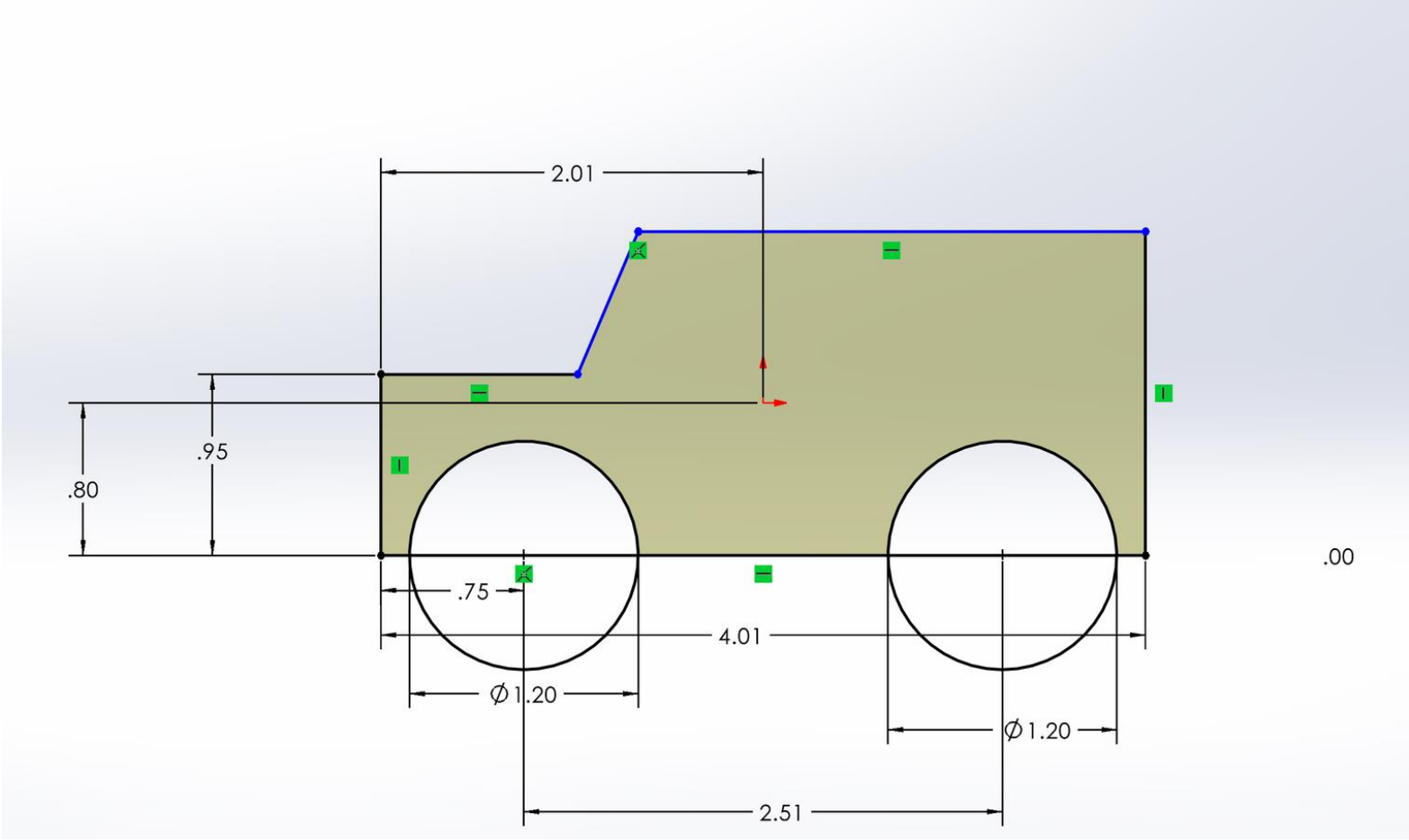




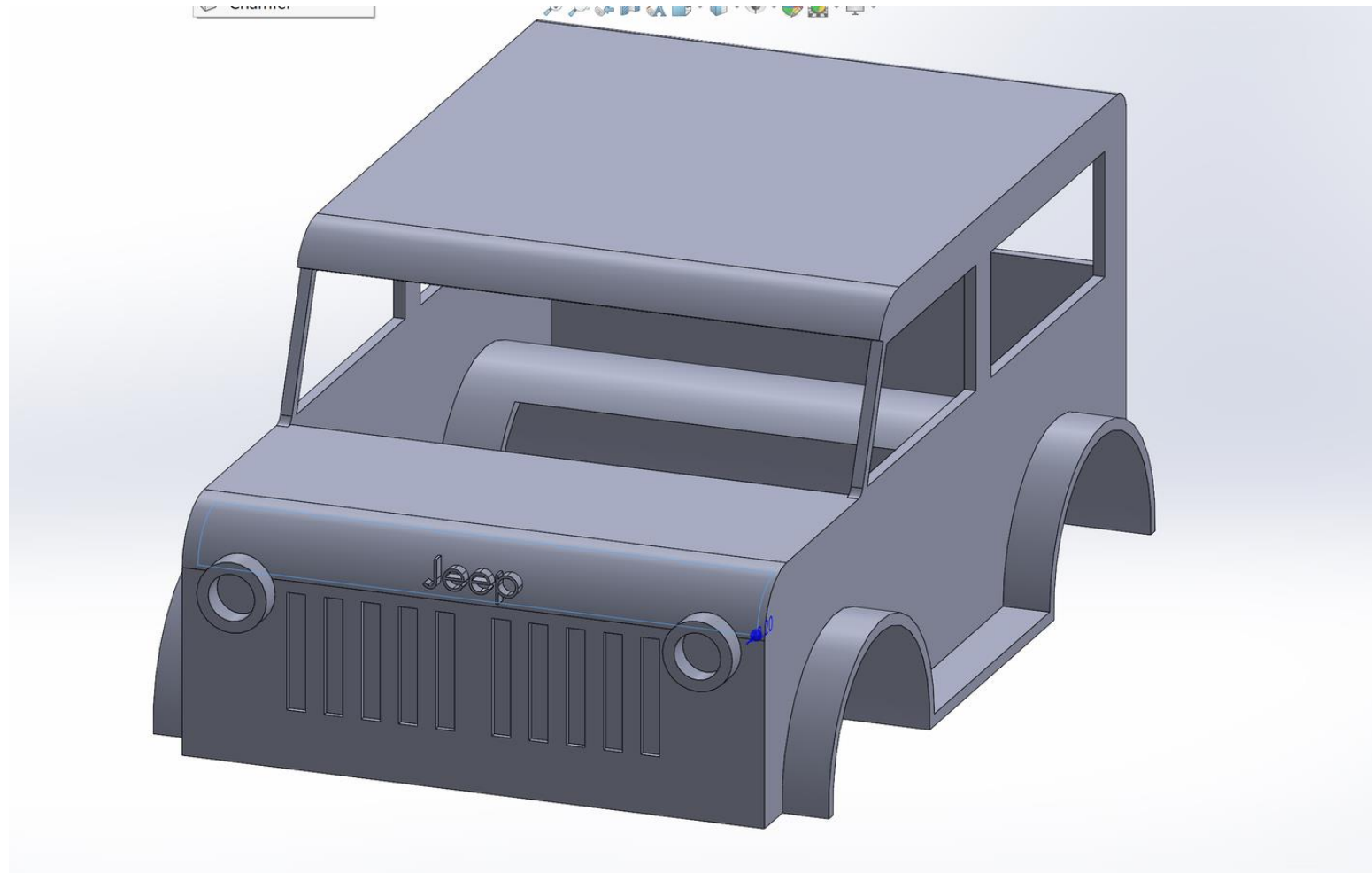
Car Shell Tutorial

CARLEE SANNER & SANJANA GUDI

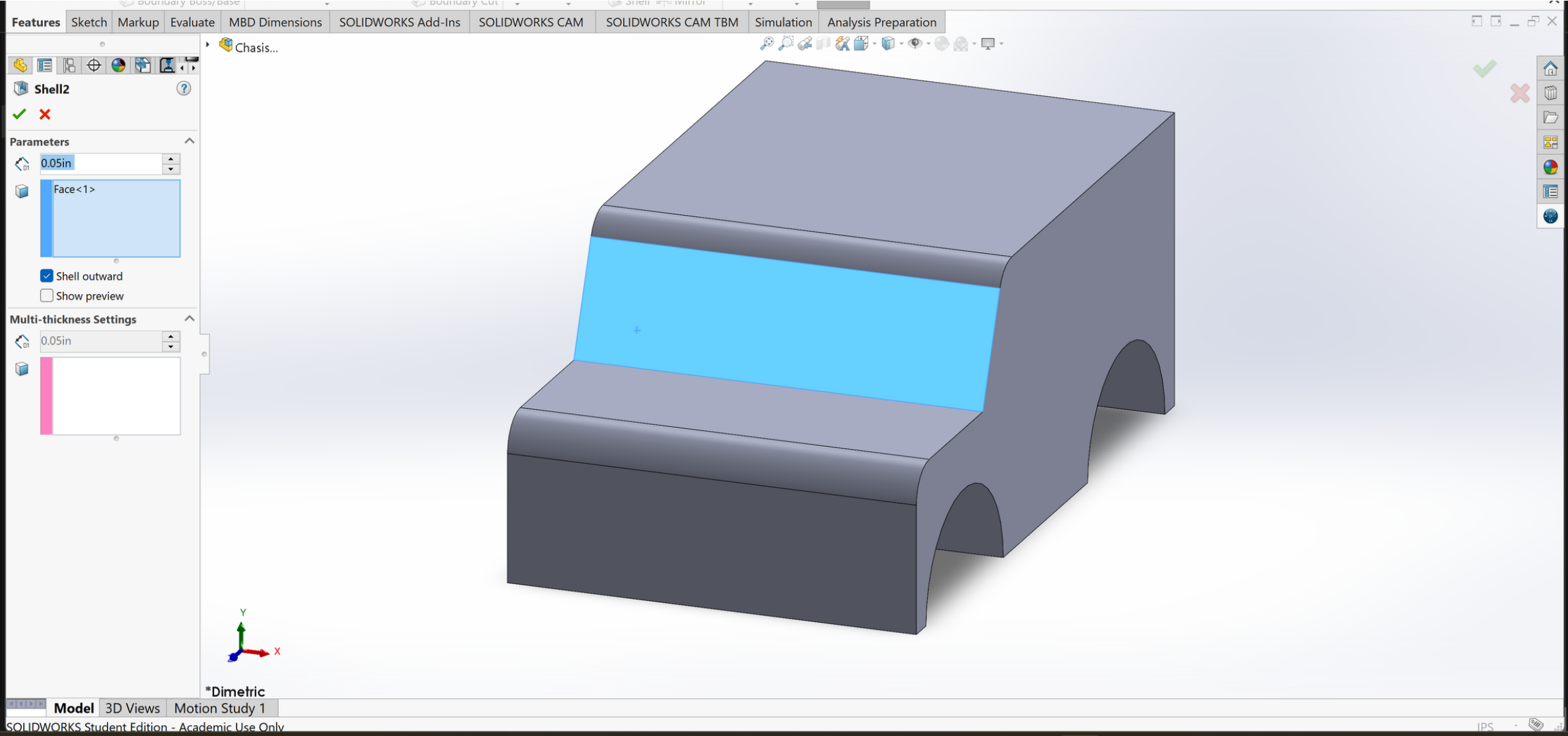
Step 1: Create general outline of your Shell



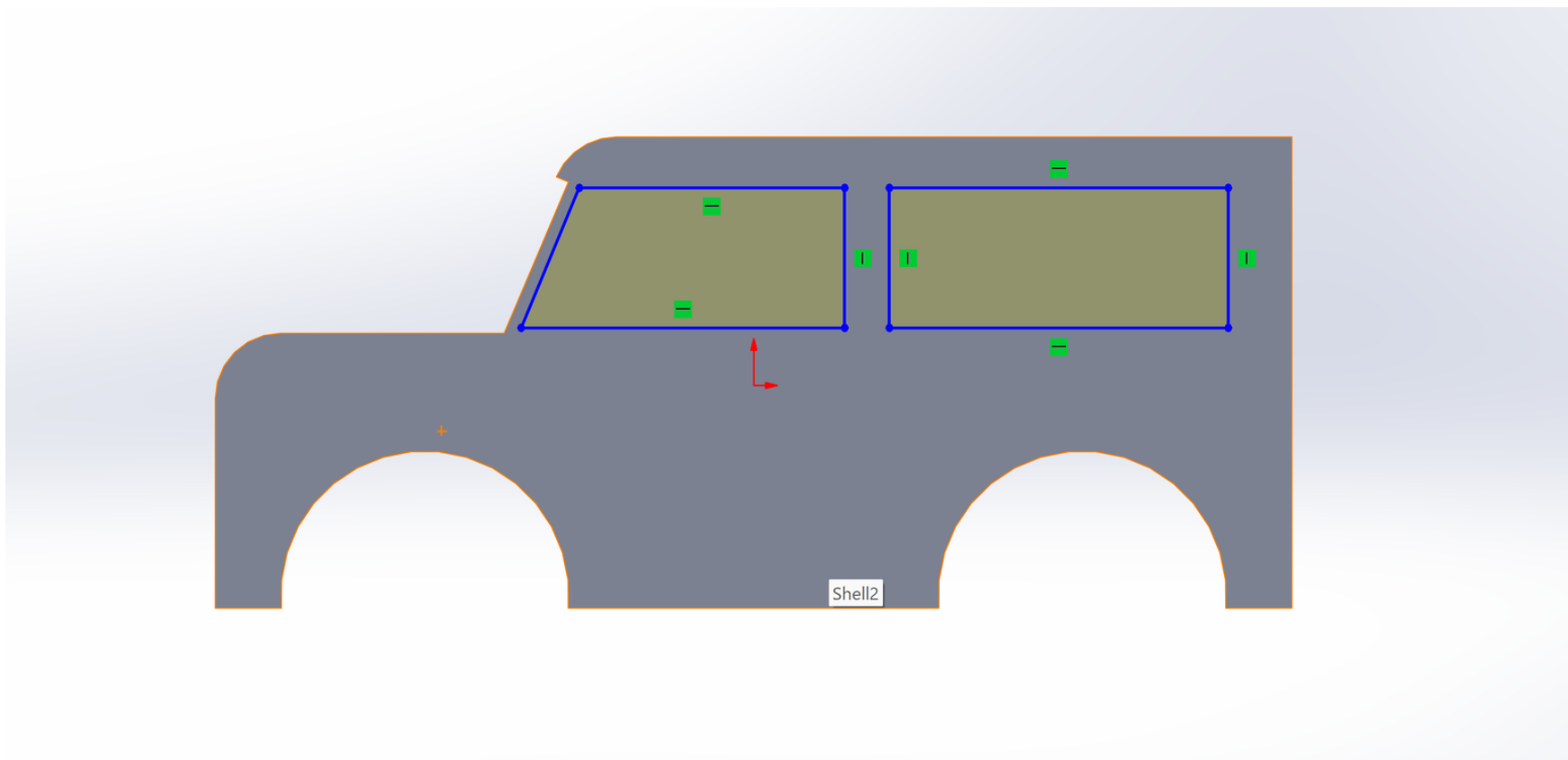
Step 2: Fillet the front edges of the shell



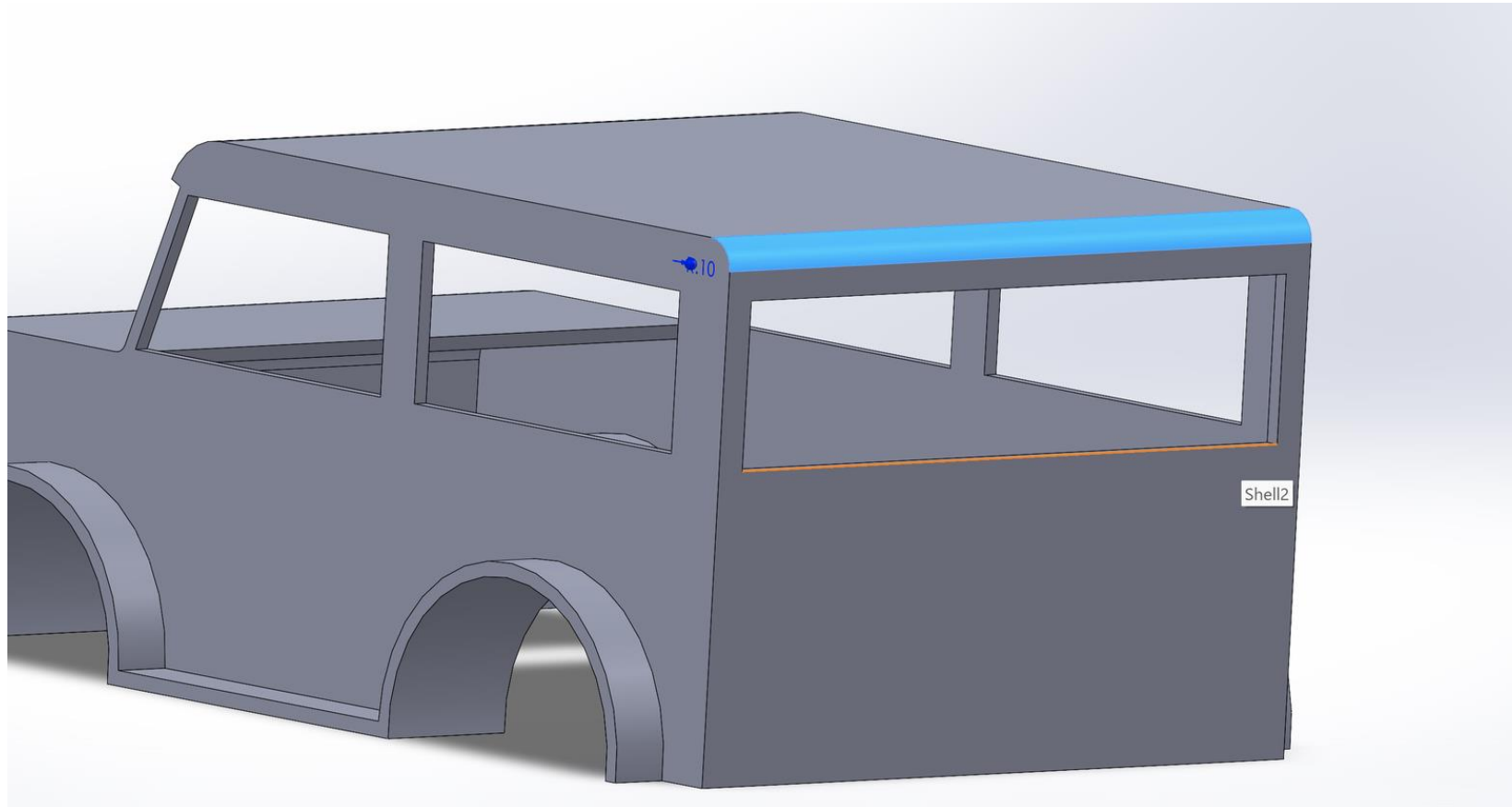
Step 3: Shell the body



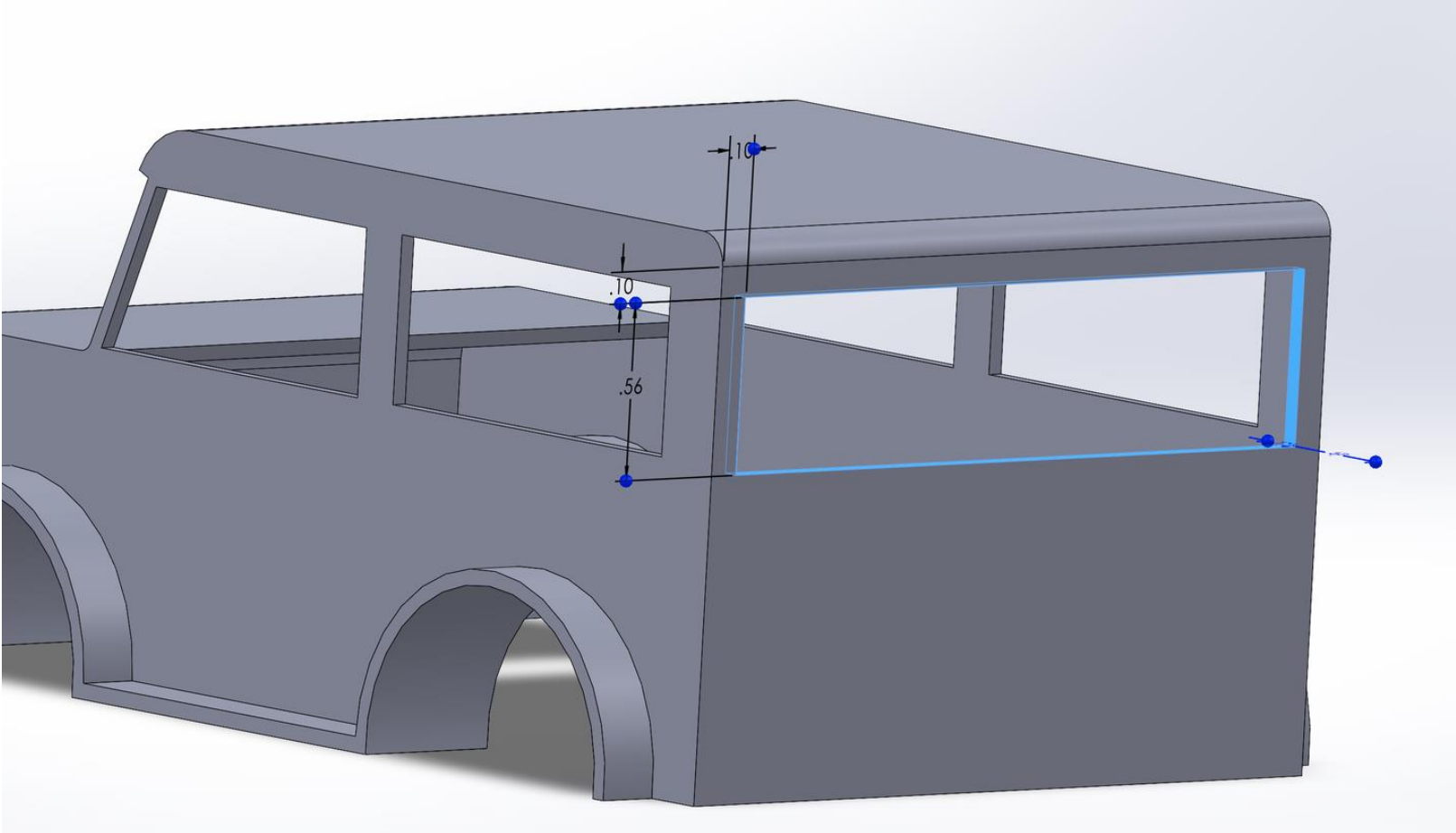
Step 4: Extrude Cut the windows



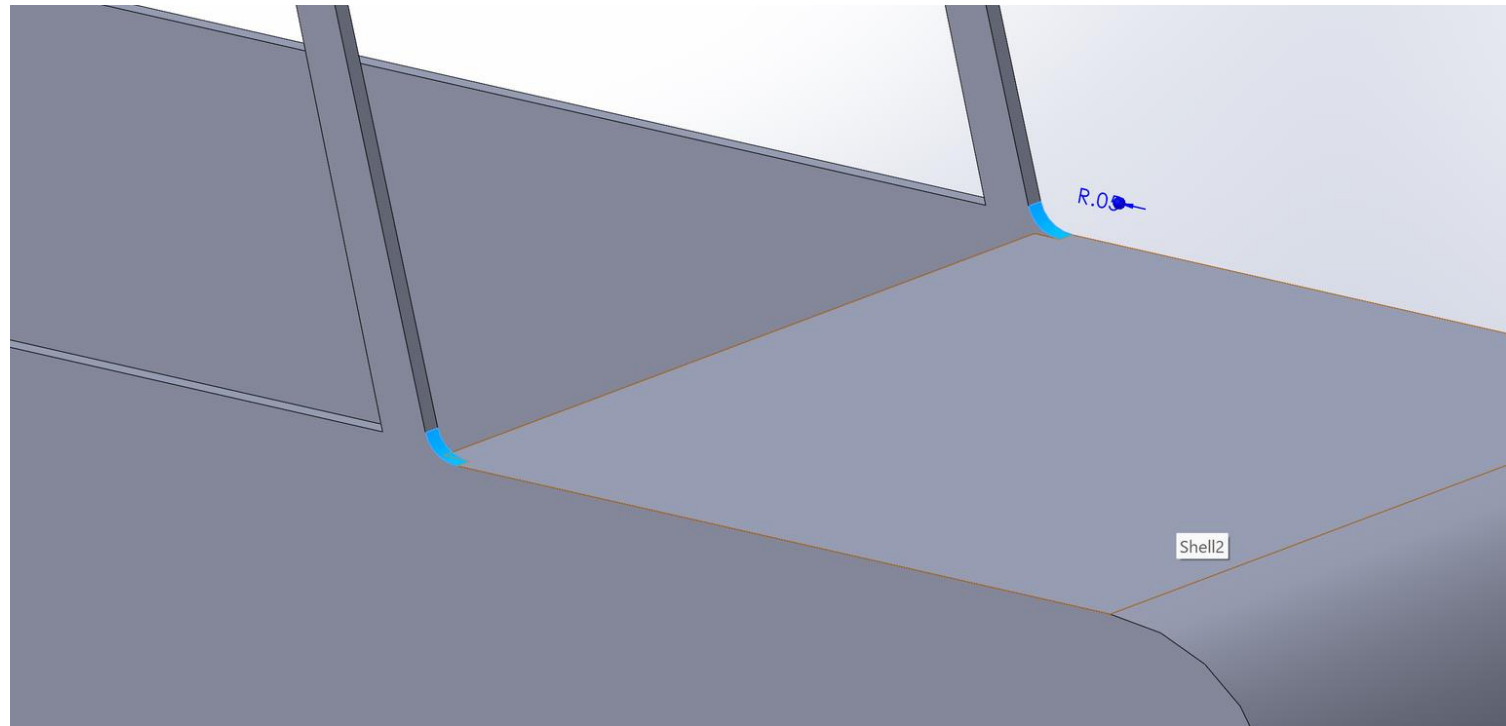
Step 5: Fillet the top back edge of the Shell



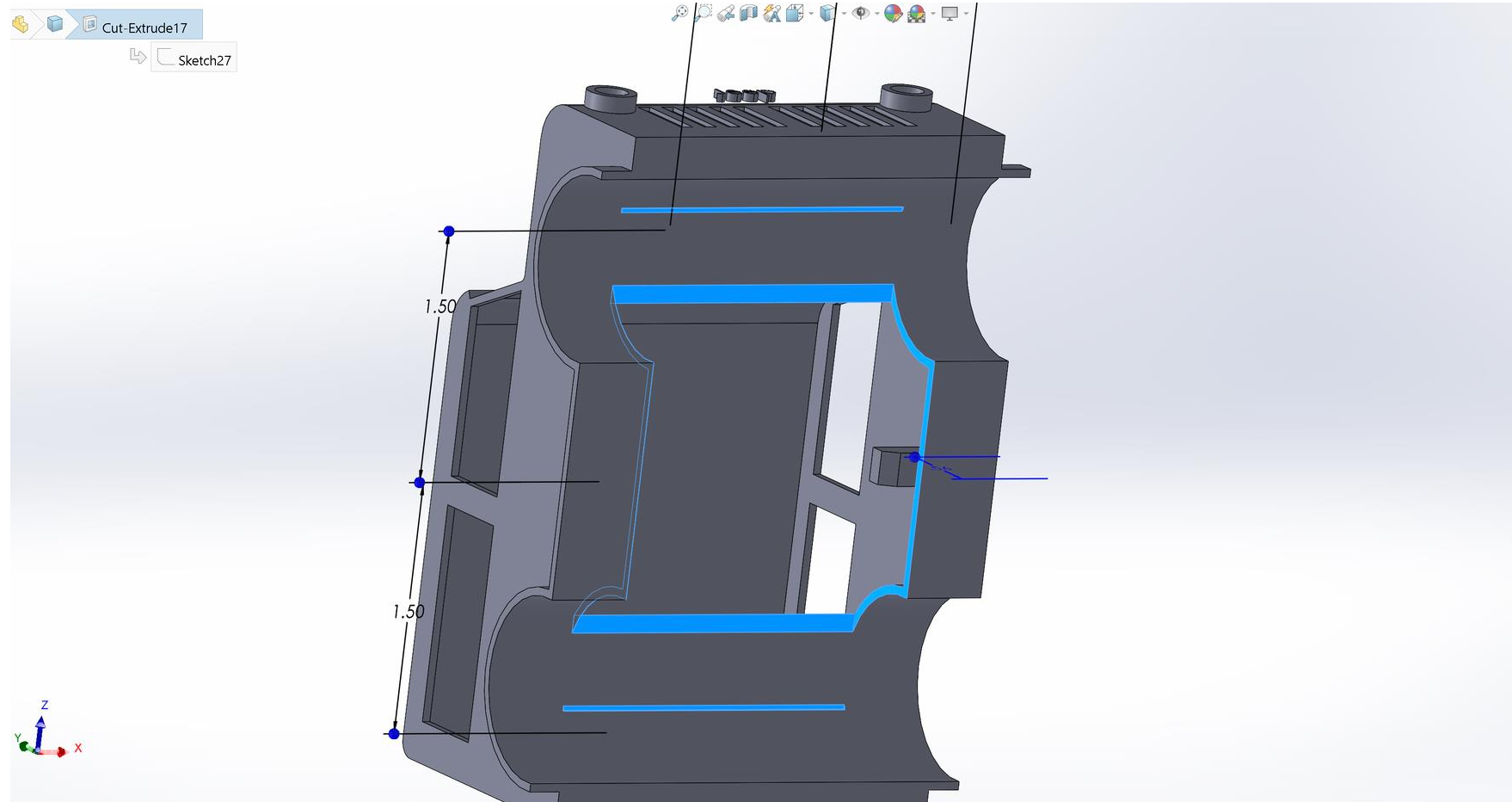
Step 6: Extrude Cut the back window



Step 7: Fillet the edge of the front window

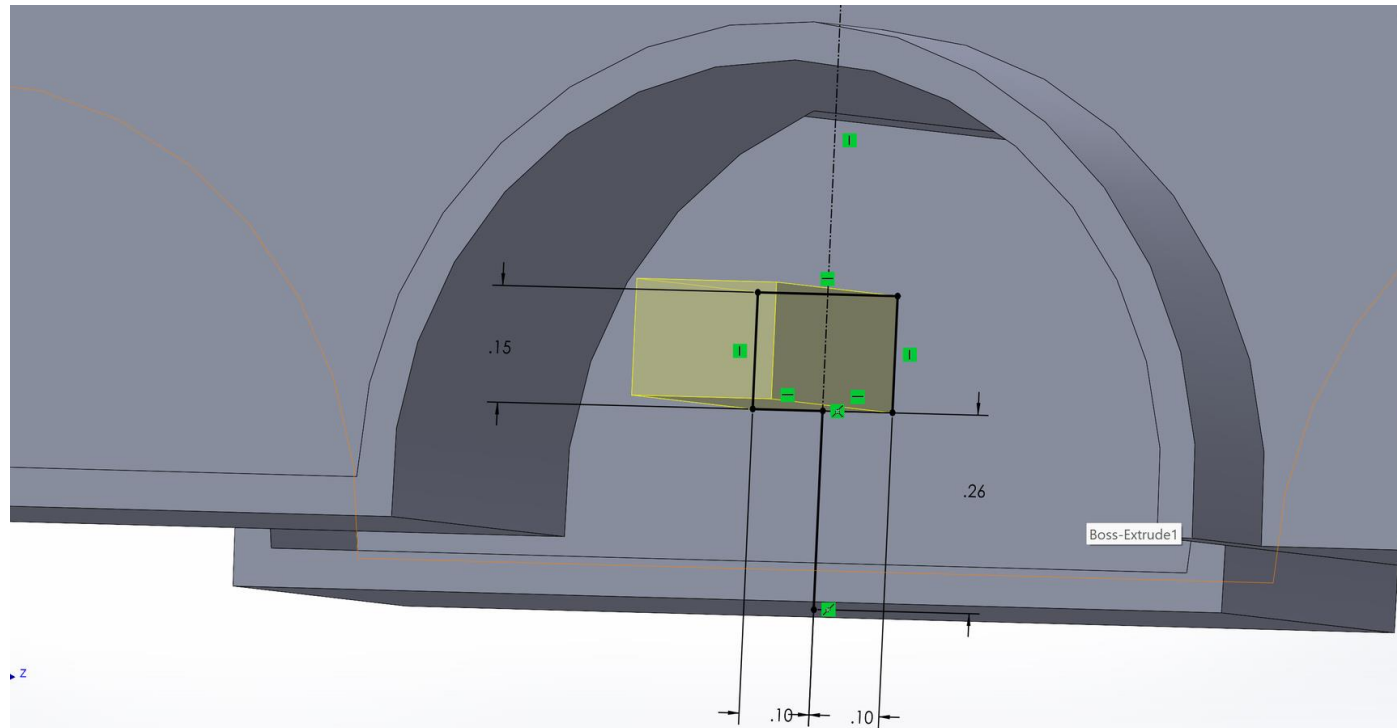


Step 8: Cut out the size of the chassis on the bottom of the shell



Our chassis was 3 in by 1.9 in, remember to add tolerances!

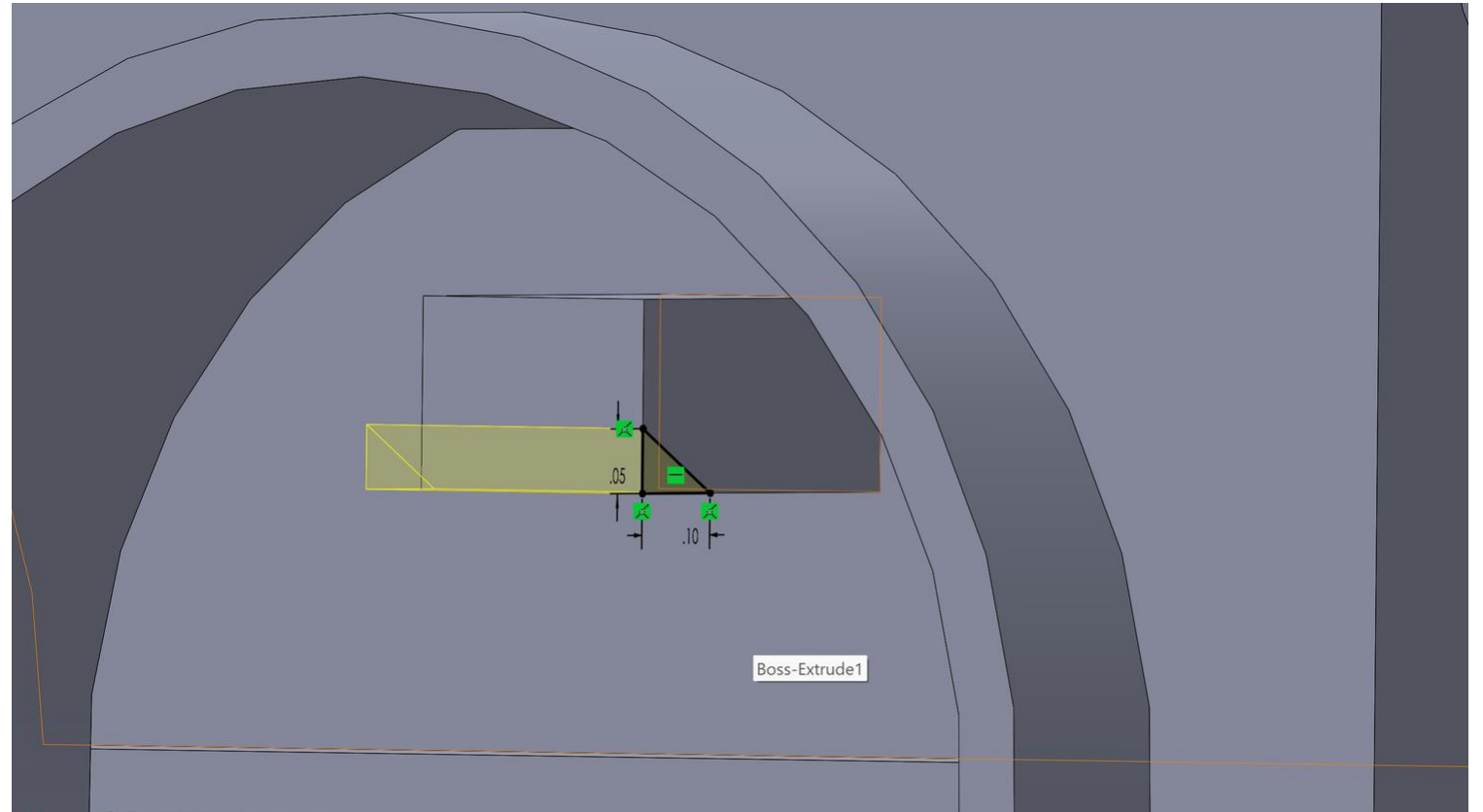
Step 9: Add the snaps on the inside of the shell to snap onto the chassis

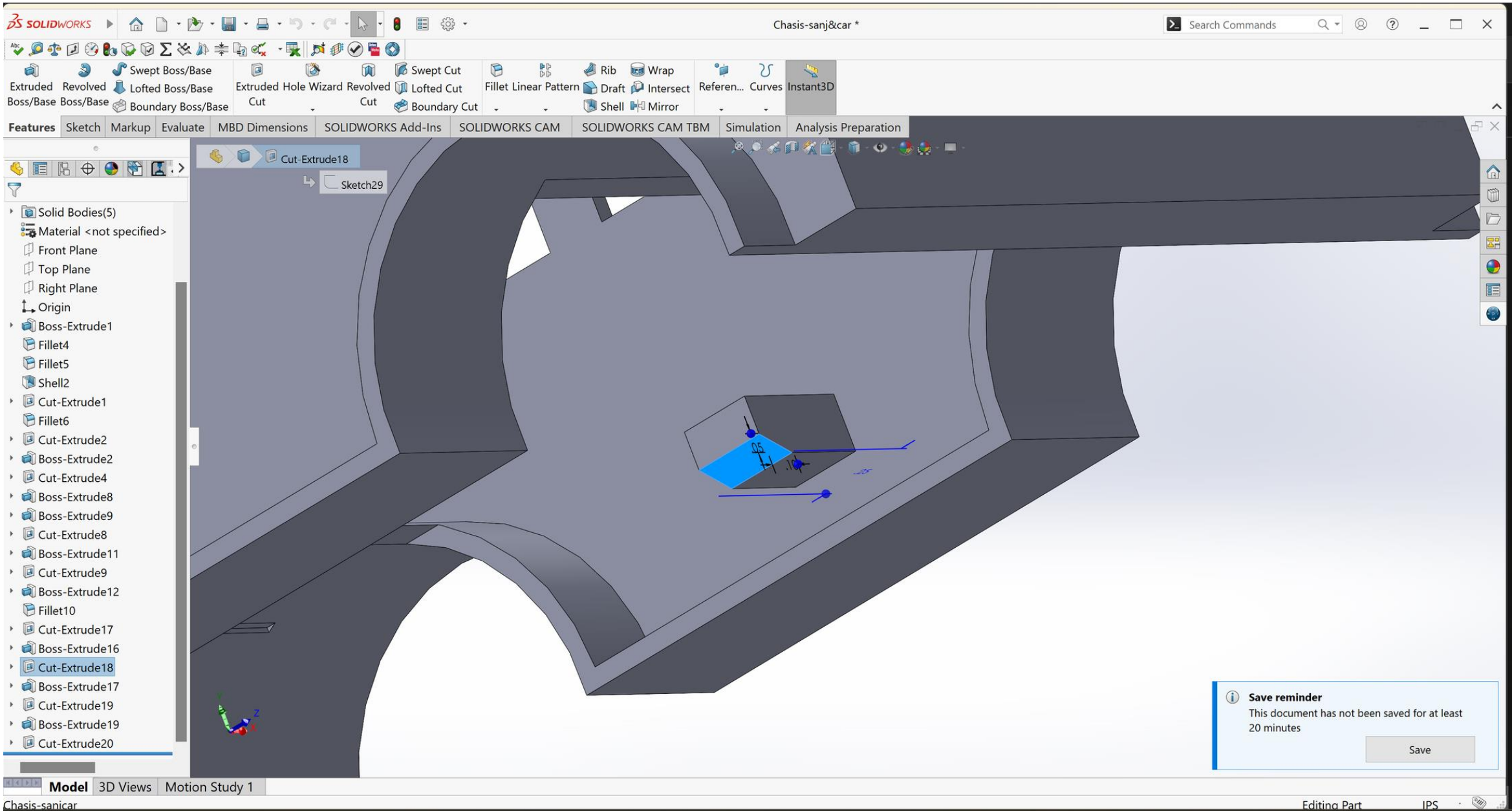


Create a sketch on the inside of the shell. Remember the dimensions of the snaps on the chassis and match them to this drawing, otherwise, it will not fit. Create a part that extrudes out to the end of the snap feature on the shell.

Step 10: Add the snaps on the inside of the shell to snap onto the chassis

Extrude Cut the end of the snap so it fits into the hole perfectly (with tolerance!). Follow the sketch of the snap-fit feature on the chassis.



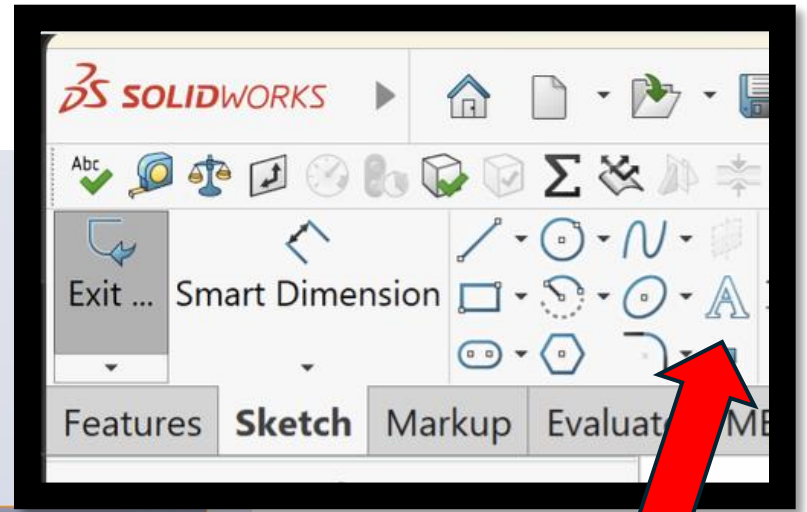
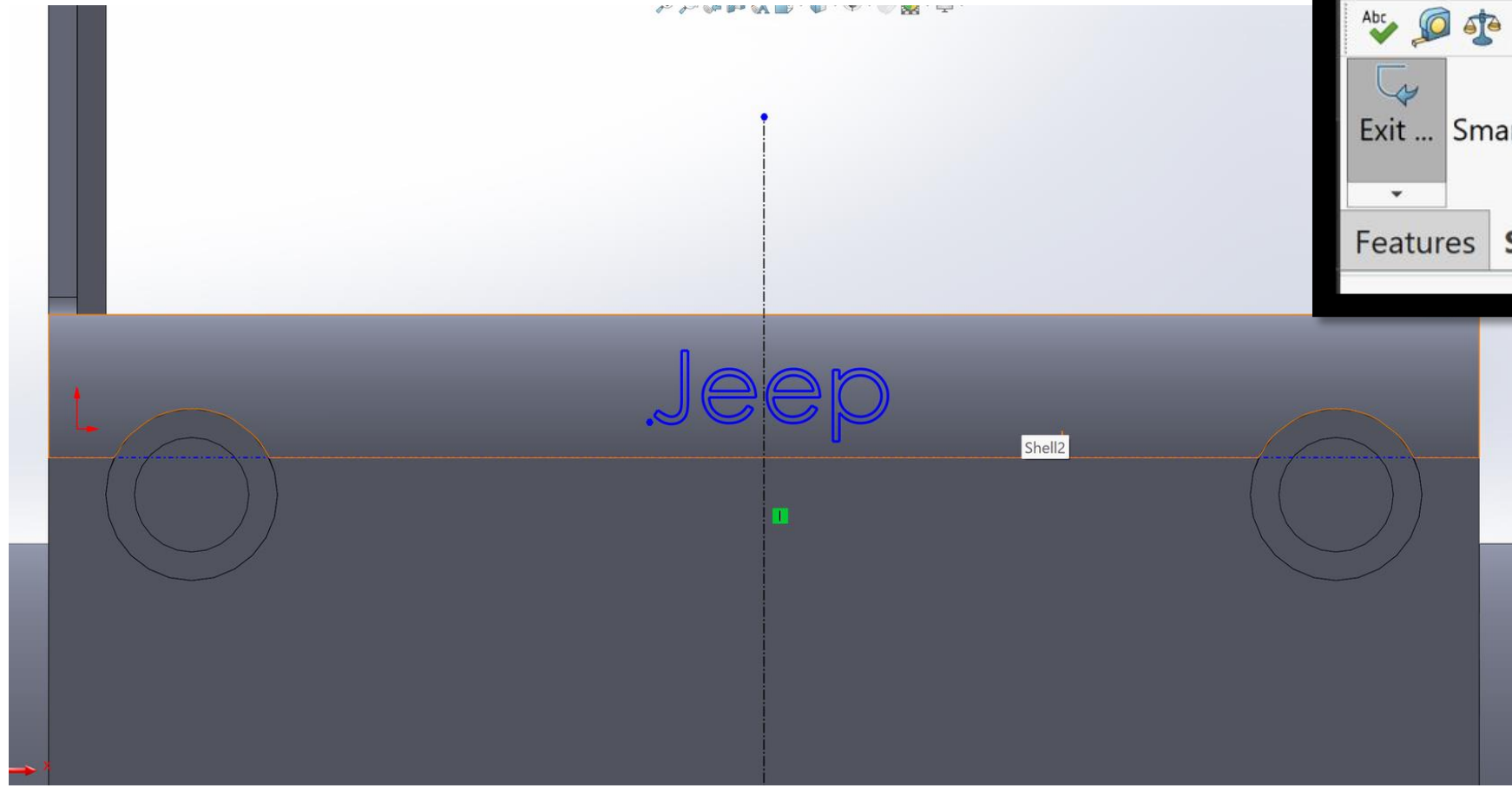




Cosmetic details

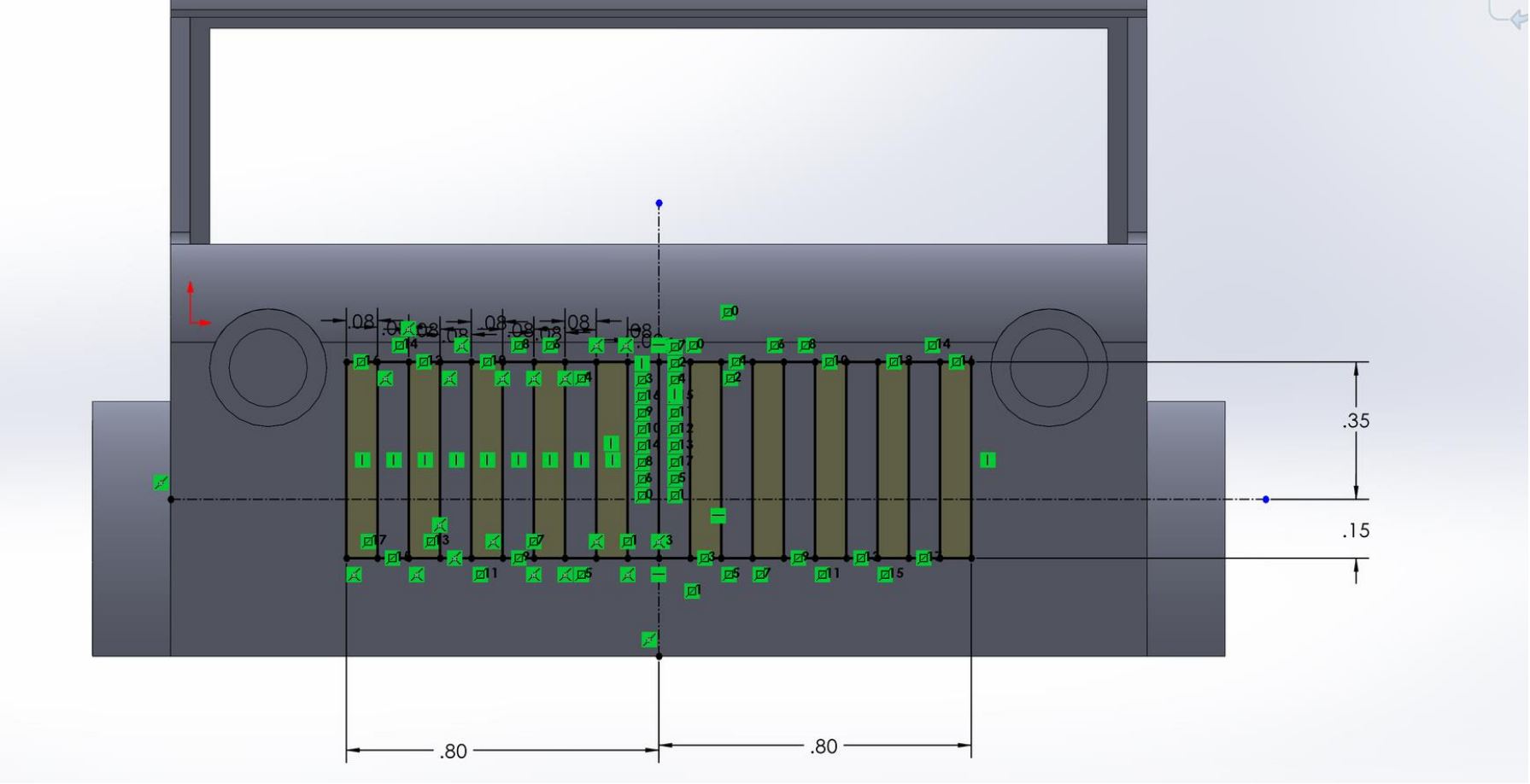
Shell2

Add text onto the shell and Extrude

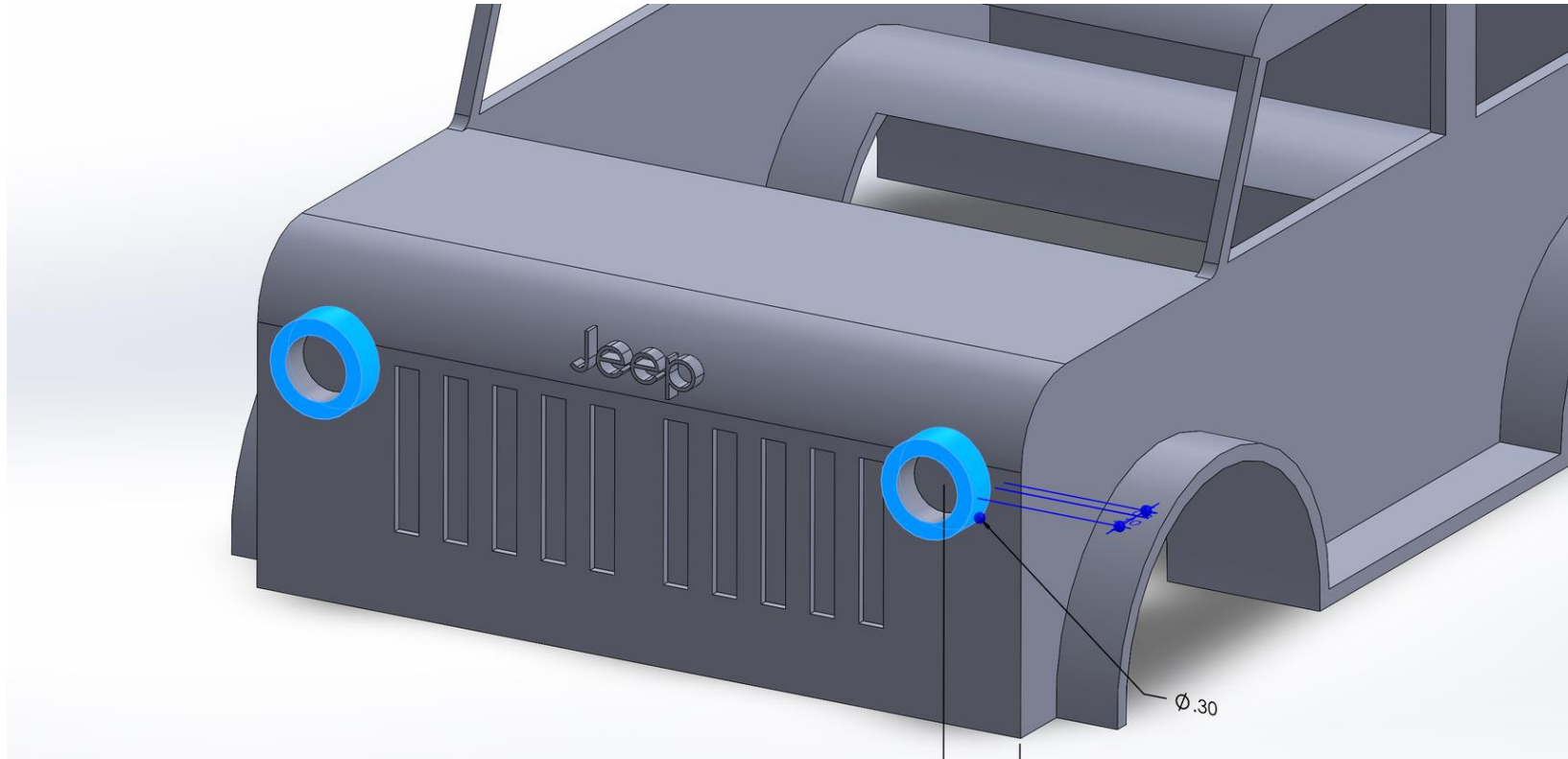


Text feature is located in the Sketch tab

Sketch and Extrude Cut grills

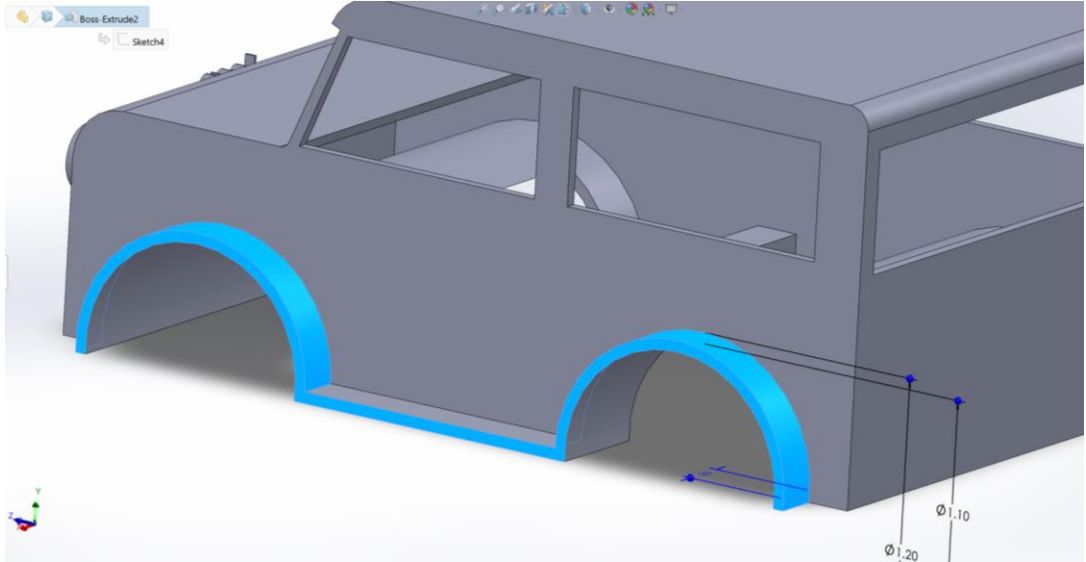
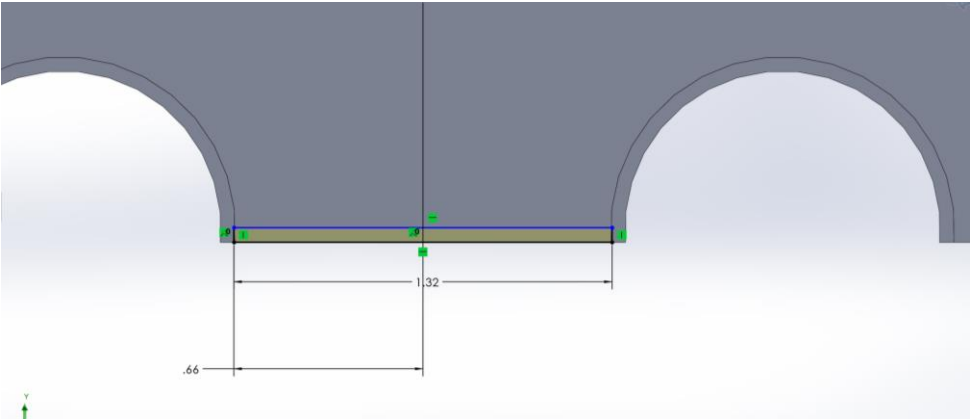
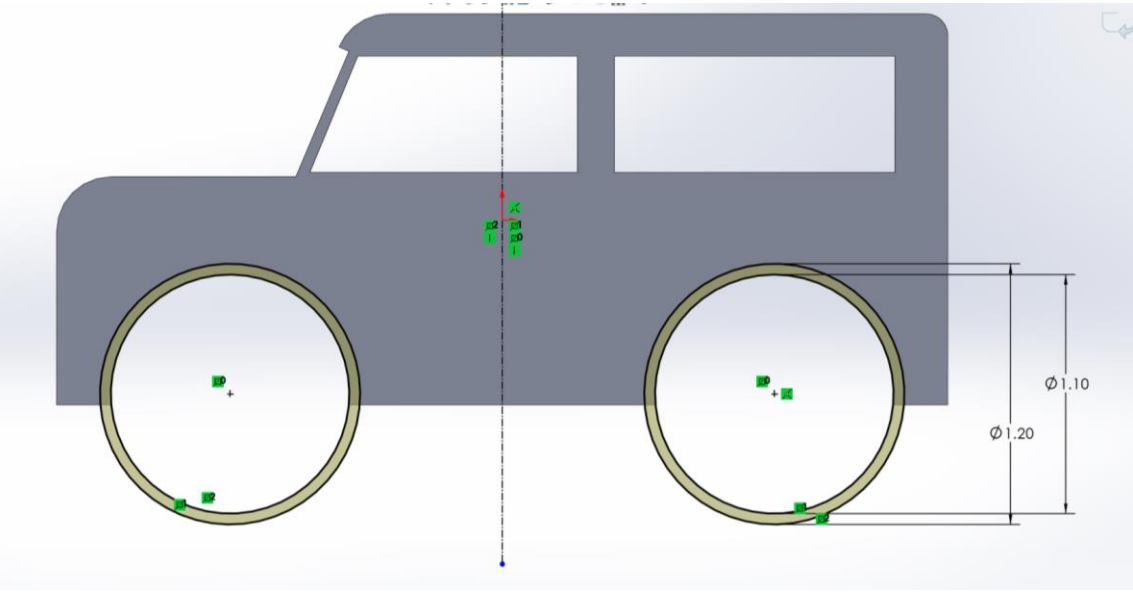


Sketch and Extrude the headlights



Create a sketch of a ring and extrude.

Sketch and Extrude the fenders




Thank you for coming!

Interest Form



SME x Sandia Competition Timeline



2023-24	Winter Quarter			Spring Quarter				
	Week 5-6	Week 7	Wk 8-10	Wk 1-2	Wk 3-4	Wk 5-6	Wk 7-8	Wk 9: 5/31
Interest (Build Teams, CAD)	████████████████████							
Register for Comp/Team		████████████████████						
Design / Development			██					
Mentor Meetings (with Sandia Engineers)					████████████████			
Presentation								
Documentation					██			

Winter Quarter: Dedicated to building your teams, understanding the prompt, learning/refining CAD, ideating, and showing your interest in the Competition. You **DO NOT** have to commit at this point but the teams are being registered and formed for those who do not have a team. If you would like to join a team please register via **Interest Form**.

Spring: Competition kickoff where you must **REGISTER**. Ideation and Design will shift to prototyping/development. This is the quarter where we will be 3D printing, testing, iterating designs, etc. Mentor meetings where you will meet your Sandia mentors will be hosted between Weeks 3-6. You will be working outside of club meetings with your group for the Presentation to Sandia Engineers on May 31, 2024. Document your design process with photos for a short oral presentation.