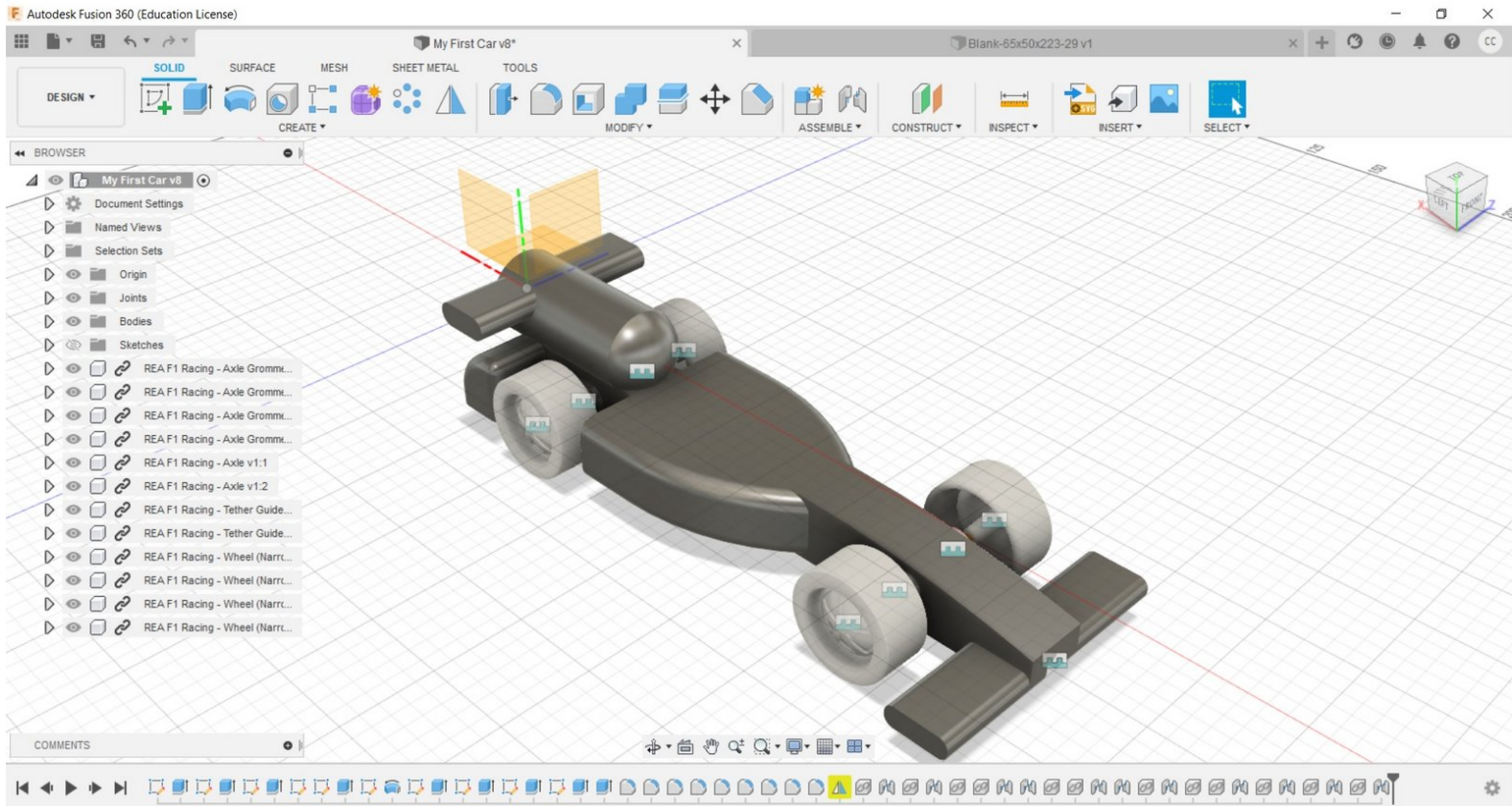


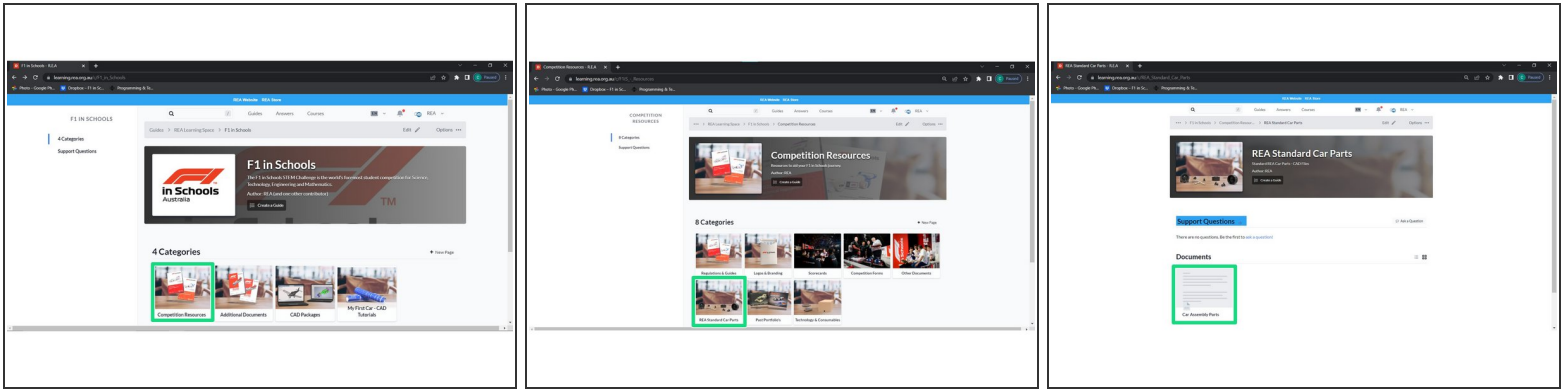


9.5 - Car Assembly

Written By: REA



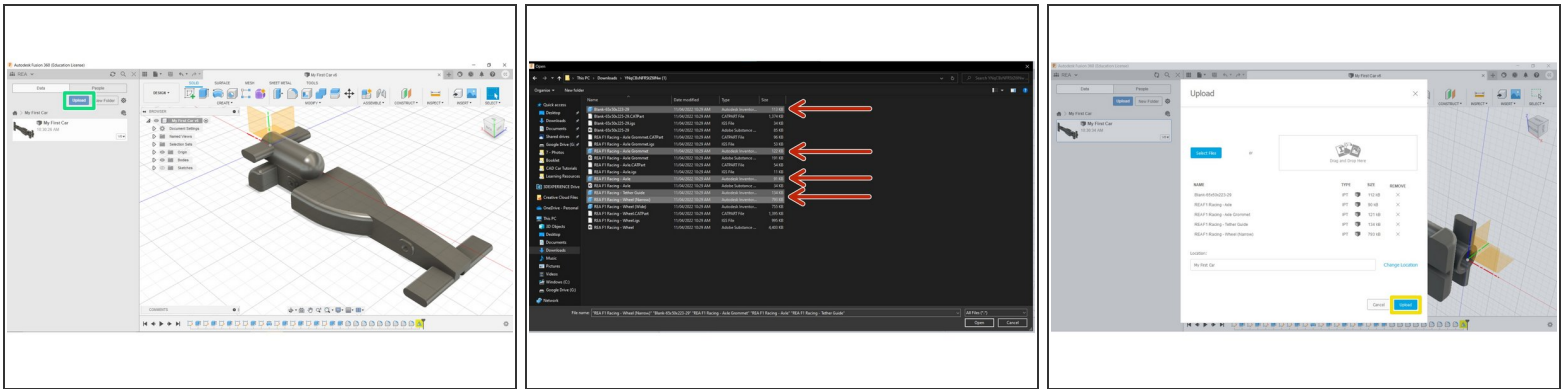
Step 1 — Download Part Files



- Download the REA Standard Car Parts from F1 in Schools / Competition Resources / REA Standard Car Parts.

 Extract the files from the .zip file.

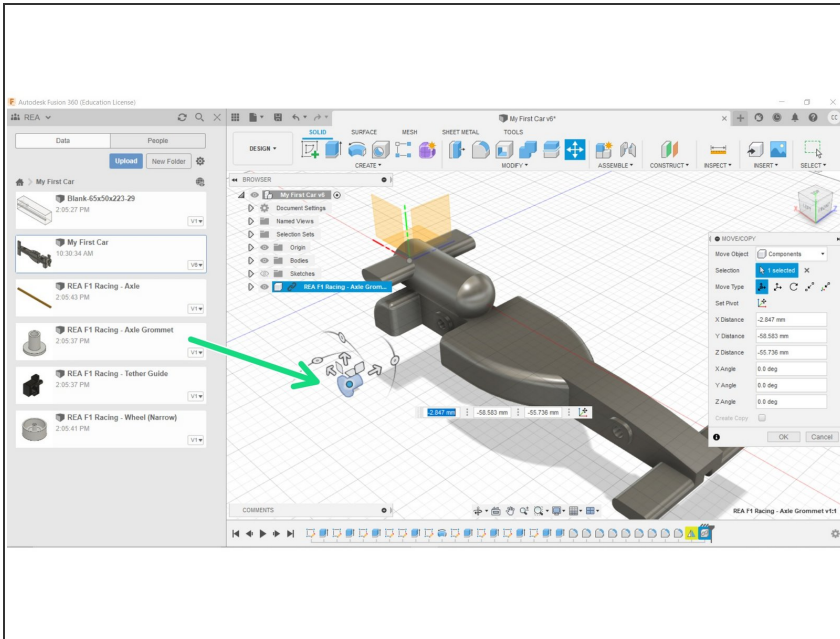
Step 2 — Uploading the Part Files



 Open your My First Car folder in Fusion 360.

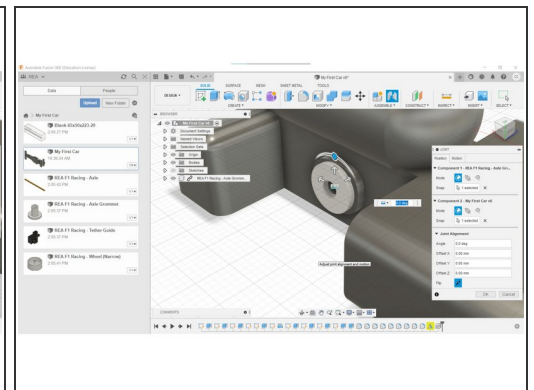
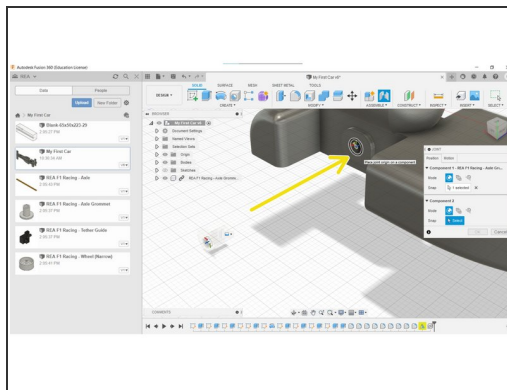
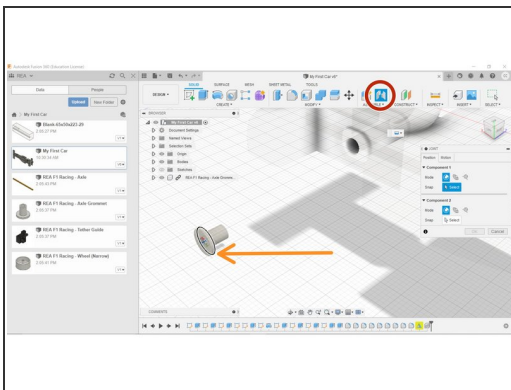
- Click the Upload button at the top left of the screen, followed by Select Files.
- Open the folder you have downloaded and extracted.
- Select the five .ipt files; only select the Narrow wheel type, and click Open.
- ⓘ Note: These files may also show as Autodesk Inventor File.
- Click Upload.

Step 3 — Inserting the Part Files



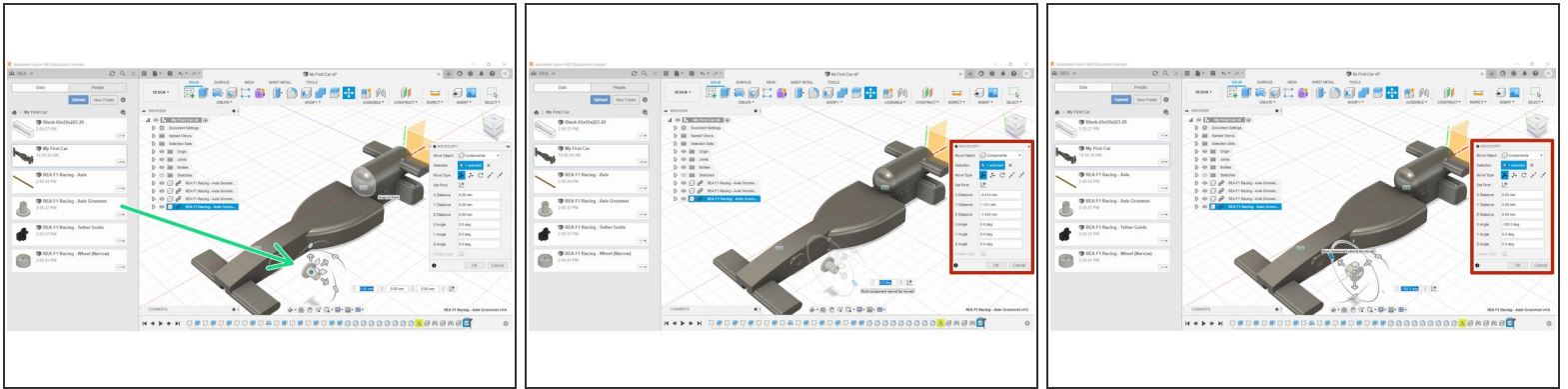
- Click and drag one Axle Grommet into the My First Car File.

Step 4 — Creating the Joint



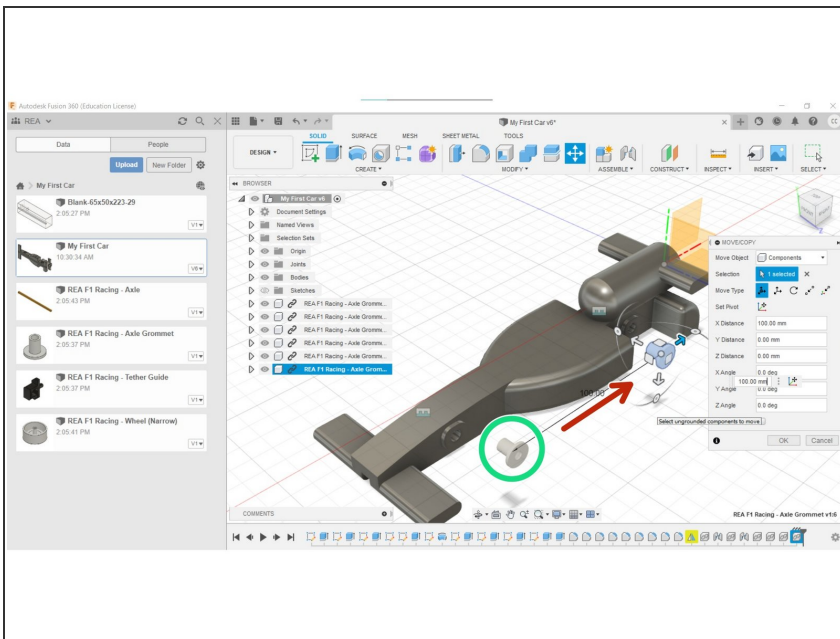
- Select the Joint Tool in the Assemble Menu.
- Select the inner face of the Axle Grommet, as shown in the image.
- Next, select the inner ring of the Axle Support / Hole.
- Watch as the joint is created; Click OK.
- Repeat for the front-right axle.

Step 5 — Rotating Components



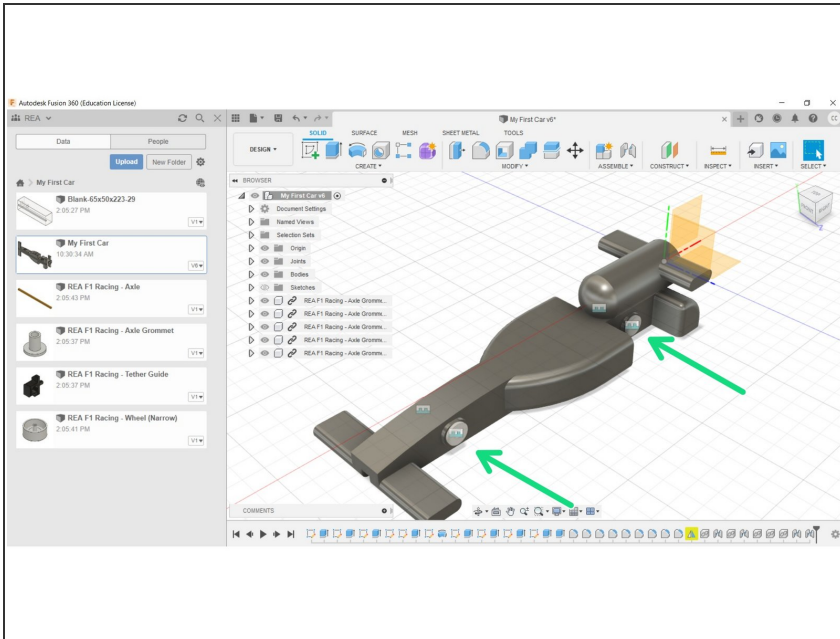
- ☑ Rotate the car body 180* using the Navigation Cube.
- Insert an Axle Grommet into the assembly.
- ⓘ Note how the Axle Grommet is facing the wrong way to insert into the car body.
- Rotate the X Angle through 180 degrees in the Move/Copy Operation Panel.
- ☑ Check this has correctly rotated the Axle Grommet for assembly and click OK.

Step 6 — Duplicating the Component



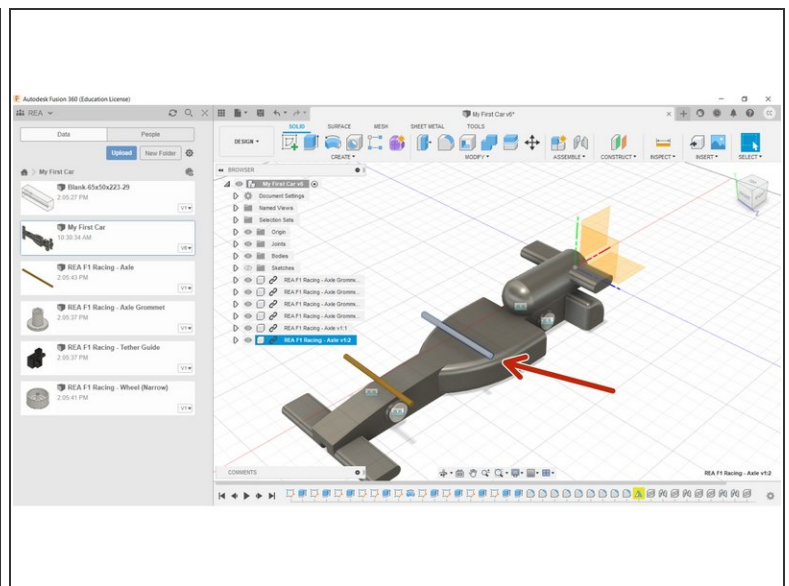
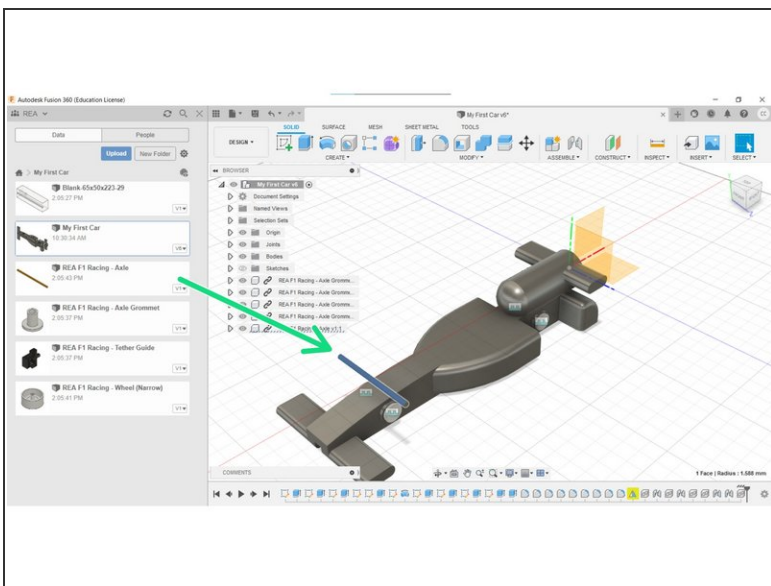
- Double-Click on the Axle Grommet, then press CTRL-C then CTRL-V to copy and paste it.
- ⓘ Note: The pasted component will be hidden behind the original Axle Grommet.
- Use the Move Arrows to drag the component approximately into place.

Step 7 — Creating the Joint



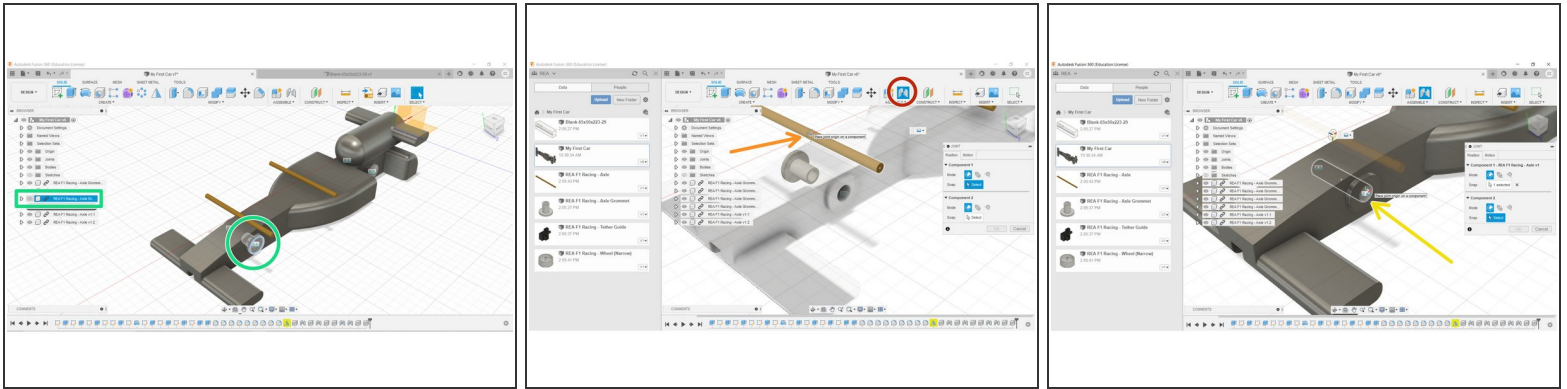
- Repeat the process from Step 4, and create a joint between the Axle Grommets and the car body.
- ⓘ Note: Successful Joints are illustrated by the green and grey joint symbol.

Step 8 — Inserting the Axles



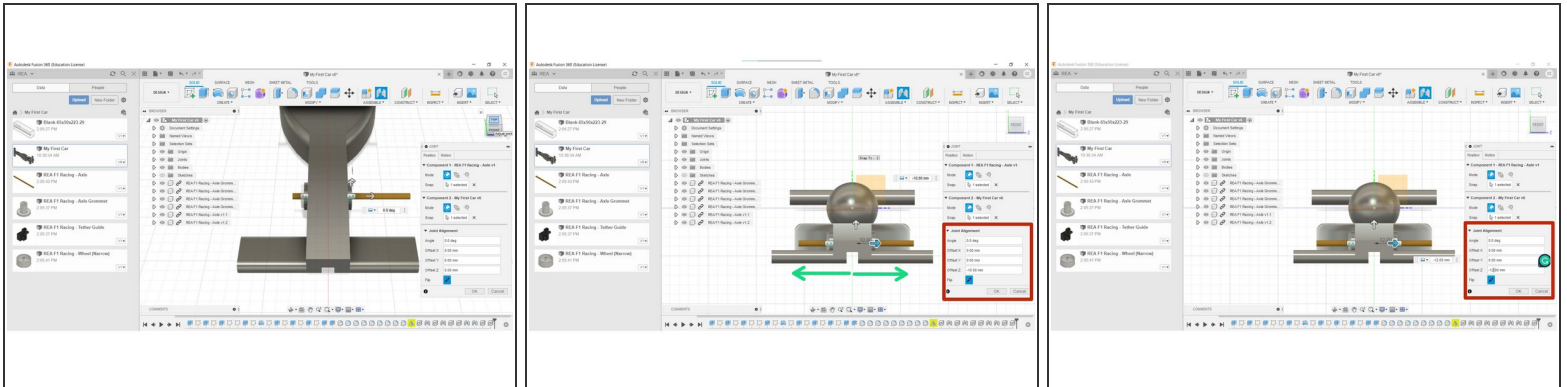
- Insert the Axle file into the assembly.
- ⓘ Note: You may need to rotate the component to match the orientation of the car body.
- Copy and paste a second Axle into the assembly.


Step 9 — Creating the Joint




- First, Click the Axle Grommet that is obstructing the axle hole. This will highlight the component in the Part Tree.
- Select the Eye-Shaped icon in the Part Tree to turn off component visibility.
- Select the Joint tool from the Assemble Menu.
- Select the centre (origin) of the Axle.
- Next, select the cylindrical axle hole.

Step 10 — Positioning the Axle



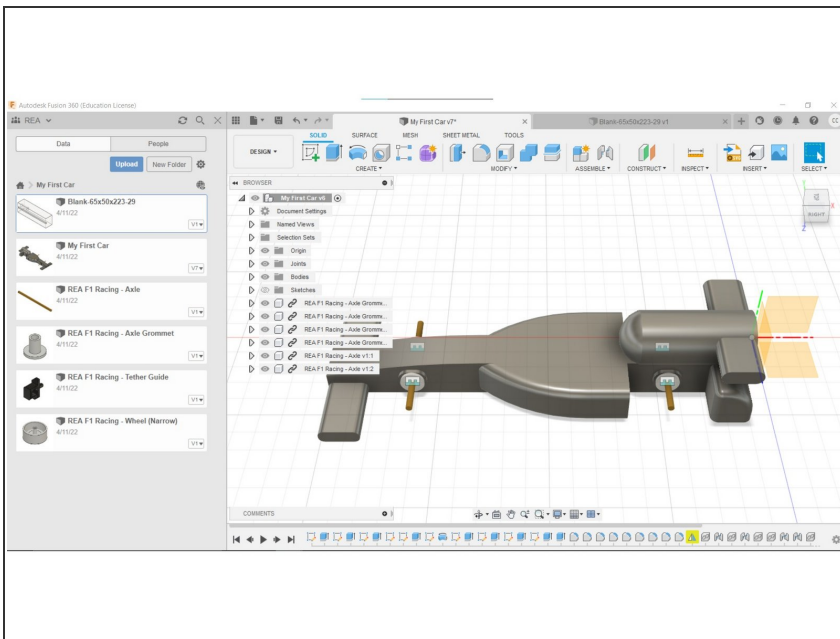
 Note how the Axle is not centred within the car body.


- Change to Front View, and using the Move Arrows, approximately drag the Axle into the centre.
- From here make small adjustments using the Joint Alignment Menu until it is centred.


 In this instance, the correct value is -12mm.

 Click OK and re-toggle Axle Grommet Visibility.

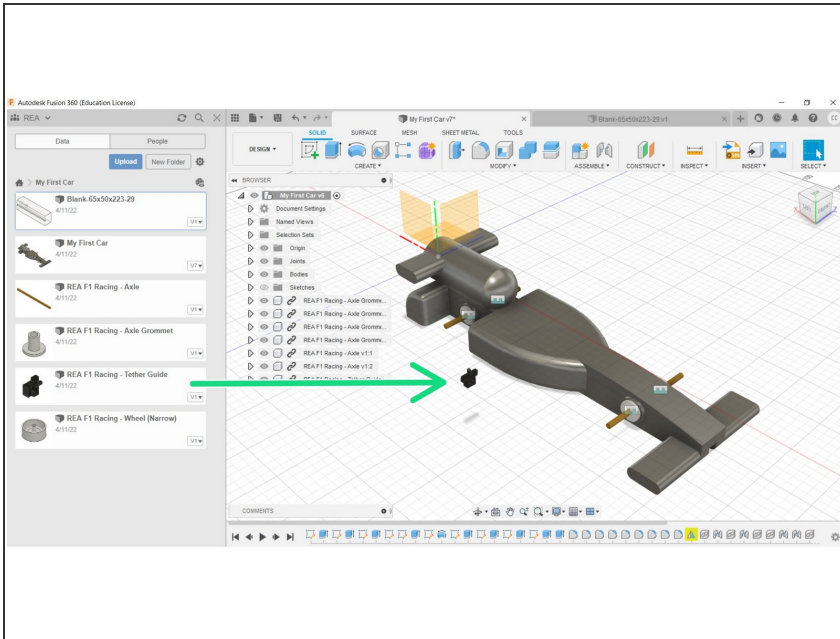
Step 11 — Creating the Joint



 Repeat the process of Step 10 for to join the Rear Axle to the car.

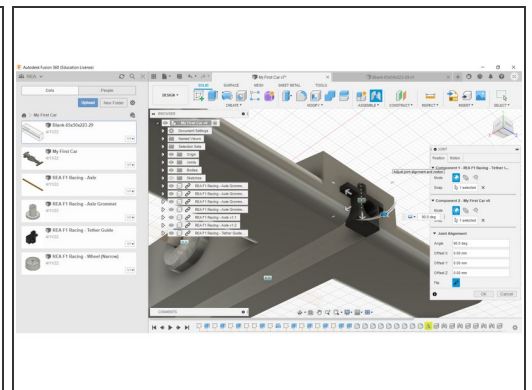
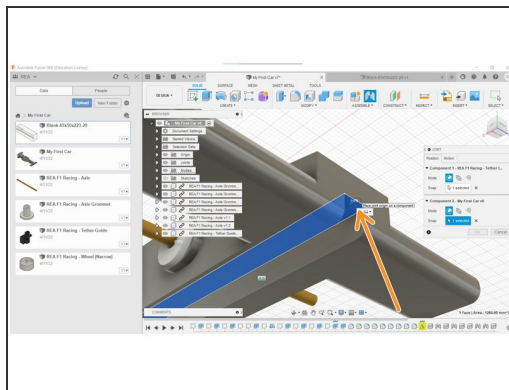
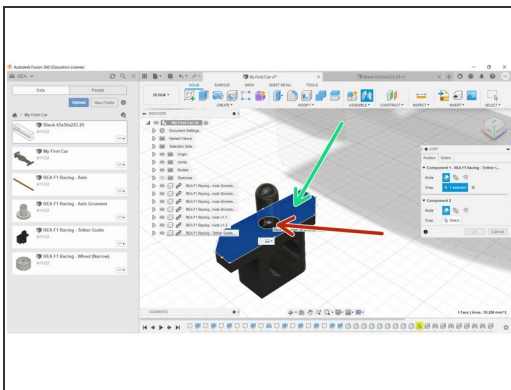
 Remember to toggle component visibility where necessary.

Step 12 — Inserting the Tether Guides



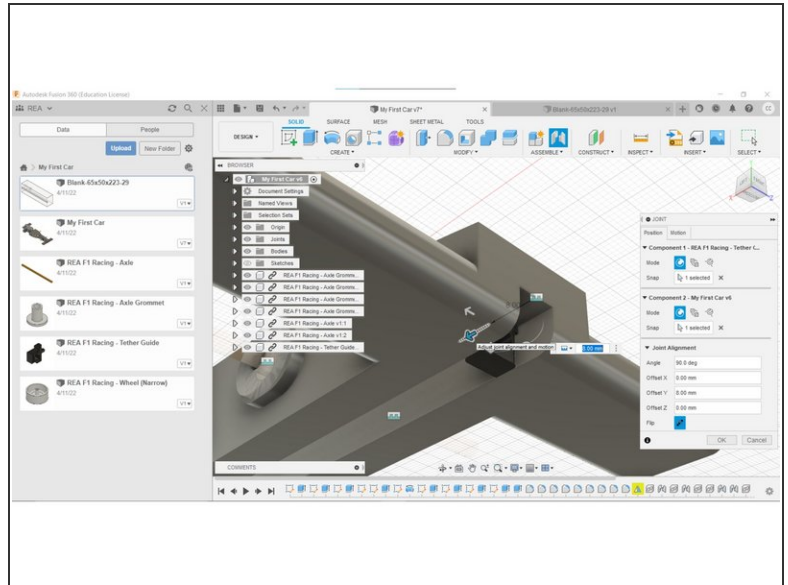
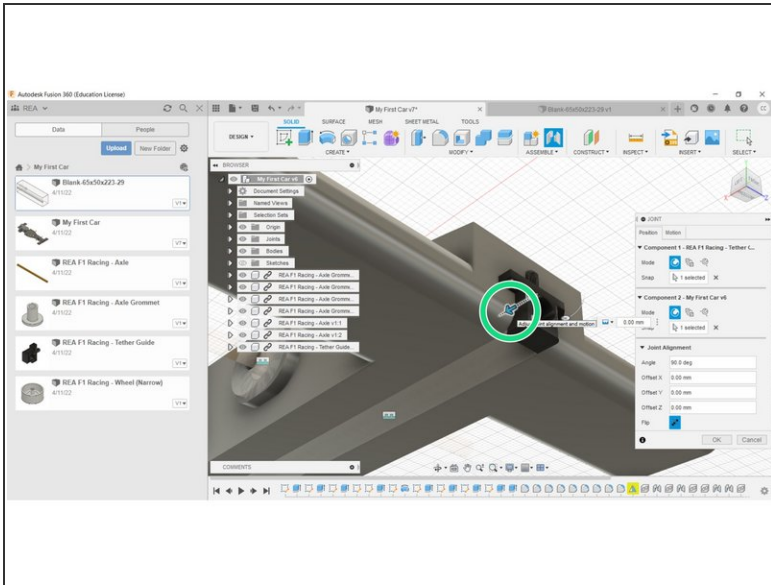
- Insert one Tether Guide into the assembly.

Step 13 — Creating the Joint



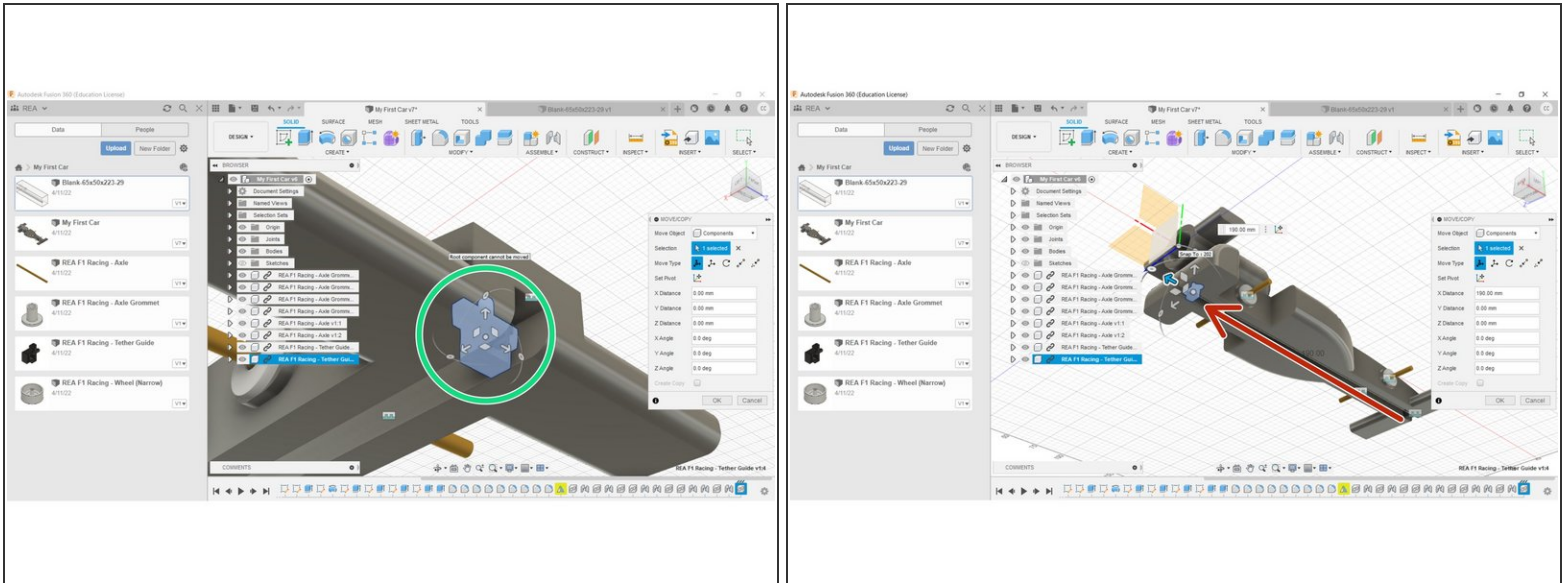
- Using the Joint Tool, select the top surface of the Tether Guide.
 - Then select the origin point in the centre of the surface.
 - Next, select the origin point at the front of the car.
- ☞ The Tether Guide will move into position however we still need to make some adjustments so don't click OK yet.

Step 14



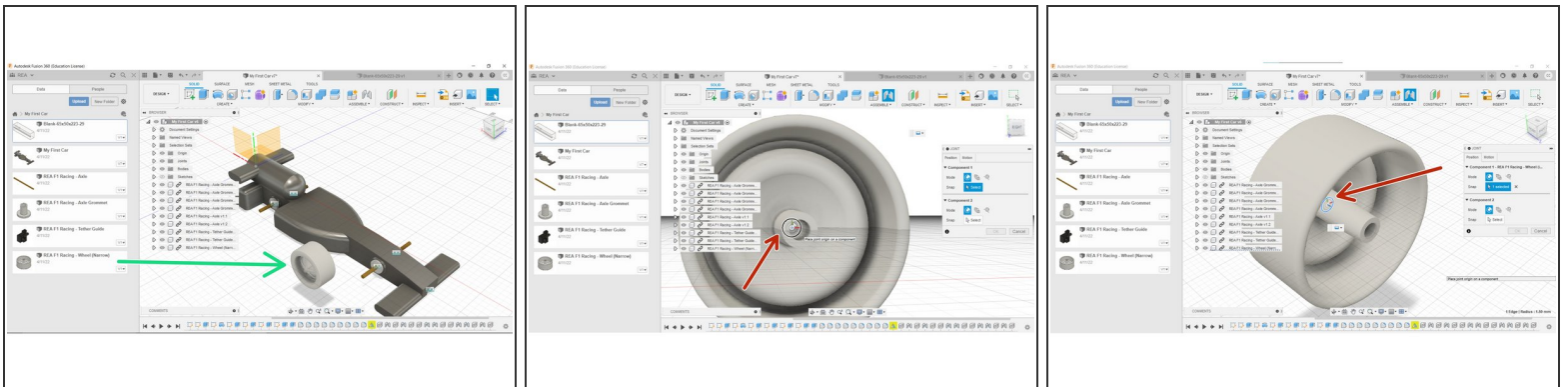
- Adjust the position of the Tether Guide using the X-Axis Offset.
- ❗ 8mm from the front of the car will provide sufficient material for a strong connection.

Step 15



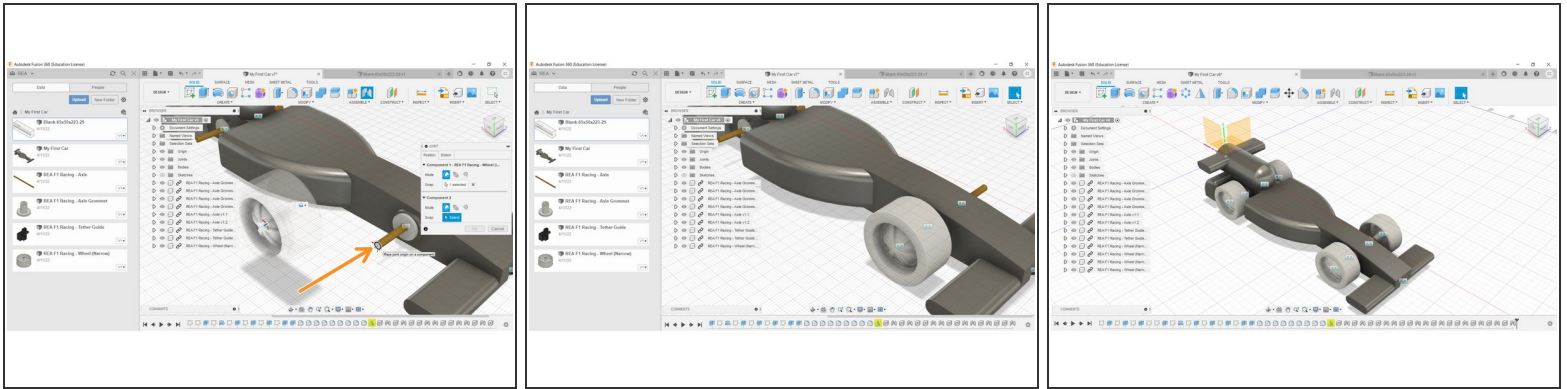
- Double-click, and copy and paste a second Tether Guide into the assembly.
- Use the X-Axis Offset to re-position the Tether Guide at the rear of the car.
- ① An offset of 190mm will provide a sound location for the Tether Guide.

Step 16 — Inserting the Wheels



- Insert a Wheel into the assembly.
- 📍 Orient viewpoint to look into the inside of the wheel.
- Using the Joint tool, select the innermost surface of the axle sleeve.

Step 17 — Creating the Joint



- Next, select the outer face of the front axle, and click OK to create the joint.
- ☑ Repeat this process, using the skills the previous steps have taught to join the three other wheels.
- ☑ Congratulations, the assembly is finished!