# CO2 Rail Car Form
# Render

## A. Rotate Ground Plane.

Step 1. The car has an issue with the ground plane not being parallel with the bottom of the wheels. The next several steps we will rotate the ground plane to align with the wheels. In **Fig 1** the Rear Wheel floats above. **Fig. 2** ground plane is rotated correctly.

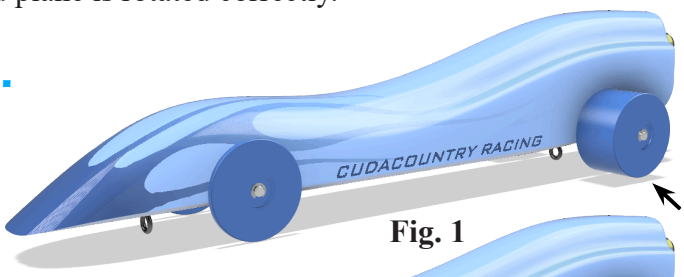



**Fig. 1**

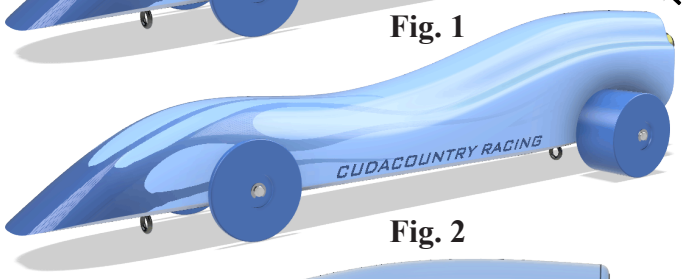
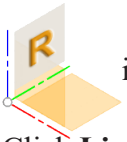



**Fig. 2**

## B. Sketch for New Front Plane.

Step 1. Open your **BODY RAIL FORM** file.

Step 2. On the Solid tab SOLID click **Create Sketch** in the Sketch area of toolbar and click **Right plane**




in canvas.

Step 3. Click **Line** (**L**) on the toolbar.

Step 4. Sketch **line at slight angle below wheels**, **Fig. 3**.

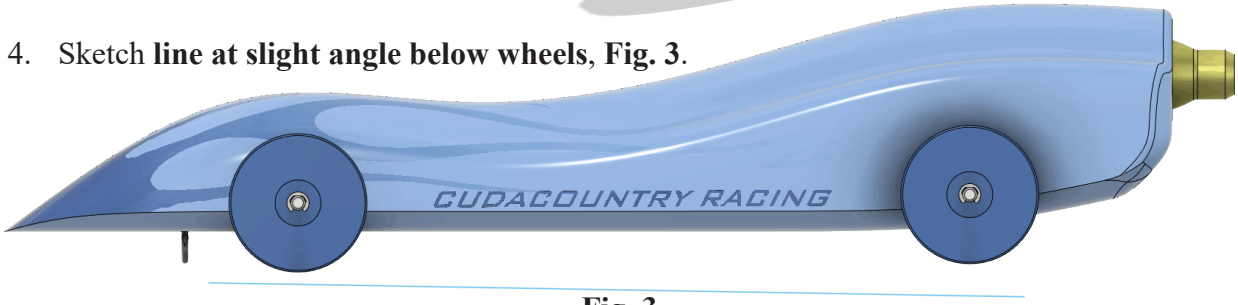



**Fig. 3**

Step 5. Click **Tangent** in the Constraints area of toolbar.

Step 6. Click **bottom (outside) cylindrical edge of front wheel and line**, **Fig. 4**.

Step 7. Click **bottom cylindrical edge of rear wheel and line**, **Fig. 5**.

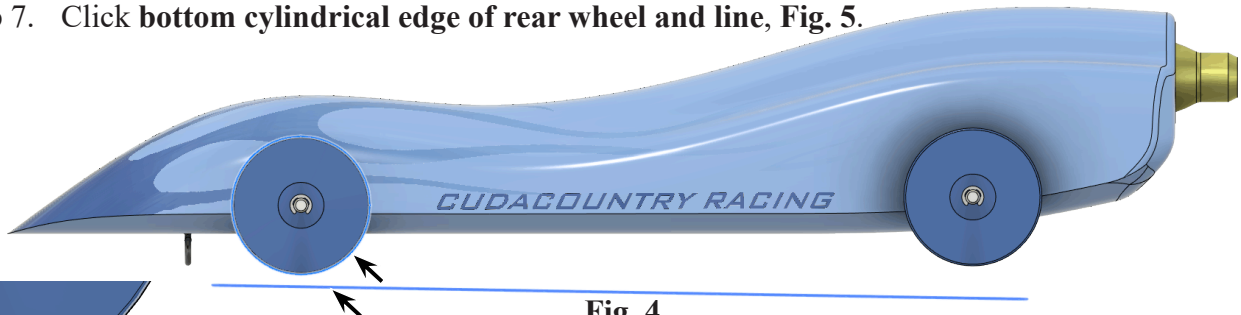



**Fig. 4**

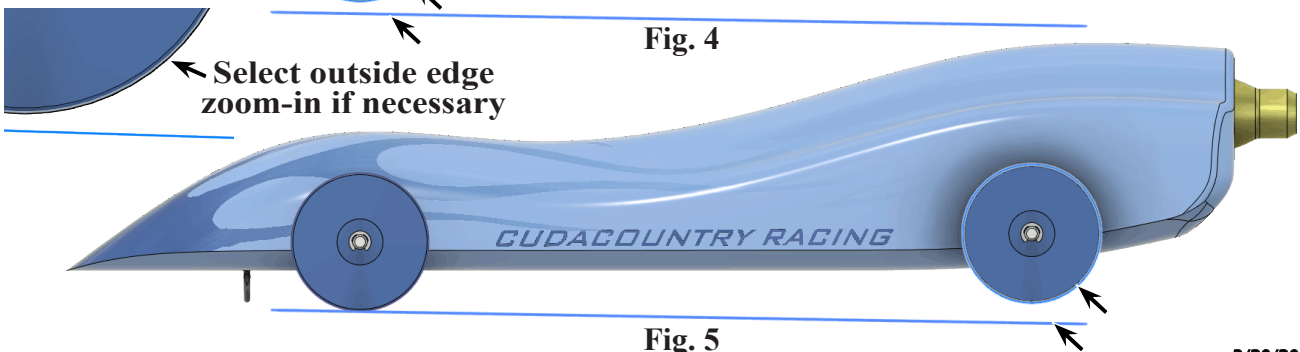



**Fig. 5**

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Step 8. Click **Line** (**L**) on the toolbar.

Step 9. Sketch **non vertical line up from left endpoint of line**, **Fig. 6**.

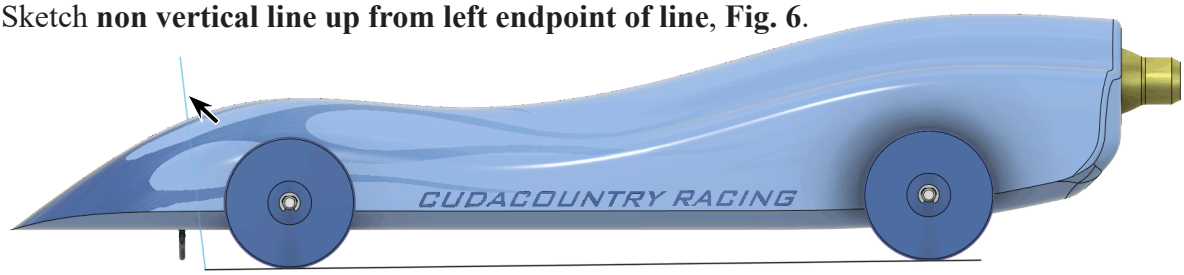



**Fig. 6**

Step 10. Click **Perpendicular** in the Constraints area of toolbar and click **both lines**, **Fig. 7**.

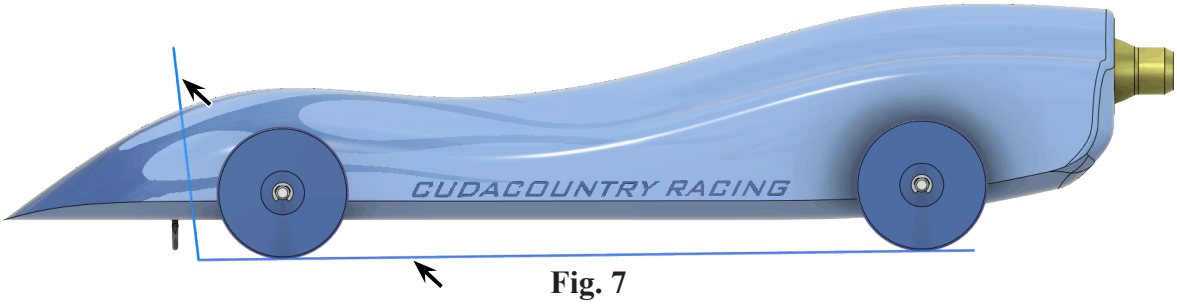



**Fig. 7**

Step 11. Click **Dimension** (**D**) in the sketch area of toolbar.

Step 12. Dimension endpoint of line to Origin **95**, **Fig. 8**.

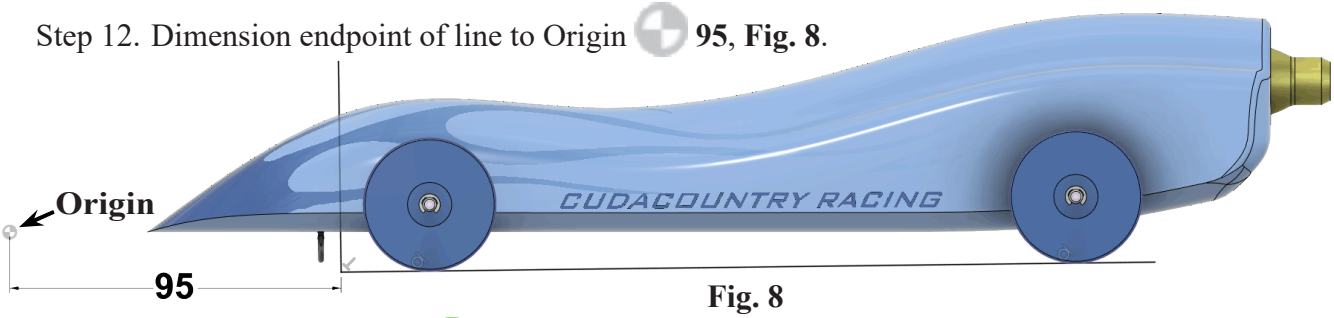



**Fig. 8**

Step 13. Click **Finish Sketch** on the toolbar.

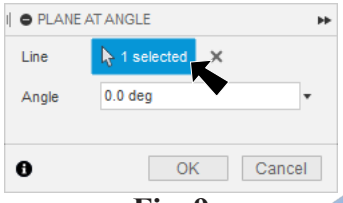



**Fig. 9**

## C. Create New Front Plane.

Step 1. Click **Home** (Isometric) on View Cube .

Step 2. On Solid tab SOLID click Construct Menu > **Plane At Angle** .

Step 3. In the Plane at Angle panel set, **Fig. 9**
click **perpendicular line in sketch**, **Fig. 10**
click OK.

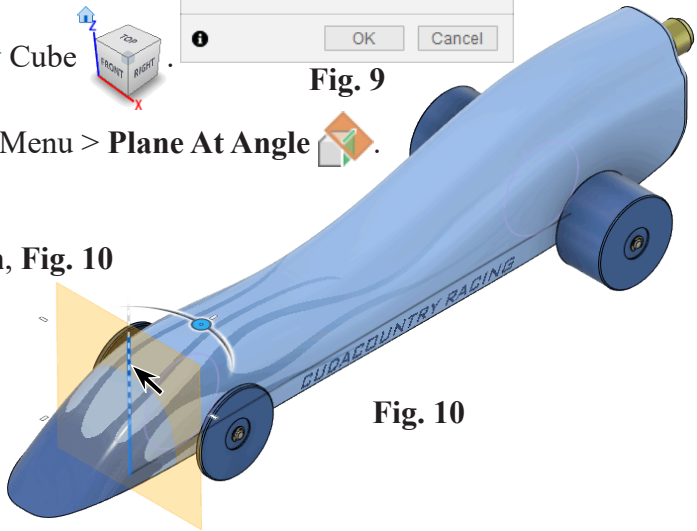



**Fig. 10**

## D. Set Front View to Plane.

Step 1. Click **Look At** in the Navigation Bar at the bottom of the canvas, **Fig. 11**.

**Fig. 11**

Step 2. Click **new Plane** in canvas area, **Fig. 12** and **Fig. 13**.

Step 3. Click the **View Cube dropdown** menu icon > Set current view as > **Front**, **Fig. 14**. (you can also, right click View Cube to access menu).

**Tip:** To restore the View Cube Front View click **Reset Front** from menu.

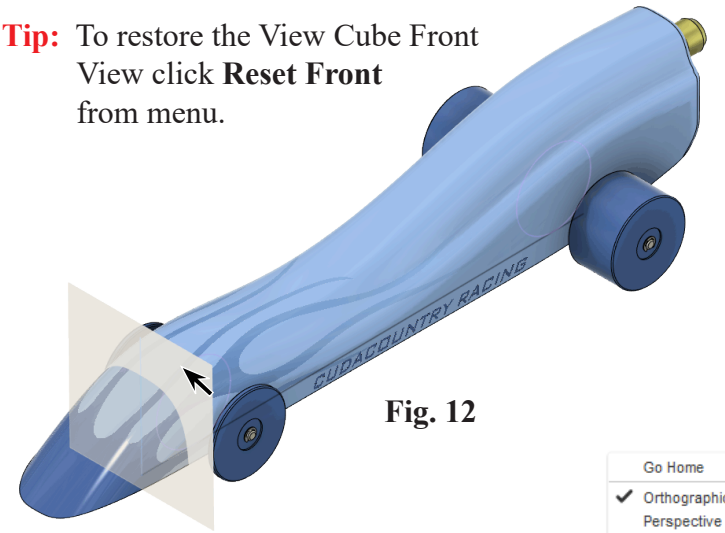



**Fig. 12**

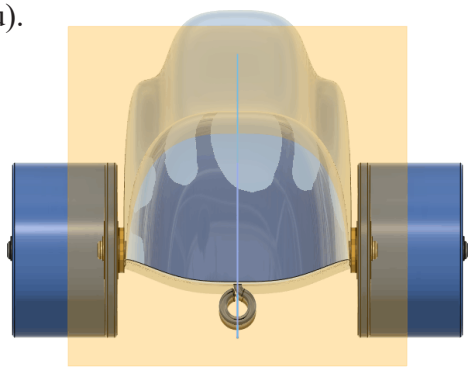


**Fig. 13**

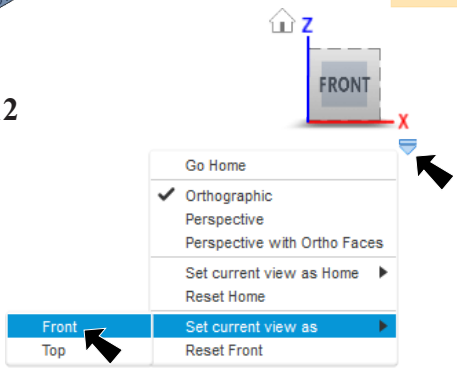



**Fig. 14**

## E. Hide Sketch and Plane.

Step 1. Click **Home** (Isometric) on View Cube .

**Tip:** **Note that with our alternative Front View the edges of the View Cube are dashed, Fig. 15.**

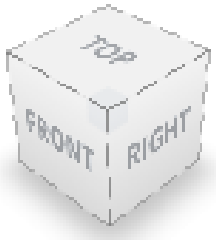



**Fig. 15**

Step 2. **Hide** **Sketch7** and **Plane2** in the Browser, **Fig. 16**.

Step 3. Save. **Ctrl-S** and press ENTER.

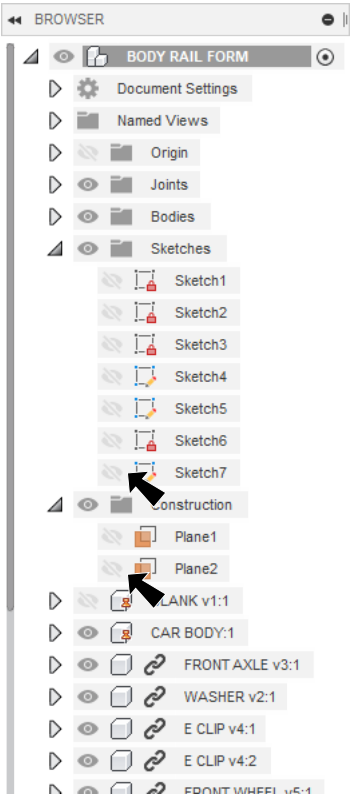



**Fig. 16**

## F. Render Workspace.

Step 1. Switch to the Render workspace. To switch, click Design DESIGN in the Change Workspace toolbar and click **Render** RENDER from the menu.

## G. Scene Settings.

Step 1. On the Render tab RENDER click **Scene Settings** in the Setup area of toolbar.

Step 2. In the Scene Setting panel set, **Fig. 17**
click Environment Library tab Environment Library
under Library
**Double click** on **Photobooth**

Step 3. In the Scene Setting panel set, **Fig. 18**
click Setting tab Settings
under Environment
click the **Gray Swatch**
drag **Color Picker up into the top right** to set color to **white** and **all RGBs 255**, **Fig. 19**
click OK.

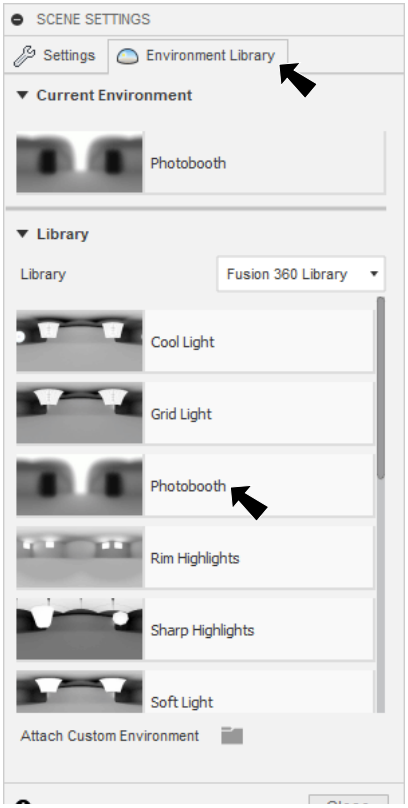



Fig. 17

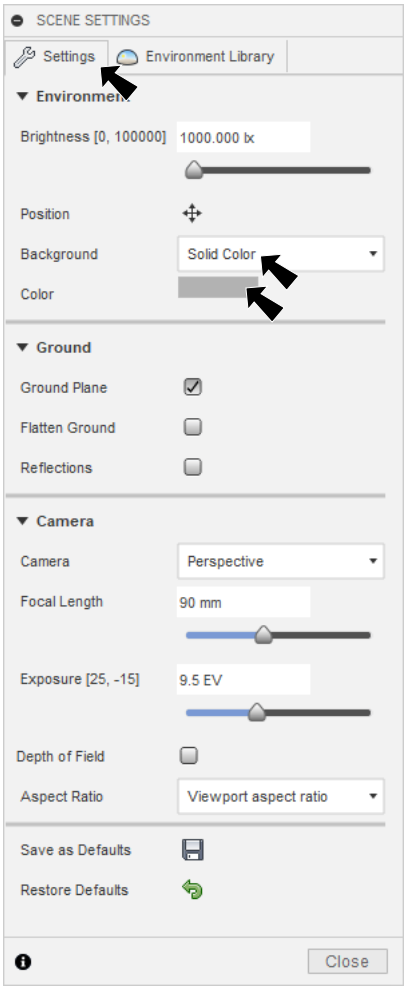



Fig. 18

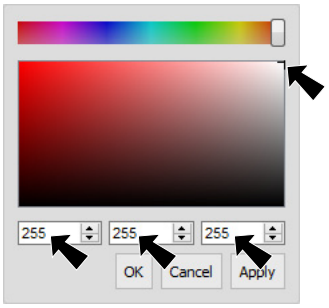



Fig. 19

Step 4. Back in the Scene Setting panel set:
under Ground, **Fig. 20**
check **Ground Plane**
check **Flatten Ground**
under Camera
Camera **Perspective**
Focal Length **90**
under Environment
click **Position** icon.

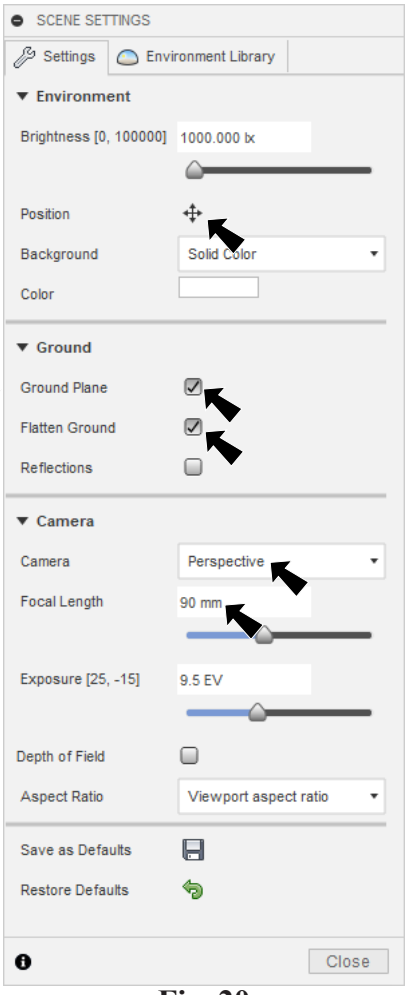



Fig. 20

Step 5. Click **Right** on View Cube 

.

Step 6. Click the **View Cube dropdown** and click **Orthographic** from menu, **Fig. 21**.

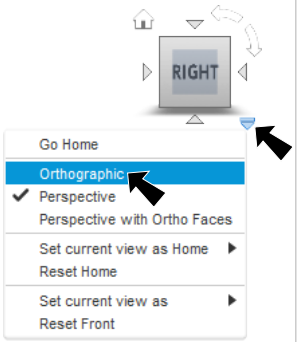



Fig. 21

Step 7. Click **Horizontal Manipulator**, **Fig. 22** and drag **over under Wheel** or key-in **108** , **Fig. 23**.

Step 8. Zoom-in on Rear Wheel.

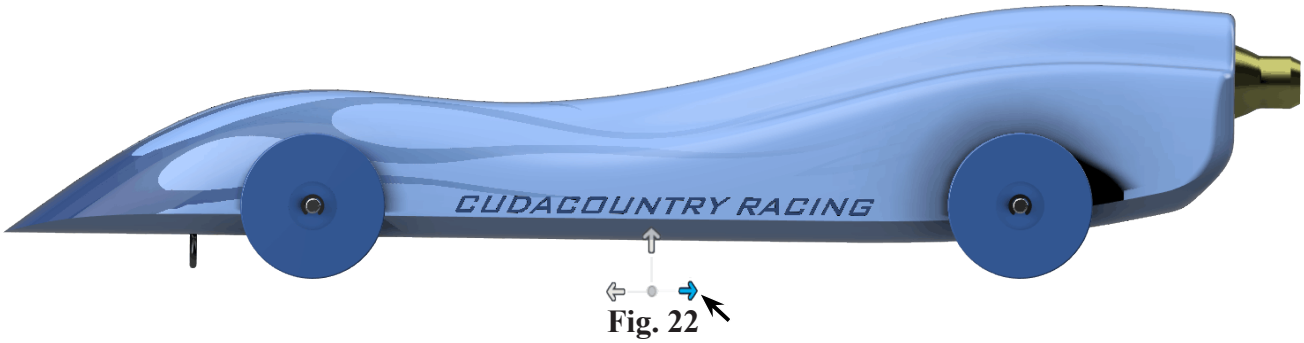



Fig. 22

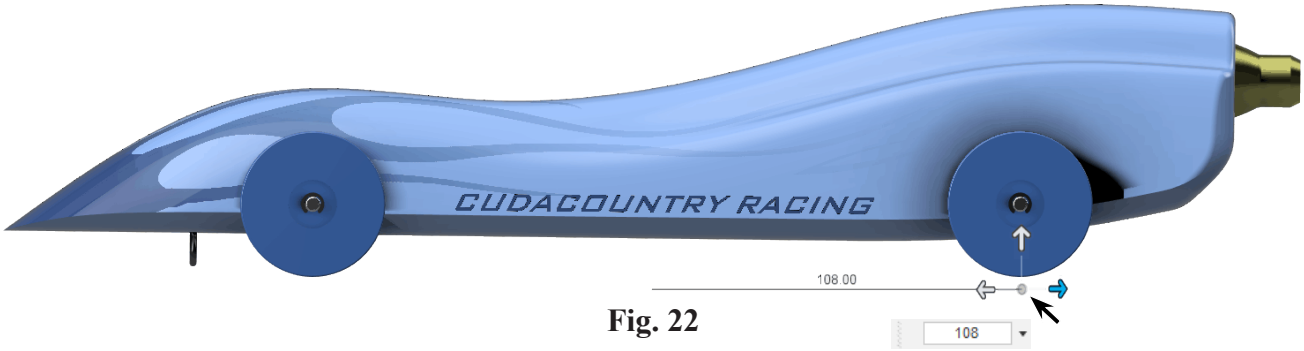



Fig. 22

Step 9. Click the **V Manipulator** , **Fig. 24**.

Step 10. Key-in **2.53**, **Fig. 25**. The Ground Plane should be at the bottom edge of Wheel. Your distance might be slightly different.

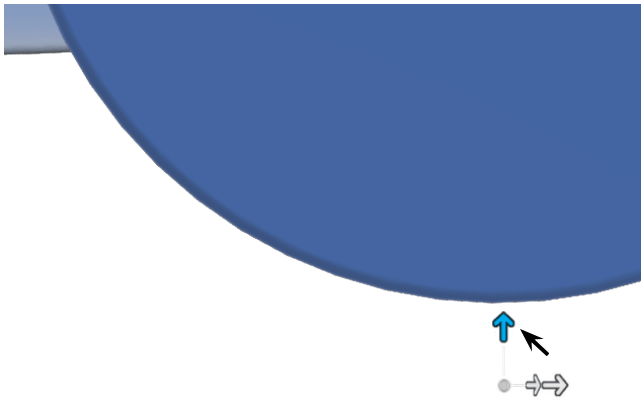


**Fig. 24**

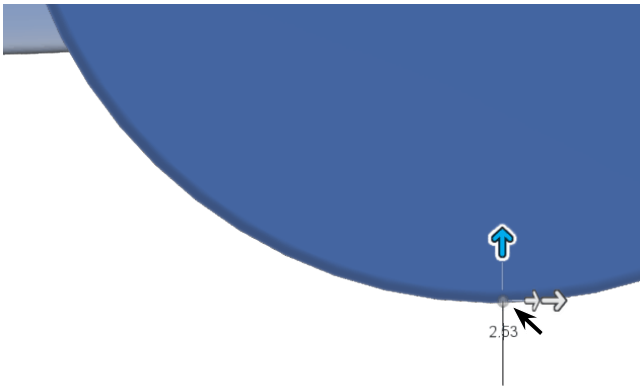
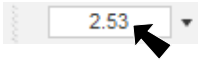



**Fig. 25**




Step 11. Rotate and zoom as necessary to approximately the position shown in **Fig. 26**.

Step 12. In the Position Controls, **Fig. 27**
**Rotation -130**
**Ground Scale 250**

Step 13. Once again in Scene Setting panel set, **Fig. 28**
click **Position** icon to close Position Controls
under Environment
Brightness **3200**
under Camera
Exposure **10**
click Close.

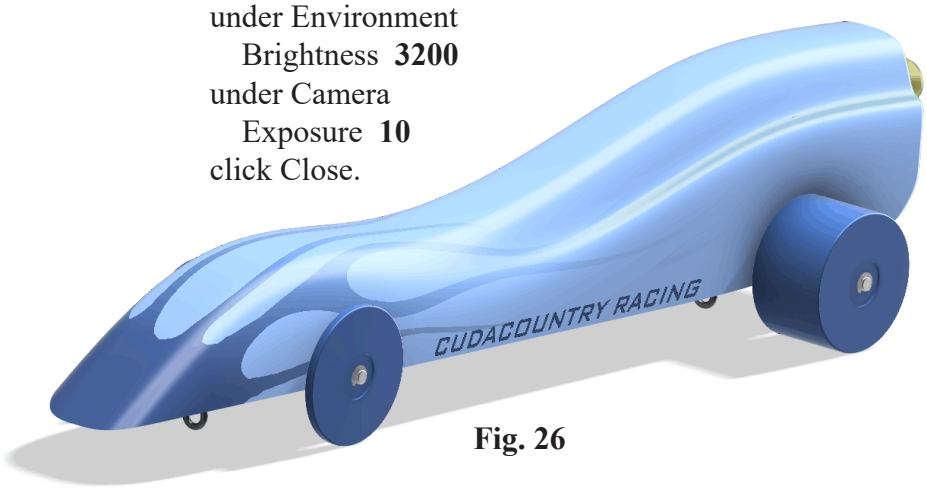



**Fig. 26**


**Fig. 27**

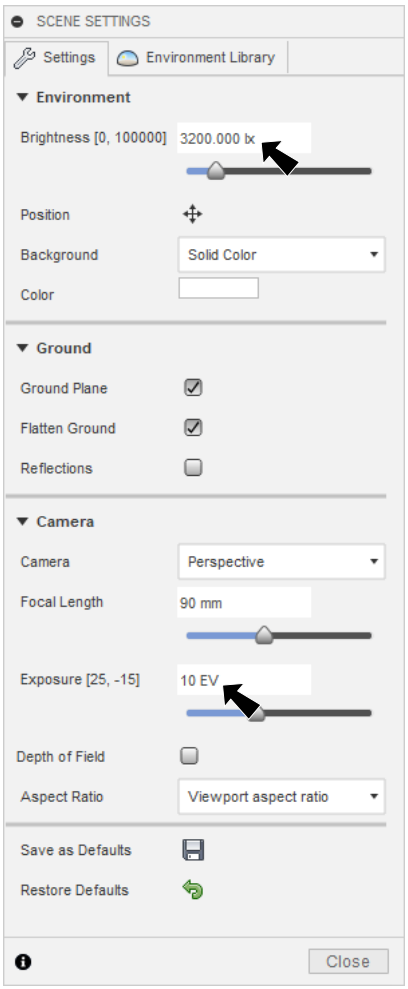



**Fig. 28**

## H. In-Canvas Render Settings.

Step 1. Click **In-Canvas Render Setting** on the toolbar.

Step 2. In the In-Canvas Render Settings dialog set:
click **Advanced** Advanced , **Fig. 29**
Limit Resolution slider **100%**
click OK.

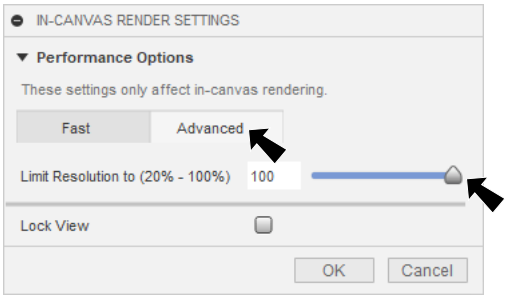



**Fig. 29**

## I. Set Capture Image Size.

Step 1. Click **Capture Image** on the toolbar.

Step 2. In the Image Option dialog box, **Fig. 30**
You can increase capture image size
select **Custom**
Width **3000**
Option for **Transparent Background**, but lose the ground shading
click OK and click Cancel.

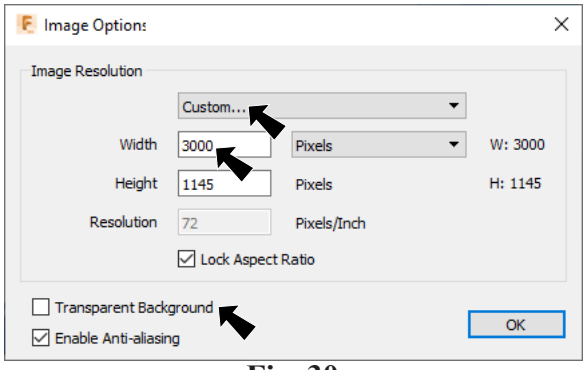



**Fig. 30**

## J. In-Canvas Render.

Step 1. Click **In-Canvas Render** on the toolbar.

Step 2. The progress bar at bottom right of the canvas shows the progress of the render.
Move slider to indicate the level of quality.
Set slider to **Infinite**, **Fig. 31**
A good quality render around 500 iterations.

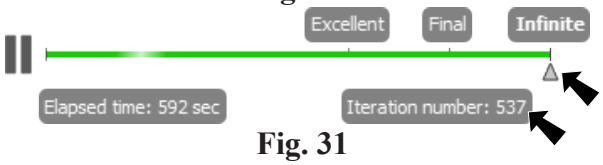



**Fig. 31**

## K. Capture Image.

Step 1. Click **Capture Image** on the toolbar.

Step 2. Back in the Image Options dialog click OK, **Fig. 32**.

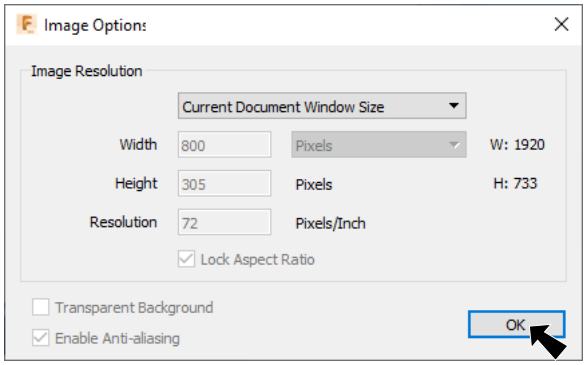



**Fig. 32**

Step 3. In the Save As dialog, **Fig. 33**
key-in a file name
**PNG** file type is good
check **Save to my computer**
click Ellipsis ... button
navigate to folder
Click Save.

Step 4. Click **In-Canvas Render Stop** on the toolbar.

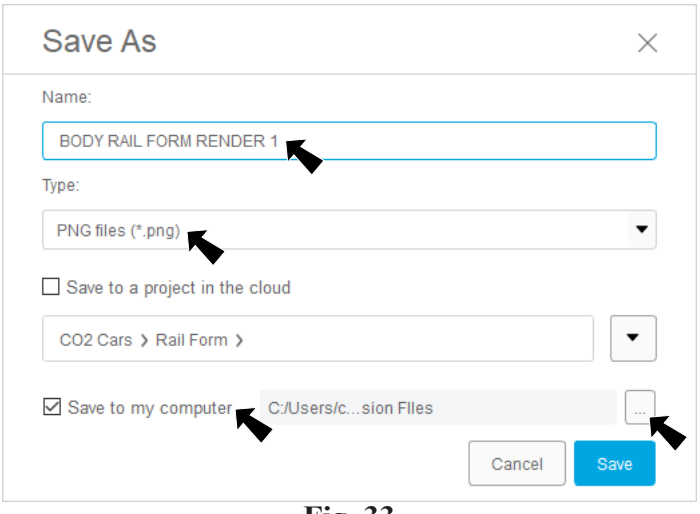



**Fig. 33**

## L. Render.

Step 1. Click **Render** on the toolbar.

Step 2. In the Render Settings dialog set:
click **Print** tab, **Fig. 34**
select **8.4 MP**
under Render With
click **Local Renderer**
select **Advanced setting**
under Render Quality
set slider **Excellent**
click **Render** button.

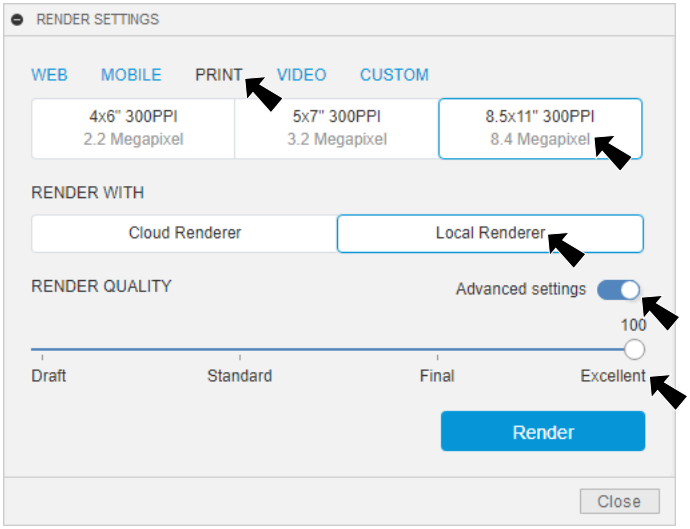



**Fig. 34**

Step 3. In the Rendering Gallery hover over the icon with the green progress bar it to view render time info, **Fig. 35**. When rendering is completed a thumbnail of the image will replace the icon, **Fig. 36**.

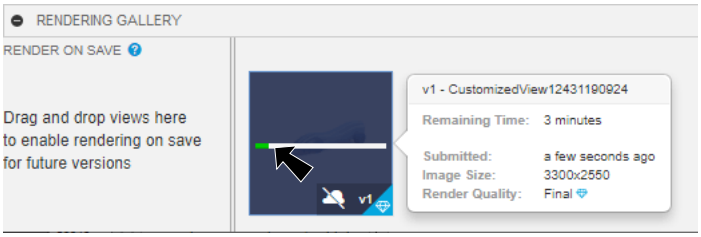



**Fig. 35**

Step 4. Click on the icon of the rendered image in the Rendering Gallery to open the Rendering Gallery viewer, **Fig. 34**.


**Fig. 36**

Step 5. In the Render gallery viewer, **Fig. 37**
click Download icon .
click Download image as **PNG**
navigate to the folder you want to save the image
key-in a file name
click Save.
click Close.

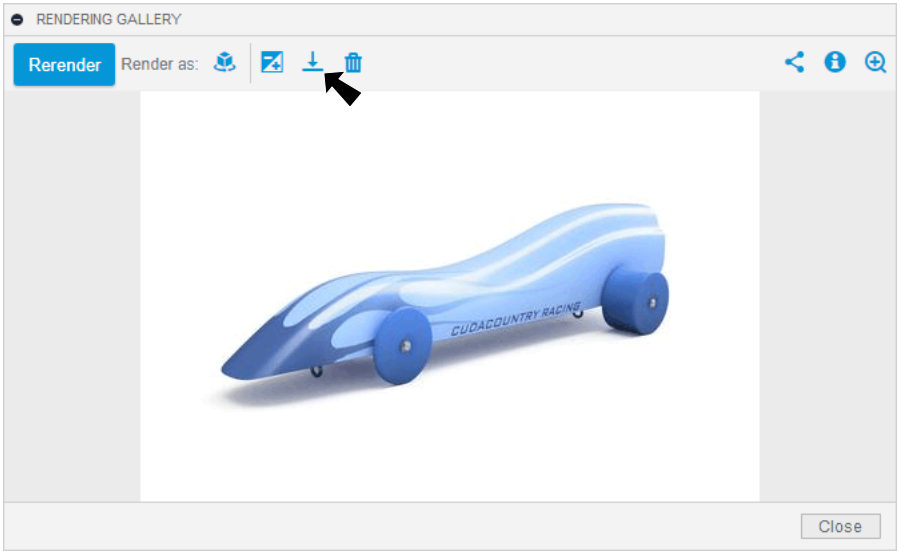



**Fig. 37**