



Grand Blanc High School Robotics Team



Initial Member Level Deliverables Create a Part File

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Mentor(s) to ask if you have questions about, and may sign off on this Challenge: Clinton Bolinger, John Boehnke OR Mike Hasselbach

This challenge is a prerequisite for the "Create a Working Drawing from your Part File" Challenge. You MUST complete this challenge before you may begin work on the working drawing challenge.

If you are new to CAD, you should complete the "ASSEMBLE CLAW IN AUTCAD INVENTOR" Deliverable before starting on this one.

Before Beginning this Challenge:

1. Use a device (preferably a personal laptop, phone, etc.) to watch the "Inventor: Introduction to Parts" tutorial by Mike Hasselbach, "TheMadCADer"
 - a. If you do not have a device to watch the video, you may use one of the Team computers in the Back Room, if they are available. Please do not use one of the Programming or PR Laptops.
 - b. Link to Mike's Channel: <https://www.youtube.com/user/TheMadCADer>
 - c. Link to video: <https://www.youtube.com/watch?v=nqRIN5cf6rE>
2. Take notes in your Engineering Notebook:
 - a. Helpful things to note:
 - What is the first step in any part?
 - How is geometry defined?
 - What is extruding?
 - What is revolving?
3. If you have not already done so, create a personal folder on the EngiNERDs Server:
 - a. From a computer in the back room, open an explorer window
 - b. On the left side of the explorer window, scroll down and select the "EngiNERDs Shared" drive, go into the "Students" folder
 - c. Right click and select to create a "New Folder"
 - d. Change the name of the folder to YOUR First Name, Last Name (Example: Clinton Bolinger). Please do not use nicknames, unless it is a shortened version of your real name (i.e Nick instead of Nicholas).
4. Check the board in the conference room to see if an object for this challenge is available to check out.
5. See Brandi or Cathy in the Conference Room to check-out an object from the bin labeled "Create a Part File (3D Model) of an Assigned Object Challenge" that is located in the conference room, this is the item you will be creating a part file from.

Challenge Instructions:

You must complete the following portions of this challenge on one of the four desktop computers in the back room at Premier OR download a licensed student edition of AutoCAD Inventor on your personal computer/laptop. Please visit www.team2337.com/2017VEX for directions on how to download Inventor.

Part One - Measurement:

1. There are different ways parts are measured for their size. For the purposes of this challenge, a tape measure or ruler will fit acceptable tolerances. More precise tools include calipers.



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Part Two - Modeling

1. Make sure you've watched the entire "Inventor: Introduction to Parts" tutorial video, and completed the Engineering Notebook portion above.
2. Open "Autodesk Inventor Professional" (version year doesn't matter)
3. Go to "New", and under the Parts category, create a "Standard.ipt"
4. Model the selected part using the techniques described in the video.
5. When finished, save the part file in your student folder.

Engineering Notebook Entry Instructions:

1. Take notes while you are working in CAD and discuss any difficulties that you may have
2. Use complete sentences to answer the following questions:
 - a. What did you think of the video? Was it helpful? Would you like to watch more?
 - b. Did you enjoy this task? Why or why not?
 - c. What is the first step in any part?
 - d. How is geometry defined?
 - e. What is extruding?
 - f. What is revolving?
 - g. What did this task teach you about methods of creating parts?
 - h. Why is it important to fully constrain geometry in a sketch?

To Complete Your Challenge:

1. Ensure that your Engineering Notebook entry is complete,
2. Open your completed assembly on the computer,
3. Find one of the Mentors listed on this challenge and escort him to the computer you used, and ask him/her to inspect your completed work,
4. Ask the Mentor to approve your Engineering Notebook entry and have your deliverables checklist validated,
5. After you've been validated:
 1. Save your work,
 2. Close AutoCAD,
 3. Shut down the computer (only at the end of the meeting).
6. Clean your workspace AND the floor around you:
 1. Wipe off tables,
 2. Push in Chairs,
 3. Sweep the floor.

More Information:

If you ever get stuck or need assistance with Inventor, see if Mike is around. He's always happy to help.

- Numerical values in Inventor can be entered as fractions, decimal conversion is not necessary (example "1/16" can be entered instead of ".0625")
- The **Browser** is among the most important things to have when working in Inventor. Refer to this: <https://www.youtube.com/watch?v=auOG1kTD2Kk>
- There are good ways to make holes and bad ways. Refer to this: <https://www.youtube.com/watch?v=n9kQr0DfM3w>