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**Grand Blanc High School Robotics Team**  
**2015 Mechanical Deliverable**  
Create a Part File (3D Model) of an Assigned Object Challenge



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Mentor(s) to ask if you have questions about this Challenge: Clinton Bolinger 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.***

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, if they are available.
  - 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?
  - b. What did you think of the video? Was it helpful? Would you like to watch more?
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).

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**You must complete the following portions of this challenge on one of the four desktop computers in the back room at Premier. If you need to use the computer, and someone is using it for non-Team related tasks, you may graciously ask to use the computer for VEX Team work. If you have problems, find Clinton or Brandi.**

Challenge Instructions:

Part One-Measurement:

1. From the bin labeled "Create a Part File (3D Model) of an Assigned Object Challenge" that is located in the conference room, choose one of the machined parts. This is the item you will be creating a part file from.
2. 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.

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.



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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:
  - Did you enjoy this task? Why or why not?
  - What is the first step in any part?
  - How is geometry defined?
  - What is extruding?
  - What is revolving?
  - What did this task teach you about methods of creating parts?
  - 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 part file on the computer,
3. Find Clinton and escort him to the computer you used, and ask him to inspect your completed work,
4. Ask Clinton to approve your Engineering Notebook entry and have your deliverables checklist validated,
5. Save your work, close AutoCAD, shut down the computer,
6. Leave your workspace cleaner than it was when you found it.

Optional 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>