Assignment 4

CAD Mechanical – Part 1

Tools, Text, & Copy

Objectives

In this assignment you will apply **draw commands** to draw lines, use the **distance command**, copy multiple lines using the **mirror command**, reposition the drawing with the **move command**, and apply the **dtext command**, as well as skills learned in earlier assignments.

Getting Started

1. When AutoCAD's menu appears, scroll down and select the **Otto 2016.dwt** template file as you have on the previous assignments.

2. Complete the title block and by typing the information into the block. The drawing will be drawn **full scale**.
3. Insert the drawing title and drawing number illustrated below:

   Extrusion Dye C8
4. Use the goldenrod drawing to follow with the instruction manual. Do not try to draw the problems without looking at the instructions in the manual.

5. When the C8 Extrusion Dye is **completed**, continue on the next assignment C9 the Studebaker Gasket Plate.

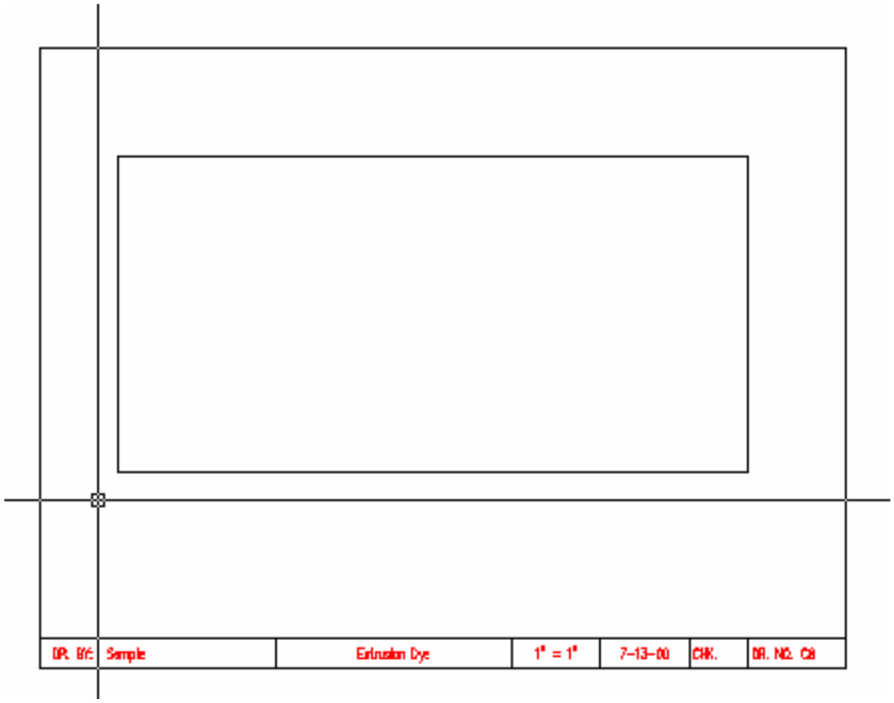
Note: If a pop ask for you to make a selection, choose the one that is recommended.

Extrusion Dye C8

1. Drawing **C8** will introduce three new drawing concepts. The **distance** (Dist) command, the **mirror** command (Mirror), and the **text** command (Dtext).

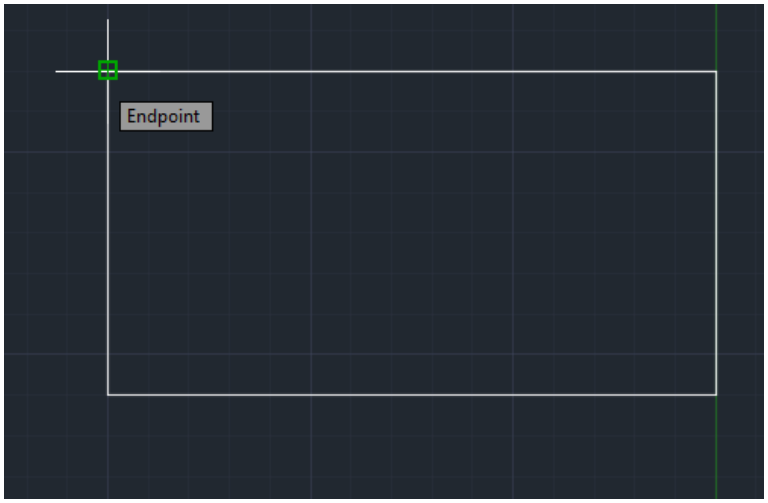
2. Remember to draw lines in the correct layers.

3. Start the drawing by **drawing** a **rectangle** that is **4" by 8"** in size as illustrated:

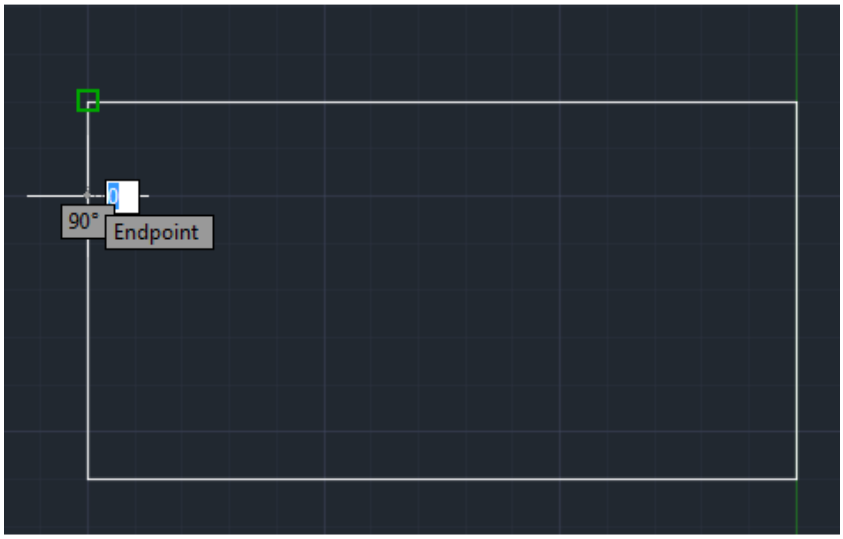


Polar Coordinates

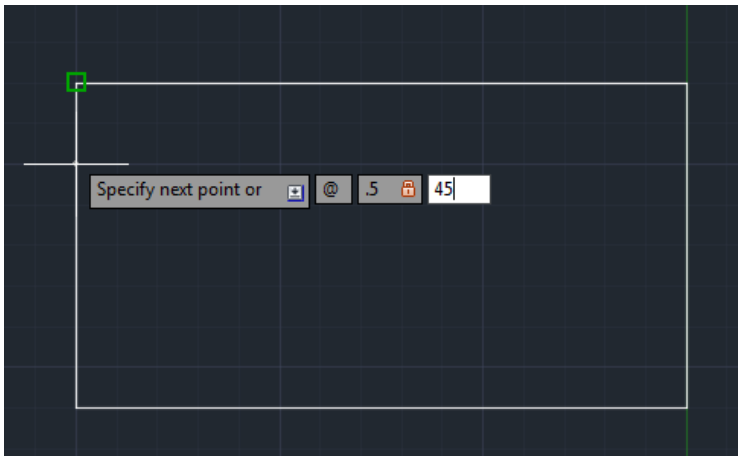
1. Select the line tool and hover over the top left corner until the screen says "End Point".



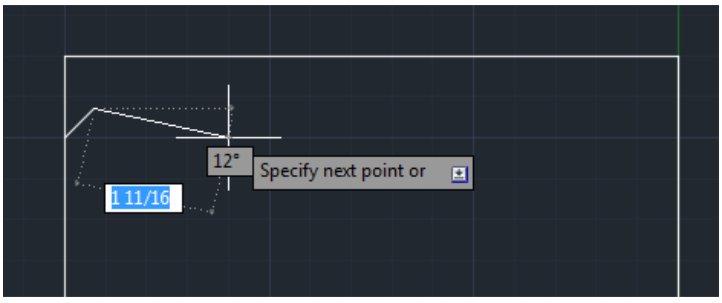
2. Now move the cursor down until at 1” and click.



3. Type “**@1/2<45**”.



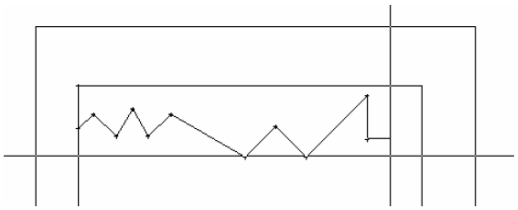
4. Press Enter. The **line** is **drawn**. Notice the command is asking for the next point. **Do not try** to **draw these** lines using the mouse. It will not work. You **have to type** the **polar coordinates** to complete this segment correctly.



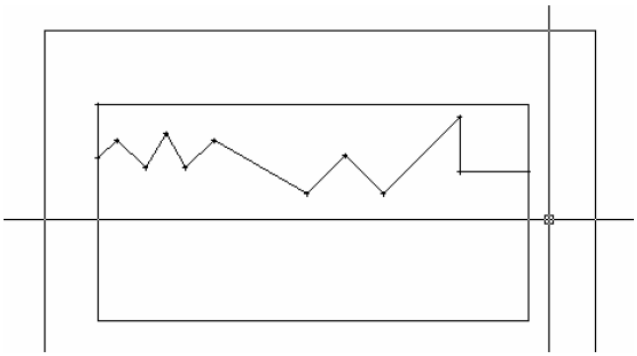
4. Type "@3/4<315" (Type: @3/4 (tab) 315)
5. Continue typing the following points:

CD	¾	60
DE	¾	300
EF	¾	45
FG	2	330
GH	1	45
HI	1	315
IJ	2	45
JK	1	270

6. Continue entering the coordinates until your reach point K.

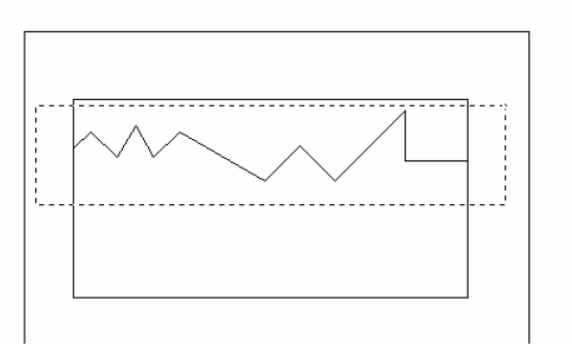


7. If the **ortho** is **not on**, click the **ortho button**. Move the **mouse** to the **right** of **point K** until it reaches the **right** vertical **line** at **point L**. **Click** the **mouse** when the **crosshair** is **on** the **vertical line**.

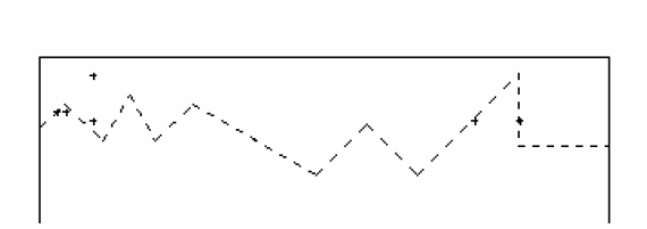


Mirror and Midpoint

1. From the **Modify** menu select **Mirror**. Drag a window around **only** the **polar coordinate lines** that you just drew as illustrated:

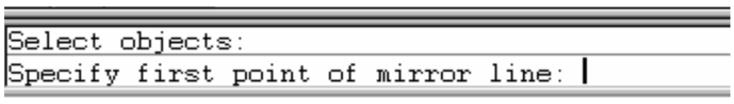


2. **Click** the **mouse** button when you have **selected** only the **polar coordinate** lines. Only the **lines should** be highlighted.



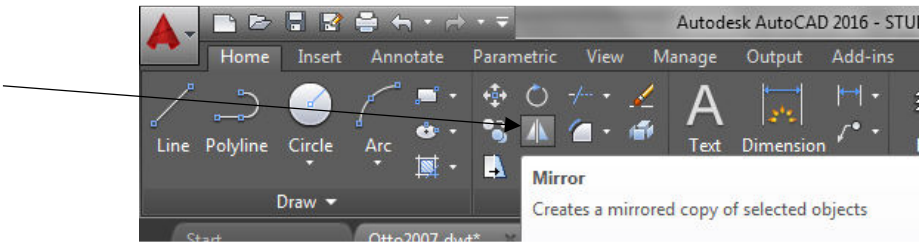
Note: If other lines are being accidentally selected when you drag the window around them, you can pick each line individually.

3. After the **correct lines** are **selected** press the **Enter Key** one time. Read the command line and you will notice it is asking for the **first point** of the **mirror line**.

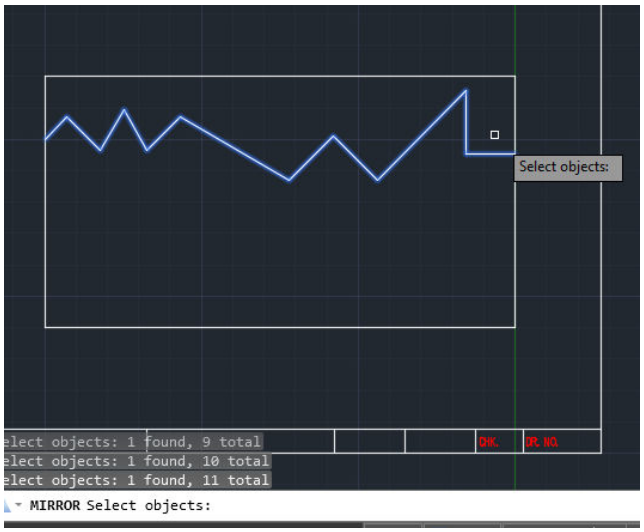


4. Type midpoint.

5. **From the Home Ribbon Menu select Mirror.**

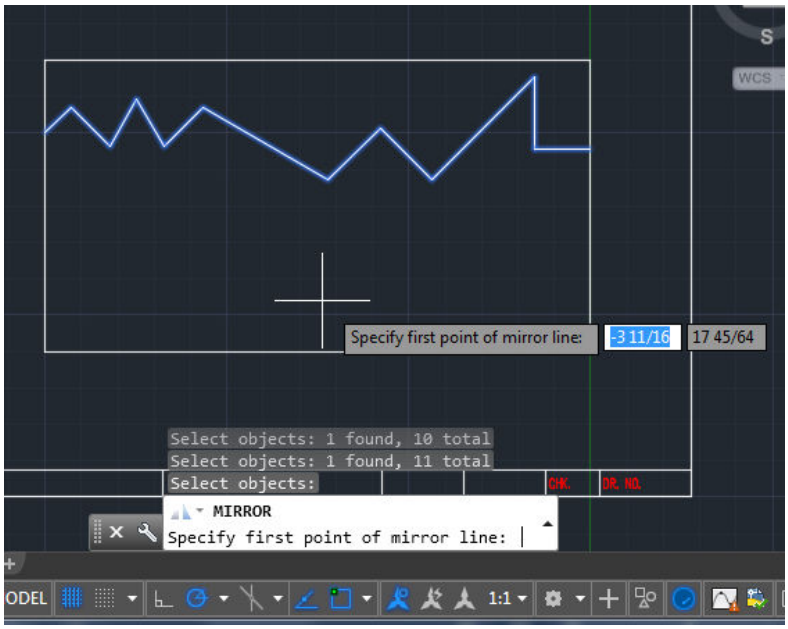


6. Drag a window around only the polar coordinate lines that you just drew as illustrated:

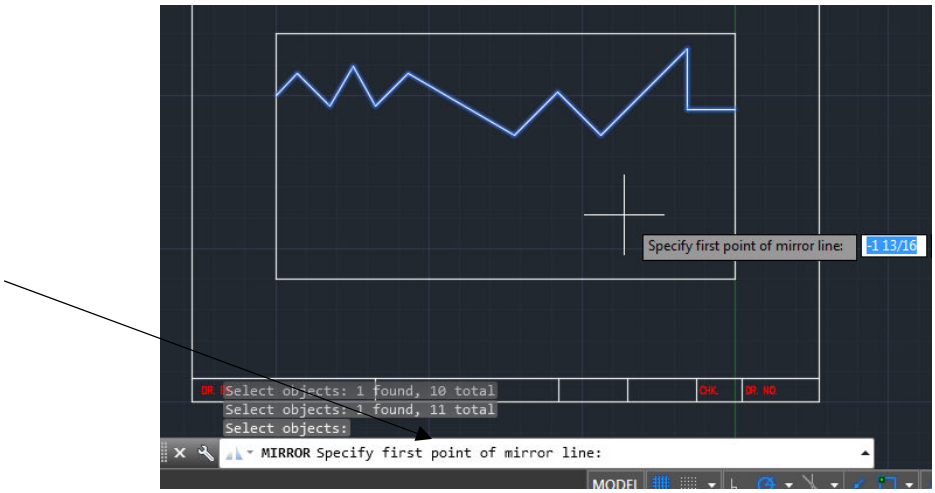


Note: If other lines are being accidentally selected when you drag the window around them, you can pick each line individually.

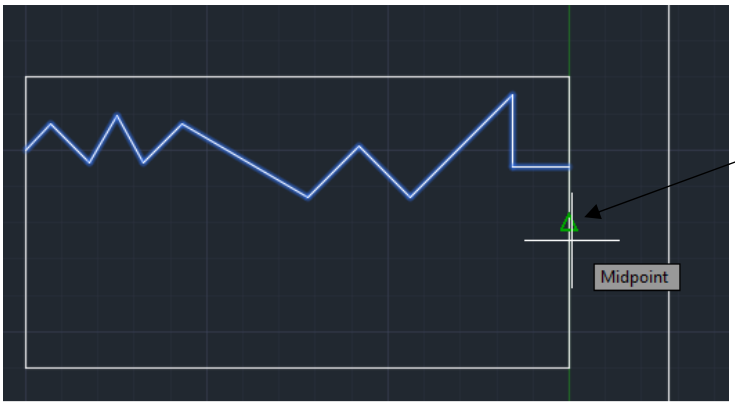
7. After the **correct lines** are **selected** press the **Enter Key** one time. Read the command line and you will notice it is asking for the **first point** of the **mirror line**.



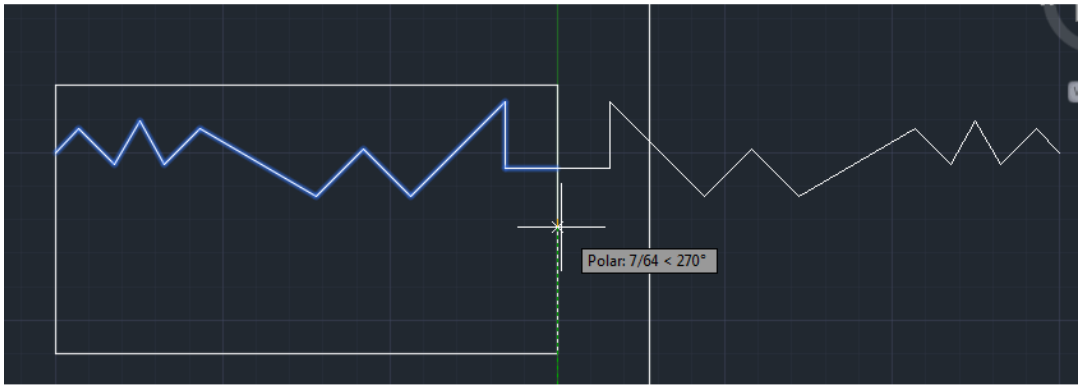
8. The command line will now ask for you to Specify the first point of the mirror line.



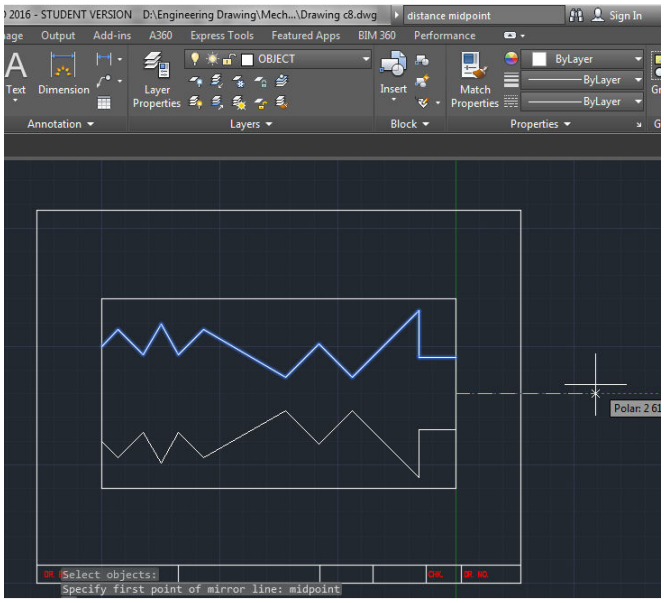
9. Type midpoint and then place your cursor over the right vertical line of the box and click:



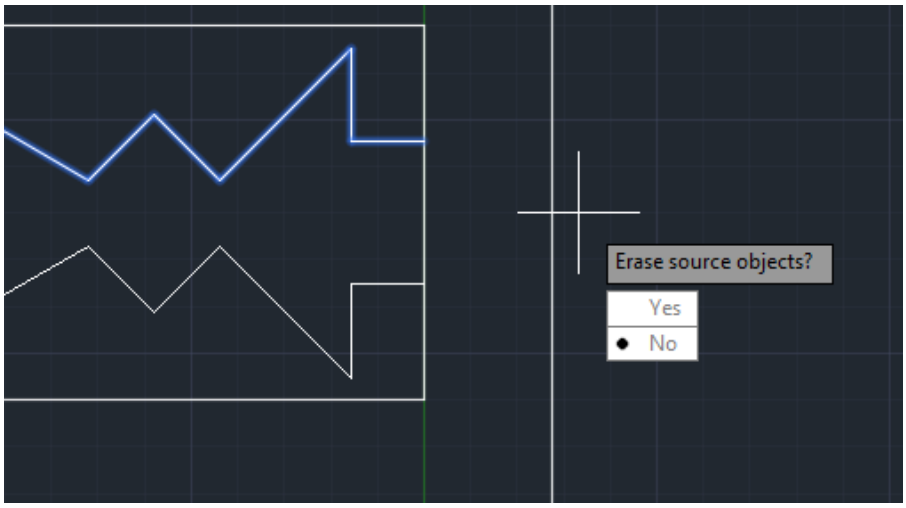
10. The screen should now look as below:



11. Move your cursor until the copied object looks as below and click your mouse.

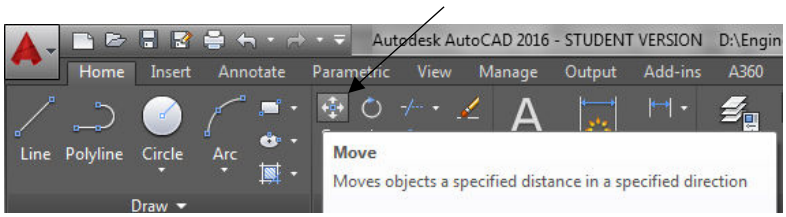


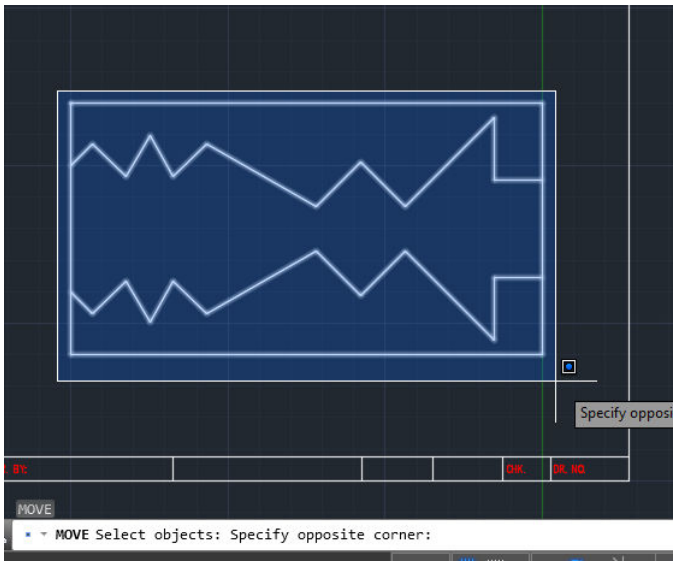
12. Press enter:



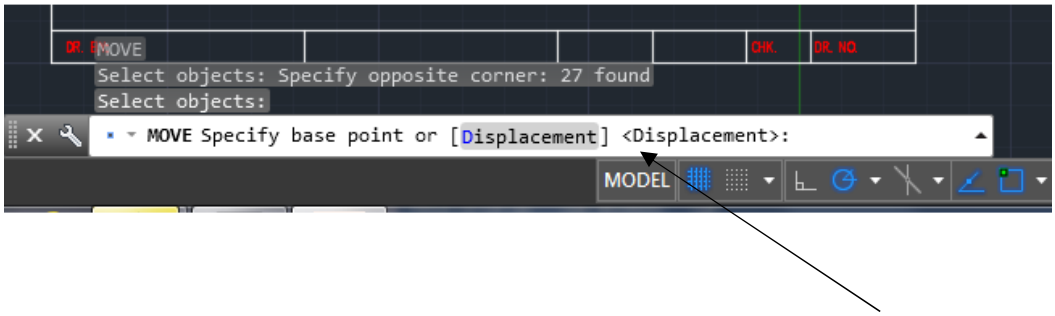
Move Command

1. Before the text is positioned below the drawing, you are going to learn the move command. From the **Modify menu** select **Move**. When the pick box appears, **drag** a **window** around the **box** and the **mirror** image of the drawing.





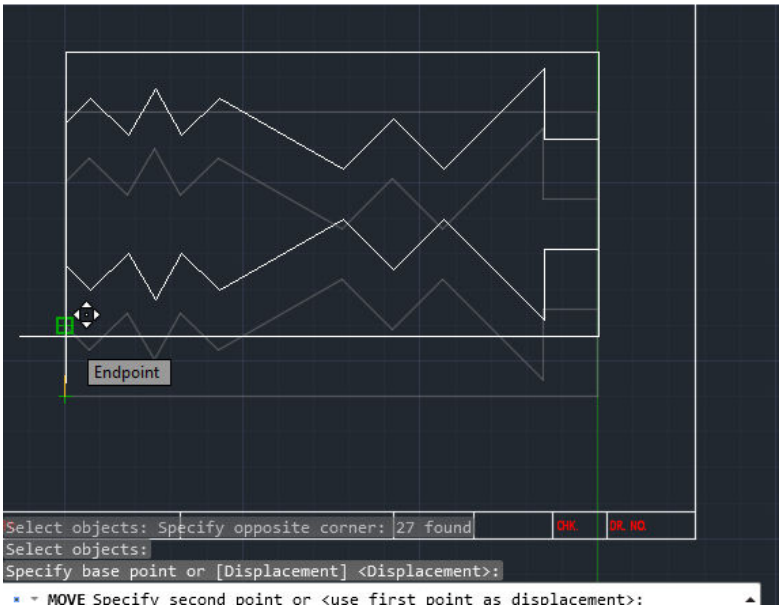
2. After the image is highlighted, press the Enter key. The command prompt asks for a base point of displacement.



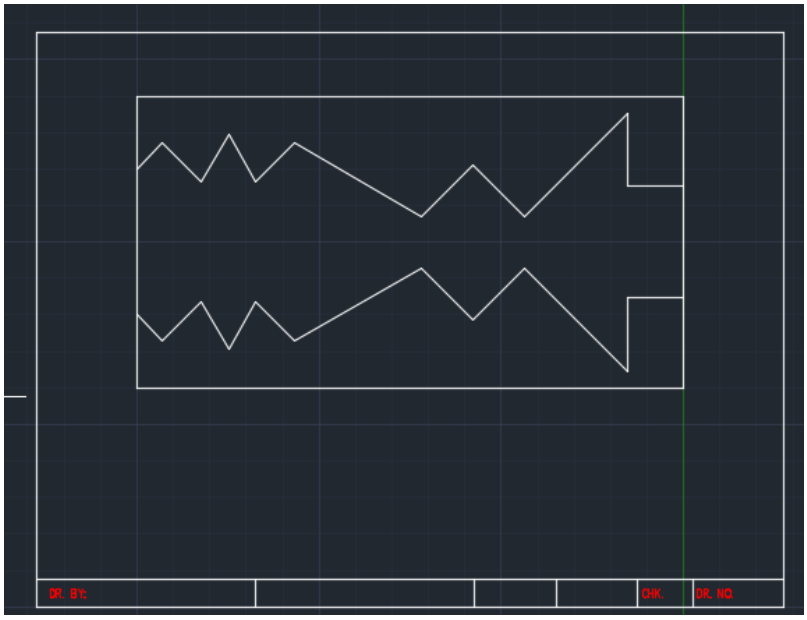
3. Specify this **location** by picking the **lower left corner** of the **drawing**, then **click and drag** it with the **left mouse button**. **Move** the **mouse** and you will notice that the selected image will move. If the **ortho button** is on, the drawing can only be moved horizontally or vertically. **Click** the **button** to **turn ortho off**.

4. Move the **drawing** to a **location** that is **centered** and **closer** to the top of the **title block drawing area**. Remember to allow some room for **dimensioning later**.

5. The original image is highlighted with the new position darker as illustrated:



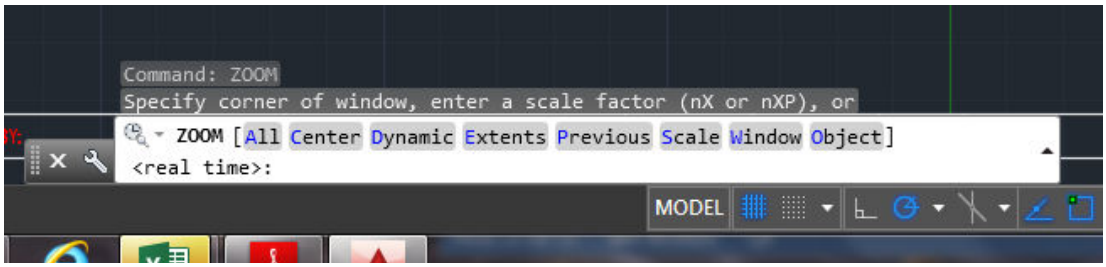
6. When you reach the desired location, click the left mouse button.



Zoom Window Command

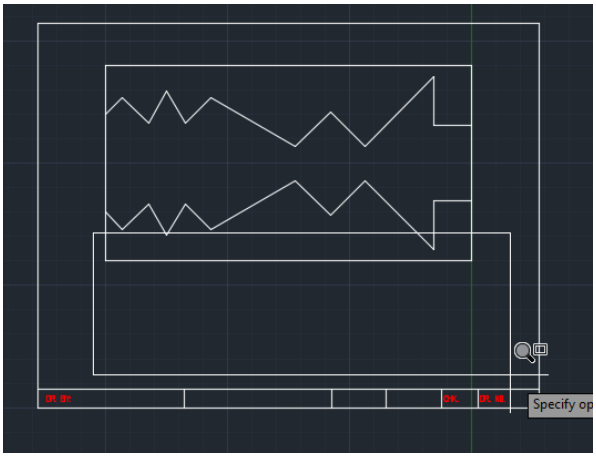
1. Before you **input** the **text**, you are going to **zoom** a **window** around the bottom of the drawing where the text will be located. This will enable you to **see** the **text better** as you type.

2. Type “zoom” then (enter), type “window” then (enter)



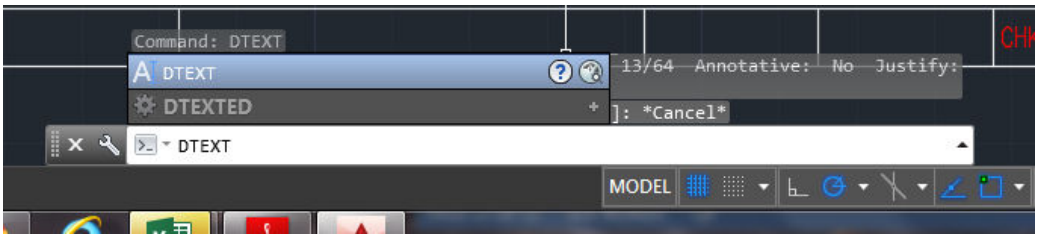
3. The **commands prompt** asks for a **first** corner and **second corner** for the window. **Click** and **hold** the **button** while **dragging** the **mouse** to **select** the area **illustrated**:

4. The area is now zoomed to the lower section of the drawing.

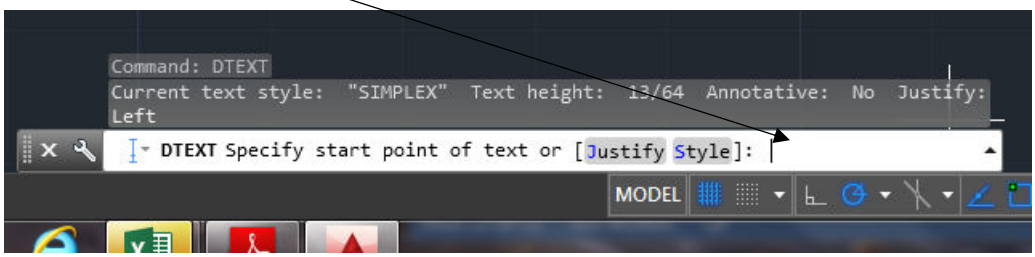


Dtex Command

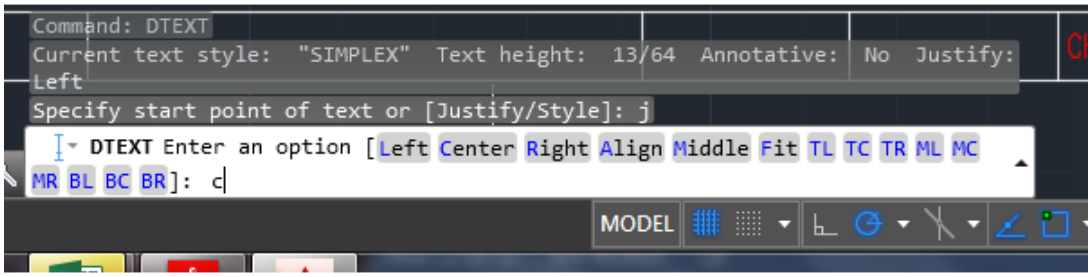
1. Click into the command prompt box and type dtext.



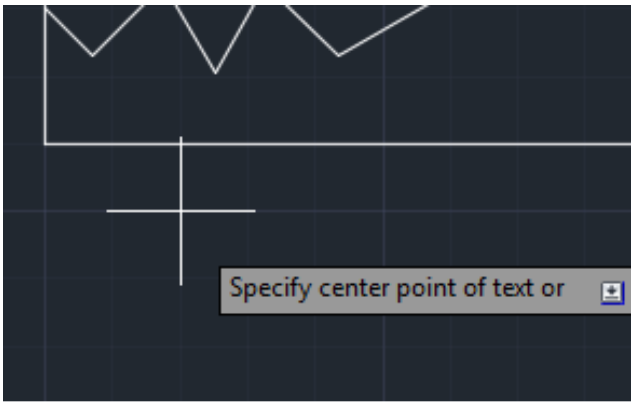
2. You will answer a series of questions before you can type. Click the command box and type J for justify.



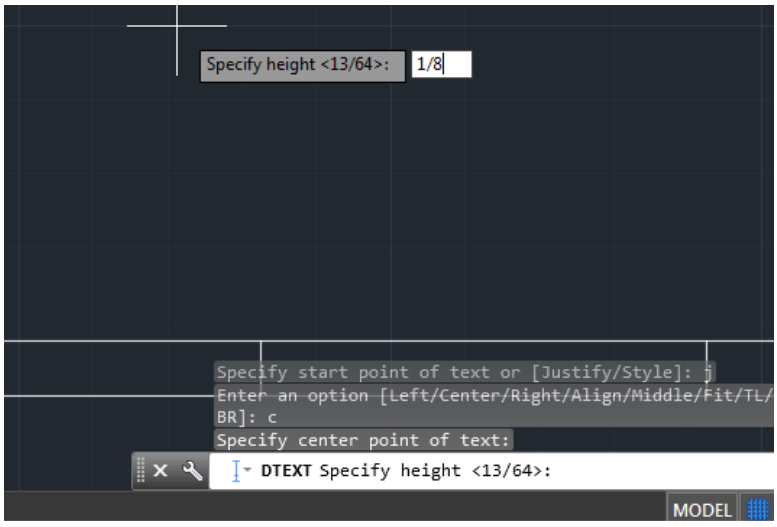
3. Press the Enter key and type C for center.



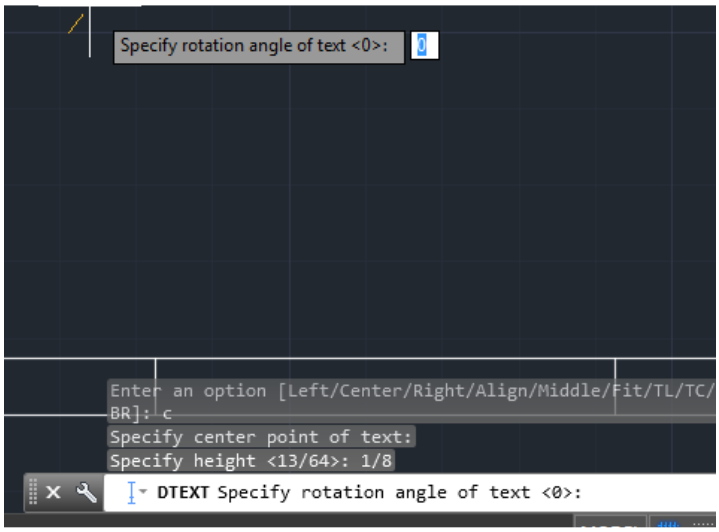
4. Locate the column of the text and Click Enter.



5. Specify the height of be 1/8.

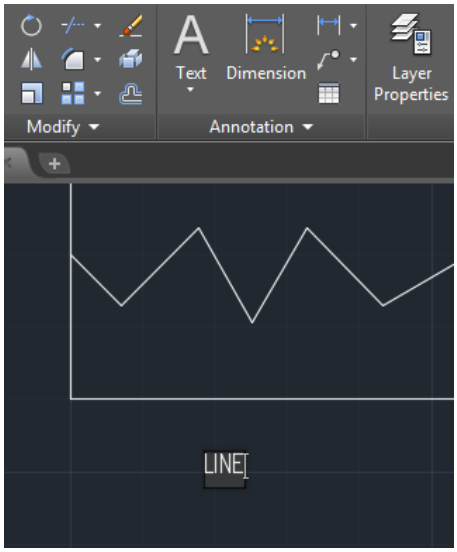


6. Press the Enter key one time. The command prompt displays a question concerning the rotation angle.

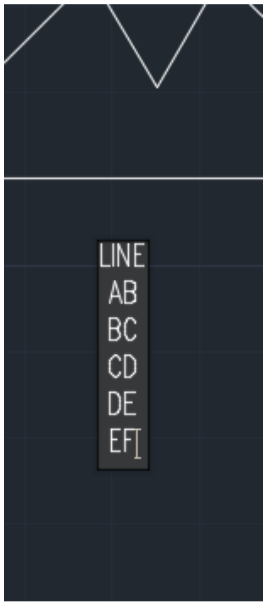


7. Press the Enter key again. A cursor point appears at the insertion point for the text. Press the Caps lock key one time and click the command prompt box with the mouse.

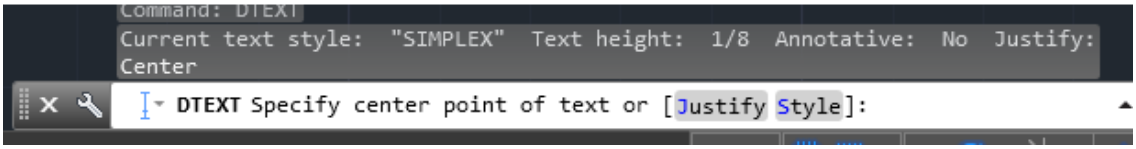
8. Type **LINE** at the **Enter text** prompt. Notice the word will appear at the insertion point.



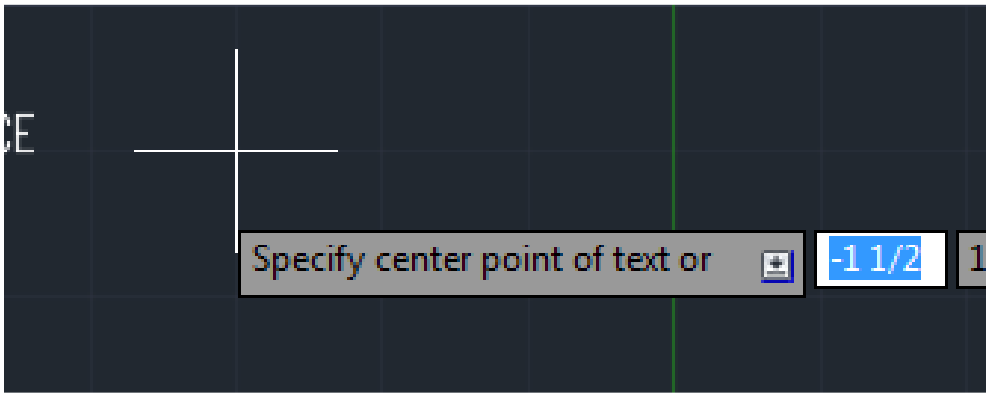
9. Press the **Enter** key and **type AB**. **Press** the **Enter** key after typing each set to letters in the entire first column (as illustrated below) through **EF**.



10. Click Enter until it reads DTEXT Specify center of text.

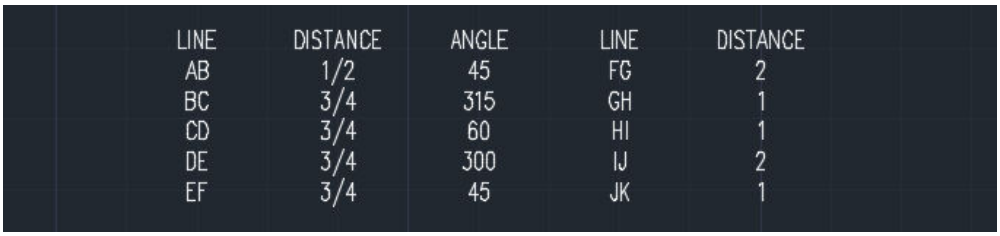


11. Move the **mouse cross hair** to a new location that aligns to the **right** of the **word LINE**.



12. Click the **mouse** at **this position** and continue **typing** the **DISTANCE** column as you did in the first column. When you reach the bottom of a column, always **align** the **next column** to the **right** and **continue typing** until the last **text** is **typed**.

13. When you **type 270**, press the **Enter key twice**. This will **allow** you to **exit** the **dtext** command.

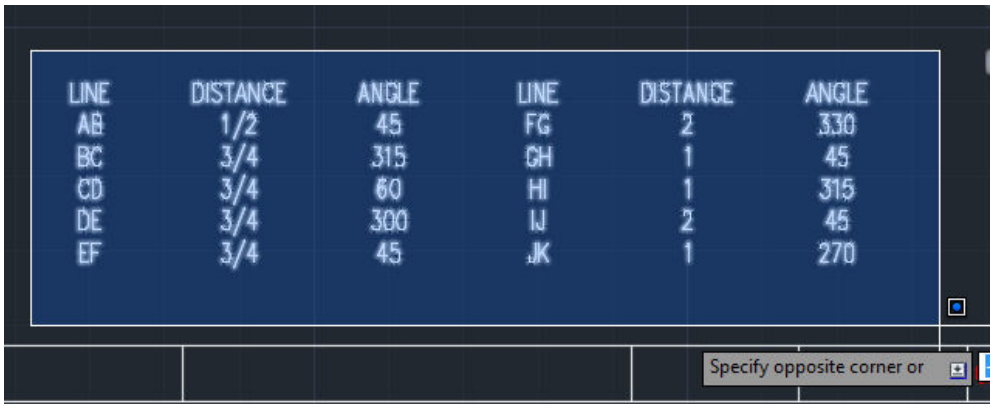


LINE	DISTANCE	ANGLE	LINE	DISTANCE
AB	1/2	45	FG	2
BC	3/4	315	GH	1
CD	3/4	60	HI	1
DE	3/4	300	IJ	2
EF	3/4	45	JK	1

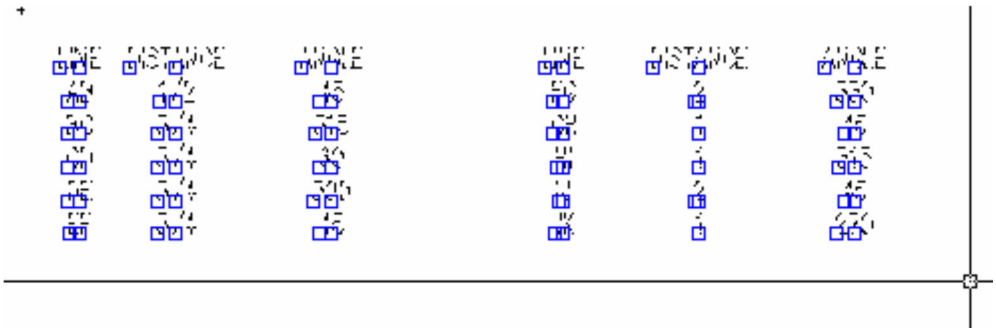
Changing Layers

1. **Dimensions** and **text** are **supposed** to be in the **dimension layer** and have a **color** of **red**. We **did not type** the **text** in the **correct layer**. The next step is a **modify command** that will allow us to **change** the **text** into the **correct layer**.

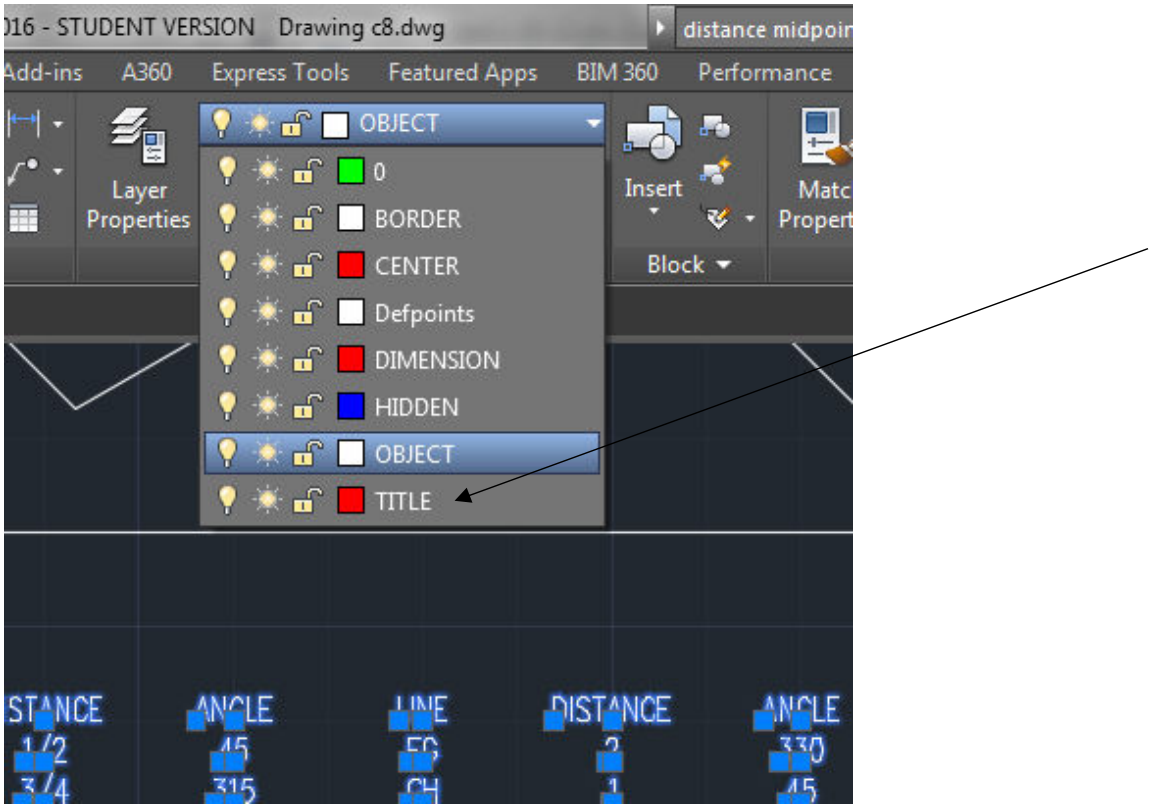
2. **Position** the **cross hair** above the **text** to the **left**. While **holding** the **left mouse button, drag** to the **lower right**. **Only** make a **window around** the **text**.



3. When the **window** is **around** the **text** as **illustrated** above click the **left mouse** button. The **text** is **selected** and **you can** see the **grips** on the text



4. From the ribbon bar, Home tab, click on Object to Title.

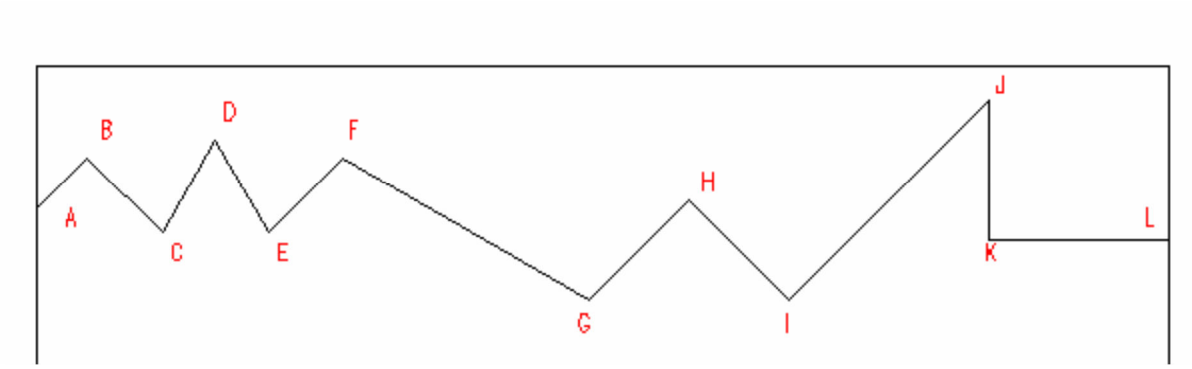


5. **Press** the **Escape key twice**. You will notice that the text is in now **red** and in the **dimension** layer.

Distance Command

1. You are now **ready** to **insert** the **text** onto the lines of the **first polar coordinates** that you drew. The **object layer** is still **active**. Remember to change to the **dimension layer** before **typing** the **labels** on the lines.

2. Use the **vertical scroll bar** and **scroll** to the **top** of the **drawing**. Click the **command line** again and **type dtext**. **Position** the **crosshair** in the correct **location** for each **label**.

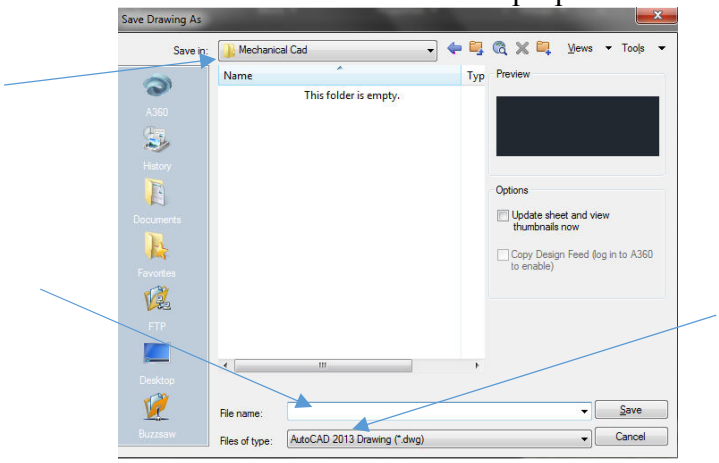


Note: Remember to change the layer to dimension before typing the text labels. Do not to forget to dimension the drawing when you finish the text.

3. Click the **command line** and type **z** (zoom) then **press** the **Enter** key. Type w and **press** the **Enter** key. Select the drawing.

4. **Complete** the overall dimensioning as shown on the goldenrod sheet C8.

5. Save the file with the correct name **format** and in the proper **location**.



Studebaker Gasket Plate

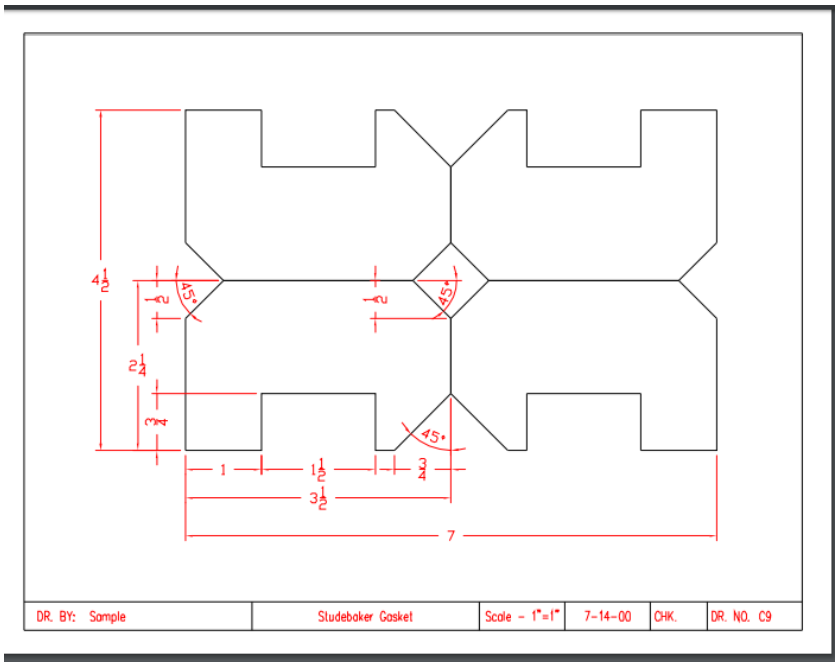
Review of Previous Assignments

1. Select the **New** icon from the menu at the top of the screen

2. When AutoCAD's menu appears, scroll down and select the template file Otto 2016 as you have on the previous assignments.

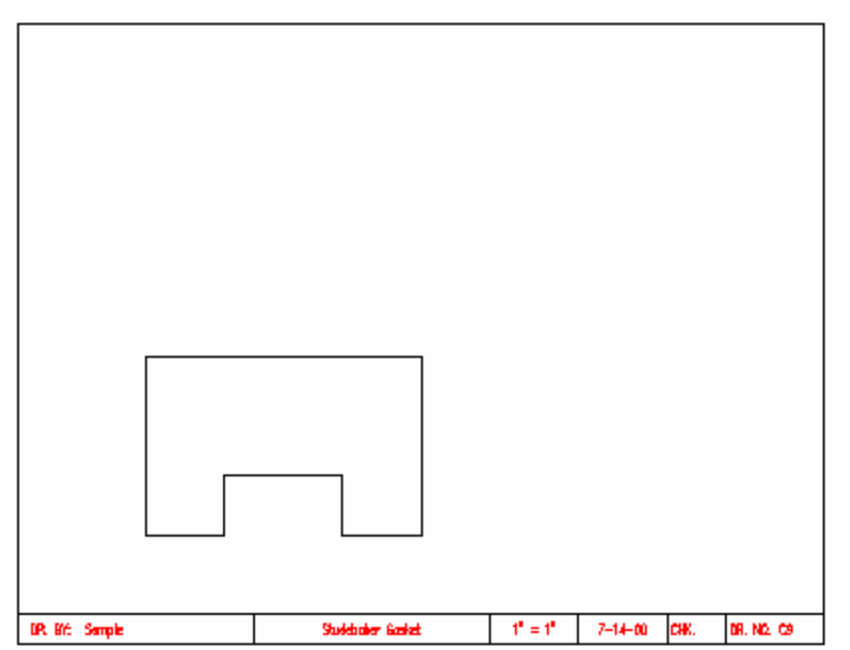
3. Insert the title block and type the information into the block. The drawing will be drawn full scale (1" = 1").

Studebaker Gasket Plate C9

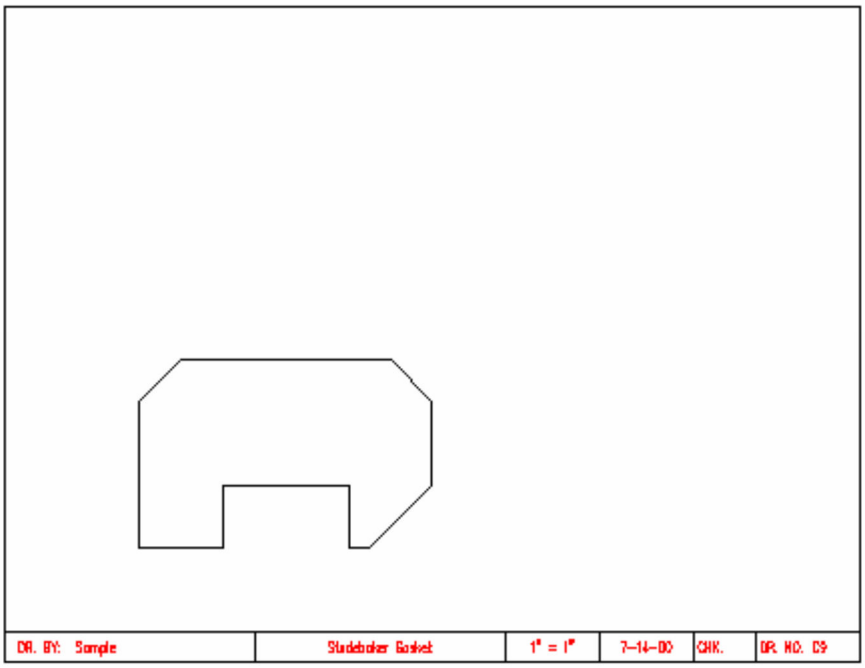


4. This **drawing** is a **test** of **all** the **commands** that you have learned in the first **eight drawings**. Minimal instructions will be given to you on this assignment. You will need to refer to previous activities for instructions, if you do not understand the procedures.

5. Begin the drawing by **using** the **Line command** to construct the first **lower left quarter** as illustrated:

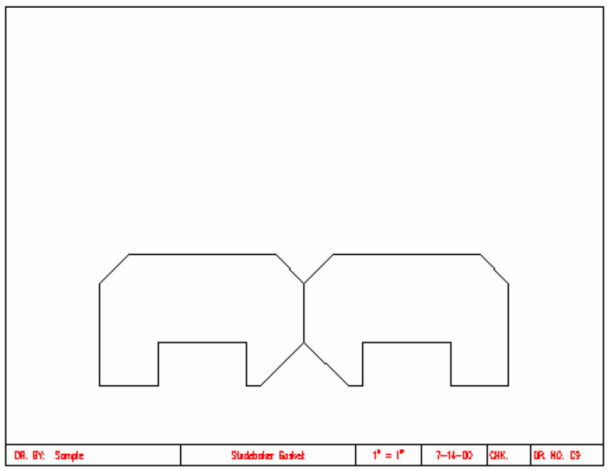


6. Use the **Chamfer command** to produce the angles as seen in the diagram below:

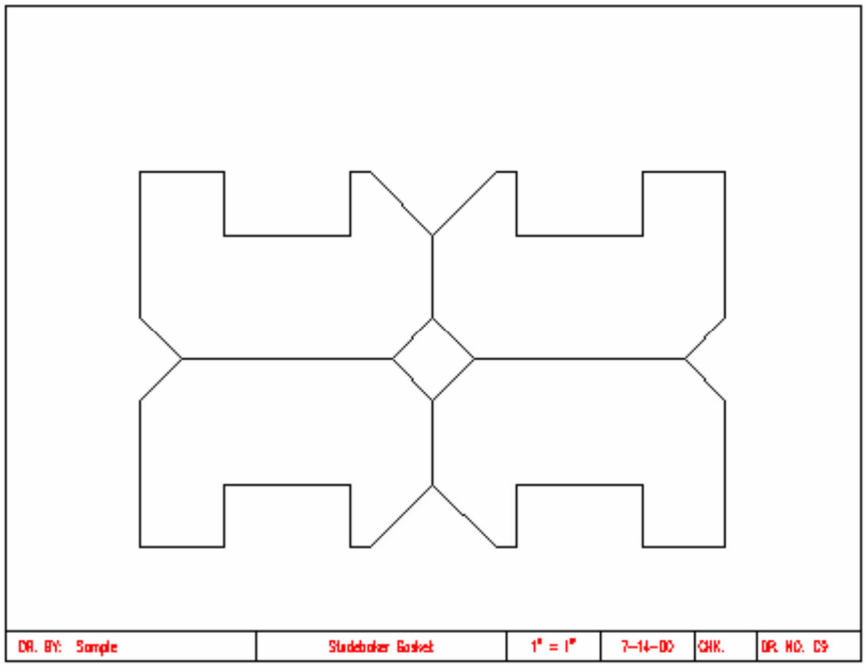


Note: Notice that not all three chamfers are the same size.
Remember to change the size of the chamfer when necessary.

7. Use the **Mirror** command to produce the **right quarter** of the drawing as shown below:



8. **Again**, use the **Mirror** command to produce the top half of the drawing as shown below:



9. Complete the drawing using angular and linear dimensioning.

10. Save the file with the correct name format and location.

Terms To Know

Distance	Mirror	Dtext
Centered	Mid-point	Move
Grips	Blips	Zoom Window