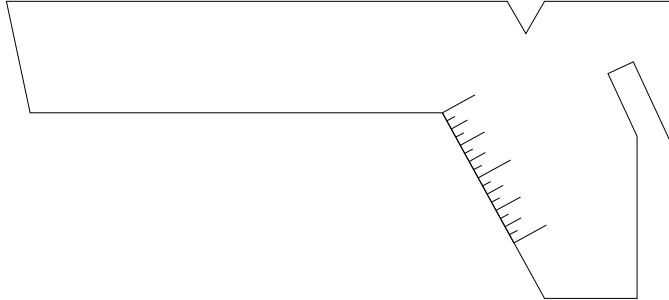


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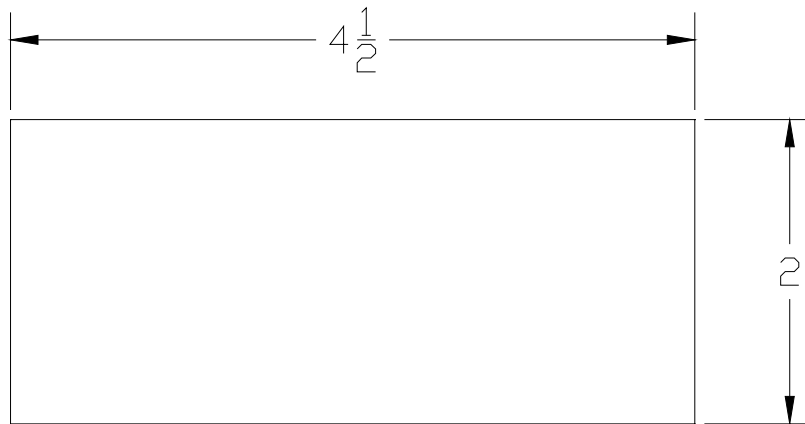
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# SHARPENING GAUGE



A sharpening gage is a very useful tool in the shop. This makes it a great project because if you build it correctly, it can serve you well for the next three to four years at Linden High School and beyond. This project will teach you how to use layout tools and sheet metal working tools correctly. The skills you will learn in this unit are very important and useful in life outside of the Ag Mechanics classroom and shop.

This packet has step by step directions on how to make your sharpening gauge. You will begin with a piece of 24 gauge galvanized sheet metal measuring  $4\frac{1}{2}$ "x2". **You will only get ONE piece, so follow these directions.**



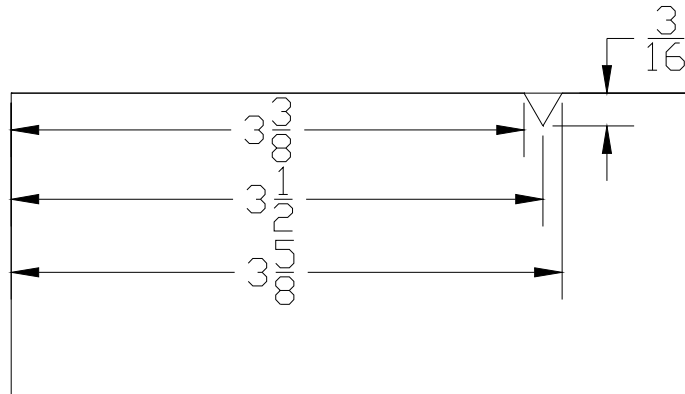
## **Layout Procedure:**

You will need to work in partners during the layout phase of this project. Start by spraying one side of your sheet metal with blue layout fluid. This makes the surface darker, so will be able to see any layout marks you will make. You will need to acquire the following tools in order to complete the layout of this project; a combination square and a scratch awl.

### **Step 1**

Choose one corner of your sheet metal to draw your measurements from. This will be the "Origin" for your measurements. Measure across from the origin  $3 \frac{3}{8}$ " and make a mark on the edge. Measure across and make a mark at  $3 \frac{1}{2}$ " and make another mark on the edge at  $3 \frac{5}{8}$ ". Use the square to make a mark  $\frac{3}{16}$ " in from the  $3 \frac{1}{2}$ " mark. This should make a triangle as shown below.

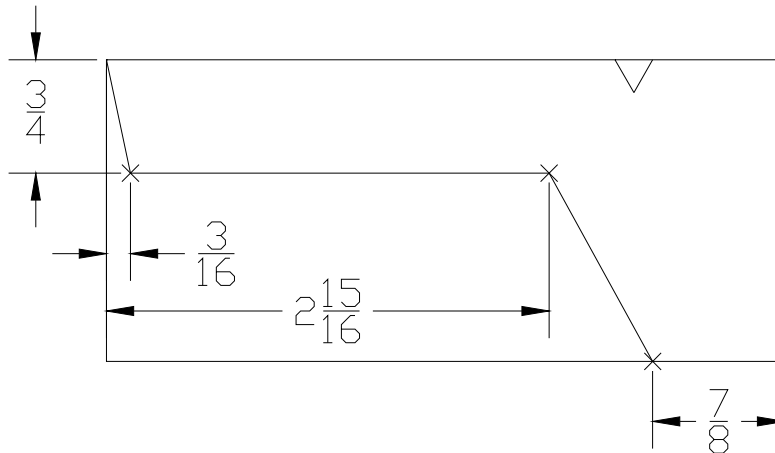
Step 1



### **Step 2**

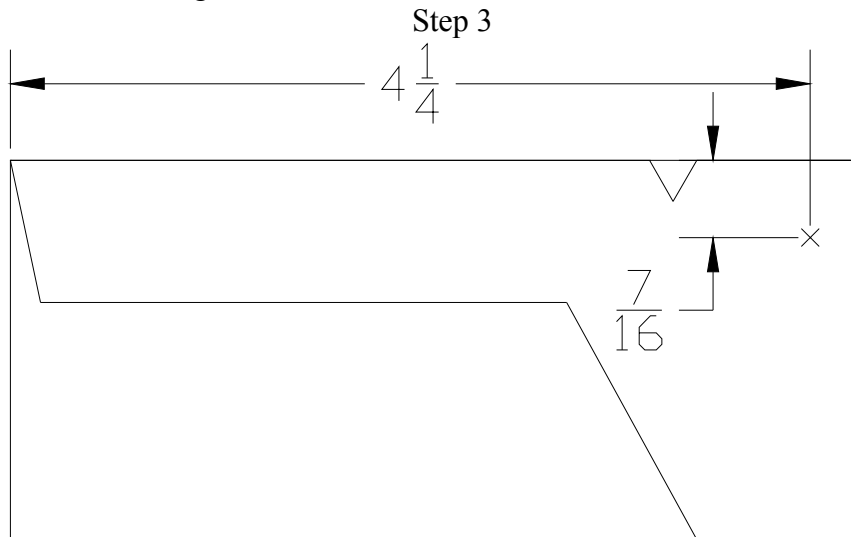
Measure down  $\frac{3}{4}$ " from the origin and mark the edge. Use your square to measure in  $\frac{3}{16}$ " and make a mark shaped like an X with the center of the X at the exact location of the mark. Return to the mark  $\frac{3}{4}$ " down and measure  $2 \frac{15}{16}$ " across. Double check to make sure the X mark is  $\frac{3}{4}$ " down from the top. Mark the bottom edge  $\frac{7}{8}$ " back from the corner opposite the origin. Connect the marks using your rule and scratch awl.

Step 2



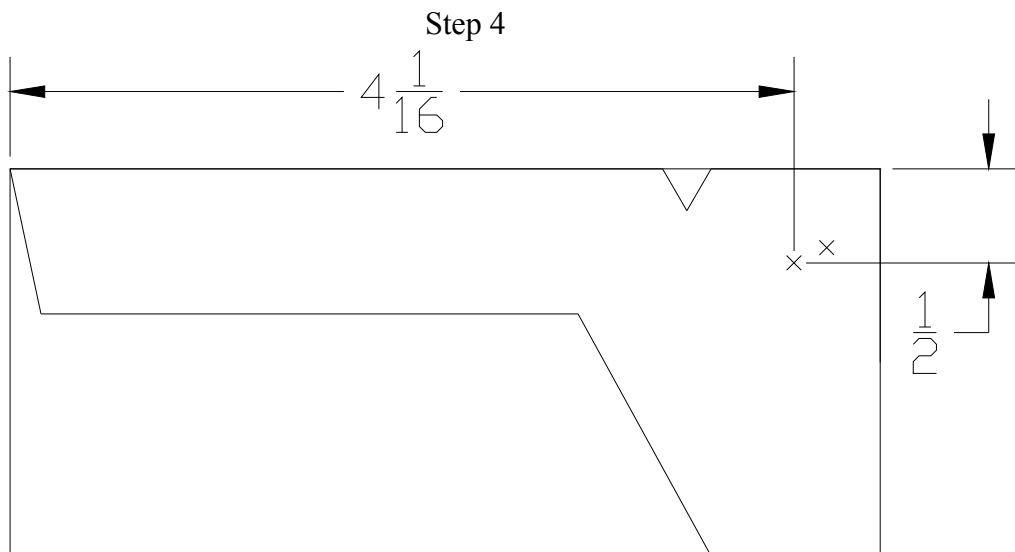
**Step 3**

Measure  $4 \frac{1}{4}$ " across from the origin and mark the edge. Measure down  $\frac{7}{16}$ " from that mark on the edge and make an X mark.



**Step 4**

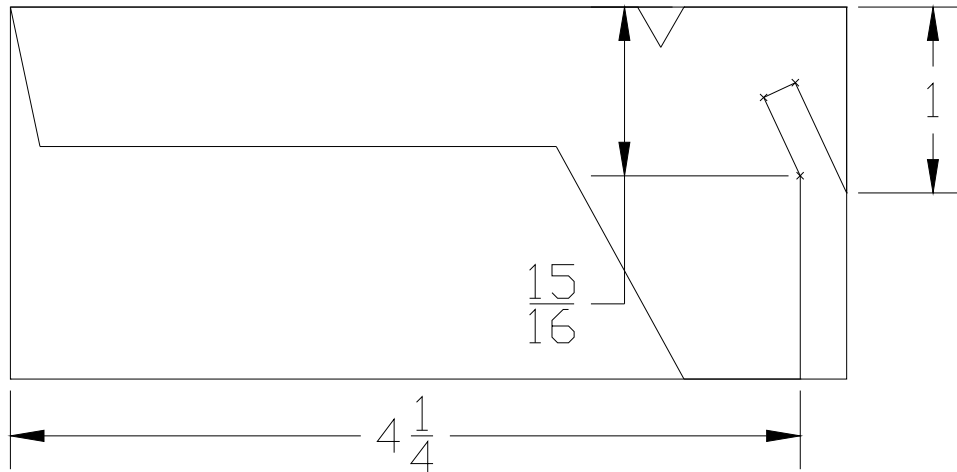
Measure  $4 \frac{1}{16}$ " across from the origin and mark the edge. Measure  $\frac{1}{2}$ " down from that edge mark and make an X mark.



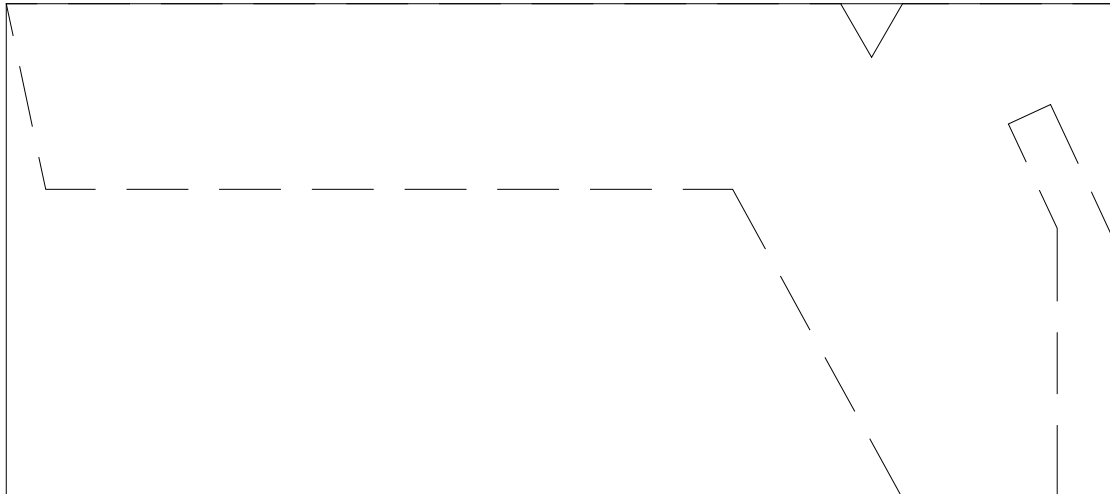
**Step 5**

Measure down 1" from the top corner across from the origin and mark the edge. Measure 4 1/4" across from the origin and make not of the mark you have made. Measure down 15/16" from that mark and make an X mark. Measure 4 1/4" across the bottom from the side closest the origin and make a mark. Connect the marks using a rule and scratch awl to complete the outline of the project.

**Step 5**



**Finished Layout**



**Show your completed parts to the teacher before continuing**

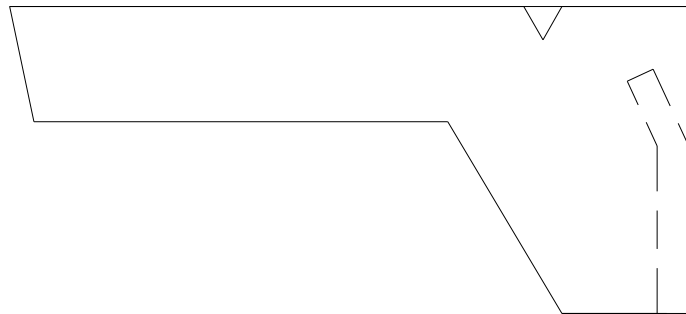
## Cutting Procedure

**Note: cutting sheet metal creates razor sharp edges. Be careful not to cut yourself when cutting out your project.**

### Step 1

Begin by cutting out the basic shape of the sharpening gauge. Trying to cut exactly on the line can be difficult if you are cutting through a lot of material, so try to make a coarse cut to get the basic shape first, and then make a fine cut by cutting exactly on the line.

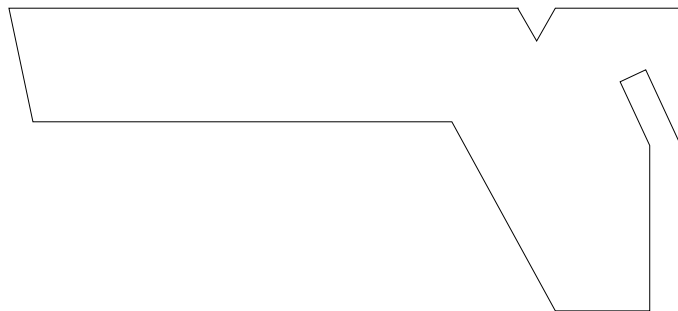
Step 1



### Step 2

Cut out the V notch at the top of the gauge. Try not to cut too far, or overlap your cuts. Carefully cut out around the right side of the sharpening gauge as the point will bend very easily. Don't worry about cutting exactly into the corners; those will be cleaned up with a file later.

Step 2



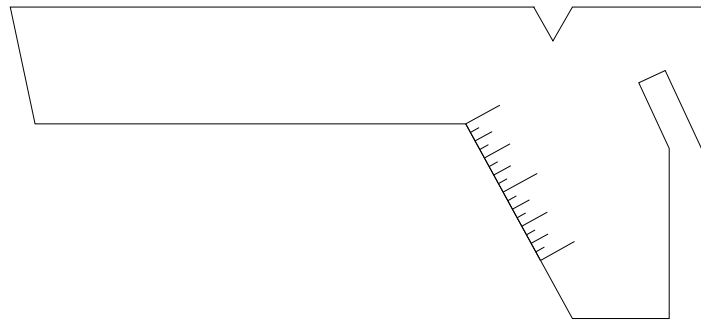
### Step 3

Use a flat file to square up the corners on the inside of the recess on the right side of the gauge. To do this, set your gauge on a wooden block and use the file in a vertical fashion. Remember a file only cuts on the forward stroke, so don't apply pressure on the back stroke. Use the file to remove any sharp edges that may be on your gauge. Finish off the edges with a small piece of sand paper for a nice soft feel. Don't file or sand too much, because you could change the angles on your sharpening gauge.

#### **Step 4**

Use a rule and a scratch awl to make the scale along the inside of the large angle. Scratch these scale lines deeply so they won't wear away. The scale should look exactly like an inch on a ruler. Start by marking the 0", 1/2", and 1" graduations. Make these 1/2" long. The lines should be square with the edge. Next, mark the 1/4" and 3/4" graduations. Make these 1/4" long, making sure they are square with the edge. Mark the 1/8", 3/8", 5/8", and 7/8" graduations, making them 1/8" long and square with the edge. Last, mark the 1/16", 3/16", 5/16", 7/16", 9/16", 11/16", 13/16", and 15/16" graduations, making them 1/16" long and square with the edge. The result should look like this:

Step 4



Remove the remaining layout fluid with some paint thinner. Using letter punches, stamp your first initial and last name along the long side (handle) to permanently identify it as your own. Set your gauge on the flat surface of an anvil and lightly strike the letter punch with a hammer.

#### **Finished Product**

