Name: _____

Art Metal

Metal Flower Assignment

Objective:

-To create a metal flower, or bouquet using 22 gauge steel sheet metal.

-To learn a variety of metal forming techniques, and how to heat treat metal for forming.

-To use a variety of metalworking equipment including a cordless drill, Whitney Punch, Plasma Cutter, MIG Welder and various blacksmithing tools.

Procedure:

-LAYOUT ->

-Ask your instructor for a piece of card stock or construction paper. You need this to layout your design.

-Draw five patterns that will create the flower on a piece of card stock or construction paper. Start with a five or six pedal flower with an overall diameter of about five inches. Create 4 more flowers each a little smaller than the last. The smallest flower should be about a one inch diameter. These designs should look similar to the example on the back of this page.

-You will also need to draw the "Under Pedals" that loosely resembles a four blade airplane propeller. Make this an overall width of four inches. Try to get it as symmetrical as possible. (SEE ATTACHED PHOTO)

-The last step in the layout phase of this assignment is the "Stem Leaf." Please also draw this on your piece of construction paper. Feel free to make more than one but you must have at least one stem leaf. It should look like a single blade from your four blade airplane propeller but maybe a little wider.

-After you have drawn all of your shapes, trace them on to a piece of 22 gauge steel sheet metal using a paint marker or sharpie. Ask your instructor for this. Place the shapes/flowers as close together as possible to prevent waste.

CUTTING AND SHAPING ->

-After you are wearing the appropriate safety gear, you can now use the Plasma Cutter to cut out your flowers. NOTE: If you are not familiar with a plasma cutter, please ask for assistance.

-After you have cut out your flowers, cool the flower pedals down in the quench container.

-Use a slag or cross-peen hammer to dent all the edges of your flower pedals. Ensure you do this to both sides of your pedals. This process makes your flower look more realistic. Do this on an anvil. (SEE ATTACHED PHOTO)

-Use a piece of wire and a ball peen hammer to put dents in your flower stem leaf. This will look like the veins on a leaf. Do this on an anvil.

-After you have put dents around all of the edges of your flower pedals, you now need to "dome" the pedals. Using a large socket and a ball peen hammer, strike the pedals on the socket to create a bowl or dome shape. Do this to each individual pedal and leaf.

-Use a small piece of angle iron and a slag hammer to shape the "Under Pedals." Lay each leaf in the "V" part of the angle iron. Strike with a slag hammer to create a half pipe shape.

-Punch or drill a ¼" hole in the center of each flower. Try to keep this hole away from the edges.

FINAL ASSEMBLY / FINISHING ->

-Once you have dented and domed your leaf and flower pedals, you are ready to assemble the flower.

-Start by cutting a 12" long piece of ¼" steel round stock. Use a hacksaw or bolt cutters for this. This is the stem.

-. Bend the stem to look more natural. Then slide all pedals over one end of the ¼" piece of steel round stock

-Push all of the flowers together using a hammer and a small socket, ½" deep socket will work well.

-Now it is time for MIG welding. Ensure you have all proper safety equipment before you begin. Ask for assistance if you are unsure of proper procedures or safety.

-Tack weld on your leaf in the center of the stem, and place a tack weld below the pedals. After you give another few hits with a hammer to push the pedals tight together, tack the center of the flower.

-Now it is time for annealing, which is a heat treating process. Ensure you have all proper safety equipment before you begin. Ask for assistance if you are unsure of proper procedures or safety. Use an Oxy-Acetylene Torch to get the entire flower pedal system red hot. Let cool down slowly at room temperature. Your flower pedals will bend much easier this way.

-After cool, bend your flower pedals into a cone shape using two pairs of needle nose pliers. Start in the center and work your way to the outside. You want to curve and bend your pedals at the same time. (SEE DIAGRAM)

-After you have bent and shaped your flower and leaf, heat again with a Oxy-Acetylene welder. Once red hot, quench your metal in water.

-Finish with clear paint.