

# BLACKSMITHING



## PURPOSE

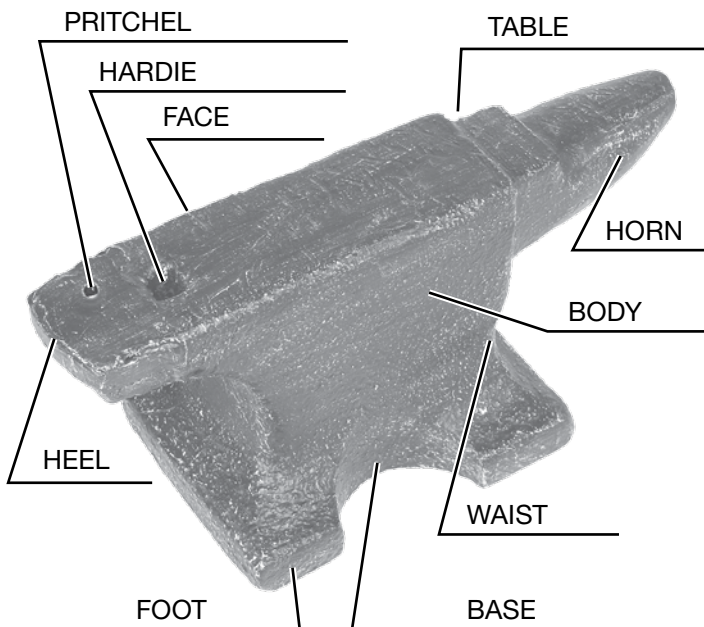
Historically, the blacksmith was one of the most respected people in the community, because everyone needed him. This badge will help Cadets learn what procedures were used to make metal items, and consider the concepts of how this skill changed our lives today.

## LEARNING

### 1. Descriptions and uses of these tools:

- Forge** — the place where the metal is heated by a fuel, propane or coal.
- Anvil** — a sturdy piece of iron onto which heated metal is placed to be beaten into the desired shape
- Vise** — a clamping tool used to hold the metal for bending or twisting
- Tongs** — a tool like a large pliers, used to hold the metal when you are heating it and working with it
- Hammer** — the tool used to shape the metal on the anvil. It's larger and heavier than a familiar carpenter's hammer, and has no claw for pulling nails.

### 2. These are the parts of the anvil:



### 3. These are five items of safety equipment a blacksmith needs to wear:

- safety glasses
- leather gloves
- leather shoes
- cotton shirt
- long pants

## DOING

**WARNING:** Working with hot metal can cause severe burns. Work only with adult supervision. Before doing any blacksmithing, be sure that you are wearing all the proper safety equipment.

- Using at least 1/4" (6 mm) mild steel, perform these exercises.
  - Draw metal out to a taper.** When the metal reaches orange heat, bring it to the anvil. Start to hammer where you want the taper to start. Draw the metal out in a square shape and then reduce the size to a point by hammering toward the end. Reheat the rod if the metal quits moving easily. If you desire a rounded piece of steel, hammer the square corners after the taper is formed.
  - Using the horn of the anvil, bend a circle.** Heat the spot on the metal you want to bend. Lay the rod on the horn of the anvil and hammer the rod just past the horn to get it to bend around the horn.
  - Using the edge of the anvil, make a square corner.** Heat the metal and lay it on the top of the anvil. Hammer the metal straight down until the vertical part lies against the side of the anvil. Alternate hitting on the top and the side of the anvil to make a good square corner.
  - Put a decorative twist in a square piece of metal.** To make a twist, the metal must be square stock, or other stock that has been squared. Heat the metal where you want the twist to be. Clamp it in the vice, close to the hot section. Use a twisting wrench, crescent wrench, vise grip, or other suitable tool to twist the metal until you get the section of twists that you want.
  - Rivet two pieces of metal together.** Mark the location that you want the holes for the rivets to be. You can purchase rivets or make your own from ungalvanized nails that have been cut off. Drill a hole in both pieces of metal just large enough for the rivet to fit through. Lay the rivet head on the anvil face with the pieces assembled. Have a helper hold the metal in place. Use a rivet header or a hammer directly on the rivet end so that it flattens or expands the metal until it holds tight. Be careful the rivet does not bend over.
- Using at least 1/4" (6 mm) metal, make two projects. Together, the projects must include at least four of the techniques practiced in the above requirement. Preserve projects from oxidation and rusting.

Counselors, find out what project your Cadets plan to work on to be sure it meets the requirements. If done as a cadre badge, the boys may all want to do the same projects. The metal can be preserved from oxidation and rusting by applying a coat of beeswax, linseed oil, or paint.

Helpful references can be found online by simply using the key word "blacksmith."