Welding

Merit Badge Workbook

This workbook can help you but you still need to read the merit badge pamphlet.

This Workbook can help you organize your thoughts as you prepare to meet with your merit badge counselor.
You still must satisfy your counselor that you can demonstrate each skill and have learned the information.
You should use the work space provided for each requirement to keep track of which requirements have been completed,
and to make notes for discussing the item with your counselor, not for providing full and complete answers.
If a requirement says that you must take an action using words such as "discuss", "show",
"tell", "explain", "demonstrate", "identify", etc, that is what you must do.

Merit Badge Counselors may not require the use of this or any similar workbooks.

No one may add or subtract from the official requirements found in Scouts BSA Requirements (Pub. 33216 – SKU 653801).
The requirements were last issued or revised in 2019 • This workbook was updated in June 2020.

Scout's Name:_____ Unit: _____

Counselor's Name: _____ Phone No.:_____ Email: _____

http://www.USScouts.Org • http://www.MeritBadge.Org

Please submit errors, omissions, comments or suggestions about this **workbook** to: Workbooks@USScouts.Org
Comments or suggestions for changes to the **requirements** for the **merit badge** should be sent to: Merit.Badge@Scouting.Org

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1. Do the following:

   a. Explain to your counselor the hazards you are most likely to encounter while welding, and what you should do to anticipate, help prevent, mitigate, or lessen these hazards.

   b. Show that you know first aid for, and the prevention of, injuries or illnesses that could occur while welding, including electrical shock, eye injuries, burns, fume inhalation, dizziness, skin irritation, and exposure to hazardous chemicals, including filler metals and welding gases.

      Electrical shock:

Eye injuries:	
Burns:	
Fume inhalation:	
Dizziness:	
Skin irritation:	
Exposure to hazardous chemicals:	
Exposure to filler metals:	
Exposure to welding gases:	

2. Do the following:

a. With your counselor, discuss general safety precautions and Safety Data Sheets related to welding. Explain the importance of the SDS.

b. Describe the appropriate safety gear and clothing that must be worn when welding. Then, present yourself properly dressed for welding—in protective equipment, clothing, and footwear.

c. Explain and demonstrate the proper care and storage of welding equipment, tools, and protective clothing and footwear.

3. Explain the terms *welding*, *electrode*, *slag*, and *oxidation*

Welding:	
Electrode:	
Slag:	
Oxidation:	

Describe the welding process, how heat is generated, what kind of filler metal is added (if any), and what protects the molten metal from the atmosphere.

4. Name the different mechanical and thermal cutting methods.

Choose one method and describe how to use the process.

Discuss one advantage and one limitation of this process.

Advantage	
Limitation	

5. Do the following

   a. Select two welding processes, and make a list of the different components of the equipment required for each process. Discuss one advantage and one limitation for each process.

1. Process	
components	
advantage	
limitation	

2. Process	
components	
advantage	
limitation	

c **b. Choose one welding process. Set up the process you have chosen, including gas regulators, work clamps, cables, filler materials, and equipment settings. Have your counselor inspect and approve the area for the welding process you have chosen.**

6. After successfully completing requirements 1 through 5, use the equipment you prepared for the welding process in 5b to do the following:

c **a. Using a metal scribe or soapstone, sketch your initial onto a metal plate, and weld a bead on the plate following the pattern of your initial.**

c **b. Cover a small plate (approximately 3" x 3" x ¼") with weld beads side by side.**

c **c. Tack two plates together in a square groove butt joint.**

c **d. Weld the two plates together from 6c on both sides.**

c **e. Tack two plates together in a T joint, have your counselor inspect it, then weld a T joint with fillet weld on both sides.**

c **f. Tack two plates together in a lap joint, have your counselor inspect it, then weld a lap joint with fillet weld on both sides.**

7. Do the following:

a. Find out about three career opportunities in the welding industry.

1.	
2.	
3.	

Pick one and find out the education, training, and experience required for this profession.

Career:	
Education:	

Training:	
Experience:	

Discuss this with your counselor, and explain why this profession might interest you.

b. **Discuss the role of the American Welding Society in the welding profession.**

When working on merit badges, Scouts and Scouters should be aware of some vital information in the current edition of the *Guide to Advancement* (BSA publication 33088). Important excerpts from that publication can be downloaded from http://usscouts.org/advance/docs/GTA-Excerpts-meritbadges.pdf.
You can download a complete copy of the *Guide to Advancement* from http://www.scouting.org/filestore/pdf/33088.pdf.