



4-H Welding

North Dakota 4-H Project Sheet

Explore several techniques and methods for joining metal together by welding. Use your new skills and the techniques to construct or repair items you use.

- Practice safety guidelines.
- Learn skills and techniques to construct or repair needed items.
- Create art from welding materials.
- Job shadow at a welding shop.



Pass it on!

Now that you know how, share it with others. Here are ideas to get you started.

Communication

- Host a safe welding demonstration.
- Give a presentation on different types of welding and how they are used.
- Teach others different types of beads using aerosol cheese and crackers.

Citizenship

- Set up a welding workshop and create simple projects to learn to weld with your club.
- Volunteer to put your welding skills to work and fix something for a neighbor.

Leadership

- Promote the safe use of welding equipment in your community.
- Organize a tour or presentation with a company that does a large amount of welding in your area.

Entrepreneurship

- Weld and sell lawn ornaments.

Here's what you can do all year!

Unit 1

- Identify equipment.
- Learn safety precautions.
- Learn the role of electrodes in welding.
- Identify the meaning of electrode markings and select the proper electrode.
- Strike an arc and run beads.
- Join two pieces of metal: butt joints welded with groove welds and T, and lap joints welded with fillet welds.
- Follow welding procedures.
- Welding project ideas include:
 - * Boot scrapers
 - * Chipping hammer
 - * Christmas tree stand
 - * Post driver
 - * Brackets with hooks and eyes
 - * Electrode holder
 - * Pedestal (fixed and movable)
 - * Welding table with positioner

Unit 2

- Make welds in the horizontal position.
- Weld in the vertical position.
- Weld in the overhead position.
- Weld high carbon, spring steel and alloy steels.
- Weld with low-hydrogen electrodes.
- Cut with an oxyacetylene torch.
- Weld with an oxyacetylene torch.
- Welding project ideas include:
 - * Adjustable work stand
 - * Welder's position clamp
 - * Welding table
 - * Hand cart
 - * Log splitter
 - * Grain auger dolly
 - * 3-point hitch tractor hoist



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Exhibit Ideas

Opportunities to explore the 4-H welding project:

- Search your home and make a list of items that have been made by welding.
- Demonstrate the proper procedure for setting up welding equipment at your 4-H club or communications art contest.
- Visit a welding shop. Talk to the welders about how they learned to weld. Discuss the type of welds they make.
- Visit an architectural or mechanical design firm that uses structural steel.
- Visit a steel plant or local steel business.
- Write and present a speech to a local community organization, your 4-H club or communications arts contest on careers in welding, changing technologies, the history of welding or the economic impact of the welding industry.
- Interested in a college education in mechanical engineering or other fields related to welding? Schedule a visit with North Dakota State University, www.ndsu.edu.



- Make a display of fillet welds vs. electrode.
- Prepare an educational exhibit on welding safety.
- Prepare samples of different beads to teach the different techniques and how each is used.
- Create an exhibit using all used items such as scrap metal and horse shoes.
- Make a display of careers related to welding.



4-H Resources

- Arcs & Sparks: Shield Metal Arc Welding, Unit 1
- Arc Welding, Unit 2

Publications available for purchase from your local Extension office.

Other Resources

- [JF Lincoln Foundation](http://JFLincolnFoundation.org)
- Welding.com
- thefabricator.com
- [American Welding Society](http://AmericanWeldingSociety.org)

Recordkeeping

- [Planning for My Project Adventure \(Ages 8-10\) \(PA093\)](#)
- [ND 4-H Project Plan \(PA095\)](#)
- [ND 4-H Plan of Action \(Ages 11-18\) \(PA096\)](#)
- [ND 4-H Participation Summary for 11- to 19-year-olds \(PA098\)](#)

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