

2017

WOODWORKING

*Denotes State Fair Entry

Purple, \$3; Blue, \$2; Red, \$1.50; White, \$1

The ability to build objects as designed by another person is an important life skill. Professional woodworkers often are hired to build objects to exacting specifications as laid out in a written plan.

Requirements: All articles exhibited must include a plan (with drawings or sketch or blueprint) stating dimensions and other critical instructions a builder would need to know to build the project. Plan may include narrative instructions in addition to the dimension drawings and include any alterations to the original plan. Part of the score depends on how well the project matches the plans. If the plans are modified, the changes from the original need to be noted on the plans. All plans used for making the article must be securely attached and protected by a clear plastic cover.

The exhibitor's name must be included on all plans and woodworking articles.

Unit I

H911021 Flower Box (from page 33 of manual)

H911022 Napkin or Letter Holder (from page 34 of manual)

H911023 Picture Frame (from page 35 of manual)

H911024 Other Woodworking Article: Item made using skills learned in the Measuring Up manual.

H911025 Woodworking Display: Display exemplifying one of the principles learned in the Measuring Up manual. Examples include: tools and equipment, safety, wood characteristics, measuring, and hand sawing.

Unit II

H911031 Napkin or Letter Holder (from page 32 of manual)

H911032 Birdhouse (from page 33 of manual)

H911033 Foot Stool (from page 34 of manual)

H911034 Woodworking Article: Item made using skills learned in the Making the Cut manual. Examples include: napkin or letter holder, birdhouse, foot stool.

H911035 Woodworking Display: Display exemplifying one of the principles learned in the Making the Cut manual. Examples include: safety, woodworking careers, wood species, screwdrivers and types of screws, squares, sanding, and liquid finisher.

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Unit III

*H911001 Woodworking Article: Item made using skills learned in the Nailing It Together manual. Examples include: bookcase, coffee table or end table.

*H911002 Woodworking Display: Display exemplifying one of the principles learned in the Nailing It Together project. Examples include: measuring angles, wood laminating and joint types.

*H911003. Recycled Woodworking Display (SF91) – Article made from recycled, reclaimed or composite wood. Article must be sanded and sealed and utilize one or more woodworking techniques from page 2 of the Unit 3 manual. Exhibit must include the woodworking plan and a minimum one page report of how the engineering design process was used to develop the woodworking plan.

Engineering Design Process

- 1) State the problem (Why did you need this item?)
- 2) Generate possible solutions (How have others solved the problem? What other alternatives or designs were considered?)
- 3) Select a solution (How does your solution compare on the basis of cost, availability, and functionality?)
- 4) Build the item (What was your woodworking plan, and what processes did you use to build your item?)
- 5) Evaluate (How does your item solve the original need?)
- 6) Present results (How would you do this better next time?)

H911041 Learning Tree Jigsaw Puzzle (from page 33 of manual).

H911042 A Box of Many Uses (from page 35 of manual).

Unit IV

*H911004 Woodworking Article: Item made using skills learned in the Finishing Up manual. Examples include: dovetailing, making a pen using lathe, overlays, using a router, etc.

*H911005 Woodworking Display: Display exemplifying one of the principles learned in the Finishing Up project. Examples include: career opportunities, types of finishes, or dovetailing.

*H911006. Recycled Woodworking Display (SF91) – Article made from recycled, reclaimed or composite wood. Article must be sanded and sealed and utilize one or more woodworking techniques from page 2 of the Unit 4 manual. Exhibit must include the woodworking plan and a minimum one page report of how the design and engineering process was used to develop the woodworking plan.

- 1) State the problem (Why did you need this item?)
- 2) Generate possible solutions (How have others solved the problem? What other alternatives or designs were considered?)
- 3) Select a solution (How does your solution compare on the basis of cost, availability, and functionality?)
- 4) Build the item (What was your woodworking plan, and what processes did you use to build your item?)
- 5) Evaluate (How does your item solve the original need?)
- 6) Present results (How would you do this better next time?)

H911051 Toy Car (from page 26 of manual).

H911052 Table Top Hockey (from page 28 of manual).

H911053 Step Stool/Chair (from page 31 of manual).

H911054 Doggie (from page 33 of manual).

H911055 Woodpecker Door Knocker (from page 34 of manual).

*H911010 Careers Interview – Interview someone who is working in the field of woodworking and research that career. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12 point font, and 1” margins. Multimedia reports should be between 3 to 5 minutes in length.

WELDING

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Welding joints and position: Welds must be mounted on a 12-inch-high by 15-inch-long display board of thickness not to exceed 3/8 inch. Attach each weld on a wire loop hinge or equivalent, so the judge can look at the bottom side of the weld when necessary. Each weld should be labeled with type of welding process (stick, MIG, TIG, oxy-acetylene, etc.), kind of weld, welder setting, electrode/wire/rod size, and electrode/wire/ rod ID numbers. Attach a wire to the display board so it can be hung like a picture frame. If no plans are included with welding article or welding furniture, it will be disqualified.

*H920001 Welding joints — a display of one butt, one lap and one fillet weld.

1. All welds should be made with the same electrode/wire/rod size and number.
2. Welds should be made only on one side of metal so penetration can be judged.
3. Welds should be cleaned with chipping hammer and wire brush. Apply a coat of light oil (penetrating oil) to the metal to prevent rusting. Wipe off excess oil.
4. It is suggested that all welds be on pieces of metal that are the same size and thickness. These pieces, referred to as coupons, should be 1½ to 2 inches wide and 3½ to 4 inches long. A good way to get this size is to buy new cold-rolled strap iron and cut to length. The extra width is needed to provide enough metal to absorb the heat from the welding process and prevent the coupons from becoming too hot before the bead is completed. Narrower coupons will become very hot, making an average welder setting too cold at the bead start, just about right in the middle, and too hot at the end. The correct way to weld narrow strips is to make short beads and allow time to cool; however, this project requires a full-length bead.

Stick welding — Suggested coupon thickness is ¼ inch if using 1/8-inch rod. Suggested rod for AC and DC straight or reverse polarity is first E-7014 and second E-6013.

MIG welding — Suggested coupon thickness is ¼ inch if using .035 wire and 1/8 inch if using .023 wire.

Oxy-acetylene — Suggested coupon thickness is 1/8 inch and suggested rod is 1/8-inch mild steel rod.

*H920002 Position welds — a display showing three beads welded in the vertical down, horizontal and overhead positions.

1. It is suggested that all welds be on same size and thickness of metal. These pieces are referred to as coupons. The welds can be on one coupon that is about 4 inches by 4 inches or on individual coupons that are about 2 inches by 4 inches and ¼ inch thick. Suggested rods for this class of position welds for AC and DC straight or reverse polarity is first E-6013 and second E7014, and E-6010 for DC reverse polarity only.

2. Welds should be cleaned with a chipping hammer and wire brush. Apply a coat of light oil (penetrating oil) to the metal to prevent rusting. Wipe off excess oil.

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Description for Classes 3 and 4: All welds should be cleaned and protected from rust with paint or light oil. Plans are to be complete enough that if they were given to a welding shop, the item could be made without further instructions. Bill of materials should include a cost for all items including steel, electrodes, paint, wheels, etc.

*H920003 Welding article — Any shop article or piece of furniture in which welding is used in the construction. 60% of item must be completed by 4-Her and notes regarding laser welding or machine welding must be included. All plans, plan alterations, dimensions and a bill for materials must be attached to the article. All plans and cost for materials should be attached to the article in a clear plastic cover. All welds should be cleaned and protected from rust with paint or light oil. Plans are to be complete enough that if they were given to a welding shop, the item could be made without further instructions. Bill of materials should include a cost for all items used including steel, electrodes, paint, wheels, etc.

*H920004 Welding furniture – Any furniture with 75% welding is used in the construction. 60% of item must be completed by 4-Her and notes regarding laser welding or machine welding must be included. All plans, plan alterations, dimensions and a bill for materials must be attached to the article. Protect plans with a cover.

*H920005 Careers Interview – Interview someone who is working in the field of welding and research that career. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12 point font, and 1” margins. Multimedia reports should be between 3 to 5 minutes in length.