about 4-H history go to http://www.4-hhistorypreservation.com/History_Map/ For a step by step video on nominating a point, please go to this link: http://tinyurl.com/nominate4h. Write a brief description of historical significance of 4-H place or person. (a minimum of one paragraph)

CLASS 10 **Careers Interview –** Interview someone who is working in a geospatial field 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 three to five pages, double-spaced,12-point font, and 1" margins. Multimedia reports should be between three and five minutes in length.

POWER OF WIND

POWER OF WIND RULES

1. **GENERAL RULES –** See GENERAL RULES – SCIENCE, ENGINEERING & TECHNOLOGY
2. **TOP EXHIBIT –** A top exhibit will be selected from those exhibits receiving purple ribbons in the Power of Wind division.
3. **MANUALS –** Printed materials are available from the Johnson County Extension Office for all currently enrolled 4-H members in Johnson County.

DEPARTMENT H **DIVISION 900** **POWER OF WIND**

PREMIUM **Purple** $2.50 **Blue** $2.00 **Red** $1.50 **White** $1.00

CLASS 1 **Engineering Notebook –** Your engineering notebook may include sketches of designs, notes of engineering questions you have, or answers to questions posed within the project manual, pictures as your complete exercises within this project, or big ideas you have while participating in this project. The notebook submitted in this class should be a working engineering notebook, NOT a scrapbook. Please include your name, county, and age on the front cover.

CLASS 2 **Wind Poster –** Poster should exemplify one of the lessons learned in the *Power of Wind* project. Posters can be any size up to 14" x 22".

CLASS 3 **Mini Turbine Blade Energy Display –** Develop a pinwheel display that demonstrates the working power of wind. Follow guidelines on pages 18 and 19 of the project manual. Display should include a notebook description of the effectiveness of at least three different designs or materials. Please do not include pennies with your display.

CLASS 4 **Wind Art or Literature Written Piece –** Item should illustrate or represent wind turbines, wind power, or something from the power of wind curriculum (example: a pinwheel or item may be original story or poem written by the exhibitor about wind).

CLASS 5 **Wind as Energy Display –** Items should be the original design of the 4-H exhibitor. Include the item, or a picture if the item is in excess of 6' tall or 2' x2'. Include a notebook of why the item was designed and how it harnesses the power of the wind.

CLASS 6 **Careers Interview –** Interview someone who is working in the field of wind 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 three to five pages, double-spaced,12-point font, and 1" margins. Multimedia reports should be between three and five minutes in length.

WOODWORKING

WOODWORKING RULES

1. **GENERAL RULES –** See GENERAL RULES – SCIENCE, ENGINEERING & TECHNOLOGY
2. **ENTRY LIMITS –** 4-H members are allowed entries in only ONE UNIT of competition. 4-H members may only enter ONE EXHIBIT per class.
3. **EXHIBIT REQUIREMENTS – ALL** articles exhibited **MUST** include a plan stating dimensions and other critical instructions a builder would need to know to construct the project. Plans may include narrative instructions in addition to the dimension drawings. Part of the score depends on how well the project matches the plans. If 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 to the project in a clear plastic cover. Any exhibits not having the required information will be lowered a ribbon placing.
4. **RECYCLED WOODWORKING DISPLAY -** 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) Reason for article finish (What type of finish? How did you finish? Why did you choose this finish?)
   6) Evaluate (How does your item solve the original need?)
   7) Present results (How would you do this better next time?)
5. **TOP EXHIBIT –** A top exhibit will be selected from those exhibits receiving purple ribbons in the woodworking division.
6. **MANUALS –** Printed materials are available from the Johnson County Extension Office for all currently enrolled 4-H members in Johnson County.

DEPARTMENT H **DIVISION 911** **WOODWORKING**

PREMIUM **Purple** $2.50 **Blue** $2.00 **Red** $1.50 **White** $1.00

WOODWORKING – UNIT 1

CLASS 910 **Woodworking Article –** Items made using skills learned in the *Measuring Up* manual (examples include: recipe holder, stilts, or other skill appropriate item). Items MUST be entered with construction plans (see above).

CLASS 920 **Woodworking Display –** Display exemplifying one of the principles learned in the *Measuring Up* project.

CLASS 930 **Recycled Woodworking Article -** Article made from recycled, reclaimed or composite wood. Article must be sanded and sealed and utilize one or more woodworking techniques learned in the *Measuring Up* project. 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.

CLASS 940 **Other Item –** Other item displaying the knowledge gained in this project.

WOODWORKING – UNIT 2

CLASS 950 **Woodworking Article –** Items made using skills learned in the *Making the Cut* manual (examples include: birdhouse, footstool, napkin or letter holder, or other skill appropriate item). Items MUST be entered with construction plans (see above).

CLASS 960 **Woodworking Display –** Display exemplifying one of the principles learned in the *Making the Cut* project.

CLASS 970 **Recycled Woodworking Article -** Article made from recycled, reclaimed or composite wood. Article must be sanded and sealed and utilize one or more woodworking techniques learned in the *Making the Cut* project. 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.

CLASS 980 **Other Item –** Other item displaying the knowledge gained in this project.

WOODWORKING – UNIT 3

CLASS 1 **Woodworking Article –** Items made using either joints, hinges, dowels, or a dado joining and other skills learned in the *Nailing It Together* manual (examples include: bookcase, coffee table, end table, or other skill appropriate item). Items are required to be appropriately finished. Items MUST be entered with construction plans (see above).

CLASS 2 **Woodworking Display –** Display exemplifying one of the principles learned in the *Nailing it Together* project (examples include: measuring angles, wood lamination, and joint types).

CLASS 3 **Recycled Woodworking Article -** Article made from recycled, reclaimed or composite wood. Article must be appropriately finished and/or 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.

WOODWORKING – UNIT 4

CLASS 4 **Woodworking Article –** Items made using skills learned in the *Finishing Up* manual (examples include: dovetailing, making a pen using lathe, overlays using a router, or other skill appropriate item). Item is required to be appropriately finished. Items MUST be entered with construction plans (see above).

CLASS 5 **Woodworking Display –** Display exemplifying one of the principles learned in the *Finishing Up* project (examples include: career opportunities, types of finishes, or dovetailing).

CLASS 6 **Recycled Woodworking Article -** Article made from recycled, reclaimed or composite wood. Article must be appropriately finished and/or 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.

CLASS 10 **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 three to five pages, double-spaced, 12-point font, and 1" margins. Multimedia reports should be between three and five minutes in length.

WELDING

WELDING RULES

1. **GENERAL RULES –** See GENERAL RULES – SCIENCE, ENGINEERING & TECHNOLOGY
2. **EXHIBIT REQUIREMENTS –** All welds exhibited in Class 1 or 2 must be mounted on a 12" high x 15" long display board of thickness not to exceed 3/8". 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 the following information: 1. Type of welding process (stick, MIG, TIG, oxy-acetylene, etc.), 2. Kind of weld, 3. Weld setter, 4. Electrode/wire/rod size, and 5. Electrode/wire/rod ID numbers. Attach a wire to display board so it can be hung like a picture frame.
3. **TIPS & SUGGESTIONS –**

CLASS 1

- All welds should be made with the same electrode/wire/rod size and number.
- Welds should be made only on one side of the medal so penetration can be judged.
- 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.
- It is suggested that all welds be on the same size thickness of metal. These pieces, referred to as coupons, should be 1.5" to 2" wide and 3.5" to 4" long. A good way to get this size is to buy new cold rolled strap iron and cut to length. The extra wide width is needed to provide enough metal to absorb heat from the welding process and prevent the coupons from becoming too hot before the beat 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 ¼" if using 1/8" rod. Suggested rod – AC and DC straight or reverse polarity – first E-7014, second E-6013.
- MIG Welding: Suggested coupon thickness ¼" if using .035 wire and 1/8" if using .023 wire.
- Oxy-Acetylene: Suggested coupon thickness 1/8", suggested rod 1/8" mild steel rod.

CLASS 2

- 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" x 4" or on individual coupons that are about 2" x 4" and ¼" thick. Suggested rods for this class of position welds for AC and DC straight or reverse polarity is, first E-6013, second E-7014 and E-6010 for DC reverse polarity only.
- 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.

CLASS 3 & 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 instruction. Bill of materials should include a cost for all items used including steel, electrodes, paint, wheels, etc.

4. **TOP EXHIBIT –** A top exhibit will be selected from those exhibits receiving purple ribbons in the welding division.
5. **MANUALS –** Printed materials are available from the Johnson County Extension Office for all currently enrolled 4-H members in Johnson County.

DEPARTMENT H **DIVISION 920** **WELDING**

PREMIUM **Purple** $2.50 **Blue** $2.00 **Red** $1.50 **White** $1.00

CLASS 1 **Welding Joints –** A display of one butt, one lap, and one filet weld.

CLASS 2 **Position Welds –** A display showing three beads welded in the vertical down, horizontal, and overhead positions.

CLASS 3 **Welding Article –** Any shop article where welding is used in the construction. All plans and bill of materials must be attached to the article. Protect plans with a plastic cover.

CLASS 4 **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 alternations, dimensions and a bill for materials must be attached to the article. Protect plans with a cover. If the project is designed to be outside it is required to have appropriate outdoor finish.

CLASS 5 **Plasma Cutter/Welder Design –** Plasma cutters/welders allow for detailed design(s) to be cut into metal. 4-Her will create a notebook describing the design process to create the "artwork" cut into the metal. In the notebook include:

1. A photo (front and back) of the finished project. Also include detailed photographs of the project to all judges to examine cuts.