**2020 State Agricultural Mechanics Career Development Event**

**ARC, MIG WELDING and OXY/ACETYLENE CUTTING**

1. Identify kinds of metal by spark test (Possible Problem Solving Question).
2. Laying out and preparing metal for welding.
3. Welding beads on butt, lap, tee, corner, and/or edge joints. Using fillet, groove, or plug and slot type welds. In all positions with appropriate electrodes or wire size and equipment settings.

MIG machines will be set up with mixed gas (25% CO2/75% Argon).

1. Joining pipe and/or square tubing to each other or to flat bar material (all positions).
2. Cutting metal with torch: straight, bevel, and piercing holes. ¼” to ½” metal thickness.

**PLUMBING**

1. Cutting and assembling plastic pipe (PVC and/or PEX - crimp and shark bite fittings).
2. Cutting, threading, and assembling steel pipe.
3. Making and/or connecting flare and compression fittings.
4. Soldering copper fittings.
5. Laying out and/or assembling similar or dissimilar plumbing materials including sink faucets and drains.

**SMALL ENGINES**

1. Using engine overhaul equipment, including valve, cylinder, piston, and bearing tools.
2. Using measuring tools, including micrometers, thickness gauge, and torque wrenches.
3. Servicing the air cleaner and lubricating systems.
4. Assembling and adjusting the carburetor and ignition system.
5. Operating the engine, carburetor adjustments and checking ignition.
6. Troubleshooting and replacing items such as gaskets, piston rings, valves, needle valves, and ignition parts.
7. Overhead valve engines will be used.

**SHOP EQUIPMENT, MAINTENANCE AND REPAIR (may be used in problem solving questions only, possibly pertaining to how correctly the maintenance or repair was done)**

1. Properly reface grinding stones and adjust tool rest on bench grinder.

Reconditioning hand tools (twist drills, screwdrivers, etc.).

1. Setup Mig, Arc welders and other shop equipment for various applications and conditions.
2. Troubleshoot and/or repair Mig machine problems (liners, trigger, nozzle, tips, feed rollers, wire, etc.).
3. Using taps and dies correctly as a method of repairing shop equipment.
4. Maintenance and repair of both hand and power tools.
5. Painting to identify shop safety zones as well as maintaining equipment.

**Notes from Ag. Mech. Meeting on January 19th**

Scheduled start time on Wednesday April 1st is 1:00pm for group A and 3:00pm for group B.

Thursday start time however is changed to 10:00am. The first 6 teams will come in and work with 30 minute rotations on the three skill areas. These first 6 teams will be finished by 11:30am.

Entire rotations will run as follows:

10:00 -11:30, first 6 teams

11:30 – 1:00, second 6 teams

1:00 – 2:30, third 6 teams

2:30 – 4:00, fourth 6 teams

If we have more than 24 teams the rotation will continue. Teams need to determine time conflicts with competing members and notify state office or myself so we can schedule them around those conflicts.

Rotations will be selected after entries are due.

I will be following the new approved scoring from August 31, 2018:

Tool ID 20 tools 100 points  
Problem Solving 20 problems 100 points

Math Test 20 problems 100 points

Individual skill 100 points

Individual skill 100 points

Option: A third individual skill, or a team skill 100 points

Total 600 points

**References**

Include the ones listed on the Ag. Mech. CDE website which pertain to this year’s skills.

The NCCER Plumbing level 1 text will be used as a plumbing reference.

NCCER Welding level 1text will be used along with AWS standards.(Welding Procedure Sheet)

Small Gas Engines will be single cylinder, slant orientation which were given out by Briggs during the Small Engines instruction three years ago. Briggs and Stratton 800 Snow Series, Model 12A1020164F8.

Contestants may need to look up specific information on-line to answer a question either in problem solving or a skill area. If so, a computer will be provided and website information will also be given.

This CDE will be based on realistic, practical applications around this year’s skill rotations.

It will be intended to represent the Ag. Mech. taught within the state and challenge students to apply lessons learned.

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