



2007 State Competition
FFA Agricultural Mechanics Contest
University of Missouri
50 points

Contestant # _____
Contestant Name _____
Chapter _____

Arc Welding

Directions: Please circle the appropriate answer or fill in the blank for each question. When you are finished please turn your sheet in. Remember to put your name, contestant number and chapter on your paper. Not doing so will result in a zero for this section. If you have questions please feel free to ask.

Problem:

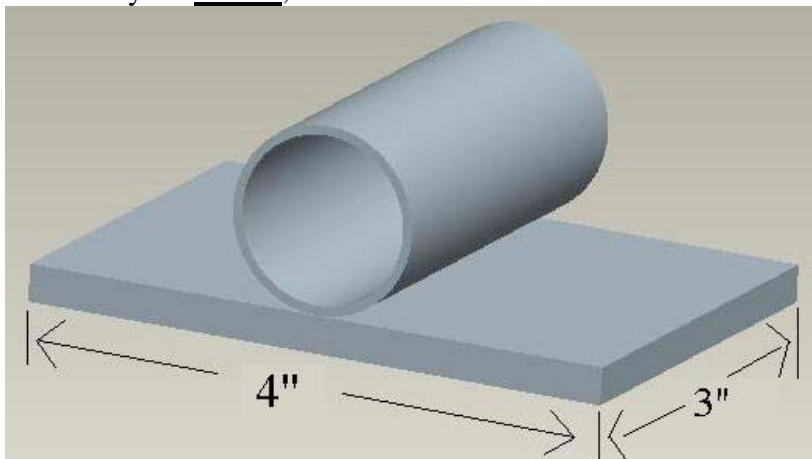
The morning after a bad wind storm your hired hand was checking the cows and ran over the gate with the tractor while feeding hay. Luckily the hinge broke that the gate was hanging on. Position the metal as shown below and completely weld down both sides of the pipe being careful not to disturb or distort the inside diameter of the pipe, other wise the hinge pin won't fit properly.

Materials:

- 1- 1 1/4" x 3" piece of schedule 40 pipe.
- 1- 3" x 4" x 1/4" piece of flat steel

Directions:

- Prepare the metal, cleaning, etc.
- Secure the metal.
- Select desired welder wire speed and voltage settings.
- Position metal as shown below.
- Perform weld, welding in the joint as stated above. (You must weld on both sides of the pipe)
- **Make Sure to Leave Gas ON and Set Wire Speed and Voltage to Original Setting!**
- Using your pliers cool the metal in the water bucket.
- **Contest officials will NOT cool your metal for you.**
- Put your **name, contestant number, and chapter** on the metal.
- Turn in your **cooled**, welded metal to the contest officials.



Welder returned to Original settings of (19 volts) / (wire speed 320)?
(circle one) YES / NO

Judges Initials _____

Evaluation Score Sheet

Points		
Evaluation Item	<u>Possible</u>	<u>Earned</u>
Metal positioned properly (pipe square, centered, etc.)	5	_____
Proper fit and operation of gate hinge	5	_____
Correct welder amperage (no spatter or holes in pipe)	5	_____
Distortion (metal still flat, pipe round)	5	_____
Weld appearance (temperature, width of bead)	5	_____
Welder returned to original settings (Gas on, Wire Speed, and Volts set to Original Settings)	5	_____
Weld passes the guided pull test at 15 tons -Weld holds together & doesn't crack	5	_____
Points from ID and problem solving (1.5 pts per question)	15	_____
<u>Improper Safety clothing and supplies or burning of contest officials</u>	-35	_____
Total	50	_____

1. **What needs to be adjusted to correct the problem with the weld on the item tagged #1?**
 - A. Amperage
 - B. Polarity
 - C. Duty cycle of the welder
 - D. None of the above

2. **For the welder tagged #2a, what would be the correct settings for welding steel tagged #2b using .030 wire and Argon/CO2 mix shielding gas?**

Answer: _____

3. **For the welder tagged #2a, what phase power can this welder be operated on?**
 - A. Single Phase
 - B. Three Phase
 - C. Both Single or Three Phase

4. **What is the duty cycle of welder tagged #3? Assume it is operating at 225 amps.**
 - A. 20%
 - B. 40%
 - C. 75%
 - D. 100%

5. **Examine the mig weld tagged #5. What is the quality of this mig weld?**
 - A. Porosity in weld
 - B. Too much penetration
 - C. Lack of Penetration
 - D. Excessive Splatter
 - E. Just fine – it's done correctly

6. **Which rod can only be used welding in the flat position?**
 - A. 6a
 - B. 6b
 - C. 6c
 - D. 6d

7. **Examine the arc weld tagged #7. The condition of the weld could/would be improved if:**
 - A. Voltage was set lower
 - B. Travel speed was increased
 - C. Distance to metal was closer
 - D. Current set higher

8. **The welding wire tagged # 8 is made of:**
 - A. Nickel
 - B. Magnesium
 - C. Aluminum
 - D. Stainless Steel

9. **Which of the lens (9a, 9b, 9c, 9d) is most suited for mig welding?**
 - A. 9a
 - B. 9b
 - C. 9c
 - D. 9d

10. **Assume you are welding mild steel, select the appropriate wire.**
 - A. 10a
 - B. 10b
 - C. 10c
 - D. 10d