

Iowa State FFA Agricultural Mechanics Career Development Event 2015

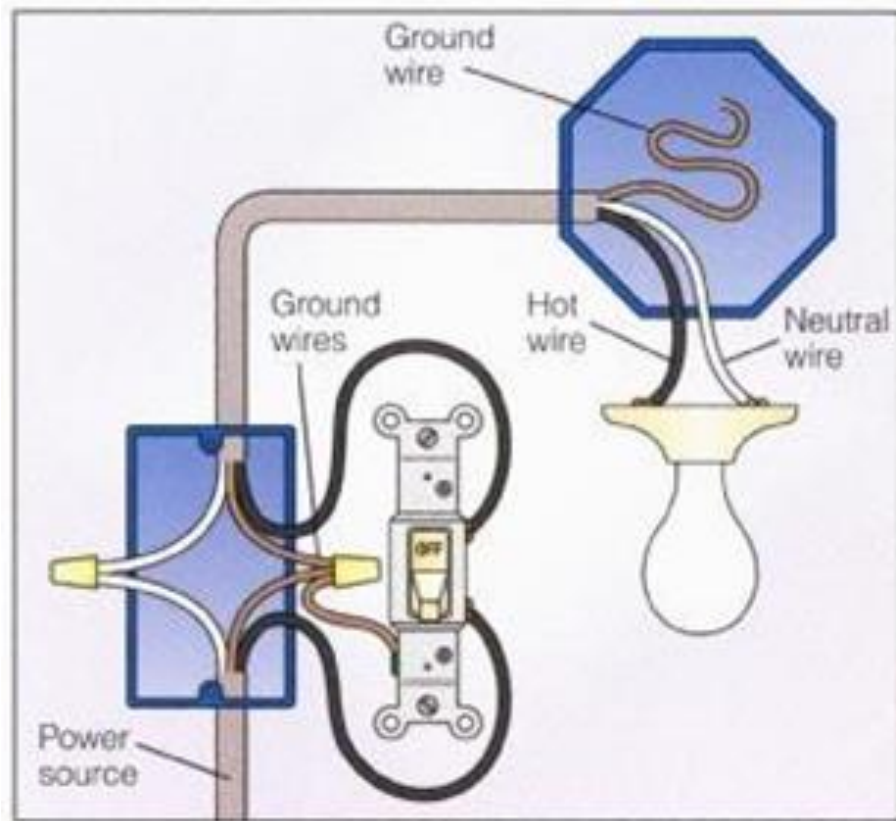
State of Iowa
Department of Education
Iowa State University
Department of Agricultural
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CONTESTANT NAME _____

CONTESTANT SCHOOL _____

Electrical Systems Electrical Wiring

Using the diagram provided below, wire the light receptacle to the switch.



Evaluation Score Card**Points**

	Possible	Earned
Selected a single pole switch	2	_____
Selected the correct wires	2	_____
Ran the neutral wires correctly	2	_____
Ran the hot wires correctly	3	_____
Ran the ground wires correctly	3	_____
Wire stripped at appropriate length	3	_____
Wires were installed in the correct direction	3	_____
Connections are tight	4	_____
Safety	3	_____
Total	25	_____

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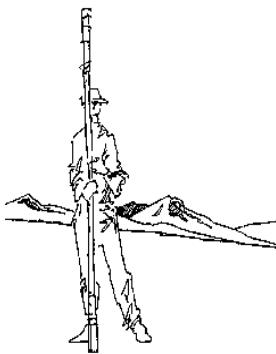
Contestant Name: _____

Contestant School: _____

ENVIRONMENTAL & NATURAL RESOURCE SYSTEMS

Surveying Skills

Activity One: Determine Slope using the digital level and rod to complete this activity (-1/2 point per 1" off for height & -1 point for 1° slope off).



1. Determine the height of point A: _____

2. Determine the height of point B: _____

3. Determine the height of point C: _____

4. Determine the height of point D: _____

5. What is the distance between A & B? _____

6. What is the distance between B & C? _____

7. What is the slope between point A & B? _____

8. What is the slope between point B & C? _____

Activity Two: Ordering Concrete (Two points each)

9. ISU is planning to build a twin building to the current building to your south. Within those plans the engineer calls for 9 inches of concrete. Using the answers from #5 & #6, determine the area in cubic feet?

10. Concrete is sold in cubic yards, how many yards of concrete will be needed if the dirt work at proposed building site has been donated?

Helpful Formulas

$$\text{Area} = H \times L \times W$$

$$\text{Slope} = (\text{change in elevation} / \text{horizontal distance}) \times 100$$

$$1 \text{ cubic yard} = 27 \text{ cubic feet}$$

Evaluation Score Sheet

	<u>Possible Points</u>	<u>Score</u>
1. Height of Point A	3	_____
2. Height of Point B	3	_____
3. Height of Point C	3	_____
4. Height of Point D	3	_____
5. Distance	2	_____
6. Distance	2	_____
7. Slope	3	_____
8. Slope	3	_____
9. Cubic Feet	2	_____
10. Cubic Yards	1	_____
Total	25	_____

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Machinery & Equipment Systems Sprayers



Activity One: Properly complete the following tasks. (Five points each)

1. Assemble the hose to the tank. _____
 2. Assemble the extension to the shut-off. _____
 3. Install the high-volume nozzle. Installation _____
- Selected Correct Nozzle _____

Activity Two: Answer the following questions. (1 point each)

1. What troubleshooting task would you look for if the sprayer is difficult to pump?
 - a. Dirt or debris on the pump gasket or closure.
 - b. Shut-off lock is engaged.
 - c. The hose is loose
 - d. The O-ring is missing or damaged
2. What would you need to do if the sprayer tank itself leaks?
 - a. Replace the shut-off assembly
 - b. Replace the O-ring extension tip.
 - c. Replace old gaskets and replace them with new ones.
 - d. Replace the entire tank.
3. Which of the following is not a part of regular pump and shut-off maintenance?
 - a. Lightly oil pump rod.
 - b. Apply petroleum jelly to o-rings.
 - c. Check and clean openings of debris.
 - d. All of the above.

4. Which nozzle would you select to do spot spraying in or around flower beds, trees or shrubs?

- a. Adjustable cone nozzle
- b. Blue watering nozzle
- c. Red high volume fan nozzle
- d. Yellow low volume fan nozzle

5. You would use which color nozzle to water or feed plants and vegetables either indoors or outdoors?

- a. Black
- b. Blue
- c. Red
- d. Yellow

Evaluation Score Sheet

	<u>Possible Points</u>	<u>Score</u>
Activity 1:		
Task 1. Hose to tank	5	_____
Task 2. Extension to shut-off	5	_____
Task 3. Install nozzle	5	_____
Select proper nozzle	5	_____
Activity 2:		
Question 1:	1	_____
Question 2:	1	_____
Question 3:	1	_____
Question 4:	1	_____
Question 5:	1	_____
Total	25	_____

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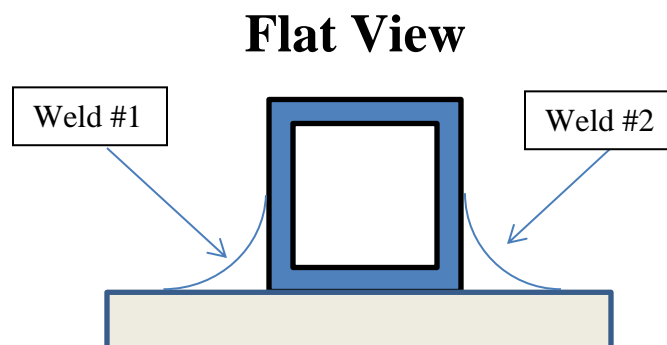
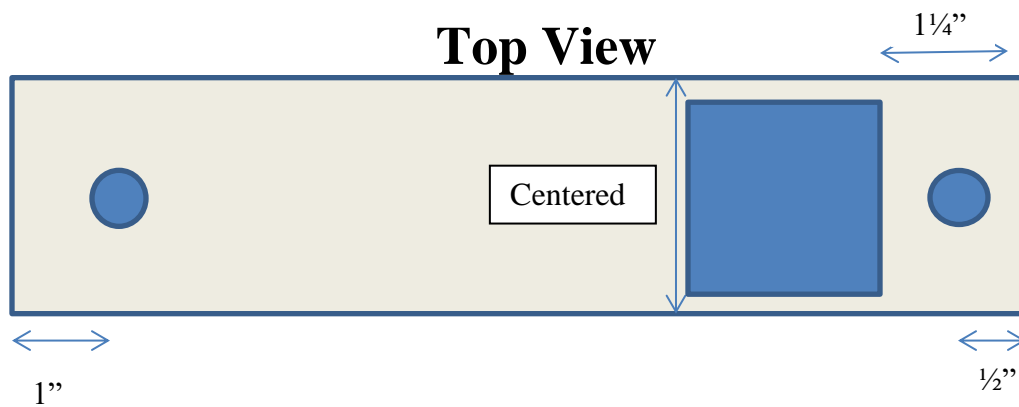
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Metals & Welding Systems Shielded Metal Arc Welding Skill

You will be provided with one welding coupon and one piece of one inch square tubing. Using the SMAW welder; weld both sides of the tubing to the coupon. Also use the drill press to drill two 3/16th inch holes.



DO NOT READJUST THE MACHINE

Evaluation Score Card**Points**

	Possible	Earned
Square tubing placement (-1 per 1/8" off)	4	_____
Weld #1	4	_____
Weld #2	4	_____
Location of Hole #1 (-1 per 1/8" off)	2	_____
Drilled correct size of hole #1	2	_____
Location of Hole #2 (-1 per 1/8" off)	2	_____
Drilled correct size of hole #1	2	_____
Safety	5	_____
Total	25	_____

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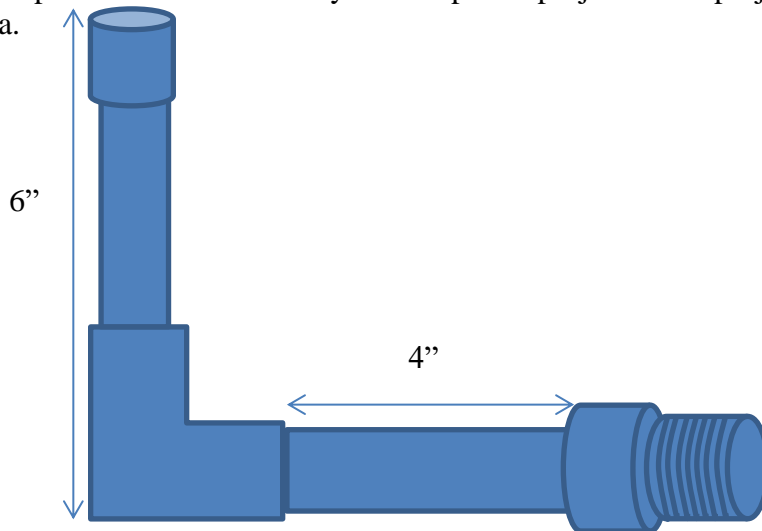
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Structural Systems Plumbing Skill

You have fifteen (15) minutes to complete the entire Structural Systems Individual Skill Activity. Using the 12 inch piece of PVC and the three joints given to you, please construct the figure below using the tools provided for you. Please use primer and glue to secure each piece into each joint. Once you have completed this task submit your completed project to the project table at the back of the activity area.



Evaluation Score Card

	<u>Points</u>	
	Possible	Earned
Correct configuration	2	_____
Vertical piece is correct height (-1 point per 1/16 off)	4	_____
Horizontal piece is correct length (-1 point per 1/16 off)	4	_____
Use of Primer is evident	2	_____

Use of Glue is evident	2	_____
Holds Water	4	_____
Quality of Work (Clean cuts, no excessive glue, etc)	4	_____
Safety	3	_____
Total	25	_____