

Students please affix one of your self-adhesive identification labels to this space. Do not obscure other parts of this page with the label. If you do not have a self-adhesive identification label, please complete the following information. Write your name as it appears on your badge.

Your Name: _____

Participation Number:

Two letter state abbreviation. →

			0	3				0	
--	--	--	---	---	--	--	--	---	--

State code (0301, 0302, to 0350)

Team member number (01, 02, 03, or 04)

Students please do not write or mark within this box.

Judges, after this skill sheet has been scored and double checked, write the total score for this activity in the blank below.

Skill Activity Score: _____

Judges Initials: _____

2017 National Agricultural Technology & Mechanical Systems Career Development Event: Environment and Natural Resources

Materials Provided: Stock tank with pump and discharge manifold, tape measure, stop watches (or clock),

Scenario: A vegetable producer collects water in five stock tanks and uses that water to irrigate a vegetable garden. The garden is 20 feet wide and 60 feet long. You will collect water from a hose and determine the rate of flow.

Assumptions:

1. The sides of the stock tank are smooth (i.e. straight) and vertical (i.e. plumb)
2. All five tanks are level and full to the brim
3. All four hoses have identical flow rates

Instructions:

1. Determine the capacity of the stock tanks. See diagram on reverse for stock tank details.
 - a. Width of the tank in inches (inside wall to inside wall) _____ (2 points)
 - b. Length of the tank in inches (inside wall to inside wall) _____ (2 points)
 - c. Depth of the tank in inches (tank bottom to the very top of the tank) _____ (2 points)
 - d. Volume of the tank in cubic feet _____ (3 points)
 - e. Volume of all five tanks in cubic feet _____ (2 points)
 - f. Volume of the tank in gallons (1 cubic foot = 7.48 gallons) _____ (3 points)
 - g. Volume of five tanks in gallons _____ (2 points)
2. Determine the rate of flow
 - a. Collect water in a container from a hose.
Record the hose you used (circle letter) A B C D
 - b. Measure the time it takes to fill the container to the specified level (two gallons)
Record the number of seconds to fill the container _____ (2 points)
 - c. Calculate the gallons per minute being pumped from one hose _____ (2 points)
 - d. Calculate the gallons per minute being pumped from all four hoses _____ (2 points)
 - e. Calculate the time to empty one tank at the pumping rate of all four hoses _____ (3 points)
3. Determine the amount of water applied to the garden
 - a. Calculate the square feet of the garden _____ (2 points)
 - b. How many inches of water are applied across the garden from all five stock tanks? _____ (3 points)

Formulas for conversions that might be useful

- One cubic foot is equal to 7.48 gallons
- One gallon is equal to 231 cubic inches
- One acre is equal to 43,560 square feet

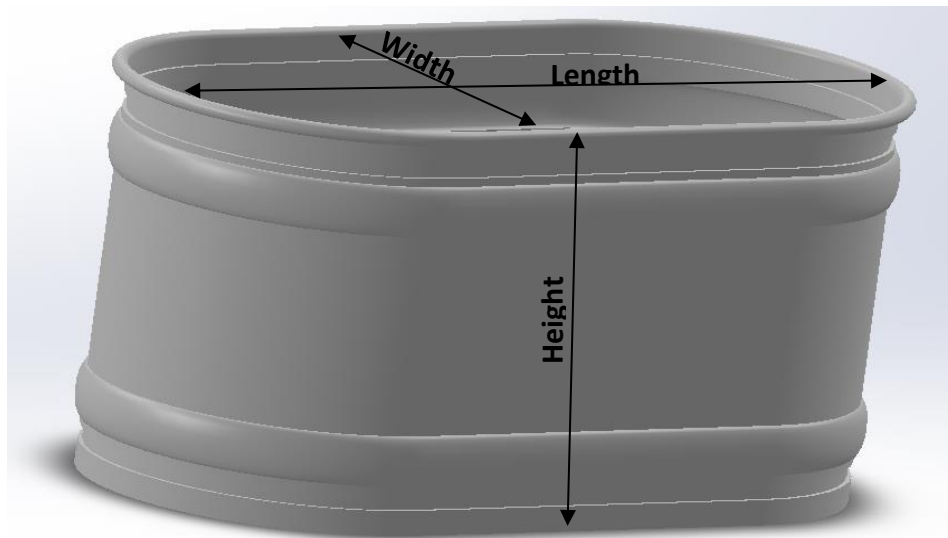


Illustration of Stock Tank

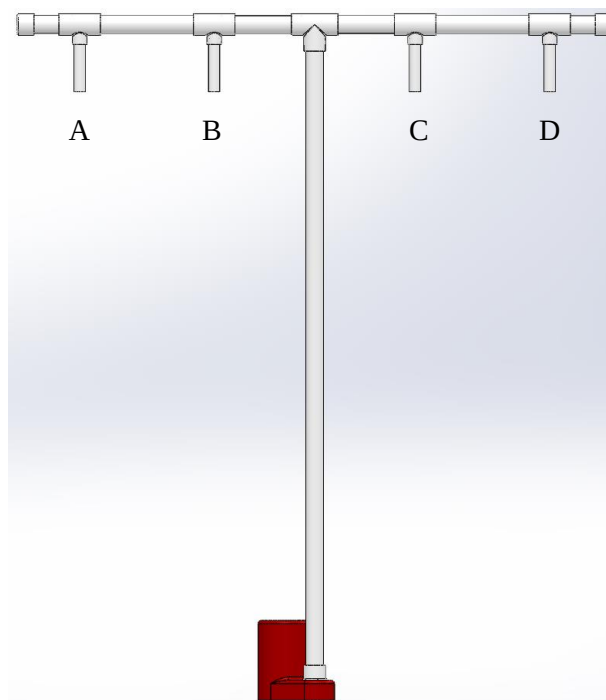


Illustration of Pump and Hoses

Do not write below this line

Summation of all points	_____ (30 points)
Minus points for safety infractions (1 point per infraction)	_____
Total score	_____ (30 points)