Name_____ **School**_____ **Contestant Number**_____

2012 Wyoming State FFA CDE
Agricultural Technology and Mechanical Systems
Machinery and Equipment Systems Activity- High Pressure Sprayer

You have obtained a summer job working for a rancher west of Lusk. The ranch currently has 200 pairs of Black Angus cows. The owner of the ranch has realized his cows and calves have a lot of flies and they need to be treated in order to maintain adequate growth. Your boss has asked you to mix a fly spray solution for use in the operations high-pressure sprayer. When mixing the fly spray solution, every 50 gallons of water requires 1.5 cups of fly spray chemical. The owner wants to spray each pair with .75 gallons of solution. The sprayer will spray 3 gallons per minute. When administering the solution, how long would you spray each pair? How many gallons of solution will you need? How many cups of fly spray chemical will be needed?

Gallons of mixed fly spray solution needed. _____

Answer = .75 * 200 = 150 Gallons

Cups of fly spray concentrate needed. _____

Answer= 150 gallons / 50 (gallons of water per 1.5 cups solution) = 3 * 1.5 = 4.5 cups solution

How long should you spray each pair? _____

Answer= 3 gallons per min. / .75 (solution per pair) = 4 (pairs per minute)
60 seconds / 4 pairs = 15 seconds per pair

The owner has had problems keeping the sprayer running. He has asked you to identify different parts of the sprayer and explain their function by matching the sprayer part to the function of the part.

Part #	Sprayer Part ID	Function		Part Function
5	Automatic Recoil Rope	**D**	A	Connects directly to the tank for spray recirculation
3	Water Input Filter	**E**	B	Converts energy from the engine to the pump
4	Pressure Release Lever	**F**	C	Includes pressure gauge, high pressure relief lever, and individual shut off valves
6	Gear Box	**B**	D	The primary system used to start the engine
1	Bypass Hose	**A**	E	This part prohibits foreign material from entering the pump system.
2	Control Unit/Regulator	**C**	F	Designed to activate and release pressure to the spray line

Criterion	**Points Possible**	**Points Earned**
Calculations	12 (3 points each)	
Parts ID	12 (one point each)	
Parts Function	6 (one point each)	
Safety	3 (recorded by skill proctor)	