

**2014 Cowboy Classic
Agricultural Technology and Mechanical Systems
Machinery and Equipment Systems Activity- Backpack Sprayer**

Congratulations! The University of Wyoming ACRES Farm has hired you; your job responsibilities include pest maintenance using a SOLO Backpack Sprayer to spray the facilities and grounds in that area. Before you can begin spraying there are a few parts on the sprayer that must be replaced. Your boss has already identified the parts using markers. Please identify the ten parts that your boss has marked as the ones that need replaced.

Match the number, attached to a part on the backpack sprayer, with the corresponding name.

	Part Number	Part Name		Part Number	Part Name
a.	10	Wand Retainer Clip	f.	3	Housing Diaphragm
b.	9	Jet Cap	g.	1	Retaining Nut
c.	2	Filter Basket	h.	8	Shut off Valve
d.	4	Pump Lever	i.	5	Adjustable nozzle
e.	7	Tank Cap	j.	6	Tank

After all of the parts that required maintenance have been replaced on the Solo Backpack sprayer, you have been assigned to spray a warehouse perimeter that stores most of the operational supplies for the farm. The warehouse measures 120'x 160', and you have chosen Cyper WP powdered insecticide for your use. Cyper WP has the active ingredient Cypermethrin, which attacks the central nervous system of insects that ingest, or come in contact with it. Cyper WP works on insects such as ants, carpenter ants, cockroaches, crickets, scorpions, and spiders, and can last up to 3 months. Four tablespoons (2 scoops) of Cyper WP is mixed with one gallon of water and covers 200 ft. Cyper WP is sold in one pound buckets (containing 96 tablespoons or 48 scoops) that cost \$35.92.

1. What is the perimeter of the warehouse? (Show work).

$$120 + 120 + 160 + 160 = 560 \text{ ft.}$$

2. How much finished product is needed to spray the entire perimeter of the warehouse?

$$560/200 = 2.8 \text{ gallons}$$

3. How many tablespoons of Cyper WP are needed to prepare the finished solution required to spray the warehouse perimeter? What will this cost?

$$2.8 \times 4 = 11.2 \text{ Tbs. } 11.2 / 96 = 0.11666 \times 35.92 = \$4.19$$

Criterion	Points Possible	Points Earned
Parts ID	20 (2 points each)	
Calculations	8 (2 points each)	
Safety	2 (recorded by skill proctor)	