Name_____ School_____

2015 Wyoming State FFA CDE
Agricultural Technology and Mechanical Systems
Environmental and Natural Resources

Your parents have recently retired and have put you in charge of the family farm. It is mid-late May and all of your heifers have calved leaving you with 75 cow-calf pairs in your calving pasture. As a part of your responsibilities managing the farm, you institute a rotational grazing plan to maximize the land you have to use for this purpose. As you are planning for the first rotation, you have 100 acres designated for grazing in late June to place the cows in after branding. You go out to the pasture to check for down fence and loose wire when you notice for the first year the growth of Houndstounge and Wild Licorice. These have been known to have negative effects on cattle, so before moving the cattle in the next month you will need to develop a strategy to remove them. You print off information sheets on these weeds to determine what the best management strategies may be and determine that spraying is the most economical solution. Additional research highlights three potential herbicides for use.

Analyze the provided documents to assist in making the best selection for your use considering the following:

Herbicide	**Unit cost**	**Unit spray per Acre**	**Unit coverage**		Conversion factors:
2-4 D	$55.95/ 2.5 gallons	2 quarts*	1 acre		1 quart = 32 ounces
Tordon 22k	$97.42/2.5 gallons	0.5 pints	1 acre		1 quart = 2 pints
Escort	$85.95/ 8 ounces	2 ounce	1 acre		1 quart = 0.25 gallons
*1 quart 2-4 D is used if mixed with another herbicide					

Questions:

1) Determine the precise costs of each herbicide prior to determining your treatment plan. **Provide all work and answers in the allotted space.**

   2-4 D = $_559.50 if using 1 qt. or $1119.00 if using 2 qts._
   Tordon 22K = $_243.55_
   Escort = $_2,148.75_

2) Which spray(s) will you use to control your weed problem? **Refer to packet and briefly explain your choice.**
   Tordon 22K and 2-4 D; Tordon is the only chemical for use on Wild Licorice; The cost of 2-4 D for use on Houndstounge is more cost efficient than Escort

3) How much will the total treatment cost be? Total cost = $_803.05_

4) You are on a limited budget so you decide to keep your treatment options open. You decide to use another method of treatment alongside or separate from herbicide use. What method(s) would be effective for control of both pest species? **Refer to packet.** Alongside herbicide use, grazing in the early season could be an effective treatment option. Mechanical control such as clipping or mowing may be effective as well, herbicides may be needed down the road.

Criterion	Points possible	Points earned
Correct Chemical Choice - #2	13	
Questions # 1, 3, 4	15 (5 pts. ea.)	
Safety	2	

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ENR Answer Sheet (Math portion):

1) 2, 4D:

$$\frac{0.25\ gal}{1\ \cancel{quart}} x \frac{1\ \cancel{quart}}{x} = 0.25\ gallons\ x\ 100\ acers = \frac{25\ \cancel{gallons/ac}}{2.5\ \cancel{gallons}} = 10\ units\ x\ \$55.95$$

$$= \$559.50\ (using\ 1\ quart)$$

Tordon 22K:

$$\frac{1\ quart}{2\ \cancel{pints}} x \frac{0.5\ \cancel{pints}}{x} = \frac{0.25\ \cancel{quarts}}{x} x \frac{0.25\ gal}{1\ \cancel{quart}} = 0.0625\ gallons\ x\ 100\ acers = \frac{6.25\ \cancel{gallons/ac}}{2.5\ \cancel{gallons}}$$

$$= 2.5\ units\ x\ \$97.42 = \$243.55$$

Escort:

$$2\ ounces\ x\ 100\ acers = \frac{200\ \cancel{ounces/ac}}{8\ \cancel{ounces}} = 25\ units\ x\ \$85.95 = \$2{,}148.75$$

3) $559.50 + $243.55 = $803.05