AAE 320 Problem Set #4 **Due October 30, 2019** **Name:**_____

1) You had a milking barn built and bought a used tractor planter. The milking barn cost $400,000 and the tractor cost $130,000. For your internal farm accounting purposes, you will depreciate the milking barn over 12 years and the tractor over 10 years. The milking barn will have zero salvage value, but the tractor will have a salvage value of $30,000. For this problem, fill out the following 4 tables that report the value of the asset at the beginning of each year, the amount of depreciation during each year and the value at the end of each year. There are 2 tables for the milking barn and 2 for the tractor. For each asset, one table uses Straight Line depreciation, the other uses 200% Declining Balance. Do the full life cycle for each asset (12 years for the barn and 10 years for the tractor). For the 200% Declining Balance, do not let the asset value fall below the salvage value (set depreciation to zero if needed) and if the implied value does not reach the salvage value by the end of the useful life, take the remaining value as depreciation in the last year.

Milking Barn, Straight Line

Year	Beginning Basis	Depreciation	Ending Basis
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Milking Barn, 200% Declining Balance

Beginning Basis	Depreciation	Ending Basis

Tractor, Straight Line

Year	Beginning Basis	Depreciation	Ending Basis
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Tractor, 150% Declining Balance

Beginning Basis	Depreciation	Ending Basis

2) In this problem, you will figure the depreciation you can claim for tax purposes for the milking barn. Use IRS Publication 946: How to Depreciation Property https://www.irs.gov/pub/irs-pdf/p946.pdf. This is the latest version, for preparing 2018 taxes. For this problem, you will use MACRS, electing the GDS option and not claiming any Section 179 depreciation. Read "Which Depreciation System (GDS or ADS) Applies?" beginning on p. 27. I do not fully understand the types of farm property that are required to use ADS, but form reading "Depreciation Methods for Farm Property" (p. 33) and the next section ("Electing a Different Method"), ADS would seem to use straight line depreciation.

a) Read "Which Property Class Applies under GDS" starting on p. 28. What property class (3-year, 5-year, 7-year, etc.) must be used for the barn (a farm building) that, for tax purposes, is technically not a single purpose agricultural or horticultural structure? Read "Recovery Periods Under GDS" on p. 31, but especially see Appendix B, beginning on page 95, especially page 97 where common agricultural assets are listed. What recovery period (how many years) must be used for the milking barn?

Recovery Period = _____

b) Suppose you built the milking barn and had it ready for use in March of 2018. Read "Which Convention Applies?" on p. 32. The milking barn is not "nonresidential real property". Because the milking barn was "placed in service" before the final three months of the year and is not a large portion of the total depreciable property you will claim for deductions during the 4th quarter, I interpret this section to mean that you should use the mid-quarter convention, with the asset placed in service during the 1st quarter. Using Chart 1 on p. 67, which depreciation table must be used for the milking barn?

Depreciation Table = _____

c) Use the appropriate depreciation table to calculate the depreciation you will be able to claim as a deduction each year for the milking barn's useful life as defined for tax purposes. What I want is a table starting in 2018 (when the milking barn was "placed in service") and what percentage of the original cost you can claim as a depreciation cost each year until the milking barn it totally depreciated for tax purposes. I have created an empty table on the next page for 26 years, which is likely more than needed. You will simply copy in the depreciation percentages from the table you determined in part b and then calculate the depreciation dollars you will claim for the next 26 years (some of the last years may be 0), and then the remaining basis (asset value for tax purposes) at the end of the year. The Depreciation ($) is the depreciation expenses for the milking barn that you could deduct from your taxable income during each year and the Remaining Basis is what you would use for depreciation recapture if you sold or transferred the building.

Note: I found it easier to use a spreadsheet program to do the calculations, and then copy the values into the table.

Tax Depreciation for the Milking Barn ($400,000 initial value).

Calendar Year	Asset Year	Depreciation (%) (from tax table)	Depreciation ($)	Remaining Basis
2018	1			
2019	2			
2020	3			
2021	4			
2022	5			
2023	6			
2024	7			
2025	8			
2026	9			
2027	10			
2028	11			
2029	12			
2030	13			
2031	14			
2032	15			
2033	16			
2034	17			
2035	18			
2036	19			
2037	20			
2038	21			
2039	22			
2040	23			
2041	24			
2042	25			
2043	26			

d) For this problem, you want to see if you can take Section 179 depreciation for the tractor. Skim over IRS Pub 946 Electing the Section 179 Deduction beginning on p. 14. Focus on determining whether the tractor (a type of machinery or equipment) qualifies for this deduction (see Eligible Property p. 15 and following) and how much you can claim (see How Much Can you Deduct (p. 17 and following), and especially "Married Individuals" (p. 18).
Specific questions to answer for this problem:

i. Does the tractor qualify for Section 179 depreciation deduction?

ii. Suppose the farm and the spouse's business bought and placed in service a lot of eligible equipment ($2,800,000) in 2018 and they file a joint tax return. Could the couple claim Section 179 depreciation for all $2,800,000? If not, how much Section 179 depreciation could they claim in total between the two of them?

3) Use the Sample Farm Balance Sheet on the next page to answer the following questions:

a) What is this farm's current ratio? (Show your calculation.)

Interpret this farm's current ratio—Is the farm doing okay or is there a problem?

b) Using a market basis, what was the farm's debt to asset ratio? (Show your calculation.)

Using a cost basis, what was the farm's debt to asset ratio? (Show your calculation.)

Interpret this farm's ratios—Is the farm doing okay or is there a problem?

c) Suppose the farm bought 40 acres of land for $8,000/acre with a bank loan that had zero down payment and 0% interest for the first year. Using a market bass for assets, how would this change
i) The farm's current ratio:

ii) The farm's debt to asset ratio:

iii) The farm's equity:

Sample Farm Balance Sheet

Name *Cyclone Farm* Date *December 31, 2017*

Farm Assets	Cost Value	Market Value	Farm Liabilities	Market Value
Current Assets (cost and market values are the same)			**Current Liabilities**	
Checking, savings accts.	$16,665	$16,665	Accounts payable	$1,859
Hedging accounts	47,909	47,909	Farm taxes due	4,750
Crops held for sale/feed	489,105	489,105	Current notes and credit lines	340,200
Investment in annual crops	8,680	8,680	Accrued interest - current	3,049
Commercial feed on hand	10,940	10,940	- fixed	19,435
Prepaid expenses			Principal due on notes and contracts	
Market livestock	329,403	329,403	Due in 12 months - fixed	28,670
Supplies on hand	2,000	2,000		
Accounts receivable			Other current liabilities	
Other current assets			Other current liabilities	
a. Total Current Assets	**$904,702**	**$904,702**	**d. Total Current Liabilities**	**$397,963**
Fixed Assets (cost and market values may differ)			**Fixed Liabilities**	
Unpaid co-op. distributions	$28,861	$28,861	Notes and contracts, principal due beyond 12 months	
Invest. in perennial crops	157,500	157,500	- Machinery	$168,673
Breeding livestock	222,600	222,600	- Land	269,100
Machinery & equipment	255,240	275,000	- Other fixed assets	
Buildings/improvements	138,510	171,000		
Farmland	800,000	1,050,000	Other fixed liabilities	
Farm securities, certificates	13,000	13,000	Other fixed liabilities	
Other fixed assets				
b. Total Fixed Assets	**$1,615,711**	**$1,917,961**	**e. Total Fixed Liabilities**	**$437,773**
c. Total Farm Assets (a + b)	**$2,520,413**	**$2,822,663**	**f. Total Farm Liabilities (d + e)**	**$835,736**
g. Farm Net Worth (c - f)	**$1,684,677**	**$1,986,927**		