AAE 320 Spring 2010 Final Exam Name: _____

1) (25 pts) Suppose your cousin just inherited 100 acres of crop land, the first and only crop land she has ever owned, and has decided to farm it. A neighbor told her the farm has 30 base acres for corn with a payment yield of 110 bu/ac and mentioned several programs she could use. She has no idea what any of this means and she is asking you for help.

Focus only on the five following programs: i) Direct Payments, ii) Counter Cyclical Payments, iii) Marketing Assistance Loans, iv) Loan Deficiency Payments, and v) Average Crop Revenue Election (ACRE) Payments when answering the following questions.

1a) (5 pts.) What USDA agency should she contact to learn about these five federal commodity support programs, base acres and payment yields?

1b) (5 pts.) Which of these five programs use base acres and program yields?

1c) (5 pts.) Suppose she wants to plant the whole farm in corn. Which, if any, of these five programs will she still potentially be eligible for?

1d) (5 pts.) Suppose she wants to plant the whole farm in alfalfa to make hay for sale. Which, if any, of these rive programs will she still potentially be eligible for?

1e) (5 pts.) Suppose she wants to plant the whole farm in sweet corn to sell at the farmers market. Which, if any, of these five programs will she still potentially be eligible for?

2) (25 pts.) For these next questions, assume she will plant all 100 acres in corn.

2a) (5 pts.) Assuming she is eligible, briefly explain what triggers a Direct Payment.

2b) (5 pts) Assuming she is eligible, briefly explain what triggers a Counter Cyclical Payment.

2c) (5 pts) Assuming she is eligible, briefly explain what triggers an ACRE Payment.

2d) (5 pts) Assuming she is eligible, briefly explain what triggers a Loan Deficiency Payment.

2e) (5 pts) Assuming she is eligible, briefly explain how a Marketing Assistance Loan works and why she may want to use one.

3) (28 pts) Your cousin is worried about risk and a neighbor told her that he buys crop insurance. She is confused because there are some many policies and different terms that she does not understand, so she asks you for some help.

3a) (2 pts each) For each of the crop insurance policies below, indicate whether it is an individual or area-wide (county) policy and whether it is a yield or revenue policy.

i) Crop Revenue Coverage (CRC):

ii) Group Risk Plan (GRP):

iii) Group Risk Income Plan (GRIP):

iv) Actual Production History (APH):

3b) (5 pts) For an individual yield policy, briefly explain what triggers an indemnity payment.

3c) (5 pts) For an individual revenue policy, briefly explain what triggers an indemnity payment.

3d) (5 pts) She is thinking about buying an APH policy. Explain what is meant by the coverage level and the price election.

3e) (5 pts) At the cafe in town, she heard some farmers talking about crop insurance subsidies. Briefly explain how the federal government subsidizes crop insurance for farmers.

4) (12 pts) She talk to a local bank about getting an operating loan to buy inputs and hire someone to till and plant corn on her farm. The loan officer talks about the "5 C's of Credit", but she forgets what they were.

List the "5 C's of Credit" **(5 pts)** and explain one of them in more detail—what does the loan officer generally mean? **(7 pts)** (Basically pick one of the readings Amber Bennett provided and briefly summarize it so it looks like you read it over).

5 a) (5 pts.) You invest $60,000 in your cousin's farm to help her get started. She will pay back the $60,000 in 6 years plus 6% interest compounded annually. How much will she owe you?

5 b) (5 pts.) How much money must be invested today earning a 5% interest rate compounded annually to have $50,000 in 5 years?

5 c) (5 pts.) You have a field worth $4,000/ac if you sell it today. If you wait 3 years, you are confident you can sell it for $5,000/ac. Think of holding the land as an investment. What is the rate of return on holding the land expressed as an annually compounded interest rate?

6 a) (10 pts.) What is the net present value (NPV) for a strawberry field that costs $6,000 to plant in year 1, then produces $4,500 in year 2, $5,000 in year 3, and $4,000 in year 4? Assume a 15% discount rate. Fill in the Present Value column in the table below. Show your work for potential partial credit.

Year	Net Return	Present Value
1	-6,000	
2	4,500	
3	5,000	
4	4,000	
	NPV	

6 b) (5 pts.) What is the annuity equivalent to the time varying returns from the strawberry field?

The annuity factor formula is $K = \frac{1}{r}\left(1 - \frac{1}{(1+r)^t}\right)$, so that the annuity is C = NPV/K.

Show your work for potential partial credit.

7) (15 pts. total) You are deciding the seeding rate for your soybeans. This table gives the seeds planted per acre (1000's of seeds per acre) and the yield (bu/ac).

Seeds (1,000's)	Yield (bu/ac)	Marginal Product	Value of Marginal Product
160	47.0	--	--
170	48.5		
180	49.5		
190	50.0		

a) (5 pts.) Use this table to show how to calculate the Marginal Product and then fill in the Marginal Product column in the table. Show your work for potential partial credit.

b) (5 pts.) Soybeans sell for $8/bu. Show how to calculate the Value of Marginal Product for one example, and then fill in the Value of Marginal Product column in the table.

c) (5 pts.) If the cost of soybean seed is $0.40 for 1,000 seeds, what is the profit maximizing seeding rate based on the table above?

8) (10 pts. total) The table below reports the cost ($/yr) for Michelle's Melons to produce organic melons (lbs/year).

Melons (lbs)	Fixed Cost	Variable Cost	Total Cost	Marginal Cost
10,500	1,000	26,250		--
12,500	1,000	27,500		
13,500	1,000	30,000		
13,750	1,000	31,250		

a) (6 pts.) Use the table above, show how to calculate the Total Cost and Marginal Cost and then fill in the missing values in the table. Show your work for potential partial credit.

b) (4 pts.) If organic melons sell for $3.75/lb, what is the profit maximizing amount (lbs) of organic melons for Michelle's Melons to produce?

9) (10 pts) Processing sweet corn yield is determined by the function: $Y = 2.5 + 0.5K - 0.01K^2$, where Y is yield (tons/ac) and K is applied potassium (lbs/ac). If the price of processing sweet corn is $80/ton and the price of applied potassium is $0.80/lb, what is the profit maximizing amount of potassium to apply? **Don't forget to check the Second Order Condition.**

10) (15 pts. total) You buy a boar (a male pig) for $6,500 that you plan to keep for 3 years. For this questions, calculate annual depreciation of the boar assuming a $500 salvage value.

a) (5 pts.) Fill in the table using Straight Line Depreciation. Show your work for potential partial credit.

Year	Depreciation During Year	Value at Year End
1		
2		
3		

b) (5 pts.) Assume you deducted the depreciation reported above from your ordinary income on your Schedule F each year. You sell the boar in year 4 for $1,200 (not the $500 salvage value). Do you pay ordinary income tax, self-employment tax, and/or capital gains tax on this $700? In other words, what taxes are paid (if any) on depreciation recapture?

c) (5 pts.) Below is the IRS depreciation table for an asset with 3-year recovery period using the half year convention. Calculate depreciation for this boar to claim for income tax purposes for **each year**, based on the table below:

Year	Depreciation Rate	
1	33.33%	
2	44.45%	
3	14.81%	
4	7.41%	

11) (5 pts.) Briefly explain the "limited liability" that owners of a Limited Liability Company (LLC) typically have as a result of using this form of business arrangement rather than the other business arrangements (partnership, corporation, and sole proprietorship) discussed in class.

12) (15 pts. total) Billy and Jean own a farm, with all assets owned as marital property under Wisconsin's marital property law. Billy and Jean bought land years ago for $200,000, but currently it has a fair market value of $550,000. Give a brief explanation for each answer.

a) (5 pts.) Suppose Billy and Jean sell the land to their son Jackson for $550,000.

i) How much gain would Billy and Jean have to report on their income tax return?

ii) What is Jackson's basis for the land?

b) (5 pts.) Suppose Billy and Jean give the land to Jackson and Billy and Jean have used none of their lifetime gift tax exclusions on previous gifts.

i) How much gift taxes would they have to pay on their gain in the land?

ii) What is Jackson's basis for the land?

c) (5 pts.) Suppose Billy dies and then Jean gives the land to Jackson.

i) After Billy dies, what is Jeans's basis in the land?

ii) What is Jackson's basis for the land?

13) (20 pts. total) Use the simplified Balance Sheet and Income Statement below to answer these questions. Show your work for potential partial credit.

BALANCE SHEET	**12/31/2009**	**12/31/2008**
Current Assets	140,000	100,000
Non-Current Assets	550,000	500,000
Total Assets	690,000	600,000

	12/31/2009	**12/31/2008**
Current Liabilities	100,000	70,000
Non-Current Liabilities	350,000	360,000
Total Liabilities	450,000	430,000
Equity	240,000	170,000
Total Liabilities and Equity	690,000	600,000

a) (5 pts.) What is the Current Ratio on 12/31/**2009**?

b) (5 pts.) What is the Debt to Asset Ratio on 12/31/**2009**?

INCOME STATEMENT 12/31/2008 to 12/31/2009

Crop and Livestock Sales	420,000
Operating Expenses	300,000
Interest Expenses	35,000
Net Farm Income from Operations	85,000

c) (10 pts.) Assume the farm family paid themselves $60,000 for their labor & management.
i) What is this farm's Return on Assets?

ii) What is this farm's Rate of Return on Assets?