

1) (16 pts. total) a) (5 pts.) Use the information given and your knowledge of the relationships among Balance Sheet entries to fill in the **five** missing cells and then answer the questions below.

BALANCE SHEET	1/1/2010	1/1/2009		1/1/2010	1/1/2009
Current Assets	280,000	270,000	Current Liabilities	250,000	240,000
Non-Current Assets	560,000	550,000	Non-Current Liabilities	320,000	370,000
			Total Liabilities	570,000	610,000
			Equity	270,000	210,000
Total Assets	840,000	820,000	Total Liabilities & Equity	840,000	820,000

b) (5 pts.) **Briefly** define each of the Balance Sheet terms below and give one specific farm/agricultural example for the first four:

i) Current Asset:

See class notes

ii) Non-Current Asset:

See class notes

iii) Current Liability:

See class notes

iv) Non-Current Liability:

See class notes

v) Equity (no example needed):

See class notes

c) (3 pts.) Based on this Balance Sheet, what is the Current Ratio on 1/1/**2010**?

$$CR = \text{Current assets} / \text{Current liabilities} = 280,000 / 250,000 = 1.12$$

d) (3 pts.) Based on this Balance Sheet, what is the Debt to Asset Ratio on 1/1/**2010**?

$$DA = \text{Total Liabilities} / \text{Total Assets} = 570,000 / 840,000 = 0.679$$

2) (16 pts. total) Below is a simplified farm Income Statement.

a) (3 pts.) Use the given information and your knowledge of the relationships among Income Statement entries to fill in the **three** missing cells.

INCOME STATEMENT	1/1/2009 to 1/1/2010
Crop Sales	200,000
Livestock/Dairy Sales	180,000
Total Revenue	380,000
Operating Costs	220,000
Interest Expenses	50,000
Total Costs	270,000
Net Farm Income from Operations	110,000
Unpaid Labor and Management	50,000
Net Farm Income	60,000

Use the Income Statement above and the Balance Sheet in Question 1 to answer the questions below. Show how you calculate your answers for potential partial credit.

b) (5 pts.) What is this farm's Return on Assets? What is this farm's Rate of Return on Assets?

$$ROA = \text{Revenue} - \text{Operating Costs} - \text{Unpaid Labor Mngmt} + \text{Cap Gains}$$

(Be sure not to include Interest in the operating cost)

$$ROA = 380,000 - 220,000 - 50,000 - 0 = 110,000$$

$$ROROA = ROA / \text{Avg Assets} = 110,000 / \text{Avg}(840,000; 820,000) = 110,000 / 830,000 = 13.25\%$$

c) (5 pts.) What is this farm's Return on Equity? What is this farm's Rate of Return on Equity?

$$ROE = \text{Revenue} - \text{Operating Costs} - \text{Interest} - \text{Unpaid Labor Mngmt} + \text{Cap Gains}$$

$$ROE = ROA - \text{Interest}$$

$$ROE = 110,000 - 50,000 = 60,000$$

$$ROROE = ROE / \text{Avg Equity} = 60,000 / \text{Avg}(270,000; 210,000) = 60,000 / 240,000 = 25.0\%$$

d) (3 pts.) What is this farm's Operating Profit Margin Ratio (i.e. Profit Margin)?

$$\text{Profit Margin} = ROA / \text{Total Revenue} = 110,000 / 380,000 = 28.9\%$$

3) (11 pts. total) Briefly and concisely answer each question below.

a) (3 pts.) Explain what the Current Ratio is and why it is important to a farm or business.

See class notes

b) (5 pts.) Explain what the Rate of Return on Assets and the Rate of Return on Equity are and why they are important for a farm or business.

See class notes

c) (3 pts.) Suppose a farm's debt to asset ratio decreased in each of the last 3 years and the farm's income statement showed that the farm business had high net farm incomes. Give an explanation of how this could happen and why it is or is not a problem.

See class notes and think about it.

4) (10 pts. total) You buy a truck for \$40,000 with a useful life of 4 years and no salvage value.

a) (3 pts.) Fill in this table using Straight Line Depreciation. Show your work.

Year	Depreciation During Year	Basis at Year End
1	10,000	30,000
2	10,000	20,000
3	10,000	10,000
4	10,000	0

$$\text{Depreciation} = (\text{purchase price} - \text{salvage value}) / \text{useful life} = (40,000 - 0) / 4 = 10,000$$

b) (4 pts.) Fill in this table using Double Declining Balance Depreciation. Show your work.

Year	Depreciation During Year	Basis at Year End
1	$40,000 \times 50\% = 20,000$	$40,000 - 20,000 = 20,000$
2	$20,000 \times 50\% = 10,000$	$20,000 - 10,000 = 10,000$
3	$10,000 \times 50\% = 5,000$	$10,000 - 5,000 = 5,000$
4	$5,000 \times 50\% = 2,500$	$5,000 - 2,500 = 2,500$

$$R_{DDB} = 2 \times R_{SL} = 2 \times (1/\text{useful life}) = 2 \times (1/4) = 50\%$$

$$\text{Depreciation} = \text{Beginning Basis} \times R_{DDB}$$

c) (3 pts.) Calculate depreciation for this truck to claim for income tax purposes for year 3 and year 4 using the following tax table for a 7-year recovery period and the half-year convention. Show your work

Year	Depreciation Rate
1	10.71%
2	19.13%
3	15.03%
4	12.25%
5	12.25%
6	12.25%
7	12.25%
8	6.13%

$$\text{Depreciation} = \text{Purchase Price} \times \% \text{ from Tax Table}$$

$$\text{Year 3: Depreciation} = 40,000 \times 15.03\% = 6,012$$

$$\text{Year 4: Depreciation} = 40,000 \times 12.25\% = 4,900$$

**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?

*Farm Service Agency (FSA), which has an office in each county*

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

*Direct Payments, Counter Cyclical Payments, and ACRE*

**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?

*All of them: Direct Payments, Counter Cyclical Payments, Marketing Assistance Loans, Loan Deficiency Payments and ACRE. Direct Payments, Counter Cyclical Payments, and ACRE because of the base acres and Marketing Assistance Loans, Loan Deficiency Payments because corn is an eligible crop.*

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

*Only Direct Payments, Counter Cyclical Payments, and ACRE, because of the base acres (whether she plants corn on them or not). She is no longer eligible for and Marketing Assistance Loans and Loan Deficiency Payments because alfalfa is not an eligible crop.*

**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?

*None of them. Under current rules, planting vegetables (or wild rice) on these acres means the farmer is not eligible for any of these.*

**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.

*Ownership of the base acres means she is eligible for a corn direct payment, if she goes to the local county FSA office and enrolls each year.*

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

*Ownership of the base acres means she is eligible for a corn counter cyclical payment, if she goes to the local county FSA office and enrolls each year. In any given year, if the national marketing year average corn price is below the target price minus the direct payment rate for corn, then she would receive a counter cyclical payment. Currently for corn, the target price is \$2.63/bu and the direct payment rate is \$0.28/bu, so the CCP trigger is \$2.35/bu.*

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

*Ownership of the base acres means she is eligible for an ACRE payment, if she goes to the local county FSA office and enrolls each year. In any given year, if the Actual State Revenue for corn is less than the ACRE State Revenue Guarantee for corn and her Actual Farm Revenue for corn is less than the ACRE Farm Revenue Guarantee for corn, then she would receive an ACRE payment for corn. Note that ACRE uses the national marketing year average price for each crop (not the actual farmer's price) and the USDA announced yield for the state, but the farmer's actual yield.*

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

*After she harvests her corn, she would put some or all of her harvested corn under loan by filing forms at the county FSA office. She would then receive a Marketing Assistance Loan at the loan rate of \$1.95/bu for her corn (\$1.37/bu if she is enrolled in ACRE). She could then remove the corn from the program by paying off the loan at any date she wishes (but before she actually physically sells the corn). On the day she pays off the loan, if the posted county price is less than the loan rate of \$1.95/bu (or \$1.37 if she is in ACRE), she would then effectively receive a Loan Deficiency Payment by paying off the loan at the lower rate of the posted county price per bushel rather than the loan rate she originally borrowed the money at. In short, the posted county price must be less than the loan rate on the day the marketing assistance loan is paid off.*

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

*Above, I explain how a marketing assistance loan works—receive a loan paying you the \$/bu enrolled equal to the loan rate. Farmers use them to help manage their cash flow—the loans have a very low interest rate, so many use them to pay off operating loans that are due, then sell their corn when the price is better. Even in 2010, when market prices were quite good, almost 1 billion bushels were enrolled in marketing assistance loan program.*

**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): *(this is now called Revenue Protection)*

*Individual Revenue insurance: pays indemnities based on your actual yield and the CBOT price*

ii) Group Risk Plan (GRP):

*Areawide Yield insurance: pays indemnities based on actual county yield*

iii) Group Risk Income Plan (GRIP):

*Areawide Revenue insurance: pays indemnities based on actual county yield and the CBOT price*

iv) Actual Production History (APH): *(this is now called Yield Protection)*

*Individual Yield insurance: pays indemnities based on your actual yield*

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

*If actual harvested yield for the unit is less than the unit's yield guarantee.*

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

*If actual harvested yield for the unit multiplied by the CBOT harvest price is less than the unit's revenue guarantee.*

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

*Coverage level is the percentage of your average yield you choose for your yield guarantee, and ranges from 50% to as much as 85% of your average. The price election is the price you choose (from a set menu) to be paid when there is a loss. The available price elections are based on the CBOT prices for harvest time futures contracts a few months before planting.*

**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.

*USDA subsidizes crop insurance in two ways. First, the USDA pays part of the farmer's premium so that farmers actually pay less than an actuarially fair premium. Second, the USDA also pays companies for selling the insurance so that companies do not need to increase premiums to earn a profit on the insurance they sell (which is what they do for traditional insurance policies).*