

1998 Iowa Vo Ag/FFA Farm Business Management
Career Development Event

MULTIPLE CHOICE SECTION (100 pts.)

Select the best answer (2 pts ea). Code your answers on the answer sheet provided. Be sure to erase completely any answers that you change.

1. An individual farmer typically has very little control over the price he/she receives for their product at a given point in time because:
 - a. there are many other sellers competing in the market
 - b. the farmer is NOT selling a differentiated product
 - c. the farmer does NOT control a large enough proportion of market supply
 - d. all of the above

2. The accrual method of accounting records the following as they occur:
 - a. assets and liabilities
 - b. income and expenses
 - c. debt and equity
 - d. profits and taxes

3. Which of the following represents, in economics, the general types of cash costs for a farm?
 - a. fixed and variable
 - b. debt and equity
 - c. controllable and avoidable
 - d. current and long-term

4. Which of the following happens if a farmer pays off a short-term loan that was used to purchase livestock feed?
 - a. assets, liabilities, and equity increase
 - b. liabilities remain unchanged
 - c. equity increases
 - d. assets and liabilities decrease, equity remains unchanged

5. The willingness and ability of consumers to buy pork is:
 - a. the price of pork
 - b. the market supply of pork
 - c. the market demand for pork
 - d. consumer purchasing power

- 6 Beef producers sometimes get upset with negative publicity about the safety and quality of beef because they believe it may:
- a increase the price of beef
 - b decrease the demand for beef
 - c increase the cost of producing beef
 - d decrease the price of competitive products
- 7 Suppose a grain farm can produce corn yielding 150 bu/acre at a total cost of \$300/acre or soybeans yielding 50 bu/acre. If the price of corn is \$3.00/bu and the price of soybeans is \$6.00/bu., what total cost per acre of soybeans would give the same net returns as corn?
- a \$0
 - b \$100
 - c \$150
 - d \$300
- 8 The net present value method and the payback method are alternative methods of:
- a ranking investment alternatives
 - b recording revenues and expenses
 - c figuring interest payments on a loan
 - d calculating depreciation
- 9 A wheat farmer wants to hedge future wheat sales to protect against a price decrease. The farmer should:
- a sell futures contracts of wheat and buy the contracts back when the wheat is sold
 - b buy futures contracts of wheat and sell the contracts when the wheat is sold
 - c sell the wheat and buy wheat futures contracts in case the price goes down
 - d wait and sell the wheat in the cash market
- 10 A farmer is "solvent" if:
- a net cash flow is positive
 - b current assets exceed current liabilities
 - c equity is positive
 - d short-term debt obligations can be paid
- 11 The current ratio is a measure of:
- a profitability
 - b solvency
 - c liquidity
 - d financial wealth

- 12 Which of the following is typically true for both cooperative agribusiness corporations and for noncooperative agribusiness corporations
- a they are nonprofit organizations
 - b company earnings are returned to stockholder investors
 - c they are owned by the customers
 - d owners own at least one share of stock
- 13 Crop enterprise diversification typically:
- a increases financial risk
 - b decreases financial risk
 - c has no impact on financial risk
 - d makes it easier to use more labor saving equipment
- 14 For which of the following marketing alternatives is there typically the least amount of uncertainty as to what price the farmer will receive for his/her commodity?
- a hedge with futures contracts
 - b hedge with options on futures contracts
 - c cash forward contract
 - d price later contract
- 15 Total assets of a farming operation are valued at \$500,000. Total net worth is valued at \$200,000 Net earnings were \$50,000 for the year What annual rate of return was earned by this farmer on his/her equity?
- a 25%
 - b 10%
 - c 16.7%
 - d 7.1%
- 16 An accrued expense that must be paid within the year is:
- a a current asset
 - b a long-term liability
 - c a source of working capital
 - d a current liability
- 17 If the total cost of producing an acre of canning peas is \$300, the yield is 2000 pounds per acre, and the selling price is 15 cents per pound:
- a net cash flow is zero
 - b net profit is negative
 - c net profit cannot be calculated from the information given
 - d the selling price is the break-even price

- 18 Typically, a graph of which of the following economic concepts slopes upward and to the right?
- a market supply
 - b market demand
 - c total fixed costs
 - d average revenue for a farm firm
- 19 The value of a resource in its next best use is called:
- a value added
 - b marginal value product
 - c opportunity cost
 - d devaluation
- 20 A negative net cash flow means a farm operation:
- a also has negative profits
 - b is NOT breaking even
 - c has cash expenses in excess of cash income
 - d is losing equity
- 21 A market in which prices are trending upward is known as:
- a a bear market
 - b a bull market
 - c a speculative market
 - d a deflationary market
- 22 The cost of an item, plus major improvements, minus accumulated depreciation is an asset's:
- a market value
 - b adjusted basis
 - c net present value
 - d cash boot
- 23 One advantage of leasing versus purchasing equipment is that:
- a lease payments are tax deductible while interest payments are not
 - b leasing always provides a larger deduction than depreciation
 - c leasing does not require as much initial capital
 - d investment credit can be used for leasing
- 24 A \$1 deductible expense before taxes is equivalent to what after-tax cost if a farmer's marginal tax rate is 40%?
- | | |
|----------|----------|
| a \$0 40 | c \$1 00 |
| b \$0 60 | d \$1 40 |

25. If a soybean producer decides to store soybeans in the local elevator for six months, the farmer should expect to receive a higher price for those soybeans in six months that will compensate him/her for:
- a the extra paperwork required
 - b the extra labor required on his/her part
 - c the extra transportation costs
 - d the cost of carry of soybeans
26. A farmer is purchasing a new piece of equipment at a cost of \$50,000. The dealer will finance the equipment under the following terms: 10% down payment with the balance repaid in equal payments over the next five years at 10% APR. The farmer expects the equipment to last for 10 years and have a salvage value of \$10,000. How much interest will the farmer pay the first year of the loan?
- a \$4,500
 - b \$5,000
 - c \$4,000
 - d \$500
27. A farm operation has a net farm income on an accrual basis of \$40,000 with sales of \$120,000, expenses of \$70,000, and beginning inventory of \$40,000. This suggests that the farm had \$30,000 of:
- a other income
 - b ending inventory
 - c taxes
 - d interest expense
28. Liquidity is best described as:
- a the ability to meet short-term cash obligations
 - b long-term profitability
 - c having no debt
 - d having a high rate of asset turnover
29. If the demand for a product is "elastic," a given percentage change in a product's price results in an even greater percentage change in:
- a the quantity of that product purchased by consumers
 - b the total dollar sales of that product
 - c the quantity of a competing product purchased by consumers
 - d the supply of that product

- 30 The dollars of patronage refunds that a cooperative member receives at the end of the current year is based on:
- a the number of shares of stock in the cooperative owned by that member
 - b the dollar amount of business done during the year with the cooperative by that member
 - c the terms of a contract between the co-op and the member
 - d decisions made by the co-op's manager
- 31 The specified price at which an option buyer may buy or sell the corresponding commodity with a futures contract is the:
- a premium
 - b call price
 - c strike price
 - d futures price
- 32 Market equilibrium is where:
- a total revenue = total cost
 - b producers are barely making a profit
 - c opportunity costs are zero
 - d market supply = market demand
- 33 Unexpected difficulties in getting the local soybean harvest transported to market will typically result in which of the following?
- a a narrowing of the basis
 - b a widening of the basis
 - c decreased demand for on-farm soybean storage
 - d the local cash price increasing relative to the futures price
- 34 A farmer has total assets of \$360,000, current liabilities of \$40,000 and non-current liabilities of \$80,000. What is the farmer's debt to equity ratio?
- a .33
 - b .11
 - c .22
 - d .50
- 35 Limited liability is one possible:
- a disadvantage of incorporating the family farm
 - b advantage of incorporating the family farm
 - c advantage of operating a smaller business
 - d advantage of hedging with futures contracts

- 36 A cash-crop farmer decides to start renting a neighboring 100 acres of cropland for \$40 per acre while farming his/her 400 acres. The effect on the farmer's costs will be:
- a to increase fixed costs per acre
 - b to decrease fixed costs per acre
 - c to increase variable costs per acre
 - d to decrease variable costs per acre
37. The process of figuring the present value of future revenues and costs is known as:
- a compounding
 - b amortizing
 - c discounting
 - d budgeting
- 38 The purchase of a put option on corn means:
- a the buyer is required to sell a corn futures contract at a set price
 - b the buyer may, but is not required, to sell a corn futures contract at a set price
 - c the buyer may, but is not required, to buy a corn futures contract at a set price
 - d the buyer is required to buy a corn futures contract at a set price
- 39 The local cash corn market price closed at \$2.25 with a nearby corn futures contract closing at \$2.50. The 25¢ difference between these prices is known as:
- a the premium
 - b the transportation cost differential
 - c the margin
 - d the basis
- 40 The present value of \$200 that will be received at the end of 1 year, given an 8% interest (discount) rate is:
- a \$185.19
 - b \$208.00
 - c \$200.00
 - d \$216.00
- 41 What is the most that you should be willing to pay for an acre of farmland that is expected to produce annual net earnings of \$80 forever if the "capitalization" or interest rate is 8%:
- a \$640
 - b \$1000
 - c \$880
 - d \$864

42. A farmer owns a grain combine (purchased for \$100,000) where total annual fixed costs are \$12,000 and variable operating costs are \$10 per acre. How many acres should the farmer custom harvest per year at a minimum to justify buying the combine if the farmer is paid \$20 per acre for harvesting?
- a. 10,000
 - b. 1,200
 - c. 600
 - d. 400
43. An increase in interest rates, everything else the same, will likely have the following impact on a beef cow:
- a. increase its net present value
 - b. decrease its net present value
 - c. decrease its payback period
 - d. decrease its salvage value
44. Crop share and cash are alternative:
- a. rental agreements
 - b. accounting methods
 - c. investment analysis methods
 - d. methods of paying for expenses
45. A rental agreement between a tenant and a landlord is also known as:
- a. a probate
 - b. an estate
 - c. a chattel
 - d. a lease
46. The opportunity cost of homegrown feeds in a farrow-to-finish swine enterprise budget would equal:
- a. the total cost of producing the feed
 - b. the cash cost of producing the feed
 - c. the value at which the feed could have been sold
 - d. the extra cost of feed compared to a feeder-to-finish operation
47. The total amount of an operating loan may be decreased without increasing the dollar value of the annual payment by:
- a. increasing the amount of the down payment
 - b. raising the interest rate
 - c. extending the length of the loan
 - d. being nice to the loan officer

48 Suppose that a dairy farmer's cost of milk production is \$8.00 per hundredweight. If the farmer's percentage increase in cost of production is 12%, what is his/her new cost of production per hundredweight?

- a \$8.12
- b \$7.88
- c \$8.96
- d \$9.20

49 For a local cooperative, the manager typically:

- a hires the board
- b sets patronage refund policy
- c hires co-op employees
- d serves on the board as a voting member

50 How much anhydrous ammonia (NH₃) should be applied to maximize profits, if wheat is \$3.25 per bushel; NH₃ is \$325 per ton and the wheat responds to each additional 10 pounds of NH₃ by the following yield increases?

NH ₃ Increase	Wheat Yield Increase (bushels)
1st 10 pounds	3.00
2nd 10 pounds	2.50
3rd 10 pounds	2.00
4th 10 pounds	1.25
5th 10 pounds	0.50
6th 10 pounds	0.00

- a 10 pounds of NH₃
- b 40 pounds of NH₃
- c 50 pounds of NH₃
- d 60 pounds of NH₃

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MULTIPLE CHOICE SECTION KEY

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|-----|---|-----|---|
| 1. | D | 26. | A |
| 2. | B | 27. | B |
| 3. | A | 28. | A |
| 4. | D | 29. | A |
| 5. | C | 30. | B |
| 6. | B | 31. | C |
| 7. | C | 32. | D |
| 8. | A | 33. | B |
| 9. | A | 34. | D |
| 10. | C | 35. | B |
| 11. | C | 36. | B |
| 12. | D | 37. | C |
| 13. | B | 38. | B |
| 14. | C | 39. | D |
| 15. | A | 40. | A |
| 16. | D | 41. | B |
| 17. | D | 42. | B |
| 18. | A | 43. | B |
| 19. | C | 44. | A |
| 20. | C | 45. | D |
| 21. | B | 46. | C |
| 22. | B | 47. | A |
| 23. | C | 48. | C |
| 24. | B | 49. | C |
| 25. | D | 50. | C |

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| 1. | D | 26. | A |
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| 3. | A | 28. | A |
| 4. | D | 29. | A |
| 5. | C | 30. | B |
| 6. | B | 31. | C |
| 7. | C | 32. | D |
| 8. | A | 33. | B |
| 9. | A | 34. | D |
| 10. | C | 35. | B |
| 11. | C | 36. | B |
| 12. | D | 37. | C |
| 13. | B | 38. | B |
| 14. | C | 39. | D |
| 15. | A | 40. | A |
| 16. | D | 41. | B |
| 17. | D | 42. | B |
| 18. | A | 43. | B |
| 19. | C | 44. | A |
| 20. | C | 45. | D |
| 21. | B | 46. | C |
| 22. | B | 47. | A |
| 23. | C | 48. | C |
| 24. | B | 49. | C |
| 25. | D | 50. | C |

Team Participation Event (100 pts.)

1998 Iowa Vo-Ag/FFA Farm Business Management Career Development Event

As a group (or team), you are to collectively select the best answer to each question below (10 pts. each). Code your answers on the answer sheet provided (one answer sheet per team). Be sure to erase any answers that your group changes.

This activity is designed to test your ability as a group to apply your knowledge of investment analysis concepts and procedures that are often used in making farm and agribusiness firm decisions. In this particular case, the application is to a 'business' decision that pertains to any high school student, such as yourself. Deciding whether to go on to college or to enter the work force immediately is a critical 'business' decision that every graduating high school senior must make.

Assume that one of your friends, I.M. Undecided, is having difficulty making a decision on what to do after high school. I.M. has come to your team for some advice and answers. Use the attached compounding, discounting, and annuity tables to assist your team with its analyses where appropriate. I.M. is considering two main alternatives at the present time--1) NOT go on to college and start working at the local co-op in the feed mill and 2) go to Iowa State University for five years and graduate with a Bachelor of Science Degree from the College of Ag. Note that I.M. would take 5 years to graduate from college versus the normal 4 years because I.M. plans on taking light course loads in order to be able to participate in extracurricular activities and to participate in travel abroad opportunities.

For ease of calculation purposes, assume that all of I.M.'s estimated incomes and expenses are annual lump sums and they are received (or made) at the end of each given year. Estimated annual incomes for I.M. for this year plus the next five years for both alternatives are given below.

<u>Year</u>	<u>I. M.'s Annual Income (\$)</u>	
	<u>Start</u> <u>Work Now</u>	<u>Go to</u> <u>ISU</u>
0 (this yr.)	20000	0
1	20800	0
2	21632	0
3	22497	0
4	23396	0
5	24332	40000

1. Notice that the attached Table 1 does NOT contain any compound interest values for interest rates less than 4%. If your group were to extend this table to include values for interest rates of 1%, 2%, and 3%, what annual compound interest value would go into the table for year (or n) = 4 and interest rate (i) = 2%?
 - a. 1.0800
 - b. 1.0240
 - c. 1.0824
 - d. 1.1040

2. What is your estimate of the compound annual percentage increase in I.M.'s annual income through year 5 if he/she goes to work now for the local co-op?
 - a. 21.66%
 - b. 4.33%
 - c. 3.61%
 - d. 4.00%

3. If I.M.'s starting salary of \$20,000 with the co-op increases at a compound annual rate of 4%, what would I.M.'s annual salary be in year 40 (about the time I.M. turns 60 years old)?
 - a. \$83,200
 - b. \$96,020
 - c. \$32,000
 - d. \$52,000

4. If I.M.'s starting salary of \$40,000 after college were to increase at a compound annual rate of 6%, what would I.M.'s annual salary be in year 40 (i.e. after 35 years of 6% annual salary increases)?
 - a. \$84,000
 - b. \$96,000
 - c. \$124,000
 - d. \$307,440

5. What is the present value of I.M.'s starting salary of \$40,000 after college (to be received at the end of year 5 from now) if a compound annual discount rate of 6% is assumed?
 - a. \$29,888
 - b. \$37,600
 - c. \$40,000
 - d. \$53,528

6. If I.M. were to calculate the net present value of going on to college (versus living on his/her own while going to work for the local co-op now) which of the following would most likely be an expense that could be ignored?
- tuition expenses
 - salaries and wages foregone
 - room and board
 - school-related book and computer expenses
7. Assume that the 'extra' expenses for I.M. to go to college are the same for all 5 years (0 through 4) and are estimated to be \$30,000 per year. What is the present value of these anticipated extra expenses using a compound annual discount rate of 6% (note that the \$30,000 extra expenses for year 0 (this year) are already on a present value basis)?
- \$150,000
 - \$141,000
 - \$112,080
 - \$133,953
8. Assume that I.M. expects to earn an additional \$30,000 per year in salary as a result of going on to college every year for 40 years (for simplicity of calculation purposes, assume here this is true even for years 1 through 4 as well as years 5 through 40). What is the present value of this future additional income stream if a compound annual discount rate of 6% is used?
- \$308,571
 - \$1,128,000
 - \$451,389
 - \$1,120,000
9. Assume that your team recognizes the answer to question #8 over estimates the present value of the additional income as a result of going on to college because it includes the present value of \$30,000 per year for years 1 through 4 when, in fact, there would be no additional salary for I.M. during these years if he/she were truly in college. Therefore, what is the present value of this falsely assumed additional income stream that is included in your answer to question #8 (again, assume a compound annual discount rate of 6%)?
- \$120,000
 - \$112,800
 - \$103,953
 - \$95,040
10. From the answers that your team has calculated above, what would be the best estimate of the net present value for I.M. of going on to college?
- #8 answer
 - #8 answer minus #9 answer
 - #8 answer minus #9 answer minus #7 answer
 - #9 answer minus #7 answer

COMPOUNDING TABLES

Use tables to find compounded and discounted amounts. The compounding tables (Fig. 9) give you the future values of \$1.00 compounded at different interest and time periods. To find out what the value of \$1.00 that is invested today at 5 percent will be in one year, find the intersection of 5 percent and one year in Fig. 9 (\$1.05). It is circled

for your convenience. What is the value of \$250 placed in a savings account at 10 percent interest for ten years? The table shows that \$1.00 becomes \$2.5937. You have \$250. You must multiply the 2.5937 times your \$250. You get \$648.43. This is the amount that you would receive on the investment of \$250 in 10 years at 10 percent per year interest.

Table 1
Future Value at Compound Interest
 $FV = (1 + i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200
2	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544
3	1.1248	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049
4	1.1698	1.2155	1.2624	1.3107	1.3604	1.4115	1.4641	1.5180	1.5735
5	1.2166	1.2762	1.3382	1.4025	1.4693	1.5386	1.6105	1.6850	1.7623
6	1.2653	1.3400	1.4185	1.5007	1.5868	1.6771	1.7715	1.8704	1.9738
7	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0761	2.2106
8	1.3685	1.4774	1.5938	1.7181	1.8509	1.9925	2.1435	2.3045	2.4759
9	1.4233	1.5513	1.6894	1.8384	1.9990	2.1718	2.3579	2.5580	2.7730
10	1.4802	1.6288	1.7908	1.9671	2.1589	2.3673	2.5937	2.8394	3.1058
11	1.5394	1.7103	1.8982	2.1048	2.3316	2.5804	2.8531	3.1517	3.4785
12	1.6010	1.7958	2.0121	2.2521	2.5181	2.8126	3.1384	3.4984	3.8959
13	1.6650	1.8856	2.1329	2.4098	2.7196	3.0658	3.4522	3.8832	4.3634
14	1.7316	1.9799	2.2609	2.5785	2.9371	3.3417	3.7974	4.3104	4.8871
15	1.8009	2.0789	2.3965	2.7590	3.1721	3.6424	4.1772	4.7845	5.4735
16	1.8729	2.1828	2.5403	2.9521	3.4259	3.9703	4.5949	5.3108	6.1303
17	1.9479	2.2920	2.6927	3.1588	3.7000	4.3276	5.0544	5.8950	6.8660
18	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5435	7.6899
19	2.1068	2.5269	3.0255	3.6165	4.3157	5.1416	6.1159	7.2633	8.6127
20	2.1911	2.6532	3.2071	3.8696	4.6609	5.6044	6.7274	8.0623	9.6462
25	2.6658	3.3863	4.2918	5.4274	6.8484	8.6230	10.8347	13.5854	17.0000
30	3.2433	4.3219	5.7434	7.6122	10.0626	13.2676	17.4494	22.8922	29.9599
35	3.9460	5.5160	7.6860	10.6765	14.7853	20.4139	28.1024	38.5748	52.7996
40	4.8010	7.0399	10.2857	14.9744	21.7245	31.4094	45.2592	65.0008	93.0509

Table 1, cont'd

Year	13%	14%	15%	16%	17%	18%	19%	20%
1	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
2	1.2769	1.2996	1.3225	1.3456	1.3689	1.3924	1.4161	1.4400
3	1.4428	1.4815	1.5208	1.5608	1.6016	1.6430	1.6851	1.7280
4	1.6304	1.6889	1.7490	1.8106	1.8738	1.9387	2.0053	2.0736
5	1.8424	1.9254	2.0113	2.1003	2.1924	2.2877	2.3863	2.4883
6	2.0819	2.1949	2.3130	2.4363	2.5651	2.6995	2.8397	2.9859
7	2.3526	2.5022	2.6600	2.8262	3.0012	3.1854	3.3793	3.5831
8	2.6584	2.8525	3.0590	3.2784	3.5114	3.7588	4.0213	4.2998
9	3.0040	3.2519	3.5178	3.8029	4.1084	4.4354	4.7854	5.1597
10	3.3945	3.7072	4.0455	4.4114	4.8068	5.2338	5.6946	6.1917
11	3.8358	4.2262	4.6523	5.1172	5.6239	6.1759	6.7766	7.4300
12	4.3345	4.8179	5.3502	5.9360	6.5800	7.2875	8.0642	8.9161
13	4.8980	5.4924	6.1527	6.8857	7.6986	8.5993	9.5964	10.6993
14	5.5347	6.2613	7.0757	7.9875	9.0074	10.1472	11.4197	12.8391
15	6.2542	7.1379	8.1370	9.2655	10.5387	11.9737	13.5895	15.4070
16	7.0673	8.1372	9.3576	10.7480	12.3303	14.1290	16.1715	18.4884
17	7.9860	9.2764	10.7612	12.4676	14.4264	16.6722	19.2441	22.1861
18	9.0242	10.5751	12.3754	14.4625	16.8789	19.6732	22.9005	26.6233
19	10.1974	12.0556	14.2317	16.7765	19.7483	23.2144	27.2516	31.9479
20	11.5230	13.7434	16.3665	19.4607	23.1055	27.3930	32.4294	38.3375
25	21.2305	26.4619	32.9189	40.8742	50.6578	62.6686	77.3880	95.3962
30	39.1158	50.9501	66.2117	85.8498	111.0646	143.3706	184.6752	237.3762
35	72.0685	98.1001	133.1755	180.3140	243.5034	327.9972	440.7005	590.6681
40	132.7815	188.8834	267.8635	378.7211	533.8686	750.3782	1051.6674	1469.7713

Fig 9 — Compounding Table

DISCOUNTING TABLES

Now look at the investment from the other end. Discount it by using the discounting table (Fig 10). The discount rate for \$1.00 in 10 years from now at 10 percent is .3855. Do you see it at the intersection of 10 percent and 10 years? It is circled for your convenience. Multiply the end value of the investment (\$648.43) times the dis-

count factor (.3855) and you get \$249.97. The reason that the sum does not exactly equal the \$250 that you originally invested is due to rounding error. Discounting and compounding are calculations of the opposite ends of the growth line of money that is placed in an investment. Each checks the other.

Table 2
Present Value of 1
 $PV = 1/(1+i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	0.9615	0.9523	0.9433	0.9345	0.9259	0.9174	0.9090	0.9009
2	0.9245	0.9070	0.8899	0.8734	0.8573	0.8416	0.8264	0.8116
3	0.8889	0.8638	0.8396	0.8163	0.7938	0.7721	0.7513	0.7311
4	0.8548	0.8227	0.7920	0.7629	0.7350	0.7084	0.6830	0.6587
5	0.8219	0.7835	0.7472	0.7130	0.6805	0.6499	0.6209	0.5934
6	0.7903	0.7462	0.7049	0.6663	0.6301	0.5962	0.5644	0.5346
7	0.7599	0.7106	0.6650	0.6227	0.5834	0.5470	0.5131	0.4817
8	0.7306	0.6768	0.6274	0.5820	0.5402	0.5018	0.4665	0.4339
9	0.7025	0.6446	0.5918	0.5439	0.5002	0.4604	0.4240	0.3909
10	0.6755	0.6139	0.5583	0.5083	0.4631	0.4224	0.3855	0.3521
11	0.6495	0.5846	0.5267	0.4751	0.4288	0.3875	0.3509	0.3172
12	0.6245	0.5568	0.4969	0.4440	0.3971	0.3555	0.3186	0.2858
13	0.6005	0.5303	0.4688	0.4150	0.3676	0.3262	0.2896	0.2575
14	0.5774	0.5050	0.4423	0.3878	0.3404	0.2992	0.2633	0.2319
15	0.5552	0.4810	0.4172	0.3624	0.3152	0.2745	0.2393	0.2090
16	0.5339	0.4581	0.3936	0.3387	0.2918	0.2518	0.2176	0.1882
17	0.5133	0.4362	0.3713	0.3166	0.2702	0.2310	0.1978	0.1696
18	0.4936	0.4155	0.3503	0.2959	0.2502	0.2119	0.1798	0.1528
19	0.4746	0.3957	0.3305	0.2765	0.2317	0.1944	0.1635	0.1376
20	0.4563	0.3768	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240
25	0.3751	0.2953	0.2329	0.1842	0.1460	0.1159	0.0922	0.0736
30	0.3083	0.2313	0.1741	0.1314	0.0993	0.0753	0.0573	0.0436
35	0.2534	0.1812	0.1301	0.0936	0.0676	0.0489	0.0355	0.0259
40	0.2082	0.1420	0.0972	0.0668	0.0460	0.0318	0.0220	0.0153

Table 2, cont'd

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.8928	0.8849	0.8771	0.8695	0.8620	0.8547	0.8474	0.8403	0.8333
2	0.7971	0.7831	0.7694	0.7561	0.7431	0.7305	0.7181	0.7061	0.6944
3	0.7117	0.6930	0.6749	0.6575	0.6406	0.6243	0.6086	0.5934	0.5787
4	0.6355	0.6133	0.5920	0.5717	0.5522	0.5336	0.5157	0.4986	0.4822
5	0.5674	0.5427	0.5193	0.4971	0.4761	0.4561	0.4371	0.4190	0.4018
6	0.5066	0.4803	0.4555	0.4323	0.4104	0.3898	0.3704	0.3521	0.3348
7	0.4523	0.4250	0.3996	0.3759	0.3538	0.3331	0.3139	0.2959	0.2790
8	0.4038	0.3761	0.3505	0.3269	0.3050	0.2847	0.2660	0.2486	0.2325
9	0.3606	0.3328	0.3075	0.2842	0.2629	0.2434	0.2254	0.2089	0.1938
10	0.3219	0.2945	0.2697	0.2471	0.2266	0.2080	0.1910	0.1756	0.1615
11	0.2874	0.2606	0.2366	0.2149	0.1954	0.1778	0.1619	0.1475	0.1345
12	0.2566	0.2307	0.2075	0.1869	0.1684	0.1519	0.1372	0.1240	0.1121
13	0.2291	0.2042	0.1820	0.1625	0.1452	0.1298	0.1162	0.1042	0.0934
14	0.2046	0.1806	0.1597	0.1413	0.1251	0.1110	0.0985	0.0875	0.0778
15	0.1826	0.1598	0.1400	0.1228	0.1079	0.0948	0.0835	0.0735	0.0649
16	0.1631	0.1414	0.1228	0.1068	0.0930	0.0811	0.0707	0.0618	0.0540
17	0.1456	0.1252	0.1077	0.0929	0.0802	0.0693	0.0599	0.0519	0.0450
18	0.1300	0.1108	0.0946	0.0808	0.0691	0.0592	0.0508	0.0436	0.0375
19	0.1161	0.0980	0.0829	0.0702	0.0596	0.0506	0.0430	0.0366	0.0313
20	0.1036	0.0867	0.0728	0.0611	0.0513	0.0432	0.0365	0.0308	0.0260
25	0.0588	0.0471	0.0378	0.0303	0.0244	0.0197	0.0159	0.0129	0.0104
30	0.0333	0.0255	0.0196	0.0151	0.0116	0.0090	0.0069	0.0054	0.0042
35	0.0189	0.0138	0.0101	0.0075	0.0055	0.0041	0.0030	0.0022	0.0016
40	0.0107	0.0075	0.0052	0.0037	0.0026	0.0018	0.0013	0.0009	0.0006

Fig. 10 — A Discounting Table

ANNUITIES

Annuities are investments paid as yearly dividends. To compare annuities you must write down the benefits of the annuities so that you can compare them directly to one another.

To find the discounted (present) value of an 8 percent, 5-year, \$100 per year annuity, use the annuity table (Fig. 11).

Find the number at the intersection of 8 percent and five years (3 9927). It is circled for your convenience. Then multiply the 3.9927 by \$100 to get \$399.27. If you are given \$100.00 every year for 5 years, you will receive the same amount of money as you would if you were given \$399.27 today.

Table 4
Present Value of Annuity of \$1

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	9615	9524	9434	9346	9259	9174	9091	9009
2	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125
3	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4868	2.4437
4	3.6299	3.5459	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024
5	4.4518	4.3295	4.2124	4.1002	3.9927	3.8896	3.7908	3.6959
6	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305
7	6.0020	5.7864	5.5824	5.3893	5.2064	5.0329	4.8684	4.7122
8	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461
9	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370
10	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892
11	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065
12	9.3851	8.8632	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924
13	9.9856	9.3936	8.8527	8.3576	7.9038	7.4869	7.1034	6.7499
14	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819
15	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909
16	11.6523	10.8378	10.1059	9.4467	8.8514	8.3126	7.8237	7.3792
17	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.5488
18	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016
19	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393
20	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5135	7.9633
25	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	8.4217
30	17.2920	15.3724	13.7648	12.4090	11.2578	10.2736	9.4269	8.6938
35	18.6646	16.3742	14.4982	12.9477	11.6546	10.5668	9.6442	8.8552
40	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7790	8.9511

Table 4, cont'd

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	8929	8850	8772	8696	8621	8547	8475	8403	8333
2	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278
3	2.4018	2.3611	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065
4	3.0373	2.9745	2.9137	2.8549	2.7982	2.7432	2.6901	2.6386	2.5887
5	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906
6	4.1114	3.9975	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255
7	4.5638	4.4226	4.2833	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046
8	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372
9	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310
10	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925
11	5.9377	5.6869	5.4527	5.2337	5.0286	4.8364	4.6560	4.4865	4.3271
12	6.1944	5.9176	5.6603	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392
13	6.4235	6.1218	5.8424	5.5831	5.3423	5.1183	4.9095	4.7147	4.5327
14	6.6282	6.3025	6.0021	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106
15	6.8109	6.4624	6.1422	5.8474	5.5754	5.3242	5.0916	4.8759	4.6755
16	6.9740	6.6039	6.2651	5.9542	5.6685	5.4053	5.1624	4.9377	4.7296
17	7.1196	6.7291	6.3729	6.0472	5.7487	5.4746	5.2223	4.9897	4.7746
18	7.2497	6.8399	6.5504	6.1280	5.8178	5.5339	5.2732	5.0333	4.8122
19	7.3658	6.9380	6.6231	6.1982	5.8774	5.5845	5.3162	5.0700	4.8435
20	7.4694	7.0248	6.6869	6.2593	5.9288	5.6278	5.3527	5.1009	4.8696
25	7.8431	7.3300	6.8729	6.4641	6.0971	5.7662	5.4669	5.1951	4.9476
30	8.0552	7.4956	7.0027	6.5660	6.1772	5.8294	5.5168	5.2346	4.9789
35	8.1755	7.5856	7.0700	6.6166	6.2153	5.8582	5.5386	5.2512	4.9915
40	8.2438	7.6344	7.1050	6.6418	6.2335	5.8713	5.5481	5.2581	4.9966

Fig. 11 — An Annuity Table

KEY - TEAM PARTICIPATION EVENT
1999 Iowa Vo Ag/FFA
Farm Business Management Career Development Event

1. (D) The equivalent single payment now is the present value (PV) of the 5-year annuity of \$10,000 per year

$$\begin{aligned} \text{PV} &= 10,000 \text{ (PV of \$1 per year for } r = 6\%, n = 5) \text{ see Fig. 11} \\ &= 10,000 (4.2124) \\ &= 42,124 \end{aligned}$$

2. (D) The equivalent present value of the 5-year annuity of \$10,000 per year is given as \$39,927

$$\Rightarrow 39,927 = 10,000 \text{ (PV of \$1 per yr for } r = ?\%, n = 5)$$

$$\Rightarrow \text{(PV of \$1 per yr for } r = ?\%, n = 5) = 39,927/10,000 = 3.9927$$

\Rightarrow look in Fig. 11, across the row for n (yr) = 5, to find value of r that corresponds to table value of 3.9927

$$\Rightarrow r = 8\%$$

3. (B) The equivalent future value (FV) = its present value (PV) compounded annually for $n = 5$ years at $r = 6\%$.

$$\Rightarrow FV = PV (1 + r)^n$$

$$\Rightarrow FV = PV (1 + .06)^5$$

$$\Rightarrow FV = PV (1.3382) \text{ see Fig. 9}$$

$$\Rightarrow FV = 42,124 (1.3382) \text{ see PV answer to Q. \#1}$$

$$\Rightarrow FV = 56,370$$

Note, the FV in this question could also have been calculated by compounding forward to the end of year 5 each annual payment separately and then adding them up.

$$\begin{aligned} \Rightarrow \text{FV} &= 10,000 && \text{this is FV of 5}^{\text{th}} \text{ yr pymt} \\ &+ (1.06)^1 && \text{this is FV of 4}^{\text{th}} \text{ yr pymt} \\ &+ (1.06)^2 && \text{this is FV of 3}^{\text{rd}} \text{ yr pymt} \\ &+ (1.06)^3 && \text{this is FV of 2}^{\text{nd}} \text{ yr pymt} \\ &+ (1.06)^4 && \text{this is FV of 1}^{\text{st}} \text{ yr pymt} \end{aligned}$$

$$\begin{aligned} \Rightarrow \text{FV} &= 10,000 \\ &+ 10,000 (1.0600) \\ &+ 10,000 (1.1236) \end{aligned}$$

$$\begin{aligned}
& + 10,000 (1.1910) \\
& + 10,000 (1.2624) \\
\Rightarrow \text{FV} & = 10,000 \\
& + 10,600 \\
& + 11,236 \\
& + 11,910 \\
& + 12,624 \\
\Rightarrow \text{FV} & = 56,370
\end{aligned}$$

- 4 (C) The present value (PV) is the PV of a 30-year annuity of \$2,000 per year

$$\begin{aligned}
\Rightarrow \text{PV} & = 2,000 (\text{PV of } \$1 \text{ per yr for } r = 6\%, n = 30) \text{ see Fig. 11} \\
& = 2,000 (13.7648) \\
& = 27,530
\end{aligned}$$

- 5 (D) The equivalent PV of Savings Plan B

$$\begin{aligned}
\Rightarrow & \text{PV of a 30-yr annuity of } \$4,000 \text{ per yr} \\
& - \text{PV of a 10-yr annuity of } \$4,000 \text{ per yr}
\end{aligned}$$

$$\begin{aligned}
\Rightarrow & 4,000 (\text{PV of } \$1 \text{ per yr for } r = 6\%, n = 30) \\
& - 4,000 (\text{PV of } \$1 \text{ per yr for } r = 6\%, n = 10)
\end{aligned}$$

$$\begin{aligned}
\Rightarrow & 4,000 (13.7648) \\
& - 4,000 (7.3601)
\end{aligned}$$

$$\begin{aligned}
\Rightarrow & 55,059 \\
& - 29,440 \\
& = 25,619 = \text{PV of Savings Plan B}
\end{aligned}$$

$$\Rightarrow \text{From Q. \#4, PV of Savings Plan A} = 27,530$$

$$\begin{aligned}
\Rightarrow & \text{PV of Savings Plan B is } \$1,911 \text{ less than} \\
& \text{PV of Savings Plan A } (27,530 - 25,619 = 1,911)
\end{aligned}$$

- 6 (C) The equivalent FV = its PV compounded annually for $n = 30$ yrs at $r = 6\%$

$$\begin{aligned}
\Rightarrow \text{FV} & = \text{PV} (1 + 0.06)^{30} \\
& = 27,530 (5.7434) \text{ see Q. \#4 answer and Fig 9} \\
& = 158,116
\end{aligned}$$

- 7 (B) The equivalent FV for $n = 30$ yrs at $r = 7\%$

$$\Rightarrow \text{FV} = \text{PV} (1.07)^{30}$$

$$= 27,530 (7.6122) \text{ see Q. \#1 answer and Fig 9}$$

$$= 209,564$$

=> This FV is 51,448 greater than its value of 158,116 for $r = 6\%$ (see Q. #6)

$$\Rightarrow 209,564 - 158,116 = 51,448$$

8. (A) The equivalent FV = its PV compounded annually for $n = 30$ yrs at $r = 5\%$

$$\Rightarrow \text{FV} = \text{PV} (1.05)^{30}$$

$$= 25,000 (4.3219) \text{ see Fig 9}$$

$$= 108,048$$

9. (C) PV of expenses (new truck)

$$= 20,000 + 2,000 (\text{PV of } \$1 \text{ per yr for } r = 6\%, n = 5)$$

$$= 20,000 + 2,000 (4.2124)$$

$$= 20,000 + 8,425$$

$$= 28,425$$

PV of expenses (used truck)

$$= 10,000 + 4,000 (\text{PV of } \$1 \text{ per yr for } r = 6\%, n = 5)$$

$$= 10,000 + 4,000 (4.2124)$$

$$= 10,000 + 16,850$$

$$= 26,850$$

=> PV of expenses (new) are \$1,575 greater than the PV of expenses (used) (i.e. $28,425 - 26,850 = 1,575$)

=> should purchase the used truck

- 10 (C) The PV of the extra salvage value on the new truck
- $$= 3,000 (\text{PV of } \$1 \text{ for } r = 6\%, n = 5) \text{ see Fig 10}$$
- $$= 3,000 (.7472)$$
- $$= 2,241$$

Note this offsets the extra PV of the costs associated with the new truck (\$1,575) calculated in Q. #9

=> Now, it is less expensive to purchase the new truck, whereas before this was not the case.

**1998 Iowa Vo Ag/FFA Farm Business Management
Career Development Event**

PROBLEM SECTION (200 pts.)

Select the best answer (5 pts each) Code your answers on the answer sheet provided. Be sure to erase completely any answers that you change

Section A: Financial Statement Analysis (50 pts.) Using the attached net worth ("Finpack" balance sheet) and income statements

1. This family's net worth on the date this financial statement was made is:
 - a. \$1,104,533
 - b. \$1,364,153
 - c. \$533,731
 - d. \$830,401

2. The farm's market value net worth is:
 - a. \$830,401
 - b. \$677,740
 - c. \$423,590
 - d. \$152,661

3. The farm's total market value debt-to-asset ratio is:
 - a. 2 38
 - b. 0.54
 - c. 0 39
 - d. 0 42

4. The farm's working capital is:
 - a. \$197,043
 - b. \$11,884
 - c. \$1,169,393
 - d. \$31,962

5. How much will their next loan payment on their long-term loan to the insurance company be?
 - a. \$322,023
 - b. \$33,600
 - c. \$3,008
 - d. \$319,015

6. How has the value of the farm's "purchased cropland" changed since it was originally bought?
- a. increased
 - b. did not change
 - c. decreased
 - d. cannot tell
7. Net cash farm income is _____ net farm income
- a. higher than
 - b. lower than
 - c. the same as
 - d. any of the above can be true
8. In this example the farm had _____ value of crops and feed at the end of the year as at the beginning
- a. a higher
 - b. a lower
 - c. the same
 - d. can't tell
9. Which value most accurately represents the value of what the farm produced over and above what it cost to produce it?
- a. \$444,684
 - b. \$56,491
 - c. \$74,512
 - d. \$62,512
10. How much did this farm spend on new machinery and equipment in the past year?
- a. \$8,700
 - b. \$78,300
 - c. \$65,000
 - d. \$22,000

Section B. Cash Flow Analysis (50 pts.)

Use the attached cash flow budget projection to answer the questions below. Note: in the final section, AO stands for 'annual operating'.

11. In which month does this farm expect to have the largest total cash outflows, for all purposes?
- a. February
 - b. July
 - c. October
 - d. December

- 12 In which month does this farm plan to sell their soybeans?
- a January
 - b March
 - c October
 - d December
- 13 In which month does this farm project the largest cash operating deficit (outflows exceed inflows)?
- a February
 - b June
 - c July
 - d December
- 14 What is the outstanding balance on this farm's annual operating loan at the beginning of the year?
- a \$57,230
 - b \$36,114
 - c \$226,682
 - d \$247,798
- 15 How much does this farm plan to borrow for purchasing cattle during the year?
- a \$27,000
 - b \$158,400
 - c \$110,000
 - d \$73,000
- 16 What is the minimum operating loan (i e minimum line of credit) this farm would need from their lender this year?
- A \$60,000
 - b \$37,000
 - c \$240,000
 - d \$100,000
- 17 Based on this cash flow budget, this farm's projected net farm income for the coming year is:
- a \$109,988
 - b \$519,115
 - c \$34,126
 - d cannot calculate net farm income from a cash flow budget
- 18 This farm wants to have a cash balance of at least _____ at the end of each month
- a \$1,000
 - b \$5,000
 - c \$100,000
 - d Zero

- 19 Another way to meet cash needs for a given month besides short-term borrowing is:
- a shorten the repayment period on amortized loans
 - b use faster depreciation methods
 - c shift the timing of grain or livestock sales
 - d increase the estimated market value of land that is owned
- 20 A primary purpose of a cash flow budget is:
- a to project what month the farm will need to borrow money
 - b to estimate the profitability of crops or livestock
 - c to estimate income taxes to be paid
 - d to project the farm's net worth for the coming year

Section C. Budgeting and Investment Analysis (50 pts.)

- 21 You are pulling together a budget to determine if you are going to harvest a crop which is standing in the field. In the short run, you will harvest the crop if: (You may be minimizing losses and not maximizing profit)
- a you can pay all crop production costs
 - b you can sell it for a profit
 - c you can pay all your variable costs, such as seed, fertilizer, etc
 - d you can cover your harvesting costs such as combine costs, labor for harvesting, etc
- 22 You are preparing a corn production enterprise budget and value land as the cash rent equivalent. The cash rent equivalent reflects its:
- a fixed cost
 - b variable cost
 - c debt payment
 - d opportunity cost
- 23 On the corn silage budgets, attached, the breakeven price per ton for silage with 16 ton yield would be:
- a \$12.79
 - b \$21.31
 - c \$12.04
 - d \$24.83
- 24 On the corn silage budgets, attached, the land charge _____ as the yield increases
- a increases
 - b decreases
 - c stays the same
 - d not enough information to tell

- 25 Which of the following items are not included in the enterprise budgets?
- a income
 - b expenses
 - c profits
 - d value added

The following is used for the next two questions.

You are looking at the alternative of buying a self-propelled combine and want to develop a budget that shows the annual costs of owning the machine (fixed and variable) You have the following information:

Interest rate	=	9%
Repairs (% of purchase cost)	=	2%
Taxes and insurance (% of purchase cost)	=	1%
Lubrication (% of fuel cost)	=	13%
Labor hours per year	=	400
Labor value (\$/hr)	=	\$8 00
Acres per year	=	800
Years of use	=	6
Gallons of diesel fuel use per year	=	2,200
Diesel fuel price per gallon	=	\$1 00
Purchase price	=	\$100,000
Salvage value	=	\$40,000

26. In the above combine budget, what is the approximate annual interest cost for the combine?
- a \$4,500
 - b \$6,300
 - c \$9,000
 - d \$5,400
27. In the above combine budget, what is the per acre labor cost for the 400 hours of labor required to operate the combine?
- a \$8 00
 - b \$4 00
 - c \$16.00
 - d \$6.00

The following information is for the next two questions.

You are looking at purchasing a neighboring 100 acres for \$200,000. The interest cost (discount rate) is 9 percent.

28. One part of investment analysis is projecting what the land may be worth at some future time period. If the land value increases at 4 percent per year, what will be its value in 20 years? (Attached tables may be helpful in this calculation.)
- a \$400,000
 - b \$1,120,800
 - c \$438,220
 - d \$91,278
29. Another part of the land investment analysis is the present value of the annual profit. What is the present value of the \$15,000 annual profit when evaluated over a 20 year period? (Attached tables may be helpful in this calculation.)
- a \$300,000
 - b \$136,928
 - c \$203,855
 - d \$150,000

You have the following information:

Initial cost of an investment	\$40,000
Net cash revenue	
End of Year 1	\$10,000
End of Year 2	\$10,000
End of Year 3	\$10,000
End of Year 4	\$10,000
Terminal value	\$0

30. What is the payback for the investment?
- a 4 years
 - b 2 years
 - c 3 years
 - d 1 year

Section D: Marketing (50 pts.)

The information attached contains price information for soybean futures and options for March 17, 1998. Use this information (if needed) to answer questions 31-40. In addition to this information, assume 1) the expected nearby basis on the first day of each delivery month is \$0.30/bu. and 2) the commission fee for one round turn (buying and selling combined) for both futures and options is \$75 per contract.

31. The closing price for July soybean futures on this day, March 17, was:
- a. 658
 - b. 657
 - c. 659
 - d. 611 ½
32. Which of the following would have been the least expensive soybean options contract to buy on the close for March 17?
- a. May call, strike price = 700
 - b. May call, strike price = 675
 - c. July put, strike price = 600
 - d. July put, strike price = 650
33. Since August 1998 soybean futures contracts began trading, what has been the highest price at which at least one such contract has been traded?
- a. 666
 - b. 753
 - c. 745
 - d. 659
34. Suppose you sold one Aug '98 soybean futures contract on the March 17 close. How much money or profit after (or including) commissions would you make if you were to buy this contract back on August 1 at a price = 638?
- a. + \$1000
 - b. + \$925
 - c. + \$20
 - d. - \$1075
35. What was the cash soybean price in your local market on March 17 if the basis was 46½¢ per bushel based on the close of the March futures?
- a. \$6 56 ½
 - b. \$6.10
 - c. \$6 09
 - d. not enough information to tell

36. A soybean farmer can expect to receive what net price per bu. (after commission fees) as a result of hedging some future (Sept 1, 1998) soybean marketings on the close on March 17 using the Sept. 1998 futures contract?
- a \$6 45
 - b \$6.46 ½
 - c \$6.16 ½
 - d \$6 15
37. If a soybean farmer is required to put up margin money equal to 25 percent of the March 17 closing value of the July '98 futures contract before he/she can hedge with that contract, how much money will he/she have to deposit per contract?
- a \$164.75
 - b \$823.75
 - c \$2,636.00
 - d \$8,237.50
38. The corn option premiums on March 17 (compared to the same options' prices on March 16) are most likely to have:
- a increased for the call options
 - b seen increases in the strike prices
 - c increased for the put options
 - d all of the above
39. The right to sell July soybean futures at a price = 650 on the March 17 close would have cost:
- a a July put option buyer 23¢/bu
 - b a July call option buyer 32¢/bu.
 - c a July put option seller 23¢/bu
 - d all of the above
40. What was the closing price of Sept '98 soybean futures the previous day (March 16)?
- a 645
 - b 652
 - c 641
 - d 646 ½

**Problem
Section
Attachments**

FINPACK BALANCE SHEET

January 1, 1980

CURRENT FARM ASSETS		Value	
Cash & checking balance		11,884	
Prepaid expense & supplies		12,500	
Growing crops		2,750	
Accounts receivable		-	
Hedging accounts		-	
Other current assets		-	
Crops	Quantity	Value/Unit	
Feed Corn	20,000	2.50/bu.	50,000
Corn Silage	500	23.00/ton	11,500
Alf/Gr Mixed	300	75.00/ton	22,500
Straw	10	70 00/ton	700
Crops under govt loan			-
Mkt Livestock	Number	Value/Unit	
Finish Beef	78	55.00/cwt.	25,740
Fin Str Calf	173	55.00/cwt.	59,469
Total Current Assets			197,043

CURRENT FARM LIABILITIES				Balance
Farm accrued interest				26,506
Accounts payable and accrued expenses				-
Current Loans	Int	P & I	Principal	
	Rate	Due	Balance	
Opr. loan - Bank	9.00	-	57,230	
Bank-cattle	8.25	-	70,000	
Government crop loans				-
Principal due within 12 months on term liabilities				11,345
Total Current Liabilities				165,081

INTERMEDIATE FARM ASSETS			
		Cost	Market
Breeding Livestock	No.	Value	Value
Beef cows, heifers	83	70,900	62,250
Beef bulls	4	6,000	5,600
Farm machinery & equip.		78,300	105,000
Other intermediate assets		-	-
Total Intermediate Assets		155,200	172,850

INTERMEDIATE FARM LIABILITIES						
	Int	Principal	P & I	Principal	Intermed	
	Rate	Balance	Due	Due	Balance	
Implement Dealer	10.00	15,894	10,000	8,337	7,557	
Total Intermediate Liabilities						7,557

LONG TERM FARM ASSETS			
		Cost	Market
Land	Acres	Value	Value
Pasture	200	20,000	80,000
Waste	50	5,000	10,000
Cropland-inherited	330	115,000	445,500
Cropland-purchased	160	375,000	216,000
Buildings & improvements		48,000	48,000
Other long term assets		-	-
Total Long Term Assets		563,000	799,500

LONG TERM FARM LIABILITIES						
	Int	Principal	P & I	Principal	Lg Term	
	Rate	Balance	Due	Due	Balance	
Insurance Company	9.50	322,023	33,600	3,008	319,015	
Total Long Term Liabilities						319,015

TOTAL FARM ASSETS	915,243	1,169,393
NONFARM ASSETS	189,290	194,740
TOTAL ASSETS (a)(b)	1,104,533	1,364,133

TOTAL FARM LIABILITIES	491,653
NONFARM LIABILITIES	42,079
TOTAL LIABILITIES (d)(e)	533,731
Retained Earnings/Contributed Capital	[a-d] 570,801
Market valuation equity	[b-a] 259,600
NET WORTH	[b-e] 830,401

I certify that my statements on this balance sheet are true, complete and correct to the best of my knowledge and belief.

Signature(s) _____ Date _____

*** INCOME STATEMENT ***

CASH FARM INCOME	Quantity	Value	CASH FARM EXPENSE	
Corn	18,620 bu.	56,897	Seed	13,566
Soybeans	10,360 bu.	71,540	Fertilizer	48,198
Finish Beef	78 head	48,590	Crop chemicals	13,522
Fin Str Calf	149 head	101,256	Crop insurance	2,963
Fin Yrlg Str	196 head	140,200	Drying fuel	6,252
Cull breeding livestock		9,525	Crop marketing	985
Deficiency payments		10,560	Crop miscellaneous	866
Custom work income		4,550	Feeder livestock purchase	
Other farm income		1,566	Yearlings 200 @ \$405	81,000
			Str calves 175 @ 325	56,875
			Total feeder livestock purchase	137,875
			Purchased feed	10,350
			Veterinary	6,690
			Livestock supplies	4,821
			Livestock marketing	2,698
			Interest	
			Ann Opr Loan Bank	12,500
			Bank-cattle	5,120
			Implement Dealer	2,354
			Insurance Company	30,853
			Total interest	50,827
			Fuel & oil	6,251
			Repairs	9,689
			Custom hire	3,500
			Hired labor	18,950
			Land rent	25,300
			Real estate taxes	13,625
			Farm insurance	2,850
			Utilities	5,963
			Dues & professional fees	300
			Miscellaneous	2,152
(C) Gross cash farm income		444,684	(D) Total cash farm expense	388,193
			(E) Net cash farm income	56,491

INVENTORY CHANGES

	Crop & Feed	Market Livestock	Receivables & Other Income Items	Prepaid Expenses & Supplies	Payables & Accrued Expenses	Total
Ending inventory	84,700	85,209	2,750	12,500	Beg 27,318	
Beginning inventory	(-) 78,350	86,400	3,200		End 26,506	
(F) Inventory change	(=) 6,350	-1,191	-450	12,500	812	18,021
(G) Net operating profit					(E+F)	74,512

DEPRECIATION AND OTHER CAPITAL ADJUSTMENTS

	Breeding Livestock	Machinery & Equipment	Buildings & Improvements	Other Assets	Total
Ending inventory	76,900	78,300	48,000	-	
Capital sales	(+) 1,513	-	-	-	
Beginning inventory	(-) 75,600	65,000	51,300	-	
Capital purchases	(-) 2,813	22,000	-	-	
(H) Depreciation / cap adj	(=) -	-8,700	-3,300	-	-12,000
(I) Net farm income				(G+H)	62,512

FINPACK: FINFLO Cashflow Plan

1981

1981
1982
1983

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
*** CASH INFLOWS ***													
Beg cash bal	11884	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	11884
Fin Yrlg Str	-	-	-	-	-	-	-	-	-	-	-	161281	161281
Fin Str Calf	-	-	-	-	-	128348	-	-	-	-	-	-	128348
Finish Beef	-	-	-	-	-	55770	-	-	-	-	-	-	55770
Feed Corn	-	-	-	-	-	7950	-	-	-	-	-	-	7950
Soybeans	-	-	-	-	-	-	-	-	-	55125	-	-	55125
Cash Corn	-	-	-	-	-	-	-	-	-	-	29531	29531	59063
Misc. crop	-	-	-	-	-	-	2125	-	-	-	-	-	2125
Cull stock	-	-	-	-	-	-	-	9570	-	-	-	-	9570
Other govt	-	-	-	-	-	-	-	8000	-	-	-	-	8000
Custom work	-	-	-	-	-	1250	1250	1250	1250	-	-	-	5000
Other farm	-	182	182	182	182	182	182	182	182	182	182	182	2000
N-Farm wages	1000	1000	1000	1000	1000	-	-	-	1000	1000	1000	1000	9000
Other N-Farm	333	333	333	333	333	333	333	333	333	333	333	333	4000
Total inflow	13217	6515	6515	6515	6515	198833	8890	24335	7765	61640	16046	197328	519115

*** CASH OUTFLOWS ***

Seed	-	-	15232	-	-	-	-	-	-	-	-	-	15232
Fertilizer	-	19118	-	19118	-	-	-	-	-	-	-	-	38235
Chemicals	-	-	-	19275	-	-	-	-	-	-	-	-	19275
Crop insur.	-	-	-	-	-	-	-	-	-	2779	-	-	2779
Drying fuel	-	-	-	-	-	-	-	-	1527	1527	1527	-	4582
Pur Silage	-	-	-	-	-	-	-	-	-	-	-	-	-
Feeder lvstk	-	-	-	-	-	-	92400	-	-	-	-	66000	158400
Purch. feed	841	841	841	841	841	841	841	841	841	841	841	841	10089
Veterinary	599	599	599	599	599	599	599	599	599	599	599	599	7192
Lstk supply	523	523	523	523	523	523	523	523	523	523	523	523	6273
L. Marketing	314	314	314	314	314	314	314	314	314	314	314	314	3769
Fuel & oil	186	186	557	929	929	557	371	371	557	929	743	186	6500
Repairs	806	806	484	323	161	161	161	161	484	323	484	645	5000
Cust hire	-	-	-	-	-	-	-	1750	1750	-	-	-	3500
Labor	1667	1667	1667	1667	1667	1667	1667	1667	1667	1667	1667	1667	20000
Land rent	-	-	13500	-	-	-	-	-	-	-	13500	-	27000
RE taxes	-	-	7000	-	-	-	-	-	7000	-	-	-	14000
Farm insur.	1500	-	-	-	-	-	1500	-	-	-	-	-	3000
Utilities	600	600	600	300	300	300	300	300	300	600	900	900	6000
Dues & fees	-	300	-	-	-	-	-	-	-	-	-	-	300
Misc.	250	250	250	250	250	250	250	250	250	250	250	250	3000
Fam. living	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	30000
Income taxes	-	20000	-	-	-	-	-	-	-	-	-	-	20000
Min end bal	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Tot. outflow	14786	52703	49067	51637	13084	12712	106426	14276	23312	17851	28848	79425	409127
Opr. surplus	-1569	-46188	-42551	-45122	-6568	186121	-97536	10059	-15547	43789	7199	117903	109988

Corn Silage following Corn

	13 tons per acre		16 tons per acre		21 tons per acre		Your Estimate
	Fixed	Variable	Fixed	Variable	Fixed	Variable	
Preharvest Machinery 1/	\$13.64	\$7.13	\$13.64	\$7.13	\$13.64	\$7.13	\$ _____
Seed, Chemical, etc.	Units		Units		Units		
Seed @ \$1.00 per 1000 k	23,000	\$23.00	27,000	\$27.00	31,000	\$31.00	\$ _____
Nitrogen @\$0.19 per lb.	120	22.80	140	26.60	170	32.30	_____
Phosphate @\$0.29 per lb.	50	14.50	65	18.85	75	21.75	_____
Potash @\$0.14 per lb.	110	15.40	140	19.60	165	23.10	_____
Lime (yearly cost)		8.00		8.00		8.00	_____
Herbicide		30.00		30.00		30.00	_____
Insecticide		14.00		14.00		14.00	_____
Crop Insurance		4.50		4.50		4.50	_____
Miscellaneous		6.00		7.00		8.00	_____
Interest on preharvest variable costs (8 months @ 9%)		8.72		9.76		10.79	_____
Total		\$146.92		\$165.31		\$183.44	\$ _____
Harvest Machinery							
Silage Harvester	\$16.53	\$11.58	\$16.53	\$11.58	\$16.53	\$11.58	\$ _____
Haul	7.28	4.94	8.96	6.08	11.76	7.98	_____
Blower	4.42	2.08	5.44	2.56	7.14	3.36	_____
Total	\$28.23	\$18.60	\$30.93	\$20.22	\$35.43	\$22.92	\$ _____
Labor							
5.0 hours @ \$7.00	\$35.00		\$35.00		\$35.00		\$ _____
Land							
Cash rent equivalent	\$105.00		\$125.00		\$150.00		\$ _____
Total fixed, variable							
Per acre	\$181.87	\$172.65	\$204.57	\$192.66	\$234.07	\$213.49	Yield:
Per ton	\$13.99	\$13.28	\$12.79	\$12.04	\$11.15	\$10.17	tons/acre
Total cost per acre	\$354.52		\$397.23		\$447.56		\$ _____
Total cost per ton	\$27.27		\$24.83		\$21.31		\$ _____

1/Chisel plow tandem disk apply N field cultivate plant cultivate and spray See the Estimated Machinery Costs table

FUTURES PRICES

Tuesday, March 17, 1998.

Open Interest Reflects Previous Trading Day.

Open High Low Settle Change Lifetime High Low Interest Open

GRAINS AND OILSEEDS

SOYBEANS (CBT) 5,000 bu.; cents per bu.

	Mar	May	July	Aug	Sept	Nov	Jan	Nov	Change	Lifetime High	Lifetime Low	Interest	Open
Mar	657	659	655 1/2	656 1/2	+ 2 1/2	749 1/2	593	1,028					
May	654 3/4	659 1/2	654 1/2	656 3/4	+ 2 1/4	752	601	67,444					
July	658	662	657	659	+ 2 1/2	753	611 1/2	42,273					
Aug	657 1/2	666	657 1/2	658	+ 3 3/4	745	631	7,596					
Sept	645	648	645	646 1/2	+ 5 1/2	723	637	1,275					
Nov	637	641 1/2	636	639 1/4	+ 4 1/4	717	597	27,305					
Jan99	644 1/2	655	644	645 3/4	+ 4 1/4	701 1/2	639	842					
Nov	644	646	644	646	+ 2 3/4	680	634	493					

Est vol 42,000; vol Mon 49,083; open int 148,711, +470

OPTIONS PRICES

Tuesday, March 17, 1998.

AGRICULTURAL

SOYBEANS (CBT)

5,000 bu.; cents per bu

Strike Price	Calls-Settle			Puts-Settle		
	May	July	Aug	May	July	Aug
600	57 3/8	64		7 3/8	5 3/4	11
625	34 7/8	46 1/2	3 1/4	12 1/2	19 1/2
650	17 1/4	32	40 1/2	10 1/2	23	33
675	7	22	31	25 1/8	38 1/4	48
700	2 5/8	15 1/2	24 1/4	45 3/8	56	65 1/2
725	3/8	11	19 1/4	68 7/8	76	85 1/2

Est vol 14,000 Mn 6,965 calls 7,555 puts
Op int Mon 109,169 calls 62,085 puts

**1998 FFA Farm Business Management
Career Development Event**

Problem Section Key

- 1 D Family net worth = total assets - total liabilities
 = \$1,364,133 - \$533,731
 = \$830,401

2. B Market value net worth = total farm assets
 (market value) - total farm liabilities
 = 1,169,393 - 491,653
 = 677,740

3. D Market value debt-to-asset ratio = total farm liabilities ÷ total farm assets (market
 value) = 491,653 ÷ 1,169,393
 = 0.42

4. D Working capital = current assets - current liabilities
 = 197,043 - 165,081
 = 31,962

5. B Principal and interest payment to insurance company = \$33,600 (= "P & I due")

6. C Value change = capital gain (or loss) = market value - cost value
 = 216,000 - 375,000
 = - 159,000 (decrease)

7. D Any of the above

8. A Change in value of crops and feed
 = ending inventory - beginning inventory = \$84,700 - \$78,350
 = + \$6,350 (an increase in value)

9. D Net farm income (= net cash farm income adjusted for inventory changes,
 depreciation, and other capital adjustments) = \$62,512

10. D Capital purchases = machinery and equipment expenditure = \$22,000

11. B Maximum value on "total outflow" line is \$106,426 in July

12. C October, under cash inflows, soybeans.

13. C Largest negative value on "opr. surplus" line is \$97,536 in July

- 14 A Value of "Beg AO bal" in January = 57,230
- 15 C Value of "cattle1 + cattle2" under New Credit = 65,000 + 45,000 = 110,000.
- 16 C The minimum line of credit must exceed the largest value of "End AO bal." which is \$235,829, in May
- 17 D A cash flow budget does not project net farm income
- 18 B \$5,000, under projected ending cash balance.
- 19 C Shifting the timing of sales to months with projected cash deficits
- 20 A A cash flow budget helps project when operating credit will be needed
- 21 D In the short run you will harvest the crop as long as you can cover the harvesting costs. At this stage all other costs are fixed in the production process and must be paid whether or not you harvest
- 22 D The cash rent equivalent represents the opportunity cost or income foregone as a result of not renting
- 23 D Breakeven price is that price which will cover all production costs of \$24.83/ton
- 24 A Land charge per acre increases (from \$105 to \$150) as you go from 13 to 21 tons per acre. The budgets likely reflect higher quality and higher value land
- 25 D Budgets include income, expenses and a profit projection but not the value added concept
- 26 B Average interest cost = (average annual value of combine) (interest rate) =
 $(\$100,000 + \$40,000 / 2) .09 = \$6,300$
- 27 B Labor cost per acre
- $$\begin{array}{r} 400 \text{ labor hours} \\ \times 8.00 \text{ labor cost per hour} \\ \hline \$3,200 \text{ total labor cost} \\ \div 800 \text{ acres} \\ \hline \$4.00 \text{ labor cost per acre} \end{array}$$
- 28 C $FV = PV (1 + i)^n = 200,000 (1.04)^{20} = \$200,000 \times 2.1911 = 438,220$
- 29 B = present value of a 20 year annuity of \$15,000 for $i = 9\%$
 $= \$15,000 \times 9.1285 = 136,928$

- 30 A Payback is the amount of time for net cash revenue to equal the initial investment
This is 4 years.
- 31 C The closing price for July soybean futures on March 17 = the 'settle' price for that day as reported at 659.
- 32 A The least expensive option = the one with the lowest premium = the May call with a strike price = 700 (premium = $2 \frac{5}{8}/bu$)
- 33 C The highest recorded price for the Aug 1998 soybean futures contract = the reported 'lifetime high' = 745
- 34 B Sold at 658 on March 17
Buy at 638 on Aug 1
 \Rightarrow 20¢/bu profit before commission
 \Rightarrow \$1000 profit before commission
Less \$75 commission fee
 \Rightarrow \$925 profit after commission fee
- 35 B The basis on march 17 = $46 \frac{1}{2}/bu$
 \Rightarrow the cash price is $46 \frac{1}{2}/bu$ below the closing March futures price on March 17
 \Rightarrow $656 \frac{1}{2} - 46 \frac{1}{2} = 610 =$ cash price
- 36 D The expected net price = futures price sold at
- expected basis
- commission fee
= $6.465 - 0.30 - 0.15$
= \$6.15
- 37 D deposit = value of contract x 25
= $(\$6.59/bu \times 5,000 bu) (25)$
= $\$32,950 \times 25$
= \$8,237.50
- 38 A Note on March 17, soybean futures prices closed higher from the previous day's prices. This generally increases the value or cost of the right to buy corn futures at set prices (i.e. call options).
- 39 A The right to sell July soybean futures at 650 = the premium paid by a buyer of a July put contract with a strike price = 650. The price or cost to the buyer of this put option on March 17 = its premium = 23¢/bu

40

C

The Sept '98 soybean futures price on March 17 closed up (+) $5\frac{1}{2}$ from the previous day as noted by the 'change' of $5\frac{1}{2}$. Given the March 17 closing price for this contract was $646\frac{1}{2}$, this means the March 16 closing price was 641 (i.e. $646\frac{1}{2} - 5\frac{1}{2}$)