

Name: \_\_\_\_\_

*Econ 337 Agricultural Marketing, Spring 2018*

**Final Exam; Due Wednesday, May 2, at 11:45am**

Binary choice: Circle one answer to each question or statement. (1 point each)

1. Many forward contracts are backed up by use of futures contracts by the entity offering the forward contract.  
True statement                      False statement
2. For a corn producer, put protection involves what?  
Buying a put + short underlying position                      Buying a put + long underlying position
3. Basis risk means  
Uncertainty about gap between cash price and futures price, both realized in the future  
Uncertainty about gap between current cash price and a futures price to be realized later
4. A soybean reverse crush spread is problematic as an arbitrage opportunity because of what?  
Hard to line up appropriate futures market positions  
Hard to line up appropriate physicals market positions
5. Commodity users may be willing to “pay” a convenience yield for storage in order to  
Keep operations running                      Profit from storage opportunities
6. The efficient market hypothesis is about how information is reflected in prices.  
Yes                                      No
7. How should the existence of shrinkage, due to lost moisture, affect cost of carry in grain futures markets?  
Increase cost of carry                      Decrease cost of carry
8. Crop insurance is not subsidized by the federal government.  
True statement                      False statement
9. What futures trade would receive payment into a margin account if futures prices increase?  
Selling a future contract                      Buying a futures contract
10. If basis is negative, which is better for a long hedger?  
Widening basis                      Narrowing basis

Short answer: Provide a complete answer for each of the following questions.

11. (2 points) Pick a day between April 24 and April 30 and record the date and the settlement price for the May 2018 Class III milk futures.

12. (2 points) On that same date you chose above (in question #11), what is the strike price for the nearest in-the-money put option for May 2018 Class III milk futures?

13. (2 points) On that same date you chose above (in question #11), what is the intrinsic value for a \$4.50 put option for July 2018 corn futures?

14. (2 points) On that same date you chose above (in question #11), what is the time value for a \$10 call option for November 2018 soybean futures?

15. (2 points) On that same date you chose above (in question #11), what is the spread between the August and October 2018 lean hog futures?

16. (2 points) What is the contract unit, i.e., number of bushels, pounds, tons, etc., for corn, soybean, soybean meal, live cattle, feeder cattle, and lean hog futures contracts?
17. (2 points) What two risks do producers still face under a hedge-to-arrive contract?
18. (2 points) Give three reasons why a producer would use a deferred price contract.
19. (2 points) List 8 steps in developing a marketing plan. What is the biggest reason for failure to repeatedly use a marketing plan?
20. (2 points) Name two marketing moves you would want to make if you are a corn producer and thought futures prices are going higher, but the basis is going to weaken.

Calculations: Provide a complete answer to each of the following questions. Show your work.

21. (5 points) Given an expected basis of \$1.00 under futures and a brokerage commission of \$0.125 per cwt to buy an option contract and \$0.125 per cwt to offset a futures position, calculate the floor prices for the following October 2018 live cattle put options.

Strike Price	Premium
\$104	\$3.050
\$106	\$3.800
\$108	\$4.625
\$110	\$5.550
\$112	\$6.575

22. (10 points) I am a hedger that went short on June 2018 lean hogs on March 14, 2018 at \$78.350 per cwt. The initial margin requirement is \$1,200. The maintenance margin is \$1,200. Fill out my margin account for one futures contract.

Date	Futures Price	Gain/Loss	Margin Call	Account Balance
3/14/2018	78.350	X	X	\$1,200.00
3/15/2018	79.175			
3/16/2018	79.125			
3/19/2018	76.825			
3/20/2018	76.750			
3/21/2018	77.225			

23. (5 points) Given the data below, compute a 14-day Relative Strength Index (RSI) for November 2018 soybeans. Based on your RSI calculation, was the market due to decline? Did the market decline after 04/05/2018?

Date	Futures Price
03/15/2018	10.335
03/16/2018	10.410
03/19/2018	10.225
03/20/2018	10.250
03/21/2018	10.262
03/22/2018	10.265
03/23/2018	10.265
03/26/2018	10.255
03/27/2018	10.205
03/28/2018	10.165
03/29/2018	10.475
04/02/2018	10.400
04/03/2018	10.425
04/04/2018	10.190
04/05/2018	10.340

24. (5 points) If the government reports that the cheese price is \$1.5542 per pound, the butter price is \$2.1759 per pound, and the dry whey price is \$0.2531 per pound, what is the Class III Milk price?

25. You run a soybean processing facility. That is, you buy soybeans, crush them, and sell the soybean meal and soybean oil. Crushers often use the futures contracts of different maturities to lock in their crushing profits for a few months to a year.

$$\text{Crush Spread } (\$/bu) = P_{oil} * 11 + P_{meal} * 0.022 - P_{soybean}$$

a. (2 points) The table below shows the current prices of the futures contracts that make up the soybean crush. Calculate the crush spread for each maturity and fill in the table.

Date: April 13	$F_{soybean}$ (\$/bu)	$F_{oil}$ (\$/lb)	$F_{meal}$ (\$/ton)	Implied crush spread \$/bushel
May Maturity	9.4600	0.3392	289.60	
July Maturity	9.5450	0.3418	292.00	
Sep Maturity	9.5725	0.3427	293.90	

b. (3 points) If your facility crushes 50,000 bushels of soybeans per month, calculate your facility's profit before crushing costs from the crushing operation and fill in the table below. For example, you will lock in your profit for June by locking in profit using the July contract prices. In general, if the month in the table below does not correspond to a futures contract month, use the prices of the next to expire contract.

Date: April 13	Locked in Profit on a 50,000 bushel/month crushing business
May	
June	
July	
August	
September	
Total (5 months)	

26. Answer questions a through c using the following table.

Wheat Futures Settlements			
	<u>Price, cents per</u> <u>bushel</u>	<u>Spread vs.</u> <u>Nearby (Dec)</u>	<u>Return to Storage</u> <u>(Monthly)</u>
(Nearby) Dec	620.000	--	--
Mar	655.825		
May	679.825		
Jul	695.125		
Sep	714.825		
Dec	731.825		

- a. (3 points) Calculate the spread versus the nearby month for each contract and fill in this column in the table above (*Calculate the spread as,  $Spread = Distant - Nearby$* ).
- b. (3 points) Calculate the per month return to storage of storing from December to maturity of each contract month and fill in this column in the table above.
- c. (4 points) Suppose a farmer has 5,000 unpriced bushels at harvest. He is considering storing his grain until a later date (Assume the farmer does not face any basis risk and assume *cash = futures* at maturity). The farmer knows costs are as follows:

Costs to Store	
Physical storage cost	8.00/bushel/month
Insurance cost	1.50/bushel/month
Financing	3% APR interest rate

Do you think the farmer will decide to store? Explain why or why not.

Calculations and Graphing: Show your work.

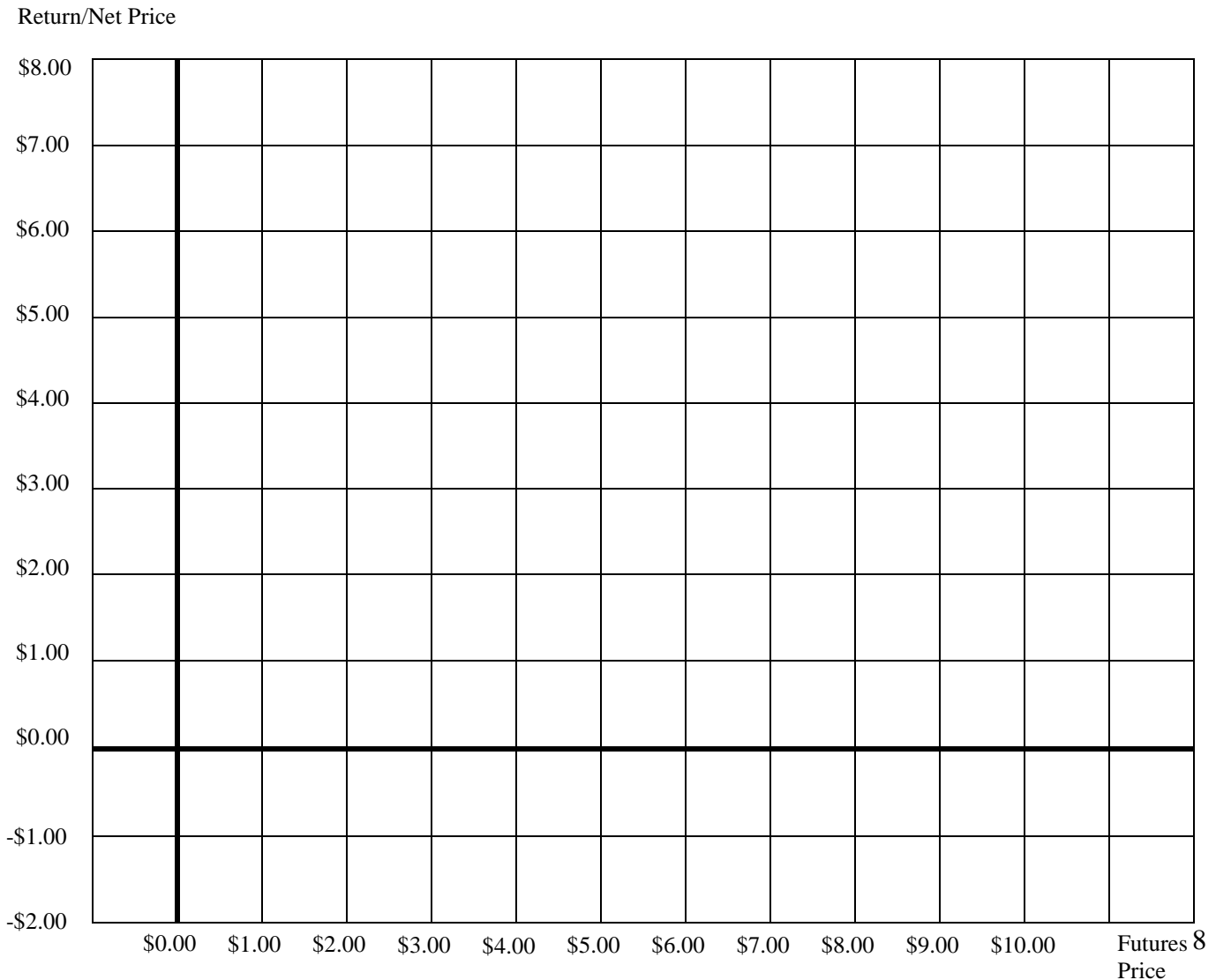
Assume an expected basis of  $-\$0.25$  per bushel and a commission of  $\$0.01$  per bushel for corn.

27. A corn producer does a short hedge for December 2018 at a futures price of  $\$4.12$  per bushel.

a. (5 points) What is her expected price with the short hedge in place?

b. (5 points) If the December 2018 corn futures price falls to  $\$3.75$ , what is her net price?

c. (5 points) Graph the relevant cash price, futures return, and net price line.





28. A corn producer is using a “window” or “fence” strategy to protect against price risk. She buys a \$4.00 put option on December 2018 corn. The premium for the put option is \$0.21. At the same time, she sells a \$5.00 call option on December 2018 corn. The premium for the call option is \$0.075.

a. (2 points) What is her floor price?

b. (4 points) If the December 2018 corn futures price rises to \$5.25, what is her expected net price?

c. (4 points) If the December 2018 corn futures price falls to \$3.00, what is her expected net price?

d. (5 points) Graph the relevant cash price, options return, and net price line.

