FFA Dairy Foods Exam 2013

Part I. There is ONE correct response per question. Completely fill in the scantron with your response.

1. The regional dairy promotion organization that represents Iowa dairy farmers is:
    a. Dairy Max
    b. Wisconsin Milk Marketing Board, Inc.
    c. Midwest Dairy Association
    d. American Dairy Association and Dairy Council, Inc.

2. Fuel Up to Play 60, the in-school nutrition and physical activity program designed to help encourage today's youth to lead healthy lives, is coordinated with:
    a. National Dairy Council
    b. National Football League
    c. U.S. Department of Agriculture
    d. All of the above

3. The microbial standard for Grade 'A' raw milk from a single farm is less than _____ total aerobic bacteria per milliliter of milk.
    a. 50,000
    b. 100,000
    c. 200,000
    d. 300,000

4. Government data reveal that 90% of teen girls and 70% of teen boys are not getting the _____ they need in their diets, which can put them at increased risk for stress fractures and bone breaks now, and osteoporosis later in life. Milk is an excellent source of this mineral:
    a. Zinc
    b. Choline
    c. Chromium
    d. Calcium

5. A mixture of milk and cream, _____ contains not less than 10.5% milk fat but less than 18% milk fat.
    a. Light cream
    b. Cultured milk
    c. Sour cream
    d. Half and half

6. This basic taste, NOT sensed by aroma, may be noted in milk from cows with mastitis.
    a. Rancid
    b. Salty
    c. Feed
    d. Malty

7. Some researchers estimate that up to 55% of adolescents may be deficient in _____, putting them at increased risk for debilitating bone diseases. Milk is the leading source of this vitamin:
    a. Vitamin C
    b. Vitamin D
    c. Folic acid
    d. Thiamin

8. What breed generally produces milk with the highest fat and protein content?
    a. Ayrshire
    b. Guernsey
    c. Jersey
    d. Holstein

9. According to the Food and Nutrition Board of the National Academy of Sciences, all people need at least _____ mg of calcium per day.
    a. 100
    b. 500
    c. 1,000
    d. 5,000

10. The pattern of dairy consumption in the U.S. has followed which of the following shapes.
    a. Continually up since dairy consumption record-keeping began in the 1950s
    b. Continually down since dairy consumption record-keeping began in the 1950s
    c. Down from the 1950s to 1980s, then up since then
    d. Up between the 1950s and 1980s, then down since then

11. Stabilizers are added to ice cream to:
    a. Add richness
    b. Prevent formation of large, coarse ice crystals in the ice cream
    c. Improve the whipping quality of the ice cream
    d. Improve nutritional value

12. Which of the following is not covered by a standard of identity?
    a. Pasteurized Process Cheese Product
    b. Yogurt
    c. Sweetened condensed milk
    d. Cottage cheese

13. Dairy products pack a powerful nutritional punch of nine essential nutrients, including all of the following, **EXCEPT**:
    a. Calcium, potassium, phosphorus
    b. Protein
    c. Vitamins A, D and B12, riboflavin and niacin
    d. Dietary fiber

14. An 8-ounce glass of milk provides 11% of the daily value of potassium, which helps to:
    a. build and repair muscle tissue, and serves as a source of energy
    b. maintain normal vision and skin
    c. strengthen bones and generates energy in your body's cells
    d. regulate the body's fluid balance and helps maintain normal blood pressure

15. An 8-ounce glass of milk provides 16% of the daily value of protein, which helps to:
    a. maintain normal vision and skin
    b. build and repair muscle tissue, and serves as a source of energy
    c. strengthen bones and generates energy in your body's cells
    d. regulate the body's fluid balance and helps maintain normal blood pressure

16. The USDA MyPyramid daily recommendation for consumption of foods in the "milk group" by teenagers is:
    a. 1 cup per day
    b. 2 cups per day
    c. 3 cups per day
    d. 4 cups per day

17. This off-flavor in milk results from breakdown of fats into free radicals. A "papery" or "cardboard" flavor is noted in the mouth.
    a. Rancid (hydrolytic)
    b. Oxidized (oxidative)
    c. Acid/Sour
    d. Malty

18. The protein in milk that forms curds when coagulated to produce cheese is:
    a. Rennet
    b. Whey proteins
    c. Lactose
    d. Casein

19. Which of the following is an example of an unripened cheese?
    a. Cheddar
    b. Cream
    c. Parmesan
    d. Asiago

20. For every 100 pounds (cwt) of milk marketed, _____ cents are assessed for dairy promotion and research programs as authorized by the checkoff legislation.
    a. 10
    b. 15
    c. 20
    d. 25

21. Dairy checkoff programs dollars support the Innovation Center for U.S. Dairy®, which do all of the following, **EXCEPT:**
    a. Increase the price of dairy products.
    b. Addresses challenges and opportunities to help grow short- and long-term dairy sales.
    c. Promote the nutrient-rich benefits of dairy foods.
    d. Works to build a foundation of sound science to tell dairy's story of sustainability and environmental stewardship.

22. A CMT test that forms a strong gel that tends to adhere to the paddle and forms a distinct central peak would have leulkocyte count of _____ cells/mL.
    a. Below 200,000
    b. 250,000-5,000,000
    c. 400,000 – 3,000,000
    d. Over 5,000,000

23. Considering exercise and milk, all of the following have been demonstrated through research, **EXCEPT**:
    a. Drinking milk is an excellent way to replace fluid that is lost during exercise.
    b. Drinking milk after a workout may help reduce muscle damage and improve recovery.
    c. Drinking milk as a post-workout beverage can increase the body's ability to make new muscle.
    d. Drinking milk after a workout causes lactose intolerance.

24. Regarding chocolate milk, all of the following are true, EXCEPT:
    a. Chocolate milk contains the same nine essential nutrients as white milk.
    b. Chocolate milk causes hyperactivity in children.
    c. Chocolate milk provides children with three of the five nutrients that fall short in children's diets.
    d. Flavored milk gives children more calcium without increasing fat and added sugars.

25. If a person is lactose intolerant, she or he may be able to comfortably consume all of the following dairy products, EXCEPT:
    a. Lactaid® milk
    b. Aged cheeses
    c. Ice cream
    d. Greek yogurt

26. Made by removal of about 60% of milk's water, _____ milk must contain at least 6.5% milk fat at least 23% total milk solids by weight.
    a. Nonfat dry
    b. Cultured
    c. Evaporated
    d. Sweetened condensed

27. To effectively sanitize a teat and maintain milk quality, how long must a teat pre-dip be left on the teat to be effective?
    a. 20 seconds
    b. 30 seconds
    c. 45 seconds
    d. 1 minute

28. The Federal Milk Market Order program establishes class prices of milk based on market prices of _____.
    a. Evaporated milk
    b. Fresh milk and cream
    c. All varieties of cheese
    d. Cheddar cheese, butter, and nonfat dry milk

29. Which of the following products contain no dairy ingredients?
    a. Sorbet
    b. Gelato
    c. Sherbet
    d. Custard

30. Which of the following statements about cheese is NOT TRUE?
    a. Process cheese is made from high-quality natural cheese
    b. Most cheeses are gluen-free
    c. Cheese is the #2 source of dietary calcium for Americans
    d. Cheese is the #1 source of dietary sodium for Americans

Part II. Observation and interpretation questions: turn the scantron over to answer the following questions.

For questions 51 – 55, observe the Nutrition Facts for Yoplait Greek Blended Blueberry Yogurt.

51. How many calories will you ingest if you eat one container of Yoplait Greek Blended Blueberry Yogurt?
    a. 150
    b. 140
    c. 120
    d. 0

52. How many containers of Yoplait Greek Blended Blueberry Yogurt would you need to consume to attain 100% of your daily recommended intake of Vitamin D?
    a. 2
    b. 3
    c. 4
    d. 5

53. Which ONE of the following statements is true?
    a. Yoplait Greek Blended Yogurt contains the same amount of protein as regular non-Greek yogurt
    b. Yoplait Greek Blended Yogurt contains 2X the protein as regular non-Greek yogurt
    c. Yoplait Greek Blended Yogurt contains more than 2X the protein as regular non-Greek yogurt
    d. Yoplait Greek Blended Yogurt contains 3X the protein as regular non-Greek yogurt

54. Which ONE of the following statements is true?
    a. Yoplait Greek Blended Blueberry Yogurt is an excellent source of dietary fiber.
    b. Yoplait Greek Blended Blueberry Yogurt is an excellent source of vitamin C.
    c. Yoplait Greek Blended Blueberry Yogurt is an excellent source of protein.
    d. Yoplait Greek Blended Blueberry Yogurt is an excellent source of calcium.

55. Which of the following stabilizers does fruit base in Yoplait Greek Blended Blueberry Yogurt contain?
    a. Sugar
    b. Modified corn starch
    c. Malic acid
    d. Vitamin A acetate

For questions 56 – 60, observe the USDA Agricultural Marketing Service Announcement of Class and Component Prices provided to you.

Important notes: Class I includes fluid milk products (requires Grade 'A' milk) Class II includes soft manufactured dairy products (requires Grade 'A' milk) Class III includes hard cheeses (can use 'manufacturing grade' milk) Class IV includes dry milk products and butter (can use 'manufacturing grade' milk)

56. Consider the **Class and Component Prices** for Class II, Class III and Class IV in **May, 2013**. Which of the following dairy products was valued the most?
    a. Nonfat dry milk
    b. Cheddar cheese
    c. Ice cream
    d. Yogurt

57. Consider the **July, 2013 Highlights** for Class II, Class III and Class IV. Which dairy product was considered more valuable in July, yogurt or Cheddar cheese?
    a. Yogurt
    b. Same value for both
    c. Cheddar cheese

58. Consider the **July, 2013 Highlights** of Class II, Class III and Class IV price changes since the previous month. Which dairy product gained more value between June and July, butter or Cheddar cheese?
    a. Butter
    b. Same value for both
    c. Cheddar cheese

59. Consider the **Federal Milk Order Class II, Class III and Class IV Milk Prices** for 2013 and 2012. Generally, would a farmer have done better selling milk in 2012 or the first 7 months of 2013?
    a. Better in 2013
    b. Equally well
    c. Better in 2012

60. Consider the **Federal Milk Order Class II, Class III and Class IV Milk Prices** for June, 2013. If a herd produced milk for a market that had 60% Class II utilization and 40% Class III utilization, what is the blend price for the milk shipped?
    a. $19.14
    b. $18.69
    c. $18.58
    d. $18.02

Nutrition Facts

Serving Size 1 container (150g)

Calories 140
Calories from Fat 0

*Percent Daily Values are based on a 2,000 calorie diet

Amount/Serving	% Daily Value*	Amount/Serving	% Daily Value*
Total Fat 0g	**0%**	**Sodium** 50mg	**2%**
Saturated Fat 0g	**0%**	**Total Carbohydrate** 22g	**7%**
Trans Fat 0g		Sugars 18g	
Cholesterol less than 5mg	**1%**	**Protein** 11g	**22%**

Vitamin A 4% · Calcium 10% · Vitamin D 20%

Not a significant source of dietary fiber, vitamin C and iron

Ingredients: Cultured Pasteurized Grade A Nonfat Milk, Fruit Blend (blueberries, sugar, water, modified corn starch, malic acid, vitamin A acetate, vitamin D3). **Contains 0.5% or less of:** Potassium Sorbate Added to Maintain Freshness, Yogurt Cultures (L. bulgaricus, S. thermophilus), Natural Flavor.

GLUTEN FREE • GELATIN FREE • CONTAINS LIVE AND ACTIVE CULTURES
Yoplait Greek Blended: 11g protein per 5.3 oz; regular non-Greek yogurt: 5g per 5.3 oz

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Announcement of Class and Component Prices

United States Department of Agriculture

Agricultural Marketing Service	Dairy Programs	Market Information Branch
CLS-0713		July 31, 2013

July 2013 Highlights

Class II Price was $19.22 per hundredweight for the month of July 2013. The price per hundredweight increased $0.08 from the previous month.

Class III Price was $17.38 per hundredweight for the month of July 2013. The price per hundredweight decreased $0.64 from the previous month.

Class IV Price was $18.90 per hundredweight for the month of July 2013. The price per hundredweight increased $0.02 from the previous month.

Announcement of Class and Component Prices for July 2013

Class II Price:	$19.22	(per hundredweight)
Class II Butterfat Price:	$1.5763	(per pound)
Class II Skim Milk Price[1/]	$14.20	(per hundredweight)
Class III Price:	$17.38	(per hundredweight)
Class III Skim Milk Price:	$12.32	(per hundredweight)
Class IV Price:	$18.90	(per hundredweight)
Class IV Skim Milk Price:	$13.89	(per hundredweight)
Butterfat Price:	$1.5693	(per pound)
Nonfat Solids Price:	$1.5438	(per pound)
Protein Price:	$3.2257	(per pound)
Other Solids Price:	$0.3927	(per pound)
Somatic Cell Adjustment Rate:	0.00086	(per 1,000 somatic cell count)
Product Price Averages:		
Butter	$1.4674	(per pound)
Nonfat Dry Milk	$1.7272	(per pound)
Cheese	$1.7142	(per pound)
Dry Whey	$0.5804	(per pound)

1/ July 2013 Advanced Price Announcement

Federal Milk Order Class II, Class III, and Class IV Milk Prices, 2013

Month	Class II Price	Class II Butterfat Price	Class III Price	Class III Skim Milk Price	Class IV Price	Class IV Skim Milk Price
	$/cwt.	$/lb.	Dollars per cwt.			
Jan	18.19	1.6238	18.14	12.93	17.63	12.41
Feb	18.49	1.6689	17.25	11.85	17.75	12.37
Mar	18.82	1.7546	16.93	11.21	17.75	12.06
Apr	18.73	1.8297	17.59	11.62	18.10	12.15
May	18.43	1.7954	18.52	12.71	18.89	13.09
Jun	19.14	1.6669	18.02	12.65	18.88	13.54
Jul	19.22	1.5763	17.38	12.32	18.90	13.89
Aug						
Sep						
Oct						
Nov						
Dec						

Federal Milk Order Class II, Class III, and Class IV Milk Prices, 2012

Month	Class II Price	Class II Butterfat Price	Class III Price	Class III Skim Milk Price	Class IV Price	Class IV Skim Milk Price
	$/cwt.	$/lb.	Dollars per cwt.			
Jan	17.67	1.7248	17.05	11.44	16.56	10.93
Feb	16.94	1.5809	16.06	10.93	15.92	10.79
Mar	16.59	1.5367	15.72	10.74	15.35	10.36
Apr	16.20	1.5715	15.72	10.62	14.80	9.66
May	15.19	1.4532	15.23	10.54	13.55	8.80
Jun	14.32	1.4936	15.63	10.81	13.24	8.33
Jul	14.51	1.6626	16.68	11.28	14.45	8.97
Aug	15.64	1.8409	17.73	11.72	15.76	9.68
Sep	17.04	2.0117	19.00	12.42	17.41	10.77
Oct	18.44	2.1206	21.02	14.12	18.54	11.55
Nov	18.81	2.0288	20.83	14.25	18.66	12.00
Dec	18.30	1.7346	18.66	13.07	17.83	12.21
Avg	16.64	1.7300	17.44	11.83	16.01	10.34

FFA Dairy Foods Exam 2013
Answer key

1 C	11 B	21 A
2 D	12 A	22 D
3 B	13 D	23 D
4 D	14 D	24 B
5 D	15 B	25 C
6 B	16 C	26 C
7 B	17 B	27 B
8 C	18 D	28 D
9 C	19 B	29 A
10 C	20 B	30 D

51 B
52 D
53 C
54 D
55 B
56 A
57 A
58 C
59 A
60 B

Blend price = (Class II utilization × Class I price) + (Class III utilization × Class II price)
(0.6 * 19.14) + (0.4*18.02) = 11.48 + 7.21 = $18.69 per cwt

Complete the Table 1, **cells A thru Y** (2 pts. per blank cel, **IF** legible)

Table 1

Cow Production						Feed	Premiums			Income Comparisons - Class I @ $19.16/cwt vs. Class II @ $17.38/cwt				Part 1	
	Lbs. Milk per Day per Cow	**Butterfat %**	**Protein %**	**Milk pH**	**Somatic Cell Count** (cells/ml)	**Feed Cost** per Day	Butterfat premium per cwt $0.19 per 0.1 above 3.5%	Protein premium per cwt $0.55 per 0.1 above 3.5%	SCC premium per cwt $0.26 per cwt if less than 200,000 cells/ml	BEFORE PREMIUMS Base Per Day $ Value of Daily Milk if sold as Class I milk @ $19.16/cwt	BEFORE PREMIUMS Base Per Day $ Value of Daily Milk if sold as Class II milk @ $17.38/cwt	WITH PREMIUMS Class I: Total Per Day $ Value of Milk if sold as Class I milk @ $19.16/cwt	WITH PREMIUMS Class II: Total Per Day $ Value of Milk if sold as Class II milk @ $17.38/cwt	**Class I After Feed:** Milk Income minus Feed Cost per day	**Class II After Feed:** Milk Income minus Feed Cost per day
Example	**25**	3.6	3.6	6.4	199,999	**$6.75**	**$0.19**	**$0.55**	**$0.26**	**$4.79**	**$4.35**	**$5.04**	**$4.60**	-$1.71	-$2.16
Cow 1	57	3.8	3.6	6.4	290,000	$5.65	$0.57	$0.55	$0.00	$10.92	A	$11.56	B	$5.91	C
Cow 2	63	4.0	3.7	6.6	398,000	$5.85	$0.95	$1.10	$0.00	D	$10.95	E	$12.24	F	$6.39
Cow 3	56	4.2	3.5	6.5	161,000	$5.95	$1.33	$0.00	$0.26	$10.73	$9.73	$11.62	G	$5.67	$4.56
Cow 4	47	4.1	3.6	6.5	1,750,000	$5.25	$1.14	$0.55	$0.00	$9.01	$8.17	H	$8.96	$8.17	$3.71
Cow 5	41	4.5	3.6	6.5	211,000	$6.75	$1.90	$0.55	$0.00	$7.86	$7.13	$8.86	I	$2.11	J
Cow 6	92	4.2	3.5	6.6	160,000	$6.60	$1.33	$0.00	$0.26	$17.63	$15.99	$19.09	$17.45	$12.49	$10.85
Cow 7	72	4.6	4.1	6.3	250,000	$5.95	$2.09	$3.30	$0.00	$13.80	K	$17.68	$16.39	L	$10.44
Cow 8	49	4.8	3.7	6.4	80,000	$5.85	$2.47	$1.10	$0.26	$9.39	$8.52	$11.27	$10.39	$5.42	M
Cow 9	46	5.0	4.4	6.6	110,000	$5.55	$2.85	$4.95	$0.26	$8.81	$7.99	N	$11.70	$10.28	$6.15
Cow 10	29	3.6	3.5	6.5	160,000	$5.75	$0.19	$0.00	$0.26	$5.56	$5.04	$5.69	$5.17	-$0.06	-$0.58
Cow 11	105	3.5	3.5	6.7	195,000	$7.05	$0.00	$0.00	$0.26	$20.12	O	$20.39	$18.52	$13.34	$11.47
Cow 12	81	3.6	3.5	7.4	1,250,000	$6.05	$0.19	$0.00	$0.00	P	$14.08	$15.67	$14.23	$9.62	$8.18
Cow 13	63	3.8	3.6	6.4	175,000	$6.60	$0.57	$0.55	$0.26	$12.07	$10.95	Q	$11.82	$5.79	$5.22
Cow 14	56	4.0	4.2	6.5	760,000	$6.25	$0.95	$3.85	$0.00	R	S	T	U	V	W
Cow 15	43	4.6	4.2	6.6	181,000	$6.15	$2.09	$3.85	$0.26	X	$7.47	$10.90	$10.14	Y	$3.99

Problem Solving Part 1

o

Chapter: _____

Chapter Number: _____

Team Members: _____

_____

_____

_____

Neatly write answers on the corresponding lines below.

A. _____ $9.91

B. _____ $10.55

C. _____ $4.90

D. _____ $12.07

E. _____ $13.36

F. _____ $7.51

G. _____ $10.62

H. _____ $9.80

I. _____ $8.13

J. _____ $1.38

K. _____ $12.51

L. _____ $11.73

M. _____ $4.54

N. _____ $12.52

O. _____ $18.25

P. _____ $15.52

Q. _____ $12.94

R. _____ $10.73

S. _____ $9.73

T. _____ $13.42

U. _____ $12.42

V. _____ $7.17

W. _____ $6.17

X. _____ $8.24

Y. _____ $4.75

Complete the Table 1, **cells A thru Y** (2 pts. per blank cel, **IF** legible)

Table 1

Cow Production						Feed	Premiums			Part 1 Income Comparisons - Class I @ $19.16/cwt vs. Class II @ $17.38/cwt					
	Lbs. Milk per Day per Cow	**Butterfat %**	**Protein %**	**Milk pH**	**Somatic Cell Count** (cells/ml)	**Feed Cost** per Day	Butterfat premium per cwt $0.19 per 0.1 above 3.5%	Protein premium per cwt $0.55 per 0.1 above 3.5%	SCC premium per cwt $0.26 per cwt if less than 200,000 cells/ml	BEFORE PREMIUMS Base Per Day $ Value of Daily Milk if sold as Class I milk @ $19.16/cwt	BEFORE PREMIUMS Base Per Day $ Value of Daily Milk if sold as Class II milk @ $17.38/cwt	WITH PREMIUMS Class I: Total Per Day $ Value of Milk if sold as Class I milk @ $19.16/cwt	WITH PREMIUMS Class II: Total Per Day $ Value of Milk if sold as Class II milk @ $17.38/cwt	**Class I After Feed:** Milk Income minus Feed Cost per day	**Class II After Feed:** Milk Income minus Feed Cost per day
Exampl	25	3.6	3.6	6.4	199,999	$ 6.75	$0.19	$0.55	$0.26	$4.79	$4.35	$5.04	$4.60	-$1.71	-$2.16
Cow 1	57	3.8	3.6	6.4	290,000	$ 5.65	$0.57	$0.55	$0.00	$10.92	$9.91	$11.56	$10.55	$5.91	$4.90
Cow 2	63	4	3.7	6.6	398,000	$ 5.85	$0.95	$1.10	$0.00	$12.07	$10.95	$13.36	$12.24	$7.51	$6.39
Cow 3	56	4.2	3.5	6.5	161,000	$ 5.95	$1.33	$0.00	$0.26	$10.73	$9.73	$11.62	$10.62	$5.67	$4.56
Cow 4	47	4.1	3.6	6.5	1,750,000	$ 5.25	$1.14	$0.55	$0.00	$9.01	$8.17	$9.80	$8.96	$8.17	$3.71
Cow 5	41	4.5	3.6	6.5	211,000	$ 6.75	$1.90	$0.55	$0.00	$7.86	$7.13	$8.86	$8.13	$2.11	$1.38
Cow 6	92	4.2	3.5	6.6	160,000	$ 6.60	$1.33	$0.00	$0.26	$17.63	$15.99	$19.09	$17.45	$12.49	$10.85
Cow 7	72	4.6	4.1	6.3	250,000	$ 5.95	$2.09	$3.30	$0.00	$13.80	$12.51	$17.68	$16.39	$11.73	$10.44
Cow 8	49	4.8	3.7	6.4	80,000	$ 5.85	$2.47	$1.10	$0.26	$9.39	$8.52	$11.27	$10.39	$5.42	$4.54
Cow 9	46	5	4.4	6.6	110,000	$ 5.55	$2.85	$4.95	$0.26	$8.81	$7.99	$12.52	$11.70	$10.28	$6.15
Cow 10	29	3.6	3.5	6.5	160,000	$ 5.75	$0.19	$0.00	$0.26	$5.56	$5.04	$5.69	$5.17	-$0.06	-$0.58
Cow 11	105	3.5	3.5	6.7	195,000	$ 7.05	$0.00	$0.00	$0.26	$20.12	$18.25	$20.39	$18.52	$13.34	$11.47
Cow 12	81	3.6	3.5	7.4	1,250,000	$ 6.05	$0.19	$0.00	$0.00	$15.52	$14.08	$15.67	$14.23	$9.62	$8.18
Cow 13	63	3.8	3.6	6.4	175,000	$ 6.60	$0.57	$0.55	$0.26	$12.07	$10.95	$12.94	$11.82	$5.79	$5.22
Cow 14	56	4	4.2	6.5	760,000	$ 6.25	$0.95	$3.85	$0.00	$10.73	$9.73	$13.42	$12.42	$7.17	$6.17
Cow 15	43	4.6	4.2	6.6	181,000	$ 6.15	$2.09	$3.85	$0.26	$8.24	$7.47	$10.90	$10.14	$4.75	$3.99

2013 Iowa FFA Milk Quality & Products CDE

Problem Solving Part 1 & Part 2

Chapter: _____ Chapter Number: _____

Team Member Names: _____ _____

_____ _____

Part 1 (2 pts. Each)

- Complete **Table 1**, then submit, and pick up a **Table 1 KEY** to utilize in completing the problems in Part 2.

  (see Table 1 and write answers on the sheet labeled **Problem Solving Part 1**)

- **For calculations purposes on part 2, use the following information:**

  - Milk weighs 8.5 pounds per gallon
  - 10 pounds of milk are needed to make 1 pound of cheese
  - 21 pounds of milk are needed to make 1 pound of butter

Part 2

Neatly write the answer to each of the following questions on the designated line. (If the judges cannot easily read an answer, the answer will receive zero points.)

1. A herd produces milk for a market that has 85% Class I utilization and 15% Class II utilization. Using the information in **Table 1**, calculate the blend price for the milk shipped.

   Blend price = (Class I utilization × Class I price) + (Class II utilization × Class II price)

   $ _____ per hundredweight (4 pts.)

2. If a grocery store sells milk for $4.39 per gallon, what price are they charging per hundredweight?

   $ _____ per hundredweight (4 pts.)

3. Use the information in **Table 1** to calculate the weighted average somatic cell count for a herd of three cows. The herd includes cows **10**, **11**, and **12**.

   Herd Average SCC: _____ cells/ml (4 pts.)

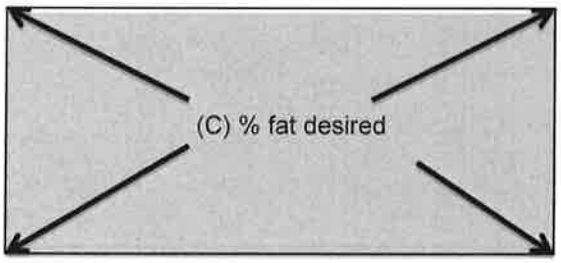
4. A dairy producer received $325,720 for 1.7 million pounds of milk shipped in May. What was the average price per hundredweight for the milk?

$ _____ per hundredweight (4 pts.)

A Cheddar cheese producer plans to standardize milk to <u>3.26% fat</u> prior to cheese making. First, the raw milk must be separated into cream and skim milk. The separation process yields fresh cream of <u>40% fat</u> and skim milk with <u>0.05% fat</u>.

The Pearson Square (below) can be used to determine, for a given volume of milk, how much cream and skim milk must be combined to attain a desired fat content.

(A) % fat in cream — difference of B minus C (D parts)



(B) % fat in skim milk — difference of A minus C (E parts)

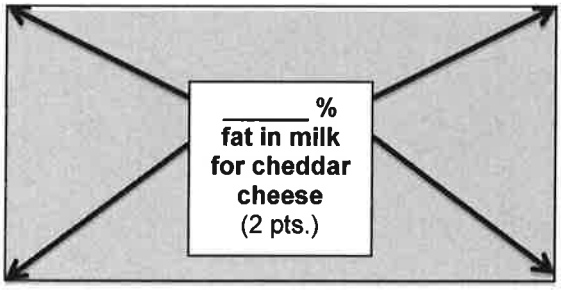
Sum of (D) + (E) = (X)

For a given volume of milk (Y), you need: (D) parts cream and (E) parts skim milk for (C) % fat milk.

For Y lb of milk at the desired fat content, you need: (Y / X) * C = lb cream and Y – lb cream = lb skim milk

5. Use the information provided above and the Pearson Square below to calculate how much cream and skim milk must be combined to make 3000 lb of 3.26% fat milk. Complete the Pearson Square below for 10 points.

_____% fat in cream (2 pts.) — **B minus C = _____ parts** (2 pts.)



_____% fat in skim milk (2 pts.) — **A minus C = _____ parts** (2 pts.)

Sum of (D) + (E) = _____ (2 pts.)

6. Using the information you entered for question 5, in order to have 3,000 lbs. of milk to make cheddar cheese at the desired fat content. How much cream and how much skim milk will you need?

_____ **lbs of cream** (4 pts.) and _____ **lbs of skim milk** (4 pts.)

7. Approximately how many pounds of Cheddar cheese will you end up with from the above 3,000 lbs of milk?

_____ **lbs of cheddar cheese** (2 pts.)

8. Utilizing the information in **Table 1**, calculate the per hundredweight value of Class I milk that is 4.4 % Butterfat, 3.8% Protein, and 5.9% Other Solids. (Other Solids are paid a premium of $0.25/cwt for each point above 5.0%.)

$ _____ **per hundredweight** (4 pts.)

9 During one week (7 days), **cows 6, 7, 13, and 14** could produce an estimated total of ____ gallons of milk?

_____ **gallons** (4 pts.)

10. How many pounds of butterfat and protein would **cow 9** produce in one week?

_____ **pounds of butter fat** (2 pts.)

_____ **pounds of protein** (2 pts.)

2013 Iowa FFA Milk Quality & Products CDE

Problem Solving Part 1 & Part 2

Chapter: _____ Chapter Number: _____

Team Member Names: _____ _____

_____ _____

Part 1 (2 pts. Each)

- Complete **Table 1**, then submit, and pick up a **Table 1 KEY** to utilize in completing the problems in Part 2.

  (see Table 1 and write answers on the sheet labeled **Problem Solving Part 1**)

- **For calculations purposes on part 2, use the following information:**

  - Milk weighs 8.5 pounds per gallon
  - 10 pounds of milk are needed to make 1 pound of cheese
  - 21 pounds of milk are needed to make 1 pound of butter

Part 2

Neatly write the answer to each of the following questions on the designated line. (If the judges cannot easily read an answer, the answer will receive zero points.)

1. A herd produces milk for a market that has 85% Class I utilization and 15% Class II utilization. Using the information in **Table 1**, calculate the blend price for the milk shipped.

   Blend price = (Class I utilization × Class I price) + (Class II utilization × Class II price)

   (.85 * 19.16) + (.15*17.38) =$18.89

   $18.88 to $18.90 per hundredweight (4 pts.)

2. If a grocery store sells milk for $4.59 per gallon, what price are they charging per hundredweight?

   $4.59/8.5*100 = 54

   $54.00 per hundredweight (4 pts.)

3. Use the information in **Table 1** to calculate the weighted average somatic cell count for a herd of three cows. The herd includes cows **10**, **11**, and **12**.

29 + 105 + 81 = 215 **29/215 = .135** **105/215 = .488** **81/215 = .377**
.135*160,000 = 21,600 **.488*195,000 = 95,160** **.377*1,250,000 = 471,250**

21,600 + 95,160 + 471,250 = 588,010

Herd Average SCC: 585,000 to 592,000 cells/ml (4 pts.)

4. A dairy producer received $325,720 for 1.7 million pounds of milk shipped in May. What was the average price per hundredweight for the milk?

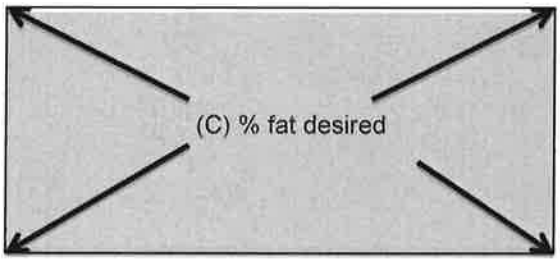
325,720/1,700,000*100 = 19.16

$19.16 per hundredweight (4 pts.)

A Cheddar cheese producer plans to standardize milk to 3.26% fat prior to cheese making. First, the raw milk must be separated into cream and skim milk. The separation process yields fresh cream of 40% fat and skim milk with 0.05% fat.

The Pearson Square (below) can be used to determine, for a given volume of milk, how much cream and skim milk must be combined to attain a desired fat content.

(A) % fat in cream — difference of B minus C (D parts)



(B) % fat in skim milk — difference of A minus C (E parts)

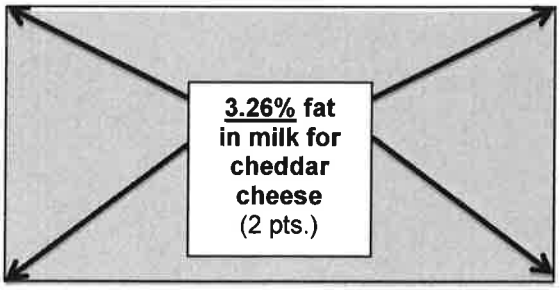
Sum of (D) + (E) = (X)

For a given volume of milk (Y), you need: (D) parts cream and (E) parts skim milk for (C) % fat milk.

For Y lb of milk at the desired fat content, you need: (Y / X) * C = lb cream and Y – lb cream = lb skim milk

5. Use the information provided above and the Pearson Square below to calculate how much cream and skim milk must be combined to make 3000 lb of 3.26% fat milk. Complete the Pearson Square below for 10 points.

40.0% fat in cream (2 pts.) — **B minus C = 3.21 parts** (2 pts.)



0.05% fat in skim milk (2 pts.) — **A minus C = 36.74 parts** (2 pts.)

Sum of (D) + (E) = 39.95 (2 pts.)

6. Using the information you entered for question 5, in order to have 3,000 lbs. of milk to make cheddar cheese at the desired fat content. How much cream and how much skim milk will you need?

skim milk: 36.74/39.95*3000 = 2758.95 lbs.

cream: 3.21/39.95*3000 = 241.05 lbs.

240 to 300 lbs of cream (4 pts.) and **2700 to 2760 lbs of skim milk** (4 pts.)

7. Approximately how many pounds of Cheddar cheese will you end up with from the above 3,000 lbs of milk?

3,000/10 = 300

300 lbs of cheddar cheese (2 pts.)

8. Utilizing the information in **Table 1**, calculate the per hundredweight value of Class I milk that is 4.4 % Butterfat, 3.8% Protein, and 5.9% Other Solids. (Other Solids are paid a premium of $0.25/cwt for each point above 5.0%.)

BF: 4.4-3.5 = 0.9/.1 = 9*.19 = 1.71
Prot: 3.8-3.5 = 0.3/.1 = 3*.55 = 1.65
OS: 5.9-5.0 = 0.9/.1 = 9*.25 = 2.25
19.16 + 1.71 + 1.65 + 2.25 = 24.77

$24.77 per hundredweight (4 pts.)

9 During one week (7 days), **cows 6, 7, 13, and 14** could produce an estimated total of ____ gallons of milk?

92+72+63+56 = 283*7 = 1981/8.5 = 233.1

233 gallons (4 pts.)

10. How many pounds of butterfat and protein would **cow 9** produce in one week?

16 to 16.25 pounds of butter fat (2 pts.) **46*.05 = 2.3*7 = 16.1**

14 to 14.25 pounds of protein (2 pts.) **46*.044 = 2.024*7 = 14.168**

2013 Iowa FFA Milk Quality and Products Career

Contestant Number _____ Contestant Name KEY

Milk Samples

A. Milk Flavor

(Each correct flavor/odor equals 2 points)

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
Bitter	A	A	A	A	A	A	A	A	A	A
Feed	B	B	B	B	B	B	B	B	B	B
Flat-Watery	C	C	C	C	C	C	C	C	C	C
Foreign	D	D	D	D	D	D	D	D	D	D
Garlic or Onion	E	E	E	E	E	E	E	E	E	E
High Acid	F	F	F	F	F	F	F	F	F	F
Malty	G	G	G	G	G	G	G	G	G	G
Metallic/Oxidized 2	H	H	H	H	H	H	H	H	H	H
Rancid	I	I	I	I	I	I	I	I	I	I
Salty	J	J	J	J	J	J	J	J	J	J
No Defect	K	K	K	K	K	K	K	K	K	K

B. Flavor Intensity Level

No Defect is marked as pronounced. (Two points for each right answer. One point if off one space. Zero points ifoff 2 spaces

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
Slight 1	L	L	L	L	L	L	L	L	L	L
Definite 2	M	M	M	M	M	M	M	M	M	M
Pronounced 1	N	N	N	N	N	N	N	N	N	N

Vanilla

2013 Iowa FFA Milk Quality and Products Career

KEY

Contestant Number: _____ Contestant Name: _____

Milk Fat Identification

	Sample Number				
	1	2	3	4	5
Nonfat (Skim) Milk	A	A	A	A	A
Reduced Fat (2 %) Milk	B	B	B	B	B
Milk (3.3 %)	C	C	C	C	C
Half and Half (10.5%)	D	D	D	D	D
Coffee Cream (18%)	E	E	E	E	E
Whipping Cream (30%)	F	F	F	F	F

4

Cheese Identification

	Sample Number									
	1	2	3	4	5	6	7	8	9	10
Blue	A	A	A	A	A	A	A	A	A	A
Brick	B	B	B	B	B	B	B	B	B	B
Brie/Camenbert	C	C	C	C	C	C	C	C	C	C
Cheddar (Mild)	D	D	D	D	D	D	D	D	D	D
Cheddar (Sharp)	E	E	E	E	E	E	E	E	E	E
Colby	F	F	F	F	F	F	F	F	F	F
Cream	G	G	G	G	G	G	G	G	G	G
Edam/Gouda	H	H	H	H	H	H	H	H	H	H
Monterey (Jack)	I	I	I	I	I	I	I	I	I	I
Mozzarella	J	J	J	J	J	J	J	J	J	J
Muenster	K	K	K	K	K	K	K	K	K	K
Processed American	L	L	L	L	L	L	L	L	L	L
Provolone	M	M	M	M	M	M	M	M	M	M
Swiss	N	N	N	N	N	N	N	N	N	N

2

Pepper

sliced

2013 Iowa FFA Milk Quality and Products Career

Contestant Number _____ Contestant Name KEY

CMT

Instructions: Place an X over the letter under the sample number that best describes the sample's reaction to the applied solution. You will receive 8 points if your mark matches the official. If you are one box off, you will receive 6; 2 boxes off, 4 points; 3 boxes, 2 points; and 4 boxes, 0 points. Each CMT test is worth 8 points for a total of 32 points for the activity

CMT Test Score	Appearance	Sample Number 1	2	3	4
Negative	Mixture liquid, no preciptate	A	A	A	A
T	Slight precipitate tend to disappear with paddle movement	B	B	B	B
1	Distinct precipitate but does not gel	C	C	C	C
2	Distinct gel formation	D	D	D	D
3	Strong gel formation, which tends to adhere to paddle. Forms distint central peak	E	E	E	E
	Score				

Milker Units

Instructions:

For each milker unit display, place an X over the letter (s) of all defects for that milker unit display. Each display may show multiple defects or no defects at all. Mark all defects that you see. If the display has no defects, make no marks for that sample number. You will score 1 point for each defect that you correctly identify. If you mark a defect with an X and the official marks it with an X, you will receive 1 point. If you leave the defect blank and the official leaves it blank, you will score 1 point. Each milker unit display is worth 8 points for a total of 32 points for the activity

	Sample Number 1	2	3	4
Rubber parts -- dirty or milkstone	A	A	A	A
Rubber parts -- checked or blistered	B	B	B	B
Rubber parts -- leaky	C	C	C	C
Rubber parts -- poorly fitted	D	D	D	D
Metal parts -- dirty or milkstone	E	E	E	E
Metal parts -- dented or damaged	F	F	F	F
Metal parts -- pitted or corroded	G	G	G	G
Metal parts -- open seams	H	H	H	H
Score for Defects				