

FFA Dairy Foods Exam 2016

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

1. The Iowa State Fair is home to the famous Butter Cow. Which one of these statements is NOT true:
 - a. The Butter Cow is completely made of fresh butter.
 - b. The Butter cow was first sculpted in 1911.
 - c. The Butter Cow is housed in the Agriculture Building during the Iowa State Fair.
 - d. The first woman Butter Cow sculptor was an Iowa dairy farmer, Norma “Duffy” Lyon.

2. Which of the following statements about cheese is NOT true?
 - a. Process cheese is made from high-quality natural cheese
 - b. Cheeses are naturally gluten-free
 - c. Cheese is the #1 source of dietary sodium for Americans
 - d. Cheese is the #2 source of dietary calcium for Americans

3. Which of the following is NOT true about dairy and non-dairy beverages?
 - a. Lowfat cow’s milk costs on average about \$2.05 per ½ gallon; soy milk costs on average about \$3.37 per ½ gallon.
 - b. Rice milk has more calories per 8-oz glass than lowfat cow’s milk because of nearly double the sugar.
 - c. Lowfat cow’s milk AND almond milk naturally contain at least 10% of the daily value of at least 5 essential vitamins and minerals.
 - d. Lowfat cow’s milk and soy milk contain about 8 g protein per 8-oz serving; almond, coconut and rice milk contain only about 1 g protein per 8-oz serving.

4. The 2010 Dietary Guidelines emphasize a total diet approach to health, which includes urging Americans to do all of the following, EXCEPT:
 - a. Reduce calories
 - b. Move more
 - c. Make more nutrient-rich choices
 - d. Increase portion size to reduce hunger

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

6. Sustainability research has concluded all of the following EXCEPT:
 - a. Since 2009, U.S. dairy farmers and companies have made a voluntary commitment to reduce dairy's carbon footprint by 25% by 2020.
 - b. Dairy production, as a whole, accounts for approximately 2% of total U.S. greenhouse gas emissions.
 - c. Only 8.4% of U.S. cropland is used for milk production.
 - d. Cow methane production contributes 5% towards greenhouse gas emissions.

7. 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. Goat milk
 - d. Greek yogurt

8. Research has shown that drinking milk after exercise can be as effective as some sports drinks in helping the body do all of the following, EXCEPT:
 - a. Reduce muscle damage
 - b. Replace fluids
 - c. Rebuild muscle
 - d. Rest

9. The “nutrients of concern” (specified in the *2010 Dietary Guidelines for Americans*), which Americans do not get enough of, *but dairy products supply a lot of*, include all of the following EXCEPT:
 - a. Iron
 - b. Vitamin D
 - c. Calcium
 - d. Potassium

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

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

12. Dairy cows are treated with antibiotics for all of these reasons EXCEPT:
- To promote growth
 - Only when they are necessary to treat and cure an illness
 - For a prescribed period of time to treat a specific illness
 - And milk from those cows does not make it into the food supply
13. Regarding bovine somatotropin, all of these statements are true EXCEPT:
- It can be distinguished from recombinant bovine somatotropin (rbST)
 - It is naturally produced in the pituitary gland of cows
 - It directs how energy and nutrients are used for growth of young cattle
 - It directs how energy and nutrients are used for milk production in lactating cows
14. Frozen yogurt:
- Is essentially pure yogurt, but frozen
 - Is much more healthy than ice cream
 - Typically has lower fat but higher sugar than ice cream
 - Can only contain all-natural ingredients
15. Some people try to claim that you can get as much calcium by consuming spinach, but you would have to eat 30 cups of spinach to equal the calcium in:
- One cup of fat-free milk
 - Two cups of fat-free milk
 - Three cups of fat-free milk
 - A half-gallon of fat-free milk
16. An 8-ounce glass of milk provides 11% of the daily value of potassium, which helps to:
- regulate the body's fluid balance and helps maintain normal blood pressure
 - build and repair muscle tissue, and serves as a source of energy
 - maintain normal vision and skin
 - strengthen bones and generates energy in your body's cells
17. The microbial standard for Grade 'A' raw milk from a single farm is less than _____ total aerobic bacteria per milliliter of milk.
- 50,000
 - 100,000
 - 200,000
 - 300,000
18. The National Dairy Council celebrated a landmark year in 2015. For how many years has the NDC been dedicated to promoting science and education related to dairy foods?
- 10
 - 25
 - 50
 - 100

19. Hormones are naturally present in:
- Humans
 - Animals
 - Plants
 - All of the above
20. The protein in milk that forms curds when coagulated to produce cheese is:
- Rennet
 - Whey proteins
 - Lactose
 - Casein
21. Which is the first-ever nationwide, multi-year program designed to inspire people to donate milk to hungry families?
- Healthy Food Bank Hub
 - Great American Milk Drive
 - Farm to Fork
 - Fuel Up to Play 60
22. The USDA MyPyramid daily recommendation for consumption of foods in the “milk group” by teenagers is:
- 1 cup per day
 - 2 cups per day
 - 3 cups per day
 - 4 cups per day
23. The Federal Milk Market Order program establishes class prices of milk based on market prices of _____.
- Evaporated milk
 - Fresh milk and cream
 - All varieties of cheese
 - Cheddar cheese, butter, and nonfat dry milk
24. Which of the following is an example of an unripened cheese?
- Cheddar
 - Mascarpone
 - Brick
 - Asiago
25. While most regular carbonated beverages contain about 7 teaspoons of added sugar per serving, the same amount of chocolate milk products contain approximately:
- 1 teaspoon
 - 2 teaspoons
 - 4 teaspoons
 - 6 teaspoons

26. According to the Food and Nutrition Board of the National Academy of Sciences, all people need at least _____ mg of calcium per day.
- 500
 - 1,000
 - 1,500
 - 2,000
27. 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:
- Vitamin C
 - Vitamin D
 - Folic acid
 - Thiamin
28. To effectively sanitize a teat and maintain milk quality, how long must a teat pre-dip be left on the teat to be effective?
- 20 seconds
 - 30 seconds
 - 45 seconds
 - 1 minute
29. An 8-ounce glass of milk provides 16% of the daily value of protein, which primarily helps to:
- maintain normal vision and skin
 - build and repair muscle tissue, and serves as a source of energy
 - strengthen bones and generates energy in your body's cells
 - regulate the body's fluid balance and helps maintain normal blood pressure
30. Which ONE of these statements is true?
- One gallon of skim milk weighs 10 lb.
 - It takes 10 lb of whole milk to make 10 lb of yogurt.
 - It takes 10 lb of whole milk to make 5 lb of cheese.
 - It takes 10 lb of whole milk to make 1 lb of butter.

For questions 31 – 40, observe the 2016 USDA Agricultural Marketing Service Dairy Market News Branch National Retail Report, provided to you.

31. For Conventional Dairy Products, which product was MOST advertised in stores, per unit, in the Midwest U.S. during the period?
 - a. Cream Cheese (8 oz)
 - b. Ice Cream (48-64-oz)
 - c. Greek yogurt (4-6 oz)
 - d. Yogurt (32 oz)

32. For Conventional Dairy Products, which product was MOST EXPENSIVE, per unit, in the Midwest U.S. during the period?
 - a. Butter (1#)
 - b. Natural Cheese (1# shred)
 - c. Cottage cheese (16 oz)
 - d. Yogurt (32 oz)

33. For Organic Dairy Products, which product was MOST advertised in stores, per unit, in the Midwest U.S. during the period?
 - a. Cottage cheese (16 oz)
 - b. Flavored milk (half gallon)
 - c. Milk (half gallon)
 - d. Greek Yogurt (32 oz)

34. For Organic Dairy Products, which product was MOST EXPENSIVE, per unit, in the Midwest U.S. during the period?
 - a. Cottage cheese (16 oz)
 - b. Flavored milk (half gallon)
 - c. Milk (half gallon)
 - d. Greek Yogurt (32 oz)

35. Of the dairy products options (Midwest U.S. region), which product was most expensive?
 - a. Conventional Milk (gallon)
 - b. Organic milk (half gallon)
 - c. Organic Greek yogurt (32 oz)
 - d. Organic yogurt (32 oz)

36. In which region do conventional dairy products tend to be the LEAST expensive (on average)?
 - a. Northeast U.S.
 - b. Southeast U.S.
 - c. Midwest U.S.
 - d. There is no real difference

37. In which region of the U.S. might consumers prefer to buy organic milk (LEAST expensive (on average))?
- Northeast U.S.
 - Southeast U.S.
 - Midwest U.S.
 - There is no real difference
38. How much of a price difference is there between yogurt purchased in Hawaii and the Midwest U.S.?
- They are the same
 - It is 6 cents cheaper in Midwest U.S.
 - It is 11 cents cheaper in Midwest U.S.
 - It is 56 cents more expensive in Hawaii
39. Is there a price incentive to purchase conventional dairy products, rather than organic, in Alaska?
- Yes
 - No
 - Milk yes, Yogurt no
 - Yogurt yes, Milk no
40. Which single category of dairy products was the most expensive (on average) during the one-week period, all locations?
- Organic flavored milk
 - Organic Greek yogurt
 - Conventional Cheese (natural varieties, 1# block)
 - Conventional Cheese (natural varieties, 2# block)

Agricultural Marketing Service

Volume 83- Number 33

Dairy Market News Branch

National Retail Report-Dairy

Websites: <http://www.marketnews.usda.gov/mnp/da-home> and <http://www.ams.usda.gov/mnreports/dybretail.pdf>

Issued Weekly Friday, August 19, 2016

Advertised Prices for Dairy Products at Major Retail Supermarket Outlets ending during the period of 08/19/2016 to 08/25/2016

NORTHEAST U.S.

SOUTHEAST U.S. MIDWEST U.S. SOUTH CENTRAL U.S. SOUTHWEST U.S. NORTHWEST U.S. ALASKA

HAWAII NATIONAL

Wtd Avg - Simple weighted average

REGIONAL -- ORGANIC DAIRY PRODUCTS

Commodity	Type	Pack Size									
			Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price
Cottage cheese		16 oz							2.99	119	2.99
Cream cheese		8 oz				2.49	90	2.49	1.99	98	1.99
Flavored milk	All fat tests	half gallon	3.99-4.79	269	4.47						
Milk	All fat tests	half gallon	3.29-4.99	966	4.23	2.49-4.49	210	3.63	2.49-4.79	641	3.70
Milk	All fat tests	8 oz UHT	1.00	100	1.00				1.00	116	1.00
Yogurt	Greek	4-6 oz	1.39-1.67	1047	1.50	1.67	61	1.67			
Yogurt	Greek	32 oz							2.50	264	2.50
Yogurt	Yogurt	32 oz				2.50-3.00	304	2.85	2.50	221	2.50

Commodity	Type	Pack Size	ALASKA U.S.			HAWAII U.S.		
			Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price
Milk	All fat tests	half gallon	2.99-4.00	32	3.65			
Yogurt	Yogurt	32 oz	2.99	11	2.99			

REGIONAL -- CONVENTIONAL DAIRY PRODUCTS

Commodity	Type	Pack Size									
			Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price
Butter		1#	2.99-4.99	1498	3.52	3.00	275	3.00	3.49	119	3.49
Cheese	Natural Varieties	8 oz block	1.24-3.00	2483	2.14	2.00-3.00	2422	2.32	1.33-2.00	801	1.91
Cheese	Natural Varieties	1 # block	2.99-3.99	207	3.64	2.99-5.00	712	4.41	2.99-3.49	671	3.15
Cheese	Natural Varieties	2 # block	3.99-8.98	255	6.49						
Cheese	Natural Varieties	8 oz shred	1.99-3.99	2137	2.36	2.00-2.50	2467	2.24	1.33-2.99	951	2.19
Cheese	Natural Varieties	1 # shred	3.99	59	3.99	5.00	502	5.00	2.99-4.50	548	3.80
Cottage cheese		16 oz	1.50-2.99	1012	2.12	1.50-1.99	1261	1.55	1.50-2.00	439	1.81
Cream cheese		8 oz	1.49-2.89	1151	1.86	1.49-2.50	2159	2.07	0.99-1.99	1088	1.67
Flavored milk	All fat tests	half gallon	2.50	110	2.50	1.99-2.50	1280	2.47	1.00	110	1.00
Flavored milk	All fat tests	gallon	1.99-4.99	192	3.68				2.50	53	2.50
Ice cream		48-64oz	1.97-3.99	3790	2.91	1.99-3.50	1852	2.47	1.75-3.99	2197	2.69
Milk	All fat tests	half gallon							1.00-1.25	179	1.10
Milk	All fat tests	gallon	3.59-3.99	380	3.74	1.99-2.99	1237	2.52	1.49-1.79	332	1.68
Sour cream		16 oz	1.29-1.99	1361	1.57	1.49-1.50	1883	1.50	1.50-2.00	464	1.74
Yogurt	Greek	4-6 oz	0.49-1.19	3815	.90	0.88-1.00	3455	.99	0.66-1.00	2290	.87
Yogurt	Greek	32 oz	3.00-5.49	649	4.29						
Yogurt	Yogurt	4-6 oz	0.33-1.25	1719	.51	0.30-0.50	1624	.49	0.30-0.59	1115	.46

Wtd Avg - Simple weighted average

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Commodity	Type	Pack Size									
			Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price
Yogurt	Yogurt	32 oz	1.99-2.50	345	2.25	2.50	120	2.50	1.99	213	1.99

Commodity	Type	Pack Size	ALASKA U.S.			HAWAII U.S.		
			Price Range	Stores with Ads	Wtd Avg Price	Price Range	Stores with Ads	Wtd Avg Price
Butter		1#	4.00	2	4.00			
Cheese	Natural Varieties	8 oz block				2.33-2.89	58	2.50
Cheese	Natural Varieties	1 # block	3.29	11	3.29			
Cheese	Natural Varieties	2 # block				6.49	27	6.49
Cheese	Natural Varieties	8 oz shred	2.49	21	2.49	2.33-2.89	58	2.50
Cottage cheese		16 oz				2.29-2.50	51	2.40
Cream cheese		8 oz	3.50	28	3.50	2.50	30	2.50
Ice cream		48-64oz	3.00-4.49	48	3.87	3.49-5.29	173	4.30
Milk	All fat tests	gallon				4.77-4.99	37	4.97
Sour cream		16 oz	1.69-2.00	13	1.74	2.29-2.50	58	2.41
Yogurt	Greek	4-6 oz	1.00	2	1.00	0.99-1.25	31	1.02
Yogurt	Yogurt	4-6 oz	0.40-0.60	47	.51	0.50-0.99	44	.57
Yogurt	Yogurt	32 oz				2.49-2.69	51	2.58

**FFA Dairy Foods Exam 2016
Answer Key**

1. A
2. C
3. C
4. D
5. D
6. D
7. C
8. D
9. A
10. D
11. C
12. A
13. A
14. C
15. C
16. A
17. B
18. D
19. D
20. D
21. B
22. C
23. D
24. B
25. C
26. B
27. B
28. B
29. B
30. B
31. C
32. B
33. C
34. C
35. B
36. C
37. B
38. C
39. A
40. D

2016 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 88% Class I utilization and 12% 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 \$3.69 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 **13**, **14**, and **15**.

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

4. A dairy producer received \$297,000 for 1.8 million pounds of milk shipped in May. What was the average price per hundredweight for the milk?

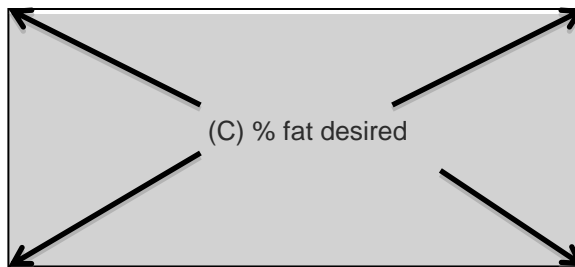
\$ _____ per hundredweight (4 pts.)

A Cheddar cheese producer plans to standardize milk to 3.50% 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)

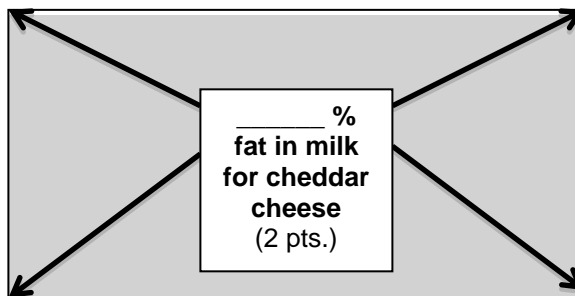
For a given volume of milk (Y), you need: (D) parts cream and (E) parts skim milk for (C) % fat milk.

For Y lb of milk at the desired fat content, you need: $(Y / X) * C = \text{lb cream}$ and $Y - \text{lb cream} = \text{lb skim milk}$

5. Use the information provided above and the Pearson Square below to calculate how much cream and skim milk must be combined to make 5000 lb of 3.50% fat milk. Complete the Pearson Square below for 12 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 5,000 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 5,000 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 4.0% Butterfat, 3.5% Protein, and 5.6% Other Solids. (Other Solids are paid a premium of \$0.23/cwt for each point above 5.0%.)

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

9. During one week (7 days), **cows 6, 7, 11, and 12** could produce an estimated total of _____ gallons of milk?

_____ **gallons** (4 pts.)

10. How many pounds of butterfat and protein would **cow 2** produce in one week?

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

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

2015 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 88% Class I utilization and 12% 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)

$$(.88 * 16.94) + (.12 * 15.01) = \$16.71$$

\$16.66 to \$16.76 per hundredweight (4 pts.)

2. If a grocery store sells milk for \$3.69 per gallon, what price are they charging per hundredweight?

$$\$3.69/8.5*100 = \$43.41$$

\$43.40 to \$43.42 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 **13**, **14**, and **15**.

$$63 + 56 + 43 = 162$$

$$63/162 = .389$$

$$56/162 = .346$$

$$43/162 = .265$$

$$.389*175,000 = 68,075$$

$$.346*760,000 = 262,910$$

$$.265*181,000 = 47,965$$

$$68,075 + 262,910 + 47,965 = \underline{378,950}$$

Herd Average SCC: **350,000 to 400,000** cells/ml (4 pts.)

4. A dairy producer received \$297,000 for 1.8 million pounds of milk shipped in May. What was the average price per hundredweight for the milk?

$$297,000 / 1,800,000 * 100 = \underline{16.50}$$

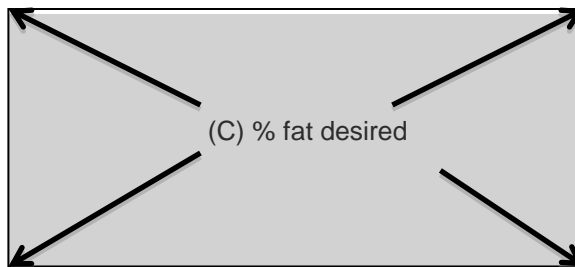
\$16.50 per hundredweight (4 pts.)

A Cheddar cheese producer plans to standardize milk to 3.50% 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)

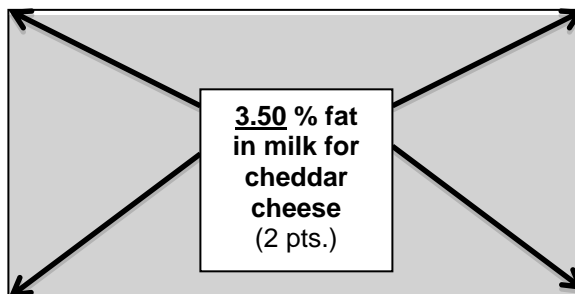
For a given volume of milk (Y), you need: (D) parts cream and (E) parts skim milk for (C) % fat milk.

For Y lb of milk at the desired fat content, you need: $(Y / X) * C = \text{lb cream}$ and $Y - \text{lb cream} = \text{lb skim milk}$

5. Use the information provided above and the Pearson Square below to calculate how much cream and skim milk must be combined to make 5000 lb of 3.40% fat milk. Complete the Pearson Square below for 12 points.

40.0% fat in cream
(2 pts.)

B minus C = 3.45 parts
(2 pts.)



0.05% fat in skim milk
(2 pts.)

A minus C = 36.5 parts
(2 pts.)

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

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

$$\text{skim milk: } 36.5/39.95 * 5000 = \underline{4568.21 \text{ lbs.}}$$

$$\text{cream: } 3.45/39.95 * 5000 = \underline{431.79 \text{ lbs.}}$$

380 to 480 lbs of cream (4 pts.) and 4520 to 4620 lbs of skim milk (4 pts.)

7. Approximately how many pounds of Cheddar cheese will you end up with from the above 5,000 lbs of milk?

$$5,000/10 = \underline{500}$$

500 lbs of cheddar cheese (2 pts.)

8. Utilizing the information in **Table 1**, calculate the per hundredweight value of Class I milk that is 4.0% Butterfat, 3.5% Protein, and 5.6% Other Solids. (Other Solids are paid a premium of \$0.23/cwt for each point above 5.0%.)

$$\text{BF: } 4.0 - 3.5 = 0.5 / .1 = 5 * .16 = 0.80$$

$$\text{Prot: } 3.5 - 3.5 = 0.0 / .1 = 0 = \text{No Premium}$$

$$\text{OS: } 5.6 - 5.0 = 0.6 / .1 = 6 * .25 = 1.50$$

$$16.94 + 0.80 + 0.00 + 1.50 = \underline{19.24}$$

\$19.24 per hundredweight (4 pts.)

9. During one week (7 days), **cows 6, 7, 11, and 12** could produce an estimated total of _____ gallons of milk?

$$92 + 72 + 105 + 81 = 350 * 7 = 2450 / 8.5 = \underline{288.24}$$

288 to 289 gallons (4 pts.)

10. How many pounds of butterfat and protein would **cow 2** produce in one week?

17.4 to 17.7 pounds of butter fat (2 pts.)

$$63 * .04 = 2.52 * 7 = \underline{17.64}$$

16.1 to 16.4 pounds of protein (2 pts.)

$$63 * .037 = 2.331 * 7 = \underline{16.317}$$

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

Table 1							Part 1								
Cow Production					Feed	Premiums			Income Comparisons - Class I @ \$16.94/cwt vs. Class II @ \$15.01/cwt						
	Lbs. Milk per Day per Cow	Butterfat %	Protein %	Milk pH	Somatic Cell Count (cells/ml)	Feed Cost per Day	Butterfat premium per cwt \$0.16 per 0.1 above 3.5%	Protein premium per cwt \$0.49 per 0.1 above 3.5%	SCC premium per cwt \$0.25 per cwt if less than 200,000 cells/ml	BEFORE PREMIUMS Base Per Day \$ Value of Daily Milk if sold as Class I milk @ \$16.94/cwt	BEFORE PREMIUMS Base Per Day \$ Value of Daily Milk if sold as Class II milk @ \$15.01/cwt	WITH PREMIUMS Class I: Total Per Day \$ Value of Milk if sold as Class I milk @ \$16.94/cwt	WITH PREMIUMS Class II: Total Per Day \$ Value of Milk if sold as Class II milk @ \$15.01/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	\$0.16	\$0.49	\$0.25	\$4.24	\$3.75	\$4.46	\$3.98	-\$2.29	-\$2.77
Cow 1	57	3.8	3.6	6.4	290,000	\$5.65	\$0.48	\$0.49	\$0.00	\$9.66	A	\$10.21	B	\$4.56	C
Cow 2	63	4.0	3.7	6.6	398,000	\$5.85	\$0.80	\$0.98	\$0.00	D	\$9.46	E	\$10.58	F	\$4.73
Cow 3	56	4.2	3.5	6.5	161,000	\$5.95	\$1.12	\$0.00	\$0.25	\$9.49	\$8.41	\$10.25	G	\$4.30	\$4.56
Cow 4	47	4.1	3.6	6.5	1,750,000	\$5.25	\$0.96	\$0.49	\$0.00	\$7.96	\$7.05	H	\$7.74	\$8.17	\$2.49
Cow 5	41	4.5	3.6	6.5	211,000	\$6.75	\$1.60	\$0.49	\$0.00	\$6.95	\$6.15	\$7.80	I	\$1.05	J
Cow 6	92	4.2	3.5	6.6	160,000	\$6.60	\$1.12	\$0.00	\$0.25	\$15.58	\$13.81	\$16.85	\$15.07	\$10.25	\$8.47
Cow 7	72	4.6	4.1	6.3	250,000	\$5.95	\$1.76	\$2.94	\$0.00	\$12.20	K	\$15.58	\$14.19	L	\$8.24
Cow 8	49	4.8	3.7	6.4	80,000	\$5.85	\$2.08	\$0.98	\$0.25	\$8.30	\$7.35	\$9.92	\$8.98	\$4.07	M
Cow 9	46	5.0	4.4	6.6	110,000	\$5.55	\$2.40	\$4.41	\$0.25	\$7.79	\$6.90	N	\$10.15	\$10.28	\$4.60
Cow 10	29	3.6	3.5	6.5	160,000	\$5.75	\$0.16	\$0.00	\$0.25	\$4.91	\$4.35	\$5.03	\$4.47	-\$0.72	-\$1.28
Cow 11	105	3.5	3.5	6.7	195,000	\$7.05	\$0.00	\$0.00	\$0.25	\$17.79	O	\$18.05	\$16.02	\$11.00	\$8.97
Cow 12	81	3.6	3.5	7.4	1,250,000	\$6.05	\$0.16	\$0.00	\$0.00	P	\$12.16	\$13.85	\$12.29	\$7.80	\$6.24
Cow 13	63	3.8	3.6	6.4	175,000	\$6.60	\$0.48	\$0.49	\$0.25	\$10.67	\$9.46	Q	\$10.22	\$5.79	\$3.62
Cow 14	56	4.0	4.2	6.5	760,000	\$6.25	\$0.80	\$3.43	\$0.00	R	S	T	U	V	W
Cow 15	43	4.6	4.2	6.6	181,000	\$6.15	\$1.76	\$3.43	\$0.25	X	\$6.45	\$9.62	\$8.79	Y	\$2.64

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

Table 1							Part 1								
Cow Production					Feed	Premiums			Income Comparisons - Class I @ \$16.94/cwt vs. Class II @ \$15.01/cwt						
	Lbs. Milk per Day per Cow	Butterfat %	Protein %	Milk pH	Somatic Cell Count (cells/ml)	Feed Cost per Day	Butterfat premium per cwt \$0.16 per 0.1 above 3.5%	Protein premium per cwt \$0.49 per 0.1 above 3.5%	SCC premium per cwt \$0.25 per cwt if less than 200,000 cells/ml	BEFORE PREMIUMS Base Per Day \$ Value of Daily Milk if sold as Class I milk @ \$16.94/cwt	BEFORE PREMIUMS Base Per Day \$ Value of Daily Milk if sold as Class II milk @ \$15.01/cwt	WITH PREMIUMS Class I: Total Per Day \$ Value of Milk if sold as Class I milk @ \$16.94/cwt	WITH PREMIUMS Class II: Total Per Day \$ Value of Milk if sold as Class II milk @ \$15.01/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	\$0.16	\$0.49	\$0.25	\$4.24	\$3.75	\$4.46	\$3.98	-\$2.29	-\$2.77
Cow 1	57	3.8	3.6	6.4	290,000	\$ 5.65	\$0.48	\$0.49	\$0.00	\$9.66	\$8.56	\$10.21	\$9.11	\$4.56	\$3.46
Cow 2	63	4	3.7	6.6	398,000	\$ 5.85	\$0.80	\$0.98	\$0.00	\$10.67	\$9.46	\$11.79	\$10.58	\$5.94	\$4.73
Cow 3	56	4.2	3.5	6.5	161,000	\$ 5.95	\$1.12	\$0.00	\$0.25	\$9.49	\$8.41	\$10.25	\$9.17	\$4.30	\$4.56
Cow 4	47	4.1	3.6	6.5	1,750,000	\$ 5.25	\$0.96	\$0.49	\$0.00	\$7.96	\$7.05	\$8.64	\$7.74	\$8.17	\$2.49
Cow 5	41	4.5	3.6	6.5	211,000	\$ 6.75	\$1.60	\$0.49	\$0.00	\$6.95	\$6.15	\$7.80	\$7.01	\$1.05	\$0.26
Cow 6	92	4.2	3.5	6.6	160,000	\$ 6.60	\$1.12	\$0.00	\$0.25	\$15.58	\$13.81	\$16.85	\$15.07	\$10.25	\$8.47
Cow 7	72	4.6	4.1	6.3	250,000	\$ 5.95	\$1.76	\$2.94	\$0.00	\$12.20	\$10.81	\$15.58	\$14.19	\$9.63	\$8.24
Cow 8	49	4.8	3.7	6.4	80,000	\$ 5.85	\$2.08	\$0.98	\$0.25	\$8.30	\$7.35	\$9.92	\$8.98	\$4.07	\$3.13
Cow 9	46	5	4.4	6.6	110,000	\$ 5.55	\$2.40	\$4.41	\$0.25	\$7.79	\$6.90	\$11.04	\$10.15	\$10.28	\$4.60
Cow 10	29	3.6	3.5	6.5	160,000	\$ 5.75	\$0.16	\$0.00	\$0.25	\$4.91	\$4.35	\$5.03	\$4.47	-\$0.72	-\$1.28
Cow 11	105	3.5	3.5	6.7	195,000	\$ 7.05	\$0.00	\$0.00	\$0.25	\$17.79	\$15.76	\$18.05	\$16.02	\$11.00	\$8.97
Cow 12	81	3.6	3.5	7.4	1,250,000	\$ 6.05	\$0.16	\$0.00	\$0.00	\$13.72	\$12.16	\$13.85	\$12.29	\$7.80	\$6.24
Cow 13	63	3.8	3.6	6.4	175,000	\$ 6.60	\$0.48	\$0.49	\$0.25	\$10.67	\$9.46	\$11.44	\$10.22	\$5.79	\$3.62
Cow 14	56	4	4.2	6.5	760,000	\$ 6.25	\$0.80	\$3.43	\$0.00	\$9.49	\$8.41	\$11.86	\$10.77	\$5.61	\$4.52
Cow 15	43	4.6	4.2	6.6	181,000	\$ 6.15	\$1.76	\$3.43	\$0.25	\$7.28	\$6.45	\$9.62	\$8.79	\$3.47	\$2.64