

FFA Dairy Foods Exam 2018 (Manchester)

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

1. Organic milk and Conventional milk:
 - a. Contain nine essential nutrients for humans
 - b. Are not considered a good source of omega-three fatty acids
 - c. Are produced under strict practices for safety
 - d. All of the above

2. Whey naturally contains:
 - a. Alpha-lactalbumin
 - b. Beta-lactoglobulin
 - c. Immunoglobulins
 - d. All of the above

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

4. If a person is allergic to cow milk, she or he may be able to comfortably consume:
 - a. Aged cheeses
 - b. Goat milk
 - c. Greek yogurt
 - d. Lactaid® milk

5. Greek yogurt is similar to regular yogurt, but:
 - a. Contains more protein per gram of product
 - b. Contains less water per gram of product
 - c. Is more expensive
 - d. All of the above

6. Which of the following items would a lacto-ovo vegetarian NOT consume:
 - a. Milk
 - b. Yogurt
 - c. Chicken
 - d. Eggs

7. Frozen yogurt:
 - a. Can only contain all-natural ingredients
 - b. Is essentially pure yogurt, but frozen
 - c. Is much more healthy than ice cream
 - d. Typically has lower fat but higher sugar than ice cream

8. Kefir:
 - a. Is the same as yogurt
 - b. Is made with the aid of “kefir grains”
 - c. Has more protein than Greek yogurt
 - d. All of the above

9. Modern robotic milking machines:
 - a. Clean and sanitize cows’ teats
 - b. Can reduce labor costs at the farm
 - c. Tend to increase milking frequency
 - d. All of the above

10. To ensure that antibiotics do not inadvertently get into the fluid milk supply, milk is tested:
 - a. Before being transferred from the bulk tank to the tanker truck
 - b. Before being transferred from the tanker truck to the processing plant
 - c. Before packaged milk is shipped to grocery stores
 - d. All of the above

11. Which of the following is an example of an unripened cheese?
 - a. Blue
 - b. Cream
 - c. Camembert
 - d. Muenster

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

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

14. The minimum amount of fat in whole milk is:
 - a. 1%
 - b. 2%
 - c. 3.25%
 - d. 5%

15. The maximum amount of fat in low-fat milk is:
 - a. 1%
 - b. 2%
 - c. 3.25%
 - d. 5%

16. The minimum amount of fat in ice cream (to be called ice cream) is:
- 5%
 - 10%
 - 15%
 - 20%
17. Which ONE of the following statements is true?
- Scientific studies do not support a link between early puberty and consumption of milk
 - Soy beverages provide equivalent nutrition as cow milk
 - Rice beverages provide equivalent nutrition as cow milk
 - Almond beverages provide equivalent nutrition as cow milk
18. Which of the following statements about cheese is NOT true?
- Cheese is the #1 source of dietary sodium for Americans
 - Cheese is the #2 source of dietary calcium for Americans
 - Process cheese is made from high-quality natural cheese
 - Cheeses are naturally gluten-free
19. 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
20. Sustainability research has concluded all of the following EXCEPT:
- Since 2009, U.S. dairy farmers and companies have made a voluntary commitment to reduce dairy's carbon footprint by 25% by 2020.
 - Dairy production, as a whole, accounts for approximately 2% of total U.S. greenhouse gas emissions.
 - Only 8.4% of U.S. cropland is used for milk production.
 - Cow methane production contributes 5% towards greenhouse gas emissions.
21. 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:
- Reduce muscle damage
 - Replace fluids
 - Rebuild muscle
 - Rest
22. Regarding bovine somatotropin, all of these statements are true EXCEPT:
- It is naturally produced in the pituitary gland of cows
 - It directs how energy and nutrients are used for growth of young cattle
 - It can be distinguished from recombinant bovine somatotropin (rbST)
 - It directs how energy and nutrients are used for milk production in lactating cows

23. An 8-ounce glass of milk provides 11% of the daily value of potassium, which helps to:
- 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
 - regulate the body's fluid balance and helps maintain normal blood pressure
24. Which of the following items would a vegan NOT consume:
- Wheat
 - Milk
 - Corn
 - Soy
25. Which of the following is true for cows, but NOT true for pigs?
- They chew their cud
 - They have 4 true stomachs
 - They bear live young
 - Both A and B
26. Hormones are naturally present in:
- Humans
 - Animals
 - Plants
 - All of the above
27. Milk naturally contains:
- Annatto
 - Vitamin B₁₂
 - Carrageenan
 - All of the above
28. 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
29. 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:
- Calcium
 - Choline
 - Chromium
 - Zinc

30. An 8-ounce glass of milk provides 16% of the daily value of protein, which primarily helps to:
- 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
 - regulate the body's fluid balance and helps maintain normal blood pressure

For questions 31 – 35, observe Figure 1, sourced from the Dairy Market News website two weeks ago.

31. Approximately how much milk was produced by dairy cows in the 23 select states in September, 2017?
- 15.7 billion lb
 - 16.0 billion lb
 - 16.3 billion lb
 - 16.5 billion lb
32. If milk production follows the same trend as in previous years, approximately how much milk MIGHT likely be produced by dairy cows in the 23 select states in this month, this year (September, 2018)?
- 15.7 billion lb
 - 16.0 billion lb
 - 16.3 billion lb
 - 16.5 billion lb
33. If the CWT was \$15.00 for May, 2018, approximately how much was milk produced in the 23 select states worth?
- \$2.7 billion
 - \$27 billion
 - \$270 billion
 - \$2.7 trillion
34. Based upon what you know about the relationship between milk composition and milk components, in which month was the % FAT HIGHEST in the raw milk produced by the cows in these 23 select states?
- February
 - March
 - May
 - July
35. In which of the months would the TOTAL POUNDS OF MILK FAT be highest in the raw milk produced by the cows in these 23 select states?
- February
 - March
 - May
 - July

For questions 36-40, observe the images of Reduced fat milk (Figures 2 and 3), provided to you.

36. Which of the following statements is NOT true about Anderson Erickson AND Fairlife ultra-filtered milk?
- Vitamin A palmitate is added because the naturally present vitamin is removed when the fat is separated.
 - Vitamin D3 is added because the fat-soluble vitamin is along with the fat during separation.
 - Milk is a good source of iron.
 - Milk is an excellent source of calcium.
37. Which of the following statements is NOT true?
- Ultra-filtered means that Fairlife milk is concentrated.
 - Ultra-filtration reduces the amount of sugar in milk.
 - Ultra-filtration increases the amount of protein in milk.
 - Ultra-filtered means that Fairlife milk is sterile.
38. Which of the following statements is true about lactase?
- The enzyme converts lactose into glucose and galactose.
 - The enzyme extends the shelf life of Fairlife milk.
 - The enzyme increases the amount of protein in Fairlife milk.
 - The enzyme is dangerous for humans.
39. Which of the following statements is true (per serving)?
- Anderson Erickson reduced fat milk has more fat than Fairlife reduced fat milk.
 - Anderson Erickson reduced fat milk has more lactose than Fairlife reduced fat milk.
 - Anderson Erickson reduced fat milk has more vitamin D than Fairlife reduced fat milk.
 - Anderson Erickson reduced fat milk has more calories than Fairlife reduced fat milk.
40. To get all of the calcium recommended for one entire day, approximately how many cups of Fairlife reduced fat milk would you need to consume?
- 1.5
 - 2.5
 - 3
 - 4

YOU HAVE COMPLETED THIS PART OF THE TEST

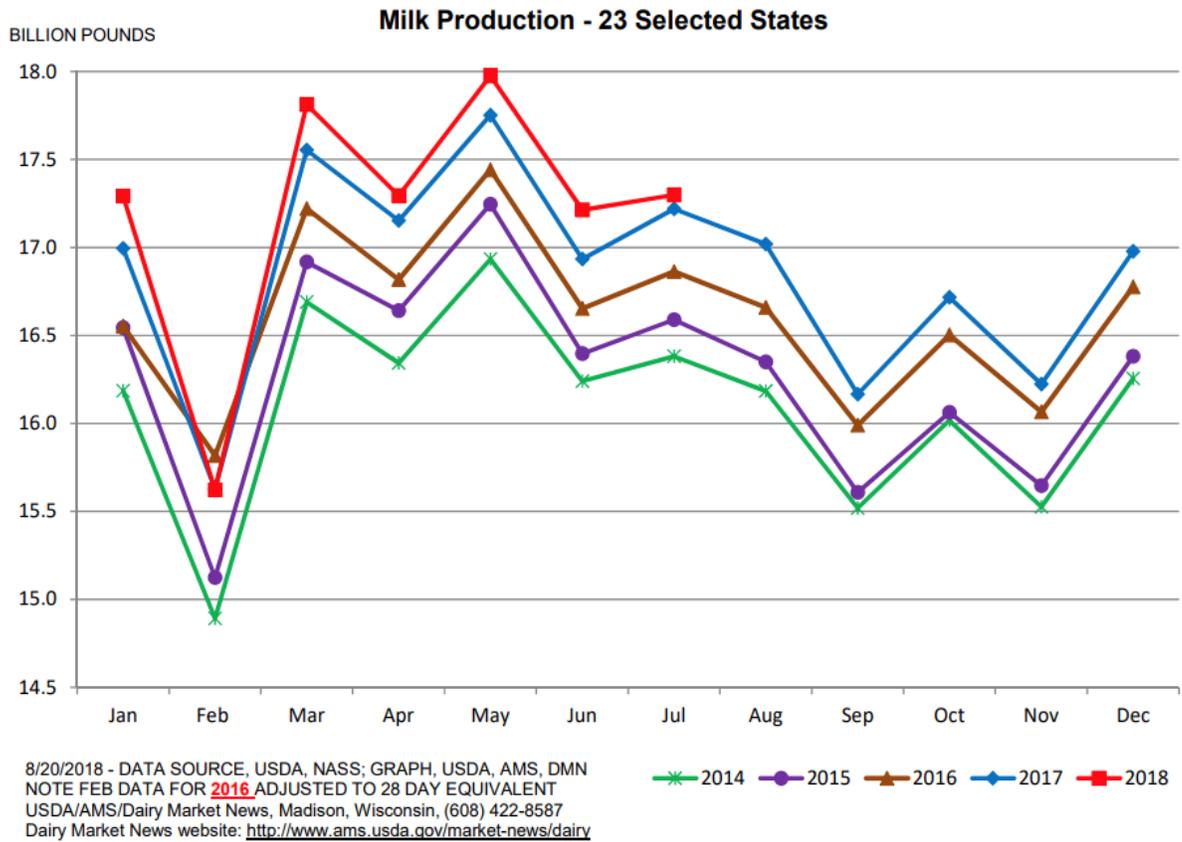


FIGURE 1. Milk production (billion lb) of 23 select states between January 2014 and July 2018.

Nutrition Facts		
Serving Size: 1 Cup (240mL)		
Servings Per Container: 16		
Amount Per Serving		
Calories	120	
Fat Calories	45	
		% Daily Value *
Total Fat	5g	8%
Sat Fat	3g	15%
Trans Fat	0g	
Cholesterol	20mg	7%
Sodium	120mg	5%
Potassium	340mg	10%
Total Carb	12g	4%
Fiber	0g	0%
Sugars**	11g	
Protein	8g	16%
Vitamin A		10%
Vitamin C		2%
Calcium		30%
Iron		0%
Vitamin D		25%

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



Ingredients:

Grade A Reduced Fat Milk, Vitamin A Palmitate, Vitamin D3 added

FIGURE 2. Anderson Erickson reduced fat milk ingredients and nutrition facts.



NUTRITION FACTS

Serving Size 1 cup (240ml)

Servings Per Container About 7

Amount Per Serving

Calories 120 Calories from Fat 40

% Daily Value*

Total Fat 4.5g 7%

Saturated Fat 3g 15%

Trans Fat 0g

Cholesterol 20mg 7%

Sodium 120mg 5%

Total Carbohydrate 6g 2%

Dietary Fiber 0g 0%

Sugars 6g

Protein 13g 26%

Vitamin A 10% Vitamin C 0%

Calcium 40% Iron 0%

Vitamin D 25%

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

Ingredients: Reduced Fat Ultra-Filtered Milk, Lactase Enzyme, Vitamin A Palmitate, Vitamin D3

Contains Milk.

FIGURE 3. Fairlife reduced fat ultrafiltered milk ingredients and nutrition facts.

2018 Test and Analyze and Interpret (40 pts)

Correct	Type	Characters	Points	Standards
1. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
2. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
3. <input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
4. <input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
5. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
6. <input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
7. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
8. <input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
9. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
10. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
11. <input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
12. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
13. <input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
14. <input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
15. <input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
16. <input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
17. <input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
18. <input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
19. <input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
20. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0
21. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	Multiple Choice	ABCDE	1	0

22.	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
23.	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
24.	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
25.	Multiple answers	 Multiple Choice	ABCDE	1	0
26.	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
27.	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
28.	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
29.	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
30.	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
31.	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
32.	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
33.	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
34.	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
35.	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
36.	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
37.	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
38.	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0
39.	Multiple answers	 Multiple Choice	ABCDE	1	0
40.	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input type="radio"/> E	 Multiple Choice	ABCDE	1	0

2018 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. Based on the component prices in **Table 1**, what is the value of 100 pounds of milk at 3.4% milkfat, 3.0% protein, 5.4% other solids and 180,000 SCC?

(4 pts.)

2. If a grocery store sells milk for \$3.19 per gallon, what price are they charging 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 **8**, **12**, and **14**.

(4 pts.)

4. A dairy producer shipped 1.5 million pounds of milk in August. Using the butterfat component price in **Table 1**, how much more valuable would the milk had been if the herd produced 0.12% more butterfat?

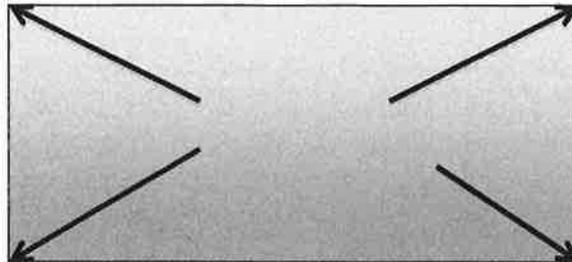
(4 pts.)

A cheddar cheese producer plans to standardize milk to 6.00% fat prior to cheese making. First, the raw milk must be separated into cream and skim milk. The separation process yields fresh cream of 30% 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)

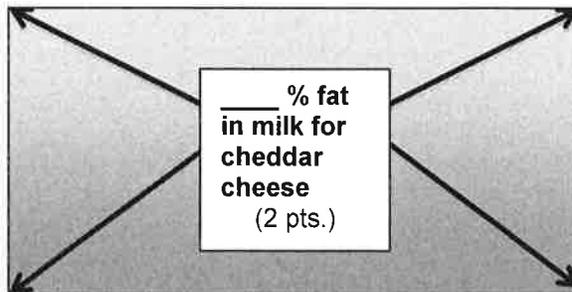
For a given volume of milk (Y), you need: (D) parts cream and (E) parts skim milk for (C) % fat milk.

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 3000 lb of 6.0% 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 3,000 lbs. of milk to make mozzarella 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?

(2 pts.)

8. During one week (7 days), **cows 3, 8, 11, and 13** could produce an estimated total of ____ gallons of milk?

(4 pts.)

9. Using the information in **Table 1**, using the same cows from question 8, how much value above feed cost are produced by these four cows in one week?

(2 pts.)

10. Using component pricing in **Table 1**, what is the value of butterfat and protein produced by **cow 6** in one week?

____ **value of butter fat** (2 pts.)

____ **value of protein** (2 pts.)

11. Using component pricing in **Table 1**, based on value of milk produced after feed cost, which cow should be culled from the herd?

(2 pts.)

2018 Iowa FFA Milk Quality & Products CDE

Problem Solving Part 1 & Part 2

Chapter: Key

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. Based on the component prices in **Table 1**, what is the value of 100 pounds of milk at 3.4% milkfat, 3.0% protein, 5.4% other solids and 180,000 SCC?

$$100 * .034 * 2.5287 = \$8.59758$$

$$100 * .030 * 1.5536 = \$4.6608$$

$$100 * .054 * 0.2425 = \$1.3095$$

$$(350,000 - 180,000)/1000 * 0.00074 = \$0.1258$$

$$\text{Add all four totals together} = \$14.69368$$

\$14.69 to 14.71 (4 pts.)

2. If a grocery store sells milk for \$3.19 per gallon, what price are they charging per hundredweight?

$$\$3.19/8.5*100 = \$37.53$$

\$ 37.5294

\$37.53 to \$38.00 per hundred weight (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 **8**, **12**, and **14**.

$$47 + 83 + 56 = 186$$

$$47/186 = .253$$

$$83/186 = .446$$

$$56/186 = .301$$

$$.253*80,000 = 20,240$$

$$.446*1,250,000 = 557,500$$

$$.301*760,000 = 228,760$$

$$20,240 + 557,500 + 228,760 = \underline{806,500}$$

Herd Average SCC: 806,500 cells/ml (4 pts.)

If rounded by 4 places = 806,828.29

4. A dairy producer shipped 1.5 million pounds of milk in August. Using the butterfat component price in **Table 1**, how much more valuable would the milk had been if the herd produced 0.12% more butterfat?

$$1,500,000 * 0.0012 * 2.5287 = \underline{\$4,551.66}$$

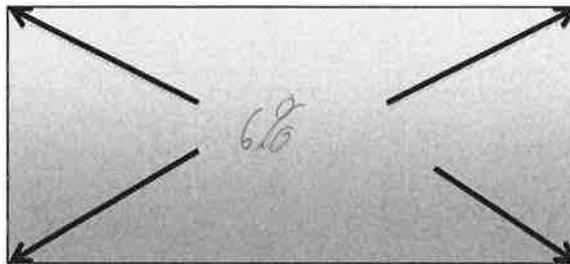
\$4,551.66 (4 pts.)

A cheddar cheese producer plans to standardize milk to 6.00% fat prior to cheese making. First, the raw milk must be separated into cream and skim milk. The separation process yields fresh cream of 30% 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

30%



difference of B minus C (D parts)

5.95

(B) % fat in skim milk

0.05%

difference of A minus C (E parts)

24

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

29.95

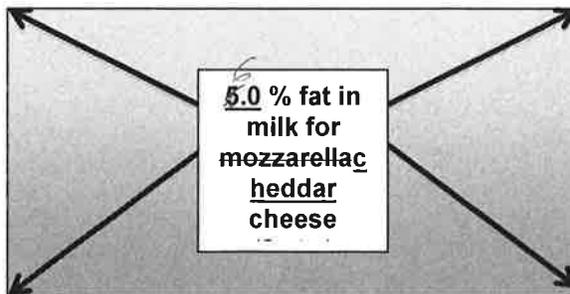
For a given volume of milk (Y), you need: (D) parts cream and (E) parts skim milk for (C) % fat milk.

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 3000 lb of 6.0% fat milk. Complete the Pearson Square below for 12 points.

30.0% fat in cream

(2 pts.)



B minus C = 4.95 parts

(2 pts.)

0.05% fat in skim milk

(2 pts.)

A minus C = 25.0 parts

(2 pts.)

Sum of (D) + (E) = 29.95

(2 pts.)

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

skim milk: $25.0/29.95 \times 3000 = 2,504.17 \text{ lbs.}$

cream: $4.95/29.95 \times 3000 = 495.83 \text{ lbs.}$

5
495.83

495.83 lbs of cream (4 pts.) and 2,504.17 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. During one week (7 days), cows 3, 8, 11, and 13 could produce an estimated total of _____ gallons of milk?

$55+47+108+59 = 269 \times 7 = 1883/8.5 = 221$

221 gallons (4 pts.)

221.5294 gallons

9. Using the information in Table 1, using the same cows from question 8, how much value above feed cost are produced by these four cows in one week?

$2.1023 + 0.9008 + 8.5425 + 1.9321 = 13.4777 \times 7 = 94.34$

\$94.34 (2 pts.)

94.3439

10. Using component pricing in Table 1, what is the value of butterfat and protein produced by cow 6 in one week?

\$64.18 value of butter fat (2 pts.)

64.1835

$98 \times .037 \times 2.5287 \times 7 = 64.18$
(Or Butterfat Value on Table 1 * 7)

\$31.53 value of protein (2 pts.)

31.5311

$98 \times .031 \times 1.4827 \times 7 = 31.53$
(Or Protein Value on Table 1 * 7)

11. Using component pricing in Table 1, based on value of milk produced after feed cost, which cow should be culled from the herd?

Cow 1 (2 pts.)

Table 1 Key

Part 1

Cow Production					Feed	Components					Income Comparisons - Statistical Uniform Price @ \$14.78/cwt		
Lbs. Milk per Day per Cow	Butterfat %	Protein %	Other Solids %	Somatic Cell Count (cells/ml)	Feed Cost per Day	Butterfat component \$2.5287 per pound produced	Protein component \$1.4827 per pound produced	Other solids component \$0.1422 per pound produced	SCC component \$0.00074 per 1,000 SCC above/below 350,000 cells/ml	Blended Price: Per Day \$ Value of Daily Milk if sold at @ \$14.78/cwt	Per Day \$ Value of Milk Sold on Component Pricing	AFTER FEED: Value of Component Price Daily Milk Minus Feed Cost per Day	
Example 25	3.6	3.2	5.7	199999	6.5	\$ 2.2758	\$ 1.4827	\$ 0.1422	\$ 0.00074	\$ 3.6950	\$ 3.7756	-\$2.7244	
Cow 1	30	3.4	3.1	5.7	290000	\$ 2.5793	\$ 1.3789	\$ 0.2432	\$ 0.0444	\$ 4.4340	\$ 4.2457	-\$1.4343	
Cow 2	72	3.7	3.2	5.6	398000	\$ 6.7365	\$ 3.4161	\$ 0.5734	-\$ 0.0355	\$ 10.6416	\$ 10.6904	\$ 4.5904	
Cow 3	55	3.5	3.3	5.8	161000	\$ 4.8677	\$ 2.6911	\$ 0.4536	\$ 0.1399	\$ 8.1290	\$ 8.1523	\$ 2.1023	
Cow 4	62	3.6	2.9	5.7	1750000	\$ 5.6441	\$ 2.6659	\$ 0.5025	-\$ 1.0360	\$ 9.1636	\$ 7.7765	\$ 1.9265	
Cow 5	55	3.7	3	5.8	211000	\$ 5.1459	\$ 2.4465	\$ 0.4536	\$ 0.1029	\$ 8.1290	\$ 8.1488	\$ 1.2488	
Cow 6	98	3.7	3.1	5.6	160000	\$ 9.1691	\$ 4.5044	\$ 0.7804	\$ 0.1406	\$ 14.4844	\$ 14.5945	\$ 7.8445	
Cow 7	70	3.7	3	5.5	250000	\$ 6.5493	\$ 3.1137	\$ 0.5475	\$ 0.0740	\$ 10.3460	\$ 10.2845	\$ 4.2345	
Cow 8	47	3.5	3.1	5.7	80000	\$ 4.1597	\$ 2.1603	\$ 0.3810	\$ 0.1998	\$ 6.9466	\$ 6.9008	\$ 0.9008	
Cow 9	48	3.9	3.4	5.7	110000	\$ 4.7337	\$ 2.4198	\$ 0.3891	\$ 0.1776	\$ 7.0944	\$ 7.7202	\$ 2.0702	
Cow 10	56	3.4	2.9	5.8	800000	\$ 4.8146	\$ 2.4079	\$ 0.4619	-\$ 0.3330	\$ 8.2768	\$ 7.3514	\$ 1.4014	
Cow 11	108	3.7	2.9	5.4	195000	\$ 10.1047	\$ 4.6438	\$ 0.8293	\$ 0.1147	\$ 15.9624	\$ 15.6925	\$ 8.5425	
Cow 12	83	3.3	2.9	5.5	1250000	\$ 6.9261	\$ 3.5689	\$ 0.6491	-\$ 0.6660	\$ 12.2674	\$ 10.4781	\$ 4.4281	
Cow 13	59	3.6	3.1	5.6	175000	\$ 5.3710	\$ 2.7119	\$ 0.4698	\$ 0.1295	\$ 8.7202	\$ 8.6821	\$ 1.9321	
Cow 14	56	3.6	3	5.7	760000	\$ 5.0979	\$ 2.4909	\$ 0.4539	-\$ 0.3034	\$ 8.2768	\$ 7.7393	\$ 1.3393	
Cow 15	44	3.7	3.2	5.8	181000	\$ 4.1167	\$ 2.0876	\$ 0.3629	\$ 0.1251	\$ 6.5032	\$ 6.6923	\$ 0.3923	

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

Table 1										Part 1			
Cow Production					Feed	Components				Income Comparisons - Statistical Uniform Price @ \$14.78/cwt			
Lbs. Milk per Day per Cow	Butterfat %	Protein %	Other Solids %	Somatic Cell Count (cells/ml)	Feed Cost per Day	Butterfat component \$2.5287 per pound produced	Protein component \$1.4827 per pound produced	Other solids component \$0.1422 per pound produced	SCC component \$0.00074 per 1,000 SCC above/below 350,000 cells/ml	Blended Price: Per Day \$ Value of Daily Milk if sold at @ \$14.78/cwt	Per Day \$ Value of Milk Sold on Component Pricing	AFTER FEED: Value of Component Price Daily Milk Minus Feed Cost per Day	
Example	25	3.6	3.2	5.7	199,999	\$6.50	\$2.2758	\$1.1862	\$0.2026	\$0.1110	\$3.6950	\$3.7756	-\$2.7244
Cow 1	30	3.4	3.1	5.7	290,000	\$5.68	\$2.5793	\$1.3789	\$0.2432	\$0.0444	A	\$4.2457	-\$1.4343
Cow 2	72	3.7	3.2	5.6	398,000	\$6.10	\$6.7365	\$3.4161	\$0.5734	-\$0.0355	\$10.6416	B	\$4.5904
Cow 3	55	3.5	3.3	5.8	161,000	\$6.05	\$4.8677	\$2.6911	\$0.4536	\$0.1399	\$8.1290	\$8.1523	C
Cow 4	62	3.6	2.9	5.7	1,750,000	\$5.85	D	\$2.6659	\$0.5025	-\$1.0360	\$9.1636	\$7.7765	\$1.9265
Cow 5	55	3.7	3.0	5.8	211,000	\$6.90	\$5.1459	E	\$0.4536	\$0.1029	\$8.1290	\$8.1488	\$1.2488
Cow 6	98	3.7	3.1	5.6	160,000	\$6.75	\$9.1691	\$4.5044	F	\$0.1406	\$14.4844	\$14.5945	\$7.8445
Cow 7	70	3.7	3.0	5.5	250,000	\$6.05	\$6.5493	\$3.1137	\$0.5475	G	H	\$10.2845	\$4.2345
Cow 8	47	3.5	3.1	5.7	80,000	\$6.00	I	\$2.1603	\$0.3810	\$0.1998	\$6.9466	J	\$0.9008
Cow 9	48	3.9	3.4	5.7	110,000	\$5.65	\$4.7337	K	\$0.3891	\$0.1776	\$7.0944	\$7.7202	L
Cow 10	56	3.4	2.9	5.8	800,000	\$5.95	\$4.8146	\$2.4079	M	-\$0.3330	N	\$7.3514	\$1.4014
Cow 11	108	3.7	2.9	5.4	195,000	\$7.15	\$10.1047	\$4.6438	\$0.8293	O	\$15.9624	P	\$8.5425
Cow 12	83	3.3	2.9	5.5	1,250,000	\$6.05	Q	\$3.5689	\$0.6491	-\$0.6660	\$12.2674	\$10.4781	R
Cow 13	59	3.6	3.1	5.6	175,000	\$6.75	\$5.3710	S	T	U	V	W	\$1.9321
Cow 14	56	3.6	3.0	5.7	760,000	\$6.40	\$5.0979	\$2.4909	X	-\$0.3034	\$8.2768	\$7.7393	\$1.3393
Cow 15	44	3.7	3.2	5.8	181,000	\$6.30	\$4.1167	\$2.0876	\$0.3629	\$0.1251	Y	\$6.6923	\$0.3923

Problem Solving Part 1

Chapter: Key

Chapter Number: _____

Team Members: _____

Neatly write answers on the corresponding lines below.

A. \$ 4.4340

J. \$ 6.9008

S. \$ 2.7119

B. \$ 10.6904

K. \$ 2.4198

T. \$ 0.4698

C. \$ 2.1023

L. \$ 2.0702

U. \$ 0.1295

D. \$ 5.6441

M. \$ 0.4619

V. \$ 8.7202

E. \$ 2.4465

N. \$ 8.2768

W. \$ 8.6821

F. \$ 0.7804

O. \$ 0.1147

X. \$ 0.4539

G. \$ 0.0740

P. \$ 15.6925

Y. \$ 6.5032

H. \$ 10.3460

Q. \$ 6.9261

I. \$ 4.1597

R. \$ 4.4281

FFA Dairy Foods Exam 2018 (Manchester)

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

51. C
52. D
53. A
54. A
55. C

56. C
57. D
58. A
59. B or A
60. B

Cheese identification:

1. Mozzarella
2. Provolone
3. Gouda
4. Colby
5. Havarti
6. Sharp Cheddar
7. Processed American (white)
8. Mild Cheddar
9. Monterey Jack
10. Processed American (orange)

FFA Dairy Foods Exam 2018 (Manchester)

Milk flavors:

	Q	R	S
1. Foreign	S	D	P
2. Salty	S	D	P
3. Malty	S	D	P
4. Feed	S	D	P
5. Bitter	S	D	P
6. Flat/watery	S	D	P
7. Rancid	S	D	P
8. Garlic/onion	S	D	P
9. Metallic/oxidized	S	D	P
10. Acid	S	D	P

Milk products

1. Butter (D)
2. Non-dairy creamer (ND)
3. Whole milk (store brand) (D)
4. 2% milk (Fairlife) (D)
5. Half & Half (D)
6. Almond & Coconut beverage (vanilla) (ND)
7. Chocolate skim milk (D)
8. Margarine (ND)
9. Sour cream (D)
10. Soy beverage (vanilla) (ND)

Class 1 - Ayrshire Spring Calves

*4-1-2-3
Cats 1-3-1*

Class 2 Brown Swiss Fall Calves

*4-3-1-2
Cats 3-2-1*