

2024

MILK QUALITY & PRODUCTS CAREER DEVELOPMENT EVENT

PROBLEM-SOLVING

1. A commercial bleach product contains 5.5% sodium hypochlorite and is routinely used to make sanitizing solutions in dairy plants. How much of this product should be added to 250 gallons of water to make a 200-ppm sanitizing solution?
 - a. 2.25 gallons
 - b. 0.92 gallon**
 - c. 5.22 gallons
 - d. 25 gallons

Answer is B

2. During March 2023, 1,453 producers shipped 1,684 million pounds of milk to regulated handlers in the Central Milk marketing order. 446 million pounds went into making fluid products, 395 million went into making non-fat dry milk, 719 million went into making mozzarella cheese and 124 went into making ice cream products. Class I price is \$14.80 and Class II is \$12.40 per hundred weights.

Based on the market description above what was the percentage Class III utilization?

- a. 7%
- b. 26%
- c. 24%
- d. 43%**

Answer is D

3. Based on the market description above what was the percentage Class II utilization?
 - a. 7%**
 - b. 26%
 - c. 24%
 - d. 43%

Answer is A

4. A dairy plant manufactured a run of premium cottage cheese that contained 4% fat, 10% protein and 3% carbohydrates. It also manufactured a low-fat cottage cheese containing 0.5% fat, 6% protein and 4% carbohydrates. One serving of cottage cheese is half of a cup or 120 grams. Fat contains 9 calories per gram of product, Protein and Carbohydrates each contain 4 calories per gram of product. One standard container of cottage cheese weighs 24 ounces.

If a person consumes 1 serving of lowfat cottage cheese how many calories would that person eat?

- a. 105.6 Calories
- b. 43.2 Calories
- c. 98.6 Calories
- d. 53.4 Calories**

Answer is D

5. How many total grams of fat, protein and carbohydrate are there in one serving of the low-fat cottage cheese?
- a. 40.8 gm.
 - b. 12.6 gm.**
 - c. 20.4 gm.
 - d. 25.2 gm.

Answer is B

6. What percentage of the total calories in the 'premium' cottage cheese came from fat?
- a. 5.4%
 - b. 0.6%
 - c. 41%**
 - d. 10%

Answer is C

7. The dairy plant has processed 2 tons of low-fat cottage cheese and will package it into standard containers. How many containers of cottage cheese will be packaged?
- a. 1,000
 - b. 2,098
 - c. 4,000
 - d. 2,667**

Answer is D

8. How many more calories are in a serving of premium cottage cheese compared to low-fat cottage cheese?
- 43.3 calories
 - 35.3 calories
 - 52.2 calories**
 - 48.0 calories

Answer is C

9. Assume a milk hauler picks up milk with a tanker from four producers and delivers it to a local dairy plant.

Producer "1"21,000 lbs. of 3.35% milkfat milk and 3.10% protein

Producer "2"30,000 lbs. of 3.40% milkfat milk and 3.25% protein

Producer "3"16,500 lbs. of 3.55% milkfat milk and 3.30% protein

Producer "4"12,500 lbs. of 3.65% milkfat milk and 3.45% protein

The average milkfat test of the tanker of milk is _____.

- 3.27%
- 3.46%**
- 3.58%
- 3.55%

Answer is B

10. If milkfat bonus is \$.12 for every point over 3.2% what was the bonus for the tanker truck?
- \$00.00
 - \$220.80
 - \$240.00
 - \$249.60**

Answer is D

11. Which producer received the largest milkfat bonus check?
- Producer "1"
 - Producer "2"**
 - Producer "3"
 - Producer "4"

Answer is B

12. If 1,500 pounds of milk testing 4.5% fat is mixed with 900 pounds of skim milk testing 0.05% fat, how many pounds of milk fat are contained in the 2,400-pound mixture?
- 45
 - 67.95**
 - 54.45
 - 45.54

Answer is B

2023

MILK QUALITY AND PRODUCTS

Select the one best answer for each question

Please DO NOT write on exam

PROBLEM-SOLVING

Assume a milk hauler picks up milk with a tanker from four producers and delivers it to a local dairy plant.

Producer "1" — 16,500 lbs. of 3.40% milkfat milk and 3.15% protein

Producer "2" — 30,000 lbs. of 3.38% milkfat milk and 3.20% protein

Producer "3" — 21,000 lbs. of 3.50% milkfat milk and 3.32% protein

Producer "4" — 12,500 lbs. of 3.60% milkfat milk and 3.50% protein

- The average protein test of the tanker of milk is?
 - 3.27%**
 - 3.45%
 - 3.58%
 - 3.55%

Answer is A

- If milkfat bonus is \$.12 for every point over 3.2% what was the bonus for the tanker truck?
 - \$00.00
 - \$220.00
 - \$240.00**
 - \$250.00

Answer is C

3. Which producer received the largest milkfat bonus check?

- A. Producer "1"
- B. Producer "2"
- C. **Producer "3"**
- D. Producer "4"

Answer is C

4. If 1,200 pounds of milk testing 4.5% fat is mixed with 900 pounds of skim milk testing 0.05% fat, how many pounds of milk fat are contained in the 2,100-pound mixture?

- A. 45
- B. 54
- C. **54.45**
- D. 45.54

Answer is C

5. What is the percentage of fat in the mixture made in Problem number 4?

- A. 2.45%
- B. **2.59%**
- C. 2.67%
- D. 2.16%

Answer is B

6. A five-gram sample of milk was heated in an oven to remove the moisture. The weight of the dry residue is 0.635 grams. What is the percentage of total milk solids?

- A. **12.7**
- B. 12.5
- C. 13
- D. 13.7

Answer is A

7. A dairy plant has a storage tank containing 90,000 pounds of 4.1% fat milk. If it takes

7.4 pounds of whole milk to make 1 pound of whole milk powder, how many 50 pound containers of whole milk powder can be made from the milk, assuming a 3% loss in the packaging process?

- A. 82 containers
- B. 240 containers
- C. **235 containers**
- D. 243 containers

Answer is C

8. How much 2% lowfat milk can be made using the 90,000 pounds of 4.10% fat milk, when excess is removed as 36% fat cream
- A. 82,460 pounds
 - B. **84,440 pounds**
 - C. 86,180 pounds
 - D. 30,600 pounds

Answer is B

9. If the 36% fat cream removed from the 90,000 pounds of 4.1% fat milk to make 2% low-fat milk, is packaged into pints, how many pints of cream will be realized, assuming no loss in the packaging process? NOTE: Heavy Cream weighs 8.37 pounds per gallon.
- A. **5,312 pints**
 - B. 5,559 pints
 - C. 5,621 pints
 - D. 664 pints

Answer is A

10. If the dairy plant does not process the 36% cream into pints, but sells the cream for \$80.00 cwt. what is the value of the cream sold?
- A. \$67,552
 - B. **\$4,448**
 - C. \$6,229
 - D. \$26,56

Answer is B

11. The specific gravity of water is 1.0 and it weighs 8.33 pounds per gallon. The average specific gravity of skim milk is 1.036. How much does skim milk weigh per gallon?

- A. 8.28 pounds
- B. 8.58 pounds
- C. 8.60 pounds
- D. **8.63 pounds**

Answer is D

Rebecca has a Jersey dairy herd of 50 cows that average 63 pounds of milk per cow per day. In January, the herd had an average fat of 4.60% and an average protein of 4.00%. She received a \$0.03 cwt. quality bonus, and the dairy paid \$0.11 per point over 3.50% fat and \$0.09 per point over 3.20% protein. Her hauling costs were \$0.07 cwt. The average blend price was \$19.25.

12. What was the January milk check after all bonuses and deductions were accounted for?
- A. \$19,948.95
 - B. **\$20,643.21**
 - C. \$17,392.20
 - D. \$20,711.56

Answer is B

Select the one best answer for each question

Please DO NOT write on exam

PROBLEM-SOLVING

ASSUME A DAIRY PRODUCER MARKETED THE FOLLOWING MILK FOR MARCH.

A 1,000 milking cow herd:

2,000,000 pounds of milk marketed per month.....**Prices:**

3.55% Butterfat.....\$ 3.0935 / lb.

3.10% Protein.....\$ 2.7182 / lb.

5.74% Other Solids.....\$ 0.6131 / lb.

Producer Price Differential (PPD)\$ 0.70 / cwt

200,000 Somatic Cell Count.....\$ 0.00103 / 100,000 cells / cwt

<u>Component</u>	<u>Average Tests</u>	<u>Hundred Weights</u>	<u>Component Pounds Marketed</u>	<u>Component Prices</u>	<u>Total Value</u>
Butterfat	3.55	x 20,000	= 71,000	x \$3.0935	= \$ 219,638.50
Protein	3.10	x 20,000	= 62,000	x \$2.7182	= \$ 168,528.40
Other Solids	5.74	x 20,000	= 114,800	x \$0.6131	= 70,383.88
PPD		20,000		x \$0.70	= \$14,000.00
Somatic Cell Count	200,000				
(Calculate SCC Adjuster)					
(350-200=150)	150	x \$0.00103	= \$0.15	x 20,000	= \$3,000.00
Value Of Milk Marketed:					\$475,550.78
Effective Price Per Hundredweight:					\$23.78

1. Based on the description of the farm operation listed above, what is the average production per milking cow for a year?
 - a. 2,000 pounds
 - b. 22,000 pounds
 - c. **24,000 pounds**
 - d. 32,000 pounds

Answer is C

2. Using the example on page 1, what would be the value of the producer's butterfat if the average butterfat test was 3.70%.
- a. \$219,638.50
 - b. \$2,289.19
 - c. \$172,338.30
 - d. **\$228,919.00**

Answer is D

3. Using the example on page 1, what would be the value of the milk if the producer marketed 3,000,000 pounds of milk?
- a. **\$713,326.17**
 - b. \$708,826.17
 - c. \$575,550.78
 - d. \$733,914.90

Answer is A

Smith's Jersey herd produced 400,000 pounds of milk in January, of which 18,000 pounds were butterfat and 14,880 pounds was protein. The cooperative that Smith is a member of paid \$12.00 per cwt plus a \$.10 BF bonus per point over 3.5% and a \$.06 protein bonus per point over 3.2%.

4. Smith's average herd butterfat percentage was.
- a. 3.95%
 - b. 3.60%
 - c. 5.05%
 - d. **4.50%**

Answer is D

5. Smith's average herd protein percentage was.
- a. 3.95%
 - b. 3.83%

- c. **3.72%**
- d. 3.40%

Answer is C

6. Smith's January milk check, including bonuses totalled?
- a. **\$53,200**
 - b. \$52,120
 - c. \$51,525
 - d. \$48,000

Answer is A

The total milk receipts from all producers in the Florida Federal Order in February were 35 million pounds, down 8 million pounds from the previous month. In February, the handlers used 28 million pounds in fluid milk, 1 million pounds in Class II production, and the remainder in cheese production. The Class I price was set at \$22.20/cwt., Class II price at \$15.90/cwt. and Class III price at \$12.50/cwt.

7. In the example above, the Class I utilization in the Florida Federal Order was.
- a. **80%**
 - b. 48%
 - c. 20%
 - d. 8%

Answer is A

8. In the example above, the Class III utilization in the Florida Order was.
- a. **17%**
 - b. 23%
 - c. 20%
 - d. 3%

Answer is A

The Levine Dairy has received an order for Half and Half that contains 10.5% milkfat. You are the production manager for Levine Dairy and have on hand 4,000 gallons of 30% cream

and an unlimited supply of skim milk containing 0.5% milkfat. A gallon of Half and Half weighs 8.5 pounds and a gallon of 30% cream weighs 8.3 pounds.

9. How many pounds of skim milk with 0.5% milkfat will be required to standardize the 30% cream to make Half and Half containing 10.5% milkfat?
- a. 97,644
 - b. 33,200
 - c. **64,740**
 - d. 46,243

Answer is C

10. How many pounds of Half and Half will it make?

- a. 33,200
- b. 64,447
- c. 46,243
- d. **97,940**

Answer is D

11. If a pint of Half and Half weighs 1.075 pounds, how many half pints will be produced?

- a. **182,213**
- b. 91,107
- c. 64,447
- d. 11,488

Answer is A

12. Levine Dairy pays \$80.00 per cwt. for 30% cream and \$15.00 per cwt. for skim. What was the cost of the 0.5% skim milk Levine purchased?

- a. \$36,227
- b. **\$9,711**
- c. \$6,229
- d. \$26,560

Answer is B

13. What did each half pint cost Levine Dairy to produce, not counting manufacturing costs?

- a. \$1.20
- b. **20 cents**
- c. 40 cents
- d. \$0.37

Answer is B

14. Calculate the number of calories in a 4 fl. ounce serving of ice cream. The ice cream mix weighed 32 grams per fluid ounce before freezing, and the frozen ice cream contained 100% overrun. (It is therefore 50% air) Analysis showed the following – Fat = 10%, Protein = 3%, Carbohydrates = 25%
- a. 130.28 calories
 - b. 258.30 calories
 - c. 119.28 calories
 - d. **129.28 calories**

Answer is D

15. If a cow produces 7 gallons of milk per day, how many 8-ounce glasses of milk does she produce in a 7-day week?
- a. 49 glasses
 - b. 392 glasses
 - c. **784 glasses**
 - d. 874 glasses

Answer is C

Milk production is expected to rise at a compound annual growth rate of 1.4 percent per year over the next ten years. Continued domestic and global demand for dairy products incentivizes producers to slowly expand milk cow numbers throughout the upcoming decade. Efficiency gains continue as the milk produced per cow is expected to climb. Milk production is projected to grow throughout the projection period due to upward trending milk prices and slowly rising but relatively low feed prices. Milk cow numbers are expected to reach 9.5 million head by 2031. Milk per cow is expected to grow at a compound annual growth rate of 1.2 percent.

16. The annual milk production for 2021 was 226 billion pounds. Based on the information in the above paragraph, what is the estimated annual milk production for 2031?
- a. **259.7 billion pounds**
 - b. 229.2 billion pounds
 - c. 223.4 billion pounds
 - d. 238.9 billion pounds

Answer is A

17. The estimated number of cows in 2021 was 9.3 million head. Based on the information in the paragraph above, what is the expected average annual growth rate per year for the number of cows?
- a. 1.2 percent per year
 - b. 2.2 percent per year
 - c. **0.21 percent per year**
 - d. 19 percent per year

Answer is C

18. The average milk production per cow in 2021 was 23,777 pounds. Based on the information from the paragraph above, what is the expected annual milk per cow in 2031?
- a. 28,530 pounds of milk per cow
 - b. **26,789 pounds of milk per cow**
 - c. 23,301 pounds of milk per cow
 - d. 27,778 pounds of milk per cow

Answer is B

Population growth is among the major factors driving increasing global trade in agricultural commodities and products. The world's population was 7.5 billion in 2019. A projected annual growth rate of 0.9 percent means that roughly 703 million people will be added to the world's population over the next decade.

Population growth is fastest in Sub-Saharan Africa, with a projected annual growth rate of 2.4 percent. North Africa is expected to grow at 1.5 percent annually. Africa is expected to add 307 million people to the world's population by 2029.

The third-fastest growing region is the Middle East, at 1.3 percent per year.

Ukraine, Japan, Russia, and Cuba all have projected negative annual population growth rates at -0.5, -0.4, -0.2, and -0.2 percent, respectively.

Meanwhile, the former Soviet Union and Europe are expected to grow at 0.6 percent and 0.1 percent annually, respectively.

The populations of the largest countries—China and India—will grow at 0.1 percent and 1.0 percent, respectively. Population growth has a larger impact on India, which adds 149.1 million people from 2019 to 2029, while China adds 14.3 million people.

The projected five largest countries in 2029 are India (1,460 million), China (1,400 million), the United States (355 million), Indonesia (285 million), and Nigeria (274 million). Together, these five countries will account for about 46.0 percent of the world's population (8.3 billion) by 2029.

19. The increase in population in Africa will be what percentage of the 2029 world population?
- 1.5%
 - 2.4%
 - 3.7%**
 - 4.6%

Answer is C

20. What percentage of the world's population is the United States estimated to represent by 2029?
- 4.3%**
 - 3.3%
 - 16.8%
 - 0.9%

Answer is A

2021

Milk Quality and Products

Select the one best answer for each question

Please DO NOT write on exam

PROBLEM SOLVING

Landry's Jersey herd produced a total of 450,000 pounds of milk in January of which 17,775 pounds were butterfat and 16,875 pounds were protein. The cooperative that Landry is a member of paid \$11.00 cwt and plus a \$.10 BF bonus per point over 3.5% and a \$.06 protein bonus per point over 3.2%.

1. LANDRY'S AVERAGE HERD BUTTERFAT PERCENT WAS?

- A. **3.95%**
- B. 3.60%
- C. 3.75%
- D. 3.57%

Answer is A

2. LANDRY'S AVERAGE HERD PROTEIN PERCENT WAS?

- A. 3.95%
- B. 3.60%
- C. **3.75%**
- D. 3.40%

Answer is C

3. LANDRY'S JANUARY MILK CHECK INCLUDING BONUSES WAS?

- A. \$49,500
- B. **\$53,010**
- C. \$51,525
- D. \$50,985

Answer is B

The total receipts of milk from all producers in the Central Federal Order in February were 25 million pounds which was down 8 million pounds from last month. In February, the handlers used 12 million pounds in fluid milk, 6 million pounds

in Class II production, and the remainder in cheese production. The Class I price was set at \$14.20/cwt., Class II price at \$11.90/cwt. and Class III price at \$10.50/cwt.

4. IN THE EXAMPLE ABOVE, THE CLASS I UTILIZATION IN THE CENTRAL FEDERAL ORDER WAS?

- A. 40%
- B. 48%**
- C. 24%
- D. 52%

Answer is B

5. IN THE EXAMPLE ABOVE, THE CLASS III UTILIZATION IN THE CENTRAL FEDERAL ORDER WAS?

- A. 7%
- B. 24%
- C. 28%**
- D. 48%

Answer is C

The Smith Dairy has received an order for Half and Half that contains 10.5% milkfat. You are the production manager for Smith Dairy and have on hand 3,000 gallons of 30% cream and an unlimited supply of skim milk containing 0% milkfat. A gallon of Half and Half weighs 8.5 pounds and a gallon of 30% cream weighs 8.3 pounds.

6. HOW MANY POUNDS OF SKIM WILL BE REQUIRED TO STANDARDIZE THE 30% CREAM TO MAKE HALF AND HALF?

- A. 8,571
- B. 25,800
- C. 73,714
- D. 46,243**

Answer is D

7. HOW MANY POUNDS OF HALF AND HALF WILL IT MAKE?

- A. 71,143**
- B. 25,800
- C. 47,914
- D. 8,571

Answer is A

8. IF A PINT OF HALF AND HALF WEIGHS 1.075 POUNDS, HOW MANY PINTS WILL BE PRODUCED?

- A. 34,284
- B. 43,017
- C. 66,180**
- D. 44,571

Answer is C

9. SMITH DAIRY PAYS \$75.00 CWT. FOR 30% CREAM AND \$13.00 CWT FOR SKIM. WHAT IS WAS THE COST OF THE 30% CREAM SMITH PURCHASED?

- A. \$35,935
- B. \$2,580
- C. \$6,229
- D. \$18,675**

Answer is D

10. WHAT DID EACH PINT COST SMITH DAIRY TO PRODUCE NOT COUNTING MANUFACTURING COST?

- A. \$1.37
- B. 37.3 cents**
- C. 73.4 cents
- D. \$1.01

Answer is B

Top 10 Dairy States in 2020

	Total Milk Production		Total Cows		Production Per Cow	
No. 1	California	41.2 billion lbs.	California	1,720,000	Michigan	27,170 lbs.
No. 2	Wisconsin	30.7 billion lbs.	Wisconsin	1,260,000	Colorado	26,142 lbs.
No. 3	Idaho	16.2 billion lbs.	Idaho	646,000	Idaho	25,180 lbs.
No. 4	New York	15.3 billion lbs.	New York	626,000	Wyoming	25,173 lbs.
No. 5	Texas	14.8 billion lbs.	Texas	613,000	Texas	24,926 lbs.
No. 6	Michigan	11.7 billion lbs.	Pennsylvania	478,000	New Mexico	24,755 lbs.
No. 7	Pennsylvania	10.2 billion lbs.	Minnesota	455,000	Nebraska	24,746 lbs.
No. 8	Minnesota	10.1 billion lbs.	Michigan	439,000	Nevada	24,677 lbs.
No. 9	New Mexico	8.1 billion lbs.	New Mexico	337,000	Iowa	24,651 lbs.
No. 10	Washington	6.8 billion lbs.	Washington	279,000	Arizona	24,568 lbs.

11. TOTAL U.S. MILK PRODUCTION IN 2020 WAS 223 BILLION POUNDS, A ONE YEAR GAIN OF 2.2% FROM 2019. IN THE TABLE ABOVE ARE THE TOP TEN STATES FOR MILK PRODUCTION IN 2020. WHAT PERCENT OF THE TOTAL U.S. MILK PRODUCTION DO THESE TEN STATES REPRESENT?

- A. 38%
- B. 66%
- C. 74%**
- D. 88%

Answer is C

12. THE NUMBER OF MILK COWS IN THE U.S. IN 2020 WAS 9.39 MILLION, UP 0.5% FROM 2019. BASED ON THE TABLE ABOVE, THE TOP FIVE STATES REPRESENT ____ OF THE TOTAL NUMBER OF COWS.

- A. 40%
- B. 52%**
- C. 73%
- D. 83%

Answer is B

13. THE AVERAGE MILK PRODUCTION PER COW IN THE U.S. IN 2020 WAS 23,777 POUNDS, IT WAS A TOTAL THAT ONLY 13 STATES WERE ABLE TO ATTAIN. THE MEAN OF STATE PRODUCTION PER COW AVERAGES IN 2020 FOR THE TOP TEN STATES WAS _____ POUNDS MORE THAN THE NATIONAL AVERAGE PRODUCTION PER COW.

- A. 1,421
- B. 1,233
- C. 951
- D. 67

Answer is A

How Dairy Industry Changed From 1992 to 2020						
Region	1992			2020		
	Herds	Cows (1,000s)	Cows/ herd	Herds	Cows (1,000s)	Cows/ herd
Midwest	80,135	4,100	51	16,020	3,329	208
Northeast	29,758	1,824	61	10,635	1,348	127
Southeast	12,057	1,253	104	2,220	1,067	481
West	9,559	2,515	263	2,782	3,644	1310
U.S.	131,509	9,692	74	31,657	9,388	297

14. THE TABLE ABOVE SHOWS HOW THE DAIRY INDUSTRY CHANGED FROM 1992 TO 2020. WHICH REGION HAD THE LARGEST PERCENTAGE DECREASE IN NUMBER OF COWS FROM 1992 TO 2020?

- A. Midwest
- B. Northeast**
- C. Southeast
- D. West

Answer is B

15. THE TABLE ABOVE SHOWS HOW THE DAIRY INDUSTRY CHANGED FROM 1992 TO 2020. WHAT WAS THE PERCENTAGE INCREASE IN NUMBER OF COWS PER HERD FOR THE U.S.?

- A. 72%
- B. 266%
- C. 301%**
- D. 84%

Answer is C

16. WHICH REGION HAD A DECREASE IN THE NUMBER OF HERDS BUT HAD AN INCREASE IN THE NUMBER OF COWS FROM 1992 TO 2020?

- A. Midwest
- B. Northeast
- C. Southeast
- D. West**

Answer is D

Mr. Monk hauls milk and picks up milk from four producers with a tanker and delivers it to Pinkerton Dairy.

Producer "1"	16,500 lbs. of 3.4% milkfat milk
Producer "2"	30,000 lbs. of 3.38% milkfat milk
Producer "3"	21,000 lbs. of 3.5% milkfat milk
Producer "4"	12,500 lbs. of 3.6% milkfat milk

17. THE AVERAGE MILKFAT TEST OF THE TANKER OF MILK IS?

- A. 3.40%
- B. 3.45%**
- C. 3.58%
- D. 3.55%

Answer is B

18. IF MILKFAT BONUS IS \$.12 FOR EVERY POINT OVER 3.2% WHAT WAS THE BONUS FOR THE TANKER TRUCK?

- A. \$00.00
- B. \$220.00
- C. \$240.00**
- D. \$250.00

Answer is C

19. WHICH PRODUCER RECEIVED THE LARGEST MILKFAT BONUS CHECK?

- A. Producer"1"
- B. Producer"2"
- C. Producer"3"**
- D. Producer"4"

Answer is C

20. A COMMERCIAL BLEACH PRODUCT CONTAINS 5.5% SODIUM HYPOCHLORITE AND IS ROUTINELY USED TO MAKE SANITIZING SOLUTIONS IN DAIRY PLANTS. HOW MUCH OF THIS PRODUCT SHOULD BE ADDED TO 250 GALLONS OF WATER TO MAKE A 200 PPM SANITIZING SOLUTIONS?

- A. 2.25. gallons
- B. 0.91 gallons**
- C. 5.22 gallons
- D. 25 gallons

Answer is B

2019

MILK QUALITY AND PRODUCTS

Select the one best answer for each question

PROBLEM SOLVING

Assume a dairy producer marketed the following milk for the month of March.

This is a 300-milking cow herd:

500,000 pounds of milk marketed

3.80% Butterfat test

3.10% Protein test

5.75% Other Solids test

Producer Price Differential (PPD)

300,000 Somatic Cell Count

Prices:

\$2.5461 / lb

\$1.6303 / lb

\$0.2200 / lb

\$0.72 / cwt

\$0.00077 / 100,000 cells / cwt

<u>Component</u>	<u>Average Tests</u>	<u>Hundred Weights</u>	<u>Pounds Marketed</u>	<u>Component Prices</u>	<u>Total Value</u>
Butterfat	3.80 x	5,000 =	19,000 x	\$2.5461 =	\$48,375.90
Protein	3.10 x	5,000 =	15,500 x	\$1.6303 =	\$25,269.65
Other Solids	5.75 x	5,000 =	28,750 x	\$0.2200 =	\$6,325.00
PPD		5,000		x \$0.72 =	\$3,600.00
Somatic Cell Count	300,000				
(Calculate Adjuster)					
(350-300=50)	50 x \$0.00077	=	\$0.04 x	5,000 =	<u>\$200.00</u>
Value Of Milk Marketed:					\$83,770.55
Effective Price Per Hundredweight:					\$16.75

- Based on the description of the farm operation list above what is the average production per cow for a year?
 - 1,525 gallons
 - 2,326 gallons**
 - 5,080 gallons
 - 8,015 gallons

Answer is B

2. Using the example above what would be the value of the producer's protein if the average butterfat test was 3.70% and average protein test was 3.20?
- A. \$26,084.80**
 - B. \$30,160.55
 - C. \$36,083.80
 - D. \$47,102.85

Answer is A

3. Using the example above what would be the Effective Price Per Hundredweight if the producer's somatic cell count is 400,000 and the protein test is 3.30?
- A. \$16.26
 - B. \$16.67
 - C. \$17.00**
 - D. \$17.18

Answer is C

4. Using the example on page 1 what would be the value of the milk marketed if the producer marketed 1,100,000 pounds of milk?
- A. \$83,770.55
 - B. \$167,541.11
 - C. \$179,975.21
 - D. \$184,295.21**

Answer is D

5. Using the example above what would be the Effective Price Per Hundredweight if the producer marketed 1,100,000 pounds of milk and all other data remained the same as in the example above?
- A. \$16.26
 - B. \$16.75**
 - C. \$17.00
 - D. \$17.75

Answer is B

6. Using the example above what would be the Effective Price Per Hundredweight if the PPD was -0.07 instead of 0.72 and all other data remained the same as in the example above?
- A. \$17.76
 - B. \$16.75

C. \$15.96

D. \$14.75

Answer is C

7. Calculate the price of Class III milk (used for making cheese). The Class III price is defined as 0.965 times the Class III skim milk price plus 3.5 times the butterfat price. The Class III skim milk price is \$6.35, and the butterfat price is \$2.5461.

A. \$15.04

B. \$15.75

C. \$16.75

D. \$22.62

Answer is A

8. Calculate the value of skim in Class III (Class III Skim Milk Price) if the protein price is \$1.6303 and the other solids price is \$0.25.

Formula:

(protein price per pound x 3.1) + (other solids price per pound x 5.9) = value of Class III skim milk price per hundredweight

(_____ x _____) + (_____ x _____) = _____ /cwt

A. \$2.55

B. \$6.35

C. \$6.53

D. \$7.22

Answer is C

9. Calculate the value of butterfat when the price for butter is \$2.29/lb. the make allowance is \$0.17/lb. and the yield factor is 1.21.

Formula:

(price of butter – make allowance) x yield factor = value/lb. of butterfat (_____ - _____) x _____ = _____ /lb. butterfat

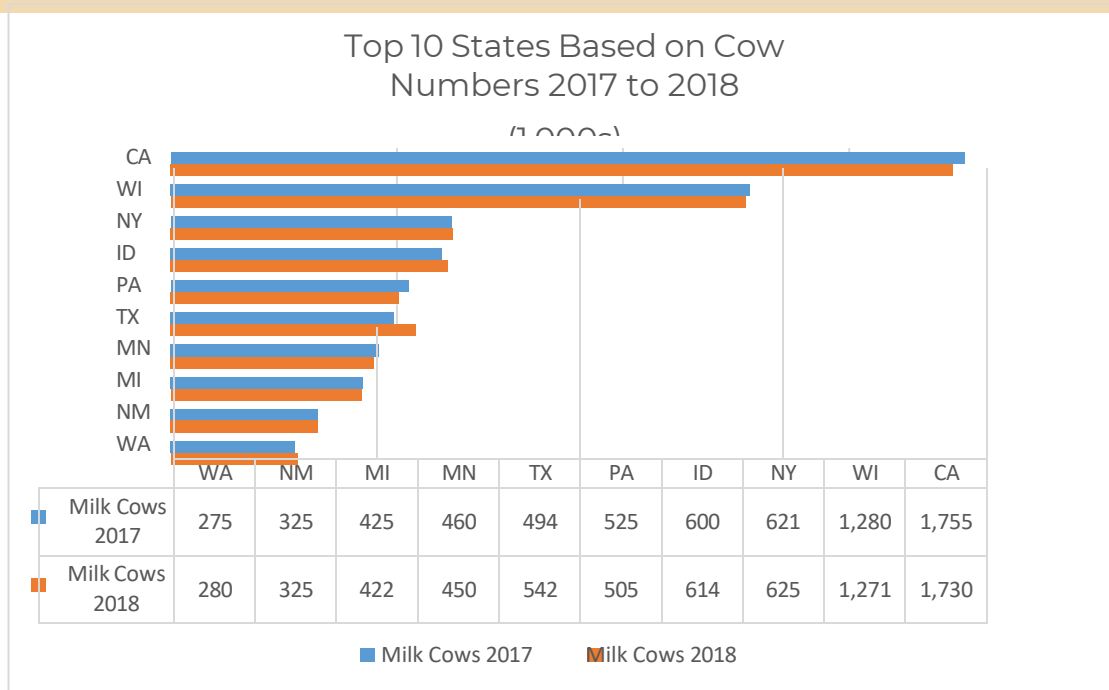
A. \$2.5652

B. \$2.5461

C. \$2.4600

D. \$2.4200

Answer is A



10. Based on the chart above which of the top 10 states had the smallest decrease in cow numbers?
- California (CA)
 - Michigan (MI)**
 - New Mexico (NM)
 - Texas (TX)

Answer is B

11. Based on the chart above which of the top 10 states had the largest increase in cow numbers?
- California (CA)
 - Michigan (MI)
 - Texas (TX)**
 - Idaho (ID)

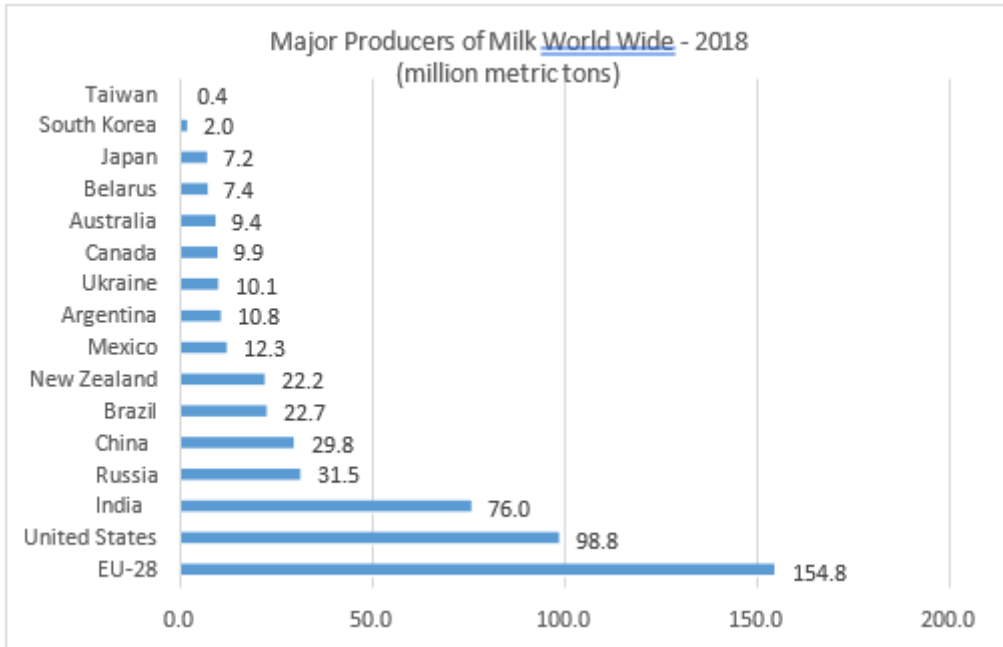
Answer is C

12. Based on the chart above the total number of cows__in the top 10 states from 2017 to

2018.

- A. increased by 0.06%
- B. decreased by 0.06%
- C. increased by 6%
- D. increased by 10%

Answer is A



13. The above statistics show the major milk producing countries worldwide in 2018. EU-28 produced the largest amount of milk at 154.8 million metric tons. This is more than _____ times the milk produced by China, Brazil and New Zealand combined.

- A. two
- B. three
- C. four
- D. five

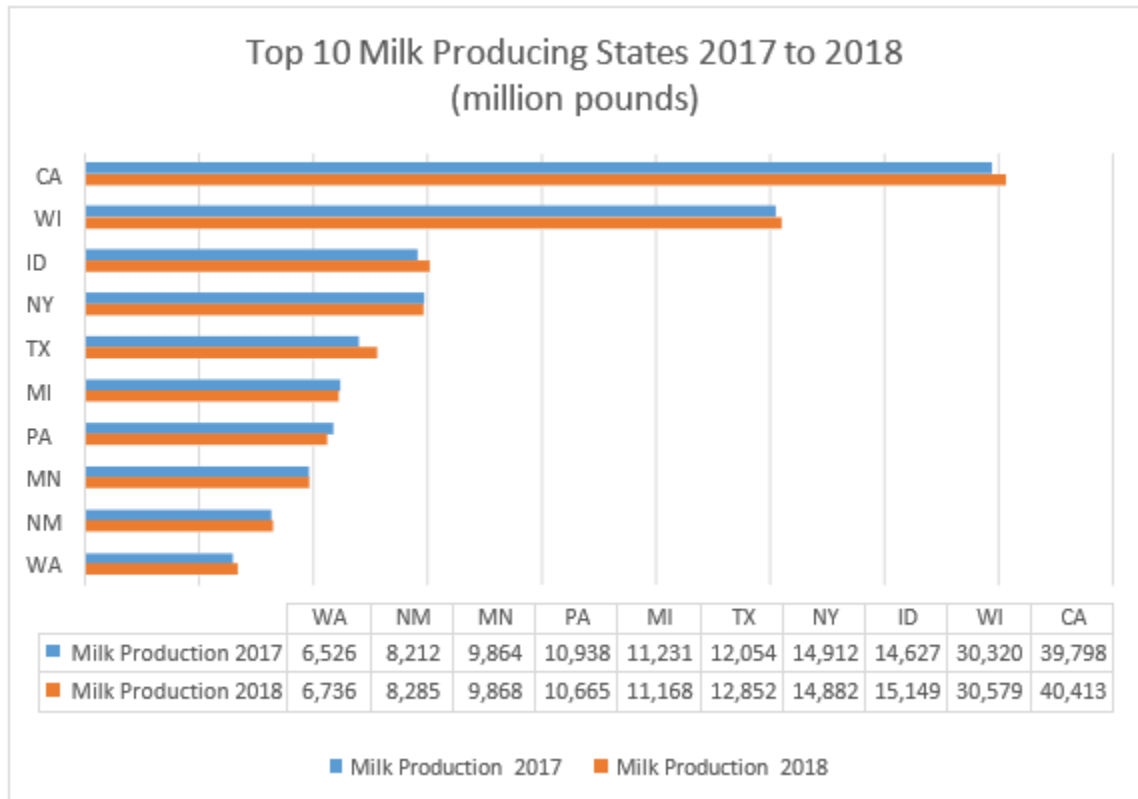
Answer is A

14. Based on the worldwide statistics in chart above the United States produced

approximately
_____of the world's milk.

- A. 1 percent
- B. 10 percent
- C. 15 percent
- D. **20 percent**

Answer is D



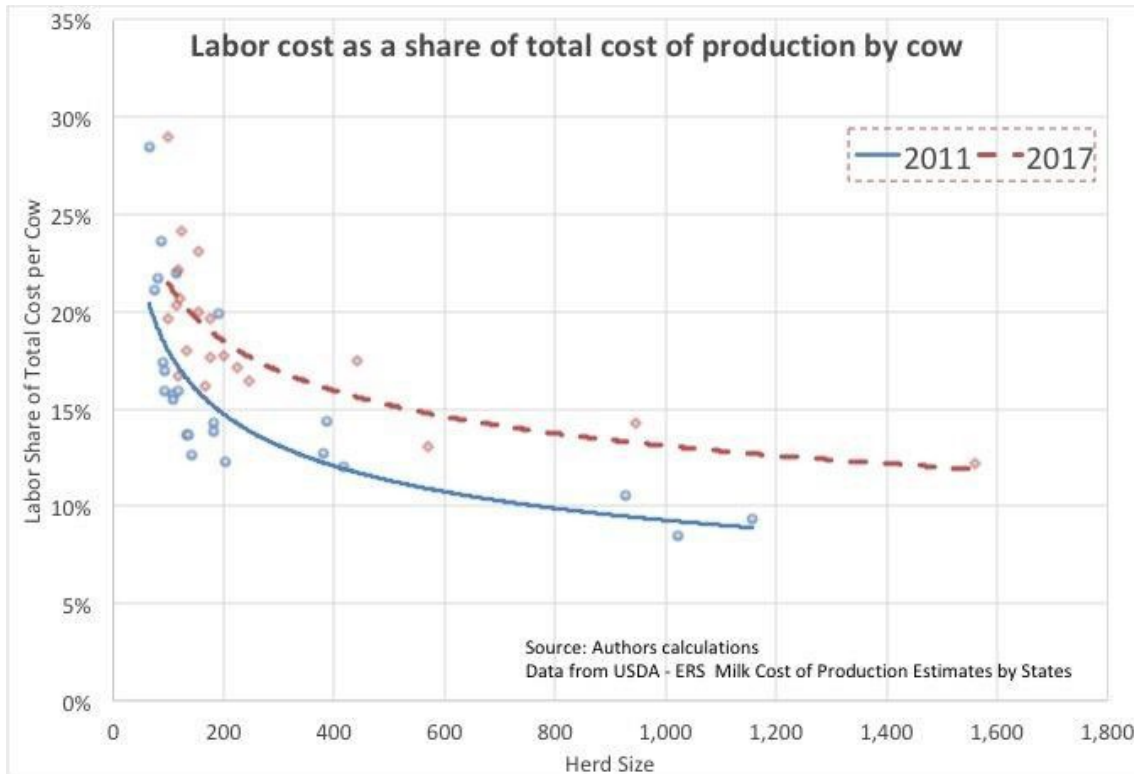
15. In the table above are the top ten states for milk production in 2018. Which state had the largest percentage production increase from 2017 to 2018?
- A. Idaho (ID)
 - B. California (CA)
 - C. Washington (WA)
 - D. **Texas (TX)**

Answer is D

16. Total U.S. milk production in 2018 was a record 217 billion pounds. In the table above are the top ten states for milk production in 2018. What percentage of the total 2018 U.S. milk production do the top five states represent?

- A. 52 percent**
- B. 48 percent
- C. 35 percent
- D. 19 percent

Answer is A



17. The figure above compares 2011 to 2017 labor expenses. It illustrates that labor expenses per cow, when including the value of the operator's labor, is much ___ for smaller herds than for larger ones.
- A. smaller
 - B. lower
 - C. about the same
 - D. higher**

Answer is D

18. USDA economists in their publication *USDA Agricultural Projections to 2028*, predict that the overall milk supply could grow by 14.9 percent from 2018 to 2028, slightly outpacing productivity based on some additional growth in cow numbers. In 2018, the collective U.S. dairy industry produced 217 billion pounds of milk. Based on the USDA economists' predictions, the pounds of milk produced in 2028 would be approximately _____ billion pounds.
- A. 300
 - B. 275
 - C. 250**
 - D. 220

Answer is C

19. USDA economists in their publication *USDA Agricultural Projections to 2028*, predict dairy cows could produce an additional 3,381 pounds of milk per year to reach a rolling herd average of 26,530 pounds of milk when looking at the nation as a whole. If realized, that would be a _____ percent gain in productivity per cow from 2018 to 2028. Presently, the average U.S. dairy cow produces 23,149 pounds of milk.
- A. 14.6**
 - B. 12.7
 - C. 9.3
 - D. 5.2

Answer is A

20. If a cow produces 7 gallons of milk per day how many 8-ounce glasses of milk does she produce in a 7-day week?
- A. 49 glasses
 - B. 392 glasses
 - C. 784 glasses**
 - D. 874 glasses

Answer is C

MILK QUALITY AND PRODUCTS CAREER DEVELOPMENT EVENT

PROBLEM SOLVING

2018

ASSUME A DAIRY PRODUCER MARKETED THE FOLLOWING MILK FOR THE MONTH OF MARCH.

This is a 1,000 milking cow herd:

2,000,000 pounds of milk marketed per month **Prices:**

3.55% Butterfat \$ 2.4273 / lb.

3.10% Protein \$ 1.8066 / lb.

5.74% Other Solids \$ 0.0556 / lb.

Producer Price Differential (PPD) \$ 0.30 / cwt

200,000 Somatic Cell Count \$0.00078 / 100,000 cells / cwt

<u>Component</u>	<u>Average Tests</u>		<u>Hundred Weights</u>	=	<u>Component Pounds Marketed</u>	x	<u>Component Prices</u>	=	<u>Total Value</u>
Butterfat	3.55	x	20,000	=	71,000	x	\$2.4273	=	\$ 172,338.30
Protein	3.10	x	20,000	=	62,000	x	\$1.8066	=	\$ 112,009.20
Other Solids	5.74	x	20,000	=	114,800	x	\$0.0556	=	\$ 6,382.88
PPD			20,000			x	\$0.30	=	\$ 6,000.00
Somatic Cell Count	200,000								
(Calculate Adjuster)									
(350-200=150)	150	x	\$0.00078	=	\$0.12	x	20,000	=	<u>\$ 2,400.00</u>
Value Of Milk Marketed:									\$299,130.38

EFFECTIVE PRICE PER HUNDREDWEIGHT:

\$14.96

1.

Based on the description of the farm operation list above what is the average production per cow for a year?

- A. 2,000 pounds
- B. 22,000 pounds
- C. **24,000 pounds**
- D. 32,000 pounds

Answer is C

2. Using the example above what would be the value of the producer's butterfat if the average butterfat test was 3.70%?
- A. \$ 95,000.00
 - B. \$150,974.80
 - C. \$172,338.30
 - D. **\$179,620.20**

Answer is D

3. Using the example on page 1 what would be the value of the milk marketed if the producer marketed 3,000,000 pounds of milk?
- A. \$ 73,391.49
 - B. \$299,130.38
 - C. **\$448,695.57**
 - D. \$733,914.90

Answer is C

4. Using the example on page 1 what would be the value for somatic cell counts if the somatic cell count was 400,000?
- A. **- \$ 800.00**
 - B. - \$1,200.00
 - C. \$ 500.00
 - D. \$1,200.00

Answer is A

5. Using the example on page 1 what would be the increase in value if the PPD was \$0.50.
- A. \$ 580
 - B. \$ 3,000
 - C. **\$ 4,000**
 - D. \$ 10,000

Answer is C

6. Using the example on page 1 what would be the Effective Price Per Hundredweight if the component tests were as follows:

Butterfat	3.85
Protein	3.20
Other Solids	5.78

and the other information remains the same?

- A. \$ 25.82
- B. \$ 25.35
- C. \$ 24.46
- D. **\$ 15.87**

Answer is D

7. Calculate the value of butterfat when the price for butter is \$2.17/lb. the make allowance is \$0.17/lb. and the yield factor is 1.21.

Formula:

(price of butter – make allowance) x yield factor = value/lb. of
butterfat (----) x _____ = _____/lb.
butterfat

- A. \$0.51
- B. \$1.25
- C. \$1.55
- D. **\$2.42**

Answer is D

8. Calculate the value of protein in Class III milk using the weighted cheese price of \$1.55, the make allowance of \$0.20/lb., the yield factor attributable to protein 1.38, the yield factor attributable to fat 1.57, and the ratio of fat to protein 1.14 with a butterfat price of \$2.43.

Formula:

$[(\text{cheese price} - \text{make allowance}) \times \text{protein's yield factor}] +$

$[(\text{cheese price} - \text{make allowance}) \times \text{fat's yield factor} - (\text{butterfat price} \times 0.9)] \times$
fat/protein ratio = value/lb. protein

$[(\text{---} - \text{---}) \times \text{---}] + [(\text{---} - \text{---}) \times \text{---} - (\text{---} \times 0.9)] \times \text{---}] =$
_____/lb. protein

- A. **\$1.79**
- B. \$2.25
- C. \$4.39
- D. \$4.93

Answer is A

9. Calculate the value of 'other solids' using the dry whey price of \$0.25/lb., the make

allowance of \$0.19 and the yield factor of 1.03.

Formula:

(dry whey price – make allowance) x yield factor = value of other solids/lb. (_____ - _____) x _____ = _____/lb other solids

- A. \$0.47
- B. **\$0.06**
- C. \$1.03
- D. \$3.20

Answer is B

10. Calculate the value of skim in Class III (Class III Skim Milk Price) if the protein price is \$1.81 and the other solids price is \$0.59.

Formula:

(protein price per pound x 3.1) + (other solids price per pound x 5.9) = value of Class III skim milk price per hundredweight

(_____ x _____) + (_____ x _____) = _____/cwt

- A. \$ 8.83
- B. **\$ 9.09**
- C. \$18.83
- D. \$19.32

Answer is B

11. Calculate the price Class III milk (used for making cheese). The Class III price is defined as 0.965 times the Class III skim milk price plus 3.5 times the butterfat price. The Class III skim milk price is \$18.00, and the butterfat price is \$1.50.

- A. \$ 1.70
- B. \$12.46
- C. \$14.23
- D. **\$22.62**

Answer is D

Total Milk Production (millions of pounds)											
West			Midwest			Northeast			Southeast		
	2012	2017		2012	2017		2012	2017		2012	2017
Alaska	5.7	2.9	Illinois	1,915	1,929	Connecticut	358	420	Alabama	132	89
Arizona	4,508	5,010	Indiana	3,746	4,264	Delaware	93.7	93	Arkansas	133	79
California	41,801	39,798	Iowa	4,512	5,172	Maine	613	630	Florida	2,340	2,496
Colorado	3,213	4,189	Michigan	8,991	11,231	Maryland	979	953	Georgia	1,530	1,840
Hawaii	28.4	38.9	Minnesota	9,073	9,864	Massachusetts	219	211	Kentucky	1,120	1,041
Idaho	13,558	14,627	Missouri	1,406	1,240	New Hampshire	275	273	Louisiana	222	160
Kansas	2,732	3,496	Ohio	5,355	5,591	New Jersey	130	119	Mississippi	199	137
Montana	299	288	Wisconsin	27,224	30,320	New York	13,190	14,912	North Carolina	940	952
Nebraska	1,186	1,444				Pennsylvania	10,478	10,938	South Carolina	276	247
Nevada	666	709				Rhode Island	18.3	13	Tennessee	805	693
New Mexico	8,149	8,212				Vermont	2,569	2,728	Virginia	1,727	1,736
North Dakota	347	345				West Virginia	158	127			
Oklahoma	849	728									
Oregon	2,513	2,529									
South Dakota	1,968	2,618									
Texas	9,596	12,054									
Utah	2,033	2,215									
Washington	6,234	6,526									
Wyoming	123.9	138.2									
Total	99,810	104,968		62,222	69,611		29,081	31,417		9,424	9,470

12. Based on the table above, which state had the largest percentage increase in milk production from 2012 to 2017?

- A. South Dakota
- B. Alaska
- C. **Hawaii**
- D. Wisconsin

Answer is C

13. In 2017, the West region produced the most milk in the United States. What percent of the total U.S. milk production was the West Region for 2017?
- A. 15%
 - B. 31%
 - C. **49%**
 - D. 58%

Answer is C

14. What was the percent increase in total production for the Southeast Region from 2012 to 2017?
- A. **0.5%**
 - B. 5%
 - C. 18%
 - D. 30%

Answer is A

15. If South Dakota's milk production continues to increase at the same rate it did from 2012 to 2017, what would the expected milk production be for 2018?
- A. **2,791 million**
 - B. 6,653 million
 - C. 6,970 million
 - D. 7,048 million

Answer is A



Top 10 Dairy States in 2017

	Total Milk Production		Total Cows		Production Per Cow	
No. 1	California	39.80 billion lbs.	California	1,749,000	Michigan	26,302 lbs.
No. 2	Wisconsin	30.32 billion lbs.	Wisconsin	1,278,000	Colorado	26,181 lbs.
No. 3	New York	14.91 billion lbs.	New York	623,000	New Mexico	24,960 lbs.
No. 4	Idaho	14.63 billion lbs.	Idaho	600,000	Arizona	24,680 lbs.
No. 5	Texas	12.05 billion lbs.	Pennsylvania	525,000	Idaho	24,378 lbs.
No. 6	Michigan	11.23 billion lbs.	Texas	511,000	Nebraska	24,067 lbs.
No. 7	Pennsylvania	10.94 billion lbs.	Minnesota	458,000	New York	23,936 lbs.
No. 8	Minnesota	9.86 billion lbs.	Michigan	427,000	Washington	23,818 lbs.
No. 9	New Mexico	8.21 billion lbs.	New Mexico	329,000	Wisconsin	23,725 lbs.
No. 10	Washington	6.53 billion lbs.	Washington	274,000	Iowa	22,725 lbs.

16. Total U.S. milk production in 2017 was a record 215.5 billion pounds, an increase of 3.06 billion pounds. In the table above are the top ten states for milk production in 2017. What percent of the total U.S. milk production do these ten states represent?
- A. 68%
 - B. **74%**
 - C. 82%
 - D. 88%

Answer is B

17. The number of milk cows in the U.S. in 2017 was 9.39 million, a gain of only 67,000 head. Based on the table above, the top five states represent ___percent of the total number of cows.
- A. **51%**
 - B. 67%
 - C. 72%
 - D. 81%

Answer is A

18. Average production per cow in the U.S. in 2017 was a record 22,941 pounds, a gain of 163 pounds. The average of annual state

production per cow in 2017 for the top ten States was _____pounds more than the national average production per cow.

- A. 1,104
- B. **1,536**
- C. 1,654
- D. 2,329

Answer is B

How Dairy Industry Changed From 1992 to 2017				
Region	1992		2017	
	Herds	Cows (1,000s)	Herds	Cows (1,000s)
Midwest	80,135	4,100	21,120	3,354
Northeast	29,758	1,824	13,060	1,419
Southeast	12,057	1,253	2,410	523
West	9,559	2,515	3,629	4,098
U.S.	131,509	9,692	40,219	9,394

19. The table above shows how the dairy industry changed from 1992 to 2017. Which region had the largest percent decrease in number of cows from 1992 to 2017?
- A. Midwest
 - B. Northeast
 - C. **Southeast**
 - D. West

Answer is C

20. In 2016, there were 41,819 herds. What is the percent decrease in number of herds from 2016 to 2017?
- A. **3.8**
 - B. 10.2
 - C. 15.0
 - D. 38.3

Answer is A

Milk Quality and Products Career Development Event Problem Solving 2017

A Look at How You Calculate A Pay Price

Assume a dairy producer marketed the following milk for the month of March.

This is a 300milking cow herd:

500,000 pounds of milk marketed

Prices:

3.80% Butterfat test	\$2.4176 / lb
3.10% Protein test	\$1.8198 / lb
5.75% Other Solids test	\$0.3345 / lb
Producer Price Differential (PPD)	\$0.43 / cwt
360,000 Somatic Cell Count cwt	\$0.00078 / 100,000 cells / cwt

<u>Component</u>	<u>Average Tests</u>	<u>Hundred Weights</u>	<u>Pounds Marketed</u>	<u>Component Prices</u>	<u>Total Value</u>
Butterfat	3.80 x	5,000 =	19,000 x	\$2.4176 =	\$45,934.40
Protein	3.10 x	5,000 =	15,500 x	\$1.8198 =	\$28,206.90
Other Solids	5.75 x	5,000 =	28,750 x	\$0.3345 =	\$9,616.88
PPD		5,000		x \$0.43 =	\$2,150.00
Somatic Cell Count (Calculate Adjuster)	300,000				
(350-360= -10)	-10 x	\$0.00078 =	(\$0.01) x	5,000 =	<u>(\$50.00)</u>

Milk Marketed:

Value Of
\$85,858.18

Effective Price Per Hundredweight:

\$17.17

- Based on the description of the farm operation listed above what is the average production per cow for a year?
 - 15,000 pounds
 - 20,000 pounds**
 - 25,000 pounds

D. 28,000 pounds

Answer is B

2. Using the example above what would be the value of the producer's butterfat if the average butterfat test was 3.90%?

- A. \$ 16,602
- B. \$ 45,934
- C. **\$ 47,143**
- D. \$ 82,500

Answer is C

3. Using the example on page 1 what would be the value of the milk marketed if the producer marketed 1,500,000 pounds of milk?

- A. \$ 247,617
- B. **\$ 257,547**
- C. \$ 545,391
- D. \$ 550,191

Answer is B

4. Using the example on page 1 what would be the value for somatic cell counts if the somatic cell count was 450,000?

- A. \$ 100.00
- B. \$ 200.00
- C. \$ -200.00
- D. **\$ -400.00**

Answer is D

5. Using the example page 1 what would be the increase in value if the PPD was 0.50.

- A. \$ 2,500
- B. \$ 2,350
- C. \$ 880
- D. **\$ 350**

Answer is D

6. Using the example on page 1 what would be the Effective Price Per

Hundredweight if the component tests were as follows:

Butterfat	3.85
Protein	3.20
Other Solids	5.78

and the other information remains the same?

- A. **\$ 17.48**
- B. \$ 18.42
- C. \$ 19.92
- D. \$ 20.13

Answer is A

7. Calculate the value of butterfat when the price for butter is \$2.10/lb, the make allowance is \$0.17/lb and the yield factor is 1.21.

Formula:

(price of butter – make allowance)/yield factor =
value/lb of butterfat (_____) x _____ =
-----/lb. butterfat

- A. \$ 12.38
- B. \$ 11.30
- C. \$ 1.72
- D. **\$ 2.34**

Answer is D

8. Calculate the value of protein in Class III milk using the weighted cheese price of \$1.55, the make allowance of \$0.20/lb., the yield factor attributable to protein 1.38, the yield factor attributable to fat 1.57, and the ratio of fat to protein 1.14 with a butterfat price of \$1.80.

Formula:

[((cheese price – make allowance) x protein's yield factor)] +
[(((cheese price – make allowance) x fat's yield factor) – butterfat
price) x fat/protein ratio] = value/lb. protein
[(_____ - _____) x _____] + [{ ((_____ - _____) x _____) - _____ } x _____] =
_____/lb protein

- A. \$ 3.14
- B. \$ 2.34
- C. **\$ 2.23**
- D. \$ 4.39

Answer is C

9. Calculate the value of 'other solids' using the dry whey price of \$0.52/lb., the make allowance of \$0.19 and the yield factor of 1.03.

Formula:

(dry whey price – make allowance) x yield factor = value of other solids/lb (_ - _____) x _____ = _/lb other solids

- A. **\$ 0.34**
- B. \$ 0.47
- C. \$ 1.03
- D/ \$ 3.20

Answer is A

10. Calculate the value of skim in Class III (Class III Skim Milk Price) if the protein price is \$1.80 and the other solids price is \$0.30.

Formula:

(protein price per pound x 3.1) + (other solids price per pound x 5.9) = value of Class

III skim milk price per hundredweight

(_____ x _____) + (_____ x _____) = _____/cwt

- A. \$ 6.75
- B. \$ 7.35**
- C, \$ 9.52
- D. \$ 11.17

Answer is B

11. Calculate the price Class III milk (used for making cheese). The Class III price is defined as 0.965 times the Class III skim milk price plus 3.5 times the butterfat price. The Class III skim milk price is \$7.60, and the butterfat price is \$2.40.

- A. \$ 1.70

- B. \$ 12.46
- C. **\$ 15.73**
- D. \$ 17.37

Answer is C

Mailbox Prices by Year		
Year	All-market Mailbox Price	Difference From Previous Year
2016	\$15.95	(\$1.07)
2015	\$17.02	(\$7.02)
2014	\$24.04	\$3.98
2013	\$20.06	\$1.50
2012	\$18.56	(\$1.64)
2011	\$20.20	\$3.91
2010	\$16.29	\$3.47
2009	\$12.82	(\$5.58)
2008	\$18.40	(\$0.76)
2007	\$19.16	\$6.32
2006	\$12.84	(\$2.14)
2005	\$14.98	(\$0.92)
2004	\$15.90	\$3.62
2003	\$12.28	\$0.37
2002	\$11.91	(\$2.86)

12. The mailbox price comparison table above shows that producers milk checks set a new high in 2014. This new record was more than the previous high.

- A. \$ 6.32
- B. \$ 3.98
- C. **\$ 3.84**
- D. \$ 1.04

Answer is C

13. The largest yearly decrease from one year to the next was from _____.

- A. **2014 to 2015**
- B. 2013 to 2014
- C. 2006 to 2007
- D. 2002 to 2003

Answer is A

Total Milk Production (millions of pounds)											
West			Midwest			Northeast			Southeast		
	2011	2016		2011	2016		2011	2016		2011	2016
Alaska	6.9	3.5	Illinois	1,897	1,903	Connecticut	361	408	Alabama	145	92
Arizona	4,412	4,788	Indiana	3,553	4,151	Delaware	91.5	95.5	Arkansas	142	79
California	41,462	40,469	Iowa	4,347	5,034	Maine	598	630	Florida	2,269	2,503
Colorado	2,999	3,923	Michigan	8,478	10,876	Maryland	970	956	Georgia	1,450	1,830
Hawaii	27.4	34.9	Minnesota	8,890	9,666	Massachusetts	220	215	Kentucky	1,090	1,048
Idaho	13,256	14,665	Missouri	1,388	1,373	New Hampshire	286	284	Louisiana	232	169
Kansas	2,585	3,329	Ohio	5,144	5,532	New Jersey	135	122	Mississippi	204	144
Montana	288	295	Wisconsin	26,058	30,123	New York	12,838	14,765	North Carolina	904	965
Nebraska	1,173	1,399				Pennsylvania	10,547	10,820	South Carolina	279	250
Nevada	671	660				Rhode Island	19.7	14.0	Tennessee	810	696
New Mexico	8,177	7,711				Vermont	2,538	2,724	Virginia	1,719	1,723
North Dakota	345	345				West Virginia	156	134			
Oklahoma	923	692									
Oregon	2,479	2,593									
South Dakota	1,873	2,546									
Texas	9,582	10,773									
Utah	1,854	2,095									
Washington	6,169	6,650									
Wyoming	123.1	139.8									
Total	98,405	103,111		59,755	68,658		28,760	31,168		9,244	9,499

14. Based on the table above, which two states had over 40 percent decrease in milk production from 2011 to 2016?

- A. California and Hawaii
- B. **Alaska and Arkansas**
- C. Alabama and Mississippi
- D. Wisconsin and South Dakota

Answer is B

15. In 2016, the West region produced the most milk in the United States. What percentage of the total U.S. milk production was produced by the West Region during 2016?

- A. 15%
- B. 31%
- C. 40%
- D. **49%**

Answer is D

16. What was the percentage increase in total production for the Southeast Region from 2011 to 2016?

- A. **3%**
- B. 5%
- C. 18%
- D. 34%

Answer is A

17. If South Dakota's milk production continues to increase at the same rate it did from 2011 to 2016, what would the expected milk production be for 2021?

- A. 2,836 million
- B. 3,003 million
- C. **3,461 million**
- D. 7,048 million

Answer is C

Top 10 Dairy States in 2016						
	Total Milk Production		Total Cows		Production Per Cow	
No. 1	California	40.5 billion lbs.	California	1,762,000	Colorado	25,980 lbs.
No. 2	Wisconsin	30.1 billion lbs.	Wisconsin	1,279,000	Michigan	25,597 lbs.
No. 3	New York	14.8 billion lbs.	New York	620,000	Idaho	24,647 lbs.
No. 4	Idaho	14.7 billion lbs.	Idaho	595,000	New Mexico	24,479 lbs.
No. 5	Michigan	10.9 billion lbs.	Pennsylvania	529,000	Arizona	24,429 lbs.
No. 6	Pennsylvania	10.8 billion lbs.	Texas	475,000	Washington	24,094 lbs.
No. 7	Texas	10.7 billion lbs.	Minnesota	461,000	New York	23,815 lbs.
No. 8	Minnesota	9.7 billion lbs.	Michigan	419,000	Iowa	23,634 lbs.
No. 9	New Mexico	7.7 billion lbs.	New Mexico	315,000	Wisconsin	23,552 lbs.
No. 10	Washington	6.7 billion lbs.	Washington	276,000	Nebraska	23,317 lbs.

18. Total U.S. milk production in 2016 was record 212 billion pounds, and a one-year gain of 3.8 billion pounds. In the table above are the top ten states for milk production in 2016. What percent of the total U.S. milk production do these ten states represent?

- A. 38%
- B. 66%
- C. **74%**
- D. 88%

Answer is C

19. The number of milk cows in the U.S. in 2016 was 9.328 million, an increase of 14,000 head. Based on the table above, the top five states represent _____ of the total number of cows.

- A. **51%**
- B. 67%
- C. 72%
- D. 81%

Answer is A

20. While average production per cow in the U.S. in 2016 was a record 22,774 pounds, it was a total that only 13 states were able to attain. The average production per cow in 2016 for the top ten States was _____ pounds more than

the national average production per cow.

- A. 1,104
- B. **1,580**
- C. 2,435
- D. 2,629

Answer is B