

## 2014 National FFA Dairy Cattle Event

### Herd Record Evaluation

Select the one cow that best answers each of the following 10 questions.

**For questions 1 through 10, use the “herd record evaluation” which is attached to the quiz.**

1. Indicate which cow is pregnant with twins.
2. Determine the cow with the lowest expectation among the cows for the value of a future lactation's production, relative to the herd average.
3. Select the cow that will transmit the highest expected breeding value to her offspring for milk.
4. Select the cow which is most significantly overweight.
5. Select which cow will be the next one to calve after the testing date, assuming normal gestation length.
6. Indicate which first lactation cow is having the least impact on the somatic cell count in the bulk tank.
7. Indicate which cow has the lowest index value that selects for the improvement of milk, fat, and protein yield, somatic cell score and productive life.
8. Which cow has the highest mature equivalent for protein?
9. Indicate the cow having the greatest impact on the somatic cell count in the bulk tank.
10. Which cow should be the next one to be dried off after the testing date, assuming that breeding dates are accurate?

## 2014 National FFA Dairy Cattle Event

### Dairy Management Exercise

Select best answer for each of the following 40 questions.

1. You have to treat your sick heifer. After reading the product label, you learn that the shot has to be given subcutaneously. Where is this injection site located on your heifer?
  - a) In the muscle
  - b) In the rump
  - c) In the fat tissue
  - d) Under the skin
  - e) Anywhere on your heifer that you want to give the shot
  
2. What is the name of the ring shaped muscle that closes the opening at the lower end of a cow's teat?
  - a) Sphincter Muscle
  - b) Teat Canal
  - c) Keratin
  - d) Alveolus
  - e) None of the above
  
3. This micromineral has been shown to be effective in decreasing the rate of foot rot, heel cracks and laminitis in dairy cattle.
  - a) Copper
  - b) Iodine
  - c) Selenium
  - d) Manganese
  - e) Zinc
  
4. Who invented the centrifugal cream separator?
  - a) Dr. Westphalia
  - b) Dr. Babcock
  - c) W. D. Hoard
  - d) Dr. Delaval
  - e) Gail Borden
  
5. What percentage of U.S. dairy farms are family owned and operated?
  - a) 97%
  - b) 89%
  - c) 75%
  - d) 52%
  - e) 36%
  
6. Which of the following is a part of the reproductive tract of the bull?
  - a) Ovaries
  - b) Cowpers gland
  - c) Vulva
  - d) Cervix
  - e) None of the above

7. Comfort for calves is just as important as cow comfort. Which of the following factors is the most important for achieving the goal of calf comfort?
- a) Bedding
  - b) Ventilation
  - c) Amount of square feet per calf
  - d) None of above
  - e) All of the above
8. The function of this organ is nutrient regulation and glucose production.
- a) Udder
  - b) Liver
  - c) Thyroid
  - d) Pancreas
  - e) Kidney
9. What genetic code is used to identify animals that are tested heterozygous polled?
- a) PP
  - b) PO
  - c) PC
  - d) PH
  - e) RC
10. Which nutritional disease is most often associated with laminitis?
- a) Johne's
  - b) Arthritis
  - c) Ketosis
  - d) Acidosis
  - e) Traumatic gastritis
11. Milk used for ice cream and cottage cheese production would be classified as what?
- a) Class I
  - b) Class II
  - c) Class III
  - d) Class IV
  - e) Class V
12. Which vitamin is not water soluble?
- a) Vitamin E
  - b) Vitamin C
  - c) Riboflavin
  - d) Vitamin B
  - e) Biotin
13. Which of the following dairy breeds is not part of a joint breed classification program?
- a) Guernsey
  - b) Milking Shorthorn
  - c) Jersey
  - d) Brown Swiss
  - e) Ayrshire

14. After silage is harvested, it goes through a fermentation process. If the fermentation process exceeds 100 degrees F after the silage is harvested, which of the following nutrients is broken down, heat damaged and unavailable to the cow?
- a) Protein
  - b) Fat
  - c) Minerals
  - d) Vitamins
  - e) All of the above
15. Somatic cells in milk are a more common name for which immune system cells?
- a) Red blood cells
  - b) Antibodies
  - c) Immunoglobulins
  - d) White blood cells
  - e) Infection
16. What state led the United States in milk per cow in 2012?
- a) New Mexico
  - b) Arizona
  - c) Colorado
  - d) Washington
  - e) Michigan
17. Which one of a dairy cow's four stomach compartments main function is the dehydration of partially digested feed?
- a) Abomasum
  - b) Omasum
  - c) Reticulum
  - d) Rumen
  - e) Small Intestine
18. Which of the following dairy breeds had the greatest increase in total registrations from 2012 to 2013?
- a) Jersey
  - b) Holstein
  - c) Guernsey
  - d) Brown Swiss
  - e) Ayrshire
19. What is the industry standard for total time cows should be resting on an average day?
- a) less than 5 hours
  - b) 6-8 hours
  - c) 9-11 hours
  - d) 12-14 hours
  - e) More than 15 hours

20. What enzyme found in the inner lining of a calf's stomach is used as a coagulant in cheese making to curdle milk?
- a) Insulin
  - b) Oxytocin
  - c) Methionine
  - d) Folic Acid
  - e) Rennet
21. How many amino acids are considered to be essential in the dairy cow, and therefore are required in the diet?
- a) 30
  - b) 40
  - c) 10
  - d) 25
  - e) 18
22. What campaign, started in April of 2014, has led to the donation of over 100,000 gallons of milk into our nation's food banks?
- a) MILC
  - b) Great American Milk Drive
  - c) Indianapolis 500
  - d) CWT
  - e) None of the above
23. Which insect is responsible for the spread of pink eye?
- a) Face Fly
  - b) Lice
  - c) Mosquito
  - d) Horn Fly
  - e) Tick
24. What acronym is used to represent daughter pregnancy rate on a sire summary?
- a) BSE
  - b) BVD
  - c) CVM
  - d) DVM
  - e) DPR.
25. In the updated 2009 PDCA Dairy Cow Unified Scorecard, in the udder category which trait receives the highest priority?
- a) Rear udder
  - b) Udder depth
  - c) Udder cleft
  - d) Fore udder
  - e) Teat placement.

26. In a cow, where would you find papillae?
- a) Small Intestine
  - b) Udder
  - c) Rumen
  - d) Skin
  - e) Large Intestine
27. A forage particle separator is used to do what?
- a) Check ration uniformity
  - b) Check for sorting
  - c) Check for over mixing and particle size reduction
  - d) Evaluate where there is enough long fiber in the ration
  - e) All of the above
28. Prior to March 2013 the USDA was responsible for genetic evaluations but this responsibility has now transitioned to which of the following organizations?
- a) Council on Dairy Cattle Breeding
  - b) ABS
  - c) FDA
  - d) National Genome Research Institute
  - e) Select Sires
29. What is most frequently the cause of high bacteria counts in milk?
- a) Mastitis
  - b) Weather
  - c) Dirty Equipment
  - d) Wrong size teat cup liner
  - e) Improper pulsation ratio
30. Which of the following is a symptom of clinical mastitis?
- a) All of the following
  - b) Hot quarter
  - c) Clots
  - d) Flakes
  - e) Watery milk
31. This term is defined as dividing the number of cows you have by the number of stalls or headlocks.
- a) Cows per stall
  - b) Stocking density
  - c) Rate at which the barn is overcrowded
  - d) Pen Size
  - e) Bunk space
32. Which of the following is not an example of an estrus synchronization program?
- a) CIDR
  - b) GnRH
  - c) Pre-Synch
  - d) Heat-synch
  - e) Co-Synch

33. Which of the following is an infectious disease?
- a) Milk fever
  - b) Hardware disease
  - c) Ringworm
  - d) Bloat
  - e) All of the above
34. The material used in a footbath for cows with foot rot problems is.
- a) Copper sulfate
  - b) Calcium carbonate
  - c) Sodium chloride
  - d) Monosodium phosphate
  - e) Iron oxide
35. This bacteria causes “Circling Disease” in cattle.
- a) Salmonella
  - b) Mycoplasma
  - c) Listeria
  - d) Leukosis
  - e) Haemophilus somnus
36. Which of the following factors should be considered when planning a waste management system?
- a) Environmental
  - b) Social
  - c) Operational
  - d) Legal requirements
  - e) All of the above
37. Every five years, genetic evaluations of US dairy cattle undergo a “base change”. When is the next time that the base change will happen?
- a) December 2014
  - b) April 2015
  - c) The base will remain the same and no change will occur
  - d) May 2016
  - e) It already happened in 2013
38. Which hormone produced by the uterus causes regression of the corpus luteum?
- a) PGF
  - b) FSH
  - c) LH
  - d) GnRH
  - e) P4
39. In 2013 which state produced 741 million pounds of yogurt to lead the nation in production of this dairy product?
- a) Indiana
  - b) California
  - c) New York
  - d) Michigan
  - e) Wisconsin

40. Which of the following is not an example of a cultured dairy product?

- a) Buttermilk
- b) Kefir
- c) Sour cream
- d) Yogurt
- e) Butter

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***2014 National FFA Dairy Cattle Career Development Event***

**Official answers for Dairy Management Exercise:**

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

## 2015 National FFA Dairy Cattle Event

### Herd Record Evaluation

Select the one cow that best answers each of the following 10 questions.

**For questions 1 through 10, use the “herd record evaluation” which is attached to the quiz.**

1. Indicate which cow is potentially suffering from rumen acidosis.
2. Which cow should be the next one to be dried off after the testing date, assuming that breeding dates are accurate?
3. Indicate which cow has the highest index value that selects for the improvement of milk, fat, and protein yield, somatic cell score and productive life.
4. Which cow has the lowest mature equivalent for fat?
5. Indicate the cow having the least impact on the somatic cell count in the bulk tank.
6. Indicate which cow is having the most impact on the somatic cell count in the bulk tank.
7. Select the cow that will transmit the lowest expected breeding value to her offspring for milk.
8. Select which cow will be the next one to calve after the testing date, assuming normal gestation length.
9. Determine the cow with the highest expectation among the cows for the value of a future lactation's production, relative to the herd average.
10. Select the cow which is the most significantly underweight.

## 2015 National FFA Dairy Cattle Event

### Dairy Management Exercise

Select best answer for each of the following 40 questions.

1. White blood cells (leukocytes) that move into the udder during inflammation and epithelial cells from milk producing tissues are two type of cells that are measured when your cow is suffering from what?  
A) Pinkeye, B) Milk Fever, C) Mastitis, D) Ketosis, E) None of the above.
2. After milk is picked up at the farm, how often should the bulk tank be washed and sanitized? A) Every time it is emptied, B) Once a Day, C) Once a week, D) Monthly, E) Once a year.
3. You recently visited a farm that installed new lights in the freestall barn. The goal was to increase the photoperiod of the cows by providing them with 16-18 hours of light to increase milk production. What hormone is released by the pineal gland in response to this lighting change?  
A) Oxytocin, B) Melatonin, C) Progesterone, D) Prostaglandin, E) Relaxin.
4. When lameness caused by abscesses, infection, foot rot or injury is common in a dairy herd, what should the owner implement immediately to help reduce lameness in his herd? A) Footbath, B) New bedding, C) Change milking times, D) Increase the moisture in the bedding pack, E) All of the above.
5. It is often said you can't improve what you can't measure. The Brix refractometer is a tool used on many dairy farms to help estimate or measure what?  
A) Wither height, B) Light quality C) Cow's reaction time,  
D) Amount of bacteria in milk, E) Colostrum quality.
6. Healthy calves are essential to any dairy operation. To be a better grower of calves you have joined the Dairy Calf & Heifer Association. According to this organization, how many quarts of colostrum should a calf receive in the first four hours of life?  
A) 1 quart, B) 2 quarts, C) 4 quarts, D) 8 quarts, E) 12 quarts.
7. If there are large numbers of flies around the dairy barn, what should be the first thing to be examined in an attempt to solve the fly problem?  
A) Cow feeding procedures, B) Milking procedures, C) Calf feeding procedures,  
D) Manure handling procedures, E) Mowing the grass.
8. Mastitis is a growing problem on your neighbor's farm. You notice that he is bedding his cows with straw. You recommend that he should change his bedding to what to help decrease the amount of bacteria? A) Sawdust, B) Sand, C) Compost, D) Chopped Bark, E) All of the above will work.
9. When using a body condition scoring system of 1 to 5, what does a score of 1 mean? A) Extremely thin, B) Average body condition, C) Extremely fat, D) Above average body condition, E) These are the best cows in the herd.

10. Paul Bunyan's ox "Babe" had a rare genetic disorder that caused him to be blue. Both his parents were apparently normal. What are the odds his next full-sib will be blue? A) 25%, B) 50%, C) 67%, D) 75%, E) 100%.
11. In what part of whole milk are most of the off-flavors found?  
A) Protein, B) Lactose, C) Butterfat, D) Water, E) Minerals.
12. A cow is almost ready to calf. You observe excessive fluid accumulation in the udder and surrounding tissues. What do we call this condition?  
A) Ketosis, B) Udder Edema, C) IBR, D) Mastitis, E) Bangs.
13. This dairy breed was originally used for milk, meat and draft purposes. Today it is known for high protein to fat ratio, longevity, sound feet and legs, and having few health problems. Which breed is this?  
A) Guernsey, B) Milking Shorthorn, C) Jersey, D) Brown Swiss, E) Holstein.
14. The following information is listed concerning a cow:  
305      3X      35,234      4.2      1480      3.2      1127  
Which of the following is not correct? A) 305 day lactation,  
B) Milked three times per day, C) Milk contained 4.2 % milk fat,  
D) Milk contained 3.2% milk fat, E) Milk contained 3.2% milk protein.
15. You infuse an antibiotic into a cow's udder to treat her for mastitis, how should her milk be handled? A) Discard milk from treated quarter according to label,  
B) Discard milk from treated quarter for 72 hours,  
C) Discard all milk according to label, D) Discard all milk for 72 hours,  
E) Discard all milk for 96 hours.
16. What state is currently working on a proposal to establish a new Federal Milk Marketing Order? A) New Mexico, B) Wisconsin, C) California, D) Washington, E) Michigan.
17. Absorption of antibodies from colostrum primarily takes place in which compartment of a calf's stomach?  
A) Abomasum, B) Omasum, C) Reticulum, D) Rumen, E) Small Intestine.
18. During evening chores you notice one of your heifers is not feeling well and is in need of treatment. After reading the product label you are using for treatment, you learn that the shot has to be given IM. Where is the injection site located on your heifer? A) In the muscle of the neck, B) In the vein, C) In the fat tissue, D) Under the skin, E) It doesn't matter.
19. The Council on Dairy Cattle Breeding recently reported the following milestone achieved in genotyping dairy animals in August 2015. A) 500,000 genotyped, B) 750,000 genotyped, C) 1 million genotyped, D) The first animal with 100% of its genome typed, E) 3 million genotyped.
20. All quality assurance programs insist that a farmer have what type of on-going relationship with their veterinary? A) Veterinary Client Patient Relationship (VCPR), B) A relationship is not required, C) Telephone contact only, D) First name basis, E) None of the above.

21. The dairy cow has the ability to digest some of the plant carbohydrates which animals with simple stomachs cannot. Which of the following is not one of these carbohydrates? A) Cellulose, B) Lignin, C) Hemicellulose, D) Starch, E) Pectin.
22. Cull heifers and cows have been treated with hormones to cause them to become sexually active as heat check animals. What is the primary hormone that is used? A) Estrogen, B) Progesterone, C) LH, D) FSH, E) Testosterone.
23. Which of the following countries was the number 1 milk and milk product importer in 2014? A) Japan, B) Algeria, C) Saudi Arabia, D) China, E) Russian Federation.
24. This waxy substance found in the teat duct limits bacterial growth and provides a physical barrier against bacteria.  
A) Alveoli, B) Keratin, C) Myoepithelial, D) Prolactin, E) Papillae.
25. Little Miss Muffet sat on her tuffet, eating her curds and whey. How many pounds of whey are produced from 10 pounds of milk?  
A) 1 pound, B) 10 pounds, C) 9 pounds, D) 5 pounds, E) 0 pounds.
26. When a dairy farm operation is owned by a single individual, what type of business entity is this called? A) Limited Liability Corporation, B) Limited Liability Partnership, C) C Corporation, D) S Corporation, E) Sole proprietorship.
27. What corn forage is typically harvested with a forage harvester equipped with an ear-snapper header? The ear should be chopped with a short length-of-cut and then well processed with the on-board kernel processor.  
A) Earlage, B) Snaplage, C) Corn Silage, D) Haylage, E) All of the above.
28. What is the name of the new fluid milk beverage that is ultra-filtered that Coca-Cola is producing with Select Milk Producers?  
A) Dairy Pure, B) TruMoo, C) Muscle Milk, D) Fairlife, E) CocaMoo.
29. What is the name of the international organization of educators, scientists and industry representatives who are committed to advancing the dairy industry? The Journal of Dairy Science is the organization's official publication.  
A) American Dairy Science Association, B) American Dairy Association, C) International Dairy Producers, D) American Animal Science Association, E) Dairy Herd Improvement Association.
30. Which of the following countries was the number 1 exporter of milk and milk products in 2014.  
A) New Zealand, B) European Union, C) United States, D) Belarus, E) Australia.
31. The PMO regulations govern the production, hauling, processing, packaging and storage of which type and grades of milk? A) Only Grade A milk, B) Both Grade A and manufacturing milk, C) Manufacturing grade milk only, D) Grade B only, E) Processing grade milk and Grade A.
32. In the reproductive cycle, the level of what hormone in the blood decreases when the corpus luteum is destroyed?  
A) Relaxin, B) Testosterone, C) Oxytocin, D) Progesterone, E) Prostaglandin.

33. After harvesting corn silage, you take a soil test. The test shows your field is high in phosphorus and low in potassium. Which of the following fertilizers would you not apply in order to reduce the potential of phosphorus run off?  
A) 0-0-44, B) 46-0-0, C) 0-0-50, D) 11-52-0, E) 18-4-12.
34. On a dairy farm where foot rot problems have been identified in the herd as a major cause of lameness, which common material is used in the footbath to prevent foot rot:  
A) Copper sulfate, B) Calcium carbonate, C) Sodium chloride, D) Monosodium phosphate, E) Iron oxide.
35. This fatal cattle disease destroys the intestinal lining of ruminants with its major symptom being diarrhea?  
A) IBR, B) Johne's disease, C) Listeria, D) Leukosis, E) Black Leg.
36. Which group of cattle should not be vaccinated with a modified live bovine virus diarrhea vaccine: A) Calves, B) Pre-pubertal heifers, C) Open cows and heifers, D) Pregnant cows and heifers, E) None of the above.
37. Which vitamin is often recommended as a feed additive to minimize the occurrence of fatty liver and ketosis in fresh cows?  
A) Niacin (B-3), B) Vitamin A, C) Thiamine (B-1), D) Vitamin E, E) Biotin (B-7).
38. When the environmental temperature falls below 30 degrees F, the normal diet of a young calf should be supplemented with?  
A) Water, B) Energy, C) Protein, D) Vitamin A, E) Warm fresh milk.
39. A cow who has recently calved has had her blood tested. The test shows that she has a calcium deficiency more than likely related to an imbalance of calcium, phosphorus and Vitamin D. Which disease is the cow suffering from?  
A) Blackleg, B) Ketosis, C) Milk Fever, D) Johne's, E) Hardware.
40. In the updated 2009 PDCA Dairy Cow Unified Scorecard, in the dairy strength category which trait receives the highest priority?  
A) Ribs, B) Chest, C) Barrel, D) Thighs, E) Neck.

***2015 National FFA Dairy Cattle Career Development Event***

**Official answers for Dairy Management Exercise:**

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

## 2016 National FFA Dairy Cattle Event

### Herd Record Evaluation

Select the one cow that best answers each of the following 10 questions.

**For questions 1 through 10, use the “herd record evaluation” which is attached to the quiz.**

1. Indicate which first lactation cow is having the least impact on the somatic cell count in the bulk tank.
2. Select the cow which is the most significantly overweight.
3. Determine the first lactation cow with the highest expectation among the cows for the value of a future lactation's production, relative to the herd average.
4. Select which cow will be the next one to be dried off after the testing date, assuming that breeding dates are accurate.
5. Indicate the cow having the most impact on the somatic cell count in the bulk tank.
6. Indicate which first lactation cow is potentially suffering from rumen acidosis.
7. Select the first lactation cow that will transmit the lowest expected breeding value to her offspring for milk.
8. Which cow has the highest mature equivalent for milk?
9. Indicate which cow has the highest index value that selects for the improvement of milk, fat, and protein yield, somatic cell score and productive life.
10. Which cow should be the next one to calve after the testing date, assuming normal gestation length?

## 2016 National FFA Dairy Cattle Event

### Dairy Management Exercise

Select best answer for each of the following 40 questions.

1. Milk is composed of approximately what percent lactose?  
A) 0%, B) 5%, C) 8.25%, D) 13.25%, E) 87.25%.
2. The precursor of this vitamin is beta-carotene and is found commonly in legumes and grasses. A) Vitamin E, B) Vitamin A, C) Vitamin D, D) Vitamin B, E) Vitamin K.
3. Lameness on a dairy farm can lead to higher culling rates, reduced reproductive performance, and lower milk yield. In order to manage lameness on your farm, you implement a locomotion scoring system using a scale from 1 to 5. What score would you give to a cow who is visibly lame, has an arched back and favors one or more feet?  
A) 4 or 5, B) 3, C) 2, D) 1, E) All of the above.
4. Fertility, as measured by daughter pregnancy rate, is lowest in which breed?  
A) Guernsey, B) Milking Shorthorn, C) Jersey, D) Brown Swiss, E) Holstein.
5. What is the major buffer produced by cows that assists in maintaining optimum rumen pH? A) Cellulose, B) Calcium, C) Phosphorus, D) Lipids, E) Saliva.
6. For lunch you have a glass of milk and notice that it has an oxidized flavor to it. In what part of the milk is this off-flavor found?  
A) Butterfat, B) Lactose, C) Protein, D) Water, E) Minerals.
7. Beginning January 1, 2017 this practice will not be permitted under the Farmers Assuring Responsible management or FARM program.  
A) Dehorning, B) Castrating, C) Eartagging, D) Taildocking, E) All of the above.
8. Which common ailment of dairy cows is medically known as tarsal hygroma?  
A) Swollen hock, B) Dehydration, C) Acidosis, D) Lameness, E) Split toed.
9. It is often said you can't improve what you can't measure. The Brix refractometer is a tool used on many dairy farms to help estimate or measure what?  
A) Wither height, B) Light quality, C) Cow's reaction time, D) Amount of bacteria in milk, E) Colostrum quality.
10. The Council on Dairy Cattle Breeding (CDCB) introduced a new genetic trait to the genetic evaluation system. The PTA of this trait indicates that daughters of a sire will be less likely to die on the farm. You will find this trait listed as the following on a sire proof:  
A) Daughter pregnancy rate, B) Lifetime net merit, C) Cow livability, D) Productive Life, E) None of these is correct.
11. Historically, during what season is the demand for milk highest?  
A) Spring, B) Summer, C) Fall, D) Winter, E) It is the same year round.
12. In 2015 which state had the most new dairy cows?  
A) New Mexico, B) Wisconsin, C) South Dakota, D) Washington, E) Michigan.

13. Which of the following are tips that would improve the biosecurity on a dairy farm?  
A) Stop unrecognized visitors, B) Accompany nonroutine visitors around during their visit, C) Verify all nonregular inspectors and contractors with picture IDs, D) Post biosecurity and no unmanned aircraft signs, E) All of the above.
14. In the past year a dairy herd has had an increase in the occurrence of milk fever. The nutritionist has recommended feeding anionic salts as a method of prevention. To solve the problem, they should be fed: A) At any time, B) Two weeks after calving, C) At calving, D) Two weeks before calving, E) At dry off.
15. This past winter while you were responsible for feeding the baby calves, you made what change in the normal diet of the calves when the average temperature was 15 degrees F for a few weeks. You supplemented the diet with additional?  
A) Warm fresh milk, B) Electrolytes, C) Energy, D) Water, E) Vitamin C.
16. Drought stressed forages often contain toxic levels of what substance?  
A) Phosphates, B) Nitrates, C) Butyric acid, D) Lactic acid, E) Potassium.
17. Excessive rates of pneumonia in dairy herds are often due to what?  
A) Excessive sunlight exposure, B) Cold weather or drafts, C) Inadequate ventilation, D) Contaminated milk, E) All of the above.
18. The Journal of Dairy Science is the official publication of the international organization of educators, scientists and industry representatives who are committed to advancing the dairy industry. This organization is?  
A) American Animal Science Association, B) American Dairy Association, C) International Dairy Producers, D) American Dairy Science Association, E) Dairy Herd Improvement Association.
19. Perinatal calf mortality is a significant problem in the dairy industry. What is this problem more commonly referred to as?  
A) DOAs, B) Morbidity, C) Pneumonia, D) Stillbirths, E) All of the above.
20. If the heat detection rate is 50% and the conception rate is 25%, what is the pregnancy rate? A) 9%, B) 12.5%, C) 25%, D) 50%, E) It cannot be determined.
21. After harvesting your alfalfa, you take a soil test. The test shows your field is high in phosphorus and low in potassium. Which of the following fertilizers would you apply in order to meet the potassium requirement while preventing excess phosphorus run-off?  
A) 0-0-44, B) 46-0-0, C) 12-12-12, D) 11-52-0, E) 18-14-24.
22. The condition in a dairy cow where the shoulder separates from the side of the cow and juts out sharply at the elbow is considered in what category of the 2009 PDCA Dairy Cow Unified Scorecard? A) Frame, B) Udder, C) Dairy Strength, D) Feet & Legs, E) Body Capacity.
23. When looking at genetic evaluations, the accuracy is expressed as a percentage and goes up as more progeny contribute to records. We refer to this as: A) Repeatability, B) Reliability, C) Predictability, D) Marketability, E) Heritability.

24. Recently your cows have been experiencing less production, lower butterfat, and sick cows that never seem to recover. What could be the cause of these symptoms?  
A) Rumen Acidosis, B) Ketosis, C) Milk Fever, D) Johne's, E) Hardware.
25. Which dry period length will maximize production in the following lactation?  
A) None, B) 30 days, C) 45 days, D) 50 days, E) 60 days.
26. You are responsible for the calf development program on a dairy farm. The farm's goal is to develop the rumen of the calf as fast as possible. To achieve this goal, you should feed the calves which of the following?  
A) Milk only, B) Hay only, C) Grain only, D) Milk and grain, E) Milk and hay.
27. The best temperature for thawing frozen semen is considered to be: A) An ice bath, B) Room temperature, C) 75-80 degrees C, D) 92-96 degrees F, E) 92-96 degrees C.
28. While at the county fair you notice one of your heifers is not feeling well and is in need of treatment. After reading the product label you are using for treatment, you learn that the shot has to be given subcutaneously. Where is the injection site located on your heifer following beef quality assurance recommendations? A) In the muscle of the neck, B) In the vein, C) In the fat layer between the skin and muscle on the neck, D) In the nostril of the nose, E) In the fat layer between the skin and muscle on the rump.
29. Under the current method of pricing, which breed of cows, on average would yield the highest milk price per hundred weight?  
A) Brown Swiss, B) Guernsey, C) Ayrshire, D) Jersey, E) Milking Shorthorn.
30. Beginning January 1, 2017 in order to purchase feed that uses medically important antimicrobial drugs such as a medicated milk replacer, you will need to obtain a VFD. What is a VFD? A) Veterinary Food Directions, B) Veterinary Feed Description, C) Veterinary Feed Directive, D) Veterinary Farmaceutical Description, E) None of the Above.
31. In order to obtain a VFD, a farmer must be able to prove what type of on-going relationship with their veterinary? A) Veterinary Client Patient Relationship (VCPR), B) Veterinary Animal Patient Relationship (VAPR), C) Telephone contact only, D) First name basis, E) Veterinary Contact Person Relationship (VCPR).
32. An increase in what compound is the result of rapid degradation of adipose tissue in the cow's body? A) Amino acids, B) Ketones, C) Fatty acids, D) Peptides, E) Ammonia.
33. One indicator that can be used as a sign of good reproduction in your dairy herd is how many cows are pregnant at all times. What percent should be pregnant?  
A) 25%, B) 35%, C) 42%, D) 50%, E) 76%.
34. The following information is listed concerning a cow:  
365      2X      42,345      3.7      1566      2.9      1228  
Which of the following is not correct? A) 305 day lactation, B) Milked two times per day, C) Milk contained 3.7 % milk fat, D) Milk contained 2.9% protein, E) 42,345 pounds of milk produced.

35. What reproductive hormone tends to be high in lactating, pregnant cows?  
A) Oxytocin, B) Progesterone, C) Prostaglandin, D) Relaxin, E) Estrogen.
36. If the MUN level is considered high, which nutrient is likely to be in excess?  
A) Fats, B) Carbohydrates, C) Vitamins, D) Minerals, E) Protein.
37. Which portion of the cow's digestive tract is most subject to "twisting"?  
A) Abomasum, B) Omasum, C) Reticulum, D) Rumen, E) Duodenum.
38. After receiving your DHIA herd summary test data, you are concerned about the increasing number of cows with mastitis. You have the cows cultured and discover that the cause is environmental pathogens. To help decrease this occurrence you invite your veterinarian to visit your farm to make recommendations. Which of the following observations by your veterinarian is the cause of the increased cases of mastitis?  
A) Using sand as a bedding source, B) A new employee is prepping the milking cows by spraying the teats with water but not drying the teats to remove water and excess manure, C) Post dip is used after milking, D) Cows are fed after milking to keep them standing at least 30 minutes post milking, E) Cows are treated at dry off.
39. Which of the following is not a primary organism associated with mastitis:  
A) Staphylococcus aureus, B) Streptococcus agalactia, C) Streptococcus uberis, D) Mycobacterium Paratuberculosis, E) Klebsiella pneumoniae.
40. An example of a Class III use for milk would be to make: A) Hard cheese, B) Ice cream, C) Milk powder, D) Cottage cheese, E) A class III use does not exist.

***2016 National FFA Dairy Cattle Career Development Event***

**Official answers for Dairy Management Exercise:**

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

## 2017 National FFA Dairy Cattle Event

### Dairy Management Exercise

Select best answer for each of the following 40 questions.

1. This cheese is the most popular American-type cheese.  
A) Cheddar, B) Mozzarella, C) Swiss, D) Monterey Jack, E) Cream Cheese.
2. What type of mastitis is the primary reason antibiotics are administered to dairy cows?  
A) Sub-Clinical, B) Clinical, C) Acute, D) Chronic, E) None of the above.
3. For question two the common symptoms of this type of mastitis are?  
A) Flakes, B) Clots, C) Hot quarters, D) Watery milk, E) All of the above.
4. What is the most effective measure to prevent new cases of mastitis infections from occurring?  
A) Teat-dipping, B) Dry-cow antibiotic treatment, C) Foot trimming, D) Both A&B, E) Both B&C.
5. Lameness on a dairy farm can lead to higher culling rates, reduced reproductive performance, and lower milk yield. In order to manage lameness on your farm, you implement a locomotion scoring system using a scale from 1 to 5. What score would you give to a cow who stands and walks normally and all feet are placed with purpose?  
A) 4 or 5, B) 3, C) 2, D) 1, E) All of the above.
6. One of your recently fresh cows is ill. She has been receiving a high grain, low roughage diet. The consistency of the small amount of manure she produces is "putty-like". Your veterinarian detects a "pinging" sound when using his stethoscope. What is the most likely diagnosis?  
A) Ketosis, B) Milk Fever, C) Grass Tetany, D) Left Displaced Abomasum, E) Rumen Acidosis.
7. In order to prevent hock lesions and improve incidence of lameness, which is the best bedding material to use?  
A) Sand, B) Straw, C) Wood shavings, D) Stall mats, E) Recycled manure.
8. Tarsal hygroma is which of the following common ailments in dairy cows?  
A) Swollen hock, B) Dehydration, C) Acidosis, D) Lameness, E) Split toed.
9. This micro-mineral has been shown to be effective in decreasing the rate of foot rot, heel cracks, and laminitis in dairy cattle.  
A) Copper, B) Iodine, C) Selenium, D) Manganese, E) Zinc.
10. What dairy breed is the leader in Cheese Merit dollars?  
A) Guernsey, B) Milking Shorthorn, C) Ayrshire, D) Brown Swiss, E) Holstein.
11. Which of the following PTA traits was introduced in August 2017 for service sires representing the influence the service sire is expected to have on the number of days his mates carry their calves during their pregnancies.  
A) DPR, B) GL, C) SCR, D) SB, E) PL.

12. You recently became the manager of dry cows at a local dairy farm. Not only do you care for the dry cows but also for newborn calves. One issue that you must address immediately is decreasing calf mortality within the first 48 hours. The first purchase you make for the farm is a Brix refractometer to help estimate or measure what?  
A) Wither height, B) Colostrum quality, C) Cow's reaction time, D) Amount of bacteria in milk, E) Antibody levels in the blood.
13. At what point during the dry period does a cow's colostrum production cease?  
A) At the beginning of the dry period, B) About a week after having the calf, C) At the start of labor, D) A week before having the calf, E) None of the above.
14. Colostrum provides antibodies to newborn calves, but it is also 4 times higher in what important nutrient than normal cow's milk?  
A) Water, B) Fats, C) Carbohydrates, D) Protein, E) All of the above.
15. Absorption of antibodies from colostrum primarily takes place in which compartment of a calf's stomach?  
A) Omasum, B) Small Intestine, C) Rumen, D) Reticulum, E) Abomasum.
16. In 2015, which state had the most organic dairy farms?  
A) Idaho, B) Wisconsin, C) South Dakota, D) Washington, E) Michigan.
17. What trait is defined as adequate constitution with front legs straight, wide apart and squarely placed on the Dairy Cow Unified Scorecard?  
A) Front End, B) Rump, C) Dairy Strength, D) Chest Floor, E) Body Capacity.
18. You are the dry cow manager on your dairy farm. You begin to notice after calving cows are experiencing a loss in body condition and are not eating enough dry matter to meet their energy needs to produce milk. After discussing these symptoms with your veterinarian, a blood test also shows the cows with a lower than normal blood glucose, high ketones and free fatty acid levels. What could be the cause of these symptoms?  
A) Rumen Acidosis, B) Ketosis, C) Milk Fever, D) Johne's, E) Hardware.
19. To treat the metabolic disorder described in #18 which of the following is fed or administered to the cow?  
A) Calcium, B) Propylene glycol, C) Antibiotics, D) Water, E) Nothing the disorder will fix itself.
20. What may be added to feeds as an aid in prevention of the condition described in #18?  
A) Calcium, B) Phosphorus, C) Vitamin A, D) Vitamin K, E) Niacin.
21. For the condition described in question 18, in addition to fiber what other ration component is important in minimizing fresh cows' negative energy balance?  
A) Starch, B) Protein, C) Water, D) Calcium, E) All of the above.
22. What percent of the average U.S. dairy cow diet could be digested by a human?  
A) 0%, B) 10%, C) 20%, D) 50%, E) 100%.

23. After reviewing your recent breeding history for the past month, you contact your nutritionist because you have identified the need to improve conception rates in your herd. She suggests you add what to your rations to improve conception rates because of larger ovarian follicles capable of producing more estrogen, larger corpus luteum and a decrease in embryonic loss?  
A) Fats, B) Carbohydrates, C) Vitamins, D) Minerals, E) Protein.
24. Your favorite cow has gone off feed recently. The veterinary says she has ingested pieces of metal and has given her a magnet. In which compartment of the stomach is metal, most often found and would benefit from the magnet?  
A) Abomasum, B) Omasum, C) Reticulum, D) Rumen, E) Duodenum.
25. An example of a Class IV use for milk would be to make:  
A) Hard cheese, B) Ice cream, C) Chocolate Milk, D) Dried milk powder, E) A class IV use does not exist.
26. A poorly maintained ventilation system on your farm can result in what percent loss of air movement?  
A) 10%, B) 30 to 50%, C) 70-80%, D) 85-95%, E) There is no noticeable differences.
27. When this cell is mature, it is the largest in a dairy cow's body.  
A) Skin, B) Blood, C) Oocyte or egg, D) Somatic Cell, E) White blood cells.
28. This non-profit organization founded in 1915 funded through the national dairy checkoff program continues to be, committed to providing science-based education about the nutrition and health benefits that dairy foods provide.  
A) USDA, B) FDA, C) Federal Milk Market Orders, D) EPA, E) National Dairy Council.
29. You recently received a pedigree for a heifer in your herd. When looking at the pedigree you noticed some of the traits had a zero breeding value. So, when you compare her to the U.S. cow population, she is considered what for these traits?  
A) Above average, B) Average, C) Below average, D) An outstanding heifer, E) None of the above.
30. It is time to load your cows to bring them to come home to calve. To be successful in moving the cows you make sure to be mindful of the area where the cows do not want any foreign objects entering. This area is commonly known as?  
A) Blind spot, B) Flight zone, C) Comfort zone, D) Point of balance, E) Both A and C.
31. Which of the following is not a part of the cow's digestive tract?  
A) Esophagus, B) Omasum, C) Mouth, D) Small Intestine, E) Alveoli.
32. Getting dairy cows bred on the farm is a top priority. What process is used to determine if a cow is pregnant by inserting an arm into the rectum of a cow to feel the reproductive tract?  
A) Palpation, B) CMT, C) Prolapse, D) Parturition, E) Involution.
33. Which of the following is **NOT** considered a micro mineral?  
A) Phosphorus, B) Potassium, C) Calcium, D) Manganese, E) All but D.

34. Which of the following diseases is caused by a species of mycobacterium?  
A) Johnes, B) Brucellosis, C) Tuberculosis, D) Both A and C, E) All of them.
35. What is the “normal” rectal temperature of a dairy cow?  
A) 94-95 degrees F, B) 98-99 degrees F, C) 101-102 degrees F, D) 102-103 degrees F,  
E) 105-106 degrees F.
36. What is the process called whereby fat globules are broken down to a small, uniform size?  
A) Pasteurization, B) Clarification, C) Equalization, D) Homogenization,  
E) Standardization.
37. Milk over what somatic cell count cannot be legally shipped.  
A) 200,000, B) 400,000, C) 500,000, D) 750,000, E) 1,000,000.
38. Which hormone is responsible for milk letdown hormone?  
A) Oxytocin, B) Estrogen, C) Prolactin, D) Adrenalin, E) Progesterone.
39. Which of the following is not an annual plant used as a source of forages for dairy?  
A) Corn, B) Alfalfa, C) Wheat, D) Oats, E) Ryegrass.
40. Which of the following factors should be considered when planning a waste management system?  
A) Environmental, B) Social, C) Operational, D) Legal Requirements, E) All of the above.

***2017 National FFA Dairy Cattle Career Development Event***

**Official answers for Dairy Management Exercise:**

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

## 2018 National FFA Dairy Cattle Event

### Herd Record Evaluation

Select the one cow that best answers each of the following 10 questions.

**For questions 1 through 10, use the “herd record evaluation” which is attached to the quiz.**

1. Which first lactation cow should be the next one to be dried off after the testing date, assuming that breeding dates are accurate?
2. Indicate which first lactation cow is having the greatest impact on the somatic cell count in the bulk tank.
3. Which first lactation cow has the highest mature equivalent for fat production?
4. Select the cow that will transmit the lowest expected breeding value to her offspring for milk.
5. Determine the first lactation cow with the lowest expectation among the cows for the value of a future lactation's production, relative to the herd average.
6. Select the youngest cow that will be the next one to calve after the testing date, assuming normal gestation length.
7. Which cow has the lowest mature equivalent for milk?
8. Indicate which cow is having the least impact on the somatic cell count in the bulk tank.
9. Indicate which one of the cows has the highest test index value that selects for the improvement of milk, fat, and protein yield, somatic cell score and productive life.
10. Select the cow, which is most significantly underweight.

## 2018 National FFA Dairy Cattle Event

### Dairy Management Exercise

Select best answer for each of the following 40 questions.

1. An example of a Class I use for milk would be to make:  
A) Hard cheese, B) Ice cream, **C) Chocolate Milk**, D) Dried milk powder, E) Butter.
2. Welcome to F.F.A. Dairy as the new calf manager taking care of calves from birth to weaning. The first change you make on the dairy is in regards to the preparation of the calving pen. You decide to use sand as the base for the pen and then bed the pen with how many of inches of long straw?  
A) 2 inches, B) 4 inches, **C) 6 inches**, D) 10 inches, E) 12 inches.
3. F.F.A. Dairy has had many issues with newborn calves getting sick within the first 4 weeks. The first step you take to address this issue is to measure the quality of colostrum using which instrument?  
**A) Brix refractometer**, B) Thermometer, C) pH Meter, D) Plate Meter, E) Cryoscope.
4. To successfully deliver colostrum to newborn calves, you feed them using which of the following tools that the USDA has identified as the most common:  
**A) Bottle**, B) Tube, C) Bucket, D) Letting the calf nurse the cow, E) All of the above.
5. After the quality of colostrum is determined and fed to the newborn calf, immunoglobulins are absorbed in what part of the digestive system?  
A) Omasum, **B) Small Intestine**, C) Rumen, D) Reticulum, E) Abomasum.
6. Calves are born with a natural insulator trapping air and creating a boundary between the body and chilly outside air. Which part of the calf is this?  
A) Head, B) Feet and legs, C) Depth of rib, D) Rump, **E) Hair Coat**.
7. As the calf manager keeping the calves healthy is a high priority, to achieve this you install this common item used to bring in fresh air, while removing moisture, dust and gases in warm weather?  
A) Doors, **B) Fans**, C) Insulation, D) Individual calf stalls, E) All of the above.
8. For the common item you installed in question 7, how often should the housings and individual parts be cleaned for optimal performance?  
A) Every 6 months, **B) Every year**, C) Every 2 years, D) Every day, E) It is not needed because it is self-maintaining.
9. A poorly maintained ventilation system on your farm can result in what percent loss of air movement?  
A) 10%, **B) 30 to 50%**, C) 70-80%, D) 85-95%, E) There is no noticeable differences.
10. This has been identified as the most visible well-being problem in the dairy industry today?  
A) Dehorning, B) Breeding cows by A.I., C) Feeding calves with a bucket, **D) Lameness**, E) All of the above.

11. If the heat detection rate is 60% and the conception rate is 30%, what is the pregnancy rate? A) 9%, B) 20%, **C) 18%**, D) 30% E) 45%.
12. Lameness on a dairy farm can lead to higher culling rates, reduced reproductive performance, and lower milk yield. In order to manage lameness on your farm, you implement a locomotion scoring system using a scale from 1 to 5. What score would you give to a cow who has pronounced arching of back, reluctant to move with almost complete weight transfer off the affected limb?  
**A) 5**, B) 3, C) 2, D) 1, E) All of the above.
13. Which milk protein is being marketed as a new dairy product that is easily digestible and comparable to human breast milk? A) Whey, B) A1 beta-casein, **C) A2 beta-casein**, D) Kappa casein, E) Beta-lactoglobulin.
14. What tissue is monitored for residual drug levels at slaughter?  
**A) Kidneys**, B) Liver, C) Large Intestine, D) Rumen, E) Heart.
15. Which dairy breed has the highest percentage of the A2 milk protein gene and which has the least? A) Holstein, Jersey, B) Brown Swiss, Holstein, C) Brown Swiss, Guernsey, D) Guernsey, Jersey, **E) Guernsey, Holstein**.
16. You have been invited to a local dairy to consult on locomotion issues that several of the cows have been having. The hoof trimmer tells you he is finding a smelly infection of the foot between the claws and toes, long, overgrown and deformed toes, and heel cracks during trimming. In order to prevent these type of problems in the future, you recommend which micro-mineral to be added to the ration.  
A) Selenium, **B) Zinc**, C) Copper, D) Manganese, E) Iodine.
17. What is considered the universal standard criteria for breeding dairy heifers?  
**A) Body weight**, B) Age, C) Height at the withers, D) Rump Width, E) All of the above.
18. F.F.A Dairy has recently been experiencing lower milk production, higher somatic cell counts, and slower milk time. You have been asked to help solve this problem. After you observe the milking procedures, the cause of the problem is identified as:  
A) No pre-dip being used prior to milking, B) Dirty udders, **C) Too long pre-milking stimulation**, D) Milking dry teats, E) All of the above.
19. To help address the problems identified in #18, you help the milkers adopt a new milking procedure. Here are 5 steps you have suggested: 1) Dry teats completely with an individual towel, 2) Dip teats immediately after unit removal, 3) Pre-dip teats and provide 20-30 second contact time, 4) Attach milking unit within 1 minute after the start of stimulation, 5) Check foremilk and udder for mastitis. The order the milkers should perform these steps are:  
A) 1, 2, 3, 4, 5, B) 5, 4, 3, 2, 1, C) 5, 3, 2, 4, 1, **D) 5, 3, 1, 4, 2**, E) Order doesn't matter as long as all 5 steps happen.
20. During step 5 listed in #19, the milkers find milk with flakes, clots, and the presence of blood. This is an indication of what problem:  
A) Sub-clinical mastitis, **B) Clinical mastitis**, C) Acute mastitis, D) Chronic mastitis, E) All of the above.

21. What type of mastitis is the primary reason antibiotics are administered to dairy cows?  
A) Sub-clinical mastitis, **B) Clinical mastitis**, C) Acute mastitis, D) Chronic mastitis,  
E) All of the above.
22. In 2017, which state produced the most milk per cow?  
A) Idaho, B) Wisconsin, C) South Dakota, D) Washington, **E) Michigan**.
23. What trait is defined as deep and wide showing capacity for vital organs, with well sprung fore ribs on the Dairy Cow Unified Scorecard?  
A) Front End, B) Heart Girth, C) Dairy Strength, **D) Chest Floor**, E) Body Capacity.
24. What is known as the use of technologies to measure physiological behavioral, and production indicators on individual animals to improve management strategies and farm performance?  
A) On site dairy production, **B) Precision dairy farming**, C) GMOs, D) DHIA,  
E) Individual cow side dairy farming.
25. Examples of the type of farming described in #24 are:  
A) Pedometers, B) Accelerometers, C) Milk Conductivity indicators, D) Daily body weight measurements, **E) All of the above**.
26. A benefit of the type of farming described in #24 is?  
A) Decreased efficiency, B) Increased Costs, **C) Improved animal health and well-being**, D) Less objective observations, E) None of the above.
27. What metabolic disorder is caused by a deficiency of blood calcium related to an imbalance of calcium, phosphorus, and Vitamin D?  
**A) Parturient paresis**, B) Ketosis, C) Grass Tetany, D) Fatty Liver, E) Displaced Abomasum.
28. As a cow's lactation begins, the disorder described in # 27 usually occurs how many hours after calving?  
A) Less than 12 hours, **B) 24 to 72 hours**, C) 80 to 120 hours, D) more than 120 hours,  
E) Immediately after birth.
29. F.F.A Dairy has turned out their high producing cows on lush, green pastures earlier this spring. The herdsman went to get the cows for milking and noticed the cows exhibiting an uncoordinated gait, nervousness, muscle spasms, staggering, and after milking decreased milk yield. What could be causing these symptoms?  
A) Parturient paresis, B) Ketosis, **C) Grass Tetany**, D) Fatty Liver, E) Displaced Abomasum.
30. The condition described in #29 is caused by a deficiency in what?  
**A) Magnesium**, B) Calcium, C) Phosphorus, D) Potassium, E) Protein.
31. 80% of the stomach is made up by this compartment where fermentation occurs and carbon dioxide and methane are produced.  
A) Abomasum, B) Omasum, C) Reticulum, **D) Rumen**, E) Duodenum.

32. What is the process called that heats raw milk to 161 degrees Fahrenheit for 15 seconds to destroy any disease producing bacteria that might be present?  
**A) Pasteurization**, B) Clarification, C) Equalization, D) Homogenization, E) Standardization.
33. What dairy breed has been noted to have the following strengths: high fertility, young age at first calving, calving ease, and excellent heat tolerance?  
A) Guernsey, B) Milking Shorthorn, C) Ayrshire, D) Brown Swiss, **E) Jersey**.
34. If you are providing water in the return alley from the milking parlor for cows, how many linear feet of watering space is required per cow?  
A) 6 inches, B) 1 foot, C) 18 inches, **D) 2 feet**, E) 40 inches.
35. What disaccharide is formed from the combination of glucose and galactose?  
A) Fructose, B) Sucrose, **C) Lactose**, D) Glucagon, E) Lactase.
36. Recently your cows have been experiencing less production, lower butterfat, and sick cows that never seem to recover. What could be the cause of these symptoms?  
A) Ketosis, B) Milk Fever, C) Johne's, D) Hardware, **E) Rumen Acidosis**.
37. Which of the following would be considered a voluntary reason for culling a dairy cow?  
A) non-breeder, B) mastitis, **C) low production**, D) crippled, E) All of the above.
38. The freezing point of milk can be altered by adding water to milk. What instrument is used to determine the freezing point of milk?  
A) Brix refractometer, B) Thermometer, C) pH Meter, D) Plate Meter, **E) Cryoscope**.
39. Which condition is a result of the fetal membranes remaining within the uterus for an extended period of time after calving?  
**A) Retained Placenta**, B) Involution, C) Separation of tissues, D) Metritis, E) Endometritis.
40. SPC is a measure of bacteria counts in milk. What do the letters SPC stand for?  
**A) Standard plate count**, B) Somatic pasteurization count, C) Secondary preliminary count, D) Super plate count, E) Super preliminary count.