

2018 NORTH CAROLINA FFA ASSOCIATION
VET SCIENCE CAREER DEVELOPMENT EVENT
MATH PRACTICUM

*Key
Worked*

Work the following problems and choose the best answer. Mark your answers on the scantron form. There are 20 questions on this test AND a formula sheet on page 5, please make sure you have all 5 pages. You may write on this test.

1. Your veterinarian has requested for you to provide pain relief for Watson, a 9 month old MN tabby cat, with buprenorphine after a neuter. Watson weighs 9 lbs., and the dose that you have been told to calculate is 0.2 mg/kg. The buprenorphine has a concentration of 10mg/ml. How many ml of buprenorphine will you draw for Watson?

- A. .008 ml
- ☒ B. .08 ml
- C. 0.8 ml
- D. 8.0 ml

$$9 \div 2.2 = 4.09$$

$$\begin{array}{r} 4.1 \\ \times .2 \\ \hline .82 \end{array}$$

$$\frac{.82}{10} = .08$$

2. A client brings in a ball python for a routine exam. When placed on the scales, the snake weighs 12.7 kg. How many pounds would the ball python weigh?

- A. 5.8 lb.
- B. 6.4 lb.
- C. 25.4 lb.
- ☒ D. 27.9 lb.

$$12.7 \times 2.2 = 27.9 \text{ lbs}$$

3. Your practice purchased a therapy laser for \$48,232. You have been asked to set up a price to charge for each therapy session. If you are expecting to average 3 sessions per day in a 30-day month, calculate what the base price per session would be to pay off the machine in a 24-month time period?

- A. \$11.00
- ☒ B. \$22.33
- C. \$264.00
- D. \$330.00

$$\frac{\$48232}{2160} = \$22.33$$

$$3 \times 30 \times 24 = 2160$$

4. Stella, a 7 year old FS Afghan Hound weighing 52 lbs., has come in because her owner has noticed a red, wet area on her hind leg. You diagnose the area as a skin infection, and you prescribe an antibiotic to help clear the infection. You choose cephalexin, and decide on a dose rate of 25 mg/kg PO BID for 10 days. If the tablets are 100 mgs each, how many tablets would be needed to complete the prescription?

- A. 60
- ☒ B. 120
- C. 180
- D. 240

$$52 \div 2.2 = 23.64 \text{ Kg}$$

$$6 \times 2 \times 10 = 120$$

$$23.64 \times 25 = \frac{591 \text{ mg}}{100} = 5.91 \text{ Tabs or } 6$$

5. You check a rectal thermometer on a pregnant heifer and the temperature reads 104.2° F. What is the heifer's temperature in Celsius?

- A. 25.9° C
- ☒ B. 40.1° C
- C. 57.9° C
- D. 130.0° C

$$C = (104.2 - 32) \times \frac{5}{9}$$

$$72.2 \times \frac{5}{9} = 40.1 \text{ C}$$

6. Your practice offers an employee pet discount charging only 65% of the cost for employee-owned animals. Your veterinary technician, Sally, brings her dog, Joey, for a dental cleaning and nail trim. If her bill totals \$324.67, how much will Sally owe for Joey's services once the discount is applied?

- A. \$113.63
- ☒ B. \$211.04
- C. \$324.67
- D. \$438.30

$$\begin{array}{r} 324.67 \\ \times .65 \\ \hline \end{array} = \$211.04$$

7. The owner of a large stable calls you regarding the need for vaccination and deworming for his stable of horses. He has a total of 8 mares, 3 stallions, 12 geldings and 4 foals (who are too young to treat or vaccinate). Your cost for the vaccines per head is \$4.45. A bottle of topical dewormer costs \$294.00 and will treat 50 head (\$5.88 per head). Assuming a typical farm call fee of \$75, and a markup cost on the medications of 150%, what will the farmer's bill be for this visit?

- A. \$237.59
- B. \$593.98
- ☒ C. \$668.98
- D. \$772.28

$$\begin{array}{r} 8 \\ 3 \\ 12 \\ 4 \\ \hline 27 \end{array}$$

$$\begin{array}{r} 23 \times 4.45 = 102.35 \\ 23 \times 5.88 = 135.24 \\ \hline 237.59 \end{array}$$

$$\begin{array}{r} 237.59 \times 1.5 = 356.39 \\ 356.39 \\ + 237.59 \\ \hline 593.98 \\ + 75.00 \\ \hline 668.98 \end{array}$$

8. You are asked to administer 4.5 ml of Xylazine (100 mg/ml) IV, to LJ, a 20 year old, 16.3 hand Appaloosa gelding who weighs 560 kg. How many cc does this injection require?

- ☒ A. 4.5 cc
- B. 450 cc
- C. 2520 cc
- D. 253,000 cc

$$4.5 \text{ ml} = 4.5 \text{ cc}$$

9. To properly sterilize a horse barr. during annual cleaning, a solution of 8.25% Clorox bleach and water at a 1:5 dilution ration is used. How many cups of bleach should be mixed with 20 gallons of water to make the solution?

- A. 8 cups
- B. 16 cups
- C. 32 cups
- ☒ D. 64 cups

$$16 \text{ cups} = 1 \text{ gal.} \quad 20 \times 16 = 320 \text{ gal.} \quad \frac{320}{5} = 64 \text{ cups}$$

10. You reconstitute 1G of Naxcel (Ceftiofur) using 20 ml of sterile water to be administered at a rate of 0.5 mg per pound to a 740 kg Santa Gertrudis bull once daily for 3 days. What is the concentration of the drug you reconstituted?

- A. .05 mg/ml
- ☒ B. 50 mg/ml
- C. 325 mg/ml
- D. 715 mg/ml

$$\frac{1000 \text{ mg}}{20 \text{ ml}} = 50 \text{ mg/ml} \quad 1 \text{ G} = 1000 \text{ mg}$$

11. The current laboratory that you have been using to perform blood counts has raised their prices significantly. You are now debating whether it is more cost effective to run the blood counts in-house, or send them to a new lab that charges you \$11.50 per sample. A microscope and the supplies to run the blood counts in-house would be \$3,420. If you average 6 tests per day, how many six-day weeks would it take for you to fully recover the cost of the equipment and supplies at \$11.50 per sample?

- A. 7 weeks
- ☒ B. 9 weeks
- C. 37 weeks
- D. 50 weeks

$$6 \times 6 \times 11.50 = \$414$$

$$\frac{\$3420}{\$414} = 8.26 \text{ wks or } 9$$

12. When examining a patient in a vet clinic, you notice they are in obvious pain. Using a stethoscope, you determine at 10 seconds a heartbeat of 21. How would the heart rate be entered on the medical record?

- A. 21 heartbeats per minute
- B. 63 heartbeats per minute
- ☒ C. 126 heartbeats per minute
- D. 210 heartbeats per minute

$$21 \times 6 = 126$$

$$\frac{60 \text{ sec}}{10 \text{ sec}} = 6 \text{ min}$$

13. One of your clients, Fred, is an obese Beagle. Fred weighs 44 lbs. and is currently 10 pounds over ideal weight. If you want Fred to lose 2% of his current weight per month, how long will it take for him to reach ideal body weight?

- A. 2 months
- B. 4 months
- C. 8 months
- ☒ D. 12 months

$$44 \times .02 = .88$$

$$\frac{10}{.88} = 11.36 \text{ mo or } 12 \text{ mo}$$

14. Carprofen (primarily marketed as Rimadyl®) is now available as a generic formulation. Your practice was purchasing Rimadyl® (50 mg) at a cost of \$148.50 for 100 tablets. The generic formulation (50 mg) costs \$168.50 for 250 tablets. How much less expensive is the generic formulation per tablet?

- A. \$0.67
- ☒ B. \$0.82
- C. \$1.22
- D. \$1.49

$$\frac{148.50}{100} = 1.49$$

$$1.49 - .67 = .82$$

$$\frac{168.50}{250} = .67$$

15. Your veterinary supplier is offering a special on Ketamine C-III this month. If you order 150 bottles (\$10.87 per bottle), you get 50 bottles free. What would be the savings per bottle if you take advantage of this sale?

- A. \$1.67
- ☒ B. \$2.72
- C. \$8.15
- D. \$10.87

$$150 \times 10.87 = \$1630.50$$

$$10.87 - 8.15 = \$2.72$$

$$\frac{1630.50}{200} = 8.15$$

16. You are about to induce anesthesia on an 80 lb. Golden Retriever for a spay. You have chosen to use Propofol, which is concentrated at 10 mg/ml, and has a dose rate of 4.4 mg/kg. How many ml of Propofol will you give to the patient?

- A. 0.83 ml
- B. 8.27 ml
- ☒ C. 16 ml
- D. 160 ml

$$80 \text{ lbs} \div 2.2 = 36.4 \text{ Kg}$$

$$36.4 \times 4.4 = 160.16 \text{ mg}$$

$$\frac{36.4 \text{ Kg}}{4.4} = 8.7 \text{ mg}$$

$$\frac{160.16 \text{ mg}}{10 \text{ mg/ml}} = 16$$

17. Your practice performs an average of 200 radiographic examinations per month, with the average number of 3 films used per examination. The hospital cost per film is \$5.50. You are considering purchasing a digital radiology system as a replacement at a cost of \$86,250. If you wish to recover the cost of the new system within 2 years while maintaining an average of 200 exams per month, what would be the minimum you would need to charge per exam to recover this investment?

- A. \$16.50
- ☒ B. \$17.97
- C. \$19.47
- D. \$20.50

$$550 \times 3 \times 200 = 3300 \times 24 = \$79,200$$

$$200 \times 24 = 4800$$

$$\frac{86,250}{4800} = \$17.97$$

18. You have been tracking the weight loss of Calypso, an overweight Australian Shepherd mix. At her last weigh in 3 months ago, she was 68 lbs. Today her weight is 24.5 kg. What percentage of her body weight was lost?

- A. 17%
- ☒ B. 21%
- C. 36%
- D. 51%

$$24.5 \text{ Kg} \times 2.2 = 53.9 \text{ lb}$$

$$68 - 53.9 = 14.1$$

$$\frac{14.1}{68} = .207 \times 100 = 20.7$$

or
21%

19. You are the managing partner of a busy 5-doctor large animal practice. The partners have set a goal that the practice will operate on a profit margin of 15% after all expenses have been paid. If the practice grosses \$90,000 this month and the monthly expenses are \$81,750, what is the actual profit margin for the month?

- ☒ A. 9.2%
- B. 11.3%
- C. 43.1%
- D. 90.8%

$$90000 - 81750 = \frac{8250}{90000} = 9.2\%$$

20. You decide to hospitalize Pandora, a 7-year old FS Siberian Husky, who presented with signs of dehydration. Your plan is to initiate IV fluid therapy for her using Lactated Ringer's Solution (LRS). Based on her weight and your assessment of her degree of dehydration, you determine her fluid infusion rate to be 75 ml per hour. How long will a 1 L bag of LRS last?

- A. 3 hours
- B. 6 hours
- C. 11 hours
- ☒ D. 13 hours

$$\frac{1000 \text{ ml}}{75 \text{ ml/hr}} = 13.3 \text{ hrs or } 13 \text{ hr}$$