

2015 North Carolina FFA Association

Vet Science Career Development Event

Math Practicum

Work the following problems and choose the best answer. Mark your answers on the scantron form.

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

A. .08 mls.
B. .18 mls.
C. 1.8 mls.
D. 8 mls.

$$9 \div 2.2 = 4.1 \text{ Kg} \quad 4.1 \text{ Kg} \times 0.2 \text{ mg} = .82 \text{ mg}$$

$$\frac{.82 \text{ mg}}{10 \text{ mg/ml}} = .082 \text{ ml}$$

2. Your practice purchases a therapy laser for \$23,750. 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, what would the price per therapy session be in order to pay off the initial cost of the machine in a 24 month period with an additional 75% markup to cover utilities, labor and repairs?

A. \$8.24
B. \$10.99
C. \$19.24
D. \$30.22

$$23,750 \times 1.75 = 41,562.50 \quad 3 \times 30 \times 24 = 2160$$

$$\frac{41,562.50}{2160} = \$19.24$$

3. Stella, a 7 year old SF 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 12 mg/kg PO BID for 10 days. If the tablets are 200 mgs, what is the total number of tablets needed to fill the prescription? (Tablets can be cut in half if necessary)

A. 30 tablets
B. 40 tablets
C. 50 tablets
D. 60 tablets

$$\frac{52 \times}{2.2} = 23.6 \text{ Kg} \quad 23.6 \times 12 \text{ mg} = 283.2 \text{ mg}$$

$$\frac{283.2 \text{ mg}}{200} = 1.4 \text{ tablet}$$

$$1.5 \times 2 \times 10 = 30 \text{ tablets}$$

4. You reconstitute 1 G of Naxcel (Ceftiofur) using 20 mls of sterile water to be administered at a rate of 0.5 mg per pound to a 650 kg Hereford bull once daily for 3 days. What is the concentration of the drug you reconstituted?

A. 71.5% or 715 mg/ml
B. 32.5% or 325 mg/ml
C. 5% or 50 mg/ml
D. 1% or 10 mg/ml

$$1 \text{ G} = \frac{1000 \text{ g}}{20 \text{ ml}} = 50 \text{ mg/ml} \quad \frac{50}{100} = 5\%$$

5. The daily rate for pet boarding is:

Under 20 lbs - \$32.00 per day
 21-50 lbs - \$36.00 per day
 Over 50 lbs. - \$40.00 per day

Susie
 $32 \times 10 = 320$
 $36 \times 10 = 360$
 $6.5 \times 2 \times 10 = 130$
 $\underline{810}$

Mary
 $40 \times 10 = 400$
 $40 \times 10 = 400$
 $4 \times 10 \times .75 = 30$
 $3 \times 5 \times .75 = 11.25$
 $6.5 \times 2 \times 10 = 130$
 $\underline{1101.25}$

1101.25
 810.00
 $\underline{1911.25}$

Dogs can be walked for an additional fee of \$6.50 per dog. Medications can be administered or applied at a rate of \$.75 per dose. Three or more dogs at the same kennel receive a 15% discount on all boarding service.

Susie Jones and her sister Mary are planning a 10 day vacation and plan to leave their dogs for boarding. Susie has a 16 lbs. Chihuahua named Luke and a 46 lbs. Golden Retriever named Sammy. Mary has a 70 lbs. Rottweiler named Larry and a 99 lbs. Bullmastiff named Stud. Luke has a prescription for joint medication that is QID and Stud has a 5 day prescription for a rash that is TID. Sammy, Larry and Stud need to be walked twice daily. Mary plans to pick up all four dogs and wants to pay the invoices for both her and Susie although they would be billed separately. What is the total cost of the invoices for their stay?

- A. \$1480.00
 B. \$1511.25
 C. \$1870.00
 D. 1911.25
6. A veterinarian diagnosed pinkeye in a 1050 pound brood cow and prescribed Nuflor for the treatment. The dosage on the label is 30 mg/kg or 30 milligrams of drug per kilogram of weight. The concentration of the Nuflor is 200 mg/ml. What dose of Nuflor will be administered?

$\frac{1050}{2.2} = 477.3 \text{ kg} \times 30 = 14319$
 $\frac{14319}{200} = 71.59$

7. You take the body temperature of a barrow hog that reads 100.4 degrees Fahrenheit. The hog is being shipped to Europe for a livestock show and the temperature has to be converted to Celsius. What is the converted body temperature?
- A. 23.7°C
 B. 38°C
 C. 155.6°C
 D. 212°C

$100.4 - 32 \times \frac{5}{9} = 38$

8. You are directed to take a weight on a client's dog. The Maltese named Rover weighs 17.16 kilograms. How much does Rover weigh in pounds?
- A. 5.4 lbs.
 B. 7.8 lbs.
 C. 37.8 lbs.
 D. 43.9 lbs.

$17.16 \times 2.2 = 37.75 \text{ lbs}$

9. How many milliliters (ml) are in 12 fluid ounces (oz) of liquid?

A. 12 mls
B. 180 mls
C. **360 mls**
D. 720 mls

$$1 \text{ fl oz} = 30 \text{ ml} \\ 12 \times 30 = 360$$

10. A veterinary assistant has a gross income of \$31,230.00. She was instructed that she will be receiving a 3% salary increase for her excellent work. What should she expect as her new annual salary?

A. \$ 30,560.00
B. \$ 31,542.00
C. \$ 31,845.00
D. **\$ 32,167.00**

$$31230 \times 1.03 = \$32,166.90$$

11. Indicate the number of tablets prescribed for the following order:

Rx: Metronidazole tablets 40 mg
Sig: 1 tablet, P.O., QID x 20 days

A. 20 tablets
B. 40 tablets
C. 60 tablets
D. **80 tablets**

$$4 \times 20 = 80$$

12. As a veterinarian you are making a client home call that is 23 miles one way from your office to a beef cattle farm to render assistance to a calving cow. Your charge for the visit is \$75.00 for the first hour of the call and \$50.00 for each additional hour, plus \$.57 per mile of travel. Additional charges for the call total \$73.00. You were on site assisting the cow for 5 hours. What are the total charges for the client home call?

A. \$99.22
B. \$174.22
C. \$301.22
D. **\$374.22**

$$\begin{aligned} &75 - 1^{\text{st}} \text{ hr} = 75 \\ &50 \times 4 = 200 \\ &26.22 \\ &\underline{73} \\ &374.22 \end{aligned} \qquad 46 \times .57 = 26.22$$

13. Our veterinary practice offers an employee pet discount of 35% for employee owned animals. Your veterinary technician, Sally, brings in her dog Joey for a dental cleaning and nail trim. If her bill totals \$324.67, how much will Sally owe for Joey's dental and trim once the discount is applied?

A. \$63.41
B. \$113.48
C. **\$211.04**
D. \$264.06

$$324.67 \times .65 = 211.04$$

14. You purchase a box of 48 heartworm tests at a cost of \$676.00. What is the cost to the client for a single test with a hospital markup of 60%?

A. \$8.45
B. \$14.08
C. \$21.12
D. **\$22.53**

$$\begin{aligned} &\frac{676}{48} = \$14.08 \text{ each} \\ &14.08 \times 1.60 = \$22.53 \end{aligned}$$

15. If a veterinary practice generates an average gross revenue of \$21,345 per week and operates 50 weeks per year, what is the annual gross revenue for the practice?

A. \$106,725
B. **\$1,067,250**
C. \$10,672,500
D. \$100,672,500

$$21345 \times 50 = 1,067,250$$

16. If the same veterinary practice generates an average gross revenue of \$21,345 per week over a 50 week period and the weekly payroll to employees including the veterinarians is \$11,217, what percentage of the weekly revenue goes toward payroll?

A. 33%
B. 47%
C. **53%**
D. 61%

$$\frac{11217}{21345} = .53$$

$$21345 - 11217 = 10128$$
$$\frac{10128}{21345} = 47\%$$
$$100 - 47\% = 53\%$$

17. A veterinary practice purchased Alfaxan C-IV for \$43.87 per bottle. The charge to patients using this product was \$61.23. What percent markup is the practice charging to their customers?

A. 30%
B. **40%**
C. 50%
D. 60%

$$\frac{61.23}{43.87} = 1.39$$

$$61.23 - 43.87 = 17.36$$
$$\frac{17.36}{43.87} = 39.5\%$$

18. To properly sterilize a kennel in between dogs, mix a solution of Clorox Regular Bleach in 5 gallons of water at the rate of $\frac{3}{4}$ cups of bleach per 1 gallon of water. What is the volume of bleach added to the 5 gallons of water?

A. 2 $\frac{1}{2}$ cups
B. 3 cups
C. **3 $\frac{3}{4}$ cups**
D. 4 cups

$$\frac{3}{4} \times 5 = \frac{15}{4} = 3.75$$

19. A veterinarian prescribes Duramycin for a 300 lb. calf that is acting sluggish. The dosage on the label for cattle is 4.5 ml /100 lbs. of body weight. What dose of Duramycin will be administered?

A. **13.5 ml**
B. 15 ml
C. 17.5 ml
D. 19 ml

$$4.5 \times 3 = 13.5 \text{ ml}$$

20. A customer brings in a 52 pound hound that has received a bite from a wild animal. The doctor prescribes Cefazolin, a common antibiotic, which is administered at a dose rate of 18 mg/kg. What is the dose rate for the dog?

A. **424.8 mg**
B. 648.4 mg
C. 936 mg
D. 2059.2 mg

$$\frac{52}{2.2} = 23.6 \times 18 = 424.8 \text{ mg}$$

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Answer Key

1. A
2. C
3. A
4. C
5. D
6. C
7. B
8. C
9. C
10. D
11. D
12. D
13. C
14. D
15. B
16. C
17. B
18. C
19. A
20. A