

**2017 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. You may write on this test.

1. You are caring for a 36 lb. dog post-op for a femoral fracture repair. The doctor asks you to administer Rimadyl (50mg/ml concentration) SQ at a dose of 4.4 mg/kg/day divided into twice daily dosing. What volume of Rimadyl will you administer at the first injection?

A. .72 ml
B. 1.44 ml
C. 3.17 ml
D. 36.08 ml

$$36 \div 2.2 = 16.4 \text{ kg}$$

$$16.4 \times 4.4 \text{ mg} = 72.16 \div 2 = \frac{36.08}{50 \text{ mg/ml}} = .72 \text{ ml}$$

2. You are about to induce anesthesia on a 17.9 lb. Havenese. You will be administering Propofol (10mg/ml) for induction. The dosage range for Propofol is 3.6-4.4 mg/kg. What is the maximum volume of Propofol you would administer to this patient?

A. 2.9 ml
B. 3.6 ml
C. 6.4 ml
D. 7.9 ml

$$17.9 \div 2.2 = 8.14 \text{ kg}$$

$$8.14 \times 4.4 \text{ mg} = \frac{35.8}{10 \text{ mg/ml}} = 3.58 \text{ or } 3.6 \text{ ml}$$

3. You are asked to fill a prescription for amoxicillin 125 mg by mouth twice daily for 10 days. You have 100 mg tablets. How many tablets will you need to dispense to fill the prescription?

A. 7
B. 16
C. 20
D. 25

$$\frac{125}{100} = 1.25$$

$$1.25 \times 10 \times 2 = 25$$

4. You are presented with a patient who was pre-medicated for surgery last year using 0.28 ml of butorphanol (10mg/ml). The patient weighed 7 kg at the time. The doctor would like to use the same dosage today. The patient now weighs 8.90 kg. How many ml of butorphanol will you administer today?

A. .25 ml
B. .36 ml
C. .72 ml
D. 1.40 ml

$$\begin{array}{r} 8.9 \\ - 7.0 \\ \hline 1.9 \text{ kg} \end{array}$$

$$\frac{.28}{7} = .04 \text{ ml/kg}$$

$$1.9 \times .04 = .076$$

$$\begin{array}{r} .28 \\ + .076 \\ \hline .356 \end{array}$$

$$8.9 \times .04 = .356$$

5. How many grams of dextrose would you add to a 1 L bag of sterile water to create a 50% (.5g/ml) dextrose solution?

A. 100 grams
B. 300 grams
C. 500 grams
D. 1000 grams

$$\frac{1000 \text{ ml}}{1 \text{ L}} \times .5 \frac{\text{g}}{\text{ml}} = 500 \text{ g/L}$$

6. A patient weighs 34 lbs. and is morbidly obese. The patient has started on a diet and exercise regimen that aims to have the patient lose 1-2% of body weight per week. Assuming the patient loses the maximum amount of weight for the plan, what would the patient weigh 4 weeks after starting the diet?

- A. 29.9 lbs.
- ☒ B. 31.4 lbs.
- C. 32.0 lbs.
- D. 32.6 lbs.

$$\begin{array}{ll} \text{WK 1} & 34 \times .02 = .68 \quad 34 - .68 = 33.32 \\ \text{WK 2} & 33.32 \times .02 = .67 \quad 33.32 - .67 = 32.65 \\ \text{WK 3} & 32.65 \times .02 = .65 \quad 32.65 - .65 = 32.0 \\ \text{WK 4} & 32.0 \times .02 = .64 \quad 32 - .64 = 31.4 \end{array}$$

7. There is a special running on vet wrap from you distributor. The special states that for every 15 individual rolls you purchase, you will receive an additional 3 free rolls. The cost for the 15 rolls is \$22.80. You need a total of 360 rolls to resupply. What would be the cost based on this distributor special?

- A. \$342.00
- ☒ B. \$456.00
- C. \$547.20
- D. \$8208.00

$$\frac{360}{18} = 20 \quad \begin{array}{r} \$ 22.80 \\ \times 20 \\ \hline 456.00 \end{array}$$

8. The owner of a farm calls for a veterinarian to come out to vaccinate his 6 breeding mares, 4 ewes, and his Great Pyrenees. The cost to the veterinarian are as follows:

Horse vaccination: \$5.80/head
Cow vaccination: \$3.60/head
Goat/Sheep vaccination: \$6.28/head
Dog vaccination: \$14.00/head
Deworming (all species): \$5.30/head
Farm call: \$75.00

$$\begin{array}{l} 6 \times 5.80 = 34.80 \times 1.50 = 17.4 + 34.80 = 52.20 \\ 4 \times 6.28 = 25.12 \times 1.50 = 12.56 + 25.12 = 37.68 \\ 1 \times 14 = 14 \times 1.5 = 7 + 14 = 21.00 \\ \text{Farm call} \quad 75.00 \\ \hline \$ 185.88 \end{array}$$

How much will the visit cost, including the farm call with a 50% markup on vaccinations?

- A. \$138.52
- B. \$148.92
- C. \$170.28
- ☒ D. \$185.88

9. You are asked to administer 4 mls of xylazine (100mg/ml) IV, on a 2 year old, 15.3 hand Appaloosa gelding who weighs 560 kgs. How many ccs do you inject?

- ☒ A. 4 ccs
- B. 8 ccs
- C. 16 ccs
- D. 22.4 ccs

$$4 \text{ ml} = 4 \text{ ccs}$$

10. You are presented with an 11 lb. cat that needs to be placed on maintenance fluids at a rate of 40 ml/kg/day. How many ml/hr should your fluid pump be set to?

- ☒ A. 8.3 ml/hr
- B. 16.67 ml/hr
- C. 18.3 ml/hr
- D. 200 ml/hr

$$11 \div 2.2 = 5 \text{ kg} \quad 40 \frac{\text{ml}}{\text{kg}} \times 5 \text{ kg} = 200 \text{ ml/day} \quad \frac{200}{24 \text{ hr}} = 8.3 \frac{\text{ml}}{\text{hr}}$$

11. You are asked to set up a fluid drip of 0.9% saline at a rate of 10ml/kg/hr for a 55 lb. patient. You have a drip set to run 15 drops/ml. What will your fluid rate be in drops/second?

- A. .5 drop/second
- ☒ B. 1 drop/second
- C. 1.5 drops/second
- D. 2.0 drops/second

$$55 \div 2.2 = 25 \text{ kg}$$

$$25 \text{ kg} \times 10 \text{ ml/kg/hr} = 250 \text{ ml/hr}$$

$$\frac{250 \text{ ml/hr}}{60 \text{ min/hr}} = \frac{4.17 \text{ M}}{60 \text{ sec/min}} = .07 \text{ M}$$

$$.07 \text{ ml} \times 15 \text{ d/ml} = 1.0 \text{ drop}$$

12. You purchase a box of 25 heartworm tests for \$368.00. You charge 175% mark up to the client for the test. How much will the client pay for heartworm testing for 2 dogs?

- A. \$40.48
- B. \$51.52
- ☒ C. \$80.96
- D. \$1012.00

$$368 \times 1.75 = 644$$

$$+ \$368$$

$$\hline \$1012$$

$$\frac{1012}{25 \text{ dogs}} = 40.48 \times 2 \text{ dogs} = \$80.96$$

13. Your animal clinic is investing in a new digital radiology unit with a cost of \$98,642. They would like to recuperate the cost of the equipment within 2 years. What is the minimum amount the clinic could charge per radiograph assuming they maintain the rate of 100 radiographs/month to recuperate these costs in this time frame?

- ☒ A. \$41.10
- B. \$82.20
- C. \$164.40
- D. \$986.42

$$1000 \times 12 \times 2 = 2400$$

$$\frac{\$98642}{2400} = 41.10$$

14. Your practice purchases a therapy laser for \$18,957 that you anticipate you will be able to recuperate over a 36 month period. You have been asked to set up a price to charge for each therapy session. If you anticipate an average of 3 sessions per day in a 30 day month, calculate the base price per session plus a 75% practice markup.

- A. \$5.85
- B. \$8.77
- ☒ C. \$10.24
- D. \$12.46

$$3 \times 30 \times 36 = 3240 \text{ sessions}$$

$$\frac{18957}{3240} = 5.85 \times .75 = 4.39$$

$$+ 5.85$$

$$\hline 10.24$$

15. A client brings in a cat for a routine exam. A rectal thermometer is used to take a temperature reading which is 103.9°F. What is the cat's temperature in Celsius?

- A. 34.5°C
- B. 36.3°C
- C. 37.9°C
- ☒ D. 39.9°C

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

$$C = (103.9 - 32) \times \frac{5}{9}$$

$$\frac{71.9 \times 5}{9} = 39.9^\circ\text{C}$$

16. You decide to keep Sammy, a 4 year old male beagle, overnight for observation as he is suffering from an elevated temperature and dehydration. Your plan is to initiate IV fluid therapy for him using LRS. Based on his weight and the assessment of dehydration, you determine his fluid infusion rate to be 90 mls per hour. How long will a 1 L bag of LRS last?

- A. 8 hours
- B. 9 hours
- C. 10 hours
- D. 11 hours

$$\frac{1000}{90 \text{ ml/hr}} = 11.1 \text{ hr}$$

17. Scottie is a 9 year old NM Akita that weight 89 lbs and his owner has noticed a deep cut on the inside of his right hind leg. You mend the wound with 5 stitches and prescribe an antibiotic to ward any infection. You choose to give cephalexin at a dose rate of 5 mg/kg PO TID for 15 days. If the tablets are 100 mgs, what is the total number of tablets needed to fill the prescription?

- A. 45 tablets
- B. 60 tablets
- ☒ C. 90 tablets
- D. 120 tablets

$$89 \div 2.2 = 40.5 \text{ kg}$$

$$40.5 \times 5 = 202.5 \text{ mg}$$

$$\frac{202.5 \text{ mg}}{100 \text{ mg/tablet}} = 2.03 \text{ tablet}$$

$$2 \times 3 \times 15 = 90 \text{ tablets}$$

18. A veterinary assistant earns an annual salary of \$42,580. She has been notified that she will be receiving a 7% salary increase starting at the first of the year. What should she expect to be her new annual salary?

- A. \$39,599.40
- ☒ B. \$45,560.60
- C. \$49,580.00
- D. \$54,388.80

$$42,580 \times 1.07 = 45,560.60$$

$$\begin{array}{r} 42580 \\ \times 1.07 \\ \hline 298060 \\ + 42580.00 \\ \hline 45560.60 \end{array}$$

19. As a veterinary assistant, you and the veterinarian you work with are making a visit to a client who has a horse that has been struck by a car. After arriving and evaluating the patient, the vet determines the horse needs to be put down. The charges for the visit is the standard \$75.00 plus \$.53 per mile travel. The roundtrip from the office is 62 miles. Additionally your services and medications for the animal were \$310. The vet decides since he could not save the horse he will only charge 50% of the services and medications. What is the total bill to the client?

- A. \$187.86
- B. \$230.00
- ☒ C. \$262.86
- D. \$417.86

$$\begin{array}{r} 62 \\ \times .53 \\ \hline \$32.86 \end{array}$$

$$310 \times .50 = 155$$

$$\begin{array}{r} 155 \\ 75 \\ + 32.86 \\ \hline 262.86 \end{array}$$

20. A veterinary practice purchased a bottle of dewormer at a cost of \$294. The practice will use the bottle of dewormer to treat 50 horses and the medication charge will be \$8.82 per treatment. What percent markup is the veterinary practice charging for the medication?

- A. 33%
- ☒ B. 49%
- C. 67%
- D. 100%

$$\frac{294}{50} = 5.94$$

$$\begin{array}{r} 8.82 \\ - 5.94 \\ \hline 2.88 \end{array}$$

$$\frac{2.88}{5.94} = .49$$

or
49%