VETERINARY SCIENCE CDE PRACTICUM RESOURCES

APPENDIX #1 - MATH PRACTICUM

Units of Measurement, Conversions, and Dosage Abbreviations

These are common formulas and conversions that students should be prepared to use as they may appear on the Math Practicum.

Units of Mass	**Units of Volume**
1 kilogram (kg) = 2.2 pounds 1 pound = 0.45 kg 1 gram (g) = 1000 milligrams (mg) 1 pound = 453.59 g 60 grains (gr) = 1 dram (dr) 3 teaspoons (tsp) = 1 tablespoon (tbsp) = 1/2 oz = 14.3 g 2 tbsp = 1/8 cup = 1 oz = 28.3 g 4 tbsp = 1/4 cup = 2 oz = 56.7 g 5 1/3 tbsp = 1/3 cup = 2.6 oz = 75.6 g 8 tbsp = 1/2 cup = 4 oz = 113.4 g 12 tbsp = 3/4 cup = 6 oz = 0.375 pound 32 tbsp = 2 cups = 16 oz = 1 pound	1 tsp = 5 milliliters (ml) 2 tbsp = 1 fluid ounce (fl oz) = 30 ml 1/4 cup = 2 fl oz = 60 ml 1/2 cup = 4 fl oz = 125 ml 1 cup = 8 fl oz = 250 ml 1 1/2 cups = 12 fl oz = 375 ml 2 cups or 1 pint = 16 fl oz = 500 ml 4 cups or 1 quart = 32 fl oz = 1000 ml = 1 liter (L) 1 gallon = 128 fl oz = 4 L 2 pints = 1 quart 4 quarts = 1 gallon
Units of Temperature	
°C = 5/9 (°F-32) or (°F-32) x 5/9	°F = 9/5 (°C) + 32 or °C x 9/5 + 32

Reading/Interpreting Prescriptions

Use common veterinary abbreviations to interpret dosages and prescriptions.

IM	Intramuscular	IV	Intravenous	SQ	Subcutaneous	p.c.	After meals
a.c.	Before meals	p.o.	Orally, by mouth	p.r.	rectally	top.	topical
s.i.d.	Once daily	b.i.d.	Twice daily	t.i.d.	Three times daily	q.i.d	Four times daily
q.d.	Every day	q.o.d	Every other day	s.s.	One half	DOB	Date of birth
o.s.	Left eye	o.d.	Right eye	a.s.	Left ear	a.d.	Right ear
a.u.	Both ears	o.u.	Both eyes	cap.	capsule	g.t.t.	A drop
tab.	tablet	ad. lib.	Available at all times	cm	centimeter	mm	millimeter
g	gram	kg	kilogram	b.w.	Body weight		

APPENDIX #2 - CLINICAL AND HANDLING PROCEDURES

Handling and Restraint Procedures: Small Animal Restraints

Cat Muzzle

- Scruff the cat with one hand, and lift, keeping the cat close to the body.
- Place the cat in seated or sternal position on the exam table. Ensure the cat is restrained by another helper before leaving the cat on the exam table.
- Select a muzzle of the appropriate size for the cat
- Position the muzzle correctly in the hands
- Approach the cat from behind with the muzzle in both hands while another person restrains the cat.
- Bring the muzzle up to the cat's face in one swift motion and secure the muzzle behind the ears.

Nylon Dog Muzzle

- Select the appropriate muzzle
- Place the dog in seated or sternal position on the exam table or the floor
- Come from behind the dog's head with the muzzle in one hand in the correct position
- Bring the muzzle up to the dog's face and slip it on while grasping the strap with the other hand
- Secure the muzzle and check for a proper fit by inserting one finger under the strap on all sides.

Gauze Dog Muzzle

- Select the proper type of material and length.
- Place the dog in seated or sternal position on the exam table or the floor
- Make a loop in the gauze and approach the dog from behind
- Place the loop on the dog's face with the tie on top
- Quickly tighten the loop and then cross the end under the dog's face
- Bring the ends back behind the dog's head under the ears and tie in a quick-release bow.

Applying an Elizabethan Collar

- Choose the correct size of E-collar for the patient.
- Prepare and assemble the E-collar for placement
- Place the e-collar over the animal's head, being careful to not catch the ears.
- Secure the e-collar by attaching the straps to the animal's collar or a length of gauze so that the animal cannot remove the collar
- Check for a proper fit by inserting one finger under the collar on all sides, to ensure that the animal's breathing is not restricted.

Placing a Cat in a Cat Bag

- Scruff the cat and lift it into the bag in one swift motion while supporting the hind end.
- Wrap the Velcro strap around the cat's neck and immediately zip up the bag.
- Use the proper zippered opening to expose the front limb.
- To remove the cat, remove the Velcro strap first, then unzip the bag and remove the cat by scruffing and supporting the hind end.

Handling and Restraint Procedures: Properly Restraining a Cat for Procedures

Cephalic IV Catheter

- Place the cat in sternal recumbency on an exam table.
- Control and lift the head up by placing thumb and forefingers over top of head, fingers firm on zygomatic arches (below eyes).
- Extend the left front limb forward by grasping the elbow in the palm of his or her hand with thumb on the top of the elbow joint.
- Occlude the vein by pressing down on the top of the elbow joint with his or her thumb and then rotating his or her thumb laterally.

Jugular Venipuncture

- Place the cat in sternal recumbency with its chest close to the edge of the table.
- Control and lift the head up by placing thumb and forefingers over top of head, fingers firm on zygomatic arches (below eyes).
- Grasp the front legs and extend them down off the edge of the table.
- Use the arm and elbow to restrain the cat's body close to the student's body.

Femoral Venipuncture

- Place the cat on an examination table.
- Scruff the cat with one hand and lift it off the table enough to grasp both hind legs with his or her other hand and reach under the cat to grasp both hind limbs.
- Lay the cat on its side with the hind legs stretched rearward.
- Tuck top rear leg and tail while occluding with side of hand.

Handling and Restraint Procedures: Properly Restraining a Dog for Procedures

Lateral Saphenous Venipuncture

- Lift the dog and place it on the exam table.
- Place the right arm across the dog's neck and reach between the front legs to grasp the dog's right forelimb in the right hand.
- Place the left arm over the dog's back and reach for the dog's right rear limb, just proximal to the hock.
- With the dog's body close, gently lift the limbs while allowing the dog's body to lay on the table; the dog should be on its right side.
- Allow the dog to relax for a couple seconds, not releasing the grasp on the limbs.
- Use the left hand to hold the limb tightly in the area just distal to the stifle, which will occlude the vein.

Cephalic Venipuncture

- Restrain the dog in sternal recumbency
- Stand on the dog's right side, wrapping an arm around the dog's neck
- Hold the dog's left forelimb with elbow in the palm of the hand and extend the dog's limb forward toward the person performing the procedure.
- With the elbow of the dog in the palm, rotate the thumb so it is on top of the dog's limb at the bend of the elbow.
- Occlude the vessel with the thumb and rotate laterally to expose the vein.

Small Dog Jugular Venipuncture

- Place one arm around the dog's neck and place the other arm around the dog's back to grasp the dog's forelimbs
- Use body weight to encourage the dog to lay down
- Cup one hand under the muzzle and push the head upward, away from the chest, holding the head up and secure
- Use the other hand to grasp the front legs and extend them over the end of the table.

Handling and Restraint Procedures: Haltering and Restraint of Large Animals

Haltering Ruminants

- Without quick movements and loud noises, approach the patient at a 45-degree angle to the patient's left shoulder.
- Place the crown piece of halter over the ears, then slip the nose through the nosepiece.
- Adjust the halter such that the nose band crosses over the bridge of the nose halfway between the nostrils and eyes.
- Ensure that the adjustable portion of the nose band is under the chin, not across the bridge of the nose.
- Keep the standing end or lead rope portion on the left side of the patient.

Haltering Horses

- Without quick movements and loud noises, approach the patient at a 45-degree angle to the patient's left shoulder.
- Place the end of the lead rope over the horse's neck and pass sufficient length of lead to form a handheld loop around the horse's neck.
- Holding the handheld loop in the right hand, use the left hand to slip the nose-band of the halter over the nose.
- Release the lead rope and with the right hand under the horse's neck, pass the crown strap over the head and behind the ears and attach the end to the appropriate place on the halter.
- Snap the end of the lead to the lead ring of the halter and undrape the lead rope from the horse's neck.
- Adjust the halter, so it is snug enough that the nose piece could not fall over the end of the nose but not so tight that the halter cuts or rubs the horse or restricts jaw movement or breathing.

Lifting the Hind Foot of a Horse

- Without quick movements and loud noises, approach the haltered patient at a 45-degree angle to the patient's hip.
- Stand beside the horse facing caudally (facing the hindquarters).
- Slide a hand over the hip and down the caudal aspect of the leg.
- Continue down the leg with their hand cupped around the palmar aspect, over the tendons behind the cannon bone.
- Apply light pressure to either side of the tendons near the fetlock until the horse lifts its leg. Then cup the hoof to support the animal.
- Gently place the foot back on the ground and move away in a safe manner.

Snare Restraint of The Pig

- Standing next to the patient, guide the loop of the snare into the mouth and over the nose or upper jaw.
- Make sure the loop is inserted far enough into the patient's mouth.
- Pull the loop tight when it is in the proper position.
- Keep the loop tight while moving to the front of the patient.
- Maintain the pressure on the snare so that the patient cannot escape.
- Keep control of the patient until the patient ceases to struggle.
- Release the patient after the procedure is completed

Clinical Procedures: Administering Medication

Aural Medication

- Read and interpret the veterinarian's order or prescription.
- Administer the proper amount of medication into the ear canal by holding the ear pinna upright and dripping the medication directly into the ear canal without contamination.
- Massage the base of the outside of the ear canal, causing a swishing sound from the medication moving around in the ear canal.
- Wipe away any solution that may have leaked onto the outside of the ear flap or hair.

Ophthalmic Medication

- Read and interpret the veterinarian's order or prescription.
- Wipe any discharge from the patient's eye using a gauze sponge or cotton ball.
- Open the end of the medicine dropper.
- Use the index finger and thumb to pull the upper and lower lids apart to open the eye.
- Use the thumb to pull the lower lid down and the index finger to pull the upper lid upward.
- While resting the hand holding the medication on the head of the patient, apply the drops or ointment gently into the eye without touching the eye, counting each drop or applying the proper amount of ointment without contamination.
- Release the eyelids and allow the animal to blink to move the medication throughout the eye.

Oral Medication

- Read and interpret the veterinarian's order or prescription.
- Open the mouth of the animal. If needed, select the proper tool for administering the medication.
- Maintain control of the head or muzzle during the administration of the medication.
- Administer medication by hand, or using the correct tool for the species.
- Use an appropriate technique to encourage the patient to swallow.

Clinical Procedures: Reading/Interpreting Prescriptions

Use common veterinary abbreviations to interpret dosages and prescriptions.

IM	Intramuscular	IV	Intravenous	SQ	Subcutaneous	p.c.	After meals
a.c.	Before meals	p.o.	Orally, by mouth	p.r.	rectally	top.	topical
s.i.d .	Once daily	b.i.d.	Twice daily	t.i.d.	Three times daily	q.i.d	Four times daily
q.d.	Every day	q.o.d	Every other day	s.s.	One half	DOB	Date of birth
o.s.	Left eye	o.d.	Right eye	a.s.	Left ear	a.d.	Right ear
a.u.	Both ears	o.u.	Both eyes	cap.	capsule	g.t.t.	A drop
tab.	tablet	ad. lib.	Available at all times	cm	centimeter	mm	millimeter
g	gram	kg	kilogram	b.w.	Body weight		

Clinical Procedures: Filling Syringes and Giving Injections

Filling A Syringe

- Determine the amount to be placed in the syringe.
- Select the proper-sized syringe.
- Insert the syringe into the top of the bottle.
- Place the bottle upside down in one hand and hold it securely.
- Withdraw the proper volume.
- Remove the syringe from the bottle.
- Gently tap or snap the edge of the syringe to remove any air bubbles or slightly expel the air by pushing the end of the plunger.

Giving an Intramuscular Injection

- Select the proper site for administration.
- Direct the needle through the skin and into the muscle
- Aspirate the syringe; if no blood is noted, depress the plunger at a steady rate to inject the medication
- Withdraw the needle and place into the sharps container
- Massage or rub the area where the injection is given and praise the patient
- Place the syringe in the sharps container.

Giving a Subcutaneous Injection

- Lift the skin using the thumb and forefinger forming a triangle or tent with the skin.
- Insert the needle into the skin at the base of the 'tent' or triangle, parallel to the body.
- Aspirate the syringe; if no blood is noted, depress the plunger at a steady rate to inject the medication
- Withdraw the needle and place into the sharps container
- Massage or rub the area where the injection is given and praise the patient
- Place the syringe in the sharps container.

Clinical Procedures: Preparing and Handling a Surgical Pack

Preparing a Surgical Pack for Sterilization

- Gather the appropriate instruments and instrument pan according to a pack recipe
- Select the appropriate packaging material and chemical indicator
- Assemble the pack correctly by following the instructions on the checklist or recipe
- Place the chemical indicator in the correct area of the pack
- Properly wrap, secure, and label the pack

Opening a Surgical Pack

- Place the surgical pack on a clean, dry surface.
- Remove or tear the tape securing the package
- Open the first flap away from the body
- Open the side flaps without reaching across the open pack, avoiding contamination
- Open the last flap toward the body
- Step away so the surgeon or scrub nurse can complete the opening of the pack.

Clinical Procedures: Wound Care

Bandage Removal

- Hold bandage scissors correctly, keeping the blade flat against the body and the tip raised slightly upward in contact with the bandage
- Begin cutting each layer from the distal end, moving proximally
- Gently remove each layer of bandage
- Note the status of the unbandaged area and look for signs of normal wound healing or potential problems

Suture Removal

- Inspect the incision site, looking for signs of normal wound healing or potential problems. If no problems, begin suture removal
- Choose the correct tool to remove sutures
- Place the curved blade underneath the suture for removal, and remove the suture, without causing unnecessary harm, or discomfort to the patient

Clinical Procedures: Fecal Flotation with Fecalyzer

- Select about 1/4 teaspoon of feces and place it into a fecalyzer.
- Add enough flotation solution to fill the fecalyzer about half full.
- Mix the feces into solution until no large fecal particles remain.
- Place insert into fecalyzer.
- Fill the vial with more solution until there is a visible meniscus at the top.
- Place a cover slip on top of the fecalyzer.
- Allow the vial to sit undisturbed for 10 to 15 minutes.
- Carefully remove the cover slip without tilting it and place it on a microscope slide.

Clinical Procedures: Antiseptic Surgical Practices

Surgical Site Preparation

- Apply an antiseptic scrub to the clipped area, following recommended contact times for disinfection..
- Prep the clipped area with a clean surgical sponge beginning at the incision site moving in a circular motion and working toward the edges. Be careful to not bring the sponge back to the incision site once it is moved away from the incision site. Discard the sponge once it reaches the edge of the clipped area.
- Wipe the clipped area with a rinse solution using a clean surgical sponge following the same pattern as when scrubbing with the antiseptic.
- Repeat the scrub and rinse a minimum of three times or until the final rinse sponge is clean.

Removing Gloves

- Grasp the outside of one glove at the wrist
- Peel the glove away from the body, rolling it inside out
- Hold the glove just removed in the still-gloved hand
- Hook fingers inside the other glove at the top of the wrist
- Peel off the second glove, leaving the first glove inside the second
- Dispose of both gloves in a proper waste container

Clinical Procedures: Taking and Interpreting Vital Signs

Taking a Temperature

- Insert a lubricated thermometer in the animal's rectum to obtain a reading.
- Clean the thermometer tip off with rubbing alcohol to disinfect.
- Record temperature reading with ℉ label in the physical exam chart.

Taking a Pulse

- Locate and palpate the femoral artery with fingertips.
- The pulse rate (per minute) is calculated by counting the number of pulses palpated for 15 seconds and multiplied by 4.
- Auscultate the heart while palpating the pulse, to ensure they are identical rhythm.
- Record pulse rate with Bpm (beats per minute) label in the physical exam chart.

Taking Respiration Rate

- To calculate the respiratory rate (per minute), count the number of breaths for 15 seconds and multiply it by 4. (One breath is counted when the chest rises and falls back to a rest state.)
- Auscultate both left and right sides of the lungs while positioning the stethoscope in high and low spots on each lung.
- Record respiration rate with bpm (breath per minute) label in the physical exam chart.

Taking Capillary Refill Time and Mucous Membrane Examination

- Visualize the gingival mucous membranes by lifting the animal's lip.
- Apply gentle pressure with the thumb onto the mucous membranes, causing the color to turn pale.
- Count the amount of time to return to normal mucous membrane color once pressure is released.
- Observe the color of the mucous membranes.
- Record both CRT and MM in the physical exam chart.