

# LESSON PLAN: EQUINE DIGESTION SYSTEM GAME

**Objective:** To help members learn the components of the equine digestion system.

## Materials Needed:

### Phase 1:

- scissors (incisors)
- mortar and pestle (molars)
- garden hose dual valve (pharynx)
- 4' long tube (esophagus)
- 2-4 gallon bucket (stomach)
- plastic bag, rectangular, about 3-4 feet long (cecum)
- about 70' of tubing (small intestine)
- about 12' of tubing (large colon)
- about 10' of tubing (small colon)
- about 1 foot of tubing (rectum)
- bag of malted milk balls (solid waste)
- measuring tape so players can measure items

Make 3x5 index cards that say:

**INCISORS:** Pick up food and tear or cut it from the ground.

**MOLARS:** Chew and grind the food, breaking it into smaller pieces

**PHARYNX:** Makes sure the food goes down the digestive track and not into the lungs (respiratory track)

**ESOPHAGUS:** About 4 feet long, a muscular tube that transports undigested food in one direction only.

**STOMACH:** Small, muscular sack that holds approximately 2-4 gallons where food is mixed with digestive juices. Proteins and minerals are absorbed into the bloodstream here.

**CECUM:** large pouch, about 3-4 feet long where roughage is broken down by fermentation (with help from good bacteria)

**SMALL INTESTINE:** About 70 feet long, where nutrients (especially proteins, carbohydrates, fats and minerals) are broken down and absorbed into the bloodstream.

**LARGE COLON:** tube about 12 feet long, where the carbohydrates are absorbed

**SMALL COLON:** 10 foot long tube where water is absorbed and solid waste is formed

**RECTUM:** About 1 foot long, holding chamber for solid waste until disposed through the anus.

### Phase 2:

3x5 Cards for Phase 2 (can be a different color)

PAROTID GLAND

SUBMAXILLARY GLAND

SUBLINGUAL GLAND

EPIGLOTTIS

CARDIAC SPHINCTER

PEPSIN, RESIN AND LIPASE

HYDROCHLORIC ACID

PYLORIC VALVE

DUODENUM

JEJUNUM

ILEUM

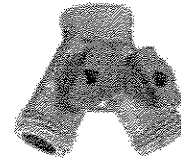
FERMENTATION

RIGHT LOWER (VENTAL) COLON

LEFT LOWER (VENTAL) COLON

LEFT UPPER (DORSAL) COLON

TRANSVERSE COLON



### Phase 3:

See worksheet for questions.

**Reference:** USPC Manuals of Horsemanship, C and B- HA- A Levels

**Players:** Anywhere from 1 to about 6

The game is played in three phases:

Phase 1 - Players assemble an equine digestive tract using the tubes and other items listed in Phase 1 and the descriptive cards. When they are done check the sequence on the Equine Digestion Game worksheet, giving them one point for each item they have correct.

Phase 2 - Players must place the Phase 2 cards by, in or between the correct parts of the digestive anatomy. Two points for each correct card.

Phase 3 - Players answer questions about the equine digestion system (3 points each).

# EQUINE DIGESTION GAME

NAMES: \_\_\_\_\_

One Point	Two Points	Three Points
INCISORS	<p>Glands</p> <p>PAROTID - largest, located near the poll</p>	<p>From start to finish, equine digestion takes approximately how many hours?</p> <p>_____ 72 ( C - 187)</p>
	<p>SUBMAXILLARY - in the jaw</p>	<p>What does saliva begin to break down?</p> <p>Starches (A - 236)</p>
	<p>SUBLINGUAL - under the tongue</p>	
MOLARS		
PHARYNX	<p>EPIGLOTTIS: flap that covers the opening to the windpipe during swallowing.</p>	<p>True or False: Food can only move one way in the esophagus.</p> <p>True. (A - 236)</p>
ESOPHAGUS		<p>Where does most choking occur?</p> <p>Answer: Esophagus</p>
	<p>CARDIAC SPHINCTER - connects the esophagus to the stomach</p>	
STOMACH	<p><b>Enzymes</b></p> <p>PEPSIN - break down proteins into amino acids</p>	<p>Are horses herbivores, carnivores or omnivores?</p> <p>_____ herbivores</p>
	<p>RESIN</p>	<p>Why should we feed horses small meals often instead of large meals infrequently?</p> <p>Because their stomachs are relatively small and can be easily overwhelmed.</p>
	<p>LIPASE</p>	
	<p><b>Acid</b></p> <p>HYDROCHLORIC ACID - secreted in the stomach to break down chemicals</p>	

	PYLORIC VALVE - Connects the stomach to the small intestine.	Protein, fats, vitamins and minerals are mostly digested and absorbed in the _____ and _____. Stomach and small intestine.
SMALL INTESTINE	DUODENUM - Where majority of digestion occurs	
	JEJUNUM - Where majority of absorption occurs. Proteins, simple carbohydrates and vitamins A, D and E.	What is the main part of the small intestine? Jejunum (20 feet long) (A - 236)
	ILEUM - At the end of the ileum is a valve that controls the flow of food into the cecum (A - 238)	The small intestine is covered with _____, small hairlike projections that increase the surface area for absorption of nutrients. Villi (A-238)
CECUM	FERMENTATION occurs in the cecum and uses bacteria to break up the plant fiber (roughage)	The large intestine is made up of what four parts of the digestive system? Cecum, Large colon, and small colon.
LARGE COLON	Right lower (ventral) colon	Where do most impaction colics occur because of all the twists and turns? _____ Large colon
	Left lower (ventral) colon	What is the muscular contractions that move the food along the digestive tract, mixing it with digestive juices called? Peristalsis (A-238)
	Left upper (dorsal) colon	
SMALL COLON	Transverse colon	What is the large intestine designed to process? Roughage.
	RECTUM	Hard, dry fecal balls can mean that a horse is not getting enough of what nutrient? Water (A-239)