Horses for Courses!

Farm-Based Education Curriculum

for

Maryland Horse Discovery Centers

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The Maryland Horse Industry Board (MHIB) program is happy to share this curriculum guide with farm-based educators and non-formal teachers who work with Horse Discovery Center stables and equine centers open to school group visits. *Horses for Courses* raises the level of public awareness of Maryland's equestrian/equine traditions and the positive impact of horses on the quality of life in Maryland by blending history and science education with dynamic, fun, hands-on lessons for grades 4 through 8. Lessons have been aligned with MSDE Voluntary Social Studies Standards, Next Generation Science Standards, and the Maryland Environmental Literacy Guidelines.

Special thanks go to the great team of curriculum writers who worked to bring this curriculum together! Writing staff include equestrians Jennifer Purcell, Ahesahmahk Dahn, Nicky Wetzelberger, Ann Petrasek, Gayle Mahaney, Tracy McKenna, Renee Dixon, Maryanna Skowronski, Barbara Sollner-Webb, Cathy Schmidt, Carlene Eaton, and project editor Dana Knighten brought together their knowledge of Maryland horse history, equine standards of care, and industry expertise to create a four-unit, 20 lesson collection that covers horse health and care, history, equine landscapes, and equine careers. Peggy Eppig, MAEF, coordinated the project and produced the curriculum book.

We offer occasional professional development for Horse Discovery Center staff and others to train educators on how to use the curriculum and how to provide meaningful field trip opportunities for teachers and students. If interested in a training session please contact the Maryland Horse Industry Board:

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Farm-Based Education for Your Horse Discovery Center

Farm-Based Education and Agri-Tourism

Know the distinctions between agri-tourism and farm-based education when marketing your program to schools and youth organizations. While agricultural education is fun on the farm, not every fun activity is necessarily educational. Be sure to seek help aligning your activities with the needs and standards of your local schools.

When discussing a farm-based education program with your farm insurance company be sure to explain the differences in audiences and goals between entertainment events you may offer and educational field trips. The distinction will be important in waivers and releases.

Educational Mission Statement

An educational mission statement describes the purpose and philosophy of your organization. As a Horse Discovery Center you may already have a mission statement, but it is important that a mission statement is developed specifically for your K-12 farm-based education program. This is helpful for teachers, parents, and administrators who want to learn more about your educational program. Make it easily available on your web page or promotional materials.

Your educational mission statement should reflect your unique program, unique topics and content, and the student audience you serve. Mission statements should change as you expand or improve your program. Revisit your educational mission statement every year to ensure that it is being upheld and accurately reflects the purpose and philosophy of your organization.

An example -

> *Our intermediate and middle school farm-based education program reflects the rich equine history of our region, from Maryland's early colonial period to the Battle of Antietam, with science and history-based, hands-on lessons that feature safe and exciting close encounters with our horses!*

When creating your farm-based education program, reflect on your mission. All education programs should directly relate to your mission and organizational goals. In the beginning create one or two quality foundation programs that you are passionate about. Work to refine and improve your foundation program and grow from there!

Facility Must-Haves for School Groups

If you are already a Maryland Horse Discovery Center, then you should have restrooms and hand-washing stations available. An indoor or event tent meeting space is important if weather forces a change of venue for activities or lunch.

Consider the size of your parking area. Is there adequate space for a bus or large vans to park and turn around? Consult with a teacher or local school administrator and invite them to visit your facility. What suggestions do they have for accommodating school groups?

Facility Nice-To-Haves

Build a rolling rack for rubber boots and jackets.

Construct a picnic ground in a shady area.

Make a hay bale circle for gatherings and wrap-up activities.

Create a class picture area where students and teachers can assemble with a scenic view.

Install a "Sightings" board to keep track of birds, mammals, weather, and natural events.

Outfit an indoor classroom with supplies you need for indoor and outdoor activities.

Add your ideas!

_____

_____

_____

Rules for Schools

You should have a short list of non-negotiable rules that ensure a safe field trip. Depending on your site, these rules could include the following, but should reflect the farm's unique safety profile as well.

Use quiet, calm voices around horses.

Define areas where students may be and where students are not allowed.

No running unless allowed in a game or event.

Students must stay with their group.

Group Management

Ask students to help define ground rules for behavior. Ask them what behaviors would be most appreciated by horses and staff. What rules are essential for everyone's safety - including the horses? Ask students and teachers to self-regulate their group's behavior so that you can direct your attention to facilitating a fun experience for everyone! Invite teachers and chaperones to be part of the group and not just tag-a-longs. Encourage conversation and questions regarding how to best manage themselves.

Share "unwritten rules" of human behavior that other groups of people use around animals.

- Wildlife photographers have a ground rule that states if the animal they are photographing moves or displays nervousness at their presence, then the photographer is too close and should back away.
- Hikers who walk through wilderness areas share news about avoiding trails where mother animals and their young have been spotted.
- Animal rescue workers follow rules of calm engagement when attempting to move frightened animals to safer surroundings.

How will students and teachers help to maintain a good learning environment for themselves on the farm while also creating a safe and calm group atmosphere that will allow them to be close to horses?

Orientation for Students

It is important to remember that many students have never been to a farm. Open spaces and long views, though beautiful to us, may be disorienting and overwhelming for some children. It helps to have a place on the farm where students and adults can position themselves in relation to the home school, their neighborhoods, and within the larger geographic region of the Chesapeake Bay Watershed.

Have students observe the lay of the land. Point out valleys that contain creeks or rivers. Use a map to locate your Horse Discovery Center within the state, region, and watershed. Ideas for display maps can be simple and creative.

- Handouts
- Chalkboard/Blackboard section on barn siding
- Highway maps
- Screen-projected/interactive computer-based map
- Painted pavement diagram map
- Bed sheet display map

How to Use the Maryland Horse Discovery Center Curriculum Guide

The lessons and activities in this guide were designed and written by members of Maryland's horse industry with the aim of introducing students Grades 4 through 8 to equine sport, history, and science by visiting a Horse Discovery Center. This curriculum was developed using Next Generation Science Standards, Maryland Standards for Social Studies, and the Maryland Environmental Literacy Standards.

To accommodate groups of all sizes, each lesson is arranged in a five-part sequence that can be adapted to small groups of ten to twenty students traveling through stations on the farm. Stations can be managed by farm-based educators, volunteers, or staff if rotation groups of students is continuous. Activities can also be facilitated by a single farm-based educator if the class is small enough to travel as one group.

The five activities in each lesson follow the ***5-E Instructional Model*** for experiential science education: **Engage, Explore, Explain, Elaborate, and Evaluate.** Do not feel constrained by this sequence, however! Feel free to rearrange the sequence as needed by your farm's particular layout or group's objectives. If a particular lesson does not completely meet the needs of your program, feel free to swap activities with other lessons and adapt any of the material to your own unique equine industry profile.

Setting Up Stations

The 5E model makes setting up pretty easy, though you may want to do the Engage activity all together to set the tone and theme for the visit. Depending on which lesson or combination of lessons you chose to do for the day, keep your eye travel time from place to place as this can certainly eat into the time needed to complete each activity.

Mark each station with a sign that can be read from a distance so students know where to travel next. This can be a colored bandana or scarf attached to a pole or door, or if you have time, a lettered sign that names the activity.

Different groups can travel together as long as each group has its own work area or guide volunteer to lead them through the activity. Or, if you have staff available, groups can travel individually to stations on a their own rotation. Decide what station method works best for each school.

If you plan to use stations repeatedly over the season with many schools, keep a station bin handy in which to keep materials and restock consumables. Stations can be portable this way and can be placed in different locations around the farm.

Measure Your Success

Evaluation and feedback is so important!

Do you have a way for teachers and parents to provide you with comments, suggestions, and ideas to help improve your program, or better yet, to help promote it? Consider an online form or paper survey that can be "cashed in" as an incentive for a return visit. Team up with a local creamery or farm stand and create a coupon that you can give to every student or teacher who completes a survey at the conclusion of the field trip.

Though each lesson contains an Evaluate activity you may want to expand on opportunities for students to share what they liked best about their visit to include what they learned and how the experience has enhanced their knowledge of horses, history, and science. Even a simple conversation as they wait to board the bus can be valuable for you and the teacher.

Invite students to return for lessons with a discount offer. You can hand out coupons or flyers as they leave to take home. Offer a coupon for students to redeem at a future event. Keep track of how many coupons are returned as a measure of community and family interest in your farm.

Unit I

The Equine Landscape

Keeping Horses On The Land

Students will experience the equine landscape from the perspective of human and natural history and demonstrate an understanding of conservation and sustainability issues that affect a horse farm.

Welcome students to the farm with an enthusiastic greeting and farm safety statement. Use a circle-up to review the rules. Ask students what they think might see as they walk with you on a farm tour. Explain that not all farms are alike and that equestrian farms have landscapes different from grain or other livestock farms

Take students on a farm tour. Break into smaller groups if necessary. Take different routes and stop at 5-8 places along the tour that have a human or natural history connection.

Discuss conservation or economic issues that are important to farm management and planning. Use comparative questioning to help students relate to what they see and hear.

Does your farm fence horses out of streams? Make this a stop on the farm tour and explain how this practice contributes to help preserve the Chesapeake Bay.

What happens to the water that runs off impermeable surfaces at your farm? Stop at water retention ponds, look at gutter systems, observe paved areas. What is the cost to the farmer for constructing or installing water control and diversion systems? How do these practices protect the health of horses and people? How do these practices improve and protect the natural environment and the Chesapeake?

Explain

Play a game of **Silent Line Up** with prepared cards that feature important dates of the farm's history as well as general history of the landscape in which the farm is located.

Assign each student a Line Up card to read to themselves. Do not show the cards to classmates! Given the signal to start, students will attempt to line up according to their date from oldest to most recent. Using only gestures, signals, or pantomime - and not showing their cards to others - students will form a timeline. When the timeline is complete, students may read aloud their cards to the group. Perform for fun! Correct any mistakes and review the timeline of the farm.

Elaborate

Take students to the fields to find the horses. Take along a chart paper pad and markers. Divide students into teams of four to map how horses use the equine landscape.

Guiding Questions:

Where do horses travel?

Why do they chose the routes they travel?

Where, why, and when do they gather?

What parts of the equine landscape are attractive to horses? Why?

Where do horses relieve themselves? Is there a preferred area that they use?

Students should observe horse behavior and note how they move across the land. Map areas where they graze. Map areas where horses observe their surroundings. Include fences and gates. Use symbols to describe the types of fencing used. Map structures and farm lanes. Use hoof print symbols to map the paths taken by horses across the pastures and fields.

As students observe the horses, continue to use guiding questions that build on knowledge of horse biology and behavior.

Why do horses form herds?

Can you observe herd behavior in other animals?

What large predators may have hunted wild horses long ago in this region? Where are those predators now?

Since horses have been domesticated by humans, what do we do to protect herds?

What do humans do to protect the landscape in areas where herds are concentrated?

When student maps are finished, ask teams to display and discuss their work. Invite a staff person or land manager to comment upon the maps and add additional information about how the horses and the landscape are both protected with specific strategies employed on the farm.

Play a round of **Two Card Match** to assess student knowledge of the topics of the day. Scatter a **set of cards** face down on the ground that have images, words, or phrases (a pair each) that relate to the day's topics.

Circle students around the face-down cards and have them flip cards to discover a match - one flip per turn. No clues or hints allowed! As matches are made have students share what they learned about the topic. Leave matched cards face up.

Trail Care Day

Students will participate in a trail maintenance activity and demonstrate an understanding of stewardship and multi-use trail responsibility and protection.

Welcome students to your farm and explain safety and conduct rules for spending time at an equine facility. Trail riding is a popular activity and there are many recreational trail riding groups throughout the state who participate. These groups also help care for trails and act as stewards for the land through which these trails pass.

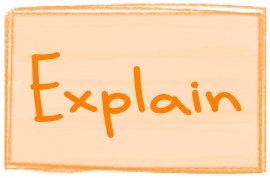
Divide students into pairs. With thirty seconds or a full minute between pairs, send partners down a section of riding trail for a quiet walk. Designate a gathering place at the end of a 50 to 100 yard walk. Tie a piece of **flagging tape** in a clearing or open area to mark where students will stop. Explain that as they walk they will look at their surroundings through the eyes of many trail users.

As you launch each pair, whisper to them whose eyes they will be exploring on the trail: a fox, a deer hunter, the farmer on whose land this trail crosses, a horseback rider, the rider's horse, a ranger who patrols the nearby park trails to which this trail connects, a child from the city, a child from the country, a deer, and a mouse.

At the meeting place discuss their observations. How do different perspectives change and strengthen our commitment to maintaining trails for humans and non-humans? How do different perspectives increase our commitment to stewardship of land? Accept all answers.

Walk together further along the trail while introducing trail etiquette. Point out interesting views, trees and wildflowers, give a history of the land. Encourage students to use all of their senses. What senses might a horse use as it walks along?

Discuss how the group should respond if they meet a trail rider on a horse. Demonstrate how to step off the trail to give the horse and rider plenty of room to pass. If possible, arrange to have a trail rider meet you later along the trail. Speak with them and get to know the horse.



Trail riders are one of many user groups who enjoy using trails. Sometimes, however, there are conflicts or dilemmas between groups.

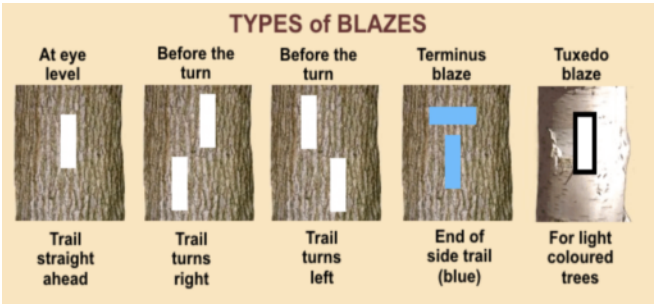
A *dilemma* is when a difficult choice must be made between two or more alternatives. Dilemmas often involve different opinions and levels of compromise. Private land owners as well as state and national parks and forests must decide upon rules or regulations that protect trails from degradation. Sometimes regulations limit which user groups may or may not use certain trails.

Show a variety of trail sign photographs and discuss why certain user groups are permitted or restricted from some trails. Use the samples provided or better yet, photographs of trail signs from your area that students may encounter on their own hikes or rides.

Trail clubs and hiking clubs may have old signs to lend or give away (as long as they are not re-posted). Have students look at the materials used in sign-making. Explain the function of trail blazes painted or nailed to trees or posts. How do they indicate trail direction, the end or start of a trail, and identify specific trails from others?


MULTI-USE TRAIL


NO HORSES
NO TRAILBIKES
NO VEHICLES


TYPES of BLAZES
At eye level
Trail straight ahead
Before the turn
Trail turns right
Before the turn
Trail turns left
Terminus blaze
End of side trail (blue)
Tuxedo blaze
For light coloured trees


ARKANSAS RIVER RECREATION AREA
TRAVEL RESTRICTED AREA
THE FOLLOWING METHODS OF TRAVEL
MUST REMAIN ON DESIGNATED ROUTES
BUREAU OF LAND MANAGEMENT

Have a variety of **tools** available and demonstrate their safe use. Assemble students at a work site along the trail to:

- Repair a bridge or crossing
- Brush out an overgrown section
- Remove a downed tree or branches
- Place or set a sign
- Restore trail markers.

Complete the trail maintenance task and take a well deserved break! Have **snacks and water** available. While resting, ask students how it felt to contribute to and participate in a stewardship activity.

Now that students have a more intimate connection to the trail through a stewardship activity, ask them to decide upon some rules for how the trail should be cared for. Are there important historical or natural features that should be protected from too much human use? Is the trail on a steep slope or otherwise located where certain kinds of travel might be dangerous to a particular user group? How could user groups be encouraged to help care for the trails they use? How would trail rules be enforced if certain groups were excluded from use?

As you exit the trail and head back to the bus, students can help carry out the equipment, water cooler, snack box, etc. Work together to put away materials and supplies. Gather students together in a circle.

Meeting the needs of a trail and the wants of multiple user groups can get tricky! Go around the circle and ask students to mention a new perspective they gained today. Go around again and ask how it felt to help maintain a trail that others will enjoy.

Invite students to come for a trail ride (if your farm offers them, of course) and become part of a trail crew for service hours.

Suggest to teachers that trail use issues can be further investigated in the classroom. These issues are important conservation and social concerns especially in and around urban areas and biologically sensitive environments.

Livestock, Athlete, or Recreation?

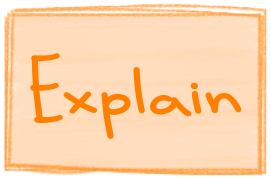
Students will explore the history of horses in Maryland to understand how humans have utilized these animals in different ways and how different perspectives for their use reflect values that affect policies and regulations.

Welcome students to the farm with an enthusiastic greeting and farm safety statement. Point out a piece of mechanical equipment (a tractor, skid loader, truck) nearby. Ask students what they see and what it may be used for. Accept all answers. Ask students to imagine their great grandparents encountering such a machine a hundred years ago. What might they have thought of it? Accept all answers. Introduce today's visit as a step into history and how our ideas and values about the use of horses has changed over time.

Take students on a farm tour. Have four stations set up around the farm and signed that describe the historic use of horses in Maryland. Stations can include draft animals for farming and industry, athlete animals in racing, transportation animals that carried or moved people and goods, and recreational animals. Tag or sign each station.

Visit a tack room where an old (or new) horse collar is hanging, investigate an old carriage or wagon , invite students to handle silks, boots, and helmets for racing. Have a selection of gear or photos of sporting events set out to shift student thinking about utilitarian uses of horses to recreational sports - horses as athletes.

How has the history of your farm and the history of horses in Maryland intersected over time? Sample station signs for the farm tour with topic headings can be hand made on card stock, framed in picture frames, or artfully made on weathered boards.



What makes a horse useful (draft), necessary (transportation), exciting (racing), or beautiful (show or event)?

Observe a horse standing nearby. Review rules about being near horses. Encourage group moderating their own behavior.

On a large dry erase board or chalk board panel, draw the general shape and anatomy of the horse and invite students to follow along in their sketchbooks, journals, or clipboards. Emphasize major muscle groups, skeletal structure, hooves, and position of eyes on the skull. Ask students to infer how the physical attributes of the horse make it an excellent livestock choice for pulling (draft & transportation), running (racing), and a recreational horse (size). Allow time for students to finish and enjoy their work!

Divide students into four major equine groups named for each of the horse history stations on the tour: Racing, Transportation, Recreational, and Draft/Working. Explain that each group represents an association that oversees the activities of their enthusiasts.

Major equine groups are represented today by *many* associations and societies such as the Mid-Atlantic Chapter of the American Driving Society, the Maryland Thoroughbred Horsemen's Association, Maryland Draft Horse and Mule Association, and the Maryland Regional Pony Club among others. These associations work to develop and monitor protocols, policies and/or regulations that ensure the safety and health of horses.

Ask groups to list what they think 3-5 priority concerns for animal welfare might be within their interest group. Compare lists across groups. Describe the Maryland Department of Agriculture's policies on horse health regarding shows, competitions, and events (Coggins Test, Self Certification, EIA).

What other priority concerns are held in common?

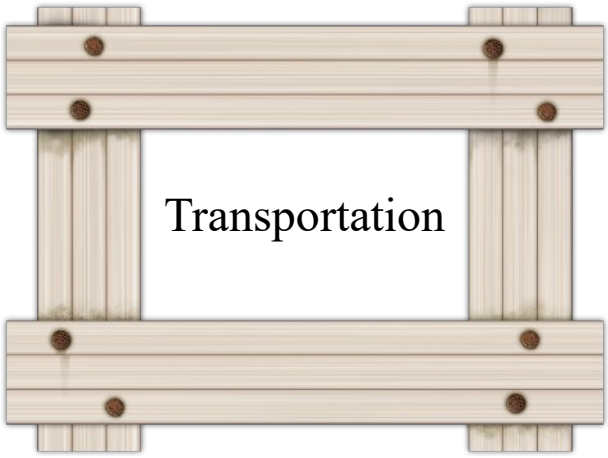
What priority concerns are unique to each group?

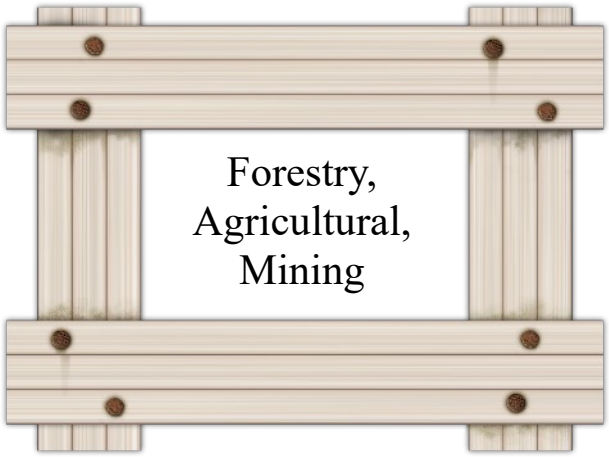
Are there priority concerns that may be *in conflict* with the priorities of another interest group? What concerns may be a priority to one group but *not as important* to another?

Horses have served people in a variety of ways for hundreds of years in Maryland. Today Maryland horse farms are home to many breeds that have played important roles in Maryland history.

In a wrap-up circle, choose one of the station signs from the farm tour. Go quickly around the circle and have students explain how the horses from that user group helped build Maryland history, past and present. Not every student will have something to offer, but assure them that the other signs will come around shortly!

Introduce another sign. Contributors from the first round can "pass" the second round giving students who didn't contribute for the first round to do so. Continue until all four station cards are covered and every student has contributed to the round-up.





A Need for Breeds

Students will explore breeds to understand that throughout history, people have selectively bred horses to serve certain purposes and needs on the land.

Welcome students to the farm with an enthusiastic greeting and farm safety statement.

Use a circle-up to review the rules and start the farm tour. Distribute a set of 3" x 5" index cards labeled with four to six horse breeds found on your farm and/or found in the region historically. Below the name of each breed have a phrase or word written to describe the use of that breed. Make enough cards for each breed set so that all students will receive a card.

Ask students to silently act out the phrase or word that describes their breed and gather with students who are acting alike. These are the working groups for the day!

Belgian Draft *Pulls large and heavy loads*	Hackney *High stepping carriage horse*
American Quarter Horse *Racing and Ranching*	Shetland Quick trotting carriage pony

Take students on a tour of the farm that includes visits with horses, tack, and equipment associated with breeds found on the farm. Give each breed team a clipboard, paper, pencils, horse-hued crayons, or markers. Assign each group the task of designing a breed poster that highlights interesting facts and stories you share with the class that pertain to breeds on the farm. Be sure to have plenty of interesting information to share with all students so that they can fill a page!

Share the group posters by inviting a spokesperson from each team to tell what they have learned about their breed while on the tour.

Emphasize that breeds have been developed by people over a long period of time to serve certain purposes in transportation, industry, farming, military use, recreation, and sport. Careful breeding ensures that important traits in temperament and physical ability develop a breed that can perform a task reliably for generations.

Depending on the breeds featured on your farm have volunteers take student groups to equine educators who represent their respective breeds. Be sure volunteers review rules for approaching and being around the horses.

Volunteers may demonstrate how different tack is used according to breed and purpose. Students may lift, adjust, and assist the volunteer with putting on a halter, saddle blanket, saddle, etc. Compare breeds.

How are body sizes different and important? How does hoof size and shape allow the breed to perform its task? Explore and explain the hoof and shoes. Demonstrate proper hoof care. Allow students to assist.

If time allows, have groups switch to another equine educator and volunteer for a brief comparison visit. This way, students understand how traits and characteristics between breeds determine their best use and task performance.

Assemble students at a picnic area with tables or indoors where work space is available for group work.

How long has it been since Maryland's horse power was replaced with gas-powered machines? During the age of horse-powered economies many different breeds served many different needs!

Each team receives a tub of clay or play dough to build their own 3-D team breed. The smallest of all the class breeds should stand 8 inches at the withers, so groups will work with each other to determine their model horse's size in relation to the others. Observe equine educators for ideas on structure, muscles and proportions. Use sticks or wire for internal support if needed. More than one model can be built per team so they have a herd.

Celebrate breeds with an equine art show! Each team will select a representative to display at their table and answer any questions. Be sure to take the volunteers and equine educators on the gallery walk as well!

Gather all groups together in a hay bale circle and review the day. Bring the equine educators and volunteer handlers into the circle so the students can thank them - but think first - how can we thank our equine educators in a way that is polite, calm, and non-threatening? How do you thank an animal for its service?

Do animals show gratitude? Invite students to share stories about how we thank animals and how animals thank us. Invite students to come again. Show your gratitude with a special invitation to an event, a coupon for lessons, or to join a club that meets on your farm.

Home-Made Play Dough!

This is a great activity for summer camp kids so you can make a large quantity to use throughout the year with school students! If the dough is kept in a cool place in a plastic bag or sealed bucket, it will last the school year.

We recommend the cooked version that Martha Stewart demonstrates here:
http://www.marthastewart.com/265236/making-play-dough-with-kids

This recipe makes 3 1/2 cups of dough, enough for two or three horse models.

Tools and Materials
2 cups flour
1 cup salt
1 tablespoon vegetable oil
2 1/2 teaspoons cream of tartar
2 cups cold water
Food coloring
Wooden board
Plastic bag or container

1. In a medium saucepan, mix together the flour, salt, vegetable oil, cream of tartar, and water.

2. Cook uncovered over medium heat, about 5 minutes. Stir constantly until the dough is the consistency of mashed potatoes.

3. Divide the dough into four equal portions.

4. Add approximately 6 to 8 drops of food coloring to each portion and knead the color into the dough to distribute it evenly. Kneading the color into the dough is the fun part -- kids will love it.

5. If you store the play dough in a plastic bag or airtight container, it will stay nice and soft and last for years.

Unit II

The Healthy Horse

The Form of the Horse

Students will learn the importance of good conformation, how horse anatomy contributes to its physical ability and how anatomy developed through interaction with the environment.

Pair students together and have them stand one in front of the other. The student in front should hold their head still, looking forward. On your command, students in the rear should take small steps to the right until the student in front indicates they can see movement to the side. Try stepping to the left. Reverse positions and try the same action. Describe how horses perceive movement. Discuss the placement of eyes high on the head for detection of threats and predators. How do horses react to being approached from behind or from directly ahead?

Take a walk to a viewpoint on the farm. Describe the kinds of animals that may have lived in this landscape 10,000 years ago. Look out across the fields at grazing horses and describe a saber-toothed tiger, a short-faced bear, and dire wolf. Imagine the grasses that would have grown almost four feet high and concealed predators. Long necks, excellent peripheral vision, and a fast escape would have been extremely necessary. You may want to carry illustrations of these animals to share.

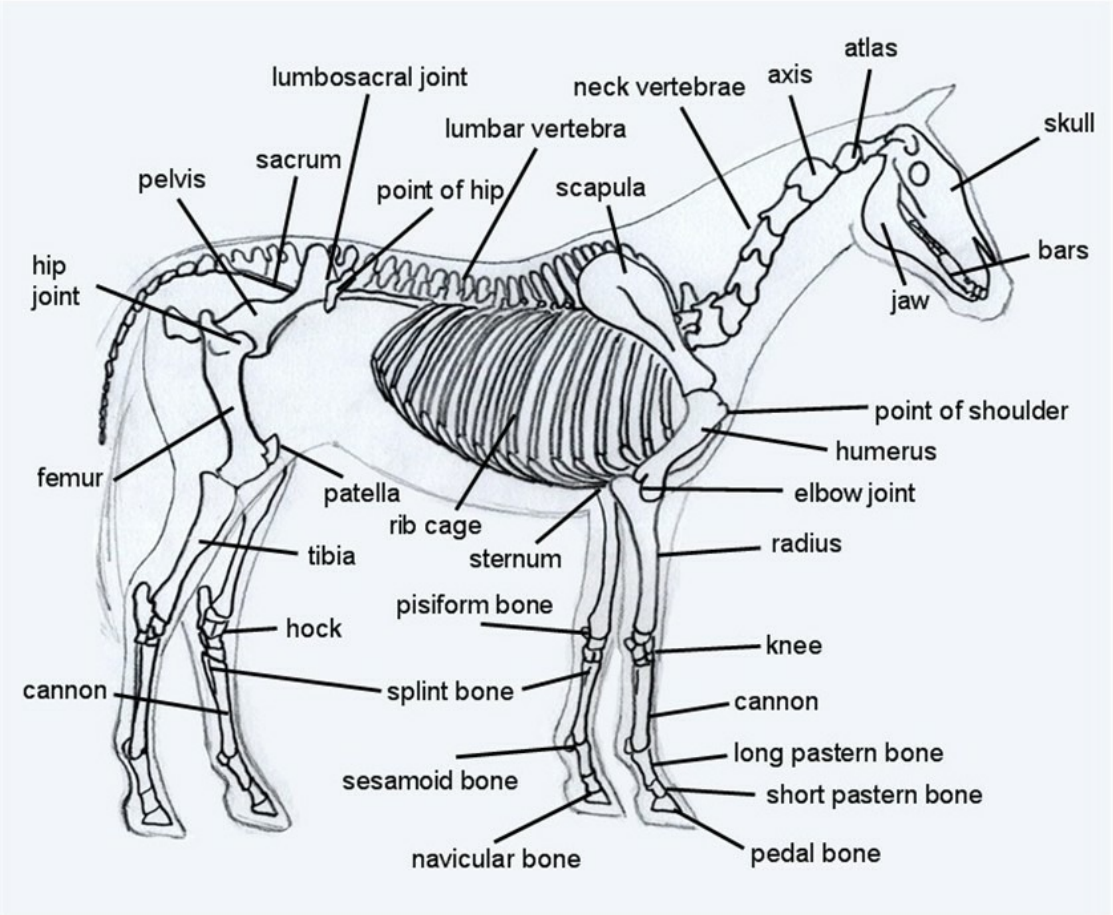
As you walk towards the stable to meet the equine educator, ask students to be aware of what muscles carry them along. How do legs and hips work together in order to move their bodies forward? What are the largest muscles in the human body? Why did humans develop large thigh muscles? How did humans survive in the Ice Age landscape in North America?

Explain

Introduce the equine educator to students. Review the rules for moving around horses safely, and remind students how important it is to be seen, calm, and kind.

With a large felt panel that contains the outline of a horse, introduce horse muscular anatomy with different colored felt pieces that fit into the image. Mention the purpose of larger components but don't overwhelm students with too much detail. Keep it fun and interesting! Ask students to compare and contrast their own muscular anatomy with the horse.

Large Bones (white felt) include the major skeletal features listed here:



Muscles (red felt) may include Abdominal, Biceps, Deltoids, Erector Spinae, gastrocnemius & Soleus, Gluteus, Hamstrings, Latissimus Dorsi & Rhomboids, Obliques, Pectoralis, Quadriceps, Trapezius, Tricepa. Find a good reference to share with students who can locate where on the horse image to place these felts with you.

Place the equine educator horse on a lunge line. Explain to the students what you will be doing and arrange students safely around the lunge area. As the horse circles, explain the term **conformation**. A formal definition is "**Equine conformation** evaluates the degree of correctness of a horse's bone structure, musculature, and its body proportions in relation to each other. Undesirable **conformation** can limit the ability to perform a specific task."

How do you check for the degree of conformation? What does it mean to "have an eye" for horse **conformation**?

Students will work on developing their "eye" for horse conformation by comparing a group of horses with the equine educator's horse. Conduct a mini-conformation clinic. Provide an additional 2-3 horses with volunteer handlers. Ask the volunteers to introduce their horse by name and a little about their breed, background, and use on the farm.

Divide students evenly into groups that equal the number of horses, to include the equine educator. Ask teachers or chaperones to accompany the groups on a conformation walk to visit and inspect each of the horses. Students may ask for help from the handlers as they try to understand important aspects of conformation.

Provide a clipboard for each group with conformation points to inspect. Rank horses on the best conformation. Decide on a scoring system that will work best for the class, such as point totals or numerical ranking. Share results after the walk.

Balance - Neck, back, and hip of equal length = a good athlete

Throatlatch - Clean and slender = easy to work head angles for control

Topline and Shoulder - Slope and angle = length of stride

Back - Strong and short with distinct withers = good performance and sound

Head and Face - Alert, short ears, wide spaced eyes = perceptive and attentive

Croup - long, strong hip = works from his hind end, stops well, good athlete

Shoulders - equal angle with hips = coordinated and travels well

Legs - well defined, straight, not too thin - sound and steady

Explain rules for working and around horses. Distribute grooming items and assign a horse to each group. Have students take turns grooming their horse on the parts of horse anatomy you name. Students should be able to locate and gently groom major muscle groups, head, neck, legs with guidance from volunteers.

Teaching Horse Anatomy Alternatives:

In addition to using a felt board, there are many other ways to illustrate and interact with a lesson on horse anatomy.

- With proper materials and non-toxic paints, a very patient pony may serve as a living anatomy lesson as you and your students paint the major anatomical features on her flank, legs, and lower neck.
- A bed sheet spread on the ground can be used as a floor chart. You won't have to worry about hanging anything or finding ways to attach parts to a vertical surface.
- Paint a section of barn or stable wall with chalkboard paint and create a permanent horse anatomy diagram that you and your students can add colored chalk diagrams to.

The Equine Veterinarian

Students will explore the work of equine veterinarians as they conduct a routine exam and address more serious health issues through analysis and consultation.

Give a short tour of the stables. Meet a staff person and an equine educator along the way. Discuss why it is important that horse owners know how to take the vitals signs of their animals.

Act as the handler at the horse's head while the staff person explains TPR(Temperature, Pulse, Respiration) and demonstrates how to monitor each.

Describe the normal temperature ranges for an adult horse as between 99ºF and 101ºF. Explain where to locate the heart, facial artery, and digital arteries in the legs, and how to observe how the horse breathes by watching its flank and nostril flare. What are some of the symptoms of illness the horse owner should be aware of? When is it necessary to call the equine veterinarian?

Now is a good time for a little story telling! All horse owners have a medical tale to tell! How is an equine veterinarian different than a small animal vet?

When an equine veterinarian visits the stable, the doctor's office comes to the farm! Introduce 8" x 11" pictures of a dozen items used by the vet when working with horses. These could be pictures of digital radiography equipment, a microscope, diagnostic ultrasound, endoscopy (bronchoscope/gastroscope), thermography camera, surgical tools, laptop, and even the truck! Your veterinary practice will gladly let you take pictures of equipment they carry and provide information on how the items are used. Include a picture of your veterinarian and the staff of the practice as well!

Describe five common illnesses or injuries that require the services of an equine veterinarian. With each description, ask the students what medical tools and equipment from the picture collection might be used to diagnose the problem.

Invite students to examine the horse's legs, flank, neck, and face to discover the thickness and length of bones, the beating heart, eyes, ears, breathing, the differences between muscles, ligaments, and tendons. How are these different from their own? Ask the staff person to help students find the horse's pulse and calculate BPM. Compare to their own.

Explain

Once a diagnosis has been made, an equine veterinarian will prescribe treatment that can include medication, therapy, rest, and/or surgery. If a horse must be transported to a surgical and therapy center, special attention must be given to managing pain, stabilizing the horse in transit, and keeping the animal calm.

Direct students to a horse trailer. Walk inside and explain how horses are transported for trail rides, events, and races. With students safely away from the trailer, ask the staff person to demonstrate with your equine educator horse how an animal is loaded and secured, then safely unloaded.

Ask students what modifications to the trailer could be made for the transport of sick or injured horses? Accept all answers. Describe your own experience of transporting an injured horse. Describe how the equine veterinarian would transport an ill or injured horse.

High performance horses receive sports medicine care from equine veterinarians who specialize in the needs of equine athletes.

Photo Credit: Gina Maybee

The best path to good horse health involves a dedicated owner, caring stable and veterinary staff, and responsible riders. Invite students to become part of a horse health team for the day!

Divide students into groups of three or four. Introduce a volunteer or staff person to each group and assign each group a horse to care for. You will have pre-selected the horses/ponies for this activity that are calm and kid-friendly. With their staff leader, walk out to meet their horse. Carry a bag or bucket with brushes, hoof pick, and any other small items needed for grooming and care. Spend some time caring for their horse from head to hoof.

Staff leaders can take their groups into stables and feed rooms. Have students help mix and measure feed for their horse. Examine a health chart and see that their horse is up-to-date on shots, exams, de-worming, and hoof care. Discuss with students the kinds of professionals who assist with horse health, especially the equine veterinarians and farrier! Make note that these are careers to consider!

Gather all students together to evaluate their horse health experience. What are the responsibilities we have to horses? Review the day's experiences and consider every aspect of housing and caring for a horse. What careers stem from equine ownership and care?

Poll students to see who might be interested in learning more about equine health careers. Have information available to share with students on local 4H clubs, pony clubs, vet tech and pre-tech programs in local high schools and community colleges, as well as university programs. Bundle program brochures and flyers with your Horse Discovery Center information for students to take home. Offer to be a resource for students and teachers. Promote your volunteer opportunities.

Reading the Horse

Students will explore the ways horses communicate through body language. Students will apply their understanding of non-verbal communications by observing cues among themselves and in animals.

Gather students in a circle. Call out a human emotion (happy, sad, angry, confused, content, afraid, etc.) and ask students to take a pose that reflects that emotion. No noise or speaking. Just body language. Have fun with this! Explain how we "read body language." Play again, but this time you will perform the emotional body language. Ask students to respond to your body language with a response of their own.

Horses are excellent communicators. Since they are gregarious by nature, they communicate with herd members through sound, body language, and movement. Visit a pasture or field to observe how horses communicate to others. You can use a chart on a clipboard to note types and frequencies of certain behaviors.

Before starting the observation period, show students what behaviors they are looking for. Help them identify behaviors that are unique to horses - behaviors that students may not be familiar with.

Be sure to stress that horse behaviors are often interlinked body language like the combination of ear position and head height (alert) and the turning of the head to look at something behind or to the side accompanied by nostril flare.

This is a very simple horse behavior chart. You can make one with more categories or that includes combined behaviors. Challenge students to observe and interpret complex responses to herd behavior or how horses interact with their environment.

Name of Horse	Ear Position	Eyes	Head Position	Nostrils

Review student observations of the horse's body language. How do we interpret this behavior? How important is context such as environment and surroundings for understanding horse behavior?

Explain that horses, as social and herd animals, respond to their environment as prey animals. Historically, what were the predators of horses? What kinds of predators evolved to hunt fast, herd-oriented animals? What types of body language did the students observe that may have direct linkages with survival behaviors?

Take a tour of the farm and point out areas where horses congregate. Is there a favorite shade tree, a "relief area," a high point or low spot where horses can see out across landscapes or gather to rest out of sight?

Horses were domesticated thousands of years ago by people. Over centuries, different breeds have been developed that exhibit certain physical traits that make horses useful in farming, logging, sport, recreation, and (at one time) war. How do breeds display behaviors that are unique in their relationship to people?

Teach the students a variety of verbal and touch commands people use in communicating with horses. Use those commands that are most likely heard or observed on your farm or at your events. Venture out to watch people interacting with horses on your farm, or work with a horse in front of the students where verbal and touch commands can be observed.

Invite students to list the human commands they observe and the response of the horse to those commands. Observe for ten to twenty minutes while making notes on a clipboard or in a journal. After a period of observation, invite students to gather and discuss what they saw and heard.

- What horse behaviors were based upon instincts (survival behaviors)? Describe how human commands may change natural behaviors to learned behaviors.
- Did students observe behaviors that showed mistrust, hesitancy, or refusal? Why? If so, how did the horse's handler respond? Describe behaviors of both human handlers and their horses when there was mutual respect and trust.
- How must human handlers learn to "read" the language of the horse in order to be an effective and trusted trainer? What happens with humans who misread body language in social settings? How can we learn to read body language so that conflicts and misunderstandings can be avoided?

We can read a horse's behavior to understand a lot about how he relates to the world around him. Invite students to reflect on how reading behaviors in other living things can serve as a basic, if not primitive, language between humans and other species. Is there a special animal in their lives that they feel connected with? Invite students to share a few stories.

What did students learn today about horse behavior that is different from behaviors of other animals? How can students apply what they learned today to their interactions with animals in the future?

Authors Who Use the Language of Horses

Students may at first not understand that we can "read" behaviors like we can read books. Use catchphrases like "I can read her like a book" or "You can't judge a book by its cover" to explain the metaphor of reading animal languages through observation.

Many equine authors use their extensive knowledge of horse behavior to describe how people and animals can read each other. Have a small library for students to explore. Provide a literature list for teachers. You may want to include these classics that offer the author's understanding of horse behavior as central to a story line. Include your own favorites and share your library list with teachers to take back to school!

Old Bones the Wonder Horse, Kentucky Derby Champion. Mildred Mastin Pace.

National Velvet. Enid Bagnold.

The Black Stallion. Walter Farley.

Seabiscuit. Laura Hildenbrand.

Black Beauty. Anna Sewell.

Misty of Chincoteague. Marguerite Henry.

My Friend Flika. Mary O'Hara

My Healthy Horse

Students will be able to compare and contrast the requirements for good human health and the responsibilities of horse owners for the health of their animals in their environments.

Welcome students to your farm and review all safety rules to ensure a great visit for them, the staff, and the horses.

Keeping horses healthy is a critical responsibility that horse owners must uphold. Ask students to list what they think are important aspects of good horse health and hygiene. Accept all answers and record their answers on a flip chart or white board.

Organize the list into the following categories:

- Proper Nutrition
- Proper Method of Feeding
- Supplements
- De-worming
- Yearly Vaccines
- Hoof Care
- Exercise
- Clean and Safe Stables & Stalls

Take students on a tour of your facility. Point out the places and activities mentioned above that indicate horses are being cared for and are healthy. If staff is available, conduct short interviews on the topic of horse health.

Compare aspects of horse health care that are similar to human health care, like a nutritious diet, getting plenty of exercise, and keeping a clean home. What are the risks to horses if health and hygiene are not maintained? What are the risks to humans if health and hygiene are neglected?

Introduce a horse, your equine educator. Review the rules behavior around and near horses.

What happens when students go to the doctor for a check-up? How do we measure the human heart rate? Invite students to take their own pulses and help them interpret the results. Demonstrate how to take a horse's pulse and explain how pulse rates are different and why. Invite students to try taking the pulse of the horse. How is normal resting pulse of the horse different that the normal resting pulse of a human? Why?

How can we estimate the weight of a horse? Describe girth and length measurements and invite students to calculate an estimation. Demonstrate how to take a horse's temperature. It's probably a good idea *not* to invite students to try this! Finally, demonstrate how to check the horse's hoof and invite students to give it a try on the front feet.

Divide students into groups of three or four. Introduce a volunteer or staff person to each group and assign each group a horse to care for. You will have pre-selected the horses/ponies for this activity that are calm and kid-friendly!)

With their staff leader, walk out to meet a horse, an equine educator. Carry a small bag with brushes, hoof pick, and any other small items needed for grooming and care. Spend some time caring for the horse from head to hoof.

Staff leaders can take their groups into stables and feed rooms. Have students help mix and measure feed for their horse. Examine a health chart and see that their horse is up-to-date on shots, exams, de-worming, and hoof care. Discuss with students the kinds of professionals who assist with horse health, especially the equine veterinarians and farrier!

Clean a horse's stall. Have mucking tools and fresh bedding available for students to freshen up their horse's stable area. Students with allergies can be given other maintenance tasks that don't stir up dust or dander. Calculate the time it took to accomplish all the tasks for a day's care for their horse. Discuss the commitment needed by an owner or boarding stable worker to ensure the health of each horse in their care.

Gather all students together to evaluate their horse health experience. Offer examples of health problems that might arise while owning a horse. Ask students what could be done to prevent or address certain problems.

Invite students to come back for sessions on equine veterinary and the work farriers do to support horse health - the lessons following The Healthy Horse). Promote lessons, trail rides, and other activities available for students new to equine recreation and sport.

Health and Work Connections

Caring for the health of animals or people involves physical work. As staff and volunteers guide students to care for a horse, encourage the appreciation of manual labor and good work ethic as integral to ensuring good health for both the animal and his caretaker.

Demonstrate what good work ethic looks like. When is a job done? Who decides if the job is done correctly and to the best ability of the caretaker? Often it is the caretaker who determines when a job is complete, but how can staff and volunteers instill in students that *a job well done* is the ultimate goal? In this age of distracted work that competes with other activities (including smart phones) routine jobs that involve the health and care of animals need extra attention. As mentors to students, instill good work ethic and pride in physical work done well.

Unit III

Sporting Horses

How Many Hands?

Students will be able to measure a horse in hands and determine what tasks certain breeds may be best suited for.

Have the students do a silent line up from tallest to shortest. When the line is complete, ask the tallest and the shortest students to step forward and stand back-to-back. There sure is a lot of variation in the height of seventh graders! How do we measure our height? Inches and feet! Ask the two students if they know how tall they are in inches and feet. Describe how horses are measured in *hands* (4 inches). Demonstrate how to measure in hands along the side of one of the students. This is the unit of measurement that we'll use today!

Explore the farm. Point out the horses and name their breeds. Explain that different breeds have different sizes and all are measured in hands. Come to the side of a barn where students can line up against the wall of the barn so you can mark their height with a washable marker or chalk (the next rain or a good hosing will get rid of the marks). Have students turn around measure their heights in hands.

Distinguishing a horse's breed is important because there are specific character traits that make them suitable for certain kinds of tasks. Two horses may be identical in color but be different sizes. Selecting the right breed for a particular discipline starts with learning how to size them up.

In the development of different breeds, size or height of a horse impacted the types of tasks a horse could perform:

- Arabian horses have more bones in their skeletal structure than other breeds.
- "Hot" horse breeds generally have higher metabolisms which can cause them to require more care.
- Gaited breeds have different movements.
- Common horse breeds include the Paint, Standardbred, Appaloosa, Thoroughbred and Quarter horse.

Have **two sets of horse breed photographs** on hand. These can be cut from horse calendars, downloaded from the Internet, or be photographs of your own horses. Glue them to one side of a large index card or small poster board. Laminate if possible. Make sure you have examples of the breeds found on your farm. Set one complete set aside for now. On the other set - attach to the backs of each breed card, a description of the breed featured on the front.

Gather the students in a hay bale (or chair) circle leaving a large interior space open. Hold up each of the breed photographs and provide a verbal description of each. Pass the photographs around the circle as you finish with each description.

Some informative descriptions can be:

> Arabians are possibly the oldest breed in the world! The Arabian horse has a distinctive dished profile. They have giant, wide-set eyes on a broad forehead, small, curved ears, and large, efficient nostrils. Arabians are also known for their arched necks and short backs. **They stand 14 to 15.3 hands high.**

The American Paint Horse sports a combination of white and any other color of the equine spectrum. Markings come in any shape or size and can be located anywhere on the horse's body. The variety of colors and markings appear in three specific coat patterns: Overo, Tobiano and Tovero. **American Paint Horses average 14.2 to 16.2 hands high.**

The limbs and hocks of the Standardbred are very strong and able to withstand the constant pounding that trotting and pacing speed require. **This breed stands an average of 15.3 hands high** and comes in all solid colors. Standardbreds are a part of the racing industry.

Appaloosa horses are known for four identifiable characteristics: coat pattern, mottled skin, white sclera and striped hooves. With coat patterns, countless numbers of color and pattern combinations exist. Appaloosa coat patterns include leopard, snowflake, blanket, marbleized and frost. **Appaloosas range from 14.2 to 16 hands high.**

The **Thoroughbred stands from 15.3 to 17 hands high** and is found in all solid colors. Its long bones and graceful movement give the horse an elegant presence. The Thoroughbred's long neck and powerful haunches help propel it forward in a galloping stride that is over 20 feet long--moving at a speeds of over 30 miles an hour.

There are 16 recognized colors of the American Quarter Horse. The most prominent color is sorrel (brownish red). The American Quarter Horse is the most popular American breed and can be seen in virtually every riding discipline. **American Quarter Horses range in size from 14 to over 16 hands high.**

After students have viewed and compared all the cards, call the name of one of the breeds and ask students to recall the character traits that make this breed different from all the others. Have fun with this! Try performing a cheer, compose a poem, or make up a silly song about each breed.

Elaborate

Visit with an equine educator. Demonstrate how to safely move around a horse. Point out the withers of the horse and how this is the area that determines height, not the top of the horse's head! Use the equine educator for comparison during this activity.

The prehistoric ancestors of the modern horse were quite small at just two feet tall! How many hands is two feet? With two students assist, stack six hands to demonstrate two feet.

After people had domesticated wild stock that roamed the Eurasian steppe five thousand years ago, they discovered that horses could be bred to display certain traits. Height became an important trait as horses were used to serve the military, industrial, hunting, and agricultural needs of people. Pair or triple the students together and assign each a breed card (see examples). Have teams read their cards and decide how many extra students they will need to stack hands to show the height of their breed.

When ready, have students stand in a half-moon in front of the equine educator horse. Invite each team to stand next to the horse and read their card aloud. They will invite students to join them and stack hands to show the height of their featured breed. Stress to students how important it is to approach the horse from a direction where they can clearly see them. Stress that they walk calmly and are mindful of their movement and motions.

When each team has finished their hands-high demonstration they may give the equine educator a gentle pat or rub.

Evaluate

Remember that second set of blank-back breed cards you set aside earlier? After another quick romp around the farm gather the students together in a circle and play a game of Two Card Match. Spread the two sets out on the ground. If windy, move inside. Make sure to really mix them up, face down so students can't see the horse pictures.

Each student will flip one card so that everyone can see it, then flip it back over. As students take turns going around the circle, they try to find a two card match. When a match is made the student can share something they learned about horse height and breeds. Matched pairs may remain face up. Keep going until all matches are made.

Necessity to Sport

Students will be able to describe at least three popular competitive equestrian activities that are based on the historic uses of horses in industry and military service.

Welcome students to your farm and review rules for a safe visit. Begin the day with a joust - Maryland's official sport! Explain that jousting is an ancient form of military training for mounted knights that became a favorite equestrian sport during the 1800s, worldwide.

Explain how the rules of jousting work: to capture a small target on a long lance held by the rider as the horse gallops full speed down a jousting lane! Hold a **hoola-hoop** above your head and explain that riders must first practice their aim and accuracy.

How many equestrian sports can students name? For each correct answer invite the student to throw a **pool noodle** through the hoola-hoop that you hold at various heights and angles for each contributor. Have fun with this!

Lead the students on a farm tour that includes places such as tractor sheds, a driveway with cars or the school bus, and other equipment or service that in the past may have involved horsepower.

Meet the horses on the farm and talk to some of the people who work there. As you walk along, talk about the roles and duties horses have played in people's lives in the past and what kinds of technologies have replaced them.

If you have horse-drawn equipment about, explore it. Share copies of **old photographs** of how horses taxied people in carriages, towed Baltimore's trolleys, carried Maryland hunters across the landscape, delivered the mail, and served bravely in battles here and overseas.

Depending on what equine events your farm hosts, plan to feature an equine sport that you are very familiar with and that has roots in historic necessity. Have a variety of equipment available for students to examine, touch, and try.

If your farm hosts or participates in combined driving events, have period clothing available (jackets, hats, skirts) for select students to try on. If your farm participates in hunts, invite a show jumper and huntsman with a favorite hound to visit with students. Offer a demonstration of your favorite event or show a short video if you have access to a big screen and projector.

Take all questions and be enthusiastic for all interested to come to an event. Recruit and invite! Do you have complementary tickets to share? Coupons or passes?

With student input, make a list on chart paper of all the ways horses assisted people in everyday life up until engines and mechanical technologies replaced horsepower. Categorize the activities into three groups: industry, military duty, and essential services.

Divide the class into three working groups and give each group a clipboard with paper and pen, large chart paper, markers, and the following instructions:

1. Select one activity group (military duty, essential services, or industry) and discuss how horses were used in this activity. You may interview farm staff and your farm-based educator for ideas and history specific to the activities.

2. On the clipboard, list all the of the actions the horse must perform in order to complete the task(s) in this activity. Does it need to jump high? Pull heavy wagons? Maneuver through obstacles on a busy city street?

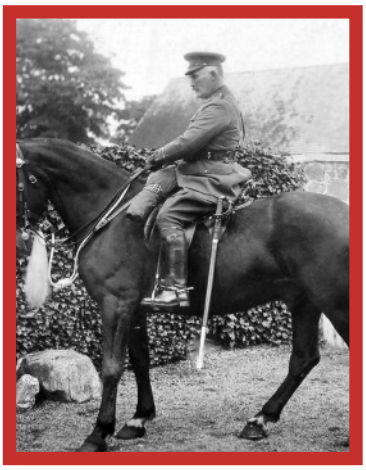
3. List all of the people skills needed to guide and control a horse in this activity.

4. Invent an equine sport that resembles the historic use of the horse in this activity. On the chart paper create a course (birds-eye view) that features challenges that both horse and rider or driver need to perform in order to complete the tasks involved. Include illustrations of the horse and rider or driver attempting different parts of the course.

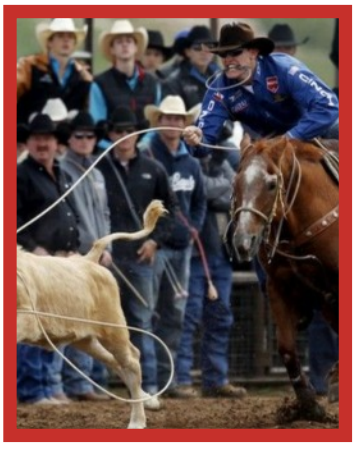
5. Draw and label special equipment needed to participate in the sporting event.

6. Share each team's sport with the class. What is the name of the sport? Announce with great flourish!

Make a **set of cards** that illustrate or describe historic uses of horses and the modern event activities that match. There may be several correct matches depending upon the event. Turn all cards face down in front of students and invite them to flip two cards per turn to make a match. To make a match, the student will need to explain how the historic use of the horse relates to the modern competition or events.



Dressage has its roots in military training for war horses and calvary men.



Calf roping competition comes from traditions of cattle drives in South America and the American West.

Run and Jump!

Students will use math and design skills to create a cross-country course that honors Maryland traditions in hunting and a mounted military.

Hand out jump ropes. Who can jump? Have fun watching students display their skills! Point to a small bale of hay. Who can jump it? Students will have to organize themselves to all have a chance to jump over. Lay a jump rope about three feet in front of the hay bale. Who can jump from the rope over the hay bale? Move the rope farther from the hay bale to make the jump longer. Have fun!

Give each student a copy of a sample cross country course map. If possible, observe horses and riders on a course. Describe how today's events in cross-country have their origins in calvary and military drill history. How long has it been since the U.S. Employed mounted soldiers on horseback? Are there still honorary uses of mounted soldiers in today's military?

Today's cross-country events focus upon endurance, especially jumping. Explore the distances between jumps on the map. How is the course timed? What are the major elements of the course?

Arrange for a rider to speak to the students about their horse and equipment. Encourage questions regarding training and competition. Use this time to really get students interested in the sport.

Explain

Designing a cross-country course is serious business! Like all good golf courses, tennis courts, and football fields, professional designers and builders construct courses and jumps with attention to many details, like turf, the materials used in creating obstacles, and carefully measuring distances and heights with accuracy.

Study the maps to inspire students to think about building a course on your farm. Show pictures of some interesting and even famous jumps and obstacles found at courses in Maryland and around the world. Explain symbols, numbering, how to follow course direction, and water features.

Fair Hill Cross Country Course Map

Discuss specific characteristics of the natural landscape of your farm that make it well-suited for a cross-country course. Point out the different materials used to construct obstacles and jumps. Some materials are natural such as logs and hedging, while some materials are manmade such as poles, plastic, and brick.

Finish the tour at an area that has been set aside for the next activity, well clear of horses and riders. Students are about to design their own course!

Divide students into pairs or threes. Give each team a clipboard with a new map attached. The new map is of the sample course they will help construct. Assign each team a numbered jump or obstacle from the map which shows the height or width of the jump to be constructed there. Give each team a tape measure. Announce that they will help to build a cross-country course for their own class to run!

Explain that the building activity is not the race - any materials taken from the main supply should be returned if they decide not to use them. Teams should not hoard materials.

Stress security and stability of the built obstacles, that you and farm staff volunteers will offer advice on how to make their constructions safe and sound. Point out that footing is important , that students consider whether the ground is hard or springy in the approach and landing areas.

Ceremoniously pull a large tarp off of a materials collection. Have a variety of building materials assembled, both natural and man made. Logs, poles, hay bales, cloth, pumpkins (in season), boxes, rope, buckets, beams, cardboard boxes can all be used. Ask an adult chaperone to monitor the collection during the building activity.

Allow students ample time to build and try out their jumps. When the class has finished assemble everyone at the start. Ask for five student volunteers to run and jump the the course while being timed. Have students average the finish times and announce a reasonable course time to finish. Teams can now compete for finish times!

You may want to ask an adult chaperone or farm staff to help with timing the teams. Have fun and celebrate as course records are broken!

It's time to dismantle the course. But before students begin taking things apart, ask each team to describe three things they learned about cross-country events today. No repeats between groups. Release the teams to dismantle their jumps and obstacles when all teams have contributed.

Personally, invite students to return to the farm to attend an event. If you offer camps, lessons, volunteer opportunities, then sincerely offer the experience to the students. Do you have a coupon to share? Do you have an informational brochure or event program you can send home with them? Thank them for coming out to the farm today!

Spark and Queen Mab

Students will understand the role that fast horse breeds have played in Maryland equine history for recreation, sport, and service.

Welcome students to the farm! Introduce two plush toy horses, *Spark* and *Queen Mab*. Explain that the toys represent two of the four original foundational horses brought from England to Maryland that established the thoroughbred breed in America. Since the 1750s horse racing has been an important part of equine history in our state! *Spark* and *Queen Mab* will help us uncover clues about this fascinating history.

Assemble students in a large circle. Include yourself as part of the circle, holding *Spark* and *Queen Mab*. "Race" the horses around the circle by passing them from student to student, *Spark* going one way and *Queen Mab* the other. Every student must touch the horses as they are passed along - no tossing! Which ever horse (it doesn't matter) comes back to you as the winner "whispers" the first clue into your ear, which you dramatically announce to the students:

Clue: "Search for and find the right course for this

Tour the farm with students to search for land that would make a suitable race course. Include discussions of steeple chasing courses and jumping events. Take students through barns, stables, across pastures and explain how the farm functions. Point out any special fields or turf features that are used for events, lessons, jumping, hunting, etc. If there are riders with horses, stop and watch.

Celebrate the tour with another race between Spark and Queen Mab! Whichever horse is the winner will whisper the next clue into your ear to share with students. **Clue: "Wish upon a star and search not too far for an athlete - with four feet!"**

Explain

Thoroughbreds are fast horses that have been bred over hundreds of years to exhibit athletic ability and competitive spirit. Ask students to name their favorite athletes. What makes an athlete a star performer? Accept all answers.

Share the names of several thoroughbred race horses with connections to Maryland racing, who achieved star status (*Native Dancer, Sea Biscuit, War Admiral, Man O'War,* etc.). If you have thoroughbreds on the farm, take the students to meet him or her. If a rider is working with a thoroughbred, invite them to come over and speak to the students. Point out the anatomical characteristics of a thoroughbred that set it apart from other breeds.

Invite students to help prepare for a feeding. How is the competitive racehorse fed and cared for differently than non-racing breeds? What are the nutritional needs of a thoroughbred? What are the special health and wellness concerns a thoroughbred owner must consider? Meet and interview the stable manager and barn workers.

After becoming familiar with the stables and the horses, announce another race between *Spark* and *Queen Mab*. Gather students in an area far enough away from the horses so as not to startle them. The winning horse will whisper into your ear the clue to announce:

Clue: "Horses built for speed satisfy the human's need!"

Elaborate

The need for speed in American thoroughbreds and other fast breeds transcended recreational and competitive racing and spread into other areas of human endeavor. *Spark* and *Queen Mab* have one more race to run, then it's the students turn. Race the horses around the circle with the winning horse whispering the next clue to share with students.

Clue: "Our race is won! Water us then you're done!"

Hang two water buckets on a fence about two rail lengths apart, one for *Spark* and one for *Queen Mab.* Between the buckets place a large tub, five gallon bucket, or half barrel of water. Divide the students into two teams facing their horse's bucket. Give the first student in each line a small dipper each (a butter tub, drink cup, water bottle, etc.) to dip water for their horse. Explain that that team with the most water in their horse's bucket is the winner!

1.) Read a statement about horse racing or racing breeds that is either true or false. Lead students holding dippers may consult with their teammates for ten seconds. Call "They're off!"

2.) *If the statement is True:* runners may scoop <u>two</u> dippers-full from the five gallon bucket bucket into their team bucket then run back and pass the dipper to the next in line. *If the statement is False* runners may dip <u>one</u> scoop of water from the opposing team's bucket <u>back into the center bucket</u> and two scoops <u>from the center bucket</u> into the team bucket and run back to pass the dipper to the next player in line.

3.) Announce the correct answer. If a team was incorrect and with great flourish, dip a scoop of water from their bucket to pour back into the center bucket. Have fun with this!

4.) Read up to ten statements that reflect what students learned during their visit. At the end of the activity measure the quantity of water in each bucket with a ruler or tape. Hang a medal on the winning horse and celebrate!

Example of True Statement:

"Horse racing has been an important equine event since the mid-1700s."

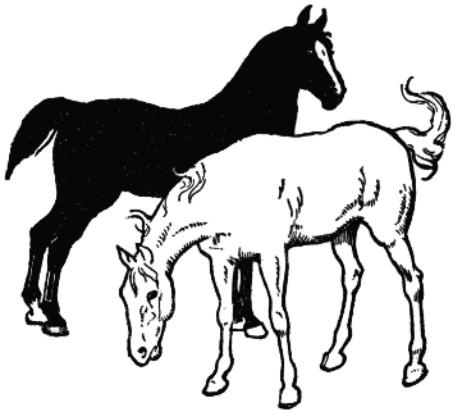
Example of False Statement:

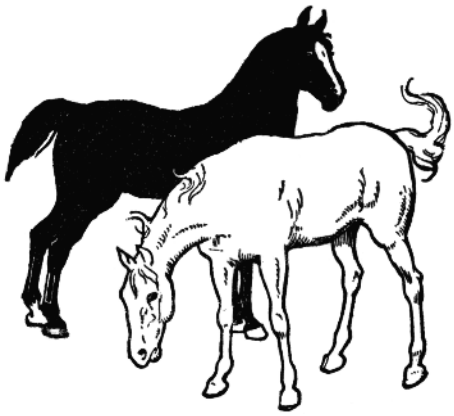
"Famous Maryland race courses include Pimlico and Belmont."

Share some familiar phrases with students and explain their origin in the history of horse racing. Terms like *running mate, a run for the money, in the running, in the home stretch* (or *that's a stretch*), *hands down, front runner, dark horse* and *across the board* are phrases that students will recognize. Ask students to help explain the origin of these phrases and describe how they are used today. For fun, have students invent some new catchy phrases based on their visit to your stables!

Unit IV

The Art of the Horse





Shades, Stars, And Stripes

Students will be able to recognize and identify the variety and beauty of markings and colors of horses in life and art.

Enthusiastically welcome students to the farm and advise them of all safety rules and expectations for behavior around the horses.

Gather students around in a hay bale circle or riding ring to look at Xu Beihong's (Shoo Bay-hung) painting "Horses." It's best to have a larger image of this painting displayed on an easel or tacked to a wall, but individual copies will work as well. (You can download this image from http://www.webetc.info/art/Xu-Beihong-horses.html)

The beauty, energy, and power of horses have inspired many artists over centuries, throughout the world. Guide students on a "Horse Hue" tour of the farm. Take along a stack of card sized (3"x3") paint chips from a local home improvement store. Tell the story of the farm as you go and when you encounter horses - bring out the paint chips and invite students to try to match the paint chip to the horse.

Read the paint names from the card that most closely matches the horse color - have a laugh if you need to! Then explain that horse colors have different names and replace the house paint name with the proper equine term. Write it on the color chip in black marker. Horse colors may include grey, chestnut, sorrel, buckskin, palomino, brown, bay, and black.

In addition to color, many horses also display unique patterns. Are there horses on the farm that display coat patterns, mottled skin, manes and tail colors different from coat color? Give each student a clipboard with paper attached and a set of earth (horse) toned crayons in a plastic baggie.

Send them out to sketch and color a horse !

Bring students back together at the hay bale or riding ring circle with their artwork.

Attach the labeled horse color paint chips to the easel legs that holds the painting by Xu Bailong. If you are not using an easel, clothespin the paint chips to a line. Hang copies of the painting on the line near the paint chips. Note that besides coat color, the artist included some interesting markings and color combinations on the horses in the painting.

Do any of the artist's three horses display markings? Yes! The solid black horse appears to have a white stripe that extends from atop the eyes to the muzzle. Did any of the students sketch and color a horse with a stripe?

Do any of the horses in Baihong's painting display manes and tails that are different from their coat color? Yes! A Palomino can be a pale horse or light tan with mane and tail almost white, flaxen, or blonde. A Buckskin coat color may be a deep tan or almost white, but its tail and mane will be black. Its lower legs are usually black and look like socks. Which horse is the Palomino and which is the Buckskin?

Did any of the student artists sketch a horse with manes and tails that are different from the coat color? How about socks? Or stockings? Hold up student artworks that show these variations.

Travel around the circle and ask each student to name the coat color (using the paint chip cards attached to easel for help) of their horse. Point out other unique markings and name them.

Star: White mark on the forehead, not extending below the eyes

Stripe: White mark from eye-level to the top of the nostril

Snip: White mark on the end of the muzzle

Blaze: Star, stripe, snip all connected

Bald: White extends from eye to eye

Sock: White or black not extending above the fetlock joint

Stocking: White or black from the hock down

String a clothesline or twine along a wall and ask students who wish to share their work with others clip their drawings to the line. Allow time for students to admire the gallery.

Add to the art show with a collection of prints! Have a selection of 6-8 laminated art posters to hang with student help. This can be especially fun if the art show is strung in the stables area so that the horses can be observed as well! Invite students to quietly walk through the art show and look closely at the prints and student artwork. Can they identify markings and coat colors? Offer compliments and model how to offer a critique.

Red Horses by Franz Marc

Whistlejacket by George Stubbs

Race on the Snow by Leonid Afremov

Indian Trapper by F. Remington

Horses in a Meadow by Edgar Degas

Count off students by three or four. Hand each group a clipboard with a Horse Color and Pattern Outline Sheet (see below), a plastic baggie of horse-hued crayons, and a 3” x 5” task card with a name of a horse coat color and set of markings.

Give the class fifteen minutes to observe live horses and the artworks that will help them create the horse on their sheet. When complete, each group will read their card and share their work with the group

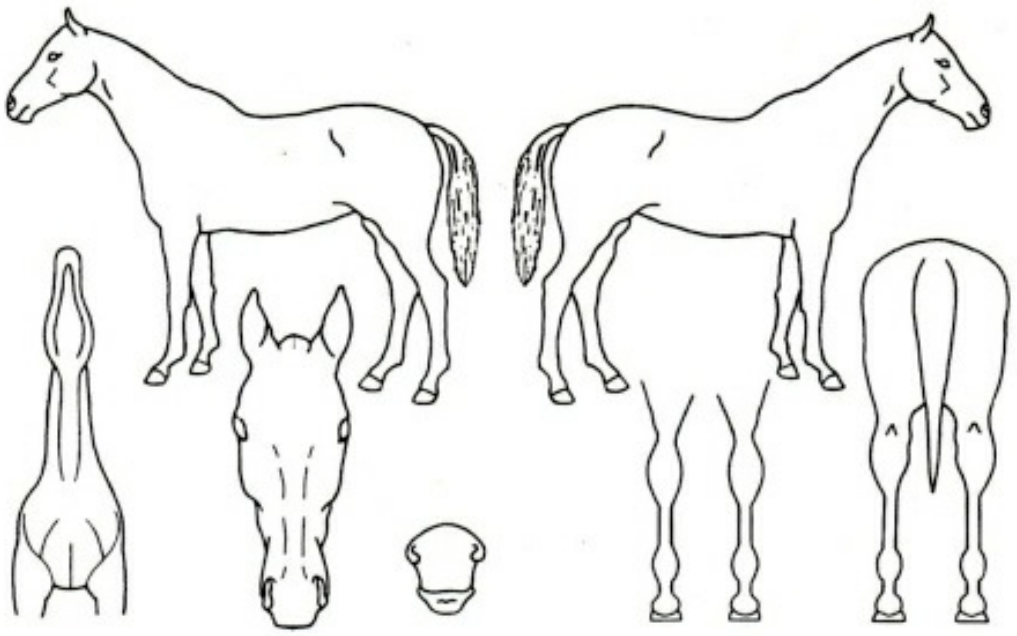
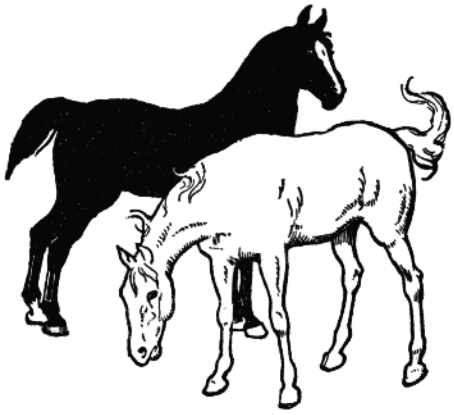


Image adapted from UK Horse Passport

To thank students for their great work, give each student a coloring sheet that includes horses and scenes from your farm. Make sure you include your farm’s logo and contact information.



Equine Unveiled

Students will explore how the horse has elevated the historical esteem society and cultures hold for important figures in national and state history.

Play a round of Hero Statue where students assume the stance and position of super heroes that the caller announces. “Batman has just defeated the Joker!” “Spiderman swings from balcony to save a man from falling!” Have fun and laugh a lot!

Ask students why statues are made of certain people? What artistic tricks does the sculptor use to make a person seem heroic or immortal? Where are statues placed? Is the placement important?

Take the students on a tour of the stables to meet each horse. Look at saddles and tack. Look at the tools needed to keep horses clean and groomed. Equestrian artists and sculptors must have a great deal of knowledge about saddlery and how horses are groomed for particular events or duties.

Inspect pastures and fields, trails and paths. Look at horses as they graze, walk, and stand alert. Orient students to the cardinal directions - North, East, South, and West. Where does the sun rise and set here? Think about how equestrian artists use light and shadow. Where on the horizon is Washington D.C.? Which direction does the city lie in relation to the stables? Why? Fun Fact! Washington D.C. Contains the largest collection of equestrian statues in the country - more than 30 at last count!

Can students think of who among prominent Americans might be found in Washington D.C. mounted on horses?

Explain

Horses are powerful animals. What attributes do horses possess that give them actual and perceived power? Accept all answers. Introduce students to your equine educator and review rules for behavior around horses. Allow students to run their hands over muscles and mane. Give them an opportunity to look at the horses head, face, eyes, nostrils, and jaw. What about the feature of the horse conveys power and grace?

Show students two examples of equine sculpture that can be found in or near Washington D.C. Look at how the horse is portrayed in relation to the person associated with it. How does the portrayal of the horse emphasize the importance of the person?

"Stonewall Jackson on Sorrel"

Joseph Polia

Manassas National Battlefield

"Abe and Old Bob"

Ivan Schwartz

President Lincoln's Cottage

Have students compare the statues to the horse in front of them. Which of the two is more accurate? What would be the purpose of distorting the form of the horse? Imagine the unveiling of each of the statues at the public ceremonies. Stonewall Jackson astride his battle horse Little Sorrel was unveiled in 1938. Lincoln standing next to Old Bob was unveiled in 2008. Compare these periods in American political and social history. Why is the equine statue such a powerful representation of our times?

Elaborate

Invite students to construct an equine sculpture with a friend or individually if they prefer. Provide your artists with craft sticks (for leg supports) and clay or play dough. The equine educator, your live horse model, will stay throughout the session and provide students with inspiration and guidance!

Students may want to add a human to their equine sculpture. Who will it be? How will the horse reflect the character or achievements of the human?

Some artists may want to make the horse the hero! Have fun telling tales of famous race horses or war horses that have their own statues. If possible, hang pictures of equine statues that honor a particular horse.

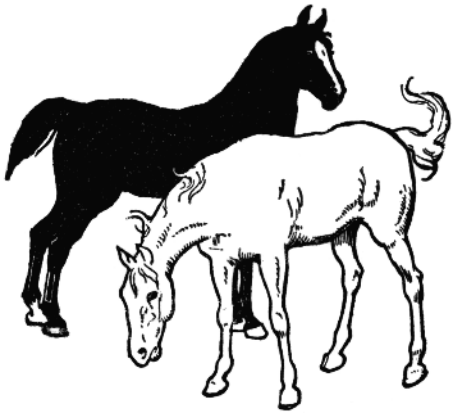
Secretariat

War Mule

Sergeant Reckless

Evaluate

Take pictures of the students with their sculptures to send to their teacher via email. Celebrate with a gallery walk! Have students describe how the live horse model helped them sculpt their work. What did they learn about the living horse in the process? What did they learn about equine art that helps us understand events and people in an historical context?



Mainly Manes

Students will be able to braid and weave a horse's mane using basic fiber arts techniques.

Lay a long tangled rope on the ground. Make sure its full of knots and twists - a real mess! Invite students to grab hold of a section of open rope and DON'T LET GO as they try to untangle the knot. Students will need to step through loops, twist and turn, and wiggle through the maze. As students work through the puzzle, ask them why it is important to keep a horse's mane and tail in good shape. Why is it important to take care of hair at all? What happens when we don't?

Lead students on a tour of the stable and meet the horses. Show students the tools needed to groom horses tails and manes. Identify the brushes and combs and demonstrate their use on one of the horses.

Visit a pasture and look at horses as they graze. What purpose does the horse's mane and tail serve? As you walk, ask students how many animals they can think of that have manes or tails. How are they similar to or different from horse's manes and tail?

Return to the stable and visit again with the horses. Do you have ribbons or awards to show? Explain to students that grooming is very important for special events. Students may have noticed horses in parades or drills that have had their manes and tails fixed beautifully. Horse grooming can be a fun way to prepare a horse for an event.

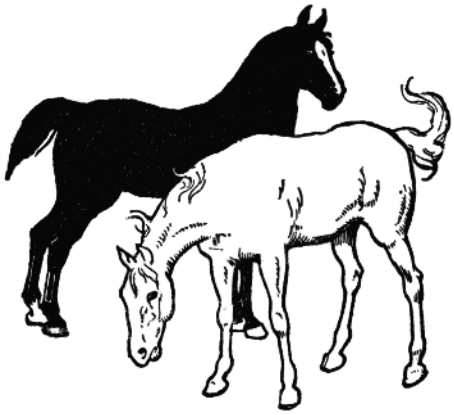
Elaborate

Invite students to try their hand at braiding. Braiding boards can be made easily with a wire bail clipboard, tape, and yarn. Give each student a clipboard and 12 to 36 pre-cut lengths of yarn to knot or tie on the wire clip bail. Use tape to keep yarn from sliding across the bail if necessary. Ask students who already know how to braid to buddy with a student who would like to learn. Allow students ample time to master simple braiding technique. Be creative and have fun!

With a patient equine educator, allow students to work in teams to use combs and brushes to try their hand at braiding a mane. Demonstrate how to use grooming tools, with emphasis on hand position, pressure, and direction of comb. Offer students the scenario of preparing the horse(s) for an annual parade in the community. Extra staff or volunteers may be needed to monitor and help teams with their work. Offer a selection of bows and ribbons for decorative flair. Have fun!

Evaluate

Have staff or volunteers lead the horses on a stable parade for students. Celebrate their great work! Why is daily grooming so important? This is especially important when a horse has been enjoying a fun afternoon in a meadow or along a woods edge - or after an energetic roll in the mud!



The Equine Artist

Students will demonstrate the foundations of equine illustration using direct observation.

Give each student a clipboard with several sheets of plain white paper attached and a colored marker. Using a large pad of paper and a larger maker, demonstrate free form ovals and free flowing lines. Encourage students to look at horses in a pasture or in stables as bundles of oval shapes, energetic and moving forms. Use ovals and lines to draw horses in fast timed sketches - no erasers or straight lines. Why draw fast? Why is it important to avoid getting things “too perfect?”

Tour the stables and grounds with clipboards, paper, and a selection of drawing tools that students can try. Ask students to create a few pages of journal notes about the tour. Stop at a few interesting places to sketch a scene or an object. Encourage students to make notes as they go. Give historical information about the farm, names of horses, descriptions of buildings and the land.

At the completion of the tour, stop and ask students to make a map of their walk with a birds-eye view of the farm. Diagram the buildings, pastures, paths, and roads. This will give students a strong orientation for your site and what it contains.

Journal sketching is a low-pressure way to familiarize students with field sketching and place-making. Students can unclip their sketches to save and reload their clipboards with new paper.

Explain

Gather students around the large easel or whiteboard. Equine artists have been hard at work since pre-historic times. The famous cave paintings of Europe contain many beautiful renderings of ancient horses. Over thousands of years people and horses have shared a history in farming, trade, and war. Equine artists have recorded this relationship in paint, chalk, sculpture, pastel, and pen. Have several examples of historic equine art to share with students.

Chauvet Cave, France

Leonardo Davinci

Photo Credit: Hershey Theater

Elaborate

Introduce a horse and lead it around for students to observe how it moves. Point out major muscle groups (ovals), skeletal features (angles), and how a change in gait changes the body posture. Demonstrate on a lunge line. Encourage students to look closely at the horse's chest, legs, and head position.

Invite students to choose one part of the horse to draw. Fold a piece of paper into quarters, then unfold so that there are four sections for a series of sketch studies. Ask students to draw the section or feature of the horse as the horse changes position or gait. Encourage students to work fast and not to linger or fuss over their work for too long - this causes frustration. Instead, work quickly and with a light hand. Each session should last for five minutes.

After the study session, allow students to draw the total horse for several five minute sessions using full sheets of paper. To set the tone and help students to focus, play (on low volume) some classical music.

Have students choose a full body sketch and have them develop it fully with shading and contrast. Allow students ample time for this - up to fifteen minutes.

When finished, invite students to clip their finished sketch to a line or tape to a designated "gallery wall." Have a gallery walk and celebrate their efforts!

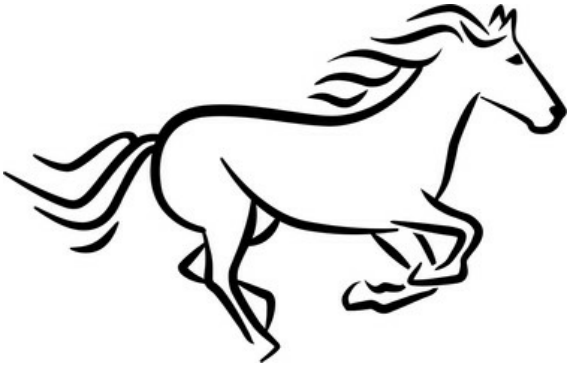
Evaluate

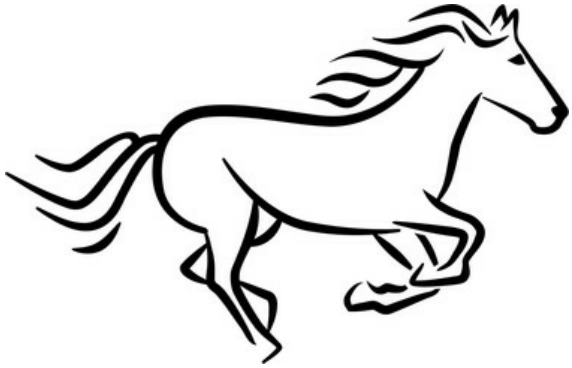
The equine artists are passionate about their subjects and work hard at what they do. What was the hardest part(s) about the student's work today? How does equine art help describe our relationship to horses?

Have an art contest! Invite students to return to your HDC and spend some time painting, sketching, or sculpting the horses. Have students submit their best work for a school-based or stable-based art show dedicated to horses. Offer prizes (a riding lesson or camp experience) and invite local equine industry leaders to help judge the work.

Unit V

Careers with Horses





To The Rescue!

Students will explore many aspects of emergency horse care through a variety of careers that specialize in or include equine emergency response.

Horses sometimes get into trouble. There are lots of reasons why horses find themselves in need of emergency help. People who respond to horse emergencies receive special training and apply special skills to rescue horses and get them to safety where an equine veterinarian can treat them.

Ask students if they've ever responded to an animal emergency. What did they do? How did the animal respond to their attempts to help it? Allow students to tell their stories and encourage group empathy by supporting storytellers with a round of applause or "silent standing ovations."

Take a tour of the facility and point out areas and equipment that are used for horse rescue. Is there an intake room/stable? How are newly rescued horses assessed here? Are there mechanisms in place to help support an injured horse on their feet?

Visit with a rescued horse and tell its story. Story telling is important to create empathy and respect for both horses and the people who rescue them.

Distribute copies of a **equine care chart** for a horse at your facility. Ask students to explain what kinds of care the horse is receiving and when. Invite a staff person to explain to the students how rescue horses are cared for and what qualifications are required of staff in order to administer quality care. Do volunteers receive regular training? Is there a staff person to supervise others in the care of horses?

Invite small student groups to accompany staff on their rounds of rescue horses. Use this opportunity to encourage future participation as volunteers at your facility and as skill and knowledge-building experiences to help enter an equine career field.

Conduct a horse rescue scenario that emphasizes teamwork and problem solving.

Offer students their 'rescue equipment' in a **l**arge tub or bucket:

10 x elastic loops (these can be made by cutting a wheel barrow inner tube into sections)

12 x sections of rope (different lengths from 6' to 20')

1 x large rubber loop (a whole wheel barrow inner tube)

1 x 50' rope (for boundary markers)

1 plush toy horse

Define a large circle as the boundary of a "frozen pond." Use the 50' rope to lay the line on the grass. Place the plush toy horse in the center of the pond. Explain that the horse is suffering from hypothermia and cannot swim the icy waters to the shore. It needs a rescue! Using only the items provided, the team must craft rescue equipment and bring the horse to safety "ashore."

Restrictions:

- Any space inside the boundary rope is off limits to any person - no bridges or boats allowed.
- Everyone must have a job to do from the shore. No onlookers.
- The horse cannot be dragged across the pond. It must be *lifted* to safety.

Give students fifteen minutes to rescue the horse. If any of the restrictions are violated, 2 minutes will be taken off the count. Explain that safety of the rescuers as well as the horse is extremely important.

Students may or may not be successful in rescuing the horse. If time has expired and the horse is still in trouble, you may decide to gather the group together to discuss a new strategy and if time allows try again. If students were successful, debrief the activity. What strategies worked? Which strategies did not work? Why?

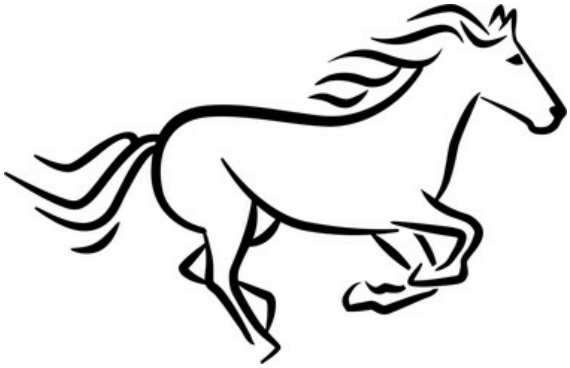
Explain that in real rescue situations there are sometimes special pieces of equipment available to trained personnel. But in many instances, it is a matter of ingenuity and teamwork that saves the day.

Is your local fire department trained to assist in large animal rescue? Explain to students what types of training emergency personnel receive and how your rescue facility contributes to rescue situations.

Not all horse rescues are the result of accidents and mishaps. Some rescues are required in cases of abuse and neglect. Share with students a case that involved your rescue. Do not reveal the outcome, but instead ask students to evaluate the situation as described and develop a plan for the rescue. What kinds of personnel will be required?

As students evaluate the scenario, describe how laws and legal protocol may come into play. What will a rescue team need in order to enter private property? What protocols are in place to allow for the welfare removal of horses from a farm or stable?

Discuss with students how laws and regulations affect what can and cannot be done to protect horses from abuse and neglect. Encourage students to research local, county, and state laws that address animal cruelty.



Will Work for Equine

Students investigate careers that deal primarily in the equine industry and learn what educational tracts are most important for entering such careers.

It's not too early to start thinking about a career, especially if you want to work with animals - lots of student do. Have students gather in a circle and have them name a job or career that has either a direct or indirect link to working with animals. What can students do now to start planning for getting a job with animals? Accept all answers.

Take a clipboard along on a walk around the farm with students. With their help, think about and list the many different services and industries that help build and maintain a horse farm.

What are some of the more challenging jobs that require specific skills? What are some jobs that requite technical training, experience with horses, or a college degree?

Try to make a list of twenty or more equine-related jobs. Not all need to be directly associated to horses. Some may be indirect - barn builders, fencing company, feed supplier, for instance.

Spend time in the stables and extra attention to the horses. Some students may not be familiar with the idea of farriers or large animal veterinary services, so be sure to introduce these unique jobs and careers to them as you meet the horses.

Gather students in a hay bale circle or picnic area where you have two easels or white boards set up with chart paper on each. Have a pack of colored markers ready. Write "Indirect" or "Direct" as the heading for each large piece of paper. Have students give an example of a job that has indirect associations with horses. Do the same for direct associations. Place the examples under the correct heading. Ask students whether either of these jobs require a college degree? Underline jobs that requires a college degree in blue.

Explain to students that now is a good time to start thinking about what they would like to do for a living. They can begin thinking about how to prepare for training and/or further education in a job that interests them by understanding that all jobs can be grouped into five general categories that require knowledge in classes they are taking right now.

Call out the jobs listed on the clipboard and categorize them as "Direct" or "Indirect." Add them to the appropriate chart. Underline in blue if a college degree is required. Then go back and circle each with the appropriate color according to this key which should be posted as a separate chart either hung nearby or held up by a student:

- Agriculture and Natural Resources/ **Science & Math** = **Green**
- Writing, Media, Communications/ **English & Fine Arts** = **Orange**
- Business & Administration/**Math, Computer Science** = **Purple**
- Engineering & Manufacturing/ **Science, Math, Computer Science** = **Red**
- Animal Health Services/ **Science, Math, Social Studies** = **Yellow**
- Human Services & Regulatory/ **Social Studies, Law, Science, Math** = **Blue**

As you complete the two charts using the key, stress to students that if they have an ideal job or career field in mind now, good grades in their required classes and careful choices for electives can help them gain skills and knowledge to give them an edge in first jobs, internships, and college applications. Stress, too, the importance of community service and being active in 4-H and related clubs. It's never too late to start thinking about building a portfolio of experience and a network.

Introduce an equine educator and tell their story. Is it a rescue? A competitor? A trail riding horse? A hunter? A companion? Ask students to think about all the people who have helped this horse stay healthy and remain active doing what he does best.

Break the group into four teams. Invite them to write a story about your horse that includes a jobs portfolio that mentions all the related human jobs and careers that have made his life a happy and healthy one. The team that can mention the most equine-related jobs and careers will win a prize.

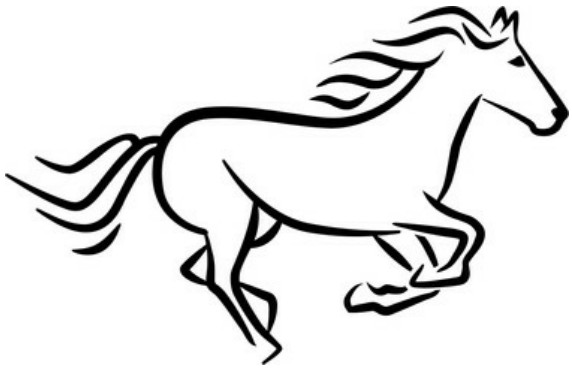
Students may use the chart papers for reference or ask staff and volunteers for help. Provide paper and pencils for writing their story and a stack of index cards to label all the equine careers and jobs mentioned during its telling.

Allow students time to create their story and practice telling it. Circulate among the students as they work and offer suggestions for equine jobs and careers that may not have been mentioned previously.

To help students further, post a chart of equine careers as mentioned on PennState's Animal Science webpage: (http://animalscience.psu.edu/majors/minors/equine-science/careers/options) * Be sure to click through the categories for detailed job descriptions.

Have a story-telling festival! Invite teams to come forward and stand next to the horse as they tell his story. As each equine career is mentioned ask that they hold up the card that labels the job. The team with the most job mentions - count the cards - wins the prize of grooming the horse and offering him a treat!

Ask students for a show of hands for how many of them would consider working with horses. Choose a few hands-up students to tell you how they plan to combine their school studies, networking, and skill building to help create a path to high school and beyond to land that job! What can you offer interested students? An internship? Volunteer opportunities?



Home For Horses

Students design and build barn and stable designs using architectural design principles based on the care and comfort of horses.

A barn is more than a farm building. Modified for the housing, a barn can contain stables and rooms dedicated to horse care, tack, and feed. A barn of any type, however, can also serve as a social gathering place for people, a production site for farm goods, retail space for customers, and offices. Barns can be spacious or small. Play a game of "All In" using carpet squares. Warning: Laughter is contagious!

Throw carpet squares on the ground, but only half the number as students in your group. Tell students that they are horses at the stables. They can run, jump, play roll around, doing all the things that horses do until….you call "All In!" The horses must return quickly to their stables (carpet squares) and not have any part of their body touching the grass. Everyone must be on a carpet square - or helping others to stay on the same square!

Just before you call "All Out!" Remove two carpet squares - claim that stable space is needed for an office, a storeroom, etc. Play another round and another (removing more squares), until the number of horses trying to fit in the stalls is impossible. The herd has burst its quarters and needs a new stable building!

Walk around the barns and stables. Identify what each type of farm structure is used for. Point out different building methods and the variety of materials used. Describe historical significance of any older barns. Meet the horses and inspect their living quarters. How many horses per stable? Why?

Explain

Agricultural architects are tasked with building or preserving large structures that serve many purposes. Throughout American history, barns have been built with local materials and local knowledge.

The most important part of the barn is the roof because it protects animals, supplies, hay, feed, people, and equipment inside. The sound roof sheds water and should be able to hold heavy snow and ice. A barn roof and its supporting beams need care and maintenance over time. What do we look for when tending to our barn roof? Leaks inside? Sagging ridge lines? Missing shingles or slates? A wind-bent metal panel?

Barn walls should be able to withstand high wind but still provide some ventilation for the animals and materials kept inside. Doors and windows are utilitarian. They are big enough to allow equipment to get in and out as well as to provide animals with fresh air without allowing them to escape! Show pictures of historic barns that illustrate roofing materials, walls, stable doors, etc.

Pennsylvania “Dutch” hay barn with stables for draft horses.

Photo Credit: Field Sport Concepts, LTD

Save old wall calendars for a great supply of demonstration photographs you can laminate and have as sets for teaching. American barn calendars are easy to find!

New training barn at Sagamore Farm, Glyndon, MD

Divide the group into work teams of 2 to 4 students and assign each team a work area that has a large sheet of paper, markers, pencils, rulers, measuring tape, and a solid, flat surface for drawing.

On easel paper hung for all students to see, discuss good layout and design considerations for planning a new barn for horses. What is a comfortable stall size for horses? Ask students to measure an empty stall and calculate the square footage.

How wide is the aisle? Is that a comfortable size for moving horses inside the barn? How big are the doors? When open, do the doors allow light to flood the interior? Where are interior lights? How many are needed to provide adequate light when the doors are closed? Are there windows to allow fresh air to flow? What doors are best for stalls? You can research design ideas before students arrive and have examples of architectural plans pinned to walls or spread about tables.

List special spaces to consider:

- Indoor and/or outdoor wash stalls
- Tack room
- Feed room
- Utility room for cleaning supplies and systems boards
- Restroom for people
- Office
- Commons space for a kitchen, sitting, computer

Invite teams to discuss their ideas for a new stable building. They may have ideas that weren't mentioned! As the teams gather their thoughts for their designs, interrupt the discussion with a "phone call" from a client who needs a new barn built and who is accepting competitive entries for floor plans. The client has certain needs and wants.

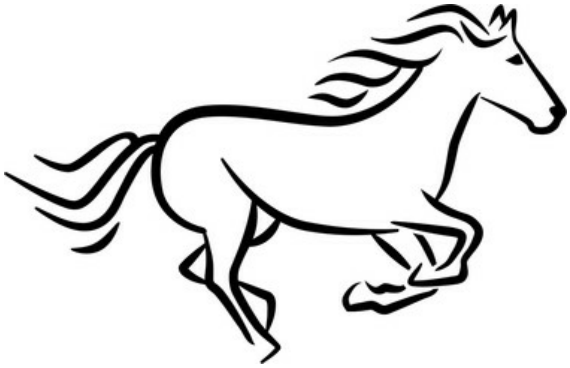
The new stable building will hold a maximum of twelve horses and will require an indoor classroom with enough room for thirty people to sit at long tables. The restrooms will need to be big enough to accommodate group visits. The client would also like a commons room with seating, a TV and computer, and small kitchen. Get planning!

When teams have completed their work, invite them to present their plans for the client's new stable building in front of the class. When all have presented, ask students to pretend that they represent the client. Which design would they choose for the client?

What kinds of jobs would agricultural architecture generate for the trades and equine industry? What kinds of economic and educational opportunities can a well-designed stable building generate for the farm and the community? Help students think beyond the product and into the process of equine business and education.

Does your facility offer internships, summer jobs, or volunteer opportunities? If so, invite students to check out your web page or newsletter where they can get more information. If not, consider offering opportunities for students and offer to help them create an equine jobs network to guide them. Help students discover opportunities in:

- Equine Publishing
- Equine Health and Rehabilitation
- Project Horse Programs
- Horse Farm Management
- Grooming and Care
- Special Events
- Breed Organizations
- Equine Photography



Supporting Horses

Students explore a range of jobs that support the equine industry in Maryland.

Working with and for horses is a team effort! For every person you see working directly with horses in any of Maryland's many equine industries, there are many people who make it possible! Play a round of 'The Invisible Man" and discover some of the support jobs that make the equine industry.

Have students stand in a circle around you. Point to one student and call out a job that involves working directly with horses. "Jockey!" "Veterinarian!" "Trainer!" Moving around the circle from that student, each student can come up with a job that makes that work possible. It might take a little time to get started and you can certainly help with hints. But once the support jobs have been exhausted, point to the next student and call out another direct industry job and start again! Have fun and expand their thinking about the importance of equine support industries.

Take a tour of the farm and tell some of the horses "biographies." Meet staff and conduct an interview so students can learn what training, background, and education they need to do their jobs well.

As you finish the tour have the students conduct an inventory of support jobs they think are necessary for one person to own and care for a horse.

Gather students at a straw bale circle or in a classroom space. What is a family tree? Ask students to give examples. On chart paper, create a equine career tree. Starting with a simple drawing of a horse, draw connections to its owner and to the farm or stables where the horse is kept. From each primary limb, create a branching tree of jobs and careers that make the equine industry possible.

How has this tree changed over time? What happens when you start a career tree with a racehorse? How has technology changed equine careers? How has technology changed the use of and need for horses?

Divide the group into small teams. Give each team a clipboard and paper/pens. At the top of each page, write the name of an equine-related position. Invite students to write an employment for-hire advertisement for that position.

Have staff and/or volunteers help each team come up with job descriptions and pre-requisites. Engage students in discussions about how employers find the right person for a job. What can students do now to begin to build a resume for a job in equine work?

Post the want-ads in the classroom or commons area and hold a mini-job fair! Ask students to read the advertisements from the other groups. Invite students to stand at the want ad that interests them. Why are they interested in the job?

Celebrate your jobs fair with a visit with the horses. Invite students to get involved with their school's agricultural program, local 4H clubs, or at your farm if student opportunities are available. Ask them what skills they would like to learn from you and your staff to help build their own resumes for a future job in the equine industry. Offer to be a mentor!

Unit VI

The Urban Horse

Horse-Drawn Transportation

Students will examine how transportation innovations occurred incrementally over time by addressing inefficiencies.

It's hard to imagine, but before buses, trucks, and cars, commuters in Baltimore, Frederick, and Washington were entirely dependent upon horses or their own two feet to go to work each day. It's hard to imagine - but let's try!

What would our city have looked like at rush hour?

What did the streets smell like?

What were the sounds of a horse-drawn city?

Baltimore was the first American city in 1859 to use horse-drawn trolleys. Trolleys could move 20 to 40 people at a time. The fare for a one-way ride to the city's factory and financial districts from Baltimore's neighborhoods was 3 cents in 1860.

If you worked six days a week (as most people did - with just Sunday off) year-round, what would be your cost of transportation to and from work in 1890 when fares were increased to 5 cents for a one-way ride?

Take a tour of the farm and think about how materials and supplies would have come here from the city in 1880? Were there rail lines nearby? Did trolleys operate near here? What kind of transportation was required to haul lumber, fencing wire, hay and straw, or food to and from the farm?

Visit with the horses. Were these the kind of breeds that may have worked in the city to pull fully loaded trolleys? Could they have pulled milk wagons through city neighborhoods? Were there specific kinds of breeds of horses or ponies that were best suited for city transportation?

People like to think that changes in transportation innovation happened smoothly, that horses were replaced by buses and cars at "an end of an era," when in fact all kinds of innovations existed together and in competition.

Explain

Horse-drawn public transportation experienced changes in in Baltimore in the early 1800s when roadways were clogged with people, wagons, and animals. Roads were rough, often unpaved, muddy, and manure-covered . Crowded conditions in the growing city made efficient travel a real challenge.

What would have helped increase efficiency in horse-drawn transportation? What innovations would make it easier and safer for both people and horses? Remember, the time period is the early 1800s in Baltimore. Cars, buses, and commuter trains were still a long way off!

Elaborate

Have students (horses) pull a wagon with 2 or 3 students riding in it over rough ground. Time students as they move the loaded wagon a certain distance (50 feet is a great trial distance).

Have students construct a "railway" for the wagon using fence boards. Run the trial again. How was the second trip for passengers and "horses" on the new surface?

What was the difference in time? How does the reduction in surface friction affect the time it takes to move the wagon?

Did efficiency increase? What were the difficulties? (Staying on the boards, slowing down when moving faster)

By the mid-1800s, horse-drawn transportation in Baltimore included the omnibus, a trolley that ran on rails embedded in the cobblestone streets. This simple innovation increased efficiency and access for people all over the city!

Evaluate

By 1890 there were 178 horse-drawn trolleys on rails in Baltimore! Pulling those rail-trolleys were 1,283 horses! Rails reduced friction and increased speed and efficiency. In what ways, however, increased friction important for safe and efficient travel? What would happen if all friction were eliminated?

Wide Wheels Are Free

Students will explore the consequences of wheel design on road surfaces and suggest new conceptual designs of low impact wheels.

What causes roads and pasture surfaces to degrade? Explore a small area of the farm to record the kinds of weathering and erosional features found on a variety of surfaces like a dirt road, a paved road, a pasture trail, or a tractor path. Keep a list - gullies, ruts, bare patches, broken pavement, potholes, mud holes, etc. Ask students what combination of factors cause roadway degradation? These factors include vehicle weight, slope, rain and snow melt, tire or wheel design, speed of vehicle, composition of road or path, among others.

Moving people and goods was the job of horses before there were trains, buses, and trucks. Draft horses pulled the heaviest freight wagons, often in teams, while the carriage horses pulled human passengers who were carried in coaches, dearborn wagons, or in a two-wheeled sulky.

Have a set of laminated pictures available to share with students that show a variety of wagons and carriages. Note the kinds of wheels each vehicle has.

Give a picture to small groups of student to examine. Ask them to imagine the vehicle, driver, and horses traveling on the Old National Road from Baltimore in 1835. This was America's first long-distance federal highway built in 1811. It was maintained by a system of tollhouses that collected fees for the upkeep and repair of the 620 mile-long road that reached all the way to Ohio. It was a main route for westward expansion. Give groups a copy of the LaValle Tollhouse (Allegheny County, MD) Rates of Toll board.

What toll is due for their vehicle at the LaValle Tollhouse? Compare tolls. Why are they so different?

Rates of Toll

Wagon or Vehicle drawn by one pair of mules, cattle, or horses. 60 cents

For each additional span of mules, cattle, or horses. 10 cents

For one inch-wide wheels, each 8 cents

For 2-4 inch-wide wheels, each 6 cents

For 5-7 inch-wheels, each 4 cents

For 8 inch or wider wheels FREE

For every vehicle drawn by one horse, one mule, or one oxen. 10 cents

Have students share their pictures and the tolls they would have had to pay to pass through the LaValle Tollhouse gate.

Considering how roads were constructed in the early 1800s and the materials available for road building, why were different kinds of vehicles and the animals that pulled them charged different rates?

Ask student teams to explain why their vehicle and animals would have been charged the calculated toll. What was the impact of their vehicle and number of animals on the road?

Give each student a clipboard, paper, and drawing tools. Consider what kind of wheel design for their vehicle would reduce road damage on paths and roads around the farm.

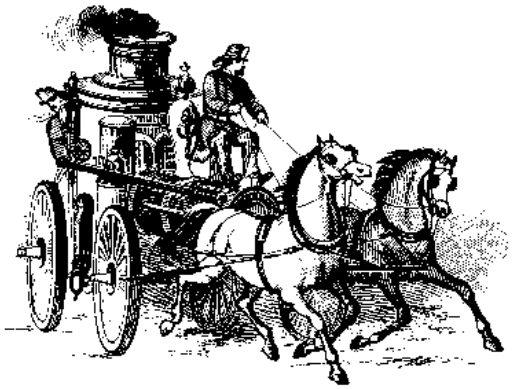
Students can redesign the carriage, buggy, or wagon pictured on their group's laminated image, or they can invent a new design that carries the same number of passengers or cargo.

Will they need wider rims? More spokes? Will they need to increase the surface area of the wheel that makes contact with the ground? Will it be made of different materials?

How will the new design affect the horsepower needed to pull the vehicle? Consider breeds of horses and whether to increase the number of horses pulling.

Invite students to share their work and explain the design modifications made to their vehicles and the power needed to move them.

Re-calculate the toll required to pass through the LaValle tollhouse gate on the National Road. Are there trade-offs between the tolls required for increasing the number of animals and the width of the wheel? Why or why not?



Fire Horse!

Students will apply concepts of statistics and probability to analyze and characterize data.

When speed and efficiency are important for responding to an emergency in the city, our fire fighters and paramedics are the best! In the mid-1800s, however, there were other first responders who served on the team: the fire horse! The fire horse was a highly trained member of the team that responded quickly to an emergency call. The pulled firefighters, hose and pump truck, and firefighters to the scene of the fire.

Play a few rounds of Horse Circle Pass to see what the groups best time is for moving a toy horse around a sitting circle - without dropping it! After a few rounds, average the speed of the horse. How is an average calculated? Why is this important data to know when speed and efficiency is important?

Arrange for students to watch a short YouTube video:
"Firefighting in the Horse Era"
https://youtu.be/n5GWgDOgfYQ

Baltimore, like many "stick-built" cities of the century, has a big fire history. There were no building codes and poor architectural design. No city planning contributed to the danger.

Take a walk around the farm. How is the farm prepared to respond to fire? Are there water sources nearby for pumper trucks? Fire extinguishers? Hydrants? Does the farm have a fire safety plan? Encourage student discussion to extend to their own fire awareness at home.

Horses can be trained to do some pretty amazing things! What tasks were the fire horses trained to do? How hard is it to train horses for certain tasks?

Fire horses had to step into harness quickly, pull the pump engine out of the firehouse (fast,!) and race to the scene of the fire. In this scenario, what kinds of distractions would the fire horse have been trained to ignore? (Smoke, loud sounds, other animals, frightened people, flames, equipment noise, etc.) Explain how horses are trained to serve in high-stress situations.

Create a list of task cards that break down the procedure for preparing a fire horse team to pull the pump engine out of the firehouse. There should be 20 to 25 tasks listed individually on index cards.

Mix the deck and hand each student one card. Have them line up in a horseshoe from the first task (emergency telegraph is received) to the squad's leaving the firehouse. Time the group effort to sequence the tasks in order. Check the order and allow them to make adjustments after their first attempt. Collect the cards, mix again, and try a second and third time.

Which attempt had the fastest time? What was the average time of all three attempts? How can the group improve its time?

Ask students to reflect on training for high stress events. What is required of the trainer and the person or animal being trained?

Why is efficiency important in emergency services?

What technologies replaced the fire horse? What technologies might improve or replace our current emergency response protocols?

Special Delivery!

Students will use calculating and estimating to determine the rate of waste production by unit and scale.

In 1850, Baltimore's streets and alleys were clogged with traffic. It was a bustling port city with a growing population. It was also a city of horses! Horses navigated all of Baltimore's crowded streets whether pulling trolleys or wagons, carriages or single riders. All those horses deposited a great amount of manure in city streets. Street cleaners were very important city workers.

Have the group (or groups if divided up) create a team cheer for street cleaners! They still are very important!

It is estimated that in 1850 there were almost 10,000 horses stabled in the city. That's a lot of manure to clean up! Take a tour of the farm to discover where manure from the stables is taken after stalls have been cleaned out.

Describe the many ways that horse manure is used and how, for some farmers who manage large-scale composting operations, it is a valuable commodity. One of the biggest buyers of Maryland horse manure is the mushroom industry in Pennsylvania. Manure is composted and mixed to make a fine growing medium to grow millions of mushrooms for us to eat.

Dig through a pile of composting manure. Look for insects, worms, and other decomposers. Ask students to describe the difference between renewable and nonrenewable resources.

Explain

Horse manure was an important commodity for Baltimore in the 1850s. Dozens of wagons a day were drawn out to the surrounding farms to use on fields and gardens. It was a manageable "manure economy."

Things changed rapidly, however, when the industrial revolution hit American cities full force in the late 1800s and the numbers of horses, like the population of people in cities, grew exponentially. By the 1890s Baltimore had tens of thousands of horses plying city streets! Baltimore, like many industrialized cities, experienced a manure crisis.

If a single horse can produce 30 pounds of manure a day, how much manure would 60,000 horses produce a day? The scale of the problem intensified as flies, attracted to the manure, helped spread dangerous diseases like typhoid fever.

Elaborate

Good Horsekeeping is essential to the health and safety of stabled horses. Like in any confined area (like a city street), a stable can quickly become overwhelmed with manure and urine.

Have students participate in a demonstration to muck out a stall. The basic steps should be

Introduce students to the tools required: a pitchfork, shovel, broom (for the group) and pair of gloves (per student). Demonstrate the steps for mucking a stall -

1.) Position a wheel barrow close to the stall entrance

2.) Pick through and pile clean bedding against the stall wall.

3.) Remove manure solids and pile into wheelbarrow.

4.) Sweep and shovel wet bedding into the wheelbarrow. Allow wet floor to dry. For purposes of this visit, a small fan can be set to help dry the area. This is a great time to visit with the waiting horse tied up outside!

5.) Return to the dry stall with some new bedding material. Spread saved and new bedding around the stall.

6.) Sweep the entrance area clean.

7.) Haul the wheelbarrow to the compost.

8.) Clean and store the tools.

9.) Clean and refresh water buckets or automatic waterer. Stress the importance of not using soiled hands or gloves to do this. If you wouldn't drink the water, neither should your horse!

10.) Clean and refill feed buckets or pails.

Students can help you lead the horse back into her stall. Ask students to observe what she does when she enters the freshly cleaned stall.

Assemble students for a Horseshoe Debrief.

Ask students to calculate the weight of manure one horse at your stables produces in one week. How much manure us produced by all of your stabled horses in one week?

Start a chain of steps involved in cleaning a stall beginning at one end of the horseshoe.

The first student in the horseshoe will say "It's time to clean the stalls!" Each student thereafter adds one step to the process until everyone in the horse has added a step. Don't worry about running out of steps! Just keep adding what happens once the horse is back in the stall like munching on a treat, rolling in the fresh bedding, etc.

Have fun!

Resources

The Maryland Horse Discovery Center Curriculum is aligned to Next Generation Science Standards (NGSS), Literacy for Social Studies and History (LSSH), and Maryland Environmental Literacy (E-Lit). This chart broadly connects the three standard sets to this curriculum project and may not reflect all standards connections possible.

NGSS	LSSH	E-Lit
MS-LS2-1 Ecosystems: Interactions, Energy and Dynamics Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. **MS-LS2-2 Interdependent Relationships in Ecosystems** Predict patterns of interactions among organisms across multiple ecosystems. **MS-ESS3-3 Earth and Human Activity** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	**Geography:** Students will use geographic concepts and processes to examine the role of culture, technology, and the environment in the location and distribution of human activities and spatial connections throughout time: **History:** Students will examine significant ideas, beliefs, and themes; organize patterns and events; and analyze how individuals and societies have changed over time in Maryland, the United States and around the world. **A/4-8 Individuals and Societies Change Over Time**	**(1) Environmental Issues:** Students will investigate and analyze environmental issues ranging from local to global perspectives. **(2) Interactions of Earth's Systems:** The student will analyze and apply the properties of systems thinking and modeling to the study of Earth's systems. **(3) Flow of Matter and Energy:** The student will analyze and explain the movement of matter and energy. **(4) Populations, Communities, and Ecosystems:** Students will use physical, chemical, biological, and ecological concepts to analyze and explain the interdependency of humans and organisms in populations, communities, and ecosystems **(5) Humans and Natural Resources:** Students will use concepts from chemistry, physics, biology, and ecology to analyze and interpret both positive and negative impacts of human activities on Earth's natural systems. **.(6) Environment and Health:** Student will use concepts from science, social studies and health to analyze and interpret both positive and negative effects of natural events and human activities on human health

E-Lit

(7) Environment and Society: Students will analyze how the interactions of heredity, experience, learning and culture influence social decisions and social change.

(8) Sustainability: Students will make decisions that demonstrate understanding of natural communities and the ecological, economic, political, and social systems of human communities, and examine how their personal and collective actions affect the sustainability of these interrelated systems.

Materials for Activities

Materials may be needed for certain activities. Some materials may be easily made using commonly found items around the home or farm, such as question cards, pictures downloaded from the Internet or clipped from magazines, and tools used on the farm. Other materials may have to be purchased ahead of time, however, so be sure to read through the activities before the day of the program to be sure you have what you need!

Figuring the Cost

How are field trip fees figured? Keep in mind that you will have to cover the cost of materials and the compensation of educators or guides if not using volunteers. At the time of this writing (2015-16) a general and acceptable price per student for farm-based field trips in the Mid-Atlantic region was between $6 and $10 per pupil. Teachers and chaperones are generally free, but are expected to help with group management and participate in activities. Pricing methods vary according to facility and program offerings, but whether you charge by the person or by the group, be consistent. If you plan to offer overnight camping or residential options, price accordingly. Make sure your accountant and insurance agent understand what you charge and why.

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