



Utah 4-H Horse  
Program  
Study Material  
Volume 1



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# INTRODUCTION

The Utah 4-H Horse Program is one of the largest within the program. Some of the most popular project areas are Western, English, Youth Mustang Challenge, Working Ranch Horse, and the Horse Classics (horseless contests). Youth involved in this program will have experiences to help develop leadership, citizenship, self-esteem, and horsemanship skills. Although we love and promote the horse industry, and everything that comes from owning and riding horses, the true purpose of 4-H is youth development. As a part of that purpose, we encourage youth to master their project area. This includes learning to be a true equestrian, but also knowing the basics of owning and caring for horses. These chapters include a small collection of information for our youth to study. Each volume will build on each other with our junior aged youth (8 – 10 years old) studying from volume I, our intermediate aged youth (11 – 13 years old) studying from volumes I and II, and our senior aged youth (14 – 18) studying from volumes I, II, and III. Volumes II and III will be released in 2021 and 2022 respectively. Additionally, youth may be tested out of the most current rule book, and the Utah 4-H State Horse Biosecurity Policy

# WORKING WITH HORSES

Safety must come first. Parents and guardians expect leaders to be concerned with not only the safety of the participants, but for the horse as well. Leaders should be aware that their actions speak louder than their words.

## HEARING

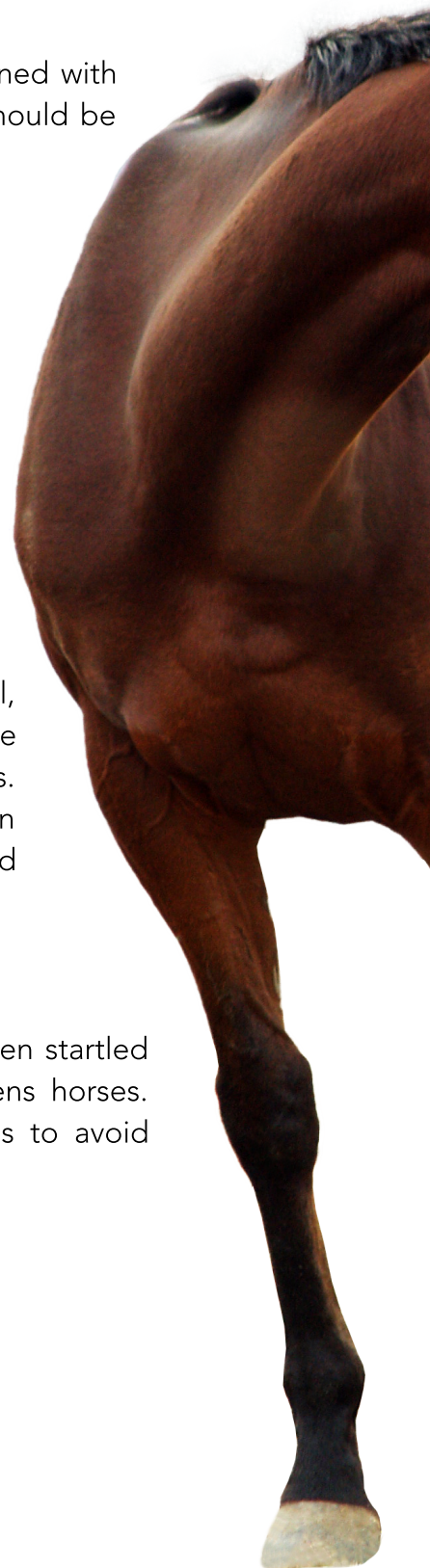
Horses can move their ears in different directions and are very sensitive to sound. They move their ears to help localize the direction the sound is coming from. Horses also communicate by ear position and movement. For example, ears laid flat back against the neck indicate a threatening posture.

## HORSE BEHAVIOR:

Horses have the same five senses that people have: hearing, sight, smell, taste, and touch/feel. However, a horse's response to these stimuli may be completely different than a person's response. Horses are prey animals. When frightened their natural instinct is "Fight or Flight". Aggression (biting, kicking, striking, charging) or attempting to run away is normal and expected when they become frightened.

## REACTIONS

Be aware that horses can respond quickly and violently when startled or frightened. We do not always understand what frightens horses. Always be watchful and careful when working with horses to avoid potential injuries.



# WORKING WITH HORSES

## SIGHT

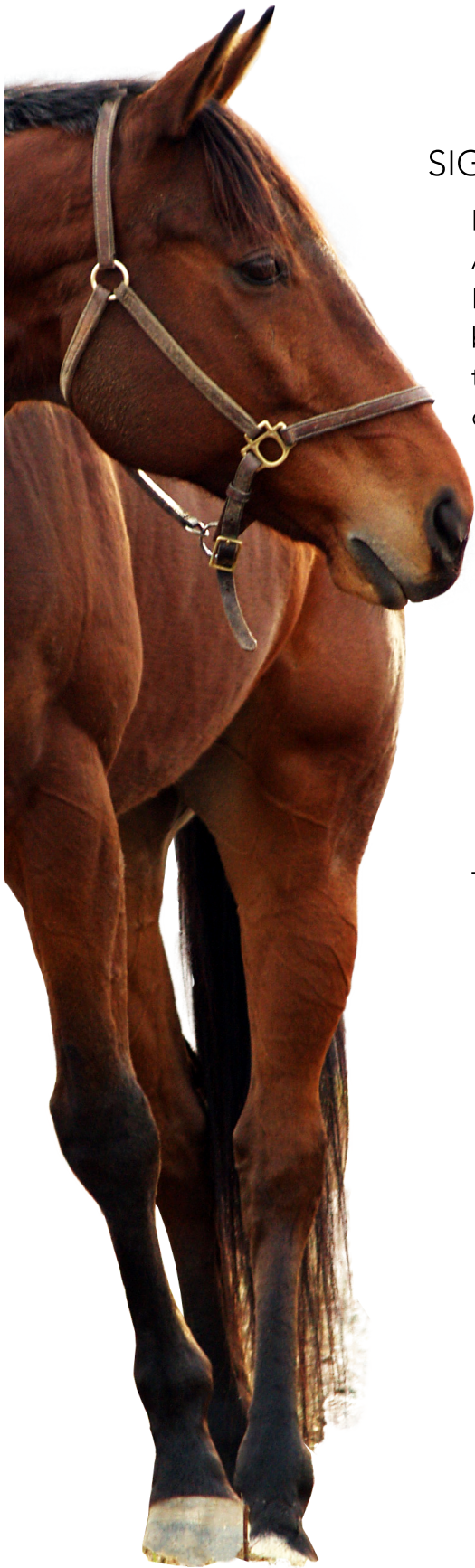
Due to the positioning of their eyes, horses have a wide range of vision. A horse's blind spots are directly in front of and directly behind them. Horses are very nervous and reactive when startled by things in their blind spots. Always approach horses within their field of vision and talk to them as approaching. When grooming a horse, keep in physical contact of the horse when passing through their blind spots.

## SMELL

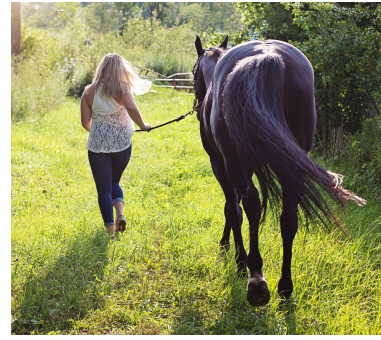
Horses are sensitive to smells. They are able to detect treats in hands or pockets and get in the habit of reaching for treats. It is safest to put all treats in the horse's feedbox and avoid feeding out of hands.

## TOUCH/FEEL

Horses are very sensitive to anything on their skin. They can feel individual flies anywhere on their bodies. Care should be taken to not be too aggressive when grooming. Also, horses are able to feel where you are when you are in their blind spots. Horses can also respond to very light pressure when given cues.



# WORKING WITH HORSES



## APPROACHING AND LEADING A HORSE

It is always best to approach a horse from the front at an angle to the shoulder. This allows the horse the best view of us. Never approach a horse from directly behind. Always talk in a low soothing voice to alert the horse of your presence. When approaching a horse in a stall, always allow the horse to turn and face you before walking up to them. Never lock a person in a stall with a horse. As you get close to the horse, slowly reach out and rub them on the neck or shoulder, then proceed to place the lead rope around the horse's neck. Gently place the nose piece around the horse's nose and buckle the halter to the correct length.

Most horses prefer to be led from the left side. However, horses should be trained to be held and led from both sides. The leader should hold the halter rope about an arm's length from the halter with the hand closest to the horse. The extra lead rope length is held in the opposite hand. Never wrap the extra lead rope around an arm or hand. When leading a horse, the handler should walk beside the horse's head at the throat latch area. Always turn the horse away from the handler. When leading a horse, always be aware of your surroundings.

## TYING A HORSE

Always know if your horse has been trained to tie. When tying a horse, make sure the object you are tying to is solid and secure. A tie should be higher than the horse's withers. The knot used should be a quick release knot. If cross tying, use a quick release snap, and do not walk under the ties. If holding a horse, the holder should stand on the same side as the person working with the horse.

## GROOMING A HORSE

When grooming a horse, safety should always be considered. Handlers should avoid staying in blind spots. When passing through a blind spot make sure you keep a hand on the horse, so they are aware of where you are at. Pay close attention to the horse's eyes and ears. Make sure to wear closed-toed shoes when working with horses and be aware of where you place your feet. It is recommended that a helmet be worn when grooming.

## PICKING UP A HOOF



When handling the front feet, you should stand next to the horse's shoulder facing the tail. Place the hand closest to the horse on the horse's shoulder and slowly move the hand down toward the hoof. As a signal, you may gently squeeze the tendons along the back side of the cannon bone. The horse should lift its foot. Do not wrap your arm around the horse's leg. Be aware of your feet as you set the foot down.

For the back feet, a handler should stand next to the horse's hip facing the tail. Place the hand closest to the horse on the horse's hip and slowly move the hand down toward the hoof. Signal the horse by gently squeezing the tendons on the back side of the cannon.

# WORKING WITH HORSES



## BATHING A HORSE

Observe safe tying procedures and remember to not stand in the blind spots. All handlers should wear appropriate footwear. Be aware of surroundings, i.e. electrical wiring. Do not spray the horse in the face, eyes, or ears. Instead, use a washcloth in these areas. Start the flow of water on the feet and legs, and then move to the shoulder, along the ribs, and to the hind quarters.

## BARN PROCEDURES

All stables should have a best management practices in writing. These include rules and emergency procedures. Know where these are kept, become familiar with them, and follow them. Information on the address for the barn as well as other emergency numbers should be located in a central location near the phone access. First aid kits and fire extinguishers should also be available.

## SAFETY CHECK PRIOR TO RIDING

- ✓ Is the surrounding environment safe? (lighting, footing, fencing, weather)
- ✓ Is the rider ready? (emotionally, clothing)
- ✓ Is the horse ready? (Health, tack, experience level appropriate)

## SAFETY WHEN RIDING



Working with and riding horses requires constant vigilance. It's important that you do not become sloppy! Have a good hold on the horse during mounting and dismounting. If you do not have a helper, make sure you have a secure grip on the reins with light contact to your horse's mouth. Do not overcrowd the riding arena and always pass to the inside of another horse to avoid riding right into their tail. A riding instructor should always be designated when youth or inexperienced riders are on horseback. It's also important to ensure that the event or activity is not over anyone's skill level.

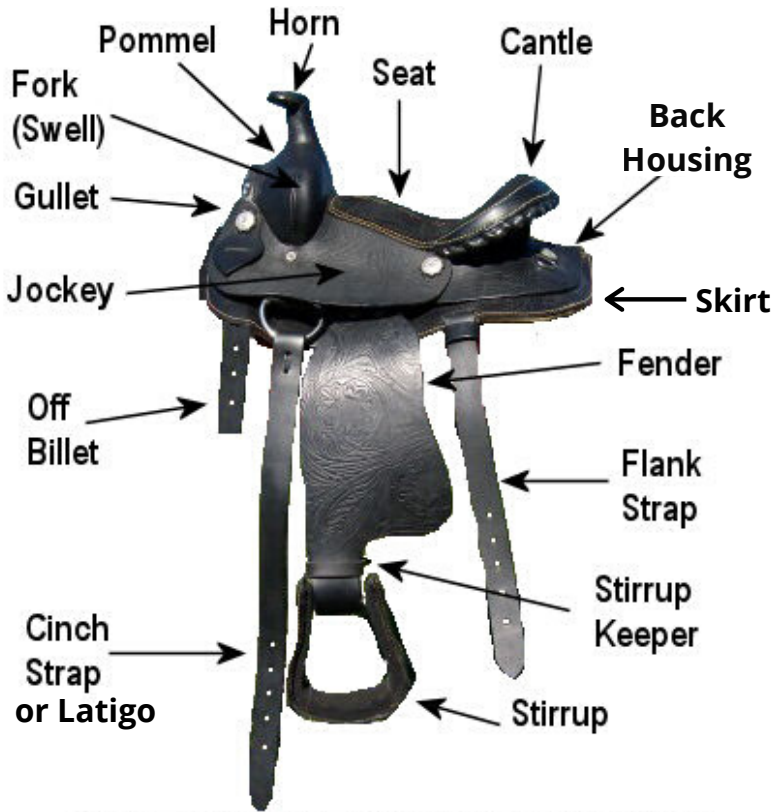


# Chapter Review

1. What are some ways that horses communicate with their ears?
2. What are natural responses for horses when they are frightened?
3. Where are a horse's blind spots?
4. How should you approach a horse?
5. How should you lift a horse's front leg to inspect the hoof? Rear leg?
6. Where should you avoid spraying a horse when bathing it?
7. List the three safety checks prior to riding.

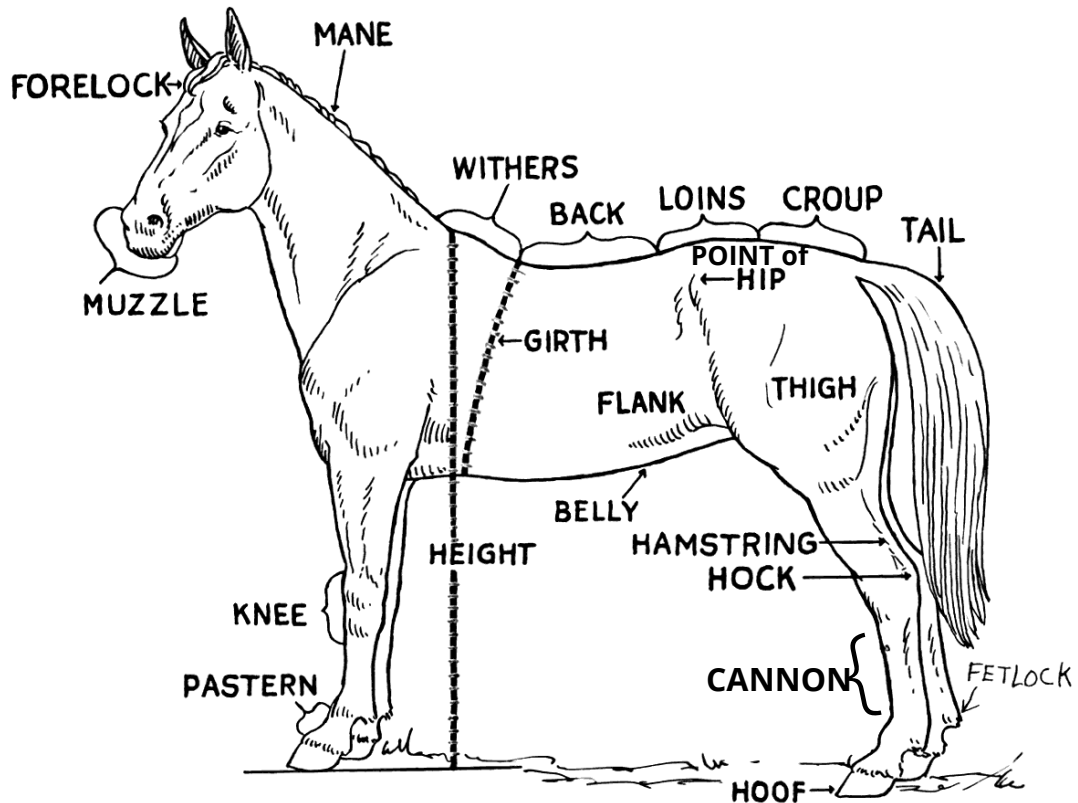
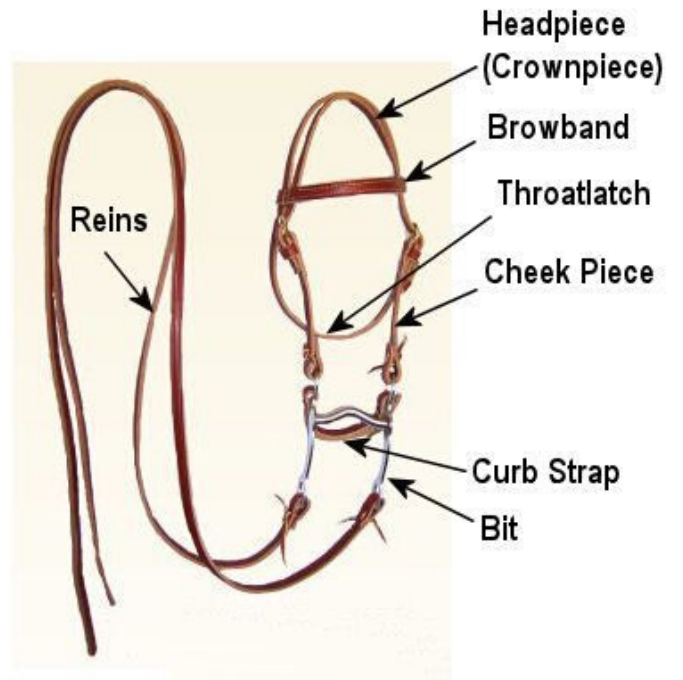


# REFERENCE – PARTS



**PARTS OF THE WESTERN SADDLE**

## PARTS OF THE WESTERN BRIDLE



# REFERENCE – PARTS

## LEARNING ACTIVITY 1

Equipment looks different when you put it on your horse. Can you identify the different parts on the equipment below? Are there parts you don't recognize?



## LEARNING ACTIVITY 2

As a club, go visit a local feed store where they sell tack. Make arrangements with one of the employees to look at the different equipment. There are lots of different types of bits, reins, and other tack for our horses. Label as many as you can and then find some new parts to learn.

# BREEDS

## INTRODUCTION

There are over 350 different recognized breeds throughout the world. Although some breeds are similar, each breed has unique characteristics that distinguishes it one from another. It's important for riders to know their horse's breeding so they can better understand the skills and abilities that their horse is prone to have. Breeds are also categorized by breed type, and these horses have been bred for generations to look, perform, and behave a certain way. This section includes some of the most common breeds found in the United States, but it is not a complete list. Most of these horses are either ponies or riding horses. You can find more breeds, such as the Clydesdale and horses like the Mustang on the internet or in the full Horse Industry Handbook.



### AMERICAN MINIATURE HORSES

Originally used as pets for kings and queens or used in the coal mines as "pit ponies." At birth, they are around 18 inches in height and 15-30 lbs. As an adult, they can mature to around 200-300 lbs and cannot exceed 34 inches to be registered.

### AMERICAN PAINT HORSE

The American Paint Horse Association (APHA) registers foals of registered Paints, Quarter Horses or Thoroughbreds that meet the color requirements. If a horse has paint markings but they or their parents are unregistered, they are considered pintos. They are distinguished by the patterns of colored hair and white hair. To describe these patterns, there are three basic types: tobiano, overo, or tovero. These are based on where the markings are located. While the APHA registers several different breeds, they are still considered stock type horses and are usually between 14.2 and 16.2 hands.



# BREEDS



## AMERICAN QUARTER HORSE

Originally referred to as “Steeldusts” after a founding sire, these horses were later renamed the American Quarter Horse, because of their ability to race a quarter of a mile faster than any other breed. They are registered through the American Quarter Horse Association (AQHA). They can range in size from 14-17 hands, usually around 15 hands. They come in 13 association-recognized colors. Defining characteristics of the Quarter Horse include a short and broad head, short ears, large eyes, wide nostrils, and a calm disposition. They are known for short, compact, and very powerful muscling, allowing for faster speed gain in shorter distances.

## AMERICAN SADDLEBRED

The American Saddlebreds are able to perform either three or five gaits. If they are five-gaited, they will slow gait and rack, in addition to walk, trot and canter (lope). Originally, they were known as “Kentucky Saddler Horses.” On average, they are 15.3 hands but range from 15-17 hands. They have a refined head and small ears, a long neck with considerable arch and the withers should be above the hips. They come in bay, black, brown, roan, gray, palomino, buckskin, and most commonly chestnut (sorrel). American Saddlebred horses can also be pinto.



## FUN FACT

The most popular horse breed in the world is the Arabian, while the most popular breed in the United States is the American Quarter Horse.

# BREEDS



## APPALOOSA

Appaloosa horses have four distinguishing characteristics: a spotted coat pattern, mottled skin, vertically striped hooves, and visible white sclera (the part of the eye that surrounds the iris) around the eye. They are often considered a stock type breed, however they will vary in size and muscling due to the introduction of other breeds. Typically, they are 14.2-15.2 hands and can have a wide variety of colors and coat patterns, leopard and blanket are the most identifiable and common.

## ARABIAN

Defining characteristics of the Arabian breed include a finely chiseled head, a muzzle with large nostrils, a dished face, long arching neck, high tail carriage, and a small build. They were bred for their ability to travel long distances in harsh desert conditions, making them ideal endurance horses. They stand 14.1 - 15.1 hands on average. Purebred Arabian colors include black, bay, chestnut, and gray. Interestingly, they often have 17 pairs of ribs (instead of 18) and 5 lumbar vertebrae (instead of 6).



## CHINCOTEAGUE PONY

These ponies are descendants of horses that survived the shipwreck of a Spanish ship. These ponies live on Chincoteague (SHINK-uh-teeg) and Assateague (ass-uh-teeg) Islands. They range in size from 13-15 hands and are usually pinto in color. They are unique in that they eat seagrass and drink small amounts of seawater, leaving them slightly bloated. The book "*Misty of Chincoteague*" by Marguerite Henry helped make these ponies famous across the nation.



# BREEDS

## FALABELLA MINIATURE HORSE

Known as the first and original miniature horse breed, the Falabella is a type and separate breed within the miniatures. They are bred out of Argentina, where the Falabella family combined traits of many other breeds including Arabians and Appaloosas to develop this unique miniature horse. They are considered true miniature horses and not ponies because of their refined body shape. They can be as small as 12 inches at birth, and are typically 34 inches at maturity. They can be virtually any color, and the more colorful coats are desirable.



## MORGAN

Compact, muscular, refined bodies, and a chiseled face with expressive eyes are the notable characteristics of the Morgan horse. They look very similar to their foundation sire, Figure. At the time Figure was born (1789) it was custom for horses to be referred to by their owner's name. So when Figure gained popularity, he became known as "Justin Morgan". We know them simply as Morgans today. Stylish, spirited gaits and up-headedness are characteristic of their movement. They average 14.2-15.2 hands, most commonly they are bay, brown, chestnut (sorrel), or black but can be buckskin, palomino or gray.

## PASO FINO

Paso Finos are a smaller breed, ranging from 13-15.2 hands come in a wide variety of colors. They have a natural, smooth, rhythmic, and purposeful gait that is straight and balanced. They were brought to America by Christopher Columbus.



# BREEDS

## PONY OF THE AMERICAS

The two unique and defining characteristics of the Pony of the Americas (POA), are their short stature, 46-56 inches and their Appaloosa-like markings (a spotted coat pattern, mottled skin, vertically striped hooves, and the white sclera visible around the eye). The color patterns include snowflake, frost, blanket, leopard, white with dark spots over rump, marbled roan and few spot leopard. The blanket pattern is the most common. They are known for their gentle disposition, durability, and intelligence.



## SHETLAND PONY

The Shetland Pony is a small, tough, hardy, and extremely strong pony. Originally from the Shetland Islands, they have been recognized as the strongest equine compared to their size. In the 1800's, they were used as "pit-ponies" because of their strength. Shetland Ponies cannot exceed 42 inches and can be any color except spotted, but they can be pinto. Once the Shetland Pony came to America, they started being cross-bred with the Welsh and Hackney ponies to develop a new breed. The American Shetland Pony Club (ASPC) also has registries for the descendants of these ponies. These pony breeds include the American Miniature horse, the National Sport Performance Pony, the American Show Pony, the Foundation Shetland Pony, the Classic American Shetland, the Modern Shetland, and the Modern Pleasure Shetland. Each has a criterion for sizes, conformation, ability, and movement.

# BREEDS

## STANDARD BRED

The Standardbred horse, while mainly being used in harness racing (trotters and pacers), have a reputation for being “bomb-proof” making them good police horses or solid family trail horses. They have a good work ethic and a willing, docile temperament. The average Standardbred is 15-16 hands, has a less refined head, is well muscled, but can be longer bodied. Bay, black, and brown are the most predominant colors.



## TENNESSEE WALKING HORSE

This breed was developed for its smooth gaits and gentleness. They have three unique gaits: the flat foot walk, running walk, and “rocking chair” canter (lope). Tennessee Walking Horses can range in size from 14.2-17 hands, but are often around 15 hands. They come in many colors, including, bay, black, chestnut (sorrel), palomino, white, gray, or even pinto. They have two characteristics while moving: the head moves in rhythm with the cadence of its feet and they over stride (the rear feet overstep the prints of the front feet).

## THOROUGHBRED

Typically Thoroughbreds stand 15.2-17 hands and have an angular appearance with a long body and deep chest. Throughout history, they have been called “Blood Horses” because of their purebred lineage for generations accompanied with detailed breeding records. They are considered hot-blooded and are known for high energy and speed. Most often, they start their careers at the racetrack. They can be bay, brown, gray, roan, chestnut or black.





# BREEDS

## WELSH PONY

The Welsh Ponies come from Wales, a country with harsh, rugged terrain. Because of this environment, Welsh ponies are known to be tough, durable, and sound. They come in four distinct types, based on size and lineage, all under one registry. These types are Section A Welsh Mountain Pony, Section B Welsh Pony, Section C Welsh Pony of Cob Type, Section D Welsh Cob. All Welsh ponies, no matter the section, have a slightly dished face, with small, well set ears. They have quick action, are very sure-footed with dense hooves. They can be any color but spotted or pinto.



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## DONKEYS AND MULES

Donkeys are also members of the horse family. They have been pack animals for over 5,000 years but now they are popular riding animals and pets. When a male donkey, called a jack, is crossed with a female horse (mare), the offspring is called a mule. Mules are also popular mounts. They are typically sterile, meaning they can't have their own offspring. When a male horse (stallion) is crossed with a female donkey (called a jenny) you don't get a mule. This cross is called a hinny!



DONKEY



MULE

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## LEARNING ACTIVITY

Do you know what breed your horse is? What breed would your dream horse be?



# Chapter Review

1. What are 3 of the 5 defining characteristics of the Arabian horse?
2. Who was the foundation sire of the Morgan breed?
3. What are the 3 unique gaits of the Tennessee Walking Horse?
4. What were Quarter Horses formally referred to as?
5. What is the maximum height of the American Mini horse?
6. What was the original name of the American Saddlebred?
7. What are the 4 distinguishing characteristics of the Appaloosa and POA?
8. What are the 3 breeds eligible to register with the APHA?
9. What breed is mainly used for harness racing?
10. Who brought the Paso Fino breed to the Americas?
11. What breed is described as angular?
12. What are 4 of the 7 listed coat patterns of the POA?
13. When Shetland ponies were brought to America, what other breeds were they crossbred with?
14. What are the color and coat restrictions for a Welsh pony?
15. Which breed has a unique diet that makes them appear slightly bloated?

Additional Sources:

<https://www.aqha.com/history-of-the-quarter-horse>

<http://www.falabellaafmha.com/>

[https://www.morganhorse.com/about\\_morgan/history/](https://www.morganhorse.com/about_morgan/history/)

<https://wpcsa.org/start/about-our-breed/>

# HORSE COLORS

## INTRODUCTION

Horses come in many different colors and shades. This chapter's purpose is to help you become comfortable with identifying the variety of colors. Not only is it fun to know what color your horse is, but it can also be important when trying to identify a lost or stolen horse. Calling a horse "brown" when he's a "bay" or calling him a "dun" when he's a "buckskin" could be an issue! The basic coat colors are black, chestnut (or sorrel), bay, brown, and white.

## BLACK

A true black horse has no red hairs in their coat. A true black horse without any warm tones (like the horse pictured) in their coat is very uncommon. A good indicator that a horse is a true black and not really a dark bay or dark brown is by looking at the muzzle. The muzzle should be solid black, even if the rest of the coat has some lighter patches due to sun bleaching.



## CHESTNUT

An all red horse is called chestnut or sorrel. The term red refers to the genes of the horse, because chestnuts come in many different shades. For example, chestnuts or sorrel horses can be a light blonde to very dark, but they don't have black hair. The term flaxen is important to know. This refers to a chestnut horse with a light or blonde colored mane and tail. A liver chestnut is a chestnut with a mane and tail that are light, while the body is typically very dark.

# HORSE COLORS

## BAY

When you have a red horse with black points, they are called bay. The points include the legs from the knee and hock down, the mane, tail, and the tips of the ears. A variation is when the black does not extend up past the fetlock. These horses are referred to as wild bay.



## BROWN

The most commonly mislabeled color for horses is brown. A brown colored horse is similar to a bay, but have more black areas and have a reddish shade around the muzzle, eyes, flanks, and buttocks. Brown horse are sometimes called black because the body of their coat is so dark. But remember, looking at the muzzle is a good way to distinguish the two colors

## WHITE

A true white horse has pink skin and brown eyes. You may have heard the term albino used in other species of animals such as rabbits, dogs, and reptiles. True albinism, which is the absence of color and characterized by pink skin and pink eyes, does not exist in horses. True white horses are not common.



# HORSE COLORS

Now that you know the base colors, it's time to learn how these colors can be modified. Modified colors have genes for one color, and a modifying gene that alters that color. An example is for horses that turn gray as they get older. Some other examples are roans, rabicano, and diluted colors.

## GRAY

Horses born with a solid coat, have black skin, and get lighter as they age, are called gray. Any color of horse can turn gray if the horse has the gray gene. White hair gradually replaces the dominant color over months or even years. Some horses never completely turn white, while others will turn completely white at a very young age. Gray horses are often called white which is not accurate. Gray horses that have completely white hairs are called porcelain gray and can easily be identified by their black skin.



RED ROAN



BAY ROAN



BLUE ROAN

## RABICANO

A horse with some roaning which forms stripes along the barrel and tail head is called rabicano. These horses have roaning, but are not true roans.

## ROAN

Roans have an even mixture of white hairs blended in with the base coat. The roaning usually appears on the neck and body, leaving the base color on the head, mane, tail, and lower legs. When a roan horse gets a cut or other abrasion, the roan color is often replaced with the base coat color. These spots are called corn spots. The following base coats, combined with the roan gene, create the following colors:

- Chestnut = Red Roan (sometimes called strawberry roan)
- Bay = Bay Roan
- Black = Blue Roan
- Liver Chestnut = Lilac Roan
- Palomino = Honey Roan



# HORSE COLORS

The next section addresses diluted colors. The dilute gene pales some of the colors out. When it is combined with a cream gene, completely different colors are created. Some examples of these diluted colors are “silver dilutes” that turn black pigment into a cool-toned chocolatey color. This includes the base coat, mane, and tail. A “silver dapple”, a common color in miniature horses and Shetland ponies, is a black silver horse with dapples.



## CHOCOLATE

Rich chocolatey color, often with a flaxen mane and tail. Chocolate horses are black with the dilute gene. The mane and tail are often flaxen, so these horses are sometimes called chocolate flax.



## BAY SILVER

Reddish body color with the black points being diluted. This creates a reddish body with silver mane, tail, and lighter legs and muzzle.



## PALOMINO

Light creamy golden to chocolate colored body with flaxen mane and tail. Palominos are a chestnut horse with the dilute gene plus a cream gene.



## BUCKSKIN

Light cream to golden colored body with black points. Buckskins are a dilution of bay with the cream gene.

# HORSE COLORS



## CREMELLO

A light creamy body with white mane and tail. Cremello horses have two copies of the diluted gene instead of just one.



## PERLINO

Light body with golden points. The perlino is a double diluted bay or buckskin colored horse.



## CHAMPAGNE

A dominant gene that dilutes black hair to brown and red hair to gold. They have dusty pink skin with freckles, amber eyes, and a metallic sheen to their coat. Chestnut horses turn to gold, bays turn to amber, dark brown turn to sable, and black horses are the classic champagne look.



## PEARL

Diluted golden color with dark golden or hazel eyes. Pearl horses have two copies of the cream gene.

# HORSE COLORS

Some other fun horse colors and variations are listed below:



## DUN

The oldest color of horses, characterized by a tan base color with a dorsal stripe along the spine, bars or zebra stripes on the legs, and a dark mane and tail.



## MUSHROOM

Most commonly found in Shetland ponies, this color has an earthy, cool-toned brown body with a light mane and tail.



## BRINDLE

Vertical, irregular, stripes over the horse's body. Any base color can also be brindle. Brindle coloring is fairly rare in horses, but occurs in some dogs and cattle, amongst other species, frequently!

All coat colors, either base colors or modified, can also be affected by different coat patterns.



# HORSE COLORS

## PINTO:

A pinto is a horse that has patches of white. These patches can be very small, or so large that the horse is more white than color! The categories of pinto patterns shown here include tobiano, frame overo, splashed white, sabino, and the rare manchado. The genetics behind pinto coloring is still being studied. Many horses will be a combination of these types (such as the tovero which is mix of tobiano and overo). A good way to identify the different types of pinto horses is by looking at the white areas of the horse.



**TOBIANO:** four white feet/legs and does not have white on the face or head.



**FRAME OVERO:** color will “frame” the white on the horse. A frame overo will usually have white on the face with a bald face or blaze, and patches of white on the side of the neck, barrel, and hip.



**SPLASHED WHITE:** the horse looks like he has been “dipped” in white paint. Splashed white horses usually have a bald face, white legs, and a white tail. They also often have blue eyes.



**SABINO:** white patterns range from minimal white to almost entirely white. These horses usually have white feet and legs, irregular spotting in jagged patches, with roaning, or white hairs evenly mixed with the color, around the white spots. The jagged patches typically are on the barrel of the horse.



**MANCHADO:** the rarest of all patterns normally found in horses from Argentina. Manchado patters can look like a mix of sabino patterned horses and spotted horses typical of the Appaloosa breed.

## SPOTTED:

Although other horses can have spotted coats, the Appaloosa is particularly known for its spots. There are many different coat patterns including blanket, snow cap, leopard, few spot leopard, snowflake, and varnish roan. The clear coat pattern, striped hooves, and visible white sclera of the eye are all distinguishing features of horses with Appaloosa coloring.



SNOW CAP: a blanket pattern with no colored spots.



FEW SPOT LEOPARD: a predominately white horse with few or no spots.



LEOPARD: a white horse with dark, circular spots, similar to a Dalmatian dog. Sometimes leopard patterned horses will also have varnish or roaning all over their bodies.



SNOWFLAKE: the least common spotted pattern. Its a dark horse with tiny flecks of white scattered all over the horse. The tiny flecks give the appearance of snowflakes.



BLANKET: the most common spotted pattern. A white "blanket" covers the back end of the horse and sometimes extends to the barrel or even the shoulders. The blanket has spots of color within it.



VARNISH ROAN: a roan looking horse with extra color shading on the bony prominences of the body such as the nose, cheek bones, lower legs, elbows, hip, stifle, and spine. They may look roan, but a true roan horse has a base coat with white hairs blended in over the neck, body, and upper legs.

# HORSE COLORS

## LEARNING ACTIVITY

Now that you've gone over all these variations, can you accurately describe the color of your horse? Sometimes it's so hard to tell, that a genetic test is the only way to be positive what your horse really is.





# Chapter Review

1. What are the five base coat colors?
2. What base coats result in a blue, red, bay, lilac, and honey roan colored horse?
3. What two colors have roanish characteristics but are not a true roan? Hint: one of the colors is typical of Appaloosa patterns!
4. What is the term to describe the color of a gray horse that could easily be mistaken as a white?
5. What colors are listed that are affected by a dilute gene? What about cream?
6. What is a color variation that results in a color common in dogs and cattle, but not in horses?
7. What are the different pinto patterns and how do you identify them?
8. Which pinto pattern is the rarest?
9. What are the different spotted patterns?
10. Which spotted pattern is the most popular? Which one is the least common?

# HORSE MARKINGS

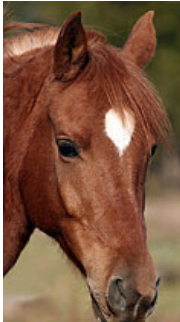


## INTRODUCTION

If you have a horse with a rare coat color, like a champagne, they are easy to identify. If you have horses that are more common, like chestnuts, then unique markings come in handy! Horses have lots of different types of markings such as white face markings, white leg markings, shading or dapples, primitive markings, and different colored eyes. If that's not enough, some people will even use a tattoo or freeze brand to further identify their horses.

Markings are commonly described as white patches on the head or legs of a horse. There are exceptions! Not all markings are white. Some patterns of horses, such as spotted or pinto will have markings genetically related to their color as well.

## WHITE FACE MARKINGS



**STAR:**

A small white patch found on the forehead between or in line with the eyes. A star can be circular or irregularly shaped.



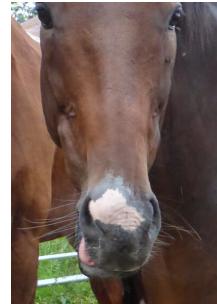
**FLAME:**

A few white hairs in the center of the forehead.



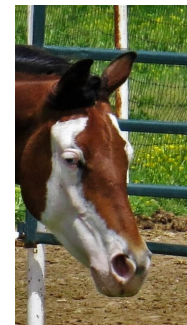
**STRIPE:**

A thin line that extends up the face between the forehead and muzzle.



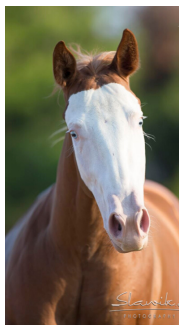
**SNIP:**

Any markings on the muzzle. It can be between, or include, the nostrils.



**BADGER FACE:**

A reverse blaze where the blaze itself is colored, while the head is white.



**BALD-FACE:**

A patch of white that covers most of the face. It covers the eyes, muzzle, and sometimes will extend below the jaw.



**BLAZE:**

A thicker version of a stripe, a blaze is a broad collection of white that runs down the horse's face. It usually starts between the eyes and includes the muzzle.

**BONNET OR APRON FACED:**

A large patch of white that covers a large portion of the face, with white wrapping around the eyes. A bonnet or apron faced horse differs from a bald-faced horse because color will still be on the sides of the muzzle.

# HORSE MARKINGS

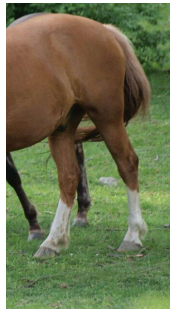
## LEG MARKINGS

When a horse has white on their legs, you can describe that marking by the body part it covers. For example, a little white on the heel would simply be called a heel and white on the ankle would be called an ankle. Usually, leg markings are categorized as variations of socks.



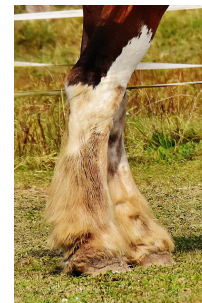
### SOCK:

White leg markings from the fetlock down.



### HALF STOCKING:

White markings that go from the coronet to mid-way up the cannon bone.



### STOCKING:

White markings that extend above the knee or hock and go all the way down.

Not all leg markings are white. When tiny spots of color appear on otherwise white legs, they are called ermine spots, or distal spots.



### ERMINE SPOTS:

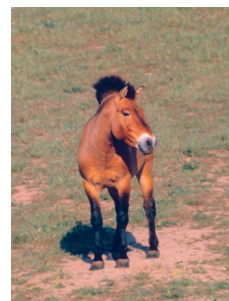
Tiny spots of dark color on a white coronet. Horses with ermine spots usually have striped hooves as well.



### DISTAL SPOTS:

Tiny spots of dark color that are surrounded by white and appear above the ankle. Distal spots are also known as belton spotting and are genetically similar to the spots you see on some hunting dog breeds. Distal spots are not limited to legs. They can appear on any large spot of white on the horse.

# HORSE MARKINGS



## PRIMITIVE MARKINGS

There are various markings that fall into the “primitive markings” category. These markings are associated with primitive breeds such as the Tarpan (extinct) or Przewalski’s Horse (still in existence; pictured above and below). The most common markings are listed below, but other specific markings include countershading, zippers, cobwebbing, neck shading, dorsal bars, mask, ear tips, and edging.



### ZEBRA STRIPES:

Dark bands or stripes on the lower legs typically above the hock and knee that look similar to a zebra’s stripes. Also called tiger stripes or leg bars.



### DORSAL STRIPE:

A dark stripe that runs down the spine of a horse.



### SHOULDER STRIPE:

A vertical stripe that crosses the withers at the shoulders.



### CROSS:

A horse with both a dorsal stripe and shoulder stripe.



### GUARD HAIRS:

Lighter hairs on the outsides of the mane and tail. The Fjord breed is known for guard hairs.

# HORSE MARKINGS

## OTHER TYPES OF MARKINGS

Although not considered true markings, different variations in the coat may still be great identifying characteristics of certain horses. The following list is not exhaustive, but has some of the more unique and common forms of other markings.



### DAPPLES:

Dark rings with light centers that can be condensed in one spot or spread over the whole body.



### BLOOM DAPPLES:

Spots of raised hair instead of a change of pigment, and typically an indicator of good health.



### IRIDESCENCE:

When the hair is hollow allowing light to enter and cause a unique shine. Sometimes called metallic. The Akhal Teke (ah-cal teh-kee) breed is famous for this unique identifying characteristic.



### SOOTY:

This color modification is dark or black shading, usually over the topline. Sooty colored horses can have a nice smooth gradient, or they may have dapples.



### REVERSE DAPPLES:

Light rings with dark centers. Reverse dapples can be textured like bloom dapples, or a color difference. Some horses get reverse dapples seasonally, such as when a roan or grey changes their coat. Seasonal dapples usually only last a few weeks.



### PANGARE:

Pronounced pan-GA-ray, these horses are lighter in areas with thinner skin, or a reverse shading. Typically the muzzle, flanks, armpits, and under-side are beige or tan. When this marking is on the muzzle, it is sometimes called mealy mouthed or being mulish.



### SUN BLEACHING OR FADING:

The fading of color caused by the sun. Hairs that typically lose pigment are weak, thin, or older hairs. For example, the most common places for sun bleaching/fading are the tips of the mane and tail, the coat on a newborn foal, and the body of the horse. Legs rarely sun-bleach, so a faded horse may look bay.



# HORSE MARKINGS

## EYE COLORS

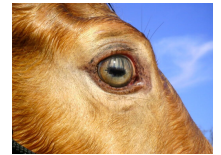
Another way to distinguish one horse from another is by eye color. A horse's eyes can be brown, blue, green, hazel, and even gold. There are a range of shades within each of these colors, and some are more common than others.

Eye color is tied closely to the base coat color. Pintos will often have blue eyes. Most solid base coats will have brown eyes. Champagnes tend to have hazel or green eyes. Diluted colors, such as perlino, cremello, and smoky cream tend to have blue or light green eyes.

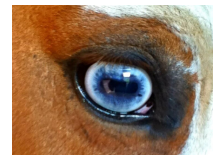
Some unusual eye colors include golden or tiger-eyes. These colors seem to randomly appear on some colors, but most often appear on palominos and buckskins.



BROWN



HAZEL



BLUE

## FUN FACTS

- White markings, especially on the legs, can be highly sought after or discouraged depending on culture and breed. For example, breeders of Clydesdale and Shire horses want white stockings and a blaze for the flash and eye appeal. In India, four white feet on the rare Marwari horse was considered lucky. On the flip side, some horse buyers avoid white feet. The old adage "One foot buy him, two feet try him, three feet look about him, four feet do without him" dates back to England and is thought to be from the theory that white feet were weaker and more prone to bruises. There is no evidence of this, but the stereotype still affects buyers' decisions.
- Dapples are usually no bigger than a horse's eye and can be seen by heat-sensing cameras.
- There are also three different markings named after Thoroughbred stallions that exhibited strange markings: Bend'Or spots (irregular dark spots of color), Birdcatcher spots (small white dots that appear randomly), and Tetrarch spots (white or roan appearing spots that appear on grey horses).

# HORSE MARKINGS

## PERMANENT FORMS OF IDENTIFICATION

Sometimes the base coat and other markings aren't enough, and owners will opt for another form of identification. Brands, tattoos, and microchips are all popular methods of identifying a horse.

### HOT BRANDS

- One of the oldest forms of branding. A piece of metal is super-heated and used to burn the hair and skin on a horse. The brand usually remains hairless.

### FREEZE BRANDS

- This form of branding is done by dipping the iron into liquid nitrogen, and then freezing the hair follicles. This type of branding doesn't scar as badly, instead just changing the pigment in the skin. The hair grows back as a contrasting color.

### TATTOOS:

- Thoroughbreds and Standardbreds will commonly have tattoos on the inside of their upper lip. These tattoos are created with tiny micro-abrasions in the form of letters and numbers that are filled with ink. Other tattoos are cosmetic. Horses with bald faces with very light skin can have the sensitive skin around their eyes tattooed. This helps reduce the glare from the sun and has been known to reduce the risk of skin cancer around the eye.

### MICROCHIPS

- This form of identification has been in the companion animal world for a long time and has gained popularity with horses as of late. Since the early 2000's, several breed registries require their horses to be microchipped. These small computer chips are placed in the horse's neck, typically between ligaments, and can be read using a special device.



HOT BRAND



TATTOO



FREEZE BRAND



MICROCHIP SCAN



# Chapter Review

1. What facial marking is a reverse blaze?
2. What are the 8 main white face markings?
3. How do you differentiate between a sock, half stocking, and stocking?
4. What is another term for horses with shading?
5. Where are distal spots seen?
6. What is Pangaré and what are two other terms commonly associated with this color variation?
7. What horses are known for iridescence?
8. What term is used to describe marking typically associated with primitive breeds such as the Tarpan or Przewalski's Horse?
9. What are five common eye colors in horses?
10. What are the 4 forms of permanent identification that are not genetic?

# THE HOOF

## INTRODUCTION

A horse's foot is designed to be sturdy and tough. It supports the weight of the horse, continually grows, absorbs shock, provides traction, and assists in pumping venous blood. The foot and all its contents are known as the hoof. The hoof has many different components. The hoof wall protects the hoof and bears all the weight of the horse. The sole protects the internal parts of the hoof. The frog absorbs shock and provides traction.

### CORONARY BAND

The coronary band is the top part of the hoof. In a human, it would be the cuticle where the nail grows from the nail bed. The hoof wall will grow  $\frac{3}{8}$  of an inch per month and even more during the late spring and when horses are younger. For this reason, it is recommended that routine hoof care occur every 4 – 8 weeks.

### BARS AND HEEL BUTTRESS

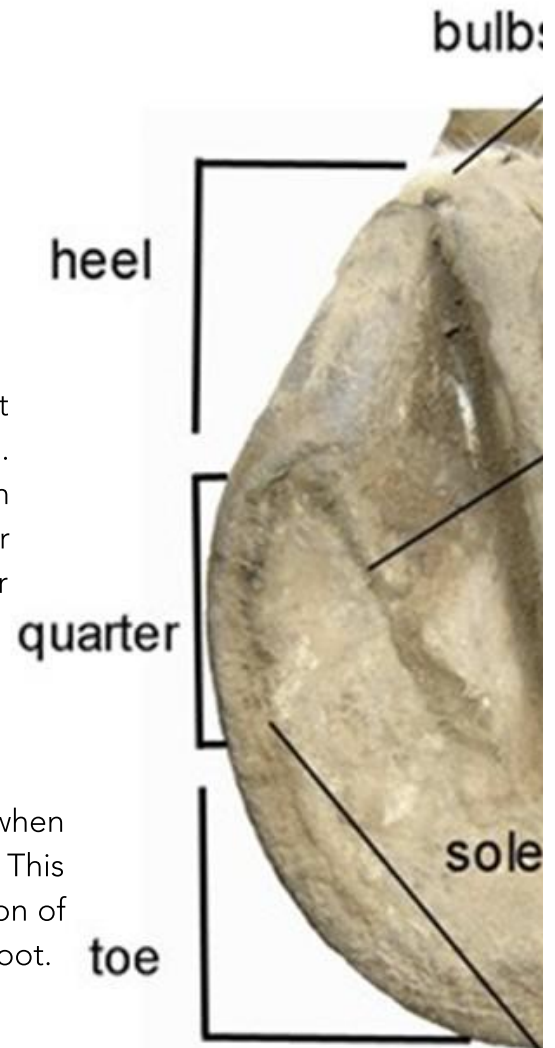
When evaluating the underside of the hoof, you can see that when the hoof wall reaches the heel, it folds inward abruptly. This portion of the hoof is called the bars. The buttress is the portion of the foot that is the extremity of the heel and of the bar of the foot.

### COFFIN BONE

The coffin bone (third phalanx) is the bone that is enclosed in the hoof. This bone is wedge-shaped and much lighter than other bones of the lower leg and hoof.

### WHITE LINE

The boundary between the hoof wall and the sole is called the white line. It is distinguishable as a lighter colored part of the sole when viewed from the bottom.



# THE HOOF



## LAMINAE

The insensitive (epidermal) laminae lines the internal surface of the hoof and the bars of the heels. The insensitive laminae interlocks with the sensitive (dermal) laminae and attaches the hoof wall to the coffin bone. The laminae transfer the weight on the horse from the bone to the hoof. When the laminae weaken due to certain illnesses and injury, the pressure on the coffin bone can cause lameness.

## SOLE

The underside of the hoof is called the sole. It is the part of the hoof that comes in contact with the ground and is the area that connects the hoof wall, the bars, and surrounds the frog. The sole cushions the hoof.

## FROG

The triangular or wedge-shaped tissue on the underside of the hoof is called the frog. This part of the hoof has the texture of hard rubber and serves as an additional cushion as well as to promote blood circulation. The commissure is the space between the body of the frog and the bars of the hoof.

## HOOF WALL

The hoof wall is the part of the foot that is visible when the horse is standing. It's the tough outer portion that protects the rest of the foot. The hoof wall also supports most of the horse's weight, and is thicker at the toe than the heel. The hoof wall will have an angle of 45 to 65-degrees. The angle of a horse's hoof can be an indicator of the internal structure, such as the straightness of the shoulder. The hoof wall is divided into the toe, quarters, and the heels. The toe is the front 1/3 of the hoof wall and the quarters form the sides. The heel is the back part of the hoof. Another part of the hoof wall is the bar of the heel. This portion of the hoof wall folds back towards the toe and forms the space where the frog sits.

# THE HOOF

Now that you know the parts of the hoof, you can learn how to properly take care of your horse's feet.

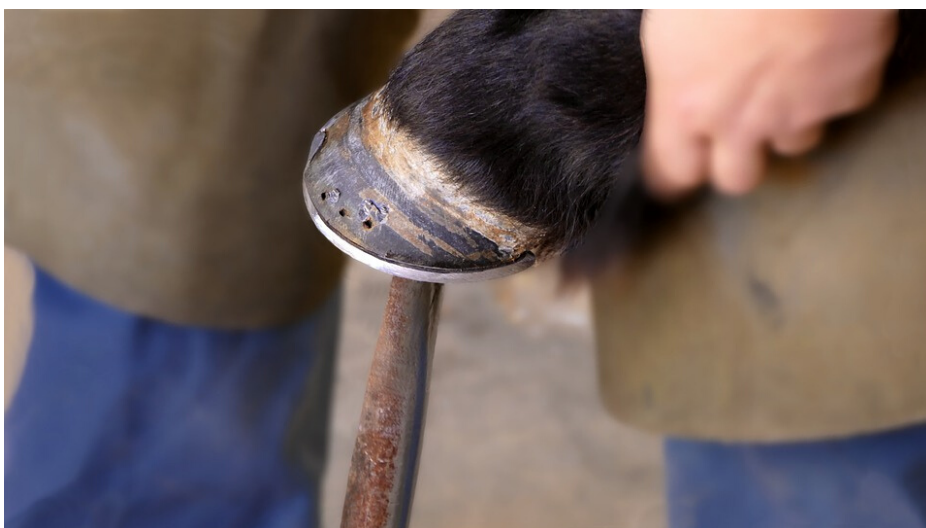
Although a farrier, the equine professional who specializes in hoof care, will usually fit shoes or trim your horse's feet, horse owners have the responsibility of cleaning their horse's hooves on a regular basis. Observing your horse's feet and cleaning rocks, mud, and other debris out of the commissure and out from the edge of the shoe is important.



When cleaning the foot, you should grasp the pick with one hand and work from the heel to the toe. Even with regular cleaning, a farrier will probably need to come tend to your horse's feet fairly often. Although a good rule of thumb is approximately every 8 weeks, the horse owner and farrier should develop a schedule based on the owner's preference as well as the following conditions:

1. Changes to the horse's foot and growth.
2. Changes to the horse's performance or activity.
3. General hoof health, length, angle, and balance.
4. Abnormal, uneven, or excessive wear of the shoe or hoof.

The first thing a farrier will do is observe the horse for lameness, uneven wear on the shoes or hooves, and other potential issues. After evaluating the hoof, adjustments can be made to keep your horse happy and healthy.



# THE HOOF

Farriers have a standard set of equipment, but there is also room for some preferences. Below are some basic tools a farrier may have in their kit as well as some definitions you'll need to know.

## ANVIL

- A metal object used to shape or make horseshoes.

## APRON

- Thick fabric, leather, or similar material designed to protect the farrier's legs from unfinished nails and sharp tools. The aprons often have pockets for smaller tools.

## CLINCH

- The part of the nail that is exposed on the outside wall of the hoof.

## CLINCH BLOCK

- A device used to turn clinches.

## CLINCH CUTTER

- A device used to cut or raise clinches for shoe removal.

## CLINCHERS

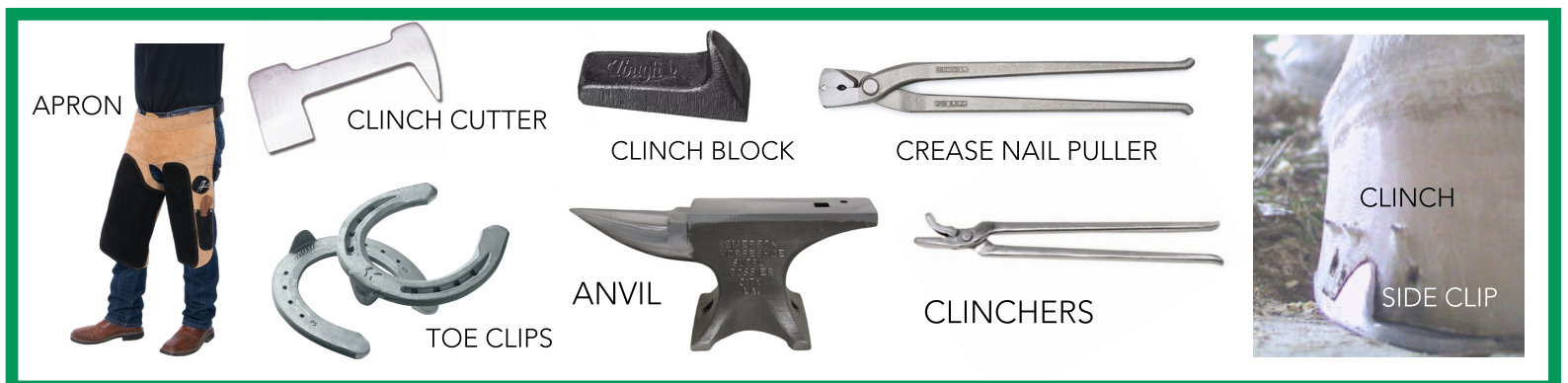
- Tongs used to draw down the clinches that can be used instead of a clinch block and hammer. Clinchers come in three standard sizes: saddle horse (most common), gooseneck (used for racehorses), and draft horse.

## CLIPS

- A device used on horseshoes to take the stress off of the nail. Toe-clips are at the top center of the shoe, while side-clips are between the 1st and 2nd nails. Toe clips are used on shoes for the front feet and side-clips are used on the hind feet.

## CREASE NAIL PULLER

- Tool designed for easy removal of nails that have been driven into creased or fuller shoes.



# THE HOOF

## DRIVING HAMMER

- A hammer used to drive the nails into the horseshoe and to twist off the ends of nails after they've been driven through.

## HANDMADE

- Shoes that are shaped and customized by a farrier. Handmade shoes are widely used in corrective or therapeutic shoeing.

## HOOF GAUGE & RULER

- Tools used to determine the angle and length of the hoof.

## HOOF KNIFE

- A small curved knife used to clean up the underside of the hoof including the sole, frog, corns, and to remove anything that shouldn't be there (rocks, debris, etc).

## HOOF PICK

- Tool used to clean out the horse's hooves.

## HOOF TESTER

- A device used to test a horse's hoof for tenderness. Usually used when trying to evaluate lameness.

## NAIL CUTTER

- Sometimes called nail nippers; a device used to cut off the edge of the clinched nails to an equal length.

## NIPPERS

- Hoof nippers are used to trim excess hoof wall.

## PULL OFFS

- Device used to take out nails or nail stubs, either to remove the shoe or replace an improperly driven nail. Sometimes called pincers, pull offs are easily distinguished from nippers by the round knobs at the ends of the handle.



HOOF GAUGE AND RULER



HOOF KNIFE



DRIVING HAMMER



HOOF TESTER



NIPPERS



HOOF PICK



# THE HOOF

## RASP

- A rough-surfaced tool that is used to level the hoof after trimming or to further shape the hoof wall.

## ROUNDING HAMMER

- A heavy hammer used when shaping or making shoes.

## SHOEING BOX

- A sturdy wooden box that serves the dual purpose of keeping tools handy and giving the horse a spot to rest their hoof during farrier work.

## TONGS

- The tongs are used to hold hot metal when making shoes.



## LEARNING ACTIVITY

Looking at the photos below, can you identify all of the equipment? What equipment could be added?



# THE HOOF

There are several different reasons to shoe horses. Farriers, veterinarians, and horse owners can all work together to decide if shoes or going barefoot is best for each individual horse's needs.

Some reasons to apply horseshoes are:

1. Protection
2. Traction
3. Influence the stance or gait
4. Improve or correct conditions of the feet and legs

The terms "corrective" and "therapeutic" are both used when discussing shoes that are intended to correct or influence the stance or gait of a horse. Often times, corrective shoeing is used to fix a horse's stance or to change the timing of his gait. Therapeutic shoeing is involved in the medical treatment of the hoof or limb. It may involve customizing the shoe to protect a weak part of the hoof.



Horseshoes are not a "one size fits all". In fact, there are many different types and sizes of shoes. Type or style of shoe is determined by many different factors, so it is important for a farrier and horse owner to talk about the use of their horse.

The factors affecting style of shoe are:

1. Type of work
2. Terrain or environment
3. Health of the hoof
4. Conformation, size, and weight of horse

The factors affecting size of shoe are:

1. Length of the shoe heels
2. Position of the heel nail hole
3. Web or width of shoe
4. Weight or thickness of the shoe
5. Nail hole size and nail hole position

# THE HOOF

Some interesting shoe types are square toed, extension, weighted, or rocker shoes. Below is a list and brief description of some other common types of shoes that your horse may need.



## EGG BAR SHOE

Used to support the heel of the horse and is very useful for horses with short heels or pain in that area such as with navicular disease.



## HEART BAR SHOE

Used to re-distribute the weight and pressure of the shoe to the frog to help horses with an injury to the hoof wall heal. These shoes are helpful for horses injured from laminitis.



## HALF-ROUND SHOES

Used on the front feet of horses used in training and events like reining and harness racing.



## ALUMINUM SHOES OR ALUMINUM PLATES

Used for racehorses or the front feet of western pleasure and reining horses.



## PATTEN SHOE

This shoe elevates the heels of a horse and is usually used for horses on stall rest because of lower leg injuries.



## SLIDING PLATES

Sometimes called "sliders" these shoes are designed for the back feet of reining horses.

# THE HOOF



## HOSPITAL PLATE

A pad that attaches to the bottom of the shoe and is used to apply medication to the bottom of the foot or to protect the bottom of the foot.



## GLUE ON SHOES

Used to get some of the benefits of a traditional shoe without needing to nail the shoe. These are useful for foals or horses with very thin hoof walls.



## CONCAVE SHOES

These shoes, sometimes called rim shoes, have a crease in the shoe that is designed to fill with dirt to create more traction. This crease is called a fullering.



## SCOTCH BOTTOM

Used on draft horses that are working in soft, muddy, or boggy soils. This shoe was designed in Europe and is mostly used in the show ring and on teams of horses.

Regardless of style or size, the shoe should be customized to fit the horse's foot. There are several important things to learn about shoeing horses, but an uneducated attempt at doing farrier work could result in severe injury to horse or rider.

There is a lot involved in equine podiatry and it's important to be aware of our horse's feet and look after their needs. Farriers have been specifically trained to care for our horses' feet and can help owners determine what style and size of shoe is needed.



# Chapter Review

1. Label the parts of the hoof.
2. What are the common farrier tools needed to trim a horse's hoof but not necessarily put on a shoe?
3. What tools are needed to put on a shoe?
4. What tool is used to pull off a shoe?
5. What are the three types of clinchers?
6. List the different reasons you may choose to apply shoes
7. What are the differences between corrective and therapeutic shoeing?
8. When would handmade shoes be appropriate?
9. Name the various shoes that are typically used for therapeutic or medicinal purposes.
10. What types of shoes would a racehorse, reining horse, and draft horse wear?

## ADDITIONAL SOURCES

[HTTPS://WWW.SCIENCEDIRECT.COM/TOPICS/VETERINARY-SCIENCE-AND-VETERINARY-MEDICINE/FARRIER](https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/farrier)

[HTTPS://EXTENSION.TENNESSEE.EDU/PUTNAM/DOCUMENTS/FARRIER%20TOOLS.PDF](https://extension.tennessee.edu/putnam/documents/farrier%20tools.pdf)

[HTTPS://WWW.SCIENCEDIRECT.COM/SCIENCE/ARTICLE/PII/B9780721603834500050](https://www.sciencedirect.com/science/article/pii/B9780721603834500050)

# HOOF DOCTOR

## INTRODUCTION

The saying “no hoof, no horse” is very popular amongst horse enthusiasts and equine professionals. The horse’s weight is supported by proportionately small hooves, and unlike dogs and other pets, horses cannot redistribute their weight onto three legs and function for very long. Hoof lameness and disease are very serious and it’s important to know some of the more common ailments and to be able to recognize the signs.

## THRUSH

A very common ailment of the hoof is thrush. This bacterial infection affects the fissures of the frog and is accompanied by blackened tissue and a strong foul smell. Although thrush alone is rarely the cause for lameness, if left untreated it can lead to more serious problems such as canker, exposed and sensitive frog, and spreading infection. Canker looks like rotten cauliflower and occurs when the horn producing tissue of hoof grows excessively and pus is formed. The frog may separate and leave the sensitive frog tissue exposed. This may lead to a more serious infection that is harder to diagnose and treat.



### CAUSES:

The bacteria that causes thrush is *Fusarium necrophorum* which is an anaerobic bacterium that occurs naturally in the soil. When a horse stands in a dirty stall, muddy paddocks, or simply does not have its feet cleaned regularly, these bacteria can get trapped in the crevices of the hoof and grow.

### TREATMENT

Anaerobic bacteria cannot survive in an environment with oxygen. The best treatment for thrush is to clean the hoof and expose the bacteria to the air. The affected tissue, whether dead or damaged, should be removed as much as possible. The hoof should be allowed to dry. Rinsing the hoof with a mild soap, or a solution of 7% Iodine mixed 50/50 with glycerin, will help cleanse and dry the area. Most cases will clear up after a few days. If lameness occurs, persists, or worsens, the horse may have a more serious injury that needs to be evaluated by a veterinarian.

The best medicine is prevention, and horse owners can easily avoid the occurrence of thrush with careful care to clean their horses’ stalls, avoid extended stays in muddy or wet paddocks, and by cleaning the hoof regularly.

# HOOF DOCTOR

## WHITE LINE DISEASE

Bacteria or fungi also cause white line disease (WLD), but this infection affects the hoof wall. This disease can be very serious as it can degrade the white line (the cornified terminal laminae) and cause the coffin bone to sag. It is identified by the powdery area of the non-pigmented area of the horn wall. The powder is white or gray in color. When the disease advances, it attacks the white zone of the hoof and leaves the hoof sounding hollow if tapped gently with a hammer. Horses may become acutely lame after an event such as a race or other event that causes the coffin bone to mechanically drop. When the coffin bone drops, the sole will appear fuller or bulging directly below the defect. The best way to truly identify WLD is by use of a radiograph. Mild cases may be confused with laminitis, but WLD will have a characteristic air space that easily differentiates it. The air space for WLD involves the horn wall, not the laminae.

This disease starts at the hoof, but can have negative impacts on other parts of the lower leg. The deep digital flexor tendon (DDFT), the laminae, and the coffin bone can all receive irreversible damage. The DDFT inserts at the palmar surface of the coffin bone, which is attached to the laminae, which is secured to the hoof wall. The bacteria or fungi disrupt these connections by weakening the inner wall. If the wall cannot withstand the suspension effect of the laminae and DDFT, it results in coffin bone rotation.

### CAUSES:

*Pseudoallsheria* and *Scopulariopsis* are the types of bacteria and fungi (respectively) that are the main culprits of WLD. These organisms digest the white zone of the hoof.



WLD can occur in the most hygienic of environments, but good hoof care is still the best way to help prevent it. Early diagnosis is key to a full, quick recovery.

### TREATMENT

There is no “one size fits all” for treating WLD. The severity of the defect, the use of the horse, and the goals of the owner are all taken into consideration. Mild damage can be treated with topical medication. Mild to moderate damage can be treated with a mechanical shoe that alleviates pressure on the defect and keeps the area from taking on more debris. Treating severe defects starts with relieving pressure off the deep digital flexor tendon (DDFT) that is connected to the coffin bone. Horses are removed from training and must be given rest until the hoof wall grows out. If horses are pushed or the condition goes untreated, then displacement, vascular damage, and irreversible bone damage, can all occur. A variety of therapeutic shoes are available to aid in the full recovery of WLD.

# HOOF DOCTOR

## SOLE BRUISES

Bruises can occur either externally or internally and have multiple potential causes. They are easily recognized by discolored spots on the sole, and often farriers find them when they are trimming away old growth. These bruises may appear weeks after the initial injury occurred. If the discoloration cannot be trimmed away, or the horse is still showing sensitivity, then the bruise probably extends through the sole and into the sensitive structures. Horses with thin soles are more prone to bruising and after a routine trim, may appear to be extra sensitive.



### CAUSES:

There are several causes for sole bruises including rough terrain such as rocks or gravel, stepping on a hard object, or improperly fitted shoes. External bruises are caused by stepping on something when the sole did not have adequate depth. Internal bruises occur when there is excessive download on the coffin bone.

### TREATMENT

Sole bruises will usually heal on their own over time. Horses with sensitivity should be allowed to rest and may need to be put into a stall or area with soft footing for a bit until the sole has grown.

The best way to prevent sole bruises is to make sure your horses have properly fitted shoes, good footing, or properly conditioned hooves with an appropriate bare-foot trim. If horses show sensitivity to shoes, there are several options for boots on the market. Find a farrier that knows not to over-trim the sole.



# HOOF DOCTOR

## CORNS

Corns are sole bruises found where the wall turns toward the frog. They are deep bruises caused by excessive external and internal loading of the sole area (most often from a misplaced shoe). They are usually the result of a few days worth of trauma, and the horse will become lame. Sometimes this issue will lead to an abscess (discussed later in this chapter) and the infection can cause more problems besides lameness.



### CAUSES:

When a shoe is too small and is not removed in an orderly fashion, the hoof wall will grow over the shoe. If this is left too long, the shoe ends up sitting inside the hoof wall instead of the stronger heel tubule. This pressure causes a deep bruise, and sometimes leads to an abscess.

### TREATMENT

No matter how mild or severe, corns require rest to fully heal. To treat corns, the offending shoe should be removed. The heel should be trimmed lower than the adjacent hoof to correct the issue. Using a bar shoe will protect the tender heel and transfers the weight of the horse to the frog. As long as the frog is in good condition, this allows the heel to grow out and heal.

A regular appointment with a farrier is the best way to prevent corns. Even if a shoe is too small or not fitted correctly, corns can be avoided by removing the shoe before the overgrown hoof gets too far along. The majority of horses need their shoes removed and refitted every 4 to 6 weeks, but this is a general rule. Some larger breeds may need to be refitted every 6 to 8 weeks. A knowledgeable farrier should be able to evaluate hoof growth and schedule regular appointments for each individual horse.

# HOOF DOCTOR

## NAIL OR SHOE BOUND

If a horse exhibits lameness after being shod, it's possible they are experiencing tenderness due to a misplaced nail or a shoe that is too tight. Horses will begin favoring the offended hoof, but will not always have any signs of heat or other injury.



### CAUSES:

When a horseshoe nail is out of place, it can put pressure on the sensitive tissue. These nails do not penetrate the tissue, but cause some irritation and discomfort. This is called being nail bound. After the nails are clinched, the increased pressure from the shoe can cause some horses to become lame. This is called being shoe bound.

### TREATMENT

Removing the offending shoe will usually take care of the problem. Horses will sometimes immediately feel better, or the lameness will subside in short amount of time.

Although being nail bound or shoe bound may only occur once, some horses show increased sensitivity to shoes and are not tolerant of wearing them. Shoes can also be glued onto the hoof to avoid pressure caused from the nails. However, the hoof can become very soft using this method, especially in humid, hot climates. Recent advancements in horse boots have made these an excellent choice for horses with sensitive hoof walls.



# HOOF DOCTOR

## HOOF ABSCESS

When an infection affects the soft tissue, the affected area will fill a pocket with pus, and is called an abscess. A hoof abscess can affect a very small area, or be extensive. Abscesses can involve multiple tissues such as the laminae, coffin bone, frog, and more. Abscesses will follow the path of least resistance until it eventually bursts and drains. Evidence of abscesses usually occur along the coronary band or sometimes in the heel bulb. If the horse is favoring their foot, but no visual of an abscess is apparent, hoof testers are useful in diagnosing and locating the abscess. Heat, drainage, or swelling of the fetlock or pastern are all signs of an abscess.



### CAUSES:

The most common cause of hoof abscesses is some sort of disruption or trauma to the hoof wall/terminal laminae junction that allows debris and bacteria to reach the sensitive tissue. A puncture wound can also result in an abscess. A puncture is very serious and a veterinarian should be consulted immediately.

### TREATMENT

Opening the abscess carefully and allowing proper drainage is an easy and effective treatment. The hoof should be wrapped to protect it from further contamination for a few days, and a shoe with a protective pad can be used for extra protection and comfort. Applying a hot, moist, poultice to the coronary band can help the abscess migrate and drain.

Because hoof abscesses can be caused by so many different scenarios, it's hard to prevent them fully. Receiving an annual tetanus shot will protect horses in the event they receive a puncture to the hoof, and wearing shoes, will often help prevent deep abscesses.

# HOOF DOCTOR

## HOOF CRACKS

Hoof crack is the general term used to describe a wide variety of specific cracks, each named for their location and severity. These specific hoof cracks are listed below.

### SAND CRACK

#### Causes:

Sand cracks are mostly superficial and involve only the surface between the heel and toe. They seem to occur most often when a hoof gets a lot of moisture and then dries out quickly.

#### Treatment:

These cracks are not severe and usually considered more cosmetic, so treatment is simple: keep the hoof from drying out and follow sound shoeing and trimming principles.



### TOE CRACK

#### Causes:

Toe cracks are found in the toe, usually closer to the center of the hoof. The hoof wall is typically dished and thin. These cracks become a serious issue because they can easily become infected, and will begin to pinch. When the horse puts weight on the hoof, the crack will pinch together. The trauma to the laminae along the upper part of the crack as well the weakened hoof wall causes the sole to sag and the dish gets worse. Many toe cracks occur when an abscess has migrated and ruptured at the coronary band.



#### Treatment:

Treatment of toe cracks focuses on first reducing the tension of the DDFT which in turn reduces the force on the wall. Special shoes, based on various factors such as recurrence, damage, and pain, can be used to help. Wedge shoes and wedge pads, rockers, and frog pressure bars, and pour pads are all used to help with toe cracks.

# HOOF DOCTOR

## QUARTER CRACKS

### Causes:

Quarter cracks are found in the quarters. Quarter cracks can be the result of a direct trauma such as stepping on a sharp rock, but usually are caused from internal bruising. These bruises occur with repeated unnatural loading on the quarter. The abscess appears just under the coronary band. Unlike other cracks, quarter cracks sometimes appear with a little bit of blood. Although these cracks are not normally painful, they can become infected and can cause the coronary band to become distorted if not treated.



### Treatment:

Luckily, treatment is more simple than toe cracks. It involves patches to stabilize the wall. Special shoes designed to shift the load from the quarter to the frog until healed are also used.

## HORIZONTAL CRACKS

### Causes:

Horizontal cracks, like the name suggests, are cracks horizontal across the hoof. They appear at the coronary band and cause the horn to grow abnormally. Horizontal cracks are caused by an abscess that burst. Because the abscess was so high in the hoof, veterinarians may want to investigate and ensure that bone is not responsible or affected. The crack itself rarely causes any problems, but the underlying cause for the abscess may cause issues. The crack is often large (the size of the abscess) and may fill with dirt and other foreign materials. Once the abscess dries up, the crack can be filled with wax.



There are several ways that cracks can occur, and some are more severe than others. Knowing and understanding the various cracks and how they are caused will help keep your horse sound.

# HOOF DOCTOR

## NAVICULAR

Although referred to as navicular disease, indicating disease within the navicular bone, there are several structures that may be affected by this disease. Sometimes called “caudal heel pain syndrome”, it may involve an inflamed navicular bursa, sprains, tears, or calcification of ligaments, and damage to bones and cartilage. Eventually, these ailments lead to tendon abrasions and adhesions. Any of these conditions could be painful in a horse. Some of the early visual signs of a horse with this type of pain is when they stand with dirt or bedding pushed up under their heels. Its thought that this relieves pressure the horse may be feeling. Because of the obvious hoof pain, hoof testers are often used to locate the discomfort. But this is not the best way as hoof testers can produce false negatives. Although radiographs (a type of x-ray) are a common way to diagnose potential navicular disease, the MRI is much more accurate.



### CAUSES:

The exact cause of navicular disease is not clear. Both short, crushed heels, and higher heeled or club footed horses have been affected. Horses with a higher heel are most often reported with navicular problems.

### TREATMENT

The most common method of relieving pain and discomfort include trimming the toe short and using an egg bar shoe with a rocker toe and increased heel support. Radiographs or MRI's are essential for evaluating this type of treatment. Veterinarians may also prescribe medication to improve circulation. There have been reports of positive results after severing the posterior digital nerves. This method is called nerving and has some high risks, as a horse that can't feel pain may cause more damage before any healing can occur. It is important to provide extra protection against puncture wounds when in the pasture or riding, and farriers should always be informed when a horse has been nerved. Your horse's hoof shape and size, the growth pattern, the way your horse is shod and trimmed, can all influence potential onset of navicular syndrome. For these reasons, working with trained professionals is always important.

Good hoof care, regular shoeing and trimming, and consistent evaluation will help keep your horse healthy.

# HOOF DOCTOR

## LAMINITIS AND FOUNDER

The term laminitis means “inflammation” (from the Latin root *itis*) of the laminae. Remember that the insensitive (epidermal) laminae lines the internal surface of the hoof and the bars of the heels. The insensitive laminae interlocks with the sensitive (dermal) laminae and attaches the hoof wall to the coffin bone.

The laminae transfer the weight of the horse from the bone to the hoof and is essential for absorbing and dissipating heat and energy by allowing the horse’s heel to be flexible. The term founder is thought to come from the Old French word “fondrer” which means submerge or collapse. When a horse founders, the bones in the hoof drop. Laminitis begins as a disruption of the vascular (veins) system. The severity of that disruption leads to further damage.

### CAUSES:

There are numerous potential causes of laminitis. However, the exact cause is generally unknown. Some conditions, listed below, often precede laminitis and are thought to trigger the condition. Here are some of those conditions, although this is not an exhaustive list: colic and colic surgery, Potomac Horse Fever, blister beetle poisoning, metabolic syndrome, grain overload, obesity, lush green pastures, prolonged stress, infection from puncture wounds, and catastrophic injuries that cause compensatory weight bearing on an otherwise healthy limb. Horses that are foundered are easily identified by the uncomfortable stance shown in the photo. They are trying to redistribute their weight to relieve the pressure in their hooves.



### TREATMENT

Laminitis should not be taken lightly and working closely with a veterinarian who specializes and understands laminitis and underlying issues is essential. Acute cases (laminitis symptoms have just occurred) require an emergency mechanical treatment (EMT) protocol and very specific management by a medical professional. Your horse’s career, and maybe his life, depends on the promptness of treatment. The goal of EMT is to prevent further damage and reduce risk of rotation of the bones. If EMT is not available, deep and dry sand can be used as an alternative as the horse must stand with his toes pointed down. The steep angle of the hoof helps to raise the heel and promotes blood flow structures within the hoof. This also helps to avoid tearing and helps blood flow to the laminae. Special shoes can be glued on to help with laminitis, and in some cases, surgery may be required.

# HOOF DOCTOR

## CONCLUSION

The variety of preceding conditions and the drastic consequences make laminitis and founder some of the worst hoof problems a horse can face. Noticing symptoms and acting quickly are the best ways to avoid permanent damage.

Although some hoof issues are more drastic and are considered more of an emergency, any abnormalities with the hoof should be carefully evaluated. As a horse owner or caretaker, knowing the early signs of these various ailments is crucial to a full recovery. You can never be too careful!







# Chapter Review

1. What hoof ailments are caused by bacteria?
2. List the different types of hoof cracks. Which hoof crack requires the most attention? The least?
3. What is one way that an abscess may form?
4. What is another term for navicular disease?
5. What are radiographs? What conditions are radiographs used to diagnose?
6. What is the most accurate method of examination for navicular disease?
7. Where are "corns" found?
8. How can "nail bound" issues be avoided?
9. What procedure will often help avoid deep abscesses?
10. What disease can cause the coffin bone to drop suddenly?

# FIRE SAFETY GUIDELINES



## INTRODUCTION

You may not keep your horse in a barn or stable, but the majority of 4-H horses are kept in barns or in a paddock with hay storage nearby. Barn fires are a nightmare and are extremely dangerous. Besides the obvious threat of burns, smoke inhalation can be extremely dangerous for our horses. The majority of all barn fires occur due to not knowing basic fire safety or carelessness. These fires are most common in the summer and winter and are the result of lightning strikes, combustion of hot hay, or electrical malfunction with lights, heaters, and other appliances in our barns and hay storage areas. Although there are lots of things to do to help our horses if they are injured by a fire, prevention is the best policy. Below are some key terms that you need to know when discussing fires.

### ACCELERANTS

- Items that speed up a fire

### COMMBUSTIBLE

- Able to catch fire and burn easily when exposed to high heat

### FLAMMABLE

- Easily set on fire

### HOT SPOT

- Spots in hay that increase in temperature and can cause a fire; usually related to moldy hay

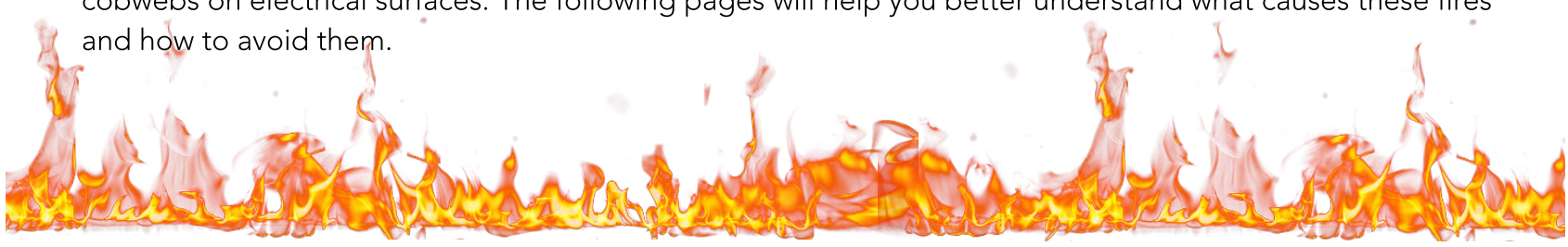
### NFPA:

- National Fire Protection Association

### VENTILATION

- The ability for fresh air to enter a room or building

Avoiding fires in your barn is easier with an understanding of what can cause fires. Summer fires are often caused by electrical storms or spontaneous combustion of improperly cured hay. Winter fires are often caused by appliances malfunctioning, rodents chewing through wires, or the accumulation of dust and cobwebs on electrical surfaces. The following pages will help you better understand what causes these fires and how to avoid them.



# FIRE SAFETY GUIDELINES

## GENERAL FIRE SAFETY PRECAUTIONS

1. Smoking should never be permitted in any barn, tack room, or hay and bedding storage area.
2. Flammable substances should be kept elsewhere.
3. Store vehicles and machinery in a separate building.
4. A class ABC fire extinguisher should be in all barns. From any point in the barn, there should be a fire extinguisher no greater than 75 feet away.
5. Use of kerosene-fueled or similar portable heaters should be discouraged.
6. Provision of automatic water sprinklers should be considered.
7. Comply with NFPA 150 standards. These standards establish guidelines and requirements for animals and their owners and handlers. The standards are outlined for all types of animal housing ranging from barns, zoos, veterinarian clinics, and racetracks.
8. Design and post (both inside and outside of the barn) an evacuation plan. Consider providing your local fire department with a copy. Include where large quantities of water can be found nearby.
9. Have fire drills in your barn, and practicing getting all horses out safely.

## PROPER STORAGE

Feed, hay, straw and shavings need to be stored properly with adequate ventilation. It is best if hay is stored in a building separate from where the horses are kept. If a loft must be used, there should be at least 12 inches of space between solid stall wall partitions and the ceiling (or loft floor). There should also be 12 inches of space left between the outside walls of the barn and the items you are storing. Dampness or mold often results in a hot spot.

Hay or bedding should not be near lights, fans, electrical boxes, heaters or outlets. Do not store flammable materials in the barn. Aerosol spray cans left in the barn can build up pressure and explode.



# FIRE SAFETY GUIDELINES

## ELECTRICAL SYSTEMS AND DEVICES

The following safety precautions should be taken when installing a new system or repairing an older system:

1. Electrical installations must be in line with the National Electrical Code. This code is part of NFPA standards.
2. Panel boxes should be in a dry, dust-free area, even if it is inside a building.
3. Outlets and switch boxes should be made of metal and have dust proof and water, spring loaded covers that close when released.
4. Wires should be encased in metal conduit pipe.
5. Light fixtures for fluorescent lights should have dust proof and moisture-resistant covers.
6. Appliances used in the barn should be UL approved. UL stands for Underwriters Laboratories, an organization that provides testing on appliances and says they are safe to use.
7. All appliances should be grounded. This means that measures are taken for appliances to safely discharge built up electricity in case of a power surge (such as from a lightning strike).
8. Portable heaters should not be used in the barn area.
9. Water tank heaters must have a thermostat and be UL listed.
10. Heat lamps should not be placed too close to hay or bedding.



# FIRE SAFETY GUIDELINES

Knowing and understanding these fire safety guidelines is important for anyone who keeps horses. Routine checks of your barn and hay storage areas to make sure they are up to standard is important to keeping your facilities, and horses, safe from accidental fires.

## LEARNING ACTIVITY 1

Invite a local firefighter or fire department to come to your club meeting and talk about barn fire safety. Take a tour of a facility and discuss best practices.



## LEARNING ACTIVITY 2

Provide youth with the materials to make an evacuation plan for their barns. For youth without barns, have them first design their dream barn and then an evacuation plan to go with it.



# Chapter Review

1. Do you know the definitions of all the key terms?
2. What times of the year do the majority of barn fires occur and what causes them?
3. What are some general fire safety precautions that we can implement in our barns?
4. What is the NFPA and what are some standards and guidelines to follow in your barn?
5. Where should fire extinguishers be kept?
6. What are the guidelines for storing hay in a building or in a loft?
7. What does UL stand for? What does this mean with our appliances?
8. What types of electrical appliances do you have in your barn? What can you do to make them safe?

# TRAILERING YOUR HORSE

## INTRODUCTION

When it comes to trailering, safety is the most important thing to consider. It is your job to ensure that horses are protected while traveling and that you only load in a trailer that is in good condition and is being pulled by an appropriate vehicle. Caution the driver to travel carefully, and plan ahead so that you don't have to rush! It's always best to travel slowly to avoid unnecessary roughness in the trailer.

## TRAILER SAFETY

It is recommended that horses be tied with a quick release knot or fastened with a quick release panic snap on permanently fixed trailer tie lines. In the case of an emergency, you don't want to get caught trying to untie your horse in the trailer. For horses that fight in the trailer a head bumper will prevent injury to the poll and other areas of the head, especially when unloading.

Tail wraps provide protection for horses that "ride" the butt bar, but the wrap should not be put on too tightly. Do not use elastic tail wraps or vet wrap, as this type of wrap can cut off the circulation to the tail and make the hair fall out. Leg wraps that extend from the knee or hock downward, including the coronary band, should be used routinely and especially for longer trips. For horses that paw or climb the sides of the trailer, knee and hock pads can help prevent swollen knees and capped hocks.



# TRAILERING YOUR HORSE

## LONG TRIPS

When traveling for long distances, be sure that the horse is offered water at least every 3-4 hours. This will help prevent colic and dehydration. Because horses are sensitive to the taste of water and may refuse to drink, consider hauling water from home or using additives such as lemonade or sports drink powder. If you do choose to use additives, you should use them at home before a trip to get the horse used to the taste.



Feeding while on the road can make the trip a better experience for horses. Stick with hay rather than trying to feed grain. If using a hay net, make sure it is tied high and tight enough to prevent feet or legs from getting caught.

When traveling for more than 18 hours, horses should be unloaded, exercised and allowed some time to eat and drink. Plan ahead to determine a safe location away from the highway or roadside. Always take extreme precaution when unloading in a location that is unfamiliar to your horse.

## THINGS TO CONSIDER...

It is always a good idea to have a first aid kit in the trailer at all times. Some basic items might include:

- nonstick gauze pads
- sheets of cotton bandages
- quilts and wraps
- a humane twitch
- tape
- saline eye wash
- elastic bandages and scissors
- antiseptic soap
- a tube of Phenylbutazone (bute) paste





# TRAILERING YOUR HORSE

When traveling, certain health requirements may be needed. Always do your research on both in-state and out-of-state rules. Some examples of requirements may include a Coggins test, health certificate or brand inspection.

Proper ventilation in a horse trailer is important. Temperatures inside a trailer may be 10-15 degrees Fahrenheit warmer than the outside temperature, so there is a chance of horses overheating. Horses also need ventilation during the winter months.



For additional comfort for your horse while traveling, consider rubber mats placed over the wood floor to provide extra cushion. A butt bar may also be used to give the horse something to brace against.

## CONCLUSION

With these tips, you and your horse are ready to hit the road! After you have reached your destination, whether it be at the show, at a pit stop for a break during a long trip, or at the trailhead, be sure to unload your horse in a safe area. Be especially careful around roadways. Alert people around so that they do not accidentally scare your horse or get in the way. Never stand directly behind your horse when unloading. And remember, safety for you and your horse is always the top priority!



# Chapter Review

1. What is the most important consideration when trailering your horse?
2. How should horses be secured in a trailer? Why is this important?
3. What piece of equipment will protect a horse's poll in the trailer?
4. What should NOT be used when wrapping a horse's tail? Why not?
5. Knee and hock pads protect horses from what injuries?
6. How often should horses be offered water when traveling in a trailer?
7. What type of feed is best for horses and how should it be offered in the trailer?
8. What is the maximum time a horse should be left in the trailer when traveling long distances?
9. What types of things should you put into your first aid kit to be stored in the trailer?
10. What are some extra things that may be required when traveling across state lines?

# Utah 4-H Biosecurity

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## Utah 4-H State Horse Event Policy:

These policies have been put in place to ensure the safety and health of your horses. There have been many current outbreaks of potentially fatal diseases going around the United States, and Utah State University is taking active measures to promote equine health. This policy is in effect for all Utah 4-H State Events. It is recommended for county horse shows.

## Preventing Disease

### Vaccinations

1. Each horse attending a Utah 4-H State Event must be vaccinated for Equine Influenza and Rhinopneumonitis (EHV).
  - a. The vaccination must be for a date between 6 months and 2 weeks prior to the date of the event.
  - b. As part of the registration, the owner of the horse must certify that the horse has received these vaccinations (including date of vaccinations).
  - c. The vaccination does not have to be administered by a veterinarian.
2. 5 Days Certificate of Veterinary Inspection with horse temperature written on the certificate (multiple day events only). Horses will not be unloaded until check-in process is complete.

### Temperature

- a. Each horse must have their temperature checked every day for the 3 days (including the morning of) prior to the horse show. For example, if the show is on Friday, participants will check Wednesday, Thursday and Friday morning.
- b. It is recommend that each horse must have their temperature checked each day of the horse show.
- c. Horses with a temperature over 101.5°F at any temperature reading will not be allowed at the event. Any horse at a multiple day event that has a temperature over 101.5°F must be examined by the show veterinarian at owner's expense.

### Clinical Signs

1. Each horse must be checked for the following symptoms before leaving for the horse show and each day of the horse show. If they exhibit any of the clinical signs, they must have written veterinarian approval to come to the show:
  - a. Nasal discharge
  - b. Elevated temperature
  - c. Coughing
  - d. Difficulty breathing
  - e. ADR ("Ain't Doin' Right")
2. If any of these symptoms are exhibited at the show, the Safety Officer can request a veterinarian inspection at owner's expense

## Understanding Vaccinations

1. Risk Based - these diseases are communicable between horses and are recommended every six months
  - a. Equine Influenza
  - b. Rhinopneumonitis (EHV)
  - c. Strangles (consult veterinarian before implementing)
2. Core Vaccines - Recommended for all horses. Discuss with your veterinarian.
  - a. West Nile
  - b. Eastern and Western Encephalitis
  - c. Tetanus
  - d. Rabies
3. Location Based - ask your veterinarian if this is needed for your area
  - a. Potomac Horse Fever

# Best Practices

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1. Before you bring a new horse home
  - a. Find out the vaccination status. Be specific - what exactly has this horse been vaccinated for? When exactly were they last vaccinated?
  - b. Have a vet check by the buyers vet and paid for by the buyer
  - c. Get a brand inspection
  - d. If crossing state lines, get a CVI (Certificate of Veterinary Inspection) and Negative Equine Infectious Anemia (Coggins)
  - e. Keep the new horse separated from other horses for 2 weeks
2. If there is a sickness at home (to the best of your ability based on location restrictions), try to quarantine the infected horse once you start seeing clinical signs. Be aware that most likely it has already spread - but it doesn't mean that it has.
  - a. Contact your vet
  - b. Quarantine the infected horse at least 30 feet away from other horses
  - c. Avoid nose to nose and/or direct contact
  - d. Avoid indirect contact
    - i. Don't pet the infected horse and then pet the other horses
    - ii. Feed the infected horse last
    - iii. DO NOT share tack, equipment or feed/water buckets
  - e. Keep the infected horse in quarantine for 2 weeks
  - f. Notify any neighbors with horses that are less than 30 feet away
3. Each time before you leave, check for the following clinical signs. If you see any of them, don't take the horse and contact your veterinarian.
  - a. Nasal discharge
  - b. Elevated temperature
  - c. Coughing
  - d. Difficulty breathing
  - e. Acting "off"
4. Good habits any time the horse is not at home
  - a. Try to avoid nose to nose and/or direct contact
  - b. Try to avoid indirect contact, touching multiple horses
  - c. Do not share tack and grooming tools
  - d. If you have to share, disinfect the equipment first. Keep disinfecting supplies as part of your tack rooms.
    - i. Chlorine:water in 1:10 ratio. Leave in contact for 10 minutes, then rinse.
  - e. Do not share feed and water buckets
  - f. Do not use a common tie rail or fence
  - g. Strip and disinfect stalls. Be courteous and completely strip your stall of all manure and bedding when you are done with it.
    - i. Chlorine:water in 1:10 ratio, air dry
  - h. Wash your hands frequently

## Resources

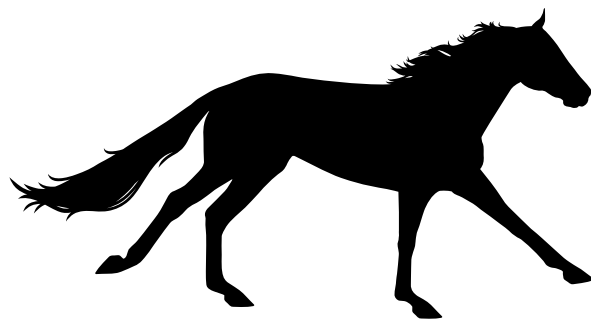
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AQHA Handbook <https://www.aqha.com/daily/health/2016/september/increase-biosecurity-measures-to-help-protect-horse-health/>

EDCC Website  
<http://www.equinediseasecc.org>

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**EXTENSION**   

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